Sherman County

Community Wildfire Protection Plan

March 18, 2009

Prepared By
Community Wildfire Protection Plan Steering Group &
Sarah J. Colvin

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I. Signature Page

The contents of this document have been agreed upon and endorsed by the Sherman County Court, the District Forester of the Central Oregon District for Oregon Department of Forestry, the Sherman County Fire Defense Board Chief, and the fire chiefs for Rufus, North Sherman County Rural Fire Protection District, Moro Rural Fire Protection District, Moro City Fire Department and South Sherman Fire Protection District. This plan is not legally binding as it does not create or place mandates or requirements on individual jurisdictions. It is intended to serve as a planning tool for the fire and land managers of Sherman County, Oregon, and to provide a framework for those local agencies associated with wildfire suppression and protection services to assess the risks and hazards associated with wildland urban interface areas and to identify strategies for reducing those risks. This is a working document to be reviewed by members of the Steering Committee and updated as necessary.

Michael Smith, Sherman County Commissioner Date

Steven Burnet, Sherman County Commissioner Date

Gary Thompson, Sherman County Judge Date

George Ponte, Central Oregon District Forester Date
Oregon Department of Forestry

John Jensen, Rufus Fire Chief Date

Rod Asher, N. Sherman Co. RFPD Fire Chief & Fire Defense Board Chief Date

Tom Macnab, City of Moro Fire Department and Moro RFPD Fire Chief Date

Lynn Fluhr, S. Sherman RFPD Fire Chief Date

I. Executive Summary

This Community Wildfire Protection Plan (CWPP) for Sherman County was initiated by the Sherman County Court (Board of Commissioners and County Judge) in the summer of 2008. Recent fires in Oregon and across the western United States have increased public awareness for the potential losses to life, property, and natural and cultural resources that fire can pose. Sherman County has major ignition sources and wildfire hazards and is considered a high risk for the occurrence of large and destructive wildfires. In the past two years (2007 & 2008), major wildland fires have resulted in the loss of five structures, one historical railroad car and more than an estimated $2.5 million dollars in agricultural crops and facilities.

This plan is a result of a county-wide effort initiated to identify and prioritize wildfire hazards and to develop a strategy to reduce those hazards. The plan will assist the county, its communities and fire districts making them eligible and securing grants and/or other funding sources to treat hazardous fuel situations and to better prepare residents for wildfires that may occur. It includes a strategy with action projects which, when implemented, will decrease the potential for large wildfires in the county and reduce the potential loss of property values and threat to human life. Once completed, this plan also meets the requirements set forth by the Office of State Fire Marshal for an invocation request of the conflagration act.

The planning process was designed to meet the guidance in the National Fire Plan and the Healthy Forest Restoration (HFRA) Act of 2003 (HR-1904). A Steering Committee with representatives from the various agencies and local jurisdictions responsible for wildfire suppression and protection worked together to guide the planning process. Numerous meetings were held during development of the draft and final plan to gain input from representative interest groups.

Goals for the planning process were:

- Involve local and state government representatives, in consultation with federal agencies and interested parties in the plan development process.
- Identify and evaluate wildfire hazards and risk factors.
- Improve wildfire response capability of fire districts and better prepare Sherman County residents to survive and save their property during a wildfire situation.
- Make the county and their respective fire districts and communities eligible for funding assistance to reduce wildfire hazards and to prepare residents for wildfire situations (National Fire Plan, Healthy Forest Restoration Act, FEMA and other sources).
- Develop and prioritize recommended strategies for private, state, and federal lands to reduce hazardous fuel situations and reduce the risk for damage to lives and property from wildfires.
- Recommend measures that homeowners and communities can take to reduce the ignitability of structures in the county.
- Complete the plan by the end of 2009.

This plan describes the various agencies and local jurisdictions responsible for wildfire protection and explains the pertinent programs and laws associated with wildfire issues in the

county. Section V gives an overall assessment of the wildfire risk in the county and considers and rates: ignition risk, wildfire hazards, values protected, protection capability, and structural vulnerability. Wildland Urban Interface boundaries (WUIs) are established for the major population centers.

Section VI of the plan addresses structural vulnerability and ignitability and offers advice to homeowners on how to reduce the risk to their home and other property from the threat of a wildfire. Homeowners who follow the suggestions will reduce risk of property loss, personnel injury or death during a wildfire event.

Section VII describes action projects designed to reduce the wildfire risk for the county as a whole, and for specific zones and communities. Priorities for hazard fuel treatment are given. The development of defensible space around homes in WUI areas is considered one of the highest priorities for hazard fuel treatment. Within WUI areas, homes on the perimeter of the communities are very high priority for hazard fuel treatment. Other high priority fuel treatment projects are vacant lots within city limits.

While the Sherman County Community Wildfire Protection Plan provides a foundation and resources for understanding wildland fire risk and opportunities to reduce potential losses from wildland fire, individual communities, fire districts and neighborhoods can take local action by developing community-specific fire plans or by participating in county-wide activities for prevention and protection. With formal adoption of this plan, Sherman County is more competitive for funding that may assist with plan implementation. Furthermore, adoption of this plan highlights the importance of partnerships between fire districts, local government, community-based organizations and public agencies. The result of these partnerships brings direction to the federal agencies for which communities are a priority for fuel treatment.

II. Introduction

The primary purpose for the Sherman County Community Wildfire Protection Plan is to identify and prioritize areas in the county with high levels of wildfire hazards and to develop a strategy to reduce these hazards. Completion of the plan will make the county and its communities and fire districts eligible for National Fire Plan grants and other funding sources to treat hazard fuel situations and to better prepare residents for wildfires that may occur. The plan describes projects which, when implemented, will reduce the potential for large wildfires in the county. It offers a strategy and methods designed to reduce the potential loss of property values and threat to human life from wildfires.

This Community Wildfire Protection Plan for Sherman County was prepared with the assistance of a National Fire Plan Grant from the Oregon Department of Forestry and funding from Oregon Emergency Management. The planning process was designed to meet the guidance in the National Fire Plan and the Healthy Forest Restoration Act of 2003 (HR 1904).

Sherman County contains a diverse set of wildfire hazard and risk situations. Conditions throughout the county are conducive to large and fast moving wildfires. Several Wildland Urban Interface[1] (WUI) areas exist with the potential for property and human life loss during a wildfire event. Following are conditions and concerns found in portions of the county which contribute to the wildfire threat and potential for catastrophic losses:

- The John Day and Deschutes Rivers/Canyon with numerous side canyons, all with very steep slopes.
- Large remote areas with no or limited vehicle access.
- Residential developments next to areas with heavy fuel loads. Some homes in these areas do not have adequate defensible space around them.
- Climatic and topographic conditions conducive for large wildfires. Hot and dry conditions exist during the fire season throughout the county. Some portions, especially in the Columbia River Gorge area, have frequent high winds which can contribute to fast moving fires that are difficult to control. Much of the county has moderate to steep slopes which add to the rate of wildfire spread and suppression difficulty.
- Large agricultural areas planted to mainly grain plus significant Conservation Reserve Program (CRP) fields. Both of these agricultural types have the potential for fast moving fires which can destroy valuable crops in short periods of time.
- Risk factors for starting wildfires. A major railroad and Interstate Highway along the Columbia River represent significant ignition sources for wildfires. Lightning has ignited frequent fires in the recent past. Power lines, debris burning and equipment use add to the risk. Most wildfires in the county are human caused.
- All volunteer fire districts with limited resources.

Sherman County has experienced serious wildfires in the past and there will continue to be fires in future years. The outlook is for more and larger wildfires, unless an active and continuing program of hazard fuel reduction and public awareness is undertaken. Each year the existing vegetation continues to grow and it may just be a matter of time before the county experiences a catastrophic wildfire that will destroy homes and possibly, take human lives. The time to act is now and this plan will be the basis for needed action to reduce the growing threat.

The planning area for the purpose of this study includes the entire area within Sherman County.

[1] "The urban-wildland interface community exists where humans and their development meet or intermix with wildland fuel." This definition is found in the Federal Register Vol. 66, Thursday, January 4, 2001, Notices; and in "Fire in the West, the Wildland/Urban Interface Fire Problem," A Report for the Western States Fire Managers, September 18, 2000. http://www.bianifc.org/fuels/fuels_pa.html.

III. Planning Process

In the summer of 2008, the Sherman County Court decided to develop a Community Wildfire Protection Plan for the county. The County hired a contractor to help guide the planning process. The planning process used was patterned after the handbook for Wildland-Urban Interface Communities titled, Preparing a Community Wildfire Protection Plan. The following steps were followed:

A. Step one: Convene Decision Makers

A Core Team designed to act as a steering committee was formed to help develop the plan. The team met several times during the planning process to review and critique planning documents. The Core Team consisted of representatives from the following entities:

- Fire Districts and Fire Departments
- Sherman County
- Oregon Department of Forestry
- Oregon State Fire Marshal's Office
- US Army Corp of Engineers
- Farming/Ranching community
- Oregon State Parks
- Oregon Department of Transportation
- Sherman County Emergency Management
- Soil and Water Conservation District
- Bureau of Land Management (BLM)
- Oregon Department of Fish and Wildlife

B. Step Two: Establish Planning Area Boundary and Planning Goals

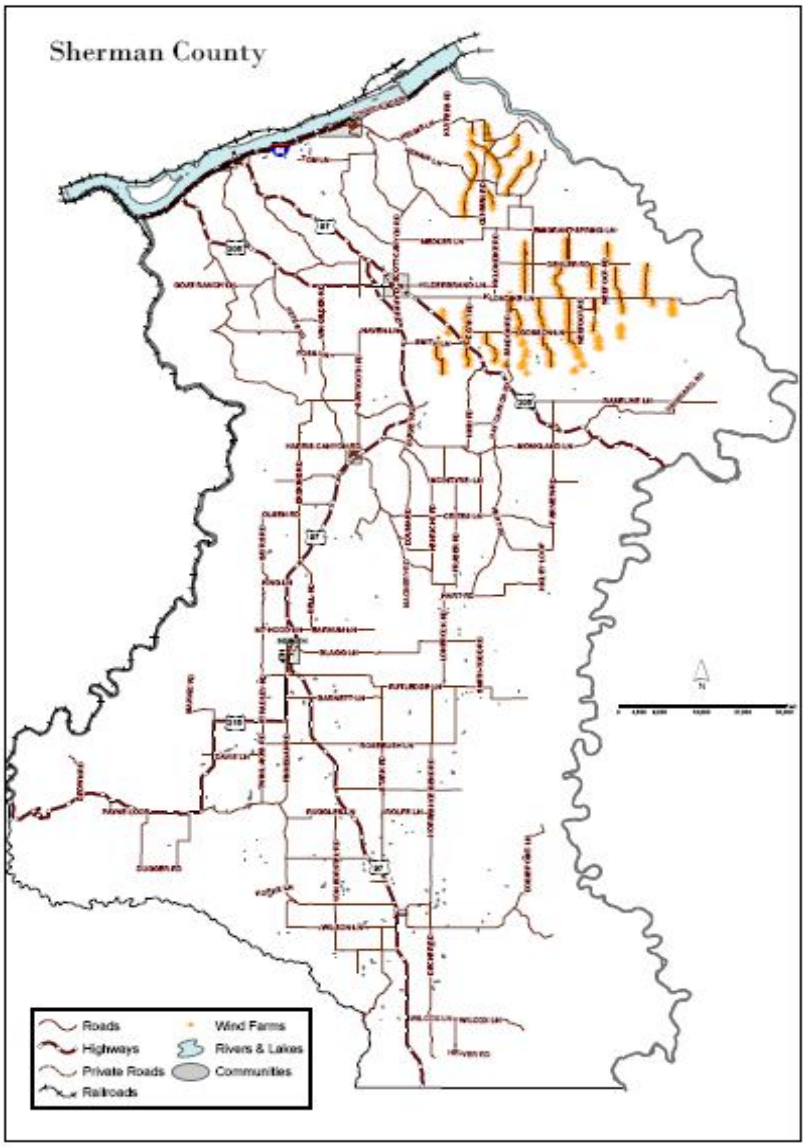
The Core Team decided the planning area would include the entire county (831 square miles). The following goals for the Community Wildfire Protection Plan were agreed to by the Core Team:

- Identify and evaluate wildfire hazards and risk factors.
- Improve wildfire response capability of fire districts and better prepare Sherman County residents to survive and save their property during a wildfire situation.

- Make the county and their respective fire districts and communities eligible for funding assistance to reduce wildfire hazards and to prepare residents for wildfire situations (National Fire Plan, FEMA and other sources).
- Develop recommended strategies for private, state, and federal lands to reduce hazardous fuel situations and reduce the risk for damage to lives and property from wildfires.

C. Step Three: Establish a Community Base Map

A series of county maps were developed using the Sherman County GIS mapping system. A Base Map of the county is shown first as our starting point as we then developed other maps showing historic wildfire occurrence and Wildland Urban Interface (WUI) boundaries were developed and used during plan development and will be shown later in the document.



Map #1. Sherman County Base Map (Also refer to Appendix D)

D. Step Four: Wildfire Risk Assessment

A wildfire risk assessment was completed for the county. Methodology for the Risk Assessment was developed by the Oregon Department of Forestry[2]; it involves five factors: Risk, Hazard, Values, Protection Capability and Structural Vulnerability. The methodology includes a scoring system for each factor. The scores are cumulative and the total score for individual communities or zones indicate a low, moderate, or high overall Wildfire Risk rating.

The following steps were taken in the wildfire risk assessment:

- Available maps were used to assess the hazardous fuel situation and wildfire risk in, and adjacent to, communities within the study area. Field trips to verify conditions on the ground were conducted. Ideas and input from community members, especially fire district representatives, were an important part of the assessment.
- Specific wildfire hazards were identified within the study area.
- A Wildland Urban Interface (WUI) zone was identified and mapped for the larger communities.
- Major risk factors which cause wildfires to start within the study area were identified.
- Wildfire occurrence history was mapped and described.
- Available resources and resource needs by fire district were identified.

E. Step Five: Establish Community Priorities and Recommendations

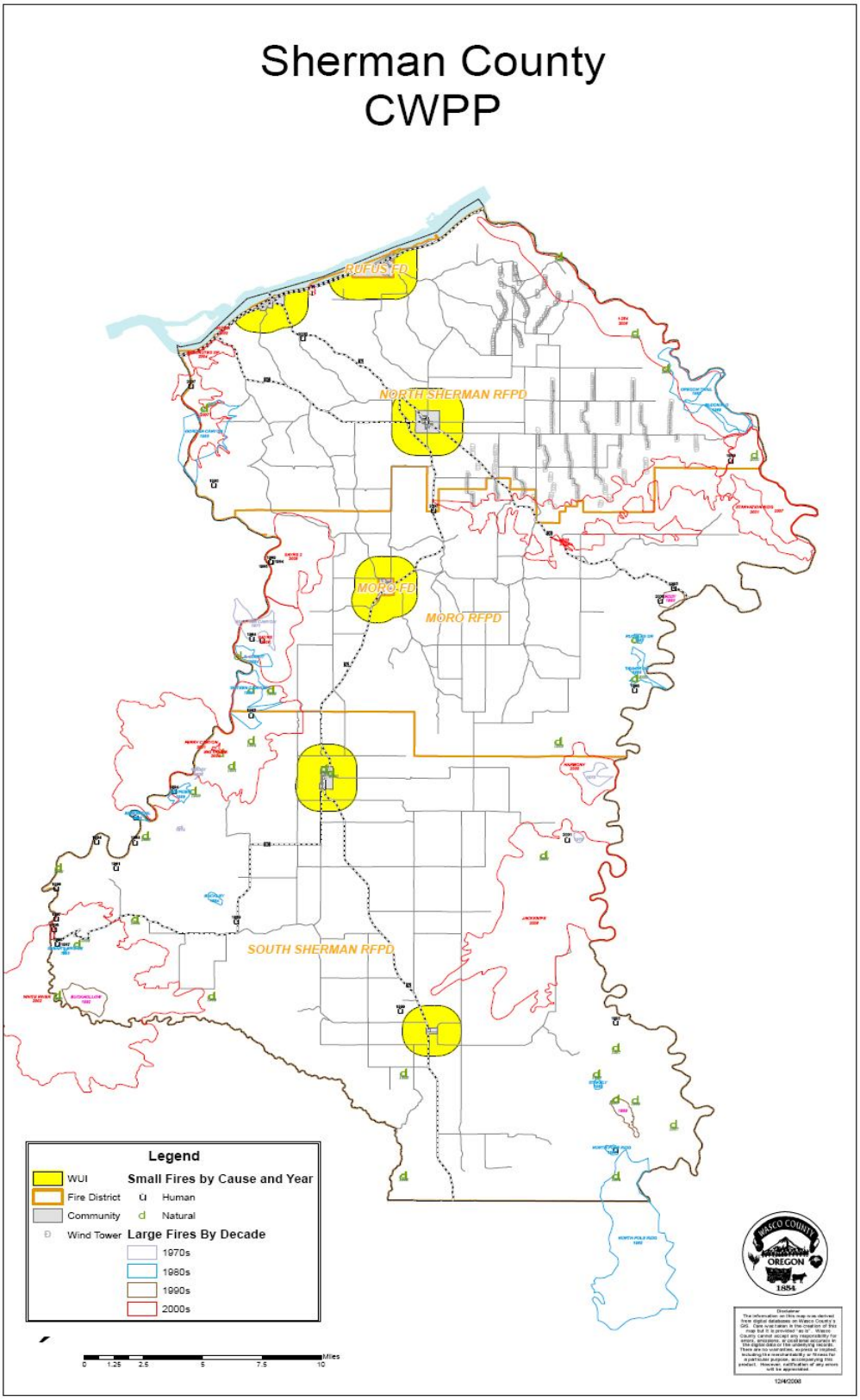
The Core Team considered the results of the wildfire risk assessment and then established a list of priority projects within the planning area. The type of projects considered includes:

- Development of fire safety standards that meet current state standards;
- Complete road, culvert and stream crossing assessments that identify evacuation hazards;
- Ingress and egress concerns;
- Structural material hazards.
- Fire district equipment needs;
- Methods to distribute wildfire protection information to homeowners and recreation users;

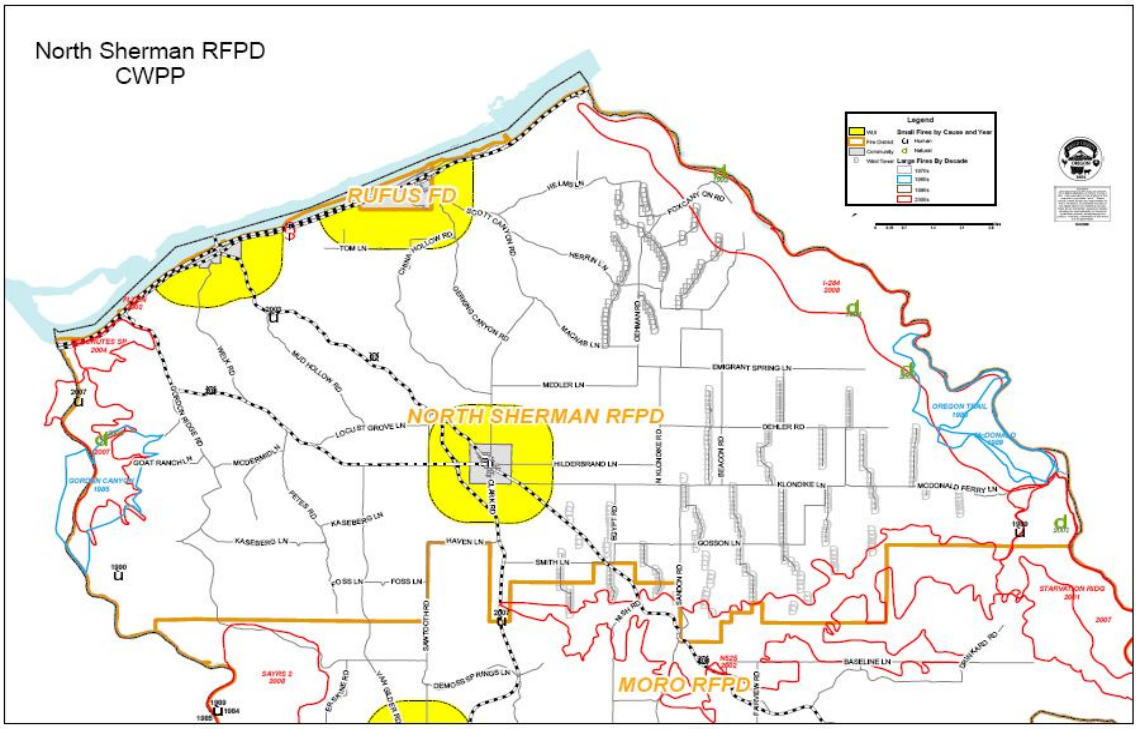
Criteria used in selecting priority projects include:

- Likelihood for acceptance by participants;
- The best chance for successful implementation;
- The best cost-benefit ratio;
- Likelihood of getting funding assistance for implementation.

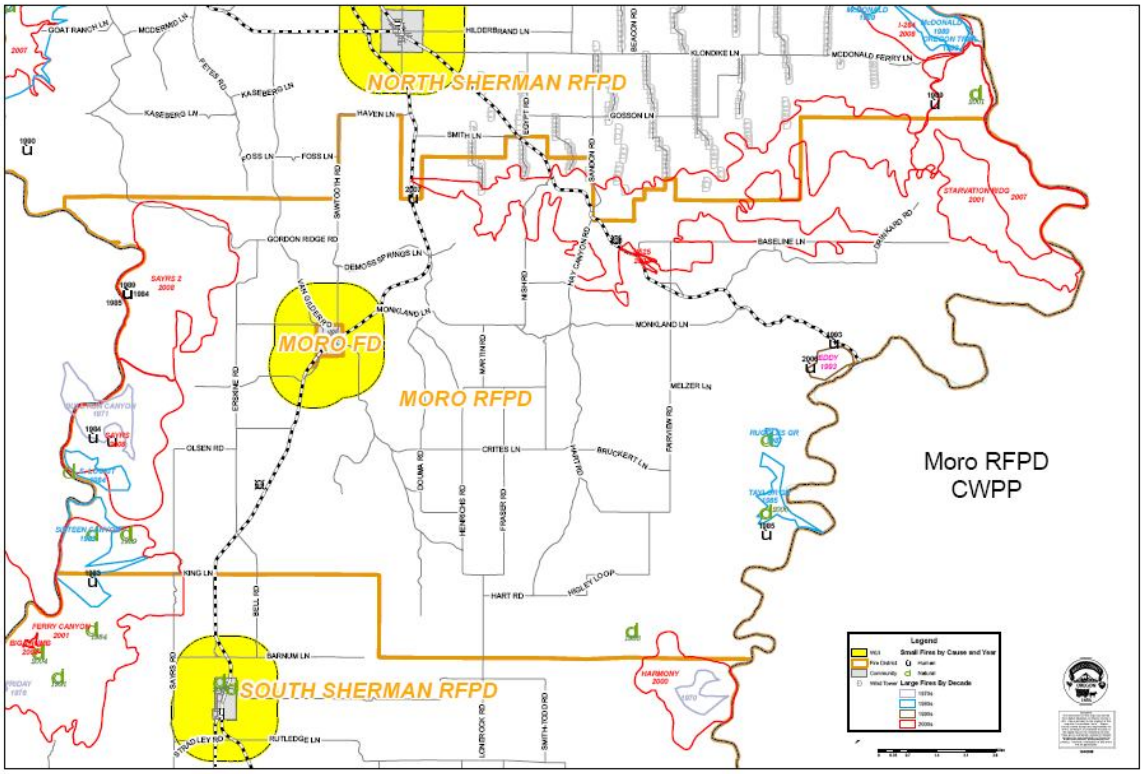
[2] Identifying and Assessment of Communities at Risk in Oregon, draft prepared on October 18, 2004.



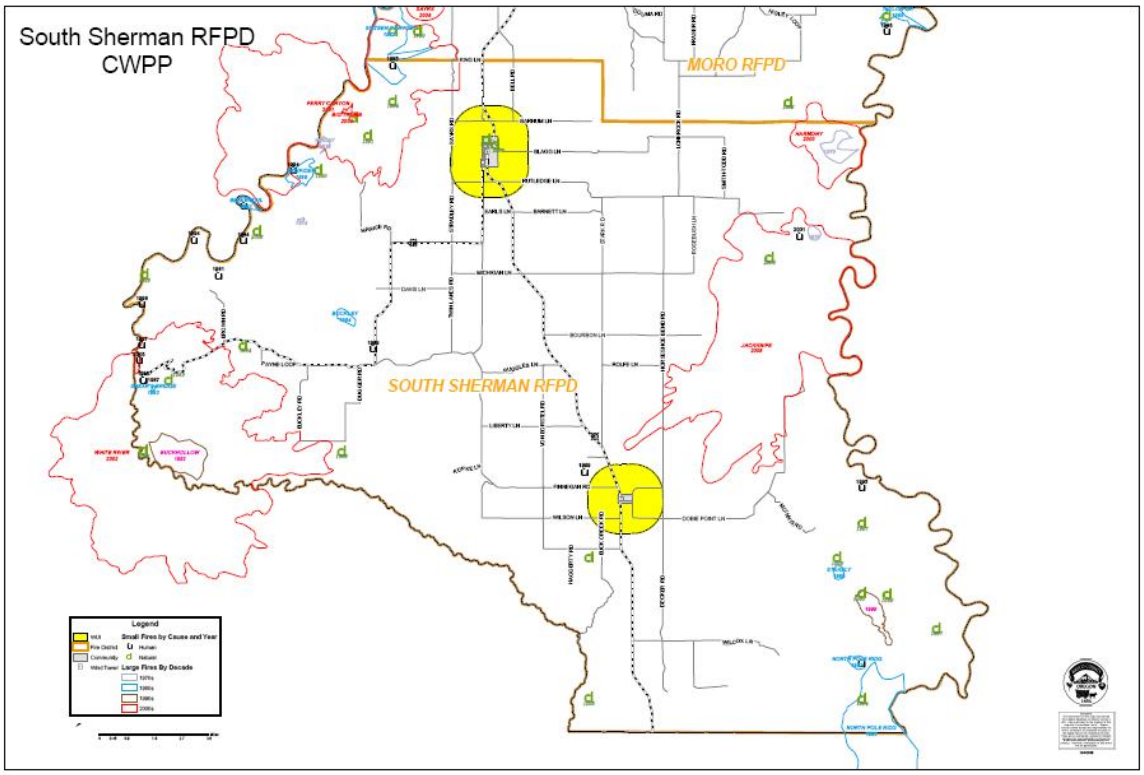
Map #2. WUI Areas (Also refer to Appendix D)



Map #3. (Also refer to Appendix D)
North Sherman Rural Fire Protection District and City of Rufus WUI and fire history



Map #4. (Also refer to Appendix D)
Moro Rural Fire Protection District and City of Moro WUI and fire history.



Map #5. (Also refer to Appendix D)
South Sherman Rural Fire Protection District WUI and fire history.

F. Step Six: Collaboration and Public Input

A strategy to collaborate and communicate information for the plan was devised. The Core Team representing various interests involved with wildfire protection at the local, state and federal level met several times during the planning process to help form the plan. Public meetings designed for the general public were not specifically held as it was a general invitation to participate and meeting dates and times were posted in the local newspapers serving Sherman County, e-news and the Soil and Water Conservation District newsletter. Members of the steering committee, fire district personnel and those other group contacts felt they adequately represented the views of the general public. Comments were considered and incorporated in the plan throughout the process.

Participants in the planning process include:

Shawn Payne, Sherman County Emergency Management
Keith Brown, Office of State Fire Marshal
Donna Disch, Office of State Fire Marshal
Ann Walker, Oregon Department of Forestry/Western Governors' Association
Jen Warren, Oregon Department of Forestry

Alex Robertson, BLM
Lisa Clark, BLM
Rod Asher, Fire Defense Board and N. Sherman Co. RFPD Chief and County Weed Master
Glenn Fluhr, South Sherman RFPD Assistant Chief
Ron Jensen, City of Rufus and Rufus FD Assistant Chief
John Jensen, Rufus FD Chief
Tom Macnab, City of Moro FD and Moro RFPD Chief
Greg Webb, US Army Corp of Engineers
Jerry Balcom, US Army Corp of Engineers
Jake Firle, US Army Corp of Engineers
Tycho Granville, Wasco County GIS Coordinator (Contracted with Sherman County)
Bob Harmon, Oregon Department of Transportation and North Sherman Co. RFPD
Jim Anderson, Oregon State Parks
Sarah Colvin, Colvin Consulting
Keith Kohl, Oregon Department of Fish and Wildlife

IV. County Profile

A. General Description

Sherman County, Oregon lies between the deep canyons of the John Day River on the east and the Deschutes River on the west in north central Oregon. The mighty Columbia River forms the boundary on the north. Much of the boundary on the south is defined by the rugged canyons of Buck Hollow, a tributary of the Deschutes.

The open rolling hills and steep narrow canyons of the county's 831 square miles, approximately 20 miles wide and 42 miles long, range in elevation from 185 feet on the Columbia River to 3,600 feet on the plateau in the south.

The soil is mostly loess (wind-blown glacial silt) over residual soil from the underlying basalt with interspersed layers of volcanic ash.

Six small towns – Biggs, Rufus, Wasco, Moro, Grass Valley and Kent – provide basic services for the 1,750 residents of the County. Long-gone, sometimes remembered hamlets, sites of country schools or rail sidings, include Rosebush, Erskine, Bourbon, DeMoss, Rutledge, Wilcox, Gorman, Gordon, Grover, Fargher, Emigrant Springs, Early (for its early spring garden produce on the John Day River), Miller, Monkland, McDonald or McDonald's Ferry (at the John Day River Oregon Trail Crossing), Klondike, Rutledge, Bigalow, Harmony and Thornberry. The overall average is 2.3 persons per square mile.

The Sherman Agricultural Research Station is located on 234 acres that serve field research needs of scientists from the Oregon State University campus in Corvallis and the Pendleton area Columbia Basin Station. Current research includes that for grain varieties, soil fertility for cereal crops, canola, mustard, other alternative crops, weed management, disease and nematode management, direct seeding practices and the use of soil conservation practices.

Wind farms in the northeast section of Sherman County serve as an additional economic driver. Currently, wind fuels the 321-megawatt Klondike Wind Farm located four miles southeast of Wasco, as well as the 450-megawatt Biglow Canyon Wind Farm just to the north. The first three phases of the Klondike project, owned by Iberdrola Renewables, uses 44 Siemens 2.3 MW wind turbines and 146 GE 1.5 MW wind turbines. These wind farms supply clean, renewable electricity to Portland General Electric, Bonneville Power Administration, the Eugene Water & Electric Board and others. Modern wind turbines stand about 400 feet high from the bottom of the tower to the tip of the highest blade.

The economy is based on wheat, barley, cattle and tourism. Volunteers provide many important services including rural and city fire protection, rescue and medical response units, local government, youth activities and educational support.

In the year 2006 there were 953 housing units in the county. The population of 1750 people has dropped 12.2% from April 2000 to July 2006. The median household income in 2004 was $38,442.

The county seat is Moro it’s about 121 miles east of Portland. Moro’s elevation is about 1,807’ feet.

Fuel types are generally similar throughout the county but there is considerable variation in elevation and percent slope. Most of the county is dominated by grass vegetation with scattered brush. No timberland exists in the county. High and dry on the Columbia Plateau, Sherman County’s most important crop is winter wheat. Of the county's 531,200 acres, 304,138 are tillable. Farms average 3,500 acres and the average yield is 42 bushels per acre. Soft white wheat is most common and is used for pocket or flat breads, crackers, cookies, cake, pastries and noodles.

Sherman County lies in the immediate “rain shadow” east of the Cascade Mountain Range. The prevailing west winds blow moisture-laden clouds up over the mountains, forcing them to release their moisture and leaving them dry as they hit the lower elevation of the county’s rolling hills. With only 11 inches of annual precipitation, the farmers employ a summer fallow system of farming to permit dry land wheat and barley production. Half the farm is typically laid out of production (fallow) allowing it to store moisture for the next crop. Employing conservation practices allows the land to capture and store about 42% of the moisture during the fallow period so the next crop is raised using two years of moisture. Very little farmland is irrigated.

Soft white winter wheat dominates the scene with about 110,000 acres planted each fall and harvested the following July and August. Spring barley and spring wheat may be planted in the spring and are used primarily as a disease and weed management tool. Farmers continue to adopt precision farming practices and direct seeding technology. Wheat accounted for 83% of the farm gate value in Sherman County in 2005.

Grain is trucked from the harvest field to cooperative elevators and to barge and rail shipping facilities on the Columbia River at Biggs for transport to Portland. The price the farmer receives is the Portland price minus the transportation to Portland and related storage and handling fees. Supplementary farm income comes from beef cattle which graze the 223,000 acres of native grasses on early summer rangelands and the wheat stubble in the fall. Some farm families have small numbers of horses, hogs, goats and sheep. Other crops include alfalfa for hay, plus a developing farm industry of grapes and sweet cherries and minor specialty crops such as garlic, mint, sunflowers, onion seed, carrot seed, peas and oilseeds. Fee hunting and guided fishing and hunting are growing enterprises.

Government conservation programs, such as the Conservation Reserve Program (CRP), allow the establishment 76,000 acres which cannot be grazed or harvested. These programs bring an additional income to farmers.

Rolling terrain and agricultural fields

Cultivated farm lands generally have gentle slopes. A large portion of the remainder of the county contains moderate to steep slopes and usually has very limited access. Slopes in excess of 40 percent are common along the John Day and Deschutes Rivers, and their side canyons.

The major transportation corridors are the I-84 Interstate Highway and the Union Pacific Santa Fe Railroad, both parallel the Columbia River. State Highway 97 is the major north-south route connecting Biggs with Kent, while State Highway 206 connects Wasco with communities to the east.

The Deschutes and John Day Rivers are a major recreation attraction for boaters, fishermen, and hunters. Summer time use is often heavy with users coming from a regional and national base. Both day use and overnight camping occurs. Access along the river route is very restricted. Much of the land within the Deschutes and John Day Canyons are publicly owned and managed by appropriate agencies the Bureau of Land Management (BLM), the Oregon Parks and Recreation Department, Oregon Department of Fish and Wildlife and/or the U.S. Army Corp of Engineers.

B. Wildfire Protection

Sherman County has three Rural Fire Protection Districts while the cities of Rufus and Moro each have their own Fire Departments. The districts and fire departments are all served by volunteers. The Moro Fire Department and the Moro Rural Fire District operate essentially as one department and share the same fire chief and fire fighters.

The North Sherman County Rural Fire Protection District contains about 140,667 acres, Moro Rural Fire Protection District and city of Moro contains about 136,297 acres (Moro RFPD has 135,981 and Moro FD has 316), the city of Rufus contains about 869 acres, while the South Sherman Fire Protection District has 251,028 acres. Sherman County has no structurally or wildland unprotected areas within its boundaries.

The North Sherman County Rural Fire Protection District has 7 volunteers and the following firefighting equipment:

- 2 Type 1 engines (750 gallon and 500 gallon capacity)
- 2 Type 3 engines (500 gallon capacity each)
- 2 Type 6 engines (light brush vehicle and rescue vehicle 250 gallon capacity each)
- 1 Type 2 water tender, (3500 gallon capacity)
- 1 Command vehicle -4x4 Jeep Cherokee

The Moro Rural Fire Protection District and city of Moro have 10 volunteers and the following firefighting equipment:

- 1 Type 1 engine
- 1 Type 4 engine
- 1 Type 6 engine (light brush vehicle)
- 1 Type 2 water tender, (3000 gallon capacity)

1 Rescue/command vehicle

The city of Rufus has 4 volunteers and the following firefighting equipment:

1 Type 1 engine (1000 gallon capacity)
2 Type 6 engines (light brush 800 gallon capacity and 250 gallon capacity)
1 Type 2 water tender (4400 gallon capacity)

The South Sherman Rural Fire Protection District has 17 volunteers and the following equipment:

2 Type 1 engines (1000 and 500 gallon capacity each)
1 Type 2 engine (730 gallon capacity)
1 Type 3 engine (300 gallon capacity)
2 Type 6 engines (brush vehicles with 250 gallon capacity each)
2 Type 2 water tenders (3500 and 1800 gallon capacity each)
1 Support/command 4x4 pickup

BLM Resources relative to Sherman County:

2 Type 6 engines stationed in Grass Valley
1 Type 6 engine (Humvee) stationed in Madras, Jefferson County approximately 1 hour from the southern border of Sherman County.
1 Type 4 heavy engine stationed in Madras, Jefferson County approximately 1 hour from the southern border of Sherman County.
1 Battalion Chief with Staff vehicle in Grass Valley

Additionally, these resources cannot be relied on as being readily available in the summer months due to the 14 county BLM response throughout the Central Oregon Fire Management Service area.

Oregon Department of Forestry has no responsibility for protection in Sherman County although they do have mutual aid with BLM.

Most of Sherman County has an Insurance Service Organization (ISO) varying rating score.

- The City of Moro has a rating of 5
- Moro Rural Fire Protection District has a rating of 9
- The City of Rufus has a rating of 8
- North Sherman County Rural Fire Protection District has a rating of 5 in the city and 9 in the rural areas
- South Sherman Rural Fire Protection District has a rating 6 in the city of Grass Valley

The ISO collects information on community fire protection capability and assigns a rating score based on the effectiveness and quality of the protection provided. Rating scores range from one to ten with a score of one indicating exemplary public protection and a 10 signaling the program does not meet minimum standards. A lower rating for community members is important from

the standpoint that fire insurance costs would be lower as compared with a community with a higher rating.

Several mutual aid agreements are in effect for Sherman County:

All Sherman County fire agencies have mutual aid agreements with fire agencies from Sherman County, Gilliam County, Wasco County, and BLM. North Sherman RFPD has a mutual aid agreement with Klickitat County across the Columbia River in Washington State. South Sherman RFPD has a mutual aid agreement with Shaniko.

Sherman County has its own fire defense board. The fire defense board Chief is Rod Asher from North Sherman RFPD. The BLM is a stakeholder to this Fire Defense Board. A separate mutual aid agreement with the Sherman County agencies and other fire districts also exists.

There is also a verbal cooperative agreement with the County Road Department. This department could supply road graders, dozers and water tenders for fire suppression activities.

C. Emergency Evacuation Routes

Evacuation routes during a wildfire emergency depend on the specific situation and would be determined by the State Police and County Sheriff personnel at the time of the emergency. For the city of Rufus, Scott Canyon Road provides escape routes to the south while I-84 offers escape to the east and west. The community of Biggs Junction, State Highway 97 provides escape routes to the north and south, while I-84 and State Highway 206 offers escape to the east and west. The city of Wasco, Scott Canyon Road provides an escape route to the north, Clark Road provides an escape route to the South, Armsworthy and Church Streets provide routes to the west, while Hilderbrand Lane and Klondike Lane provide routes to the east. The city of Moro, State Highway 97 Main Street provides routes to the north and south, while 1st Street Lonerock Road provides a route to the east and 4th Street provides a route to the west. The city of Grass Valley State Highway 97 Mill Street provides routes to the north and south, while North Street to Blagg Road provides a route to the east and Krusow Street to 2nd Street to State Highway 216 provides a route to the west. The community of Kent, State Highway 97 provides routes to the north and south, while Decker Road provides a route to the east and just north of town, Finnigan Road provides a route to the west.

V. Wildfire Risk Assessment

This chapter presents the methodology and results of the Wildfire Risk Assessment.

A. Methodology

A Wildfire Risk Assessment based on criteria and a rating process established by the Oregon Department of Forestry[3] was completed. The assessment is designed to assign a rating of Low, Moderate, or High Overall Risk for the planning area. The rating is based on scores assigned to five risk factors. The five factors considered were: Ignition Risk, Wildfire Hazards, Protection Capability, Values Protected and Structural Vulnerability. Each factor has from two to five criteria designed to better describe it. These criteria were given weighted scores established by the ODF. Criteria scores were added giving a total score for the factor. The scores for the factors were then added and used to establish an overall rating of Low, Moderate, High or Extreme. In summary, the assessment used the following process:

- The area was assessed separately based on five factors;
- Each factor has from two to five criteria to better describe it;
- Each criterion was given a score based how important it was.
- A rating of Low, Moderate, High or Extreme was assigned to each factor based on the cumulative scores of the criteria involved;
- The cumulative scores of the four factors determined the Overall Risk rating of Low, Moderate, or High for the area.

B. Assessment

Summary

The wildfire risk assessment was completed on a county-wide basis in three different breakdowns. While conditions do vary throughout the county, the differences were significant enough to warrant breaking the planning area into zones. The zones were assessed as Incorporated Cities, Rural areas and Unincorporated areas such as Biggs and Kent. Vegetation throughout the county consists mainly of grass/sagebrush type with scattered cultivated fields. There are virtually no native trees within the county. Much of the farmland is in dry-land crops with a few irrigated fields along creek bottoms. Elevations range from a few hundred feet along the Columbia River to the north to around 3,600 feet maximum further south on the plateau. The west boundary consists of the Deschutes River with steep slopes rising above. The drainage (aspect) is mainly to the west into the Deschutes River. The east boundary consists of the John Day River with steep slopes rising above. The drainage (aspect) is mainly to the east into the John Day River. There are several significant risk factors including the railroad and interstate highway along the Columbia River. Housing density is low with the exception of the incorporated cities of Rufus, Wasco, Moro, Grass Valley and communities of Biggs Junction and Kent. Suppression response time to most areas in the county is more than 20 minutes. The overall wildfire risk for the county is considered high based on the following factors and ratings:

[3] Identifying and Assessment of Communities at Risk in Oregon, October 18, 2004

I = Incorporated Areas (Cities), R = Rural Areas, U = Unincorporated Areas (Biggs & Kent)

1. What is the likelihood of a fire occurring?

	I*	R*	U*
Fire occurrence (per 1000 acres per 10 years) 0 – 0 .1 (low) 5 points 0.1 – 1.1 (moderate) 10 points 1.1+ (high) 20 points	**5**	**10**	**5**
Ignition Risk – Home Density (homes per 10 acres) 0 - 0 .9 (rural) 0 points 1 – 5 (suburban) 5 points 5.1+ (urban) 10 points	**10**	**0**	**5**
Ignition Risk – Other Factors Present < 1/3 present 0 points 1/3 – 2/3 present 5 points > 2/3 present 10 points	**5**	**10**	**10**
Total points:	**20**	**20**	**20**
Risk category rating: 0 – 13 points = Low 13 – 27 points = Moderate 27 – 40 points = High			
Rating:	**M**	**M**	**M**

Other factors: power lines or stations, logging, construction, debris burning, mining, dispersed or developed camping, off-road vehicle use, flammables, fireworks, dry grass mowing, woodcutting, equipment use, target shooting, military training, arson, cultural activities, railroad, highways, county or public access road, camps/resorts/stables, schools, business, ranch or farm, lightning prone, dumping.

I = Incorporated Areas (Cities), R = Rural Areas, U = Unincorporated Areas (Biggs & Kent)

2. Hazards

	I*	R*	U*
Weather Zone 3	**40 points**	**40 points**	**40 points**
Topography - Slope 0 – 25% 0 points 26 – 40% 3 points 41% + 5 points	**0**	**4**	**2**
Topography - Aspect N, NW, NE 0 points W, E 3 points S, SW, SE 5 points	**3**	**4**	**0**
Topography - Elevation 5001 feet + 0 points 3501 – 5000 feet 1 point 0 – 3500 feet 2 points	**2**	**2**	**2**
Vegetation (SB 360 definition) Non-forest 0 points HV 1 5 points HV 2 15 points HV 3 20 points	**5**	**15**	**10**
Crown Fire Potential Passive - Low 0 points Active – Moderate 5 points Independent – High 10 points	**3**	**5**	**3**
Total points:	**53**	**70**	**57**
Risk category rating: 0 – 9 points = Low 10 – 40 points = Moderate 41 – 60 points = High 61 – 80 points = Extreme			
Rating:	**H**	**E**	**H**

HV 1 – produces flame lengths up to 5 feet with very little spotting, torching or crowning.
HV 2 – produces flame lengths 5-8 feet high with sporadic spotting, torching or crowning.
HV 3 – produces flame lengths over 8 feet with frequent spotting, torching and crowning.

NOTE: The group commented on the Biggs hillside as a factor in the 2 point rating of the *Topography – Slope* section of the Unincorporated area. Wheat fields in town were a factor in the 5 point rating of the *Vegetation* section of the Incorporated area. Crown fires in the wheat fields were discussed as an important issue to the suppression efforts and current points assigned reflect the concern in the flashy grassland fuel type.

I = Incorporated Areas (Cities), R = Rural Areas, U = Unincorporated Areas (Biggs & Kent)

3. Protection Capabilities

	I*	R*	U*
Fire response			
Organized structural response < 10 minutes 0 points			
Inside fire district, response > 10 minutes 8 points			
No structural protection, only wildland response 15 points			
No structural or wildland protection 36 points	**8**	**9**	**12**
Community Preparedness			
Organized stakeholder group, community fire plan, phone tree, or mitigation efforts 0 points			
Primarily agency efforts (mailings, FireFree, etc.) 2 points			
No efforts 4 points	**2**	**1**	**2**
Total points:	**10**	**10**	**14**
Protection Capability Category Rating:			
0 – 9 points = Low			
10 – 16 points = Moderate			
17 – 40 points = High			
Rating:	**M**	**M**	**M**

NOTE: The group commented on volunteer response as a factor in the 8 point rating of the *Fire Response* section of the Incorporated area. Overall distance from a fire station was a factor in the 12 point rating of the *Fire Response* section of the Unincorporated area. Farmers with pumper trucks/tanks and delayed volunteer firefighter response was a factor in the 1 point rating of the *Community Preparedness* section of the Rural area.

4. Values Protected: Human and economic

	I*	R*	U*
Homes (density per 10 acres)			
0.1 – 0.9 (rural) 2 points			
1 – 5 (suburban) 15 points			
5.1 + (urban) 30 points	**30**	**2**	**15**
Community Infrastructure			
None 0 points			
One present 10 points			
More than one present 20 points	**20**	**20**	**20**
Total points:	**50**	**22**	**35**
Values Protected Category Rating:			
0 – 15 points = Low			
16 – 30 points = Moderate			
31 – 50 points = High			
Rating:	**H**	**M**	**H**

Community infrastructure – Power substations and corridors, transportation corridors, municipal watersheds, water storage and distribution, fuel storage, health care facilities, landfills and waste treatment, schools, churches, community centers, and stores.

I = Incorporated Areas (Cities), R = Rural Areas, U = Unincorporated Areas (Biggs & Kent)

5. Structural Vulnerability. What is the likelihood that structures will be destroyed by fire?

	I*	R*	U*
Structure Itself Flammable Roofing Non-wood roofing 0 points Wood roofing 30 points	**12**	**12**	**12**
Defensible Space Meets local requirements 0 points Non-Compliant with local Standards 30 points	**25**	**30**	**25**
Fire Access - Roads and Driveways Within 300' of access that meets local requirements 0 points Non-Compliant with local standards 30 points	**5**	**28**	**28**
Total points:	**42**	**70**	**65**
Risk category rating: 0 – 30 points = Low 30 – 60 points = Moderate 61 – 90 points = High			
Rating:	**M**	**H**	**H**

VI. Structure Survivability

This chapter describes the factors which affect the survivability of a structure during a wildfire event. It addresses factors surrounding the structure and the building material used in the construction of it. Recommendations are given to make a structure more survivable during a wildfire.

A. Structural Vulnerability

Structural Vulnerability is the likelihood that a structure will be destroyed during a wildfire event. The decisions and practices by the landowner within the home ignition zone account for 90 percent of the likelihood of a wildfire threatening a structure. The three primary criteria involved are construction material, defensible space, and presence of suppression action (access). A rating score for Structural Vulnerability can be developed if in the future, the county wanted to complete a survey of homes using NFPA 1144 criteria. Important measures homeowners can and should take to reduce the threat to life and property if and when a wildfire event occurs include:

- Create a defensible space around the house. Defensible space is the area between a house and an oncoming wildfire where vegetation has been modified to reduce the amount of burnable material and to provide an opportunity for firefighters to effectively defend the structure. Methods for creating defensible space include the removal of some live trees or brush, removal of all dead material in the zone, pruning lower tree branches, and mowing grass. The amount of defensible space around a structure can vary from as little as 30 feet to more than 200 feet, depending on the type of vegetation involved and the slope of the land. Homeowners should seek advice from their local fire department members, or utilize prevention materials from ODF, USFS, BLM or other wildland agencies when deciding on how to create an effective defensible space to fit their property.
- Once a defensible space has been created, it must be maintained annually to be effective.
- Replace more flammable plants with more fire resistant ones. A list of fire resistant plants is in Appendix C.
- Maintain an emergency water supply when living in areas not served by a municipal water source with hydrants nearby. A minimum supply of 2,500 gallons is recommended. Notify the local fire department as to the existence of the water source, clearly mark it, and provide easy access to it.
- Provide at least two exit opportunities by vehicle from your property.
- Design access routes to allow emergency equipment to reach the house. Consider road width, grade and curves. Provide adequate turnaround areas for large vehicles. If constructing bridges, be sure they can carry heavy equipment. Clear flammable material at least 10 feet from roads and driveways.
- Post home identification numbers which can be easily identified by emergency personnel.

Home with insufficient defensible space

B. Structural Ignitability

Structural Ignitability relates to the cause of a structure igniting during a wildfire event. The cause of a structure igniting is usually related to building material used during construction. The roof of a structure is often the most vulnerable part of a building during a wildfire. Wood shake roofs offer some of the best potential for a fire start, usually from flying embers. Following are some recommendations to help make a structure more resistive to ignition during a wildfire event:

- Replace wood shake roofs with a class C or better fire resistant material.
- Clean all dead leaves and needles from roofs and gutters.
- Cover chimney outlets and stovepipes with a non-flammable screen of one-half inch or smaller mesh. Check screens for creosote buildup.
- Enclose eaves, balconies, and below decks with fire resistant material.
- Use fire resistant siding material.
- Limit the size and number of windows that face areas of dense vegetation. Use double or triple paned windows.
- Consider sprinkler systems inside and outside the structure.

- Avoid storing flammable materials, including firewood piles, within 30 feet of a structure.

An excellent pamphlet dealing with structural vulnerability and ignitability is the Living With Fire, A Guide for Homeowners. Copies of this can be obtained from PNWCG Publications. A more complete list of projects for reducing wildfire vulnerability and ignitability is in Appendix C.

VII. Wildfire Mitigation Projects

This section establishes a strategy designed to mitigate the wildfire risk concerns in Sherman County. Part A discusses priorities for wildfire hazard fuel treatment while Part B presents some projects which should be implemented throughout the county and some which apply to specific areas. Priority levels of High, Moderate, or Low are assigned to mitigation projects along with a time frame in which they should be implemented (immediate, mid-term, and long-term) and the agency responsible for doing so. Some of the projects may require grant funding in order to be successfully implemented. Part C exposes current projects already underway within the county.

A. Wildfire Hazard Fuel Priorities

As described in Chapter V, fuel conditions throughout the county are fairly uniform consisting mainly of grass, brush and cultivated agricultural crops. Federal lands are mainly those administered by the Bureau of Land Management along the Deschutes and John Day Canyons. Priorities for hazard fuel treatment follow:

- Conservation Reserve Program (CRP) lands. There is a need to create fuel breaks or to periodically do prescribed burns to reduce fuel loads.
- Promote wildfire hazard reduction in coordination with "county and city clean-up days".

B. Wildfire Mitigation Projects

- ***HIGH Priority/SHORT Term PROJECTS***
  *(*Projects are in no particular order and project number does not reflect priority)*

1. Develop seasonal paid county firefighter positions which would provide wildfire Initial Attack in the summer months within the county.
   Responsibility –Fire Departments, BLM (Training), County

2. Pursue a county ordinance regulating railroad maintenance activities during moderate and extreme fire months.
   Responsibility – Sherman County, fire districts, railroad, BLM

3. Create an "Emergency Fund Application" process through the county. Identify and coordinate a means to request emergency funds from the county court in large fire events.
   Responsibility – Sherman County, fire districts

- ***HIGH Priority/SHORT Term - Continuing PROJECTS***
  *(*Projects are in no particular order and project number does not reflect priority)*

1. Bring county fire safety standards up to code, consistent with state standards. Categories of standards include construction materials, fuel breaks, setbacks from ridge-tops, access roads, water source, power source, chimney screens.
   Responsibility – Sherman County Planning Department, Oregon State Fire Marshall Office

2. Complete a road, culvert, and stream crossing assessment to address existing situations which could result in problems for evacuation of residents and limit fire apparatus response during a wildfire situation. Can be tied directly to the county fire safety standards project.
   Responsibility – Sherman County Planning and Road Departments, Seasonal firefighters

3. Assist Rural Fire Protection Districts and City Fire Departments in upgrading their firefighting equipment, facilities and training as needed. This can be done by means of application of RFA/VFA or other Grants, obtaining FEPP equipment from ODF, obtaining training from BLM or other agencies, etc.
   Responsibility – cities, Sherman County, ODF, BLM.

4. Conduct county-wide wildfire prevention efforts including:
   - Distribution of fire prevention literature and material to home owners and campers.
     -Handout "Living with Fire" and "Beyond the Flames" brochures
   - Placement of fire prevention signs at strategic locations. Develop a county-wide fire prevention sign plan in cooperation with State Parks, US Army Corp of Engineers and the BLM to identify type of signs, locations, maintenance schedule, etc.
     -Necessary signs were identified as being needed at the following recreation sites: Cottonwood, Lepage and Giles French.
   - Place public service announcements about fire prevention on the local TV channel. Work with local media to produce public service announcements using local fire personnel and community members.
     -Partnering with ODF on annual PSA's to include Sherman County. Currently ODF has PSA's in the summer months that speak directly to the fire danger and/or prevention messages that includes a reference to other agencies.
   - Conduct fire prevention programs in schools. Currently Sherman County partners with the Mid-Columbia Fire Prevention Co-Op for team teaching once a year within the county and they are limited to what few resources they currently have to conduct other small prevention efforts. Other resources they would like to utilize would be the use of Gilliam County's Fire Prevention Trailer, having a budget for prevention

materials (stickers, plastic helmets, pencils, etc.), the ability to teach older grades fire extinguisher use and other similar activities.

- Provide information about what type of fire resistive plants to use for landscaping.
  Responsibility – Fire chiefs, BLM, Sherman County, State Parks, Army Corp of Engineers, ODF, ODFW

5. Improve Fire Department volunteer recruitment and retention on a county wide basis.
   Responsibility – Fire Departments

6. Work with the NRCS (Natural Resources Conservation Services) and to develop fuel breaks around CRP lands. Manage juniper stands and grass under-story to reduce fuel loads and rate of fire spread.
   Responsibility – Fire departments, county, NRCS, SWCD (Soil and Water Conservation District)

- ***MODERATE Priority/MID Term PROJECT***

1. Promote wildfire hazard reduction in coordination with "county and city clean-up days".
   Responsibility – cities, Sherman County, fire districts and departments.

- ***MODERATE Priority/LONG Term PROJECTS***
  *(*Projects are in no particular order and project number does not reflect priority)*

1. Develop reliable rural water supplies in Kent and Biggs Junction for fire suppression purposes.
   Responsibility – Communities of Kent and Biggs, Sherman County, the Fire Departments

2. Develop a position to conduct the duties of a Fire Marshal within the county for standard projects. This will ensure that fire and life safety standards are being met and that the safety and survivability of fire personnel, public and structures will be up to current state, county and federal standards.
   Responsibility – Sherman County, Fire Departments, State Fire Marshal's Office

3. Combine equipment and administrative services between the Cities and the Rural Fire Protection Districts into one entity (Example: Moro City FD and Moro RFPD).
   Responsibility – Cities, fire departments

4. Establish a satellite station at Liberty as part of the South Sherman Rural Fire Protection District. Use district's existing equipment for this facility.
   Responsibility – South Sherman Rural Fire Protection District, Sherman County

- ***LOW Priority/LONG Term PROJECT***

1. Establish a satellite station at Biggs Junction and/or Klondike as part of the North Sherman Rural Fire Protection District. Use district's existing equipment for this facility.
   Responsibility – North Sherman Rural Fire Protection District, Sherman County

C. Current Projects Already Underway In The County

Currently in the county, the use of goat herds is already underway. These herds have been utilized within the city limits of Moro to reduce vegetation in the creek banks within the town next to the senior center and other similar areas. The project has been very successful to this date in time.

Federal agencies are not currently planning any mitigation or fuels reduction projects within the county that would coincide with National Fire Plan Grant monies, although, BLM is conducting a pre-attack plan for the Deschutes and John Day rivers. It may include identification of ridges and natural features to use as fire lines, assessment of campgrounds and improvements along the rivers including evacuation plans and identifying processes to notify or evacuate river users in case of a fire emergency.

VIII. Appendix

Appendix A. Special Considerations

Emergency Conflagration Act

Under circumstances when wildfires create a serious threat to life and property, the Governor may invoke the Emergency Conflagration Act. Once invoked, the Act authorizes the Governor to use the resources of any county, city, or district fire suppression organization to assist fire-fighting efforts anywhere in the state. The Act requires the state to reimburse the political subdivision for costs in providing such fire suppression assistance. The Governor can also declare a "state of emergency" authorizing the participation of all public agency personnel and equipment, including the Oregon National Guard, to assist in the battle against wildfires. During a Governor-declared "state of emergency," the Oregon State Police coordinates National Guard resources through the Office of Emergency Management and structural fire fighting resources through the Office of the State Fire Marshal. The Oregon Military Department also provides both staff and equipment for emergency fire fighting needs.

Federal Emergency Management Act (FEMA) Eligibility

Federal fire management financial assistance is provided through the President's Disaster Relief Fund and made available by FEMA. Only fires involving structures or homes can be declared eligible for FEMA reimbursement. Cost reimbursement can only occur if the Governor invokes the Emergency Conflagration Act and the Office of Emergency Management requests assistance and provides information on the estimated amount and severity of the threat to structures or homes through the FEMA Region 10 office. Each incident requires separate approval. After validating the nature and extent of the threat, the FEMA regional office requests approval by the FEMA director in Washington, D.C. Once approved, subsequent fire fighting costs on all FEMA approved fires are eligible for approximately 70% cost reimbursement under an approved grant for managing, mitigating, and controlling designated fires during the incident time period as established by FEMA.

The following fires (8 out of 10 in the 2002 fire season) were approved by FEMA and were eligible for cost reimbursement:

Cache Mountain Fire	Deschutes County
Biscuit (Florence) Fire	Josephine County
Timbered Rock Fire	Jackson County
Sheldon Ridge Fire	Wasco County
Flagtail Fire	Grant County
Squire Peak Fire	Jackson County
Winter Fire	Lake County
Eyerly Fire	Jefferson County
Foster Gulch	Baker County
Eggley (07)	Harney County

Healthy Forest Restoration Act (HFRA)

The November 2003, Healthy Forest Restoration Act (HFRA) offers new tools and additional authorities for treating more acres in a timely fashion to meet forest restoration goals. It provides new authorities to treat fuels on federal land that require NEPA at the EA or EIS level. HFRA strengthens public participation by providing incentives for the local communities to develop their own community wildfire protection plans. It limits the complexities of Environmental Analyses for hazard reduction projects. It provides a more effective appeal process and instructs the Courts to balance short-term effects of implementing projects against the harm caused by delay and long-term benefits of a restored forest.

HFRA Title I addresses vegetation treatments on National Forest System and Bureau of Land Management lands that are at risk of wildland fire or insect and disease epidemics (emphasis is on Fire Regime I, II, and III in Condition Class 2 & 3). Title II encourages each community to develop their own CWPP and to designate their own specific WUIs where restoration projects might occur. Half of all fuel reduction projects under the HFRA must occur in the community protection zone as defined by HFRA. It also encourages biomass energy production through grants and assistance to local communities to help create market incentives for the removal of otherwise valueless forest material.

National Fire Plan (NFP)

Following the explosive fire season of 2000, the National Fire Plan was established to respond to severe wildland fires and their impacts to communities. It is an umbrella term that covers a variety of government programs and ideas addressing wildland fire issues. The NFP is a long-term investment that will help protect human lives, communities, and natural resources, while fostering cooperation and communication among federal, state, and local governments, tribes, and interested publics. Federal fire agencies worked closely with these partners, and the Western Governor’s Association to complete a 10-Year Comprehensive Strategy in August 2001.

The authors of the 10 Year Strategy established a Collaborative Framework through which the strategy is to be implemented. This framework reflects their understanding that, in order to successful, implementation must involve communication and collaboration across ownership boundaries, administrative jurisdictions, and areas of interest. Further the strategy 'should enhance collaboration among all levels and all parties for planning, decision making, implementation, monitoring and learning, without altering the responsibilities or statutory authorities of participating federal and state agencies.'

In 2002, the Implementation Plan for the 10-Year Strategy reiterated the importance of this framework for achieving the desired principles, goals, and objectives. The Implementation Plan identified the three levels of accountability on which the framework is built. A 2006 update of the Implementation Plan provides Characteristics of Successful Collaboration and identifies three Implementation Tasks. These additions are intended to promote more effective implementation of the plan by participants at all levels.

The NFP is focused on firefighting, rehabilitation, hazardous fuels reduction, community assistance, and accountability. The guiding principle for dealing with fire risk is the reduction of hazardous fuel loads threatening communities and wildland

ecosystems. The NFP offers grant opportunities for hazard fuel reduction, wildfire planning, wildfire prevention, and fuel utilization. Most NFP funding in Oregon goes to wildfire preparedness and hazardous fuel treatment projects.

Oregon Statewide Land Use Planning Goals

Since 1973, Oregon has maintained a strong statewide program for land use planning. The foundation of that program is a set of nineteen statewide planning goals. The goals express the state's policies on land use and related topics. The program is administered through the Department of Land Conservation and Development (DLCD), and Oregon's cities and counties. Cities and counties implement the requirements of the statewide planning goals through state-approved local comprehensive land use programs.

Planning goals related to WUI fire hazards are Goal 4 – Forest Lands, Goal 7 – Natural Hazards, and Goal 14 – Urbanization. Goal 4 requires local governments to minimize risks associated with wildfire when new dwellings or other structures are allowed in forestlands. Goal 7 requires local governments to develop programs to reduce risks to people and property from a variety of natural hazards, including wildfire. Goal 14 mandates that cities have urban growth boundaries (UGBs) to provide for urban uses and limit urban-type development on rural resource lands outside of UGBs.

County Emergency Management

Sherman County has recently completed a Natural Hazard Mitigation Plan. This plan addresses wildfire in its Risk Assessment section which has the following to say about the subject:

- In a self-completed hazard analysis, Sherman County reported itself as having a high risk and vulnerability for wildfire as well as a high probability of future wildfire events.
- The four incorporated cities in Sherman County –Grass Valley, Moro, Rufus and Wasco have limited resources and rely on the county for certain services and public facilities.
- The State of Oregon's Natural Hazard Mitigation Plan indicates that Sherman County's probability for a future fire in the WUI is high (that the county would be likely to have a major WUI fire event in the next 10-35 years).

EXAMPLES: Potential interface with the City of Grass Valley and surrounding lands.

Fire Safety Standards

Sherman County Planning Department and the State Fire Marshal Office will begin development of safety standards which will apply to new home development in the county. The purpose of the standards is to protect home-owners and fire fighting personnel during a fire on their property, as well as surrounding lands. Categories of county standards include: construction material, fuel breaks, set-backs from ridge-tops, cliff and bluffs, access roads, water source, power supply, chimney screens.

State Fire Marshal Office standards address water source and access for properties with structures; they are basically the same throughout the county. Homes larger than 3,500 square feet require a water source for fire fighting purposes. For access, the State requires a way to get fire fighting vehicles to within 150 feet of the structure.

Appendix B. Fire-Wise Plant Material

Fire-Wise Plant Material for the Pacific Northwest

(Adopted from "Living With Fire – A Guide for the Homeowner")

Although there are no fire-proof plant materials, the following is a list of some firewise plants that can be used in landscaping for fire prevention. Landscape maintenance is far more important to fire prevention than the selection of plant materials. When planning your landscape, use the characteristics of Firewise plants along with site characteristics such as slope, aspect, hardiness zone and amount of precipitation to choose plant material suitable for your site.

TREES	**Common Name**
Conifers;	
Calocedrus decurrens	Incense cedar
Thuja plicata	Western red cedar
Deciduous:	
Acer spp.	Maple
Alnus spp.	Alder
Betula	Birch
Catalpa speciosa	Northern catalpa
Celtis occidentalis	Hackberry
Cornus florida	Flowering dogwood
Fagus spp.	Beech
Fraxinus spp.	Ash
Gleditsia tricanthos	Honeylocust
Liquidambar styraciflua	Sweetgum
Malus spp.	Apple
Populus spp.	Aspen, cottonwood, poplar
Prunus spp.	Cherry
Quercus spp.	Oak (white, burr or red)
Robinia pseudoacacia	Black locust
Salix spp.	Willow

SHRUBS	Common Name
Amelanchier spp.	Serviceberry
Atriplex canescens	Four wing saltbrush
Berberis spp.	Oregon Grape
Buddelia davidi	Butterfly bush
Caryopteris x clandonensis	Blue-mist spirea
Cornus sericea	Red osier dogwood
Cotoneaster spp.	Cotoneaster
Gaultheria shallon	Salal
Holodiscus discolor	Oceanspray
Liqustrum spp.	Privet
Mahonia spp.	Creeping grape holly
Pachistima canbyi	Dwarf mountain lover
Philadelphus spp.	Mock orange; syringa
Rhamnus fragula	Buckthorn
Rhododendron spp.	Azaleas, rhododendrons
Rhus spp.	Sumac
Ribes spp.	Currant
Sheperdia argentea	Silver buffaloberry
Symphoricarpos albus	Snowberry
Viburnum trilobum	Cranberry bush
Yucca spp.	Yucca

PERENNIALS	
Achillea spp.	Yarrow
Allium schoenoprasum	Chives
Bergenia spp.	Bergenia
Brodiaea spp.	Lillies
Coreopsis spp.	Coreopsis
Erysimum linifolium	Wall flower
Eschscholzia spp.	California poppy
Fragaria spp.	Wild strawberries
Geranium spp.	Geranium
Hemerocallis hybrids	Daylillies
Heuchera spp.	Coral bells
Hosta spp.	Hosta
Iris spp.	Iris
Kniphofia uvaria	Red hot poker
Lupinus spp.	Lupine
Oenotheria spp.	Evening primrose
Penstemon spp.	Beard tongue
Solidago spp.	Goldenrod
Strachys byzantina	Lamb’s ear

GROUNDCOVERS

Succulents:	**Common Name**
Delosperma nubigenum	Hardest ice plant
Echeveria spp.	Hens & chicks
Sedum spp.	Stone crops

Non-succulents:	
Achillea tomentosa	Wolly yarrow
Ajuga reptans	Carpet bugle
Arctostaphylos uva-ursi	Kinnikinnick
Armeria maritima	Sea pink; thrift
Cerastium tomentosa	Snow in summer
Cotoneaster dammeri	Bearberry cotoneaster
Euonymus fortunei	Winter creeper
Hypericum calycinum	St. Johnswort
Potentilla tabernaemontanii	Spring cinquefoil
Senecio cineraria	Dusty miller
Thymus praecox arcticus	Mother of thyme
Verbenia bipinnatifida	Verbenia
Vinca minor	Periwinkle

Appendix C. Firewise Practices to Reduce Wildfire Vulnerability/Ignitability

No cost, just a little time projects

- Move your firewood pile out of your home's defensible space.
- Perform a FIREWISE assessment of your home.
- Clean your roof and gutters of leaves and pine needles (best done in October).
- Clear the view of your house number so it can be easily seen from the street.
- Put a hose (at least 100' long) on a rack and attach it to an outside faucet.
- Trim all tree branches if they overhang your house.
- Trim all tree branches from within 20' of all chimneys.
- Remove trees along the driveway to make it 12' wide.
- Prune branches overhanging the driveway to have 14' overhead clearance.
- Maintain a green lawn for 30' around your home.
- If new homes are still being built in your area, talk to the developer and local zoning officials about building standards.
- Plan and discuss an escape plan with your family. Have a practice drill. Include your pets.
- Get involved with your community's disaster mitigation plans.
- Check your fire extinguishers. Are they still charged? Are they easy to get to in an emergency? Does everyone in the family know where they are and how to use them?
- Clear deadwood and dense flammable vegetation from your home's defensible space.
- Remove conifer shrubs from your home's defensible space especially if your home is in a high-risk area.
- Review your homeowner's insurance policy for adequate coverage. Consult your insurance agent about costs of rebuilding and repairs in your area.

- Talk to your children about not starting fires or playing with matches.
- If you have a burn barrel that you use for burning trash, remove it!
- Compost leaves in the fall, don't burn them.
- If you burn your brush piles or grass in the spring, get a burning permit.
- Always have a shovel on hand and hook up the garden hose BEFORE you start the fire.
- Never burn if the smoke and flames are blowing towards your home (or your neighbor's home).
- Be a Firewise advocate.
- Install highly visible house numbers (at least 4" tall) on your home.
- Install big, highly visible house numbers (at least 4" tall) at the entrance of the driveway onto the street. Use non-flammable materials and posts.

Minimal cost actions - ($10 - $25 and a little time)

- Install metal screens on all attic, foundation, other openings on your home to prevent accumulation of leaves and needles.
- Hold a neighborhood meeting to talk about fire safety. Invite your local fire chief. Have coffee and donuts for neighbors.
- Install a fire extinguisher in the kitchen AND the garage. Install a metal shield between your home and an attached wood fence.
- Replace conifer and evergreen shrubs with low-flammable plants in your home's defensible space.
- Thin and prune conifer trees for 30' to 100' around your home.
- Purchase and use a NOAA weather alert radio. Many types of emergencies are announced through this service.
- Replace vinyl gutters and downspouts with non-flammable, metal gutters and downspouts.
- Install a spark arrestor or heavy wire screen with opening less than 1/2" on wood burning fireplaces and chimneys.

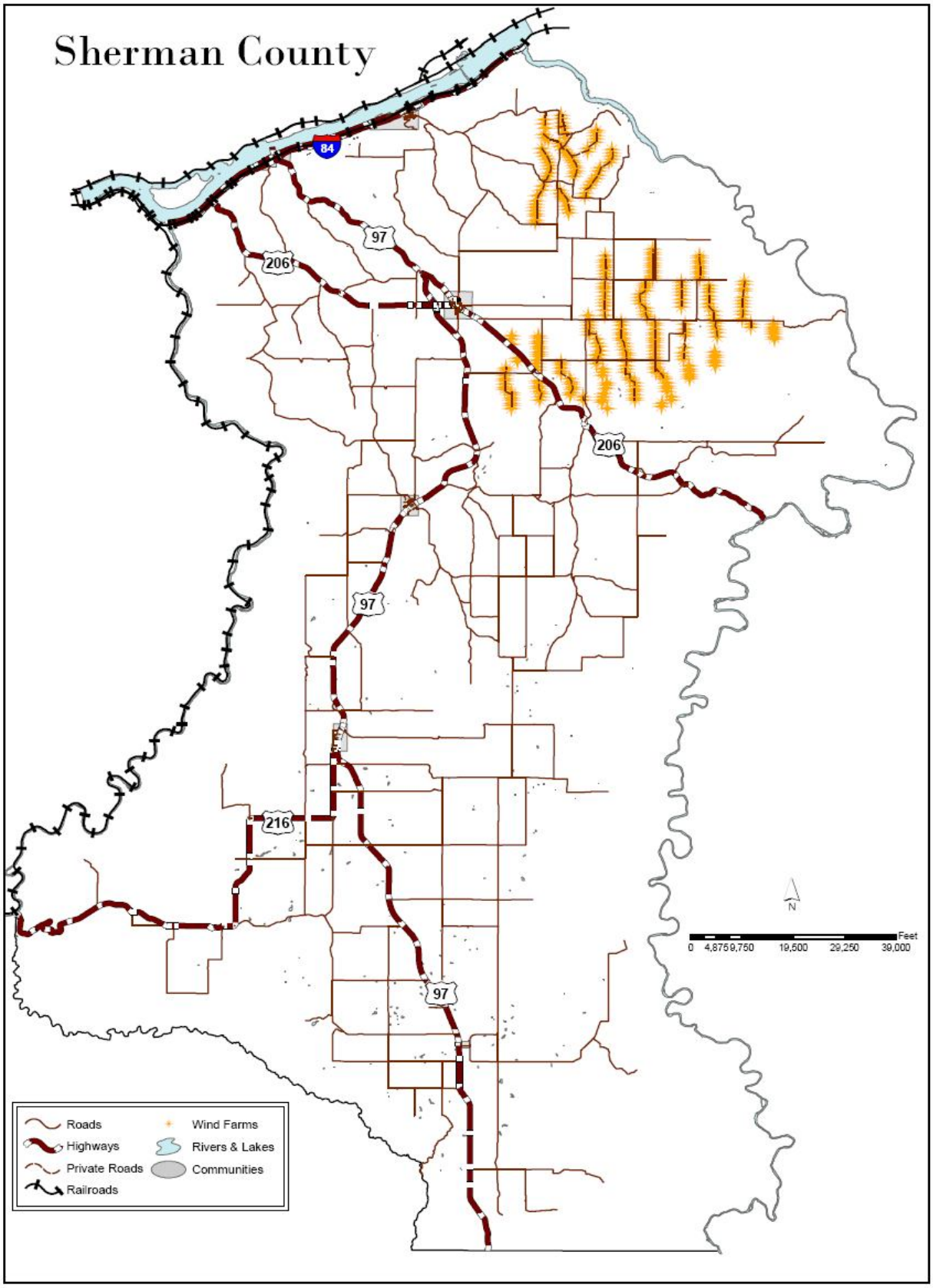
Moderate cost actions - ($50 - $250 and a little more work)

- Build a gravel turn around area near your house big enough to allow a fire truck to turn around.
- Join your neighbors in having an additional access road into your neighborhood. Share the costs.
- Treat flammable materials like wood roofs, decks, and siding with fire retardant chemicals
- Modify driveway gates to accommodate fire trucks. They should be at least 10' wide and set back at least 30' from the road. If locked, use a key box approved by your local fire department or use or a chain loop with the lock that can be cut in an emergency.
- Enclose decks to prevent accumulation of leaves, needles, and debris. Include a metal screen with a 1/8" mesh opening to prevent sparks from getting under the deck.

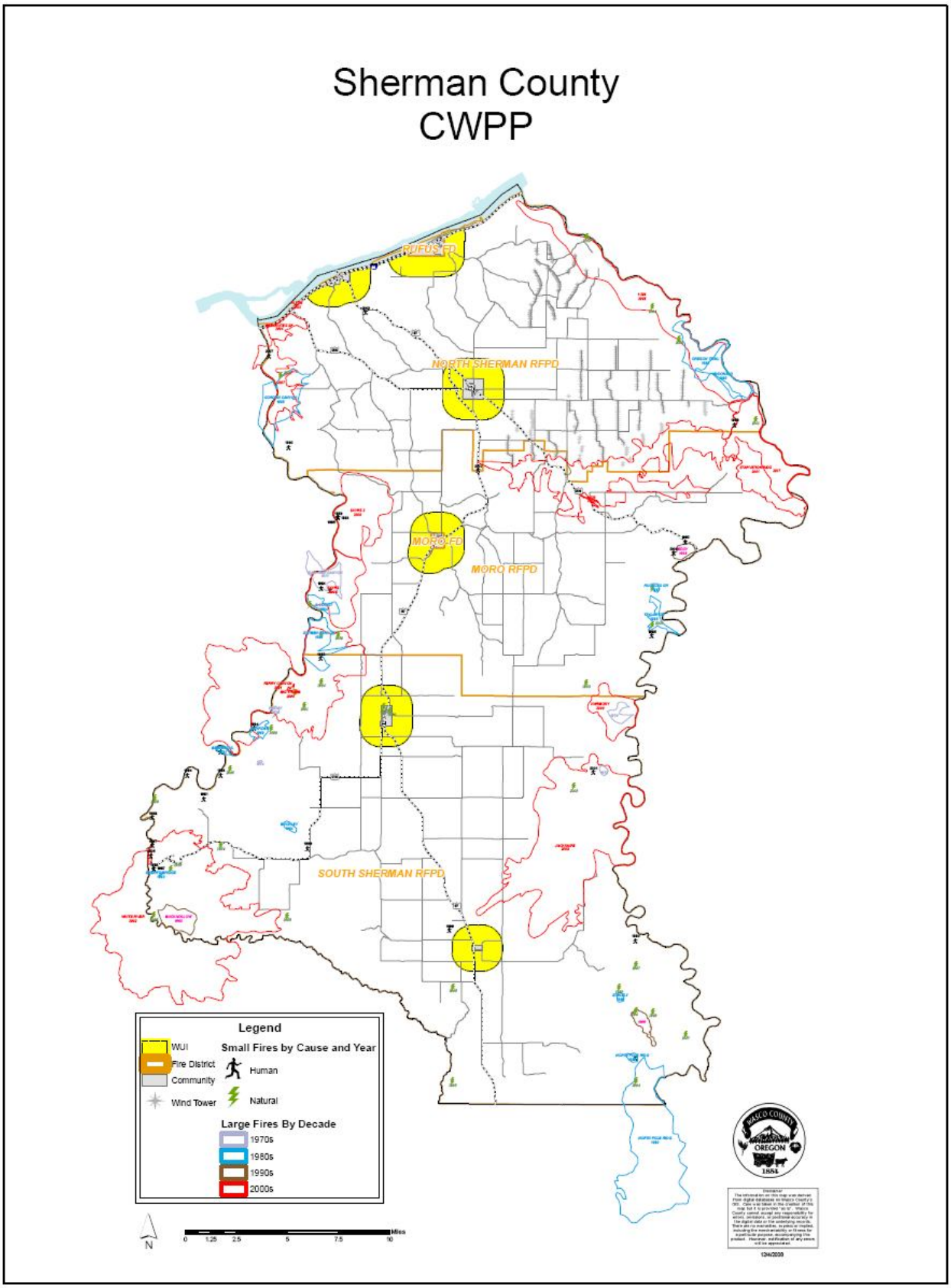
High cost actions - (more than $500)

- Replace your roof with fire-resistant materials such as Class A shingles.
- Install a roof irrigation system to protect your home's roof.
- Install an independent water supply for a sprinkler system with a non-electric (e.g., propane) powered pump capable of running unattended for 24 hours.
- Replace wood or vinyl siding with non-flammable material.
- Replace single-pane glass windows and plastic skylights with tempered, double-pane glass.
- Box in eaves, facias, and soffits with aluminum or steel materials with metal screens to prevent entry of sparks.
- Improve driveway culverts and bridges to accommodate the weight of a fire truck.
- Relocate propane tanks inside the defensible space but at least 10' from the house.
- Have non-flammable ground cover such as gravel around them for 10'.
- Have electric service lines to your house placed underground.
- Improve your driveway by straightening sharp curves and filling in sharp dips that would hinder a fire truck.

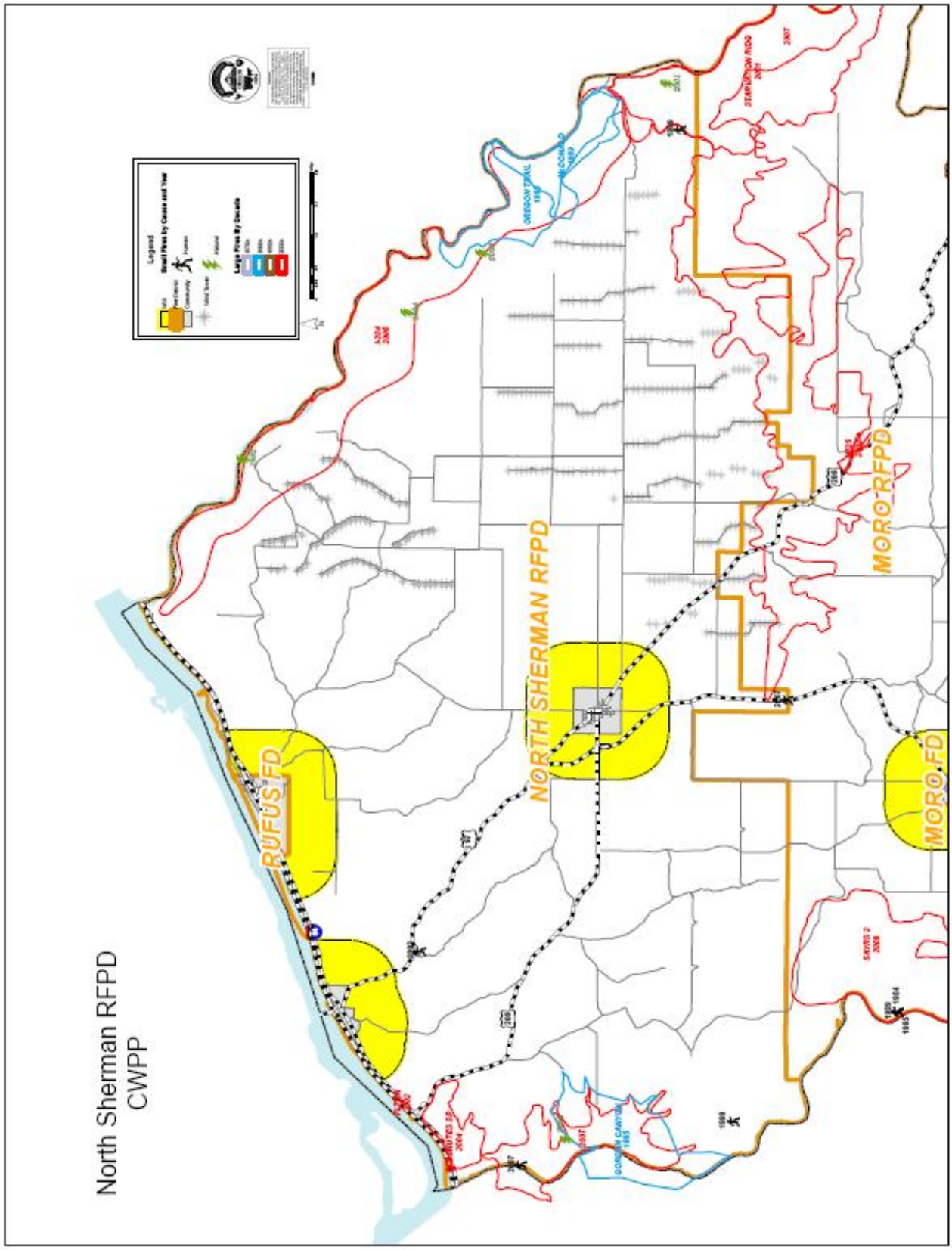
Appendix D. Maps



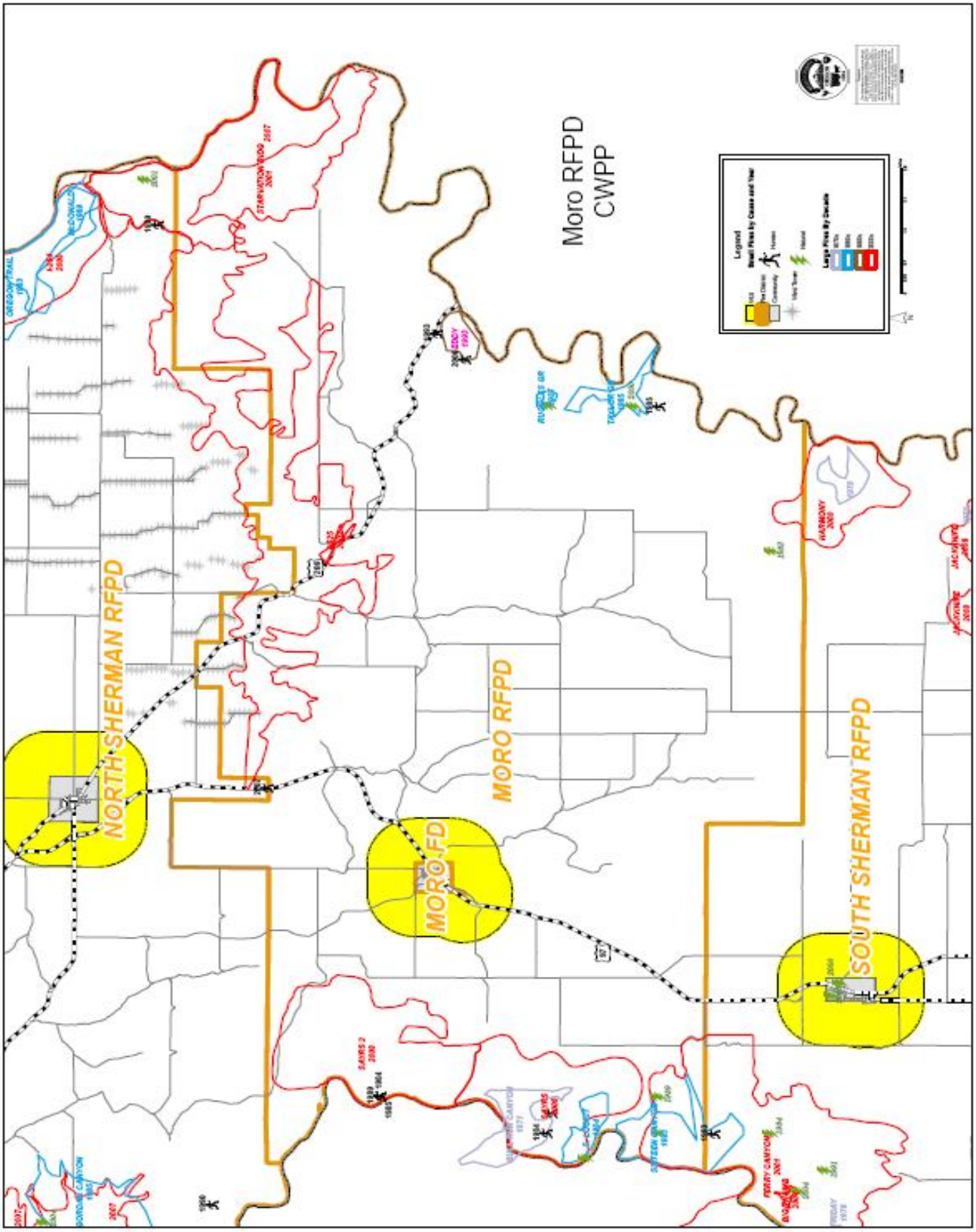
Sherman County Base Map



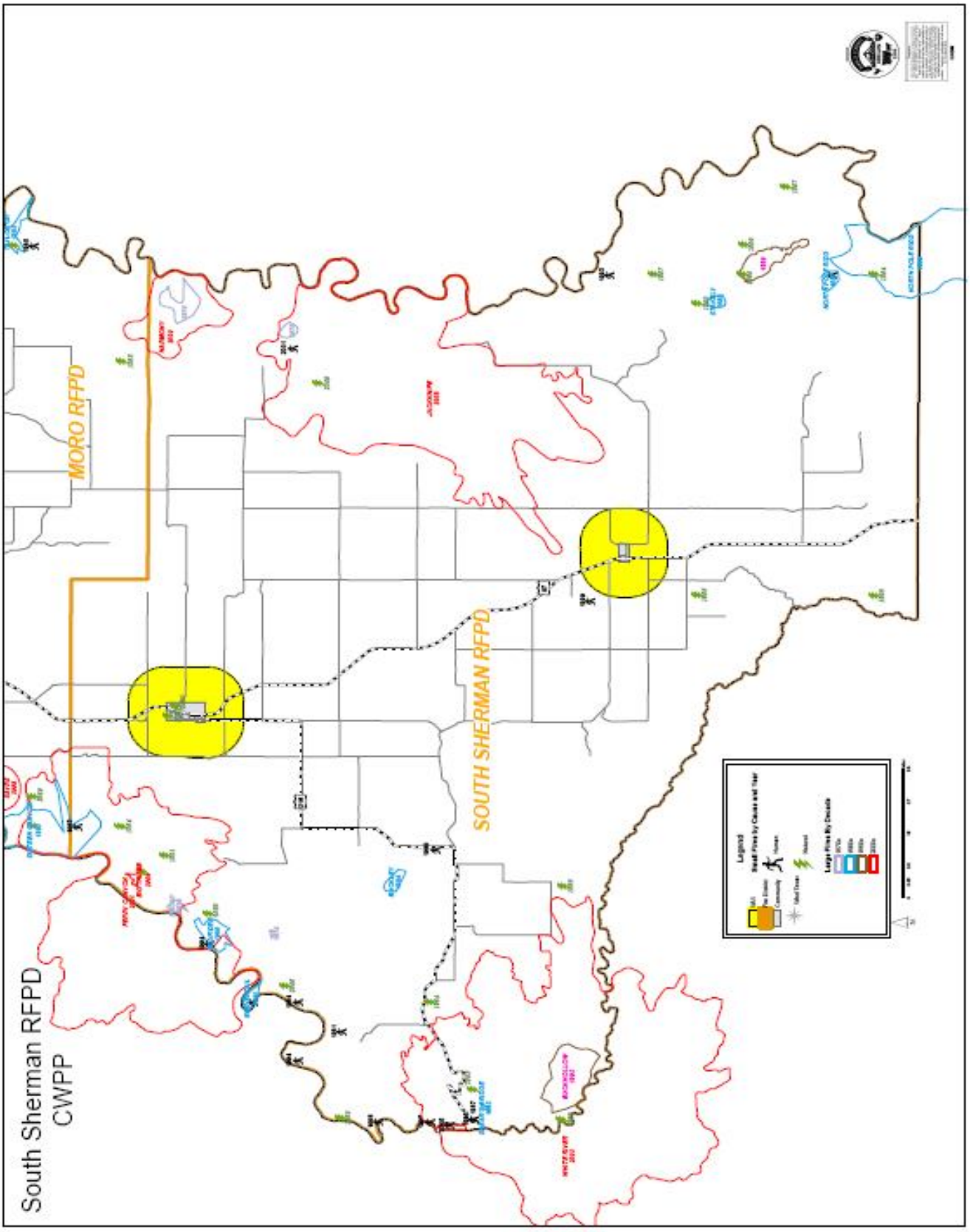
Sherman County WUI Areas



North Sherman Rural Fire Protection District and City of Rufus WUI and fire history



Moro Rural Fire Protection District and City of Moro WUI and fire history.



South Sherman Fire Rural Protection District WUI and fire history.