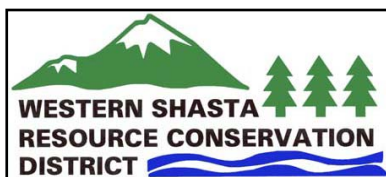


SHINGLETOWN/MANTON COMMUNITIES FIRE SAFE PLAN UPDATE 2010



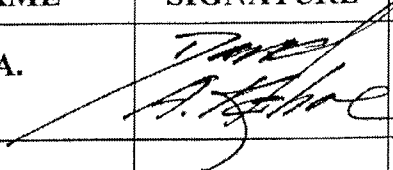

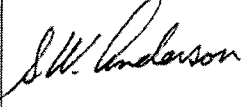
This project was funded through a grant from the
Shasta County Title III Secure Rural Schools Program



This project was funded through a grant from the Shasta County Title III Secure Rural Schools Program and updated by the Western Shasta Resource Conservation District,
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Shingletown/Manton Communities
Fire Safe Plan Update
2010

SIGNATURE BLOCK

NAME	SIGNATURE	ORGANIZATION	DATE
David A. Kehoe		Chairman, Shasta County Board of Supervisors	JUN 15 2010
Doug Wenham		Unit Chief, CAL FIRE, Shasta-Trinity Unit and County Fire Warden, Shasta County Fire Department	6/4/10
Steve Anderson		Field Manager, Bureau of Land Management, Redding Field Office	2 June 10

**Shingletown/Manton Communities
Fire Safe Plan Update
2010**

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FIRE SAFE PLAN FOR THE SHINGLETOWN RIDGE/MANTON COMMUNITY UPDATE (2010)

I. INTRODUCTION

A. THE PLAN

In 2009, Shasta County entered into a consulting services agreement with Western Shasta Resource Conservation District (WSRCD) to update all of the existing strategic fuel management plans in western Shasta County including the *Fire Safe Plan for the Shingletown Community, December 2003* (Plan). The purpose of the update was to meet with the local Fire Safe Council, watershed groups, landowners, and agencies to review the existing project list and priorities, move completed projects to a category of maintenance projects, add new projects, identify wildland urban interface areas, conduct risk assessments, and establish a revised list of priority projects.

The Plan update addresses values at risk, landowner objectives, the types of fuel treatments, the road system, potential funding sources, and fuelbreak locations, which together developed the updated fire safe plan. The recommendations include locating shaded fuelbreaks along key roadways and ridgelines, increasing publicity for the updated fire and community evacuation plan, post the Plan on the WSRCD website, and continue annual neighborhood-based fuel reduction work. Background information from the original Plan was included as well as revisions based on new information.

The boundary of the planning area (**Map 1**) encompasses 107,340 acres and includes the community of Shingletown, located approximately 25 miles east of Redding, California. Other communities that lie within the Plan boundary include Viola on the eastern end and Manton on the south. There are approximately 5,411 residents living within the Plan boundary. The area is used heavily for recreation during the summer months – substantially increasing the number of people using the land during the height of fire season. Land ownership is approximately 4% public, including Bureau of Land Management and USDA Forest Service, and 96% private, including commercial forest land owned by Sierra Pacific Industries (SPI) and land managed by W.M. Beaty and Associates, Inc. (W.M. Beaty), and other private land ownership.

This area can be reached from State Highway 44 east and west, which is the major two-lane highway connecting Redding and Lassen Volcanic National Park. The topography of the area varies with elevations from 350 feet at the confluence with the Sacramento River on the west end to 4,400 feet at the eastern end. The majority of the watershed has remained relatively undeveloped over time and provides high quality water to the Sacramento River.

The Battle Creek Watershed (in Shasta County) includes the communities of Mineral and Manton and encompasses about 410 square miles or approximately 262,400 acres, and

lies along the north border of Tehama County on the east side of the Sacramento River. Approximately 54,910 acres lies within the planning area. The elevation of the watershed ranges from 330 feet on its western end along the Sacramento River to 10,470 feet at the top of Lassen Peak. Land ownership includes Lassen National Park, the USDA Forest Service, Bureau of Land Management, large commercial timberland and small private landowners.

B. BACKGROUND

Fire has played a natural part in the evolution of vegetation within the 112,100 acre planning area. Much of the vegetation has evolved and co-existed with fire for many years and is either dependent on fire or has adapted to the fire regime now associated with the area. The forest ecosystems and the chaparral on the canyon slopes within the planning area evolved with frequent, low intensity fire over thousands of years. Native Americans did not simply use the resources of the forest as they found them. There is growing evidence that they actively managed the land using fire to encourage certain plant and animal species and to create and maintain desirable landscapes. The open stands of trees and diversity of ecosystems encountered by the first Europeans were largely the result of human resource management using fire and frequent accidental and lightning fires. The Native Americans were apparently the most important influence on the timing and location of fires, and therefore contributed to the maintenance of the fire dependent ecosystem.

Successful fire suppression activities for over eighty years in the western United States and in the planning area in particular, have significantly increased the volume and type of fuels across the landscape. The result is a Very High Fire Hazard Rating throughout the planning area, according to the CAL FIRE (**Map 2**). The number and size of devastating wildfires impacting the western United States over the past ten years resulted in the creation of a National Fire Plan for the U.S. Departments of Interior and Agriculture. Funding has been available through the National Fire Plan, California Fire Plan and other agencies to assist local communities and watershed groups in identifying/planning and implementing fuel reduction projects.

C. UPDATING THE PLAN

The 2003 Plan stressed maximum synergy with groups performing similar work in adjacent areas to foster collaboration and overall project effectiveness. This update maintained that synergy by WSRCD staff, CAL FIRE staff, and the Shingletown Fire Safe Council Chairman by including the Manton Fire Safe Council (FSC) in the update. The Manton FSC proposed additions to assure that fuel reduction projects proposed on both the Shasta and Tehama sides of the county line are complementary in order to create a safer environment in the Manton area. As a result, the planning area boundary has been modified to include an area near Manton as well as exclude areas that have active commercial timber operations that maintain a safer fire environment (**Map 1**).

Additional partners in updating the Plan include the Bear Creek Watershed Group, USDA Forest Service/Lassen National Forest, located on the eastern side of the Plan

area; the Cow Creek Watershed Management Group on the north boundary, which is a 501(c)(3) non-profit formed to protect and restore the natural resources of the Cow Creek Watershed; the Battle Creek Watershed Conservancy on the southern boundary includes a portion of the Battle Creek Watershed in Shasta County that includes the community of Manton.

II. GOALS AND OBJECTIVES

A. ORIGINAL GOALS AND OBJECTIVED (2003)

- Identify assets at risk, including streams, timber, wildlife, and structures.
- Foster and maintain multi-agency and landowner roles and responsibilities in the implementation and maintenance of the Shingletown Fire Safe Plan.
- Define the boundary of the planning area in order to maximize coordination with other groups performing similar work in the area.
- Encourage effective, community-based fire safe practices around structures.
- Identify, prioritize, and map potential fuel reduction projects that will provide for human safety, minimize private property loss, and minimize the potential of a wildfire burning into the community.
- Develop maps of the features important to fire prevention and control, including soils, fire history, vegetation, land ownership, topography, roads, and the locations of residential areas.
- Enter the completed plan on the Western Shasta Resource Conservation District’s website.

B. ADDITIONAL GOALS AND OBJECTIVES (2010)

- Review existing projects and identify, prioritize and map new fuel reduction projects that will provide for human safety, minimize private property loss, minimize the potential of a wildfire burning into communities, and increase fire fighter safety.
- Redefine the boundary of the planning area in order to maximize coordination with other groups performing similar work in the area.

III. METHODOLOGY

The activities undertaken for the update of the *Fire Safe Plan for the Shingletown Community* (Plan) include:

Activity	Actions Taken
Meet with Shingletown and Manton Fire Safe Councils, Bear Creek Watershed Group members, landowners (residential, farm, ranch, timber), and representatives from local agencies about the scope of the update.	Met with BCWG on 8/6/09, Shingletown FSC on 9/7/2009, Manton FSC on 10/08/09. Held TAC meeting on 9/25/09. Held community meetings in Shingletown on 9/7/2009 and 11/11/2009 and Manton on 11/12/2009. Present at each of the meetings were agency and FSC

Activity	Actions Taken
	representatives and community members.
Present information to the Shingletown and Manton Fire Safe Councils, CAL FIRE, Shasta County Fire Department, and local landowners for review and assistance in assessment of risk, identification of WUI's, and prioritization of fuel reduction projects.	Presented draft plan at Shingletown FSC/community meeting on 11/11/09 and Manton FSC meeting on 11/12/09. Incorporated changes into revised draft plan.
Evaluate values at risk, such as structures and natural resources.	9/25/09 TAC meeting, 11/11/09 Shingletown FSC meeting, and 11/12/09 Manton FSC meeting.
Coordinate with agencies on their management objectives in the watershed.	Confirmed existing agency management objectives with agency representatives and carried forward to this plan update
Identify long term maintenance options for fuelbreaks.	Reviewed discussion of options in the 2003 plan with the TAC and carried forward to this plan update.
Identify mechanical treatments and possible uses of excess fuels.	Reviewed the mechanical treatment options in the 2003 Plan with the TAC and carried the options forward to the plan update.
Develop a priority list of recommendations and potential funding sources.	Developed the priority list of recommendations with the TAC. Carried forward the potential funding sources from the existing plan
Complete a draft fire safe plan for review by the TAC. Present a draft fire safe plan to the community, and incorporate recommendations into the final plan.	The draft was posted on line for TAC and community review on 11/09/2009. A revised draft based on comments received at the 11/11-12/2009 meetings was posted Comment incorporated on 5/13/10.

IV. RECOMMENDED ACTIONS

Proposed projects described in this update include proposals that were not yet completed and still viable projects from the 1995 and 2003 Plans plus new projects recommended by the Shingletown Fire Safe Council, the Manton Fire Safe Council, and the Tehama County East Community Wildfire Protection Plan. All action items are an integral part in managing the fuels in the Shingletown/Manton Community. Factors considered in developing the list include:

- Fire history for the area, both lightning-caused and human-caused fires.
- Heavy fuel loading conditions with closed canopies.
- Assets at risk.
- Common wind directions and speed.
- Roadsides overgrown with vegetation.

- Major topographical features important to fire control and weather patterns which influence fire behavior.
- Road access for fire crews.
- Escape routes for residents

The fuel reduction projects fall into two categories, defensible space/Firewise Program for residences and structures and shaded fuelbreaks primarily intended to create safer environments for fire personnel to attack wildland fires and safer escape routes for residents. The following section describes the individual project and the asset values at risk.

A. ACTION ITEMS

1. Encourage and participate in the creation of defensible space and support of a Firewise Program for neighborhoods throughout the planning area.
2. Seek funding to develop a variety of typical neighborhood-scale landscape designs that demonstrate fire safety, increase forest health, and reduce impacts from wind-driven fires while preserving or improving aesthetics and providing for security, privacy, and other values. Link the larger scale projects to individual fuelbreaks. Shingletown and Manton community members can reduce structural ignitability throughout the planning area by implementing defensible space/Firewise Programs to include the following:
 - a. Assess risk/structure ignitability.
 - b. Upgrade existing structures to fire safe building codes.
 - c. Replace wood roofs with approved fire safe roofing.
 - d. Consider fire resistant exterior siding.
 - e. Maintain a minimum 100-foot defensible space around structures.
 - f. Clean roofs and gutters annually.
 - g. Develop a community phone tree in case of a fire emergency.
 - h. Develop agreements with the county to use the reverse 911 system.
 - i. Remove ladder fuels.
 - j. Clean and screen chimneys.
 - k. Maintain green grass and fire resistant plants within 30 feet of structures.
 - l. Move all flammable material at least 30 feet from homes.
 - m. Remove dead, dying, or diseased shrubs, trees, dried grass, fallen branches and dried leaves 100 feet around structures.
 - n. Attach a hose that can reach to all parts of the structures.
3. Seek funding to create defensible space through fuelbreaks, Vegetation Management Plans, or other means in Nature Conservancy holdings located in the southwest corner of the planning area.
4. Coordinate with and support the Battle Creek Watershed Conservancy in their fuel reduction planning efforts both in and to the south of the planning area, including in and around the community of Manton.

5. Coordinate with and support the Cow Creek Watershed Management Group's Strategic Fuel Reduction Plan, whose planning area lies directly north of the Plan boundary.
6. Coordinate work with Sierra Pacific Industries, Pacific Gas & Electric (PG&E), and W.M. Beatty and Associates, Inc. to assure fuel reduction activities on their properties are complemented by other fuel reduction projects throughout the Plan area.
7. Coordinate fuel reduction projects with Western Area Power Authority and PG&E transmission line clearing and biomass thinning projects.

B. PROPOSED PROJECTS (Maps 7-7C)

The identified fuel reduction projects fall into two categories, defensible space for homes and structures and roadside and ridgeline shaded fuelbreaks intended to create safe ingress and egress for fire personnel and escape routes for residents. The following section describes the individual projects and the asset values at risk. The following table depicts the project name, type, category, and priority.

**Table 1
Fuel Reduction Projects**

Type	Shingletown/Manton Fuel Reduction Projects				
	Category	Project	Map Letter	Priority	Comments
Defensible Space/Firewise	High				
		Near Berry Spring/Plateau Pines Area	A	1	
		Emigrant Trail	B	2	
		Manton	C	3	new
		Shasta Forest Pines	D	4	
		Bat. Cr/Lake Mc	E	5	
		Airport	F	6	
		Frey Road	G	7	new
	Moderate				
		Midway Pines	H	1	
		Black Butte School	I	2	
		Starlight Pines	J	3	
		Forward Mills	N	5	new
	Low				
		Woodridge Lake Estates	K	1	
	Viola	L	2		

Type	Shingletown/Manton Fuel Reduction Projects				
Fire Access/Escape	High				
		Shingletown Ridge*	A	1	extended
		Sites/Plateau Pines Roads	B	2	
		Black Butte Road	C	3	
		Ponderosa Way #1	D	4	new
		Emigrant Trail #1	E	5	
	Moderate				
		Ponderosa Way #2	F	1	new
		Rock Creek Road	G	2	new
		Emigrant Trail #2	H	3	new
	Emigrant Trail #3	I	4	new	
Fire Access/Escape	Low				
		Wilson Hill Road north***	J	1	
		Wilson Hill Road South ***	J	2	extension
		Deer Flat Road*	K	3	extended
		Upper Rock Creek	L	4	new
		Battle Creek Bottom Road	M	5	new
		Wild Cat Road***	N	6	extended
	Ritts Mill Road**	O	7	shortened	
	Ponderosa Way #3	P	8	new	

* Extended existing proposed project

** Shortened to remove those sections within the Starlight Pines and Battle Creek/Lake McCumber area, plus there is a buffer from adjacent timber company operations. Reduced category to Low

*** Wilson Hill and Wildcat Roads were in the 2003 Plan and were recommended to be extended as shown in the updated plan. There is also a proposed safety zone at the airport along Wilson Hill Road south.

1. Defensible Space/Firewise



Typical neighborhood in need defensible space

a. **High Priority:**

#1 Concern – Lack of Defensible Space Near Berry Spring/Plateau Pines Area

Proposed Solution: Encourage the development of defensible space/Firewise program.

Ownership = 100 % private land
Number of dwellings = 114
Value of dwellings = \$22,800,000
Number of people = 263

#2 Concern – Lack of Defensible Space Emigrant Trail Area

Proposed Solution: Encourage the development of defensible space/Firewise program.

Ownership = 100 % private land
Number of dwellings = 286
Value of dwellings = \$62,920,000
Number of people = 658

#3 Concern – Lack of Defensible Space Manton Area

Proposed Solution: Encourage the development of defensible space/Firewise program.

Ownership = 100 % private land
Number of dwellings = 153
Value of dwellings = \$30,600,000
Number of people = 352

#4 Concern – Lack of Defensible Space Shasta Forest Village Area

Proposed Solution: Encourage the development of defensible space/Firewise program.

Ownership = 100 % private land
Number of dwellings = 170
Value of dwellings = \$37,400,000
Number of people = 391

#5 Concern – Lack of Defensible Space Battle Creek Estates/Lake McCumber/McCumber Flat Area

Proposed Solution: Encourage the development of defensible space/Firewise program.

Ownership = 100 % private land
Number of dwellings = 167
Value of dwellings = \$41,750,000
Number of people = 384

#6 Concern – Lack of Defensible Space Airport Area

Proposed Solution: Encourage the development of defensible space/Firewise program.

Ownership = 100 % private land
Number of dwellings = 151
Value of dwellings = \$30,200,000
Number of people = 348

#7 Concern – Lack of Defensible Space Frey Road Area

Proposed Solution: Encourage the development of defensible space/Firewise program.

Ownership = 100 % private land
Number of dwellings = 109
Value of dwellings = \$23,980,000
Number of people = 2507

b. Medium Priority:

#1 Concern – Lack of Defensible Space Mid-Way Pines Area

Proposed Solution: Encourage the development of defensible space/Firewise program.

Ownership = 100 % private land
Number of dwellings = 95
Value of dwellings = \$19,000,000
Number of people = 219

#2 Concern – Lack of Defensible Space Black Butte School Area

Proposed Solution: Encourage the development of defensible space/Firewise program.

Ownership = 100 % private land
Number of dwellings = 62
Value of dwellings = \$13,020,000
Number of people = 143

#3 Concern – Lack of Defensible Space Starlight Pines Area

Proposed Solution: Encourage the development of defensible space/Firewise program.

Ownership = 100 % private land
Number of dwellings = 175
Value of dwellings = \$35,000,000
Number of people = 403

#4 Concern – Lack of Defensible Space Forward Mills Area

Proposed Solution: Encourage the development of defensible space/Firewise program.

Ownership = 100 % private land
Number of dwellings = 21
Value of dwellings = \$3,780,000
Number of people = 49

c. Low Priority:

#1 Concern – Lack of Defensible Space Woodridge Lake Estates Area

Proposed Solution: Encourage the development of defensible space/Firewise program.

Ownership = 100 % private land
Number of dwellings = 107
Value of dwellings = \$69,160,000
Number of people = 247

#2 Concern – Lack of Defensible Space Viola Area

Proposed Solution: Encourage the development of defensible space/Firewise program.

Ownership = 100 % private land
Number of dwellings = 28
Value of dwellings = \$7,000,000
Number of people = 65

2. Fire Access/Escape Routes (Shaded Fuelbreaks)

a. High Priority

#1 Concern – Poor Fire Access/Escape along Shingletown Ridge Road

Proposed Solution: Construct shaded fuelbreak along Shingletown Ridge Road. 6.3 miles long x 100 feet on each side = 152 acres

Ownership = 100 % private land
Number of dwellings = 456
Value of dwellings = \$91,200,000
Number of people = 10,488

Shingletown Ridge Road. Note trees and brush up to asphalt edge.



#2 Concern – Poor Fire Access/Escape along Sites/Plateau Pines Roads

Proposed Solution: Construct shaded fuelbreak along Sites/Plateau Pines Roads. 1.0 miles long x 50 feet on each side =12 acres

Ownership = 100 % private land
Number of dwellings = 114
Value of dwellings = \$21,660,000
Number of people = 263

Sites/Plateau Pines Road. Note trees and brush up to asphalt edge.



#3 Concern – Poor Fire Access/Escape along Black Butte Road

Proposed Solution: Construct shaded fuelbreak along Black Butte Road. 3.5 miles long x 100 feet on each side = 85acres

Ownership = 100 % private land
Number of dwellings = 284
Value of dwellings = \$62,480,000
Number of people = 654

Black Butte Road. Note dense trees and brush near asphalt edge.



#4 Concern – Poor Fire Access along Ponderosa Road #1 (Rock Creek Road intersection to High Bridge)

Proposed Solution: Construct shaded fuelbreak along Ponderosa Road, Rock Creek Road intersection to High Bridge section. 4.3 miles long x

100 feet on each side = 104 acres. This projected should be primarily for fire access.

Ownership = 100 % private land
Number of dwellings = 153
Value of dwellings = \$30,600,000
Number of people = 352

Ponderosa Way #1. Note dense trees and brush up to road



**#5 Concern – Poor Fire Access/Escape along Emigrant Trail #1
(Shingletown to Airport)**

Proposed Solution: Construct shaded fuelbreak along Emigrant Trail # 1
3.4 miles long x 100 feet on each side = 83acres

Ownership = 100 % private land
Number of dwellings = 237
Value of dwellings = \$71,100,000
Number of people = 546

Emigrant Trail #1. Note dense trees and brush up to road



b. Medium Priority

#1 Concern – Poor Fire Access/Escape along Ponderosa Way #2 (Inwood intersection to 44)

Proposed Solution: Construct shaded fuelbreak along Ponderosa Way,
Inwood section. 2.2 miles long x 100 feet on each side = 52 acres

Ownership = 100 % private land
Number of dwellings = 112
Value of dwellings = \$24,640,000
Number of schools = 2
Value of Schools = \$50,000,000
Number of people = 258

**Ponderosa Way #2. Note dense
trees and brush near road edge**



#2 Concern – Need to improve Fire Access/Escape along Rock Creek Road (Intersection of Wilson Hill Road to Ponderosa Way intersection).

Proposed Solution: Construct shaded fuelbreak along Rock Creek Road,
Manton to Ponderosa Way. 3.2 miles long x 100 feet on each side = 79
acres

Ownership = 100 % private land
Number of dwellings = 176
Value of dwellings = \$31,680,000
Number of people = 405

**Rock Creek Road. Need
improvement of fuelbreak
along road. Note dense
vegetation up to edge of road**



#3 Concern – Poor Fire Access/Escape along Emigrant Trail #2 (Airport to Starlight Pines)

Proposed Solution: Construct shaded fuelbreak along Emigrant Trail #2 for fire access purposes only. 1.0 miles long x 100 feet on each side = 22 acres. This project is primarily for fire access.

Ownership = 100 % private land
Number of dwellings = 335
Value of dwellings = \$73,700,000
Number of people = 771

Emigrant Trail #2. Note dense trees and brush up to road edge



#4 Concern – Poor Fire Access/Escape along Emigrant Trail #3 (Starlight Pines to McCumber Road)

Proposed Solution: Construct shaded fuelbreak along Emigrant Trail #3. 1.7 miles long x 100 feet on each side = 40 acres

Ownership = 100 % private land
Number of dwellings = 468
Value of dwellings = \$93,600,000
Number of people = 1077

Emigrant Trail #3. Note dense trees and brush up to road edge.



#5 Concern – Poor Fire Access/Escape along Wilson Hill Road south (Short Hill Road south to Manton)

Proposed Solution: Construct a shaded fuelbreak along Wilson Hill Road south and encourage landowners to treat grass and light brush outside highway easement fence to break continuity of fuels. 4.6 miles long x 100 feet on each side = 112 acres. Designate a fire safe zone at the undeveloped airstrip along Wilson Hill Road north of Manton.

Ownership = 100 % private land
Number of dwellings = 46
Value of dwellings = \$8,280,000
Number of people = 106

c. Low Priority

#1 Concern – Poor Fire Access/Escape along Wilson Hill Road north (Shingletown south to Short Hill Road)

Proposed Solution: Construct shaded fuelbreak along Wilson Hill Road. 2.7 miles long x 100 feet on each side = 66 acres

Ownership = 100 % private land
Number of dwellings = 125
Value of dwellings = \$22,500,000
Number of people = 288

Wilson Hill Road north. Note dense trees and brush up to road edge.



C. PROJECT MAINTENANCE PRIORITY

Project	Completed	Maintenance Priority	Cost
Highway 44 at Dersch Road	2003	1	\$115,000
Ritts Mill Road	Unknown	2	\$310,700
Deer Flat Road (near Viola)	Unknown	3	\$238,800
Upper Rock Creek	Unknown	4	\$517,400
Shingletown Ridge/Shasta Forest Village fuelbreaks	2009	5	\$427,300
Battle Creek Bottom		6	\$307,700
Wild Cat Road		7	\$651,300
Highway 44	Ongoing by Cal Trans	Ongoing by Cal Trans	\$263,211

#1 Maintenance Concern: Highway 44 at Dersch Road

Proposed solution: Conduct maintenance on the existing fuelbreak. 2.8 miles long x 300 feet on each side = 102 acres

Ownership = 100% Private
 Number of dwellings = 39
 Value of dwellings = \$8,580,000
 Number of people = 90

#2 Maintenance Concern – Maintain Fire Access/Escape along Ritts Mill Road

Proposed Solution: Maintain shaded fuelbreak along Ritts Mill Road 6.7 miles long x 100 feet on each side = 162 acres

Ownership = 100 % private land
 Number of dwellings = 628
 Value of dwellings = \$157,000,000
 Number of People = 1444

Ritts Mill Road. Fuelbreak is generally good, but could use some maintenance and improvement.



#3 Maintenance Concern –Maintain/Improve Fire Access/Escape along Deer Flat Road (Viola)

Proposed Solution: Maintain shaded fuelbreak along Deer Creek Road. 3.7 miles long x 100 feet on each side = 89 acres

Ownership = 100 % private land
Number of dwellings = 9
Value of dwellings = \$2,700,000
Number of people = 21

Deer Flat Road. Fuelbreak is generally good, but could use some maintenance and improvement.



#4 Maintenance Concern –Maintain/Improve Fire Access/Escape along Upper Rock Creek Road (Ponderosa Way intersection to Highway 44)

Proposed Solution: Conduct maintenance of shaded fuelbreak along Upper Rock Creek Road, Ponderosa Way to Highway 44. 8.3 miles long x 100 feet on each side = 201 acres

Ownership = 100 % private land
Number of dwellings = 938
Value of dwellings = \$187,600,000
Number of people = 2158

Upper Rock Creek Road. Fuelbreak is generally good, but could use some maintenance and improvement.



#5 Maintenance concern: Shingletown Ridge/Shasta Forest Village fuelbreaks

Proposed solution: Conduct maintenance on the existing fuelbreak. 4.5 miles long x 200-300 feet wide = 109-164 acres.

Ownership = 100 % private land
Number of dwellings = 310
Value of dwellings = \$68,200,000
Number of people = 713

#6 Concern – Need to maintain Access/Escape along Battle Creek Bottom Road

Proposed Solution: Encourage landowners to treat grass and light brush inside highway easement fence to break continuity of fuels.

Ownership = 100 % private land
Number of dwellings = 26
Value of dwellings = \$4,680,000
Number of people = 60

**Battle Creek Bottom Road,
eastern end: Note dense brush to
the road edge.**



#7 Concern – Maintain/Improve Fire Access/Escape along Wild Cat Road.

Proposed Solution: Encourage landowners to treat grass and light brush inside highway easement fence to break continuity of fuels.

Ownership = 100 % private land
Number of dwellings = 138
Value of dwellings = \$30,360,000
Number of people = 318

Wild Cat Road. Fuelbreak is generally good, but could use some maintenance and improvement. This is just north of the proposed safety zone at the airport



8 Maintenance Concern – Maintain Fire Access/Escape along Ponderosa Way #3 (High Bridge to Wilson Hill Road intersection)

Proposed Solution: Conduct maintenance of shaded fuelbreak along Ponderosa Way from High Bridge to Wilson Road. 3.7 miles long x 100 feet on each side = 90 acres

Ownership = 100 % private land
Number of dwellings = 284
Value of dwellings = \$56,800,000
Number of people = 654

Ponderosa Way #3. Fuelbreak is generally good but could use some maintenance.



#9 Maintenance concern: Highway 44 (ongoing by Cal Trans)

Proposed solution: Cal Trans conducts new construction and periodic maintenance of the shaded fuelbreaks along Highway 44 on an annual basis.

D. OVERALL COMMUNITY WILDFIRE RISK ASSESSMENT

BASIC ASSUMPTIONS	
People	2.3 per dwelling
Dwellings	1733
Property Value (\$180k – 300k/ per dwelling = \$240,000/dwelling)	\$415,920,000
Schools	\$
Power line –9.63 miles @ \$250,000/mile	\$4,815,000

DEFENSIBLE SPACE AND FIREWISE PROGRAMS

Community, structure or area at risk	Fuel Hazard	Risk of Wildfire Occurrence	Structural Ignitability	Preparedness and Firefighting Capability	Overall Risk	Fire Hazard Severity Zone Rating
Near Berry Spring/Plateau Pines Area/Plateau Pines area	High	High	High	Low/High	High	Very High
Emigrant Trail	High	High	High	Low/High	High	Very High
Manton	High	High	High	Low/High	High	Very High
Shasta Forest Pines	High	High	High	Low/High	High	Very High
Battle Creek Estates/Lake McCumber and McCumber Flat	High	High	High	Low/High	High	Very High
Northwest of Airport Landing Strip	High	High	High	Low/High	High	Very High
Frey Road	High	High	High	Low/High	High	Very High
Midway Pines Sub-division	High	High	High	Low/High	Medium	Very High
Black Butte School Area – including Ponderosa Way and Inwood Road	High	High	High	Low/High	Medium	Very High
Starlight Pines Sub-division	High	High	High	Low/High	Medium	Very High
Forward Camp	High	High	High	Low/High	Medium	Very High
Woodridge Lake Estates	High	High	High	Low/High	Low	Very High
Viola	High	High	High	Low/High	Low	Very High

Rating: High, Medium, Low

Fire Hazard Severity Zone ratings: Very High, High, Moderate

FIRE ACCESS AND ESCAPE ROUTES (SHADED FUELBREAKS)

Community, structure or area at risk	Fuel Hazard	Risk of Wildfire Occurrence	Structural Ignitability	Preparedness and Firefighting Capability	Overall Risk	Fire Hazard Severity Zone Rating
Shingletown Ridge Road	High	High	High	Low/High	High	Very High
Sites/Plateau Pines Roads/Plateau Pines Road	High	High	High	Low/High	High	Very High
Black Butte Road	High	High	High	Low/High	High	Very High
Ponderosa Way #1 (Rock Creek Road to High Bridge section)	High	High	High	Low/High	High	Very High
Emigrant Trail #1	High	High	High	Low/High	High	Very High
Ponderosa Way #2 (Inwood Road to Highway 44 section)	High	High	High	Low/High	Medium	Very High
Rock Creek Road, (Wilson Hill Road to Ponderosa Way)	High	Medium	High	Low/High	Medium	Very High
Emigrant Trail #2	High	Medium	High	Low/High	Medium	Very High
Emigrant Trail #3	High	Medium	High	Low/High	Medium	Very High
Battle Creek Bottom Road	High	Low	High	Low/High	Low	Very High
Wild Cat Road	Medium	Low	High	Low/High	Low	Very High
Ritts Road	High	Low	High	Low/High	Low	Very High
Ponderosa Way #3 (High Bridge to Wilson Road)	High	Low	High	Low/High	Low	Very High
Wilson Hill Road north	High	Low	High	Low/High	Low	Very High
Wilson Hill Road south	Medium					
Deer Flat (near Viola)	High	Low	High	Low/High	Low	Very High
Battle Creek Bottom Road	Medium	Low	High	Low/High	Low	Very High
Ritts Road	High	Low	High	Low/High	Low	Very High
300P/P3 Road	High	Low	High	Low/High	Low	Very High

Rating: High, Medium, Low

Fire Hazard Severity Zone ratings: Very High, High, Moderate

E. OVERALL COMMUNITY HAZARD REDUCTION PRIORITIES

Community, structure or area at risk	Overall Risk	Structures at Risk	Cultural Value	Type of treatment	Method of Treatment	Overall Priority
Defensible Space/Firewise Programs						
High						
Near Berry Spring/Plateau Pines Area	High	114	Low	Hand labor/Mechanical	Remove brush & trees, pruning	1
Emigrant Trail	High	286	Low	Hand labor/Mechanical	Remove brush & trees, pruning	2
Manton	High	153	Low	Hand labor/Mechanical	Remove brush & trees, pruning	3
Shasta Forest Pines	High	170	Low	Hand labor/Mechanical	Remove brush & trees, pruning	4
Battle Creek Estates/Lake McCumber and McCumber Flat	High	167	Low	Hand labor/Mechanical	Remove brush & trees, pruning	5
Airport	High	151	Low	Hand labor/Mechanical	Remove brush & trees, pruning	6
Frey Road	High	109	Low	Hand labor/Mechanical	Remove brush & trees, pruning	7
Medium						
Midway Pines Sub-division	Medium	95	Low	Hand labor/Mechanical	Remove brush & trees, pruning	1
Black Butte School Area	Medium	62	Low	Hand labor/Mechanical	Remove brush & trees, pruning	2

Starlight Pines Sub-division	Medium	175	Low	Hand labor/Mechanical	Remove brush & trees, pruning	3
Forward Camp	Medium	21	Low	Hand labor/Mechanical	Remove brush & trees, pruning	4
Low						
Woodridge Lake Estates	Low	107	Low	Hand labor/Mechanical	Remove brush & trees, pruning	1
Viola	Low	28	Low	Hand labor/Mechanical	Remove brush & trees, pruning	2
Fire Access/Escape Routes (Shaded Fuelbreaks)						
High						
Shingletown Ridge Road	High	456	Low	Hand labor/Mechanical	Remove brush & trees, pruning	1
Sites/Plateau Pines Roads	High	114	Low	Hand labor/Mechanical	Remove brush & trees, pruning	2
Black Butte Road	High	284	Low	Hand labor/Mechanical	Remove brush & trees, pruning	3
Ponderosa Way #1, Rock Creek Road to High Bridge	High	153	Low	Hand labor/Mechanical	Remove brush & trees, pruning	4
Emigrant Trail #1	High	237	Low	Hand labor/Mechanical	Remove brush & trees, pruning	5
Medium						
Ponderosa Way #2, Inwood Road to Highway 44	Medium	112	Low	Hand labor/Mechanical	Remove brush & trees, pruning	1

Rock Creek Road, Wilson Hill road to Ponderosa Way	Medium	176	Low	Hand labor/Me chanical	Remove brush & trees, pruning	2
Emigrant Trail #2	Medium	335	Low	Hand labor/Me chanical	Remove brush & trees	3
Emigrant Trail #3	Medium	468	Low	Hand labor/Me chanical	Remove brush & trees, pruning	4
Deer Flat (near Viola)	Low	9	Low	Hand labor/Me chanical	Remove brush & trees, pruning	1
Upper Rock Creek, Ponderosa Way to Highway 44	Low	938	Low	Hand labor/Me chanical	Remove brush & trees, pruning	2
Battle Creek Bottom Road	Low	26	Low	Hand labor/Me chanical	Remove brush & trees, pruning	3
Wild Cat Road	Low	138	Low	Hand labor/Me chanical	Remove brush & trees	4
Ritts Mill Road	Low	628	Low	Hand labor/Me chanical	Remove brush & trees, pruning	5
Ponderosa Way #3, High Bridge to Wilson Road section	Low	284	Low	Hand labor/Me chanical	Remove brush & trees, pruning	6
300P/P3 Road	Low	0	Low	Hand labor/Me chanical	Remove brush & trees, pruning	7

Rating: High, Medium, Low

Fire Hazard Severity Zone ratings: Very High, High, Moderate

F. ESTIMATED COSTS

The following table displays the estimated costs of the proposed projects.

DEFENSIBLE SPACE/FIREWISE PROGRAMS (\$3100/site)

Project Type/Category	Project Name	Acres	Funding Needs (\$)¹	Community Priority Recommendation
High	Near Berry Spring/Plateau Pines Area	114	\$353,400	1
	Emigrant Trail	286	\$886,600	2
	Manton	153	\$474,300	3
	Shasta Forest Pines	170	\$527,000	4
High	Battle Creek Estates/Lake McCumber and McCumber Flat	67	\$517,700	5
	Airport	151	\$468,100	6
	Frey Road	109	\$337,900	7
Moderate	Midway Pines Sub-division	95	\$294,500	1
	Black Butte School Area – including Ponderosa Way and Inwood Road	162	\$502,200	2
	Starlight Pines Sub-division	175	\$542,500	3
	Forward Mills	21	\$65,100	5
	Woodridge Lake Estates	107	\$331,700	1
Low	Viola	28	\$86,800	3

¹ \$3100 per site. Projected costs for planning only. More precise costs will be determined when grant applications are prepared.

FIRE ACCESS/ESCAPE ROUTES

Project Type/Category	Project Name	Size	Funding Needs (\$)²	Community Priority Recommendation
High	Shingletown Ridge Road	152 acres	\$329,129	1
	Sites/Plateau Pines Roads/Plateau Pines Road	12 acres	\$58,174	2
	Black Butte Road	85 acres	\$220,456	3
	Ponderosa Way: Manton to High Bridge	116 acres	\$329,578	4
	Emigrant Trail #1 (Shingletown to Airport)	65 acres	\$234,460	5
Moderate	Ponderosa Way #2, Inwood Road to Highway 44	52 acres	\$150,300	1
	Rock Creek Road, Wilson Hill Road to Ponderosa Way	79 acres	\$212,900	2
	Emigrant Trail # 2 (Airport to Emigrant Trail)	22 acres	\$92,900	3
	Emigrant Trail #3 (Emigrant Trail to McCumber)	40 acres	\$122,600	4
	Wilson Hill Road south	126	\$313,300	5
Low	Wilson Hill Road north	83 acres	\$203,700	1
	Upper Rock	201 acres	\$517,400	2

² Projected costs for planning only. More precise costs will be determined when grant applications are prepared.

Project Type/Category	Project Name	Size	Funding Needs (\$)²	Community Priority Recommendation
	Creek,			
	300P/P3 Road	46 Acres	\$131,200	3

V. PLAN UPDATES

The Shingletown Fire Safe Council and Fire Agencies intend to assess progress annually and invite agencies and landowners to submit additional projects that provide community protection. Additional (new) projects will be displayed in an updated appendix to this plan.

VI. VALUES AT RISK

A. CURRENT LAND USES

1. Fishing

Both cold and warm water fishing are popular on Shingletown Ridge and in the Battle Creek and Bear Creek drainages. Small mouth bass and blue gill are caught in Bear Creek up to 1,000 feet elevation, while rainbow trout are supported in Bear Creek and Battle Creek. Grace, Nora, and McCumber Lakes support rainbow trout and brown trout, and brown trout, rainbow trout, and bullhead are found in Lake McCumber. Woodridge Lake also supports an excellent trout fishery, but is not open to the public. The pond at Bear Creek Trading Post offers rainbow trout fishing for a fee. Bailey Creek, North Fork of Battle Creek, Millseat Creek, and all diverted water support rainbow trout.

2. Hunting

The planning area contains important deer migration routes. Deer, bear, and turkey are hunted throughout the planning area, especially on lands north of Highway 44 leased by local gun clubs.

Quail, dove, and the Bandtail Pigeon are hunted. Between November 15 and March 1 fur trapping is allowed and species taken include bobcat, coyote, mink, raccoon, and muskrat.

3. Highway 44 Corridor

Highway 44 is the main highway between Interstate 5 and Lassen Volcanic National Park, an area that offers a year-round complex of outdoor recreation resources and has been designated a gateway to the Lassen Crossroads National Scenic Byway by the USDA Forest Service. As Highway 44 merges with Highway 89 at Lassen Volcanic National Park, it becomes part of the “Volcanic Legacy Scenic Byway,” a 500 mile route that begins as a loop around Lassen Volcanic National Park, and ends

just north of Crater Lake National Park near Mount Thielsen in Oregon. Driving the “volcano to volcano” route for pleasure attracts tourists in both summer and winter.

4. Scenic Views

Long vistas of Mount Shasta and the forests that surround it are possible from Shasta Forest Village, some locations along Highway 44, Westmoore Road, and in the Midway area. Lassen Peak vistas are visible from locations on the west side of meadows and Lake McCumber in the eastern third of the planning area. Canyon views can be observed from the roads leading north and south off the ridge and into Battle Creek south of the Site Road/Pegnon Acres settlements. The Ash Creek drainage provides middle foreground to the views from the east side of Shingletown Ridge Road and the Weston House Bed & Breakfast. Canyon views are also visible to the northwest from Ponderosa Way and Westmoore.

Throughout the area, forest scenes viewed from homes and roads are attractive. Lassen Peak is visible from the highway as drivers pass through large meadows in the eastern third of the planning area. Meadows and glades are scenic resources throughout the planning area, although some of these locations are being invaded by brush and trees and would be improved by the application of prescribed fire. Meadows and glades double as potential safety zones for residents and firefighters and as fuelbreaks. As a middle foreground, meadows are second only to lakes in scenic value.

Brush fields offer less attractive scenes (and offer evidence of past stand-replacing fire events) and do not inspire the same kind of interest and attention provided by meadows and lakes. Brush fields are found throughout the planning area and along Highway 44 and large brush fields are found near the airport and west of the planning area. They are also visible on hillsides to the northeast and on the canyon slopes to the south and north of the planning area.

5. Residential Environments

The landscapes of residential settlements are a particularly sensitive aesthetic resource. Research has demonstrated that as many as one in five residents in the wildland-urban interface feel a lush landscape today is more important than saving their home from a wildfire that might occur. Comments in focus groups and public meetings reinforce the notion that a thick forested landscape is essential to the quality of life they experience as part of living in the Shingletown community (Hodgson, 1993).

In community discussions the importance of the landscape arose many times. Saving the landscape from catastrophic fire was a common motivation of those strongly supporting hazard fuel reduction efforts; while others objected to removal of the understory for fear the openness would decrease their privacy. Those people in particular wanted to keep the landscape in what they perceived to be a natural state.

Many of the residential areas have covenants, conditions, and restrictions (CC&Rs) restricting logging and tree removal in order to protect the aesthetics of the landscaping around homes. The energy with which these restrictions are enforced testifies to the importance of the landscape as an aesthetic resource.

B. FOREST LAND

Commercial forestland managed by Sierra Pacific Industries (SPI) and W.M. Beaty and Associates, Inc. primarily for commercial forest products, occupies about 49,100 acres in the planning area. Timber harvests are regulated by the Forest Practice Act in order to “create and maintain an effective and comprehensive system of regulation and use of all timberlands so as to assure that: a) where feasible, the productivity of timberlands is restored, enhanced and maintained; and b) the goal of maximum sustained production of high-quality timber products is achieved while giving consideration to values relating to recreation, watershed, wildlife, range, forage, fisheries, regional economic vitality, employment and aesthetic enjoyment.”

C. WILDLIFE AND PLANTS (MAPS 3 and 4)

In general, the watersheds in the planning area provide suitable habitat for a wide variety of wildlife species. Wildlife viewing is an important recreation activity for residents and visitors. Mountain lions are common on Shingletown Ridge and in the canyons to the north and south, and elk can also be found on the Ridge. Neither lions nor elk are legally hunted, however. Deer are viewed often, as well as song birds, quail, and raptors. Eagles and osprey are found near some of the lakes. Bears and mountain lions are also species some residents like to observe. Nearly any wildlife adds to the pleasure of wildlife viewers. Elk might be managed effectively as a major wildlife viewing resource. The large meadows and glades provide excellent viewing sites. In other northern California locations, elk herds are important recreation and tourism attractions.

Map 4 shows historical locations for “special status” wildlife and plant species in the planning area. “Special status” species are those that are:

- Federally listed or candidates for listing
- CA state listed
- Recently delisted species
- Protected under the CA Forest Practices Act
- On the CNPS-1B or CNPS-2 lists (list 1B plant species are those that are rare in California and other states and list 2 species are those that are rare in California but more common in other states)

The following table depicts each special status wildlife and plant species shown on Map 4 and gives their legal status.

Table 2
Special Status Wildlife and Plant Species Known to Inhabit
the Shingletown Planning Area

Scientific Name	Common Name	Legal Status
<i>Actinemys marmorata</i>	western pond turtle	California Species of Concern (CSC)
<i>Botrychium crenulatum</i>	scalloped moonwort	CNPS-2 List
<i>Clarkia borealis ssp. arida</i>	Shasta clarkia	CNPS-1B List
<i>Cryptantha crinita</i>	silky cryptantha	CNPS-1B List
<i>Gulo gulo</i>	California wolverine	California Threatened and Fully Protected Mammal
<i>Haliaeetus leucocephalus</i>	bald eagle	Federally Delisted species
<i>Limnanthes floccosa ssp. floccosa</i>	woolly meadowfoam	CNPS-1B
<i>Martes pennanti (pacifica) DPS</i>	Pacific fisher	Federal Candidate
<i>Oncorhynchus tshawytscha spring-run</i>	Central Valley spring-run chinook salmon ESU	Federal Threatened
<i>Pandion haliaetus</i>	osprey	Historically protected under the CA Forest Practices Act
<i>Paronychia ahartii</i>	Ahart's paronychia	CNPS-1B List
<i>Vulpes necator</i>	Sierra Nevada red fox	California Threatened

D. SOILS (MAP 5)

Fuels management activities located on unstable soils or on slopes in excess of 40% can stimulate erosion processes or exacerbate existing erosion problems; therefore, prior to any fuels management activities, all soil types within any future project area will be identified and evaluated to determine the erosion hazard. Projects will be designed to prevent or minimize erosion by reducing soil disturbance, maintaining vegetation where appropriate, avoiding steep and unstable slopes if possible, and incorporating the use of fire resistant vegetation as a means to provide soil stabilization. The locations of major soil types have been illustrated in Map 6; however, more detailed soils mapping information should be examined once specific project boundaries have been established.

High intensity wildfire also damages soil by incinerating roots and the humus layer (organic portion of soils) that hold soils together and provide energy dissipation. In addition, the loss of large areas of vegetation can reduce evapotranspiration and increase peak flow, which can result in augmented erosion potential, adversely affecting watershed resources. Many life forms, including invertebrates of phylum Arthropoda that are essential for cycling plant material and fixing atmospheric gases, are also destroyed. These invertebrates eventually re-establish their populations, but time is lost in maintaining and building up the soils. Therefore, continual burning over time will result in gradual soil depletion, much the same as continual plowing and crop harvesting will deplete the soil of mineral nutrients and negatively affect the soil structure (Richards,

2002). Fortunately in this area of California, there exist relatively young volcanic soils in the mountains and recent alluvial soils in the valleys that can tolerate fire without immediately showing the negative effects.

Low intensity prescribed fires in light to medium fuels seldom produce enough heat to significantly damage soil or increase the erosion potential within a given watershed. Conversely, the chemical and physical properties of soil change dramatically after a high intensity fire. Loss of organic matter causes the soil structure to deteriorate, and both the water-storing and transmitting properties of soils are reduced. The living tissues of microorganisms and plants can be damaged by fire if the temperatures are above 120 degrees Fahrenheit (DeBano, 1970).

VII. SUPPORTING PLANS, ORGANIZATIONS AND AGENCIES

A. 1995 SHINGLETOWN WILDFIRE DEFENSE PLAN

The *Shingletown Wildfire Defense Plan* was completed in 1995 and was authored by Ralph Minnich, CAL FIRE Battalion Chief, Mark Lancaster, Registered Professional Forester, and Ron Hodgson, a professor from the California State University, Chico.

The 1995 plan was intended to be a general organizing effort, and covered an area of approximately 40,000 acres. It contained seven chapters discussing the goals and values relating to the forest; a physical description of the forest on Shingletown Ridge; the resource management history and present land uses; forest health; a description of the wildfire threat to human life, property, and forest values; the predicted behavior of wildfires under typical extreme fire danger experienced in the summer months; and included recommendations to improve wildfire defenses for Shingletown Ridge through hazard and risk management.

The following list is taken from the 1995 plan, and describes the “Actions Needed” in the Shingletown area in order to reduce the threat of catastrophic wildfire. It includes a brief discussion of the follow up actions already taken, or those that will be taken as a result of the current Plan.

- Identify and develop funding sources to support cooperative hazard reduction by public and private landowners.
- Find more cost-effective methods for removing and disposing of material generated during hazard reduction projects.
- Expand the educational programs for neighborhood organizations. Develop educational materials that describe how to assess the fire threat in one’s neighborhood; how to organize with one’s neighbors to reduce the fire threat; and how to select vegetation for removal, how to prune, and how to do other work needed to adapt the neighborhood setting to better contain fires and survive wildfires burning into them from the neighboring wildlands.
- Find and test equipment appropriate for vegetation management in the wildland-urban interface.

- Develop recommendations for specific fuel modification projects, particularly the location of and vegetation management prescriptions for fuelbreaks. .
- Encourage interest within the private sector for application of landscape management techniques to wildland fire defense landscaping
- Develop a variety of typical neighborhood-scale landscape designs that demonstrate fire safety and forest health while preserving or improving aesthetics and providing for security, privacy, and other values. Publish illustrations of those designs.
- Develop lists of more fire safe plant materials that can be grown successfully in the Southern Cascade Mountains and Northern Sierra Foothills. Provide instructions for planting and care of those plants. Provide information on plant identification for native species and information about flammability with recommendations for replacement with safer plant materials.
- Develop illustrations of fire defense landscaping zones around structures in different kinds of vegetation and on different slopes and aspects. Illustrate the use of landscape construction and plantings to slow the fire down, cool it down, and keep it on the ground.
- Support programs which enhance long-term forest health, including the reintroduction of controlled fire as a management tool. The maintenance of commercial forest lands after thinning and fuelbreaks after completion is an essential use of prescribed fire.
- Stimulate an understanding and appreciation for the interaction of a vigorous forest environment, wildlife, recreation, water, and aesthetics. A healthy forest is essential to a prosperous local economy.
- Recognize that widespread community participation in preparing wildland fire defenses and improving forest health creates a stronger, more effective community better prepared to deal with other concerns as well.

B. NATIONAL FIRE PLAN

In 2001 the Chief of the USDA Forest Service published a *National Fire Plan* (U.S. Department of Interior and U.S. Department of Agriculture, 2001), which is a cohesive strategy for improving the resilience and sustainability of forests and grasslands at risk, conserving priority watersheds, species and biodiversity, reducing wildland fire costs, losses and damages, and insuring public and firefighter safety. To achieve these goals, work began to improve firefighting readiness, prevention through education, rehabilitation of watershed functions, hazardous fuel reduction, restoration, collaborative stewardship, monitoring jobs, and applied research and technology transfer. The objective of the National Fire Plan is to describe actions that could restore healthy, diverse, and resilient ecological systems to minimize the potential for uncharacteristically intense fires on a priority basis. Methods include removal of excessive vegetation and dead fuels through thinning, prescribed fire and other treatment methods. The focus of the strategy is on restoring ecosystems that evolved with frequently occurring, low intensity fires. These fires typically occurred at intervals of between 1-35 years and served to reduce the growth of brush and other understory vegetation while generally leaving larger, older trees intact. The report is based on the premise that sustainable resources depend on healthy, properly functioning, resilient ecosystems. The first priority for restoration is the millions of acres of already roaded and managed landscapes that are

in close proximity to communities. More information about the National Fire Plan is available on the Internet at www.fireplan.gov.

C. CALIFORNIA FIRE PLAN

The California Fire Plan has five strategic objectives:

- Create wildfire protection zones that reduce risks to citizens and firefighters.
- Assess all wildlands (not just the state responsibility areas) to identify high risk, high-value areas and develop information and determine who is responsible, who is responding, and who is paying for wildland fire emergencies.
- Identify and analyze key policy issues and develop recommendations for changes in public policy.
- Develop a strong fiscal policy focus and monitor wildland fire protection in fiscal terms.
- Translate the analyses into public policies.

A key product of the Fire Plan is the identification and development of wildfire safety zones to reduce citizen and firefighter risks from future large wildfires. Initial attack success is measured by the percentage of fires that are successfully controlled before unacceptable costs are incurred. Assets at risk are identified and include citizen and firefighter safety, watersheds, water, timber, wildlife, habitat, unique areas, recreation, range structures, and air quality. Air quality is a factor because, based on the annual average acres burned by wildfires from 1985-1994, CAL FIRE calculates wildfires emit almost 600,000 tons of air pollutants each year.

The safety and asset assessments in the plan enable fire service managers and stakeholders to set priorities for prefire management project work. Pre-fire management includes a combination of fuels reduction, ignition management, fire-safe engineering activities, and improvements to forest health to protect public and private assets. CAL FIRE has identified a direct relationship between reduced expenditures for pre-fire management and suppression and increased emergency fund expenditures, disaster funding, and private taxpayers' expenditures and losses.

D. CAL FIRE

CAL FIRE is responsible for fire suppression and prevention on non-federal lands identified as State Responsibility Areas (SRAs) and on lands where a contract has been signed for CAL FIRE protection, known as Direct Protection Areas (DPAs). CAL FIRE may also provide and manage emergency services through cooperative agreements with counties and fire districts.

In 2000, the State Board of Forestry and CAL FIRE completed a comprehensive update of the state fire plan for wildland fire protection in California. The overall goal of the plan is to reduce total costs and losses from wildland fire by protecting assets at risk through focused prefire management prescriptions and increasing initial attack success.

CAL FIRE's statewide Initial Attack Fire Policy is to aggressively attack all wildfires, with the goal of containing 95% of all fire starts to 10 acres or less.

In summary, CAL FIRE believes that cooperative fire protection, fuels reduction, and fire prevention must be linked in order to have future success in dealing with the wildfire problems on lands for which they are responsible.

E. SHASTA COUNTY FIRE SAFE COUNCIL

The Shasta County Fire Safe Council was formed in May 2002 as part of a statewide effort that began in 1993 to form area Fire Safe Councils to educate and encourage Californians to prepare for wildfires before they occur. The mission of the Shasta County Fire Safe Council is to be a framework for coordination, communication, and support to decrease catastrophic wildfire throughout Shasta County. The group meets quarterly to discuss projects, share information, schedule speaking engagements, develop educational opportunities, and update maps showing fuels reduction projects and maintenance throughout the county. More information is available at www.firesafecouncil.org, or at www.shastacountyfiresafecouncil.org.

1. Shingletown Fire Safe Council

The Shingletown Fire Safe Council was formed in 2003 as a result of an idea planted at a community meeting held during the formation of this Plan. Community meetings were an integral aspect of the process, and were scheduled to announce the Plan to the community, to ask for input as the process continued, and to present the final Plan to the community once completed. At the second community meeting held in April of 2003, staff from the WSRCD and CAL FIRE encouraged the neighborhood coordinators of the Community Fire Safe program to think about forming a Fire Safe Council of their own and joining the Shasta County Fire Safe Council. This seemed to be a logical step for the group, as some of the goals of this Plan are educational in nature, and serve the community directly; members of the Community Fire Safe program have lived in the area for years and are known to other community members. It was felt a locally based effort would bring less resistance and skepticism that could thwart the new Fire Safe Council as they began attempts to disseminate information on fire safety and gain widespread community support.

F. LASSEN NATIONAL FOREST

The Forest Service administers about 2,375 acres or 2% of the land on the eastern boundary of the planning area. These lands are managed as part of the Hat Creek Ranger District of the Lassen National Forest. Responsibility for fire incidents is dependent upon where the fire is located, and can include CAL FIRE, the Hat Creek Ranger District, the Shingletown Volunteer Fire Department, the National Park Service, or the Lassen National Forest.

The total area of the Lassen National Forest is 1.2 million acres or 1,875 square miles. It lies within seven counties: Lassen, Shasta, Tehama, Butte, Plumas, Siskiyou, and Modoc. The forest lies at the heart of one of the most fascinating areas of California that has been named “The Crossroads.” Here the granite of the Sierra Nevada, the lava of the Cascades and the Modoc Plateau, and the sagebrush of the Great Basin meet and blend. The area is known for its variety, greeting visitors as well as residents with a wide array of recreational opportunities. Fishing, hunting, camping, hiking, bicycling, boating, snowmobiling, cross-country skiing, and just exploring and learning about nature are among the many popular pastimes (www.fs.fed.us/r5/lassen/about/).

G. BUREAU OF LAND MANAGEMENT

The Bureau of Land Management (BLM) administers about 3,225 acres or 3% of the land in the planning area. All BLM lands with burnable vegetation must have an approved Fire Management Plan (FMP), a strategic plan that defines a program to manage the wildland and prescribed fires based on the area’s approved land management plan (U. S. Department of Interior, U.S. Department of Agriculture, 2002). The FMP provides for firefighter and public safety, includes fire management strategies, tactics and alternatives, addresses values to be protected and public health issues, and is consistent with resource management objectives, activities of the area and environmental laws and regulations. Until an FMP is approved, BLM units must take aggressive suppression action on all wildland fires consistent with firefighter safety and public safety and the resources to be protected. The BLM Fire Management Officer is responsible and accountable for providing leadership for the BLM fire and aviation management program at the local level.

BLM strategically focuses fuel treatment activities by placing priorities on areas where actions will mitigate threats to the safety of employees and the public, areas where actions will protect, enhance, restore and/or maintain plant communities and habitats that are critical for endangered, threatened or sensitive plant and animal species, and areas where actions will reduce risks and damage from a wildfire.

Although structural fire suppression is the responsibility of tribal, state or local governments, BLM may assist with exterior structural protection activities under a formal agreement with CAL FIRE (as of 2003, CAL FIRE is under contract to provide fire protection to BLM lands). There are three categories of structures: those not threatened; those threatened; those lost or too dangerous to protect. In the wildland-urban interface, BLM lists several “Watch Outs” that assist personnel in sizing up a wildfire situation. These Watch Outs may be beneficial to readers of this report in assessing the fire-safe condition of personal property. Watch Out for:

- Wooden construction and wood shake roofs.
- Poor access and narrow one-way canyons.
- Bridge weight and size limits when using heavy equipment.
- Inadequate water supply.
- Natural fuels 30’ or closer to structures.
- Evacuations of public, livestock, pets, animals (planned or occurring).

- Power lines and poles overhead and fallen lines.
- Propane and above-ground fuel tanks with nearby vegetation or wooden improvements.
- Local citizens attempting suppression actions.
- Level of coordination with multiple agencies.

H. PRIVATE TIMBERLAND – W.M. BEATY & ASSOCIATES, SIERRA PACIFIC INDUSTRIES, and PACIFIC GAS AND ELECTRIC

About 49,100 acres (44%) of the planning area are privately owned timberlands, most of which are zoned as Timber Production Zones (TPZs) that are restricted to timber production and certain compatible uses. Sierra Pacific Industries (SPI) is the largest commercial forest landowner in the planning area, managing 27,500 acres; W.M. Beaty and Associates, Inc. manages approximately 21,560 acres within the planning area, and Pacific Gas and Electric which manages 217,792 acres within the planning area.

Typically, all contractors and employees authorized on private forest land are required to make every effort and take all precautions necessary to prevent fires. A sufficient supply of hand tools are maintained on a job site at all times for firefighting purposes. Tools include shovels, axes, saws, backpack pumps, and scraping tools. Each forest worker, employee, or person authorized on private forest land is required to take immediate action to suppress and report any fire on or near the property.

On all fires, a sufficient number of people stay on a fire until it is known that adequate action has been taken by CAL FIRE or the agency taking primary responsibility for putting out the fire. All people and equipment remain until released by the agency in charge, or for a longer period, if considered necessary by the land manager. During fire season, most companies conduct daily aerial patrols covering their forest operations and pay special attention to those areas where work is being conducted, even hours after workers have left the area.

Typically there are specific treatments detailed for care of limbs and other woody debris (often called slash) created by harvest operations in order to minimize fire hazards. It can include piling and burning slash no later than April 1 of the year following its creation, or within a specified period of time after fire season, or as justified in the associated Timber Harvest Plan. A Timber Harvest Plan is a detailed logging plan that must be approved by the California Board of Forestry before any work begins. Within 100 feet of the edge of the traveled surface of public roads, and within 50 feet of the edge of the traveled surface of permanent private roads open for public use where permission to pass is not required, the slash and any trees knocked down by road construction or timber operations are typically “lopped” for fire hazard reduction, then piled and burned, chipped, buried or removed from the area. Lopping is defined as severing and spreading slash so that no part remains more than 30” above the ground. All woody debris created by harvest operations greater than one inch and less than eight inches in diameter within 100 feet of permanently located structures maintained for human habitation are removed or piled and burned. All slash created between 100-200 feet of permanently located structures maintained for human habitation are usually cut for fire hazard reduction, removed,

chipped, or piled and burned. Lopping may be required between 200-500 feet from a structure if an unusual fire risk or hazard exist has been determined.

I. PRIVATE LAND – OTHER

Other private land totals about 57,500 acres, or 51% of the total planning area, and includes a mixture of residential parcels, farms, and ranches. Of historical interest is the Aldridge Ranch, the second longest continually owned ranch in Shasta County. It was purchased in 1862, and contains approximately 5,000 acres of ranchland. This area has been subjected to a CAL FIRE Vegetation Management Plan (VMP) which used prescribed burning (Section VI) to reduce the fuel load on the ranch. Residential parcels are found in scattered clusters throughout the Plan area, and have been prioritized for fuel reduction work (Section XII, Map 7).

VIII. ANALYSIS OF FUEL MODELING AND FIRE CONDITIONS

A. FIRE HISTORY (MAP 6)

CAL FIRE maintains databases on large fires within and around their State Responsibility Areas (SRAs) and Direct Protection Areas (DPAs), and has recorded 37 large fires within and around the planning area between 1900 and 2008, including prescribed burns (Table 3). The CAL FIRE database also includes fires recorded within the National Park Service Federal Responsibility Areas (FRAs). Both databases include the year of fire start and the number of large fires, but do not include cause of fire which is on CAL FIRE fire start data and Forest Service large fire data. The CAL FIRE database is also historically incomplete because it does not record fires less than 250 acres and does include the cause of fire starts prior to 1985.

**Table 3
Incidence of Fires in the Shingletown Area 1910 – 2008.**

Year	Number of Large Fires	Total Acres Burned
1910	4	4,510
1920	9	5,653
1930	5	2,851
1940	1	292
1950	3	2,715
1960	4	19,512
1970	2	8,986
1990	2	796
2000	2	140
2003	2	85
2005	1	1822
2008	2	637
Total	37	47,999

B. FUEL, WEATHER, & TOPOGRAPHY

The three major components of the Wildland Fire Environment are fuels, weather, and topography (National Wildfire Coordination Group, 1994). Weather is a major factor and local weather conditions are important in predicting how a fire will behave. Within the planning area, the wind generally blows from the southwest throughout the summer, although periodic winds out of the north during summer and fall are common as well. From a strategic (yet hypothetical) standpoint, a fire start can most likely be attacked by an east-west fuelbreak or area to set up control lines. If a community had an east-west fuelbreak on the north and south boundary, it would have a level of protection perpendicular to either dominant wind situation, from the north or south.

Topography can affect the direction and the rate of fire spread. Topographic factors important to fire behavior are elevation, aspect, steepness, and shape of the slope. When fire crews are considering fire suppression methods, the topography is always critical in determining the safest and most effective plan of attack. When accessible, ridge lines are very important features from which to conduct fire suppression activities and can be a strategic area to conduct fuels management activities.

Fuel factors that influence fire behavior are: fuel moisture, fuel loading, size, compactness, horizontal continuity, vertical continuity, and chemical content (National Wildfire Coordinating Group 1994).

- Fuel moisture in this case is the amount of water in a fuel sample, expressed as a percentage of the green weight of that fuel. A fuel with less than 30% moisture content is considered a “dead” fuel, while “live” fuels will range from 30 to 60 percent moisture content, depending on the plant's stage of growth in a season.
- Fuel loading is defined as the oven-dry weights of fuels, usually expressed in bone dry tons. A bone dry ton is 2000 pounds of vegetation at 0% moisture content.
- Size refers to the dimension of fuels, and compactness refers to the spacing between fuel particles.
- Continuity is defined as the proximity of fuels to each other, vertically or horizontally, that governs the fire's capability to sustain itself.
- Chemical content in fuels can either retard or increase the rate of combustion.

All of these factors in combination with fire weather conditions (relative humidity, temperature, wind, etc.) will influence the quantity of heat delivered, and the duration, flame length and rate of spread of any given fire. Map 4 displays the live vegetation found within the planning area.

C. FUEL MODELS

Fuels are made up of various components of vegetation, live and dead, that occur on a given site. Fuels have been classified into four groups – grass, shrub, timber litter, and slash. The differences in fire behavior among these groups are related to the fuel load and its distribution among the fuel diameter-size class. In 1972, 13 mathematical fire behavior models or Fuel Models were developed by Rothmel to be utilized in fire

behavior predictions and applications for every vegetation type. These Fuel Models represent the types of fuel most likely to support a wildfire.

Fuel models represent what type of fuel will most likely support fire. Fuel models 1-3 are grass or grass dominated, 4-7 are shrub dominated, 8-10 are timber litter, and 11-13 are slash dominated. The fuel models were identified based on the publication “Aids to Determining Fuel Models for Estimating Fire Behavior” by Anderson, 1982.

**Table 4
Fuel Models for Estimating Fire Behavior.**

Fuel Model	Fuel Complex	Found in Shasta County?
	Grass and Grass-Dominated	
1	Short Grass (1 foot)	Yes
2	Timber (grass and understory)	Yes
3	Tall Grass (2.5 feet)	No
	Chaparral and shrub fields	
4	Mature brush with considerable amounts of dead fuel	Yes
5	Young brush with very little dead fuel	Yes
6	Dormant brush	Yes
7	Southern rough	No
	Timber litter	
8	Short needle conifer and hardwood litter	Yes
9	Long needle conifer and black oak litter	Yes
10	Timber litter greater than 3 inches	Yes
	Slash	
11	Light logging slash	Yes
12	Medium logging slash	Yes
13	Heavy logging slash	Yes

The fuel models were designed to predict fire behavior for specific weather and fuel conditions. They are accurate throughout a broad range of climates but tend to under predict the spread and intensity of fire during extreme conditions (high winds combined with very low relative humidity). Fuel models are tools to help the user realistically estimate fire behavior. The criteria for choosing a fuel model includes the assumption that fire burns in the fuel stratum best conditioned to support the fire. This means that situations will occur where one fuel model will represent the rate of spread most accurately, while another best depicts fire intensity. In other situations, two different fuel conditions may exist, so the spread of fire across the area must be weighed by the fraction of the area occupied by each fuel type.

Using the fuel models described by Rothermel in 1972 (Table 4), computer models were employed to indicate the intensity and rate of spread for the types of fuel conditions found in the planning area of the 1995 *Wildfire Defense Plan for the Shingletown Area*. This type of modeling also quantifies the benefits resulting from the removal of unwanted fuel, the reduction in numbers of tree stems (increased spacing) and the general decrease in flammable vegetation. Areas modeled in 1995 included the Shingletown Ridge and the slopes below the Ridge to the south and west, leaving the eastern part of the current planning area to be modeled. However, the vast majority of the land east of the Shingletown Ridge is in private timber ownership (Map 1), and as a result will mostly fall under Fuel Models 9 and 10; the former was not modeled in 1995, while the latter was (it should be noted that Sierra Pacific Industries, W. M. Beaty & Assoc., and Pacific Gas and Electric have been using biomass operations to convert the predominant Fuel Model 9 and 10 conditions to Fuel Model 8 in order to change the fuel model from characteristically fast moving fire with long flame lengths to a slow, ground burning fire with short flame lengths). Consultation with staff from CAL FIRE has revealed that the modeling done in 1995 can still be applied to the current situation, as no large fire event has occurred in the area since that time. Therefore, a near-complete modeling of the current planning area is possible with a new iteration of Fuel Model 9, which was completed for the previous Plan.

D. RESULTS OF FUEL MODELING

Personal communication with CAL FIRE staff familiar with the planning area, and review of the 1995 *Shingletown Wildfire Defense Plan (Plan)* revealed 6 different fuel models occurring in the planning area. These include Fuel Model 1 (grass), Fuel Models 4 and 5 (shrub), and 8, 9, and 10 (timber litter). Fuel Model 9 was not discussed in the 1995 *Shingletown Wildfire Defense Plan*; therefore this Fuel Model will be used, with the same assumptions used for the 1995 Plan, in running the “BEHAVE” computer fire model. A summary of the fuel types found within the current planning area is shown below using Anderson (1982); tables showing results of the computer modeling follow.

- Fuel Model 1 (short grass) is governed by the fine, very porous, and continuous herbaceous fuels that have cured (dried) or are nearly cured. Fires are surface fires that move rapidly through the cured grass and associated material. Very little shrub or timber is present, generally less than one-third of the area. This model includes annual and perennial grasses, and can be found on the western edge of the planning area.
- Fuel Model 4 (mature brush with considerable amounts of dead fuel) may have very high to extreme rates of spread, which makes control efforts difficult. Fire involves the foliage and live and dead fine woody materials in the crowns of a nearly continuous secondary overstory. Besides flammable foliage, there is dead woody material in the stand that significantly contributes to the fire intensity. Dominant stands of chamise or manzanita with chamise are representative of Fuel Model 4. This fuel model can be found in the planning area from one thousand to fifteen hundred feet elevation within a mix of Fuel Models 8 and 5.

- Fuel Model 5 (young brush with very little dead fuel) is characterized by fire carried in the surface fuels that are made up of litter cast by the shrubs and the grasses or forbs in the understory. The fires are generally not very intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material. Usually, shrubs are short and almost totally cover the area. Young, green stands with no dead wood would qualify, and for the planning area, include manzanita and chamise. Most of the brush in the planning area is in Fuel Model 4, but this Fuel Model can be found mixed with Fuel Models 8 and 4 between 1,000 and 1,500 feet of elevation.
- Fuel Model 8 (short needle conifer and hardwood litter) describes slow-burning ground fires with low flame lengths. However, a fire moving through this model may encounter a “jackpot,” or heavy fuel concentration, that can cause a flare up, but only under severe weather conditions involving high temperatures, low humidity, and high winds do the fuels pose fire hazards. Closed canopy stands of short-needle conifers or hardwoods that have leafed out support fire in the compact litter layer. Representative conifer types include white pine, lodgepole pine, spruce, fir, and larch. This Fuel Model is found in areas where fuel reduction work has been done, including commercial forest lands where thinning and biomass removal has been completed and residential lands where hazard reduction takes place continually. This Fuel Model can be found mixed in with Fuel Models 4 and 5 between one thousand and fifteen hundred feet on the Shingletown Ridge.
- Fuel Model 9 (long needle conifer and black oak litter) can be found between 2,000 and 4,000 feet in the planning area, where ground fuels of mostly needle litter and downed wood less than three inches in diameter is interspersed between fairly young stands of pine and a closed canopy. It is characterized by both faster moving fires and longer flame heights than Fuel Model 8. Long needle conifer stands and hardwood stands are typical. Fall fires in hardwoods are predictable, but high winds will actually cause higher rates of spread than predicted because of spotting caused by rolling and blowing leaves. Closed stands of long-needled pine like Ponderosa, Jeffrey, and Red Pines, or southern pine plantations are grouped in this model. Concentrations of dead-down woody material will contribute to possible torching out of trees, spotting, and crowning.
- Fuel Model 10 (timber litter greater than 3 inches) fires burn in the surface and ground fuels with greater fire intensity than other timber litter models. Dead-down fuels include greater quantities of three inch or larger limb wood resulting from over maturity or natural events that create a large load of dead material on the forest floor, and ladder fuels are common. Crowning out, spotting, and torching of individual trees are more frequent in this Fuel Model, leading to potential fire control difficulties. Any forest type may be considered for this Fuel Model if heavy, downed material is present. Examples include insect or disease-ridden stands, wind-thrown stands, over mature situations with deadfall, and aged light thinning or partial cut slash.

IX. FUEL TREATMENTS

A. PRESCRIBED BURNING

Advantages of prescribed fire include the low cost of implementation and the large area that can be treated at one time. Some of the negative aspects of prescribed fire are a potential for erosion, the smoke created, the limited time frame to implement, the risk of escape, non-feasibility in small areas, and that it is not a stand-alone tool.

Prescribed fire is used to approximate the natural vegetative disturbance of periodic wildfire occurrence. This vegetative management tool is used to maintain fire dependent ecosystems and restore those outside their natural balance. Generally, low intensity prescribed fire is applied by trained experts to clear ground of dangerous fuels like dead wood and brush. This low-intensity fire is vital to the life cycles of fire-dependent range and forest lands.

Most prescribed fires are lit by crews using a drip torch - a hand-carried device that pours out a small stream of burning fuel. Other fires or burns are ignited by helicopters carrying a gelled fuel torch (helitorch) or a sphere dispenser machine that drops material to ignite the surface fuels in forest and range types. Exactly how each unit is ignited depends on weather, the lay of the land, and the intensity of the fire needed to meet the goal of the burn (USDA Forest Service 2002).

Prescribed fire is useful in restoring and maintaining natural fire regimes in wildland areas, but logistic, economic, and social attributes are constraints on widespread deployment. Because of such conflicts, resource managers often employ mechanical fuel reduction, such as thinning, in conjunction with prescribed fire to reduce fuels and the fire hazard (Regents of the University of California 1996, CAL FIRE 2002).

Prescribed fire is not without controversy and risk. A prescribed fire can get out of control and cause damage to watersheds, wildlife habitat, and structures, and can even result in loss of life. For example, heavy fuel loading in timberlands precludes applying fire as the intensity is sufficient to kill overstory trees. It is only an option when the risk can be reduced to manageable levels. Factors closely monitored to mitigate risk include:

- Fuel moisture content
- Ratio of dead-to-live fuel
- Fuel volume
- Size and arrangement of fuel
- Percentage of volatile extractives in the fuel
- Wind speed and direction
- Relative humidity
- Air temperature and topography

A successful prescribed burn must account for all these factors to prevent the fire from going out of control. Guidelines for measuring the data and selecting the levels necessary

to manage the prescribed fire are available from a variety of sources. One excellent reference for wildland-urban zones is the USDA Forest Service publication, “Burning by Prescription in Chaparral” (USDA Forest Service 1981).

Air quality is another consideration when considering the use of prescribed burning. Communities in the Urban-Wildland Interface are very sensitive to the presence of smoke. Burn days approved by state and local authorities take into consideration the meteorological effects on both fire severity and smoke dispersion. In the case of chaparral, prescribed burning for range improvement has been practiced by California landowners under permit from CAL FIRE since 1945 (Green 1981). Currently, procedures for prescribed burning require a written plan for each burn. A plan includes such items as an objective, an area map, a description of the burn unit and surrounding areas, a smoke management plan, and the burn prescription (USDA Forest Service 1981). Prescribed fire is the primary treatment method for all public lands, ranging from USDA Forest Service land to state parks; most of the land in the planning area is in private ownership, however. According to FRAP, the *Forest and Rangeland Resources Assessment Program*, most prescribed burns were to control brush, especially chaparral (Regents of the University of California 1996). Public agencies feel prescribed burns offer the lowest cost solution when considering the scale of the area requiring treatment. However, prescribed fires can be quite expensive when the true cost of planning, data gathering, reporting, and control and suppression are considered. Other major constraints are the reduction in allowable burn days because of increasing air quality concerns, high fuel load levels found in many forested and urban-wildland areas, and the increased production of pollutants, such as carbon monoxide, nitrous oxide, and particulates. In these situations, a combination of mechanical methods of fuel reduction combined with prescribed fire may provide the best solution.

B. SHADED FUELBREAKS

Shaded fuelbreaks are constructed as a means to create a defensible space in which firefighters can conduct relatively safe fire suppression activities. Fuelbreaks may also slow a wildfire’s progress enough to allow attack by firefighters. The main idea behind fuelbreak construction is to break up fuel continuity to prevent a fire from reaching the treetops, thus forcing the fire to stay on the ground where it can be more easily and safely extinguished. Fuelbreaks may also be utilized to replace flammable vegetation with less flammable vegetation that burns less intensely. A well-designed shaded fuelbreak also provides an aesthetic setting for people and a desirable habitat for wildlife, in addition to fuels reduction. The California Board of Forestry has addressed the need to strengthen community fire defense systems, improve forest health, and provide environmental protection. The California Board of Forestry rules allow a Registered Professional Forester (RPF) to use a special silviculture prescription when constructing or maintaining a community fuelbreak, exempts community fuelbreaks from an assessment of maximum sustained production requirements and allows defensible space prescriptions to be used around structures.

The WSRCD has developed the following fuelbreak standards:

- The typical minimum width of a shaded fuelbreak is 100 feet, but can be up to 300' wide. The appropriate width is highly dependent on the slope, fuel density, fuel type, fuel arrangement, and landowner cooperation.
- Fuelbreaks should be easily accessible by fire crews and equipment at several points. Rapid response and the ability to staff a fire line is very important for quick containment of a wildfire.
- The edges of a fuelbreak are varied to create a mosaic or natural look. Where possible, fuelbreaks should compliment natural or man-made barriers such as meadows, rock outcroppings, and roadways.
- A maintenance plan should be developed before construction of a fuelbreak. Although a fuelbreak can be constructed in a matter of a few weeks, maintenance must be conducted periodically to keep the fuelbreak functioning.
- The establishment of a shaded fuelbreak can lead to erosion if not properly constructed. Short ground cover, such as grass or leaf/needle litter, should be maintained throughout the fuelbreak to protect the soil from erosion.
- A properly treated area should consist of well-spaced vegetation with little or no ground fuels and no understory brush. Tree crowns should be approximately 10-15' apart. The area should be characterized by an abundance of open space and have a 'park like look' after treatment.

The "pile and burn" method is most commonly utilized when constructing fuelbreaks. Material is cut and piled in open areas to be burned. Burning takes place under permit on appropriate burn days. Burn rings can be raked out after cooling as a means to decrease their visual effect.

C. MECHANICAL TREATMENT

Using mechanized equipment for reducing fuels loads on suitable topography and with certain fuel types can be very effective. Using equipment to remove excess vegetation may enable the landowner to process the debris to a level where it can be marketed as a product for use in power generation; the debris then becomes labeled as "biomass" or "biofuel."

Mechanical methods to remove fuels include, but are not limited to, the utilization of bulldozers with or without brush rakes, excavators, mechanized falling machines, masticators, chippers, and grinders. Mechanical treatments conducted with a masticator grind standing brush and reduce it to chips that are typically left on the ground as mulch. Alternatively, mechanically removed brush may also be fed into a grinder for biomass production. A technique called "crush and burn" combines mechanical fuels treatment with burning. As the name implies, the brush is mechanically crushed and then burned. Due to the higher intensity heat created in burn piles, it is more effective at eliminating brush than a low-intensity prescribed burn, which has difficulty overcoming the high moisture content of live chaparral. In addition, it is a good technique for areas adjacent to communities, because fire agencies only burn when fire danger conditions are decreased during the rainy winter months. Mechanical treatments are also utilized on industrial and non-industrial timberlands in which trees are thinned by mechanized tree cutting or falling machines. In most cases, stands of trees are thinned from below as a means to

eliminate fuels that can take a fire higher in the forest into the tree canopy (ladder fuels). However, stands of trees may also be thinned from above to eliminate crown continuity.

Mechanical treatments can be used successfully on stable ground up to 50% slope, but should only be conducted during dry periods when soils are not saturated so as to minimize erosion and compaction. The drastic visual impacts should be considered when planning projects so that all parties are aware of how the area will look when the project is completed. Initial planning should address mitigation for erosion potential, using measures such as waterbars, ditching, and mulching in critical areas. Furthermore, the impacts on wildlife and archaeological resources must be addressed.

Due to air quality concerns, the mechanical treatment method is fast becoming the acceptable method of fuel reduction in urban interface areas. Compared to prescribed fire, mechanical treatment involves less risk, produces less air pollutants, is more aesthetically pleasing, and allows landowners to leave desirable vegetation.

D. BIOMASS ANALYSIS

For thousands of years, people have been taking advantage of the earth's vegetation, also called biomass, to meet their energy needs (www.epa.gov, 2002). Technologies for using biomass continue to improve and today biomass fuels can be converted into alternative fuels (biofuels), such as ethanol, methanol, biodiesel, and as boiler fuel for use in industrial heating and power generation.

When used for generating electricity, biomass is typically burned to transform water into steam, which is used to drive a turbine and attached generator (www.epa.gov, 2002). Although a majority of the biomass market is associated with energy production, biomass offers a wide variety of uses such as fiber-reinforced composites, fiber-filled thermoplastics, high performance fiberboard, cement board, mulch for landscaping and soil amenities, smoke chips for curing and flavoring meat and bio-oils which are used as asphalt additives or adhesives.

The utilization and development of biomass technology offers many economic and socioeconomic benefits. However, one of the most widely acknowledged benefits is the development and utilization of biofuels as a means to reduce the world's dependency on non-renewable fossil fuels. Presently, a majority of the electricity in the U.S. is generated by burning fossil fuels such as coal, natural gas, and oil. On the local level, the development of biotechnology also offers both economic and socioeconomic benefits. Potential markets continue to be explored and developed by the private sector, and the federal government has demonstrated interest in the biomass industry. Examples are the Presidential Executive Order 13134 designed to stimulate the creation and early adoption of technologies needed to make biobased products and bioenergy cost-competitive in the large national and international markets; and the Biomass Crop Assistance Program (BCAP) in the 2008 Farm Bill, which provides incentives for producers to establish and grow cellulosic energy crops.

The planning area contains about 49,100 acres of private timberland and thousands of acres of chaparral, which produce a substantial amount of renewable biomass each year.

The biomass market associated with wood products production has been long developed, and biomass harvesting for fuel reduction is a common practice within managed forestlands in Northern California. Biomass production not only provides economic support at the local, state, and federal levels but also reduces the nation's dependency of fossil fuels.

The potential for biomass production within the planning area is good given that it contains a substantial amount of raw material (chaparral and forestland species), and is in close proximity to Wheelabrator Shasta Energy, a 50-megawatt wood-fired power plant that utilizes one hundred semi truckloads (~1,400 bone dry tons) of biomass each day, seven days a week, to produce electricity (Jolley 2002). There are other wood-fired power plants in Shasta County, but this facility is the closest to the planning area.

The feasibility of any biomass operation depends on the market price of biomass fuel (also commonly called hog fuel), the density or amount of fuel on the ground, topography of the area being biomassed, and transportation costs (distance to market). Processing can include harvesting and chipping or hogging and costs are directly correlated with the species, age, size, and density of the vegetation being processed, as well as the topography of the area. The transportation cost from the project area to the nearest wood-fired power plant is directly related to the size of the vehicle, time needed for loading biomass, the road bed system, and distance to the plant. The price a power plant is willing to pay for a ton of biomass versus the processing and transportation determines the economic feasibility of an operation. However, the value of fuel reduction to the landowner should be included in this calculation to determine the true feasibility of a biomass operation.

Biomass Collection in Action. Tub grinder on right. conveyor takes biomass into the



Harvesting can be accomplished with an excavator, a bulldozer tractor, or a feller/buncher, which are utilized to remove and pile the brush. Processing can be accomplished with a hammer hog, tub grinder, drum chipper or some other type of industrial type chipper fed by the excavator or other mechanical means. A Registered Professional Forester should be involved prior to commencement of any biomass operation on timberlands in order to determine what permits might be required and to estimate the cost and timing of obtaining permits. Pursuant to the California Forest Practice Rules, if biomass operations involve the harvest of commercial timber species, the project requires a Timber Harvest Plan or exemption depending upon the nature of the operation. Biomass operations not involving the harvest of commercial species are not

subject to the California Forest Practice Rules, but may require county permits or other agency review depending on the physical characteristics of the project area.

Although the biofuel industry is the most developed biomass market in northern California, other markets are currently in the developmental stage and may become a commercially viable option for biomass products in the future. These markets are far from becoming a significant force in the market place, but may provide alternative utilization methods and future marketing opportunities.

E. MAINTENANCE TREATMENT

Maintenance plans for all existing shaded fuelbreaks, as well as a maintenance strategy for all planned shaded fuelbreaks, must be formulated as soon as funding can be made available. A maintenance section needs to be added to all planned shaded fuelbreaks, and should address both short and long term maintenance. Scrub oak re-sprouts and manzanita sprouts and seedlings on disturbed areas are typical of the vegetation that will need control on a short term basis, while continued thinning of dense stands of timber to increase spacing between crowns will be typical of long term treatments. Control can take many forms, including chemical control, mechanical control, or grazing by livestock. The time frame for maintenance is typically two years, five years, and ten years after initial construction of the shaded fuelbreak.

Periodic maintenance of a fuelbreak sustains its effectiveness. Seeding the fuelbreak with annual grass cover immediately following its construction will help reduce brush and conifer invasion, but only depending on grass cover will not eliminate invading plants for an extended period of time. The cost of fuelbreak maintenance must be balanced with its degree of effectiveness. Listed below are several methods to maintain fuelbreaks.

1. Herbicides

The use of herbicides is a very effective and inexpensive method of eliminating unwanted vegetation, but should be used only as specified by the manufacturer. Some herbicides are species specific, which means they can be used to eliminate brush species and will not harm grass species.

2. Manual Treatment

Manual treatment is a very effective means to eliminate invading vegetation, but is labor intensive. A “rule of thumb” is an experienced, 4 person crew can manually complete maintenance at a rate of 0.5 to 1 acre per 8 hour day, depending on density of resprouts, slope, terrain, and weather.

3. Herbivores

Herbivore (goat) grazing may be used as a means of maintaining fuelbreaks, since goats would rather eat brush and weeds than grass. Browse makes up about 60% of a goat's diet, but only about 10-15% of a cow's diet.

Goats used for fuel load reduction are managed to remove dense understory, including brush, forbs, and lower branches to remove ladder fuels. However, browsing on this type of low-nutrition feed may require giving goats supplements of protein or energy, depending on the breed of goats used, time of year, soil type, and vegetation analysis. Generally speaking, a minimum effective goat herd has 500 animals, which will remove fuel from about 3 acres per day. Portable electric fencing with solar energizers can be used to control the goats' foraging area. The cost will include the goats, portable fencing, a goat herder, water and all transportation and daily supervision. Lastly, monitoring of the herbivore grazing is critical since over-grazing can lead to erosion.

As goats work through an area they are also working on the understory, breaking lower branches, and splitting apart old downed branch material. Once an area has been "brushed" by goats, it can be maintained as a living green belt. Fuelbreak maintenance with goats takes coordination of the stock owner, land steward, professional fire abatement teams, CAL FIRE, DFG, and others. According to Hart (2001), grazing goats have been observed to select grass over clover, prefer browsing over grazing pastures, prefer foraging over flat, smooth land, graze along fence lines before grazing the center of a pasture, and graze the top of the pasture canopy fairly uniformly before grazing close to the soil level. Herbivore grazing has been done in the Sierra Foothills by Goats Unlimited of Rackerby, California. They report the vegetation in the Sierra Foothills grazing area consists of woody plants, shrubs, forbs, and grasses. Before entering a new area, they develop a landscape goal, complete a vegetative survey, and identify toxic plants.

Herbivores Used for Fuel



They identify the growth habit and adaptation of each plant species, especially those that are toxic. The objective is to control the invasion of unwanted species and encourage perennial grasses to return. In a report published by Langston University (2001), goats improve the cycling of plant nutrients sequestered in brush and weeds, enabling the reestablishment of grassy species.

X. ROADS FOR ACCESS

Roads are an essential part of any fire and fuels management plan, providing the principal access to the communities, homes, and wild places in the watershed. Additionally, roads may offer a defensible space from which firefighters can conduct direct attack on wildfires and also provide strategic locations for roadside fuelbreaks. Roadside fuelbreaks not only provide defensible space for firefighters, but also a safe escape route for residents in the event of a wildfire.

Roads in the planning area typically intersect State Highway 44. The planning area can be reached from both the east and west along this route, which is the major two-lane highway connecting Redding and Lassen National Park. All roads are important for providing fire protection/suppression access. This plan will not attempt to identify and map all paved or improved roads. Roads that are vital to future projects will be included in treatment options.

A. SHINGLETOWN AREA ROADS

MAIN NORTH-SOUTH ROADS

- Black Butte Road
- Ponderosa Way
- Wilson Hill Road
- Lake McCumber Road
- Ritts Mill Road
- Rock Creek Road
- Tehama County Road A6

MAIN EAST-WEST ROADS

- Long Hay Flat Road
- Inwood Road
- Dersch Road
- State Highway 4
- Emigrant Trail
- 100 Road
- Shingletown Ridge Road
- Emigrant Trail
- Wildcat Road
- Forward Road

B. MANTON AREA ROADS

MAIN NORTH-SOUTH ROADS

- Wilson Hill Road
- Rock Creek Road
- Manton-Ponderosa Way Road

- Manton Road (Co. Road A6)

MAIN EAST WEST ROADS

- Forward Road
- Forward Mills Road
- School House Road
- Wild Cat Road
- Battle Creek Bottom Road

XI. POTENTIAL COST-SHARE FUNDING SOURCES

The following table of cost share programs was provided by the University of California, Cooperative Extension Service (UCCE).

**TABLE 5
Funding Sources and Cost Share Programs.**

Program	Goals	Services	Will Fund	Agency	Who	Limitations
Emergency Watershed Protection	Helps safeguard people and property following natural disasters.	Technical and financial assistance	Up to 75%	NRC S	Public agencies, non-profits, community groups	25% cost share. Must obtain necessary permits
Environmental Quality Incentives Program	To address significant natural resource needs and objectives	Cost sharing, technical and educational assistance	Up to 75% set by local working group	NRC S, FSA	Agricultural producers having significant natural resource needs	Approved practices up to \$10,000 per producer per year. Must have Conservation Plan approved by RCD.
Forest Stewardship Program	Assist California communities to more actively manage their watershed resources, to keep forests and	Technical, educational and financial assistance	Cost share up to \$50,000. 100% match is required.	CAL FIRE	RCDs, RC&Ds, special districts, Indian tribes, and community non-profit organizations.	Projects that involve activities that may lead to changes in the environment are required to comply with CEQA. Projects must be on NIPF

Program	Goals	Services	Will Fund	Agency	Who	Limitations
	associated resources productive and healthy					land & address one of the major categories: pre-fire fuels mgmt, forest & woodland health, water quality, or wildlife & fisheries habitat.
Hazard Mitigation Grant Program	Hazard mitigation to reduce risk from future disasters	Cost share	Up to 75%	FEMA	Agencies, governments, non-profits, tribes	Federal Disaster Areas
Vegetation Management Program	To provide incentives for using fire as a tool to control unwanted brush, and other vegetation, which create wildfire hazards.	Covers liability, conducts prescribed burn	Up to 90% cost share	CAL FIRE	Landowners, individual or group	Agreement to sign, plan required
California Forest Improvement Program	Forestry, watershed and riparian protection and enhancement, and post fire rehabilitation	Reforestation, site prep, land conservation, and fish & wildlife habitat improvements	75% up to \$30,000 per contract, rehab after natural disaster up to 90%	CAL FIRE	Landowners	Plan (can be cost shared) required, 20-50,000 acres of forestland

Additional funding sources include:

- California Department of Conservation, RCD Assistance Program
- USDA Forest Service State Fire Assistance (SFA)
- Shasta County Regional Advisory Committee, Title II Funds, Secure Rural Schools and Community Self-Determination Act of 2000
- Bureau of Land Management (BLM) Community Assistance
- National Park Service (NPS) Community Assistance/WUI
- U.S. Fish and Wildlife Service (USFWS) Wildland-Urban Interface Grant Program
- California State Fire Safe Council Clearinghouse, Fuel reduction project grant funding

XII. FUELBREAK MAINTENANCE FUNDING

Since grant funds are often obtained just to construct the fuelbreak, maintenance efforts are often left to the landowner. Unfortunately, some landowners do not have the physical or financial means to do maintenance. If a fuelbreak is not properly maintained in its entirety, it will not provide adequate fire protection in the long run. Therefore, in some situations it is often best for watershed groups and other conservation organizations to seek funding for maintenance as a means to better ensure fire protection for a given area. The Community Protection Plan was developed as a result of the USFS National Fire Plan. This plan provides grant funding for fuel reduction projects on private lands. In addition, many of the programs listed in Table 5 above also provide funding opportunities for fuels reduction and maintenance.

Information on private sector funding can be found at the following Internet sites:

- www.fdncenter.org
- www.ceres.ca.gov/foreststeward/funding.html
- www.ice.ucdavis.edu/
- www.teleport.com/~rivernet/general.htm
- www.tpl.org/tpl/about/
- www.ufe.calpoly.edu/data/news/grants.html

Funding programs can assist in the development of shaded fuelbreaks, defensible space around structures, roadside fuel reduction, and community fire safe projects.

XIII. GRANT FUNDING OPPORTUNITIES

Funding sources are as varied as the projects listed above. WSRCD has the organizational structure to seek funding for any projects generated through this Plan. The Shingletown Fire Safe Council is under the umbrella of a 501(c)(4) non-profit corporation, and can apply for grant funds as well. There are several sources of funding available through the agencies in the area, discussed in Sections X and XI of this plan.

Agencies that have or can fund fuelbreak construction include:

- USDA Forest Service
- California Department of Conservation
- USDI Bureau of Land Management
- USDI National Park Service
- Shasta County
- FEMA

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APPENDICES

APPENDIX A: GLOSSARY

**APPENDIX B: COMMUNITY FIRE SAFE FUEL REDUCTION
GUIDELINES**

**APPENDIX C: WILDLAND FIRE EVACUATION PLAN
SHINGLETOWN RIDGE**

MAPS

APPENDIX A

GLOSSARY

BEHAVE – A computer program used for predicting fire behavior.

Chain – A unit of measurement equal to 66 feet.

Fire Safe Area – a community that comes together once a year as part of the Community Fire Safe Program to remove excess vegetation to decrease the fire hazard around their homes. Removed vegetation is piled and collected by CAL FIRE for chipping and disposal off-site for a nominal fee.

Fuel Characteristics – Factors that make up fuels such as compactness, loading, horizontal continuity, vertical arrangement, chemical content, size and shape, and moisture content.

Fuel Chemical Content – Substances in the fuels which can either retard or increase the rate of combustion, such as mineral content, resins, oils, wax or pitch.

Fuel Ladder – Fuels which provide vertical continuity between strata. Fire is able to carry from ground, to surface, to crown.

Fuel Moisture Content – The amount of water in a fuel, expressed as a percentage of the oven-dry weight of that fuel.

Fuels – Any organic material, living or dead, in the ground, on the ground, or in the air, that will ignite and burn. General fuel groups are grass, brush, timber and slash.

Mechanical Treatment – Using mechanized equipment including but not limited to bulldozers with or without brush rakes, rubber tired skidders, mechanized falling machines, chippers and grinders.

Pile and Burn – Material is cut and piled in open areas to be burned. Burning takes place under permitting environmental conditions.

Prescribed Burning – The burning of forest or range fuels on a specific area under predetermined conditions so that the fire is confined to that area to fulfill silvicultural, wildlife management, sanitary or hazard reduction requirements, or otherwise achieve forestry or range objectives.

Rate of Spread – Rate of forward spread of the fire front, usually expressed as chains per hour.

Shaded Fuelbreak – A wide strip or block of land on which the vegetation has been modified by reducing the amount of fuel available, rearranging fuels so that they do not

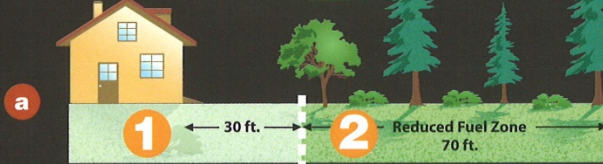
carry fire easily, and replacing particularly flammable fuels with others that ignite less easily and burn less intensely.

Surface Fire – A fire that burns surface litter, debris and small vegetation.

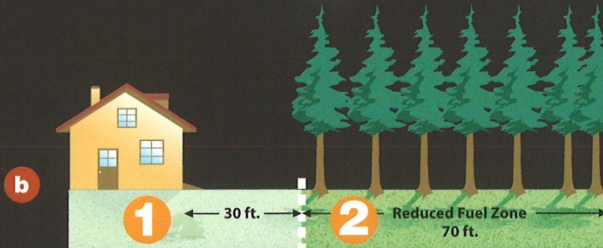
Topography – The configuration of the earth's surface, including its relief and the position of its natural and manmade features.

APPENDIX B
COMMUNITY FIRE SAFE FUEL REDUCTION

100' DEFENSIBLE SPACE Make Your Home FIRE SAFE



or



Contact your local CDF office, fire department,
or Fire Safe Council for tips and assistance.

www.fire.ca.gov

Why 100 Feet?

Following these simple steps can dramatically increase the chance of your home surviving a wildfire!

A **Defensible Space** of 100 feet around your home is required by law.¹ The goal is to protect your home while providing a safe area for firefighters.

1 "Lean, Clean and Green Zone."

– Clearing an area of 30 feet immediately surrounding your home is critical. This area requires the greatest reduction in flammable vegetation.

2 "Reduced Fuel Zone."

– The fuel reduction zone in the remaining 70 feet (or to property line) will depend on the steepness of your property and the vegetation.

Spacing between plants improves the chance of stopping a wildfire before it destroys your home. You have two options in this area:

- a** Create horizontal and vertical spacing between plants. The amount of space will depend on how steep the slope is and the size of the plants.
- b** Large trees do not have to be cut and removed as long as all of the plants beneath them are removed. This eliminates a vertical "fire ladder."

When clearing vegetation, use care when operating equipment such as lawnmowers. One small spark may start a fire; a string trimmer is much safer.

Remove all build-up of needles and leaves from your roof and gutters. Keep tree limbs trimmed at least 10 feet from any chimneys and remove dead limbs that hang over your home or garage. The law also requires a screen over your chimney outlet of not more than ½ inch mesh.

¹ These regulations affect most of the grass, brush, and timber-covered private lands in the State. Some fire department jurisdictions may have additional requirements. Some activities may require permits for tree removal. Also, some activities may require special procedures for, 1) threatened and endangered species, 2) avoiding erosion, and 3) protection of water quality. Check with local officials if in doubt. Current regulations allow an insurance company to require additional clearance. The area to be treated does not extend beyond your property. The State Board of Forestry and Fire Protection has approved Guidelines to assist you in complying with the new law. Contact your local CDF office for more details.



April 2006

Here's How to Get Started: Create a Fire Safe Landscape in Seven Steps

Step One

Evaluate the environment around your home. What will catch on fire? Be on the lookout for those "little things" that can burn your home; this can include lounge cushions, papers or anything flammable outside your home. Also consider slope, prevailing winds, vegetation type and density, and exposure to direct sun.

Step Two

Determine what you need to do. Start with the closest Home Ignition Zone and work toward the Defensible Space Zone and through the Wildland Fuel Reduction Zone.

Step Three

Develop a plan for correcting any fire safe problems identified in steps one and two. Consider completing your work prior to June 1 of each year before fuel conditions become too dry. Make sure your power tools have approved spark arresters and, if working in the summer months, complete all work before 10 a.m. Coordinate with adjacent land owners if possible and incorporate existing formal landscape features.

Step Four

Consider codes and regulations related to *defensible space*, burning, work performed near waterways, and tree removal; comply with federal environmental laws and, if necessary, secure permits such as burn permits.

- The Department of Forestry & Fire Protection (CAL FIRE) should be consulted if any wood products from your property are sold, traded or bartered. Types of regulated wood products include sawmill logs, firewood or wood chips.
- The Department of Fish & Game should be notified and consulted if work occurs near a river, stream, lake, or tributaries. Go to: www.dfg.ca.gov/1600/1600.html
- Before cutting down trees, residents should check local association and special district regulations.

Step Five

Implement the plan. Get help and any needed equipment. Begin work in the Home Ignition Zone and work out from there. Remember: It's the little things—such as patio furniture and cushions, leaves, needles, firewood piles, bark, etc.—that can ignite and cause a fire to your home.

Step Six

Remove all slash and debris generated during the fuel modification process by chipping, burning or disposal at your local vegetative waste site. Contact your local fire department for permit requirements. Contact your local Fire Safe Council about their chipping, home consultation and other programs. Find your local Fire Safe Council at www.FireSafeCouncil.org.

Step Seven

Continue to monitor and evaluate the fire safe condition of your home and landscape. Maintain your home's resistance to fire and the *defensible space* in the surrounding property on a routine basis—annually or more frequently, if needed. For new construction, consider fire resistant materials such as concrete panels, stone, brick or other material that doesn't burn easily.

Design and printing: www.FireSafeHelp.com. To order, call: 530/872-0850
Special thanks to the Butte County Fire Safe Council

Is Your Home a Safe Place to Stay?

You live in an area of natural beauty—but it's also prone to wildfire. In fact, it's not a matter of *IF* the timberlands of California will burn, it's a matter of *WHEN* that will happen.

Fortunately, you can take steps today to dramatically improve your odds of survival by making your property "fire safe."

A fire safe property is one where the home and landscape resist the impact of fire. A fire safe landscape is a beautiful landscape that not only protects your home from fire but can also increase the value of your home and impact your home's insurability.

The Fire Environment

Fire behavior is affected by a variety of factors—some of these you can do something about and others are weather-related and beyond your control. Understanding these terms will help you make your home and the surrounding property fire safe.

Fuels: Any flammable materials that will burn. This includes everything from the home itself to plants, dried leaves in the rain gutter, brush, wood shingles, patio furniture and decking material. If it will burn, it's a fuel.

Ignition: The point at which a fire starts as a result of fuel contacting with embers, firebrands (hot, flying embers), direct flame, or superheated air.

Topography: Primarily slope or the steepness of the incline on which your house is situated. Also your home's location on the slope and proximity to canyons or ravines.

Weather: Primarily wind, but also air temperature and humidity (moisture content of the air).

Extreme X-Factor: A multiplication factor used to increase the *defensible space* around a home due to extreme fire behavior factors such as slope, and/or constant or unusually strong winds. If your home is located **on or near** the top of a slope and/or **receives constant or unusually strong winds** you must increase the *defensible space* in Zones 2 and 3 by a multiplication of 1.5 (X-Factor). For instance, in Zone 2, increase the *defensible space* from 100 feet to 150 feet.



During the summer and fall months, a combination of low humidity, high temperatures and strong winds results in a "red flag" weather warning. During such a condition, the fire danger is very high. The X-Factor explained above helps provide that extra margin of *defensible space* necessary to keep your property fire safe.

A Homeowner's Guide to Fire Safe Landscaping



Timberland

The California Fire Safe Council's mission is to provide leadership and support that mobilizes all Californians to protect their homes, communities and environment from wildfire. We accomplish our mission through broad-based public/private partnerships that create community-wide change via education and action programs because we believe fire prevention and loss reduction are everyone's business.



www.FireSafeCouncil.org



Funding for this brochure was provided by a grant from State Farm Insurance.

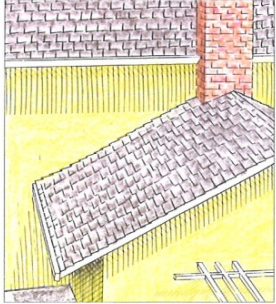
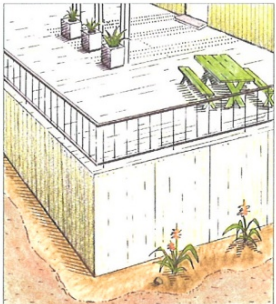
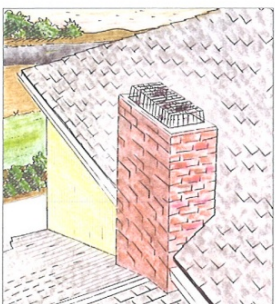
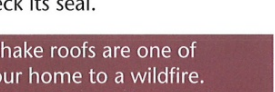

California Fire Safe Council
P.O. Box 2106
Glendora, CA 91740
Phone: 626/335-7426
www.FireSafeCouncil.org



- www.FireSafeCouncil.org
California Fire Safe Council
- www.fire.ca.gov
California Department of Forestry & Fire Protection;
includes forest management information

Home Ignition Zone (The home plus 10 ft distance)

It's the 'little things' that will endanger your home. Just a little ember landing on a little pile of flammable material will burn it. Spend a morning searching out and getting rid of those flammable little things outside and your home will be much safer.

1. Keep your rain gutters and roof clean of all flammable material. 
2. Get rid of dry grass, brush and other flammable materials around your home—and don't forget leaves, pine needles and bark walkways. Replace with well maintained (watered) landscape vegetation, green lawn and landscape rocks. 
3. Clear all flammable materials from your deck. This includes brooms, stacked wood and easily ignitable patio furniture. Also enclose or board up the area under your deck to keep it from becoming a fuel bed for hot embers. 
4. Move woodpiles and garbage cans away from your home. Keep woodpiles away from the home a distance of 2 times the height of the pile—more if lot size allows. 
5. Use fine mesh metal screen (1/4" or less) to cover eaves, roof and foundation vents to prevent windblown embers from entering. 
6. Inspect and clean your chimney every year. Trim away branches within 10 feet. Install a spark arrester with 1/2" or smaller mesh screen.
7. Got a propane tank? Get rid of any flammable materials within 10 feet of it and, if possible, position it at least 30 feet from any structures.
8. Window screens should be metal, not plastic or other flammable or meltable material.
9. If your home has a pet door, check its seal.

Burning embers landing on wood shake roofs are one of the leading risk factors for losing your home to a wildfire. If possible, replace wood shingle roofs with non-flammable (Class-A) roofing materials, such as asphalt shingles, tile or metal roofing.

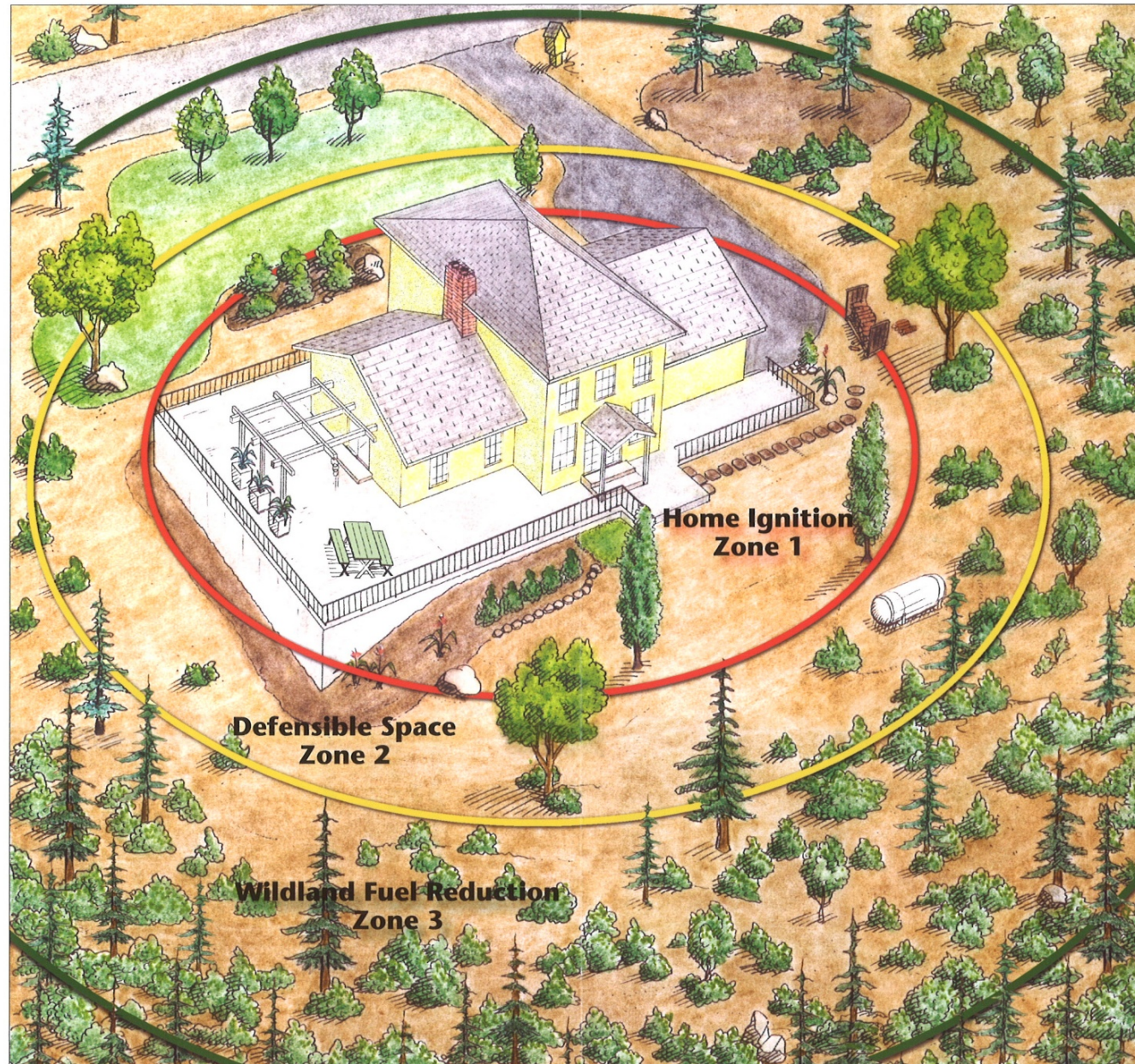
Defensible Space Zone (100 feet or more distance) • Keep this area lean and green!

Your "defensible space" is the area that is a minimum of 100 feet from your home (as required under State Public Resources Code 4291 or other local ordinances). This is the area where you've modified the landscaping to allow your house to survive on its own—greatly improving the odds for firefighters defending your home.

If your home is on a slope or subject to high winds, extend the distance of this zone based upon the "X-Factor." For instance, this zone may increase to 150 feet (1.5 X 100 feet).

Create a *Defensible Space Zone* by keeping in mind the three R's of defensible space:

- **Remove**—dead and dying grass, shrubs and trees.
- **Reduce**—the density of vegetation (fuel) and ladder fuels, those fuels extending from the ground to the tree canopies.
- **Replace**—hazardous vegetation with less flammable, irrigated landscape vegetation including lawn, or other low growing groundcovers and flowering plants.



Find out more ways to make your home fire safe: www.FireSafeCouncil.org

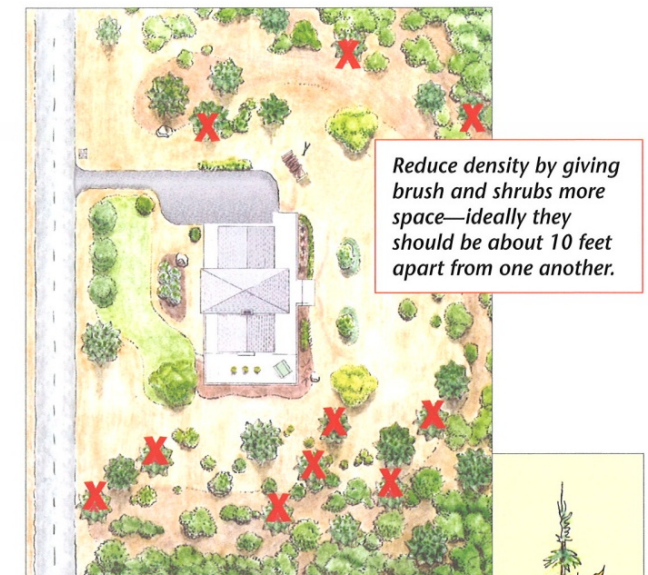
Wildland Fuel Reduction Zone (Beyond 100 feet distance)

Getting rid of the undergrowth and thinning out densely-crowded smaller trees in this outlying area will reduce fire intensity and slow the spread of a fire moving toward your home. Defensible space increases the odds of your home's survival.

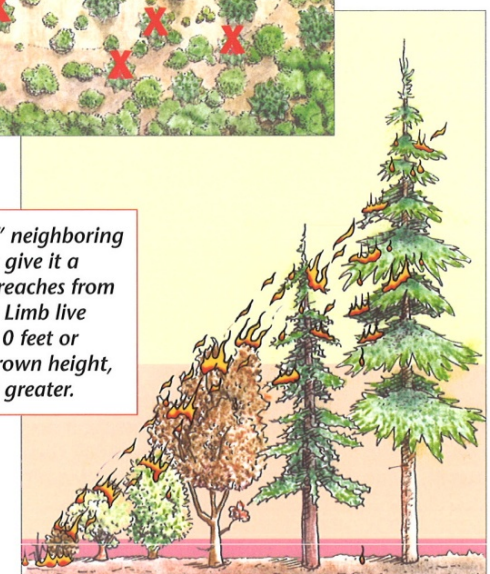
Experts recommend a minimum of 10 feet of spacing between individual trees and shrubs, measured at the crown (widest part) of the tree or shrub. You may need to increase this distance based on your property's X-Factor.

Mature trees should also be limbed up 10 feet, or 1/3 of their live crown height, whichever is greater.

It's possible, depending upon the size of your property, that you will be limited by your property boundary and unable to complete the fire safe measures identified in Zones 2 and 3. If this happens, talk with your neighbors and ask for their cooperation. A safer home means a safer neighborhood for everyone.



Fire "climbs" neighboring trees—don't give it a ladder that reaches from low to high. Limb live trees up to 10 feet or 1/3 of live crown height, whichever is greater.



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A fire safe property is one where the home and landscape resist the impact of fire. A fire safe landscape is a beautiful landscape that not only protects your home from fire but can also increase the value of your home and impact your home's insurability.

The Fire Environment

Fire behavior is affected by a variety of factors—some of these you can do something about and others are weather-related and beyond your control. Understanding these terms will help you make your home and the surrounding property fire safe.

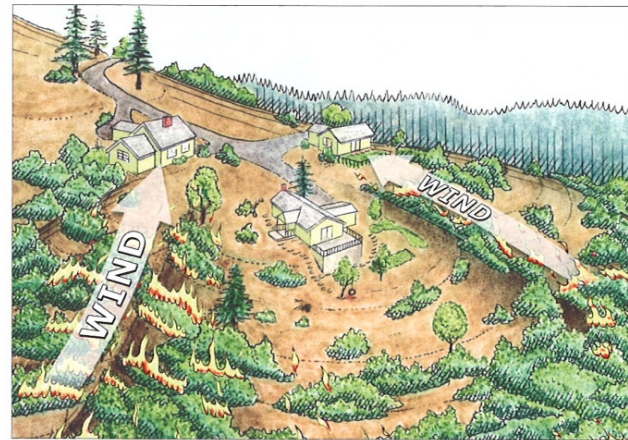
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Ignition: The point at which a fire starts as a result of fuel contacting with embers, firebrands (hot, flying embers), direct flame, or superheated air.

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During the summer and fall months, a combination of low humidity, high temperatures and strong winds results in a "red flag" weather warning. During such a condition, the fire danger is very high. The X-Factor explained above helps provide that extra margin of *defensible space* necessary to keep your property fire safe.

A Homeowner's Guide to Fire Safe Landscaping



Brushland

The California Fire Safe Council's mission is to provide leadership and support that mobilizes all Californians to protect their homes, communities and environment from wildfire. We accomplish our mission through broad-based public/private partnerships that create community-wide change via education and action programs because we believe fire prevention and loss reduction are everyone's business.



www.FireSafeCouncil.org



Funding for this brochure was provided by a grant from State Farm Insurance.

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Phone: 626/335-7426
www.FireSafeCouncil.org

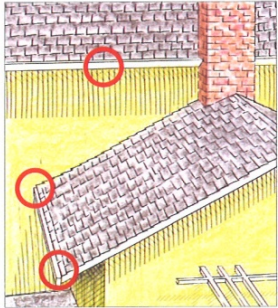
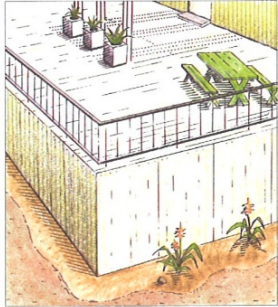
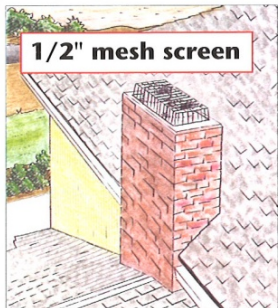


For more information:

- www.FireSafeCouncil.org
California Fire Safe Council
- www.fire.ca.gov
California Department of Forestry & Fire Protection;
includes forest management information

Home Ignition Zone (The home plus 10 ft distance)

It's the 'little things' that will endanger your home. Just a little ember landing on a little pile of flammable material will burn it. Spend a morning searching out and getting rid of those flammable little things outside and your home will be much safer.

1. Keep your rain gutters and roof clean of all flammable material. 
2. Get rid of dry grass, brush and other flammable materials around your home—and don't forget leaves, pine needles and bark walkways. Replace with well maintained (watered) landscape vegetation, green lawn and landscape rocks.
3. Clear all flammable materials from your deck. This includes brooms, stacked wood and easily ignitable patio furniture. Also enclose or board up the area under your deck to keep it from becoming a fuel bed for hot embers. 
4. Move woodpiles and garbage cans away from your home. Keep woodpiles away from the home a distance of 2 times the height of the pile—more if lot size allows.
5. Use fine mesh metal screen (1/4" or less) to cover eaves, roof and foundation vents to prevent windblown embers from entering.
6. Inspect and clean your chimney every year. Trim away branches within 10 feet. Install a spark arrester with 1/2" or smaller mesh screen. 
7. Got a propane tank? Get rid of any flammable materials within 10 feet of it and, if possible, position it at least 30 feet from any structures.
8. Window screens should be metal, not plastic or other flammable or meltable material.
9. If your home has a pet door, check its seal.

Burning embers landing on wood shake roofs are one of the leading risk factors for losing your home to a wildfire. If possible, replace wood shingle roofs with non-flammable (Class-A) roofing materials, such as asphalt shingles, tile or metal roofing.

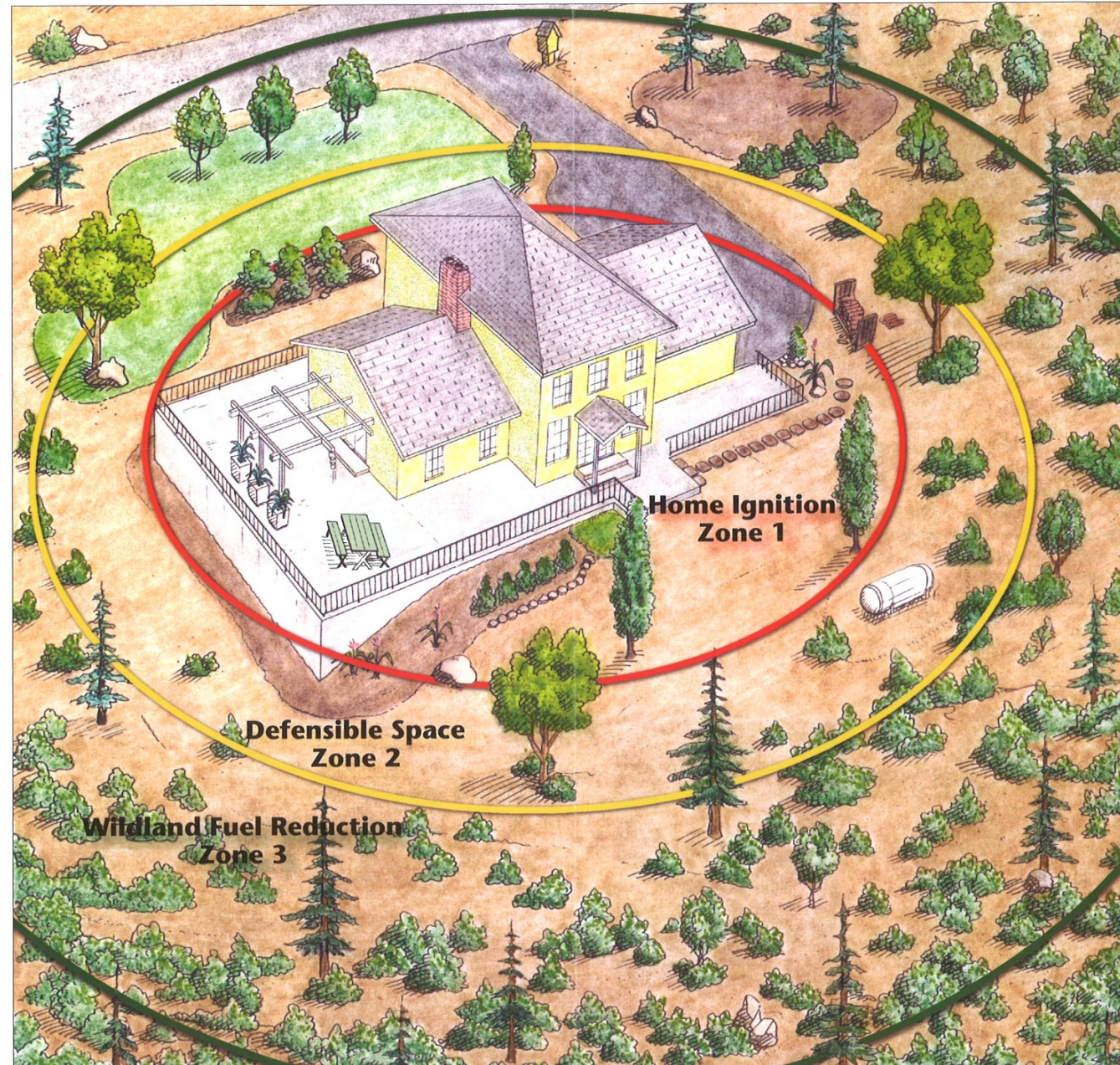
Defensible Space Zone (100 feet or more distance) • Keep this area lean and green!

Your "defensible space" is the area that is a minimum of 100 feet from your home (as required under State Public Resources Code 4291 or other local ordinances). This is the area where you've modified the landscaping to allow your house to survive on its own—greatly improving the odds for firefighters defending your home.

If your home is on a slope or subject to high winds, extend the distance of this zone based upon the "X-Factor." For instance, this zone may increase to 150 feet (1.5 X 100 feet).

Create a Defensible Space Zone by keeping in mind the three R's of defensible space:

- **Remove**—dead and dying grass, shrubs and trees.
- **Reduce**—the density of vegetation (fuel) and ladder fuels, those fuels extending from the ground to the tree canopies.
- **Replace**—hazardous vegetation with less flammable, irrigated landscape vegetation including lawn, or other low growing groundcovers and flowering plants.



Find out more ways to make your home fire safe: www.FireSafeCouncil.org

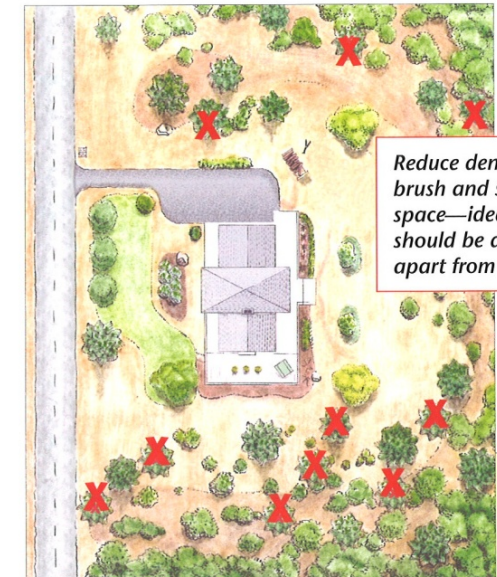
Wildland Fuel Reduction Zone (Beyond 100 feet distance)

Getting rid of the undergrowth and thinning out densely-crowded smaller trees in this outlying area will reduce fire intensity and slow the spread of a fire moving toward your home. Defensible space increases the odds of your home's survival.

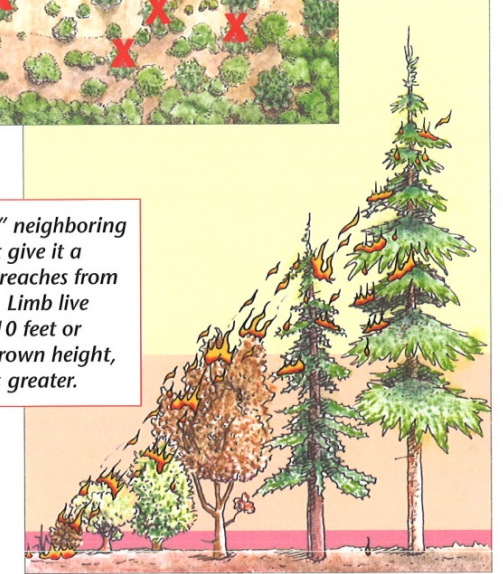
Experts recommend a minimum of 10 feet of spacing between individual trees and shrubs, measured at the crown (widest part) of the tree or shrub. You may need to increase this distance based on your property's X-Factor.

Mature trees should also be limbed up 10 feet, or 1/3 of their live crown height, whichever is greater.

It's possible, depending upon the size of your property, that you will be limited by your property boundary and unable to complete the fire safe measures identified in Zones 2 and 3. If this happens, talk with your neighbors and ask for their cooperation. A safer home means a safer neighborhood for everyone.



Fire "climbs" neighboring trees—don't give it a ladder that reaches from low to high. Limb live trees up to 10 feet or 1/3 of live crown height, whichever is greater.



Here's How to Get Started: Create a Fire Safe Landscape in Seven Steps

Step One

Evaluate the environment around your home. What will catch on fire? Be on the lookout for those "little things" that can burn your home; this can include lounge cushions, papers or anything flammable outside your home. Also consider slope, prevailing winds, vegetation type and density, and exposure to direct sun.

Step Two

Determine what you need to do. Start with the closest Home Ignition Zone and work toward the Defensible Space Zone and through the Wildland Fuel Reduction Zone.

Step Three

Develop a plan for correcting any fire safe problems identified in steps one and two. Consider completing your work prior to June 1 of each year before fuel conditions become too dry. Make sure your power tools have approved spark arresters and, if working in the summer months, complete all work before 10 a.m. Coordinate with adjacent land owners if possible and incorporate existing formal landscape features.

Step Four

Consider codes and regulations related to *defensible space*, burning, work performed near waterways, and tree removal; if necessary, secure permits such as burn permits.

- The Department of Forestry & Fire Protection (CDF) should be consulted if any wood products from your property are sold, traded or bartered. Types of regulated wood products include sawmill logs, firewood or wood chips. For more information, contact your local CDF unit.
- The Department of Fish & Game should be notified and consulted if work occurs near a river, stream, lake, or tributaries. Go to: www.dfg.ca.gov/1600/1600.html
- Before cutting down trees, residents should check local association and special district regulations.

Step Five

Implement the plan. Get help and any needed equipment. Begin work in the Home Ignition Zone and work out from there. Remember: It's the little things—such as patio furniture and cushions, leaves, needles, bark, etc.—that can ignite and cause a fire to your home.

Step Six

Remove all slash and debris generated during the fuel modification process by chipping, burning or disposal at your local vegetative waste site. Contact your local fire department for permit requirements. Contact your local Fire Safe Council about their chipping, home consultation and other programs. Find your local Fire Safe Council at www.FireSafeCouncil.org.

Step Seven

Continue to monitor and evaluate the fire safe condition of your home and landscape. Maintain your home's resistance to fire and the *defensible space* in the surrounding property on a routine basis—annually or more frequently, if needed. For new construction, consider fire resistant materials such as concrete panels, stone, brick or other material that doesn't burn easily.

Design and printing: www.FireSafeHelp.com. To order, call: 530.872.0850
Special thanks to the Butte County Fire Safe Council

Is Your Home a Safe Place to Stay?

You live in an area of natural beauty—but it's also prone to wildfire. In fact, it's not a matter of *if* the grasslands of California will burn, it's a matter of *when* that will happen.

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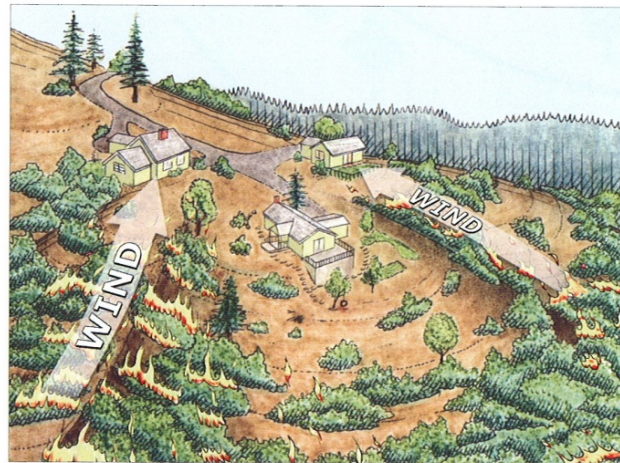
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A Homeowner's Guide to Fire Safe Landscaping



Grassland

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www.FireSafeCouncil.org

April 2005

Allstate
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This brochure made possible by a grant from the Allstate Foundation.

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Fire Safe COUNCIL

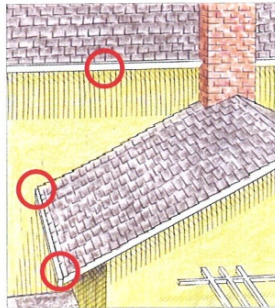
For more information:

- www.FireSafeCouncil.org
California Fire Safe Council
- www.firewise.org
National Wildland/Urban Interface Fire Program
- www.fire.ca.gov
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- www.allstate.com
Allstate Insurance

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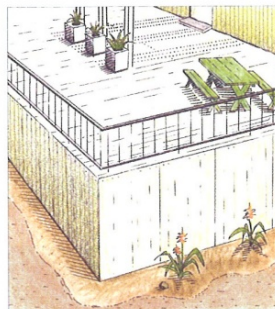
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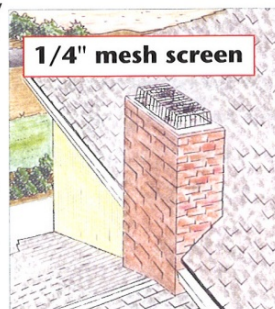
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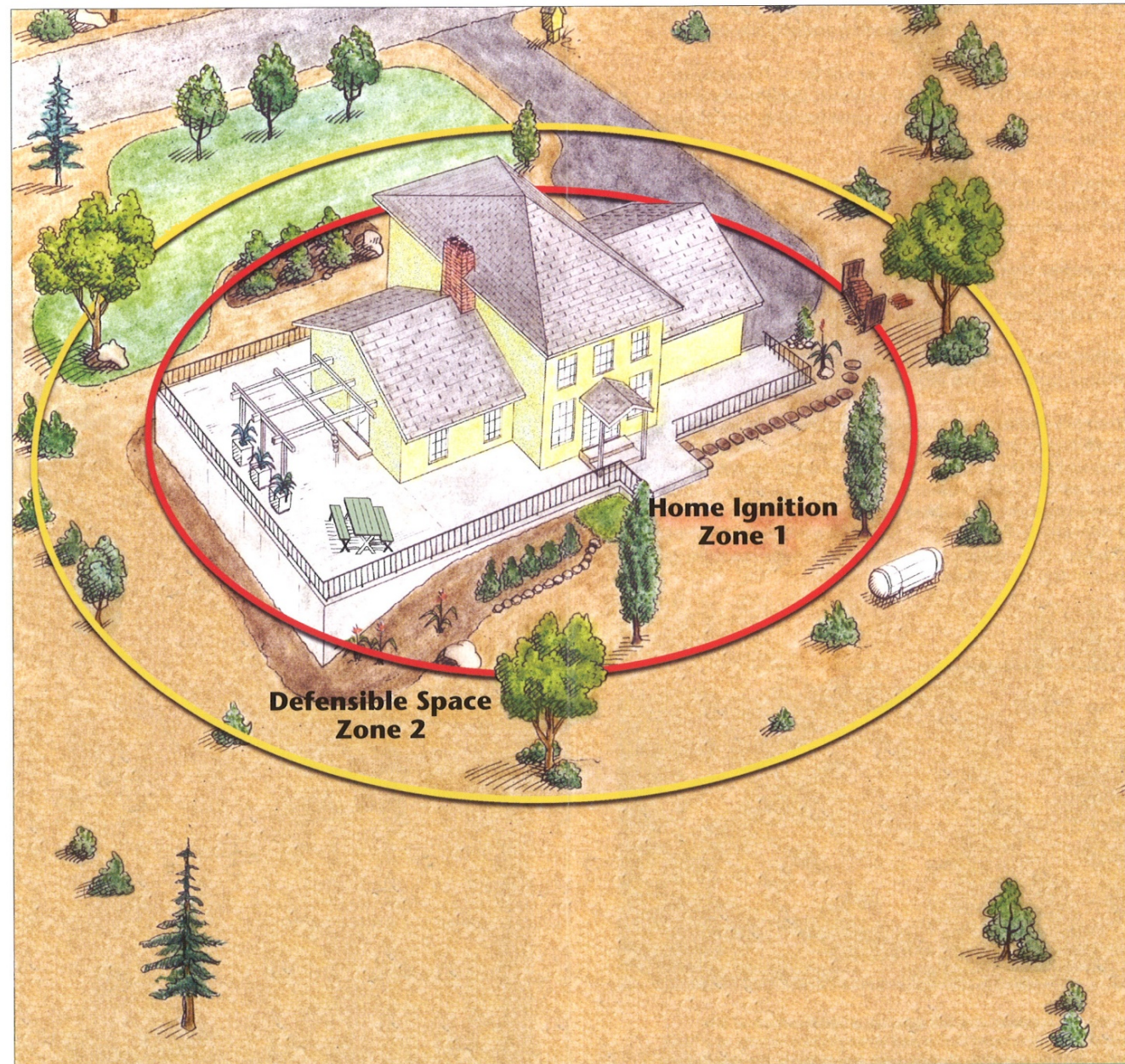
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Find out more ways to make your home fire safe: www.FireSafeCouncil.org

Are you doing the right thing—the wrong way?

Getting rid of the hazards around your home is a good idea—but you need to do it properly or you could accidentally start a wildland fire.

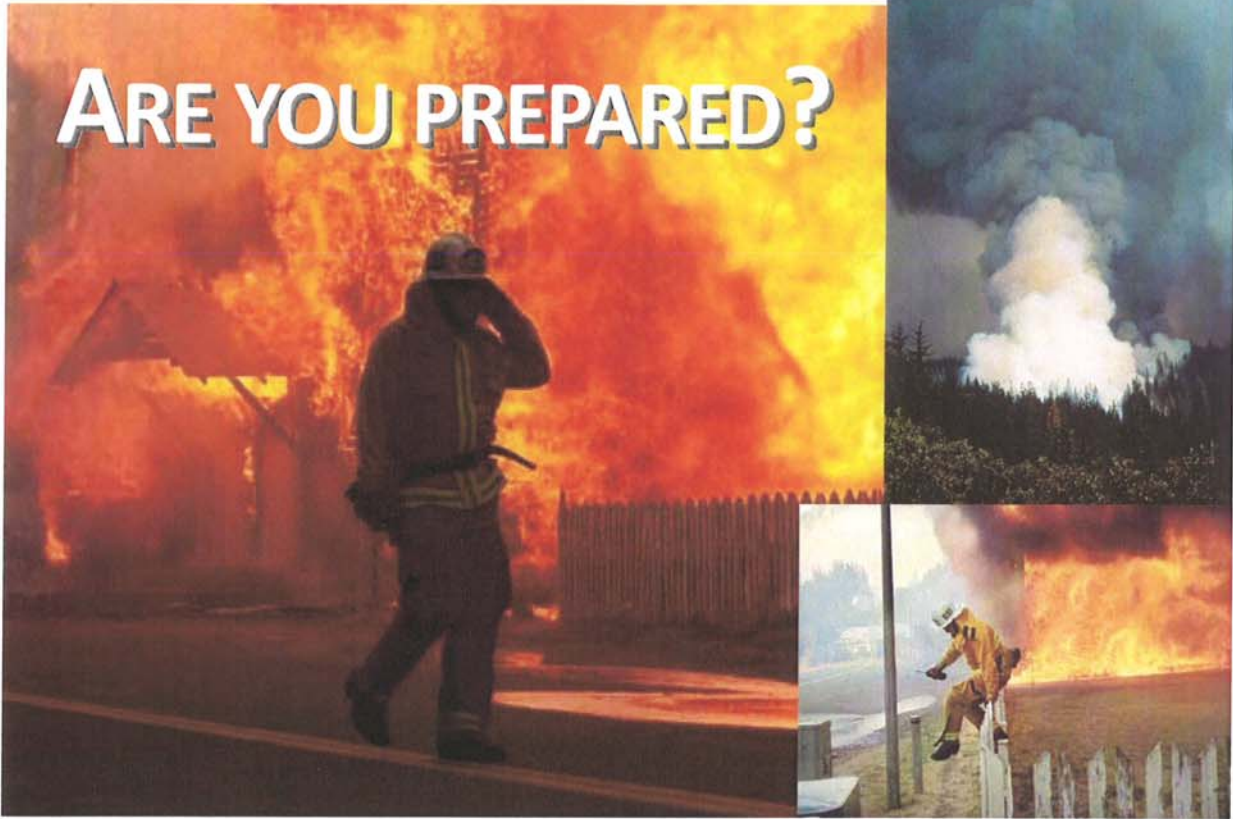
Each year fire departments respond to thousands of fires started by people using equipment the wrong way. Whether working to create defensible space around your home, just mowing dry grass, or pulling your dirt bike over to the side of the road, if you live in a wildland area you need to use all equipment responsibly. Lawnmowers, weedeaters, chainsaws, grinders, welders, tractors and trimmers can all spark a wildland fire. Do your part, the right way, to keep your community fire safe.



Here's how to do it the RIGHT WAY:

- Mow before 10 a.m. If it's too hot for you, it's too hot to mow. **REMEMBER, DON'T MOW DURING THE HEAT OF THE DAY OR WHEN THE WIND IS BLOWING!**
- **Beware**—Lawn mowers are designed to mow lawns, not dry grass, weeds or rocks! A grass-hidden rock is enough to start a fire when struck by a metal blade. Remove rocks from the area before you begin mowing.
- **In wildland areas**, spark arresters are required on all portable gasoline powered equipment. This includes tractors, harvesters, chainsaws, weedeaters and mowers.
- Keep the exhaust system, spark arresters and mower in proper working order and free of carbon buildup. Use the recommended grade of fuel and don't top off.
- **In wildland areas**, grinding and welding operations require a permit plus 10 feet of clearance, a 46-inch round point shovel, and a backpack watertype fire extinguisher—all ready to use.
- Hot exhaust pipes and mufflers can start fires you won't even see—until it's too late! Don't drive your vehicle onto dry grass or brush.
- Keep a cell phone nearby and call 911 **immediately** in case of fire.

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WILDLAND FIRE EVACUATION PLAN Shingletown Ridge/Manton



**American
Red Cross**
Together, we can save a life



Printing provided by California Fire Safe Council/USDA Forest Service

ARE YOU PREPARED?

WILDLAND FIRE EVACUATION PLAN

Shingletown Ridge/Manton

Pre-Fire Preparation

- Have adequate clearance around structures of all flammable material. Minimum of 100 feet in areas designated "Very High Fire Danger", (includes wood piles). (Greater distance may be required based on slope).
- Clear pine needles and leaves from gutters and roof. Trim back overhanging branches at least 10 feet from the outlet of any chimney or stovepipe.
- Replace roofing and siding with nonflammable or fire resistive materials.
- Reduce or remove flammable vegetation, including landscape plants, and replace with less flammable plants.
- Maintain greenbelt modification around developed areas.
- Install and maintain strategic fuel breaks.
- Have means of transporting pets readily available.
- Collect valuables, important documents, medications and other personal items in one place and be ready to evacuate if necessary. Maintain a mobile survival kit.
- Local Disaster Volunteers or Neighborhood Watch groups should conduct data collection on homeowners by neighborhood. Shasta County Social Services has information regarding medically fragile persons.
- Local groups should establish alternative communications and alerting methods such as phone trees.
- Preplan and prepare for a local disaster coordination point to be known as "Evacuee Collection Points" (ECP).

Public Agencies will carry out duties and functional responsibilities to the best of their ability, considering the extent of the emergency and available resources.

What Would Happen in the Case of an Evacuation

- Emergency Response Personnel (Fire Department/ Sheriff's Office) will decide the areas to be evacuated and notify the occupants.** The area to be evacuated will depend upon where the fire is, wind and fire behavior. **Fixed evacuation plans will not work due to the variability of fire spread.**
- Law Enforcement agencies are responsible for carrying out the evacuation.** They will use deputies, officers, Search and Rescue, and citizen volunteer patrols (CVP). Law Enforcement agencies are responsible for the security of areas that are evacuated. Sheriff officers will be placed at road blocks to obtain information regarding people that may still be in an evacuated area.
- The Local Community Disaster Rep. Or Neighborhood Watch Chairperson** will work closely with the Sheriff's Office in the Command Post to **ensure that local needs are communicated.**
- Red Cross/Sheriff's Office will decide where people will be relocated for short-term relocation.** Red Cross will have a representative in the Command Post.
- California Highway Patrol (CHP) and the Shasta County Public Works will control traffic flow** and maintain access for emergency equipment. CHP and SCSO will have a representative in the Command Post. CHP and SCSO may utilize CVP, Search and Rescue, or Mutual Aid Law Enforcement Officers.

What to do if a Wildfire is Approaching

- Park your vehicle facing out. Put your valuables in the car. Place the car keys where you can find them.
- Secure pets and prepare them to be transported. **If you have livestock or large animals that you have no means of removal, contact the Sheriff's Office at 245-6540, with the number and type of animals.**
- Close shutters and heavy drapes.
- Leave your electricity on and leave some inside lights on. Leave doors unlocked.
- Attach garden hoses to exterior faucets and place buckets full of water around the house.
- Place a ladder outside for roof access.
- Cover up by wearing long pants, long sleeved shirt, goggles or glasses and a baseball cap and a bandanna to cover your face. 100% cotton clothing is preferable.
- Turn off gas at gas meter or propane tank.

Three Levels of Shelter/Evacuation

□ Evacuation Notification:

First notification may come in the form of an advisory. Residents will be advised of potential hazards and the possibility of future mandatory evacuation. Residents should prepare for the following alternatives and will be given instructions as to travel routes and Evacuee Collection Points. Second notification will be an evacuation order.

□ Shelter in Place:

This would be for a low intensity fire where the structures have good clearance and are made of fire resistant materials and the Fire Department felt it was safe to stay.

□ Evacuee Collections Points (ECP):

Temporary holding areas for smaller groups of people until shelter locations can be established. These locations are identified throughout the community to provide collection points that are a relatively short distance from their homes. A map of established Evacuee Collection Points and a list describing their location is attached. Not all Evacuee Collection Points may be available based on the location of the fire..

□ Evacuation :

When an evacuation order is given, residents should leave immediately. Red Cross establishes shelters for the short-term housing and care of evacuated residents during an evacuation order.

Alternative Locations:

Residents who do not wish to use Red Cross shelters should consider determining in advance alternative housing locations. Access to these locations may be restricted due to the road closures resulting from the incident.

To assist in reuniting families, have an alternate out-of-the-area telephone contact point. If unable to make contact, call the Red Cross at (530) 243-3021.

□ Planning Your Evacuation Route:

The direction of your evacuation will be dictated by the location of the fire in relation to your home and the direction and speed it is spreading. The following concepts will help you determine the safest travel route. **Single fixed routes will not work in a fire situation!**

□ Evacuee Collection Point:

Know the location of all Evacuee Collection Points in your area.

Primary Travel Routes

- Know and become familiar with the primary travel routes to get to the Evacuee Collection Points.
- Be prepared to be directed by Public Safety or traffic control personnel. You must follow their directions.
- Drive the routes, in advance, so that you will be prepared before the confusion of an actual emergency.

Primary Travel Routes

- Have checklist and map ready with all the actions you will take prior to and during evacuation.
- If you become trapped by fire while evacuating in your car, park in an area clear of vegetation, close all vehicle windows and vents, cover yourself with a blanket or jacket and lie on the floor. If you are trapped by fire while evacuating on foot, select an area clear of vegetation and lie face down.
- Watch for downed power lines.

If You Are Unable to Evacuate When a Fire Approaches:

- Stay inside your house away from outside walls.
- Keep all doors closed but leave them unlocked.
- Keep your entire family together and **REMAIN CALM.** Remember if it gets hot in the house, it is four to five times hotter and more dangerous outside.

After the Fire Passes

- Check the exterior and roof immediately, extinguish all sparks and embers. If you must climb on the roof, use caution.
- Check inside the attic and underneath decks for hidden burning embers.
- Check your yard for burning woodpiles, trees, fence posts or other materials.

How Will Citizens Be Notified?

- Neighborhood Communication and Alerting Systems (phone trees).
- Emergency Alert System (EAS), alerting on radio and TV.
- Fire Personnel.
- Home-to-home by the Sheriff's Office, their volunteers or other public safety personnel.
- Reverse Phone (SHASCOM)

Local Radio Stations:

KNNN	99.3	(FM)
KQMS	1400	(AM)
KSHA	104.3	(FM)
KLVB	102.7	(FM)
KEWB	94.7	(FM)
KNCQ	97.3	(FM)
KVIP	98.1	(FM)
KVIP	540	(AM)
KRDG	105.3	(FM)
KCNO	94.5	(FM)

When Can People Com Back Into Their Homes?

The Fire Department will determine when it is safe for citizens to move back into their homes. This will be done just as soon as possible. Please do not attempt to return to your house until Public Safety personnel have advised you that it is safe to do so. When safe, the evacuation area may be re-opened to residents only. A form of identification showing residential address may be required to allow access. Areas may remain closed to vehicle traffic for fire fighter and public safety.

This will be announced through the media as well as on the CAL FIRE's information line (225-2510), at roadblocks, Evacuee Collection Points, information points and Red Cross shelters.

For more information, contact the CAL FIRE office at (530) 225-2418. Contact the Red Cross at (530) 244-8000 for disaster preparedness information.

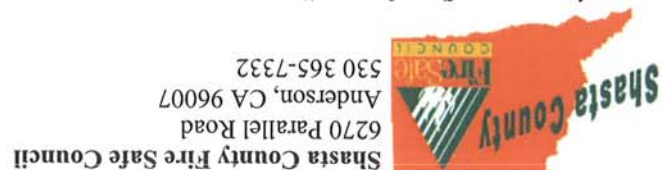
Be alert to downed power lines and contact your gas and electric company before turning utilities back on.

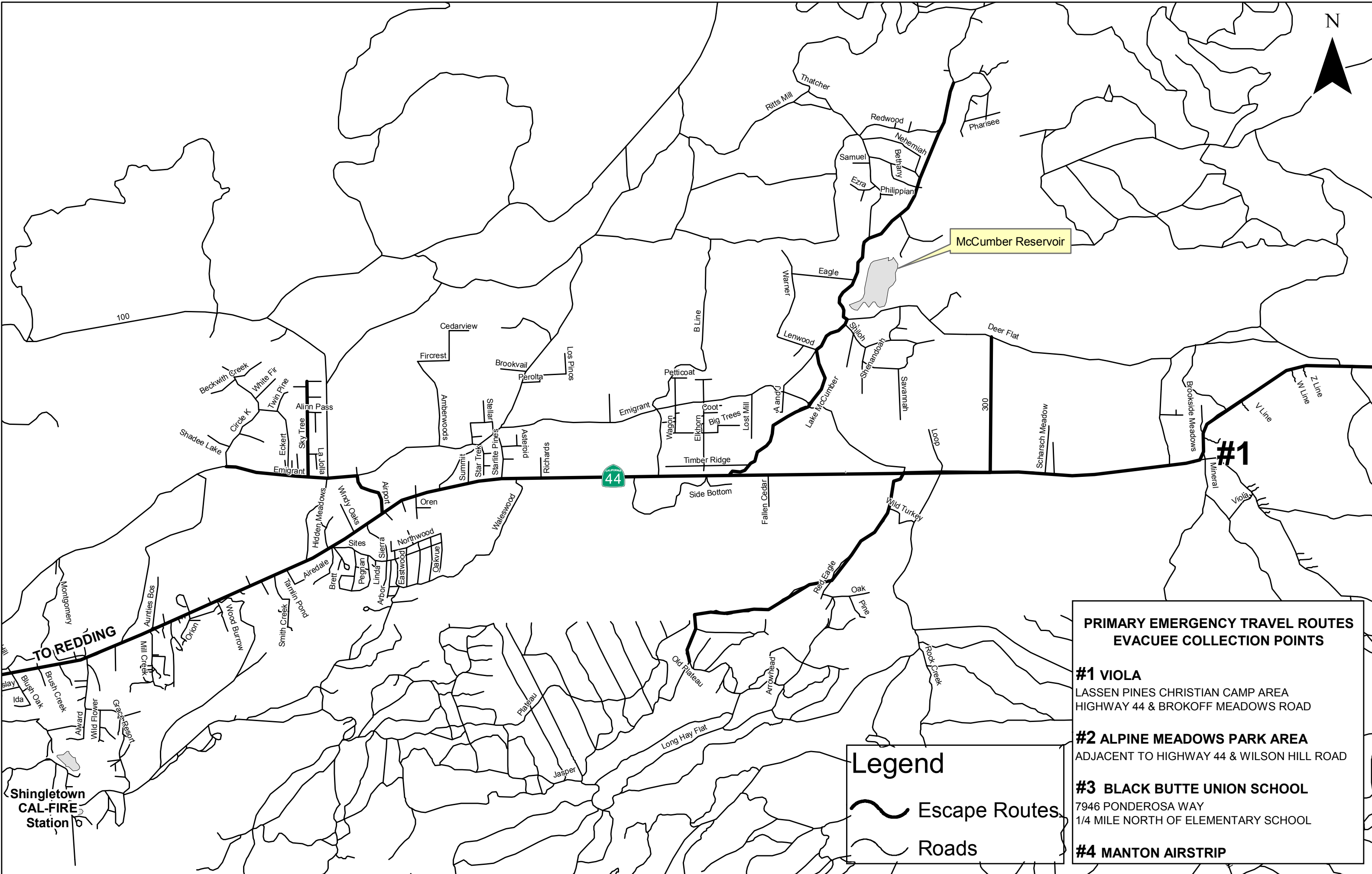
Where To Keep This Plan:

A few suggestions on locations for keeping and maintaining your escape plan:

- Home Bulletin Board
- Refrigerator Door
- Mobile Survival Kit

www.shastacountyfiresafecouncil.org





McCumber Reservoir


44


#1

TO REDDING

Shingletown
CAL-FIRE
Station

Legend

 Escape Routes

 Roads

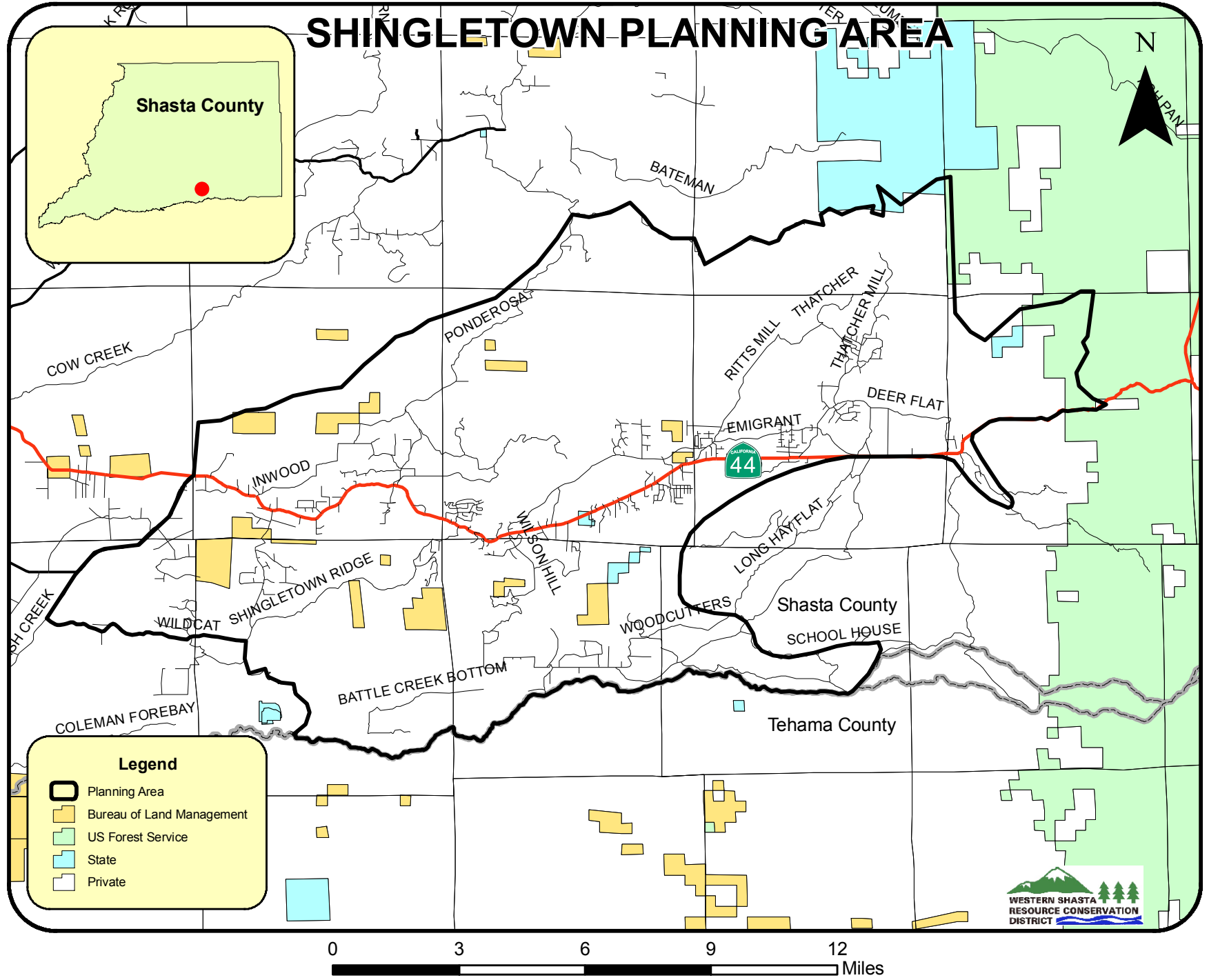
- PRIMARY EMERGENCY TRAVEL ROUTES
EVACUEE COLLECTION POINTS**
- #1 VIOLA**
LASSEN PINES CHRISTIAN CAMP AREA
HIGHWAY 44 & BROKOFF MEADOWS ROAD
 - #2 ALPINE MEADOWS PARK AREA**
ADJACENT TO HIGHWAY 44 & WILSON HILL ROAD
 - #3 BLACK BUTTE UNION SCHOOL**
7946 PONDEROSA WAY
1/4 MILE NORTH OF ELEMENTARY SCHOOL
 - #4 MANTON AIRSTRIP**

MAPS

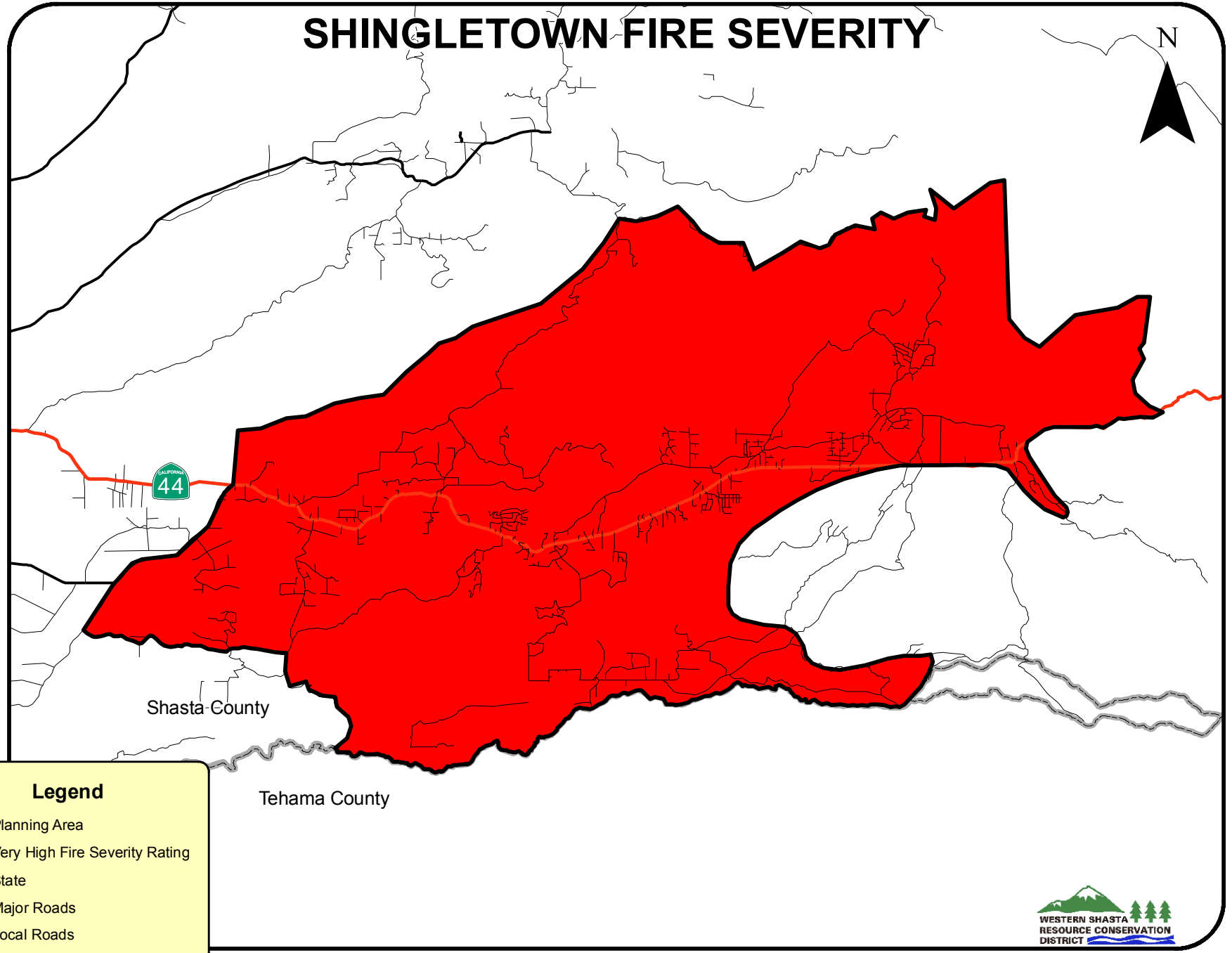
1. SHINGLETOWN PLANNING AREA
2. FIRE SEVERITY RATING
3. VEGETATION
4. SPECIAL STATUS SPECIES & HABITAT
5. SOILS
6. FIRE HISTORY
7. FUEL REDUCTION NETWORK
 - 7a. DEFENSIBLE SPACE
 - 7b. FIRE ACCESS AND ESCAPE ROUTES
 - 7c. COMPLETED PROJECTS

MAP 1

SHINGLETOWN PLANNING AREA



SHINGLETOWN FIRE SEVERITY



Legend

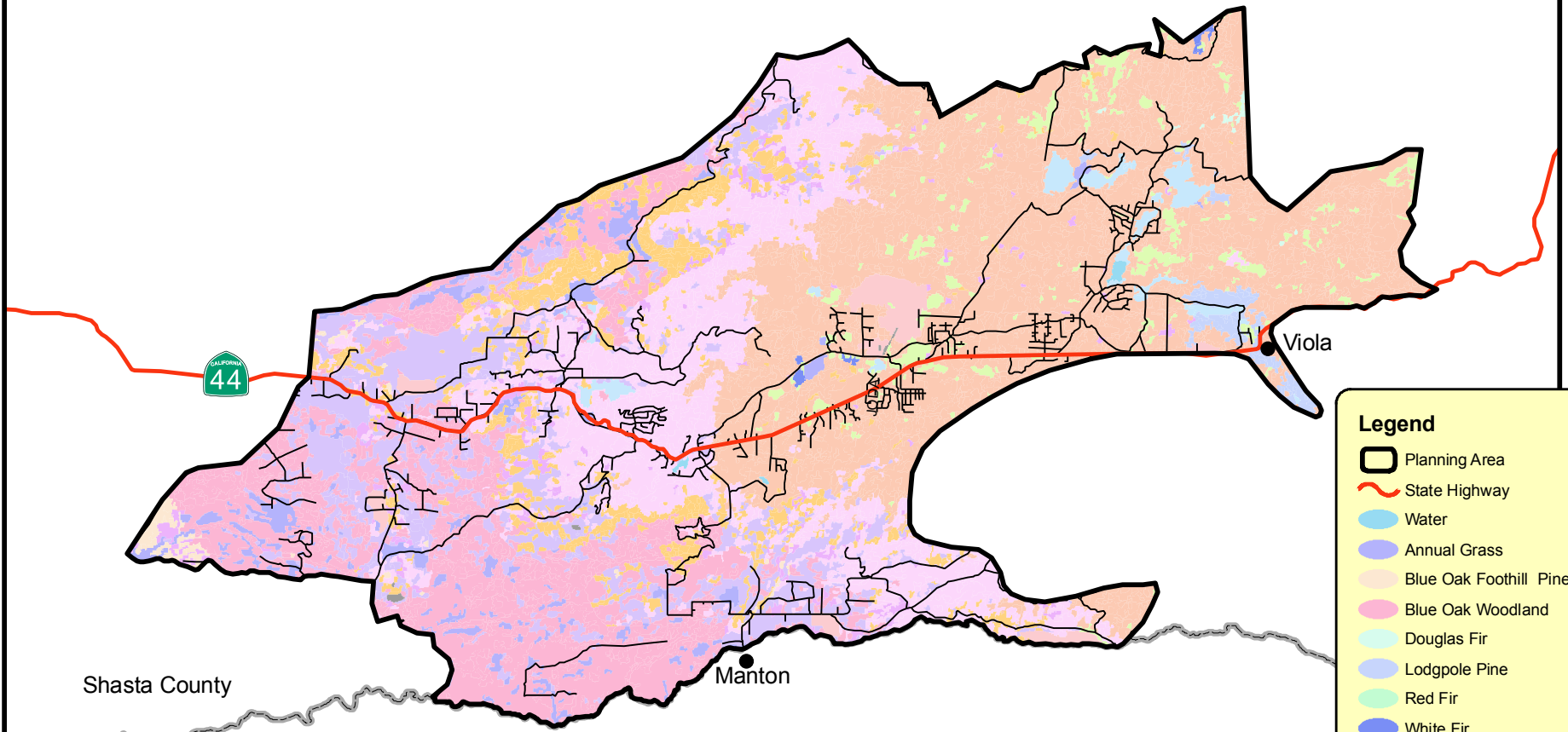
-  Planning Area
-  Very High Fire Severity Rating
-  State
-  Major Roads
-  Local Roads



VERY HIGH FIRE HAZARD SEVERITY ZONE
as Recommended By CAL FIRE

MAP 3

SHINGLETOWN VEGETATION MAP



Shasta County

Tehama County

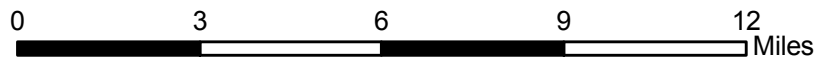
Manton

Viola



Legend

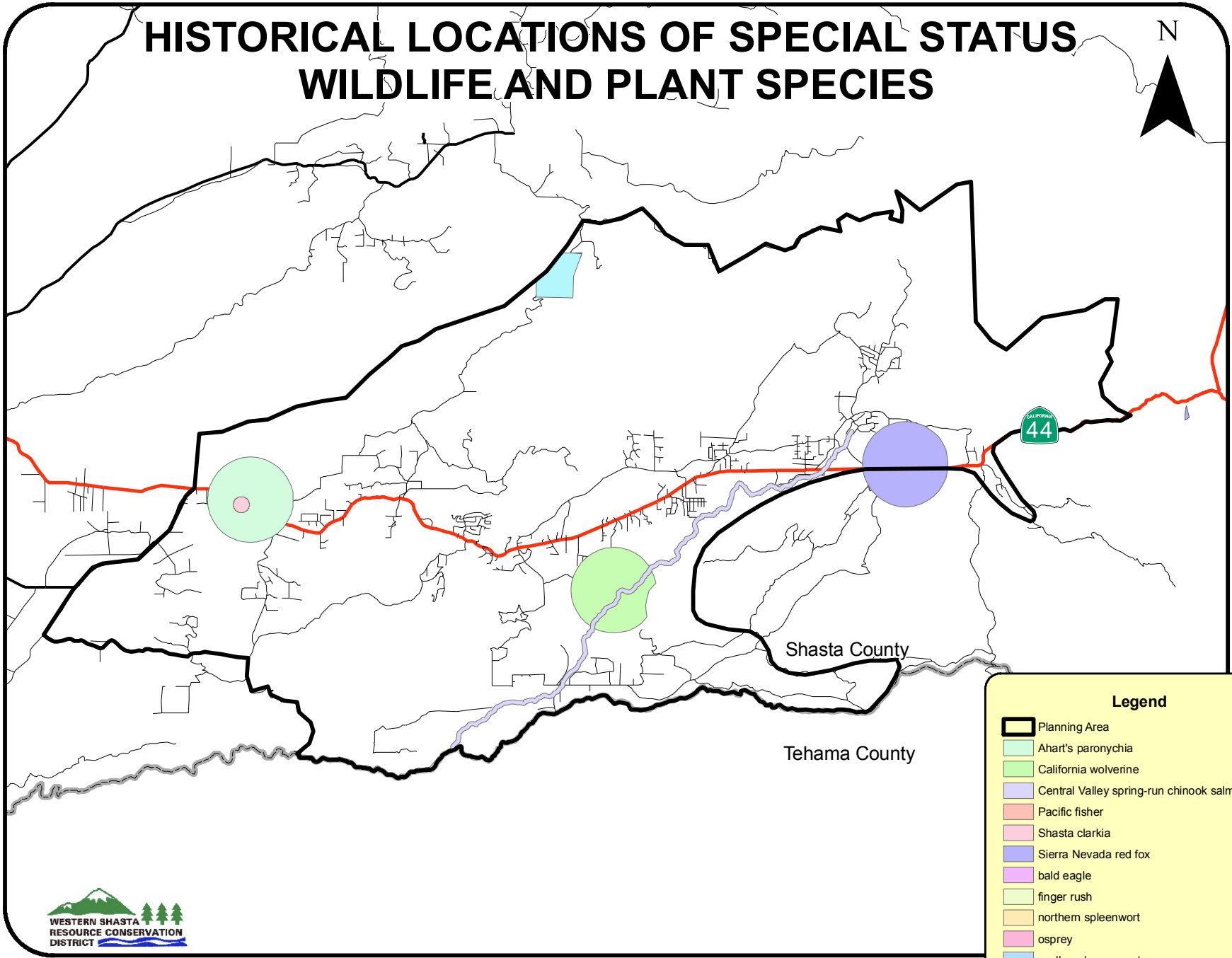
- Planning Area
- State Highway
- Water
- Annual Grass
- Blue Oak Foothill Pine
- Blue Oak Woodland
- Douglas Fir
- Lodgpole Pine
- Red Fir
- White Fir
- Ponderosa Pine
- Mixed Chaparral
- Montane Chaparral
- Montane Hardwood Conifer
- Sierra Mixed Conifer
- Montane Hardwood
- Wet Meadow
- Cropland
- Barren



MAP 4

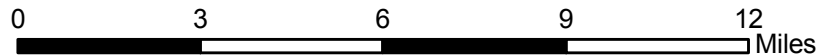
HISTORICAL LOCATIONS OF SPECIAL STATUS WILDLIFE AND PLANT SPECIES

N

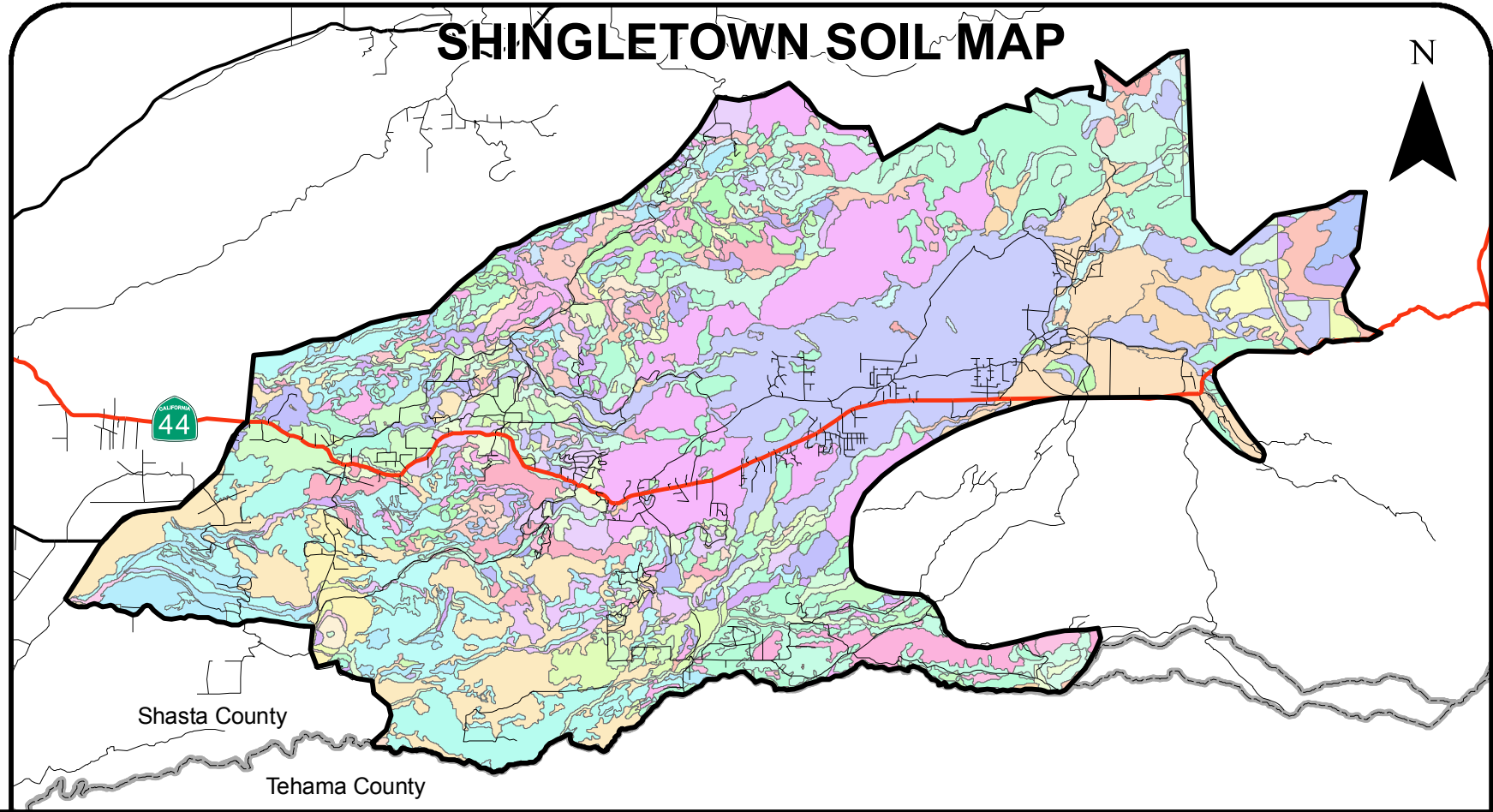


Legend

- Planning Area
- Ahart's paronychia
- California wolverine
- Central Valley spring-run chinook salmon ESU
- Pacific fisher
- Shasta clarkia
- Sierra Nevada red fox
- bald eagle
- finger rush
- northern spleenwort
- osprey
- scalloped moonwort
- silky cryptantha
- western pond turtle



SHINGLETOWN SOIL MAP



Legend

Planning Area	79	LhEsc	AbB	Ch	CrG	FdD	IdD	KhC	LcB	MeD	PcE	StC	VgB
Ca708	84	RxFsc	AbC	Ck	CsF	GbD	IdE	KhD	LdA	MeE	PfF	StD	W
116	CmDsc	WeDsc	AbD	CID	CtC	GbE2	JbD	KhE	LeB	MeG	RxF	StE	WeD
24	CmEsc	WfEsc	AcE	CmD	CtD	GdD	JbE	KID	LgE	MfE2	ShB	SuD	WfE
42	CsFsc	Ca607	Ad	CmE	CvE	Gp	JbF	KIE	LhE	NaB	SkA	SuE	WfG
59	LgEsc	AaB	Ae	CnF	CwF	GsD	JdD	LaE	LkF	NbB	SnC	TcE	WgE
		AaC	AhB	CoE	FaD	GuD	JdE	LbE	McD	NcB	SnD	TeD	
		AaD	AkB	CrE	FaE	GuE	KgF2	LcA	MdE	PcD	SnE	VeA	

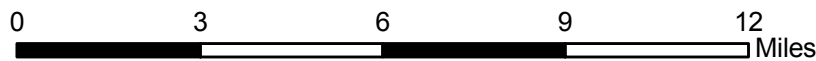
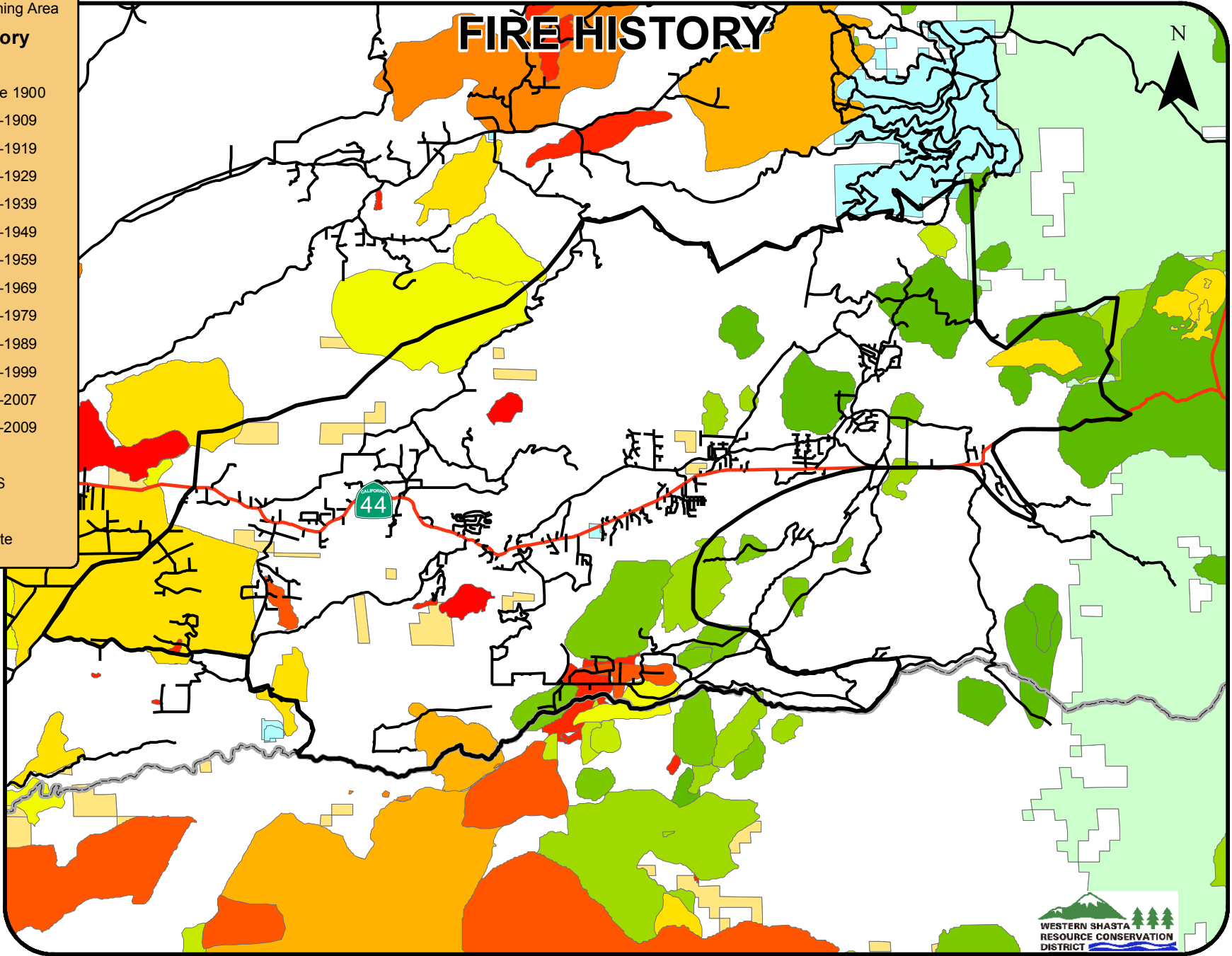


MAP 6

FIRE HISTORY

Legend

- Planning Area
- Fire History**
- Year**
- before 1900
- 1900-1909
- 1910-1919
- 1920-1929
- 1930-1939
- 1940-1949
- 1950-1959
- 1960-1969
- 1970-1979
- 1980-1989
- 1990-1999
- 2000-2007
- 2008-2009
- BLM
- USFS
- State
- Private

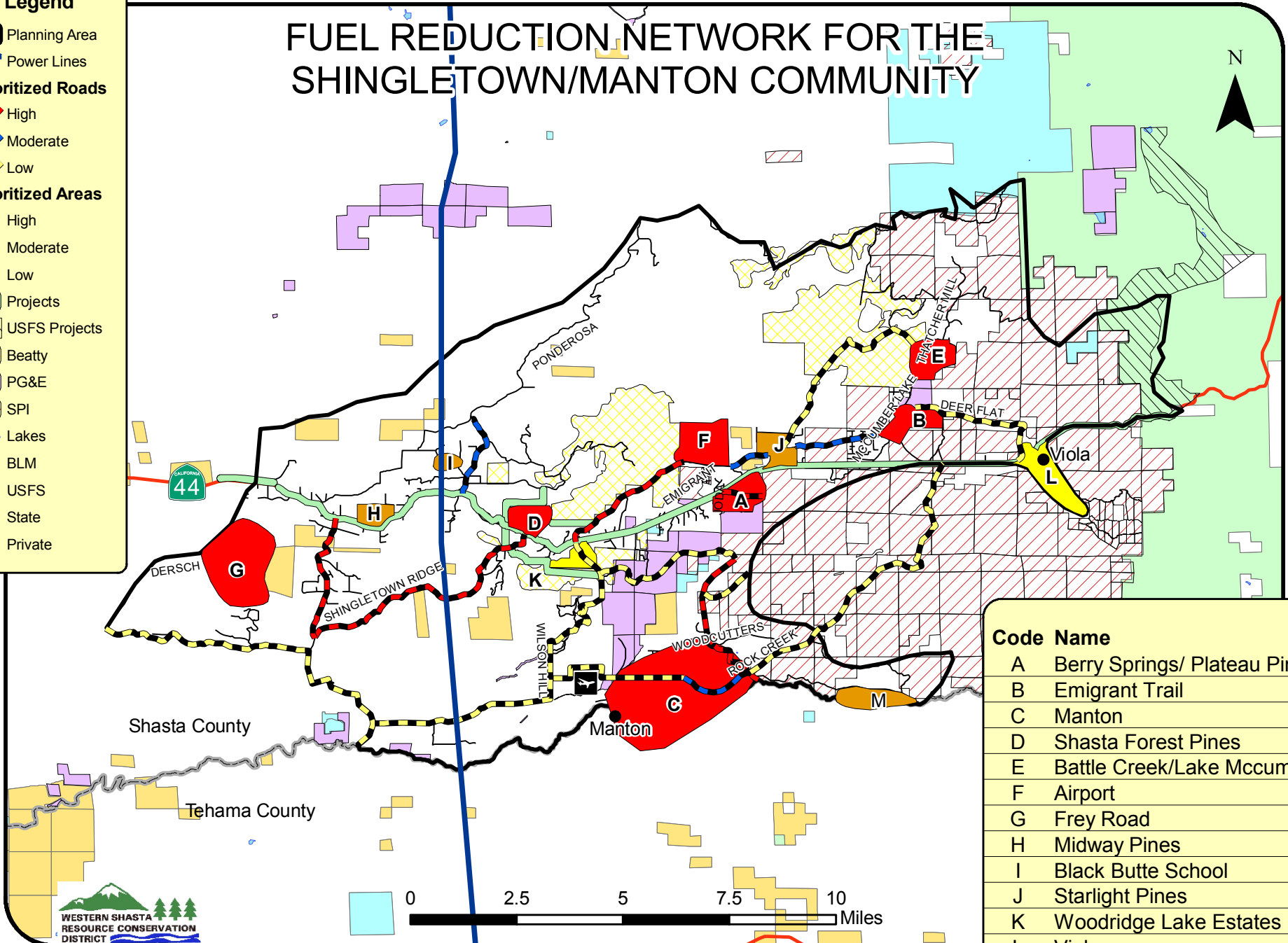


MAP 7

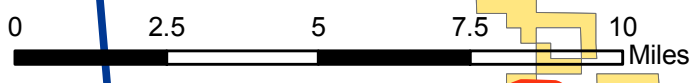
FUEL REDUCTION NETWORK FOR THE SHINGLETOWN/MANTON COMMUNITY

Legend

- Planning Area
- Power Lines
- Prioritized Roads**
- High
- Moderate
- Low
- Prioritized Areas**
- High
- Moderate
- Low
- Projects
- USFS Projects
- Beatty
- PG&E
- SPI
- Lakes
- BLM
- USFS
- State
- Private



Code	Name
A	Berry Springs/ Plateau Pines
B	Emigrant Trail
C	Manton
D	Shasta Forest Pines
E	Battle Creek/Lake Mccumber
F	Airport
G	Frey Road
H	Midway Pines
I	Black Butte School
J	Starlight Pines
K	Woodridge Lake Estates
L	Viola
M	Forward Camp

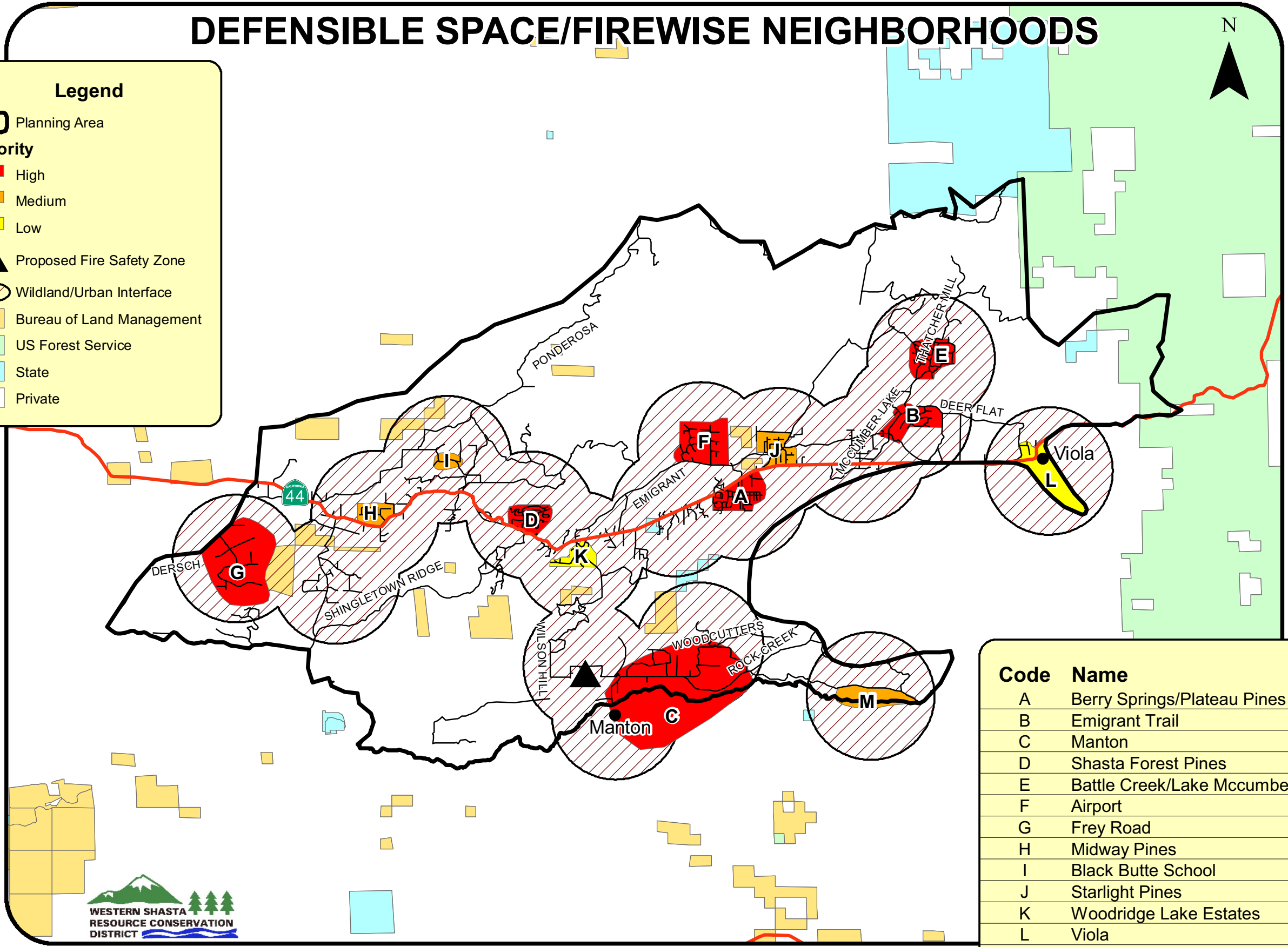


MAP 7A

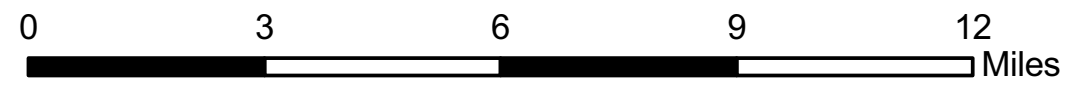
DEFENSIBLE SPACE/FIREWISE NEIGHBORHOODS

Legend

- Planning Area
- Priority**
- High
- Medium
- Low
- Proposed Fire Safety Zone
- Wildland/Urban Interface
- Bureau of Land Management
- US Forest Service
- State
- Private



Code	Name
A	Berry Springs/Plateau Pines
B	Emigrant Trail
C	Manton
D	Shasta Forest Pines
E	Battle Creek/Lake Mccumber
F	Airport
G	Frey Road
H	Midway Pines
I	Black Butte School
J	Starlight Pines
K	Woodridge Lake Estates
L	Viola
M	Forward Camp

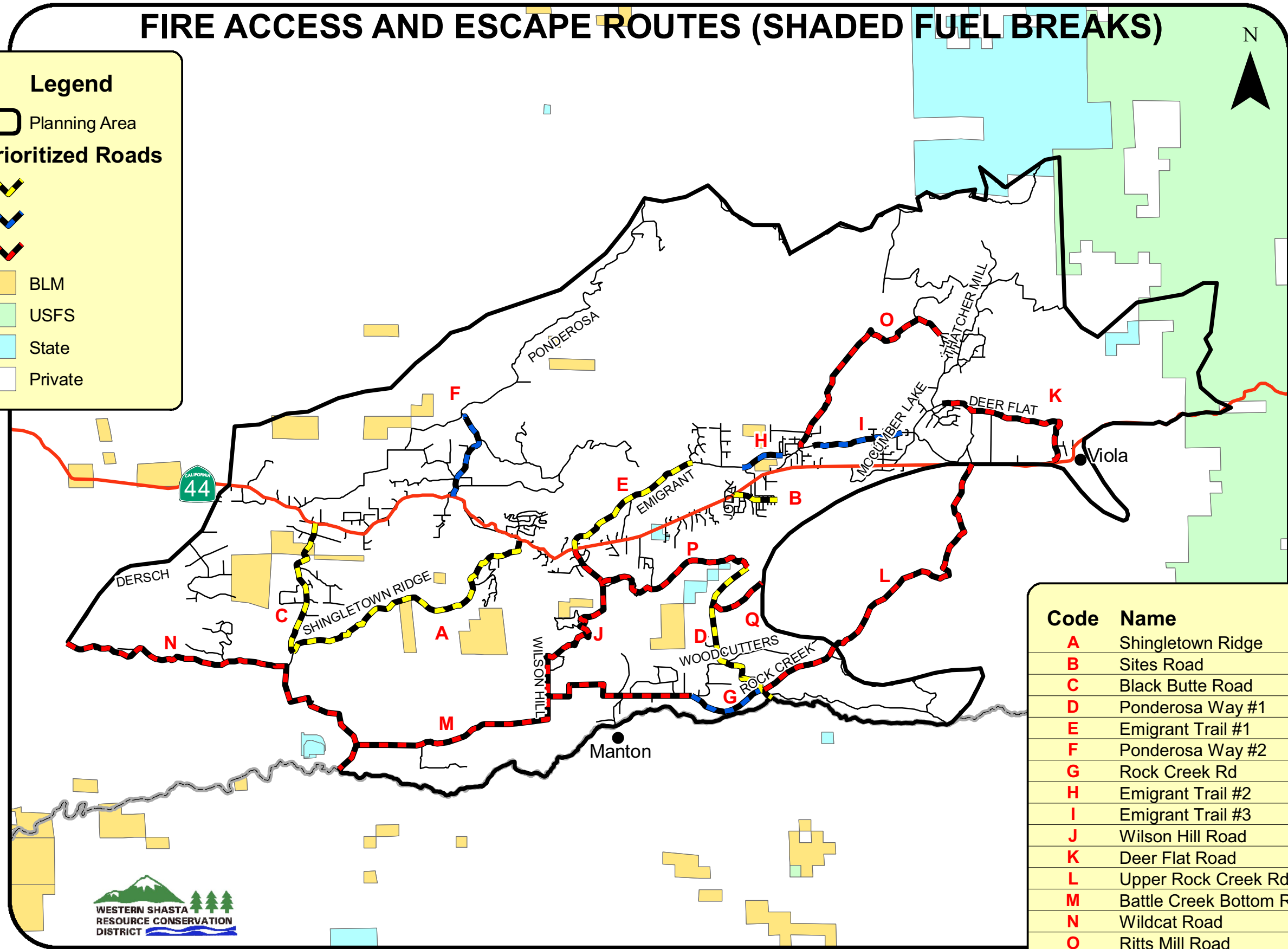


MAP 7B

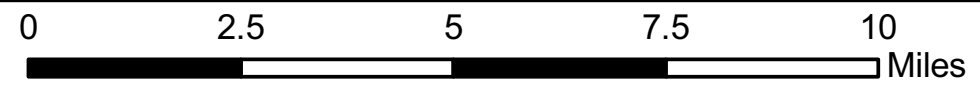
FIRE ACCESS AND ESCAPE ROUTES (SHADED FUEL BREAKS)

Legend

- Planning Area
- Prioritized Roads**
-
-
-
- BLM
- USFS
- State
- Private

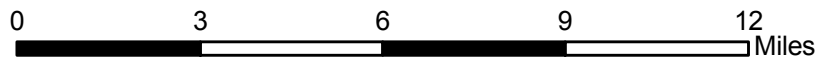
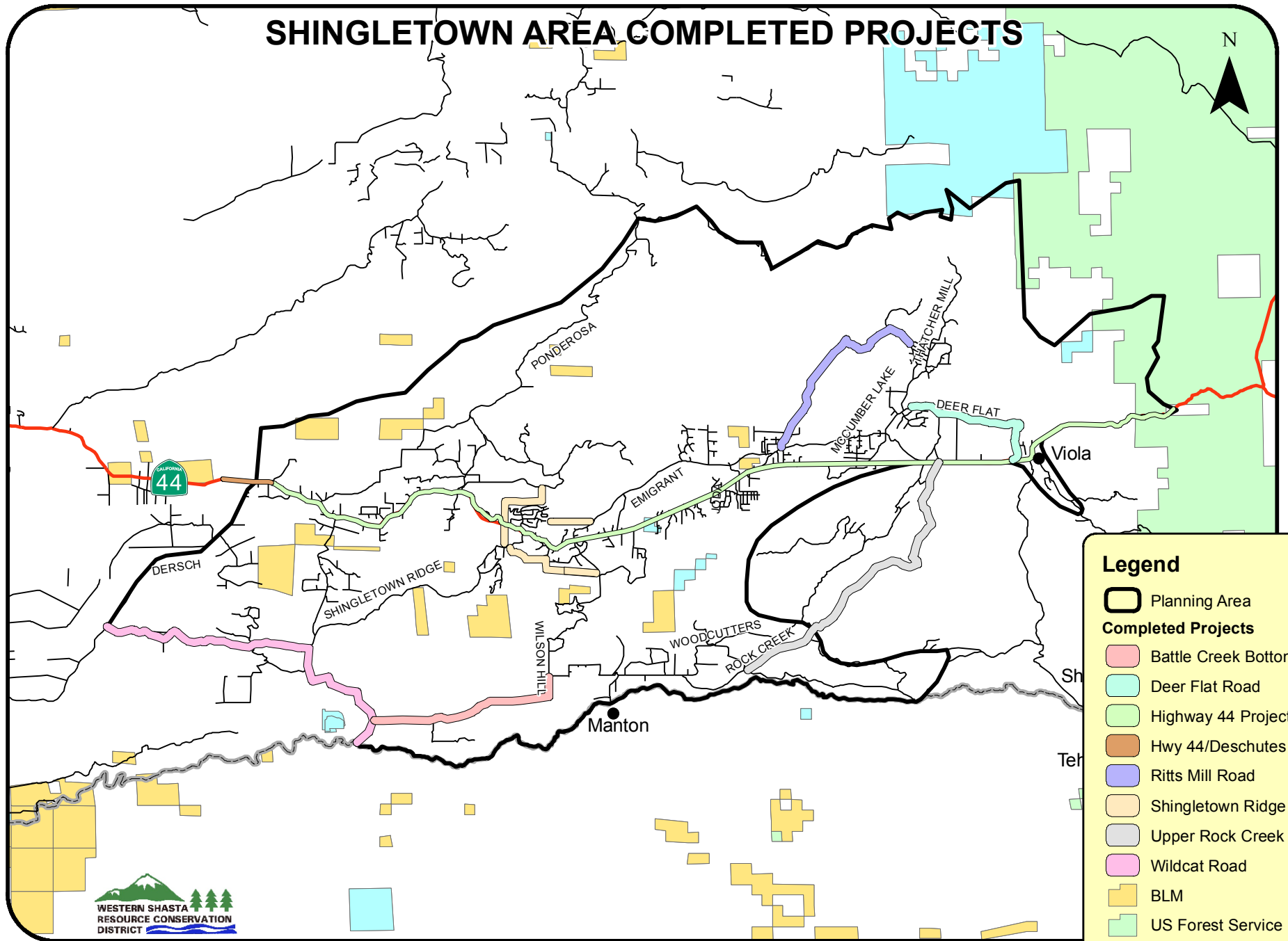


Code	Name
A	Shingletown Ridge
B	Sites Road
C	Black Butte Road
D	Ponderosa Way #1
E	Emigrant Trail #1
F	Ponderosa Way #2
G	Rock Creek Rd
H	Emigrant Trail #2
I	Emigrant Trail #3
J	Wilson Hill Road
K	Deer Flat Road
L	Upper Rock Creek Rd
M	Battle Creek Bottom Rd
N	Wildcat Road
O	Ritts Mill Road
P	Ponderosa Way #3
Q	300P3 Road



MAP 7C

SHINGLETOWN AREA COMPLETED PROJECTS



Legend

- Planning Area
- Completed Projects**
- Battle Creek Bottom Rd
- Deer Flat Road
- Highway 44 Project
- Hwy 44/Deschutes Rd
- Ritts Mill Road
- Shingletown Ridge
- Upper Rock Creek Rd
- Wildcat Road
- BLM
- US Forest Service
- State
- Private