

Community Wildfire Protection Plan

Polk County Oregon



Photo by Greg Juber

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**Prepared by
James H. Hulbert**

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Signature Page

The contents of this document have been agreed upon and endorsed by the Polk County Board of Commissioners, the District Forester of the West Oregon District for Oregon Department of Forestry, and the Polk County Fire Defense Board Chief. 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 Polk 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 the Fire Defense Board Chief and updated as necessary.

Tom Ritchey
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Date

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West Oregon District, Oregon Department of Forestry

Date

Bill Hahn,
Polk County Fire Defense Board Chief

Date

Executive Summary

This Community Wildfire Protection Plan for Polk County was initiated by the Polk County Board of Commissioners in the spring of 2009. The primary purpose for the plan is to identify and prioritize wildfire hazards in Polk County and to develop a strategy to reduce those hazards. The plan qualifies the county, its communities and fire districts for National Fire Plan grants and other funding sources to treat wildfire hazards and to better prepare county residents for wildfires that may occur. It includes a strategy with wildfire hazard reduction 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.

The planning process was designed to meet the guidance in the National Fire Plan and the Healthy Forest Restoration Act of 2003 (HR-1904). A Planning Team 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:

- Provide opportunities for meaningful discussions among agency representatives regarding their priorities for wildfire protection. Involve local, state, and federal government representatives and interested citizens in the process.
- Identify and evaluate hazardous fuel conditions in wildland-urban interface areas. Prioritize areas for fuel reduction treatments. Identify a wildland-urban interface boundary for at-risk communities.
- Address structural ignitability and recommend measures that homeowners can take to reduce the ignitability of structures. Better prepare Polk County residents to survive and save their property during a wildfire situation.
- Evaluate the wildfire response resources of fire districts and recommend measures to strengthen their capability.
- 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).
- Complete the plan by mid-August 2009.

This plan describes the various agencies and local jurisdictions responsible for wildfire protection in the county. It 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. A Wildland Urban Interface (WUI) boundary has been established by the Polk County Fire Defense Board, (see map in

Appendix E). Section VI offers projects designed to reduce the wildfire risk for the county as a whole, and for specific fire protection districts.

Polk County has many wildfire hazards and is vulnerable to wildfire events which could threaten property values and human life. Based on the Wildfire Risk Assessment (Chapter V), the Planning Team has determined that the wildfire risk level is high throughout the county¹. However, because the conditions are not as hot and dry as most east-side Oregon counties, it does not experience as many fires on an annual basis. While the fire frequency is at a lower level as compared with east side counties, there is potential for large and severe fires when conditions are right.

I. Introduction

This Community Wildfire Protection Plan addresses wildfire risks in Polk County and identifies measures which will reduce the risk of property loss and the threat to human lives from wildfires. The plan was developed collaboratively with community and agency partners interested in reducing wildfire risk. It identifies and prioritizes areas for hazardous fuel reduction treatments, and recommends methods of treatments that will protect at-risk communities and essential infrastructure. Further, the plan recommends measures that homeowners and communities can take to reduce ignitability of structures throughout the county.

There have been large and destructive wildfires in and around Polk County in the past. Polk County contains wildfire hazards and risk situations typical of west-side Oregon Counties. Between 1840 and 1900, wildland fires burned at least two million acres of forestland in western Oregon². The 1849 Siletz Fire burned 800,000 acres in portions of Lincoln and Polk Counties. Yamhill County to the north and Tillamook County to the west, both with similar fuel conditions have experienced several very large wildfires in the past. In 1987, a 5,000 acre fire in the Rickreall Watershed caused sediment damage to the Mercer Reservoir, the source of the City of Dallas's water supply.

Forest health issues and possibly climate change may be contributing to an increase in large wildfires in the west. Fire suppression policies have lead to a buildup of forest fuel loads and increased wildfire risk. Rising seasonal temperatures and earlier arrival of spring conditions since the mid 1980s may to be contributing to more frequent and severe wildfires in the western states, including portions of the coastal mountain range in Oregon³. In recent years there has been four times the yearly average number of wildfires burning an area six and a half times the number of acres normally affected. Scientists project that as atmospheric greenhouse gas concentrations continue to rise, warmer springs and summers will intensify in coming decades, accentuating conditions favorable to large wildfires.

¹ Oregon Department of Forestry Risk Assessment process.

² Polk County Natural Hazard Mitigation Plan.

³ Running, Steven W. Is Global Warming Causing More, Larger Fires. Science Express, July 2006.

The outlook is for more and larger wildfires, unless an active and continuing program of hazard fuel reduction and public awareness is undertaken. Without treatment, hazardous fuel situations become more of a concern as more homes are built in areas prone to wildfires. The county has the potential to experience a significant wildfire that could destroy homes and possibly, take human lives. This plan is the basis for needed action to reduce the growing threat of wildfires in Polk County.

Typically, the eastern portion of the county is dominated by agricultural uses while the western part is mainly covered by forests. While fuel conditions differ significantly from east to west, both landscapes are subject to large and destructive wildland fires. Because of fuel conditions and residential development, all of the area that is generally east of the coastal mountain range is considered a Wildland Urban Interface⁴ (WUI). Within that area there is potential for property and human life loss during a wildfire event. Following are conditions and concerns found in the county which contribute to the wildfire threat and potential for catastrophic losses:

- Heavy fuel loads on federal lands (BLM) and industrial forest lands along the western portion of the county. The concern is for large forest fires which could destroy valuable natural resources, and then move to residential areas to the east, or vice versa.
- Residential developments in rural or adjacent areas with heavy fuel loads. Some homes in these areas do not have adequate defensible space around them and or suitable access for firefighting equipment and evacuation purposes. New development in these areas has increased dramatically in recent years.
- Climatic and topographic conditions conducive for large wildfires. Hot and dry conditions exist during the fire season throughout the county. Much of the county has moderate to steep slopes which add to the rate of wildfire spread and suppression difficulty.
- Agricultural areas susceptible to fast moving fires which can destroy valuable crops in short periods of time.
- Risk factors for starting wildfires. Most wildfires in the county are human caused. Debris burning, mainly illegal, has been the biggest factor for wildfire starts. Power lines, highways, railroads, and farming activities add to the risk.
- Fire districts with limited resources. Many rural areas have homes located a considerable distance from the nearest fire station resulting in increased response time for fire emergencies. Most fire districts rely mainly on volunteer firefighters.

⁴ "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.

These volunteers usually have jobs and their response time is affected by the distance between their work sites and the fire.

Completion of this plan makes Polk 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 plan was prepared with the help of funding from Polk County, Oregon Department of Forestry and the Polk County Fire Defense Board. The planning process was designed to meet the guidance in the National Fire Plan and the Healthy Forest Restoration Act of 2003 (HR 1904).

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

II. Planning Process

In March of 2009, Polk County officials decided to utilize available County, ODF, and Fire Defense Board funds to develop a Community Wildfire Protection Plan. The Fire Defense Board hired a fire planning consultant to facilitate the planning process. The process used followed the guidance in the handbook, “Preparing a Community Wildfire Protection Plan, March 2004” and its supplement, “Community Guide to Preparing and Implementing a CWPP, August 2008”. The following steps were followed:

A. Step one: Convene Wildfire Protection Experts and Interested Citizens

A Planning Team with representatives from various stakeholder groups was assembled. The role of the team was to establish the planning process, review planning documents, provide input throughout the process, and to assure the planning goals were met. Team members coordinated with their contacts outside of the planning team to help establish the Wildland Urban Interface boundary, completion of a Wildfire Risk Assessment, and enhancement/action projects. They met several times with the planning contractor during the planning process.

The Planning Team consisted of representatives from the following entities:

- Fire Districts and Departments,
- Polk County GIS,
- Polk County Emergency Management,
- Polk Soil and Water Conservation District,

- Oregon Department of Forestry,
- Oregon Office of State Fire Marshal,
- Industrial Forest Land Owners.

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

The Planning Team decided the planning area would include the entire county (about 745 square miles). The following goals for the Community Wildfire Protection Plan were agreed to by the Planning Team:

The purpose of this project is to complete a Community Wildfire Protection Plan (CWPP) for Polk County which will meet the intent of the Healthy Forests Restoration Act and accomplish the following objectives:

- Provide opportunities for meaningful discussions among agency representatives regarding their priorities for wildfire protection. Involve local, state, and federal government representatives and interested citizens in the process.
- Identify and evaluate hazardous fuel conditions in wildland-urban interface areas. Prioritize areas for fuel reduction treatments and identify a wildland-urban interface boundary.
- Address structural ignitability and recommend measures that homeowners can take to reduce the ignitability of structures. Better prepare Polk County residents to survive and save their property during a wildfire situation.
- Evaluate the wildfire response capability of fire districts and departments and recommend measures to strengthen their capability.
- 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).
- Complete the plan by mid-August 2009.

C. Step Three: Develop a Community Base Map

A series of county base maps were developed by the Polk County GIS Department. Colored orthophoto maps of each fire district and agency responsibility were initially developed. Later, maps showing historic wildfire occurrence were added. The maps were used as part of the hazard assessment and eventually led to the development of a strategy including specific projects to reduce wildfire hazards.

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 Forestry⁵; it involves four factors: Risk, Hazard, Values, and Protection Capability. The methodology includes a scoring system for each factor. The scores are cumulative and the total score for individual zones indicate a low, moderate, or high overall Wildfire Risk rating.

A survey to establish hazard ratings for individual home sites (Structural Vulnerability) was not completed at the time of plan development. It is intended that this process will eventually be used to evaluate high risk homes. Surveys using criteria from the NFPA-1144 survey method or the Oregon Forestland-Urban Interface Fire Protection Act of 1997 (SB 360) criteria could be used to assess individual homes. Criteria from the NFPA 1144 survey system are shown in Appendix A. It is expected there will be a continuum from a low to a high risk situation for homes surveyed in Polk County. Results of this survey will be appended to this plan when available.

The following steps were taken in the risk assessment:

- GIS maps and data created by the county, Oregon Department of Forestry and Polk Soil and Water Conservation District 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.
- Major risk factors which cause wildfires to start within the study area were identified.
- When available, information from NFPA 1144 or SB360 surveys will be referred to with implications described.
- 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 Planning Team considered the results of the risk assessment and then established a list of wildfire risk reduction projects within the planning area. The type of projects considered includes:

- Development of defensible space and fuel reduction around individual homes.
- Treatment of Federal lands within identified Wildland Urban Interface areas.
- Removal of hazard fuels along access routes.

⁵ Identifying and Assessment of Communities at Risk in Oregon, draft prepared on October 18, 2004.

- Addressing access concerns.
- Reducing structural ignitability hazards.
- Addressing fire protection district equipment needs.
- Identifying materials and distributing wildfire protection information to homeowners.
- Enhancing forest management practices, healthy forest restoration etc.

Criteria used in selecting priority projects include:

- Likelihood for acceptance by property owners,
- The best chance for successful implementation,
- The best cost-benefit ratio,
- Likelihood of getting funding assistance for implementation, and
- Community capacity/income levels

F. Step Six: Collaboration and Public Input

A strategy to collaborate and communicate information for the plan was devised using a combination of informational strategies. The Planning Team representing the fire departments, fire districts, Polk County, state and federal agencies, and industrial forest land owners involved with wildfire protection at the local, state and federal level met several times during the planning process to help form the plan. Planning Team members discussed planning issues and provided the basis for the final plan. The Polk County Fire Defense Board and the Board of County Commissioners were kept apprised of planning efforts and were given opportunities to provide input.

At the beginning of the planning process a news release was sent to local media sources announcing the start of the process. Another news release was sent out when the first draft of the plan was available. The draft plan was placed on the Polk County Web Site and made available to the public. Members of the Planning Team, fire district personnel, and the County Fire Defense Board made efforts to inform interested members of the public throughout the process. Comments were considered and incorporated in the plan throughout the process.

Importantly, agency representatives and fire district personnel will communicate the intent of the plan to homeowners during face-to-face contacts when the plan is complete. During these contacts, homeowners will learn specifics about what is needed to reduce wildfire hazards on their property, and what options are available to assist them.

III. County Profile

A. General Description

Polk County, named for U.S. president James Knox Polk, was established in 1845. It includes an area of 745 square miles. The population was 75,265 in 2007⁶ most of which live in six incorporated communities located in the eastern half of the county: Dallas, Independence, Monmouth, Salem, Falls City and a portion of Willamina. There are numerous unincorporated communities as well. Adjacent counties are Benton to the south, Lincoln to the west, Tillamook to the northwest, Yamhill to the north and Marion to the east. The Willamette River forms the east boundary of Polk County.

Agriculture and forestry are the predominant land uses in the county. Most of the western half of the county is forested with coniferous trees being the prominent species. A high proportion of the forested area is privately owned by industrial timber companies. The Bureau of Land Management does administer approximately 63 square miles of National Resource Land scattered throughout the western part of the county. There is a small amount of National Forest land which is also administered by the BLM.

The County ranked tenth out of the 36 Oregon counties in 2007 gross farm and ranch sales (\$160 million). The diversified agricultural base includes grains, grass seed, livestock, Christmas Trees, vineyards, and nurseries. Nearly 90 percent of the farms are family or individual owned.⁷ In 2007 there were 6,719 acres of wheat, 7,030 acres of orchards, and 2,537 acres of vegetables harvested in the county. Polk County is second only to Yamhill County in the number of acres planted to grapes in Oregon (1,322 acres).⁸

Elevations in Polk County range between 125 feet at the Willamette River to 3,725 feet in the west, at Laurel Mountain. The Willamette River is the major river basin. Other drainage basins in the Willamette watershed include the Little Luckiamute River, Ash Creek, and Rickreall Creek. There are over 20 small tributaries in the basin. Major streams in the Yamhill watershed include the South Yamhill River, located in the northern portion of the County. There are numerous water sources throughout the agricultural areas in the form of stock ponds.

The Rickreall Watershed has six reservoirs licensed by the Water Resources Department. The largest, Mercer Reservoir formed by an earthen dam 79 feet high, is 60 acres in size. It is owned by the City of Dallas and is the source of the city's water supply. The City owns about four acres of land with the reservoir and has a lease to the road around the reservoir. Most of the land around the reservoir is owned by the Forest Capital Timber Company. A 5,000 acre fire in the watershed in 1987 resulted in the accumulation of 10

⁶ US Census Bureau

⁷ City-Data.com

⁸ Wikipedia

acre feet of sediment in the reservoir. There are two lakes in the Rickreall Watershed larger than 10 acres, Hayden and Humbug.

For thousands of years Native Americans, and in more recent times early settlers, regularly burned areas of the Willamette Valley to maintain favorable plant communities. Because the frequency and location of fires is not well documented, the impact on historical settlements cannot fully be assessed. Many large fires occurred in 1902 and 1910, however, which raised the public's awareness of the possibility of death and loss of property due to fire hazards.

More recently, there have been a number of significant wildfires that have occurred in Polk County. In 1945 a 12,785 acre wildfire burned. Costs to control this fire bankrupted the Polk County Fire Protection Association and led to the Department of Forestry assuming the responsibility of wildfire protection within the county. In 1987 two significant wildfires occurred, the 1100 acre Shady Lane fire and the 5000 acre Rockhouse fire. Both of these fires in 1987 quickly grew beyond district capabilities and resulted in the deployment of Oregon Department of Forestry Type 1 Fire Teams. In 2007 the 1500 Road fire burned 360 acres and took a week for the district to control.

There is potential for large wildfires in the forested area of the western portion of the county. Some rural residential properties scattered along the edge of these forested areas are at high risk from wildfires because of the lack of defensible space and available water. Wildfire in the Wildland Urban Interface is increasingly becoming an issue as more homes are built in rural areas.

Polk County has a modified marine climate where winters are cool and wet, while summers are moderately warm and dry. Cool air flows west from the Pacific Ocean and is tempered by the Cascade Mountains to the east. From 1961 to 1990, the average annual precipitation in Polk County was approximately 52 inches with most received in the Coast Range and gradually decreasing eastward toward the Willamette Valley floor. The Laurel Mountain Weather Station, located at an elevation of 3,589 feet in the Coast Range west of Falls City, was established in 1970. Between 1970 and 2000, average annual precipitation recorded at the station was about 121 inches. A total of 204 inches was recorded during the winter of 1996-97. In the Mid-Willamette Valley, 90 percent of the rainfall is experienced between October and the end of May.

In the 1860's, the United States government placed remnants of the Willamette Valley Indian Tribes as well as Native Americans from other parts of Oregon at the Grand Ronde Indian Reservation in the northwest portion of the County. The Tribes currently operate the Spirit Mountain Resort and Casino in Grand Ronde. This facility is the top tourist attraction in Oregon with a daily average of 7,500 visitors.



Typical Wildland Urban Interface setting with Coast Range in background.

Five major highways serve Polk County: Highway 221 runs north and south along the northeastern portion of the county, Highway 223 connects Dallas with Benton County to the south, Highway 99W runs north and south the length of the east part of the county, Highway 22 connects Salem and Dallas with Willamina, and Highway 18 merges with 22 in the northwest part of the county, on its way to the Oregon Coast. Highway 51 connects Highway 22 to Independence and then south to the Benton County Border.

B. Wildfire Protection Entities

This section describes the wildfire protection roles of the various local, state and federal agencies serving Polk County. There are eleven Fire Districts or Departments within, or partially within, the county. An Oregon Department of Forestry Protection District covers a portion of the county and the BLM administers lands there as well.

1. Oregon Department of Forestry (ODF)

825 Oak Villa Road,
Dallas, OR 97338
Telephone: 503-623-8146

The Oregon Department of Forestry's West Oregon District contains 3 unit offices (Dallas, Philomath and Toledo). A total of 28 permanent and 26 seasonal and temporary employees accomplish the work of the Fire Protection, Private Forests and State Lands programs within the district. The West Oregon District provides wildland fire prevention, detection and suppression on approximately 1.1 million acres of forestland in portions of five counties (Polk, Benton, Lincoln, Tillamook and Yamhill). The District contributes to a complete and coordinated forest protection system on a local and statewide basis, providing for cooperative work to both public and private landowners to supplement the fire protection system. The District also has cooperative agreements for mutual assistance with 4 rural fire districts that are within Polk County.

Fires that occur on lands protected by ODF, and which overlap jurisdiction with a rural fire district, are handled with a joint or unified Incident Command structure. The rural fire district and ODF typically combine resources to provide protection to the structures as well as the associated wildlands. ODF does not take direct action on any structure fire but the rural districts can and do assist with wildland fires. If the fire becomes large in size, the rural district may request support through the Conflagration Act which will allow agencies from outside the area to respond. ODF has the ability to request Incident Management Teams in large fire situations that will work with all fire agencies in the suppression of large fires.

The Oregon Department of Forestry, through pre-established procedures, processes and cooperator agreements can mobilize in very short time frames industrial cooperator equipment, aircraft, firefighting crews, and Type I Incident Management Teams. Industrial cooperator equipment can include logging equipment, bull dozers, water tenders, and other firefighting equipment. The Oregon Department of Forestry has two retardant planes and one lead plane under contract each summer starting around mid-July to the first part of August and until early fall depending on the weather conditions. Aircraft under contract to the United States Forest Service can also be called upon by ODF if they are available. There are over 200 twenty-person contract firefighting crews available in Oregon and Washington and multiple state and county 10-person inmate firefighting crews in Oregon. Fourteen of these state 10-person inmate firefighters are available within about two hours to any location in Polk County. ODF maintains three Type I Incident Management Teams statewide that are available for dispatch to any area of Oregon with an estimated time of arrival of 8-10 hours maximum from time of dispatch. To support these management teams, ODF maintains: field kitchens, geographic information systems, showers, fire cache, and communications units. ODF also has access to the USFS fire cache systems for ordering extra hose, pumps, and other firefighting and logistical equipment.

For Polk County, the Dallas Unit office has wildland fire protection responsibilities on approximately 293,000 acres that lie within the district's fire protection boundary. The Dallas Unit office is located approximately 1 mile NE of Dallas at the junction of Highway 223 and Oak Villa road. Currently, the Dallas Unit employs 5 permanent employees and 7 seasonal wildland firefighters. It also maintains 1-Type 4, 1-Type 5 and 2-Type 6 engines for initial attack of wildfires.

2. USDA Forest Service

District Ranger
Hebo Ranger District
31525 Highway 22
Hebo, Oregon, 97122

The USFS is a federal land management organization established to manage the nation's National Forests. As part of the Department of Agriculture, it provides timber for people, forage for cattle and wildlife, habitat for fish, plants, and animals, and recreation lands throughout the country. The USFS offers a possible link for local jurisdictions to federal grant programs. There are only about three sections of National Forest lands in Polk County; they are administered by the BLM. See Part 3 below for a description of the cooperative fire management program between the Forest Service and the BLM.

3. Bureau of Land Management (BLM)

District Manager
Salem District Office
1717 Fabry Rd. SE
Salem, OR 97306
(503) 375-5646

There are approximately 63 square miles of National Resource Lands administered by the BLM in Polk County. The BLM contracts with the Oregon Department of Forestry for its wildfire protection. Since 1995, the BLM has been integrated with the USDA Forest Service for fire and aviation management. The fire program is managed cooperatively between the two agencies and in close collaboration with the Pacific Northwest Wildfire Coordinating Group, an interagency group including the five federal wildland fire agencies, two state forestry agencies, and two state fire marshal associations. The interagency jurisdiction covers both Oregon and Washington and includes 10 BLM districts, 19 National Forests, and the Columbia Gorge National Scenic Area. By working cooperatively, the agencies can administer fire, fuels and aviation programs in a manner that eliminates duplication, increases program efficiency, and capitalizes on the expertise of each agency's personnel.

4. Polk County Emergency Management

850 Main Street St.
Dallas, OR 97338
(503) 623-9251

The purpose of the Office of Emergency Management is to execute the Governor's responsibilities to maintain an emergency services system as prescribed in ORS 401 by planning, preparing and providing for the prevention and management of emergencies or disasters that present a threat to the lives and property of citizens and visitors to the state of Oregon. The agency is responsible for coordinating and facilitating emergency planning, preparedness, response and recovery activities with the state and local emergency services agencies and organizations.

The Polk County Emergency Management Department maintains a county wide, integrated system to prepare for, respond to, recover from, and mitigate against disasters. The Polk County Emergency Management Plan, approved in 2006, provides the basic framework to guide departments, agencies, and organizations with emergency capabilities and responsibilities to mitigate, prepare for, respond to and recover from any major emergency that may affect all, or parts of Polk County. The Plan identifies authorities and references, defines operational conditions, describes the County emergency operations organization, assigns responsibilities, and provides a concept of operations. The Annexes assign specific functions while Appendices supplement actions outlined in the Plan and Annex. The county is in the process of updating the Emergency Management Plan; it will be available in the summer of 2009.

A Polk County Natural Hazards Mitigation Plan was adopted by the County Board of Commissioners in January 2006. The Plan provides a set of strategies and measures the county can pursue to reduce the risk and financial loss to the county and its residents from natural hazard events. The key activities are summarized in a five-year action plan. The Five-Year Action Plan Matrix lists the activities that will assist Polk County in reducing risk and preventing loss from future natural hazard events. The action items address multi-hazard issues and specific activities for flood, landslide, wildfire, severe winter storm, windstorm, drought, expansive soils, earthquake, and volcanic eruption hazards.

The County Sheriff is responsible for evacuations during a wildfire emergency. The responsibilities of other county employees are spelled out in Appendix B of the Polk County Natural Hazard Mitigation Plan.

5. State Fire Marshal

Oregon Office of the State Fire Marshal
4760 Portland Rd. NE
Salem, OR 97305
(503) 378-3473

The mission of the Oregon State Fire Marshal is to protect citizens, their property, and the environment from fire and hazardous materials. To meet this objective, the State Fire Marshal has numerous programs including community education, fire code adoption, consultation and enforcement, fire investigation, and local level emergency planning.

The State Fire Marshal maintains three Incident Management Teams (IMT) which can be deployed to provide comprehensive incident command to manage ongoing emergency operations. Incident Management Teams provide expertise in logistics, finance, planning, public information operations, safety, and community issues. They respond with resources mobilized by the Governor for a conflagration or other emergency that has overwhelmed the control and resources of local emergency responders (ORS 476.510). IMTs enhance effective coordination among responding agencies during fires, floods, earthquakes, structural collapse, tsunami, spilling of hazardous materials, and other natural or human-caused incidents. On large wildfire incidents, one of these teams will integrate with one of the Oregon Department of Forestry's IMTs to form a Unified Command. If the emergency dictates, an Urban Search and Rescue (US&R) team will be dispatched for heavy rescue operations.

The Community Right to Know Unit (CR2K) administers an annual Hazardous Substance Information Survey (HSIS) of Oregon businesses and government agencies. The HSIS is sent to facilities that have reportable quantities of hazardous substances and to facilities that operate under North American Industrial Classification System codes that have been determined to likely store, possess, use, generate, manufacture or dispose of hazardous substances. This information is provided to emergency responders and emergency planners to assist them with hazardous materials pre-emergency planning and response. If required, the State Fire Marshal has regional HazMat Emergency Response Teams to protect life and the environment by responding to chemical emergencies and minimizing the dangers associated with them.

6. Confederated Tribes of the Grand Ronde

Confederated Tribes of the Grand Ronde Community of Oregon
9615 Grande Ronde Road
Grand Ronde, OR 97347
(503) 879-5211

The Grand Ronde Community is an Indian reservation located on several non-contiguous sections of land in southwestern Yamhill County and northwestern Polk County. It is about 18 miles east of Lincoln City, near the community of Grand Ronde. Various tribes and bands from all parts of Western Oregon were removed from their homes in the mid-

1800s and placed on this reservation. It is owned by the Confederated Tribes of the Grand Ronde Community of Oregon. The reservation has a land area of 10,300 acres(16.4 sq miles) and a 2000 census resident population of 55 persons, although there are 4,700 confederated members.

The Reservation consists mainly of timber lands. The Natural Resource Division for the Tribes administers the forestry related activities.

The West Oregon District of the Oregon Department of Forestry has a fee-based fire protection agreement with the Confederated Tribes of Grand Ronde. Staff from the Tribes regularly attend and participate in meetings of the West Oregon Forest Protective Association. It is common to have joint fire suppression action from tribal and ODF organizations on fires of mutual concern. Joint fire training is a yearly occurrence. Slash disposal is also a frequent issue requiring communication and coordination. Larger planning efforts including fire mobilization plans from each organization are shared and reviewed between the organizations.

7. Polk County Fire Defense Board

Dallas Fire Department, Fire Chief
915 SE Shelton Street
Dallas, OR 97338
(503) 831-3530

The Fire Defense Board was formed to comply with the Oregon Fire Service Mobilization Plan and to maintain valid fire suppression, basic life support and an inter-fire agency cooperation understanding in Polk County for the betterment of public safety services. Membership consists of all Fire Chiefs in Polk County. Additionally, the State Fire Marshal is an ex-officio member and the Oregon Department of Forestry is represented. The Board meets once every other month on the second Wednesday at 2PM.

Responsibilities of the Board regarding conflagration include:

- Administer the Mobilization Plan within established boundaries,
- Maintain response procedures for alert, transfer, and dispatch of firefighting equipment,
- Maintain a liaison with other agencies capable of augmenting fire fighting resources,
- Maintain accurate inventories of fire fighting equipment within the District,
- Conform to the standards of the Mobilization Plan and, when applicable, the statewide fire communications network (FIRE NET),
- Develop dispatch plans for mobile support equipment requests, and to conduct test exercises as necessary to ensure sufficient operation if the Mobilization Plan, and
- Provide expedient procedures for dispatching mobile support.

Responsibilities of the Fire Defense Board regarding non-conflagration issues are yet to be developed.

8. Industrial Forest Landowners

Several industrial forest landowners own and manage timber lands in the western portion of Polk County. These landowners have strong interests in preventing wildfires which could threaten their land and resources. The companies have some of their own equipment but, importantly, they also have contractual agreements with logging, road construction, labor and helicopter contractors who can supply equipment and manpower during wildfire events. The companies have fire suppression plans which spell out responsibilities and sources of equipment.

The typical policy for industrial landowners is to take immediate suppression action on any fire which threatens or occurs on their ownership. They will cooperate fully with other landowners, rural fire districts and State protection districts in forest fire suppression activities. If a fire should occur, their personnel and contract loggers or forest workers in the area will take immediate fire suppression action. The Region Manager and the appropriate State protection districts will be notified immediately. Available company personnel, contract loggers and forest workers will be alerted for possible dispatch to the fire. The Region Manager or his designated representative will assume direct supervision of all fire suppression activities until the fire is out or until the responsibility of fire suppression is transferred to the landowner or a government agency. For fires that occur on timber sale areas, the Logging Manager will assume the responsibility for fire suppression action and coordination. All operations will focus on personal safety as a primary objective.

The West Oregon Forest Protective Association consists of private timberland owners in Benton, Polk and Lincoln Counties who pay an annual per acre assessment on their land. The main objective of the associate is the protection of forest resources from destructive influences, including forest fires. They also seek effective communications with public agencies and other resource organizations in an effort to assure wise decisions affecting forest resources are made. The association has about 30 members and six affiliate members.

9. Polk Soil and Water Conservation District

580 Main St., Suite A
Dallas, OR 97338
(503) 623-9680

The Polk Soil and Water Conservation District (SWCD) is a subdivision of the state government, led by a locally elected board of directors who serve without pay. The district's charge is to help conserve the land, water, plants, and wildlife resources in Polk County. The Polk SWCD directors are joined by associated directors, staff, and volunteers to carry out the district activities. Much of the district's work involves matching governmental assistance with local conservation needs and encouraging land managers to use conservation practices.

The "Dust Bowl" captured the attention of the nation to the need to conserve soil and other natural resources. In 1935, President Franklin D. Roosevelt addressed the problems of soil erosion in the nation by shepherding the passage of the Soil Conservation Act, which established the Soil Conservation Service (SCS) within the United States Department of Agriculture.

The SCS was charged with developing a program to conserve and enhance the nation's soil and water resources. At first it was assumed the federal government could manage the whole program. However, during the first two years, it became apparent local leadership was needed to coordinate efforts of conservation agencies and tie their program to local conditions and priorities. The SCS needed the assistance of local farmers, ranchers and other land managers to put together and operate an effective program.

In 1937, President Roosevelt asked all state governors to promote legislation to allow soil conservation districts to form. During that same year the US Congress developed a model conservation district law for consideration by state governments. Thus began a partnership that exists today.

Across the United States, nearly 3,000 conservation districts are helping local people to conserve land, water, forests, wildlife, and other related natural resources. Districts coordinate assistance from all available sources (public, private, local, state, and federal) in an effort to develop locally driven solutions to natural resource concerns.

The Polk Soil & Water Conservation District (Polk SWCD) was organized in April of 1966. Seven elected volunteers representing five zones and two At-Large positions administer it. The Polk SWCD received a tax rate in 2002 to continue the conservation of natural resources.

The Polk SWCD acts as a liaison with federal, state, and local agencies to accomplish a landowner's natural resource related goals. Using their resources they can bring funding and technical assistance to Polk County for wildfire risk reduction projects that would have a beneficial outcome to all residents in the county.

C. Fire Department & Protection Districts

There are 12 fire protection districts or departments located partially, or completely, in Polk County (Appendix E). The fire departments for the incorporated cities have varying amounts of paid, career firefighters, and volunteers. The fire protection districts are largely made up of volunteers. Some districts do not have equipment or firefighters, they contract for fire protection from nearby fire departments.

For most of the fire protection districts or departments described in this section, an ISO rating is given. ISO stands for Insurance Service Office. The ISO rates communities and fire districts on a scale of one to ten based on the quality and effectiveness of their fire protection program and resources. The rating criteria are largely based on available

equipment and water supply. Lower ratings indicate better fire protection afforded by the fire district or department. Insurance companies use the ratings to help establish the cost of their fire insurance. The rating criteria are in Appendix B.

For some districts or departments an approximate number of annual responses is given. In these cases, the numbers of medical/rescue type calls are far more than wildfire calls.

The following gives a brief description of each of the fire protection districts and departments.

1. Amity Fire Protection District

401 Trade Street
Amity, OR 97101
(503) 835-2311

The Amity Rural Fire Protection District is located in portions of southeast Yamhill County and northeast Polk County. It contains a total of 69 square miles of which 43 are in Yamhill County and 26 are in Polk County. The main fire station is in Amity which is in Yamhill County while a satellite station is located in Perrydale, a part of Polk County. About 2,500 residents are served by the district. The district has about 52 firefighters of which 50 are volunteers. The ISO rating for the district is 5 in the city and 8b in the rural area.

Amity Rural Fire District maintains the following apparatus: four engines, three tenders, two brush rigs and one rescue vehicle. In 2005 the district responded to 308 calls of various types.

Amity Fire District is in the process of building a new fire station.

The following is firefighting equipment needs for Amity Fire Protection District:

- Full complete sets of wildland clothing including boots - 15 sets.
- 1" forestry hose - 2,000 feet.
- Updated Brush trucks with 400 gallon tanks - 2 units
- 3,000 gallon portable tank - 1
- 1" nozzles for wildland fire fighting - 10
- Pok foam pack unit - 2

2. Dallas Fire Department

915 SE Shelton Street
Dallas, OR 97338
(503) 831-3533

The Dallas Fire Department provides fire protection and rescue service to the City of Dallas, and under a contract, to the SW Polk County Rural Fire Protection District. The

department has four full time paid employees and 70 volunteers. The area protected in the city and throughout the district is close to 130 square miles and has about 33,000 people.

There is one fire station in the City of Dallas. This station, built in 1972, has some major maintenance issues but does not need to be replaced at this time. Two other stations are located in the contract area, Rickreall and Falls City. The Falls City station is new and owned by the city. The district owns the Rickreall Station; it will need to be replaced in the near future. Volunteers for both Rickreall and Falls City are under the Dallas Fire Department, except for incidents within the city limits of Falls City.

The ISO rating for the City of Dallas is 2, which is a very enviable rating. The rating for the areas within the district ranges from 5 to 10, depending on the distance from the nearest fire station, or hydrant.

The department has the following equipment;

- Two 1,500 GPM, 750 Gallon Engines
- One Heavy Rescue
- One Aerial Ladder Truck
- One 600 Gallon Interface Truck
- One 2,500 gallon Tender
- One 1,000GPM Engine

The district has the following additional equipment

- Two 4x4 Interface Engines
- One 3,000 Gallon Tender
- One H&W Engine
- One 1,800 Gallon Tender
- One ton CAF System

3. Dayton Fire Protection District

500 Ferry Street
Dayton, OR
(503) 437-1738

The Dayton Fire protection District covers approximately 80 square miles in portions of Yamhill and Polk Counties; only 15 percent is in Polk County. The district serves about 5,000 people providing fire protection, emergency medical services, and vehicle rescue. The main fire station is in the City of Dayton; there are two substations, one in Hopewell and one at Grand Island. All fire stations are in good condition.

The district maintains the following apparatus:

- Four Type 1 Engines
- One Type 2 Engine
- One Type 1 and two Type 2 tenders
- One Emergency Medical Rescue Vehicle
- Two Type 6 Brush Vehicles

One AIR Truck
One Command Vehicle

The district has about 40 volunteers and four part-time paid employees. In 2008 the district responded to 425 calls of various types. The ISO rating within the city is six while it is 9 in the outlying areas.

Vegetation varies across the district but is largely associated with agricultural uses. Some small wood lots are found at both the northern and southern portions. Response time is an issue for some of the rural areas because of the distance from the nearest fire station.

4. Hoskins-King Valley Fire Protection District

38811 Highway 223
Philomath, OR 97378
(541) 929-2356

The Hoskins-King Valley Fire Protection District is mainly located in Benton County, to the south of Polk County. Only 3.4 square miles of the district is located in Polk County; these are a combination of private and BLM administered lands. The district has one fire station in King Valley with about 15 volunteers.

5. Polk County Fire District #1

1800 Monmouth Street
Independence, OR 97351
(503) 838-1510

Polk County Fire District #1 serves an area of approximately 165 square miles including the Communities of Monmouth, Independence, Buena Vista, Airlie, and Pedee. The district has four fire stations, all being in fairly good condition (Buena Vista is one year old). There are 15 career, paid positions on the district including six which are administrative. Additionally, there are 70 volunteers including nine resident volunteers who are college students in training to be firefighters.

Currently, the entire district enjoys an ISO rating of 3. District officials feel this rating will likely increase for the rural areas when the district is re-evaluated.

Much of the district located outside of the urban area is in agricultural use with wheat fields, tree farms, grass seed, and increasingly, vineyards. The western portion of the district grades into the foothills of the coast range and a heavily forested situation. The district is better set up to fight grass type fires in the rural areas and relies on the ODF and federal agencies through mutual aid agreements to fight forest fires with heavy fuel loads.

The District maintains the following apparatus:
Five Engines

Three grass rigs
Four Tenders
One Ladder Truck
One Heavy Rescue
Three Ambulances

From January 1, 2005 to March 1, 2009 the fire district responded to 219 fire related calls.

6. Salem Suburban Rural Fire Protection District

Fire Station #1
370 Trade Street SE
Salem, OR 97301
(503) 588-6245

The Salem Suburban RFPD is located in portions of Polk and Marion Counties and is adjacent to the western portion of the City of Salem. In 1973 the two counties merged four smaller fire districts into one making the Salem Suburban RFPD. The District includes about 30 square miles, about one-half of which is in Polk County. The Willamette River divides the district.

The district has a Board of Directors and contracts with the Salem Fire Department for their fire protection and medical/rescue services. The district does not have any firefighters under its jurisdiction. It does own one fire engine, two tenders, and three wildland engines it provides to Salem Fire Department for the delivery of service. Hazard fuel concerns include brushy areas on steep slopes. Much of the area is in hobby farms, vineyards and Christmas tree farms.

7. Salem Fire Department

370 Trade Street SE
Salem, OR 97301
(503) 588-6245

A portion of the City of Salem is located west of the Willamette River in Polk County (West Salem). All of the City of Salem is served by the Salem Fire Department. The department has 11 fire stations, two of which are located in West Salem. Fire Station Number 5 is located at 1520 Glen Creek Road NW. Fire Station #11 is being built and will be staffed 40 hours per week by August of 2009. The Salem Fire Department provides fire protection to the Salem Suburban Rural Fire Protection District under a contract between the two entities. The ISO rating for the city and all areas in the district within 1,000 feet of a hydrant is 2. All other areas in the district are 8b.

Salem Fire Department Resources

Station	Apparatus	Staffing
Station 1 370 Trade St SE	Engine Air support unit Wildland engine	3
Station 2 875 Madison St NE	Engine Ladder truck Battalion chief Reserve medic	3 4 1
Station 3 1884 Lansing NE	Engine Reserve engine	3
Station 4 200 Alice SE	Engine Ladder truck Battalion chief Rescue	3 4 1
Station 5 1520 Glen Creek Rd NW	Engine Reserve engine Rescue Boat Tender Wildland Engine	3
Station 6 2740 25 th SE	Engine ARFF unit	3
Station 7 5021 Liberty Rd S	Engine Tender Wildland engine Air support unit	3
Station 8 4000 Lancaster Dr NE	Engine	3
Station 9 5080 Battlecreek Rd SE	Engine Reserve Medic	3
Station 10 3611 State St	Engine USAR unit MCI trailer	3
Station 11 1970 Orchard Heights Rd NW	Engine Reserve Ladder Reserve Medic Haz Mat unit	

The Salem Fire Department responded to 2,062 calls of various types in Polk County for the year 2008 (Salem City and Salem Suburban Fire District).

The department is in need of the following wildfire fighting equipment: Fire shelters 75 @ \$525.

8. Sheridan Fire Protection District

230 SW Mill Street
Sheridan, OR 97378
(503) 843-2467

The Sheridan Fire Protection District consists of 101.2 square miles of which 57.4 square miles (57%) are in Yamhill County and 43.8 square miles (43%) are in Polk County. A small portion of the district located in Polk County is within the West Oregon Protection District (ODF).

The District has its main fire station in Sheridan (Yamhill Co.) and has substations in Buell and Ballston, both in Polk County. All three fire stations are in good condition. There are six and one-half paid positions on the district and 40 volunteers.

Fuel types in the Polk County part of the district vary considerably. The area southwest of Highway 22 is largely hilly and forested. The part to the northeast of Highway 22 is generally flat and dominated by agricultural uses, typically grain fields. Most large wildland fires within the district are associated with grain field fires which can be fast moving and wind driven. There have been no large wildland forest related fires in the district during the past five years; there was one large Wildland Urban Interface fire in the past ten years.

The district participates in the following Mutual Aid Agreements:

County wide with Polk County fire districts and departments,
County wide with Polk County fire districts, and
With the Oregon Department of Forestry.

In 2008, the district responded to a total of 1,059 calls. Of these, 66 were fire related.

The district has the following fire apparatus:

Four Type 1 Engines
Two Type 1 Tenders
Four Type 6 Brush Rigs
One Heavy Rescue
Two Medical/Ambulance Unit.

Sheridan Fire Protection District's equipment needs include:

- Interface engine
- Updated wildland PPE, especially shelters
- New chassis for (3) brush rigs
- Turbo-draft unit
- New substation for Gopher Valley/Thomson Mill Road area
- Interface engine for new substation (fully equipped)

9. Spring Valley Fire Protection District

2750 Zena Road
PO Box 5125
Salem, OR 97304
(503) 364-4747

The Spring Valley Fire Protection District is located north of West Salem and south of the Dayton Fire Protection District; it covers about 32 square miles. It is an all volunteer organization and has 11 volunteers. The district has one fire station which was built in 1979. Equipment maintained by the district includes two engines, two tenders, one rescue vehicle and one brush truck. The newest piece of equipment was made in 1984. The district includes two small communities, Zena and Lincoln.

The ISO rating for the district is 8. It responds to around 80 calls per year, most being medical/rescue type of incidents. Wildland fires are usually grass or brush. Much of the district is in agriculture use with grass seed, vineyards and orchards being the primary uses. There are scattered woodlots throughout the district as well. The district responds to all calls to the Dayton Fire Protection District (automatic mutual aid).

10. Southwest Polk Rural Fire Protection District

275 Main Street
Rickreall, OR 97371

The Southwest Polk Rural Fire Protection District contracts with the City of Dallas Fire Department for its fire protection. The Rural Fire Protection District is separate from the City Fire Department and has its own Board of Commissioners and some equipment. There are two fire stations in the district, one in Rickreall and one in Falls City.

The Rickreall fire station is in fair condition now but it probably should be replaced before long. This station operates with 25 all-volunteer firefighters. The Falls City Fire Station is new; it has a chief and about 30 volunteers. There are five firefighting or rescue vehicles kept at the Falls City Station, two belong to the city and the SW Polk Co. RFPD owns three.

Both Rickreall and Falls City have an ISO rating of 5 while the remainder of the district has a rating of up to 10, depending on how far they are from the nearest fire station or hydrant. Locations more than five miles from the nearest hydrant or station have a rating of 10.

The fuel situation in the district is largely influenced by agricultural activities. Grass seed and grain fields along with some vineyards dominate much of the landscape. However, there are scattered woodlots and brushy draws throughout. While the area just west of Falls City is outside of the district, it is heavily forested and presents a wildfire threat to the city. Areas to the west of Dallas are also heavily forested and represent additional wildfire threats to the district.

11. West Valley Fire Protection District

825 NE Main St.
Willamina, OR 97396
(503) 876-2004

The West Valley Fire protection District is located in the southwestern portion of Yamhill County and the northwest part of Polk County. A total of 55% or 33.9 square miles of the district lies in Yamhill County with the remaining 45% or 27.5 square miles being in Polk County.

The main fire station for the district is in Willamina which is mostly in Yamhill County. The district maintains a substation in Grande Ronde, a part of Polk County. The main station was built in 2000 and is in good condition while the substation is old and needs replacement. The Grand Ronde Tribes are building a new fire station in Grand Ronde but at this time, it is unclear who will man the facility when it is complete.

The district has seven full time employees and about 8 regular volunteers. Additionally, there are 12 resident college students who do 24 hour shifts at the fire station. These apprentice type volunteers receive financial assistance from the district to help with the cost of their education.

The full time employees along with the resident students at the station allow the district to have a very fast response time for all calls. The fast response time is important for their ambulance calls and helps them get a quick jump on wildland type fires. As a result they have been able to keep most wildland type fires small in size.

Most of the calls taken by the district are for medical purposes and most of these are in Polk County. The Indian Casino at Grand Ronde and the coastal highway generate much of this business.

The district trains with the Oregon Department of Forestry and department personnel often use district facilities. Firefighters with the West Valley Fire Protection District get a lot of wildland fire training and are frequently dispatched to wildfires outside of their district.

During the 2009 fire season the district will have a part-time employee who will be doing wildfire risk surveys in high risk neighborhoods around the City of Willamina. The district is also in the process of distributing address signs to homeowners in rural areas to make their location easier during an emergency situation.

Much of the fuel type outside of the communities is considered forest lands. There is a small amount of agricultural use. The cities within the district have an ISO rating of 5 while the rural areas have an 8B rating.

The district maintains the following apparatus:

- Three Type 1 Engines
- One Type 1 Water Tender
- Two Command Units (One is Command and Medical Support for large Incidents)
- Two Type 6 and One Type 3 Brush Units
- Four type 2 Medical/Rescue Units

In 2008, the district responded to 1,323 calls of various types. Most responses by the district are for medical type reasons.

West Valley District equipment needs include:

- Interface engine
- Updated wildland PPE

IV. Special Considerations

A. Senate Bill - 360

The Oregon Forestland-Urban Interface Fire Protection Act of 1997 (SB-360) is the State of Oregon's response to several escalating wildland fire problems. Wildfires are burning homes in the interface and firefighters are working in increasingly hazardous situations. Fire suppression costs are increasing significantly in Oregon. Firefighting resources are limited and in some cases emergency service agencies cannot provide equipment and personnel to all structures threatened by a wildfire. SB-360 addresses these concerns and enlists the aid of the only people who can make fuel reduction changes to residential property: the landowners themselves.

The vegetation treatment prescription found in the act is derived from research conducted at the Rocky Mountain Research Station in Missoula, Montana (Cohen and Saveland, 1996). The measures are simple and easy to apply and include:

- Removing pine needles and leaves from the roof.
- Pruning limbs from trees, keeping trees healthy.
- Removing shrubs near the home and close to trees.
- Mowing dead grass near the home.
- Storing firewood and other flammable material at least 20 feet from the home (during fire season).
- Removing tree limbs within 10 feet of a chimney opening.
- Maintaining a shaded fuel break near the house and in some cases around the property line.

- Maintaining driveways that are over 150 feet long clear of branches and trees that could prevent emergency vehicles from gaining access to the structure.

The act applies to lands protected by the Oregon Department of Forestry and does not apply to other properties outside of ODF protection. Each county will establish a classification committee that will identify the hazard class of each area affected by the act. Once classified, landowners are provided a certification package and given two years to certify that their lands meet the standards. The Oregon Department of Forestry will work closely with local emergency management personnel, conduct public meetings, hearings and community workshops along with providing onsite consultation for landowners affected by the act.

The Forestland-Urban Interface Fire Protection Act of 1997 is intended to be both voluntary and self certifying by the homeowner. By design, the Oregon Department of Forestry developed a program that recruits the assistance of each homeowner, offers defensible space prescriptions and allows affected homeowners the option of certifying their property or not. The act contains no statutory provisions, homeowners will not be cited or required to appear in court if they choose not to participate. The act does contain a potential civil liability if the homeowner does not certify their property in two years after notification. If a fire originates on that property and spreads through the area that should be treated and the Oregon Department of Forestry must utilize extraordinary suppression efforts to contain that fire, a home owner could be liable for up to one hundred thousand dollars of suppression costs.

Throughout the original Legislative consideration of the Forestland-Urban Interface Fire Protection Act it was clear that the Act was intended to be implemented across the entire state. It was also understood that the Oregon Department of Forestry would conduct implementation in a staged manner based on each county's exposure to damaging interface fire. At this time, implementation of the Act has not started in northwest Oregon counties (including Polk County).

B. Emergency Conflagration Act

Under circumstances when wildfires create a serious threat to life and property, and when structures are involved, 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.

C. 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 9) 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

D. 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 affects 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.

E. 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. An Implementation Plan was developed in May 2002 to provide consistent and standard direction for implementing the NFP and the Strategy.

The NFP is focused on firefighting, rehabilitation, hazardous fuels reduction, community assistance, and accountability. The guiding principle for dealing with fire risks 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.

F. 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.

G. Fire Safety Standards

Polk County, the State Fire Marshal Office, and within the City of Salem, the Salem Fire Department, have fire safety standards which 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, setbacks from ridge-tops, cliff and bluffs, access roads, water source, power supply, chimney screens. The Polk County Fire Siting Standards for dwellings and structures apply to certain zones and are listed in Chapter V.E.1.

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 3,600 square feet require a water source for firefighting purposes. For access, the State requires a way to get firefighting vehicles to within 150 feet of the structure.

V. Wildfire Risk Assessment

This chapter describes the Wildfire Risk Assessment process completed by the CWPP Planning Team for Polk County. Wildfire Risk can be described as follows:

- Risk is "the potential for realization of unwanted, adverse consequences to human life, health, property or the environment."⁹ It is the exposure to the chance of loss of something humans value.
- Wildfire Risk is the potential for a wildfire to adversely affect things that humans value - lives, homes, critical infrastructure, or ecological functions and attributes.
- Wildfire risk in a particular area is a combination of the chance that a wildfire will start in or reach that area and the potential loss of human values if it does.
- Human activities, weather patterns, wildfire fuels, values potentially threatened by fire, and the availability (or lack) of resources all contribute to wildfire risk.

Because there are significant differences in the wildfire risk factors between the forested, mountainous zone on the western portion of the county as compared with the more level areas occupied with homes, farms and communities and used primarily for agricultural purposes to the east, a separate Wildfire Risk Assessment was completed for each.

A. Methodology Used

A Wildfire Risk Assessment was completed for two zones, the forested, mountainous area in the western portion of the county (Zone 1), and the primarily agricultural areas to the east (Zone 2). The assessment resulted in a rating of Low, Moderate, or High Wildfire Risk for each zone. The ratings were based on scores assigned to four risk factors: Ignition Risk, Hazard, Values, and Protection Capability. A fifth factor, Structural Vulnerability, was not included in the assessment because individual homes in the county have not been assessed using the evaluation criteria from NFPA 1144 or SB-360 at the time of this writing. Structural Vulnerability is addressed in part D of this chapter.

Each of the four evaluation factors used has from two to five criteria to better describe it. These criteria were given weighted scores established by the Oregon Department of Forestry. Criteria scores were added giving a total score for each factor. The scores for the four factors were then added and used to establish the overall rating of Low, Moderate, and High for the zone. In summary, the assessment used the following process:

- Each zone was assessed separately based on four factors.
- The factors have from two to five criteria to better describe them.
- Each criterion was given a weighted score based on how important it was.
- A rating of Low, Moderate, or High 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 zone.

⁹ Society for Risk Analysis

The methodology used was developed by the Oregon Department of Forestry. It can be used on a state-wide basis, or at the local level. This assessment for Polk County used the local level method. A description of the factors and the scoring system is in Appendix C.

B. Summary and Discussion

Table 1 summarizes the scoring results of the Wildfire Risk Assessment for Polk County. Following Table 1 there is a brief discussion about the results of the assessment. Part C of this section gives a detailed analysis of the risk factors and their evaluation criteria.

Table 1. Wildfire Risk Assessment Summary

Factor	Criteria	Possible Score	Zone 1 Score	Zone 2 Score
Ignition Risk	Wildfire History	5-20	10	20
	Home Density	0-10	0	2
	Other Wildfire Risks	0-10	5	10
Ignition Rating			Moderate	High
Hazard	Weather	20	20	20
	Slope	0-3	2	1
	Aspect	0-5	3	5
	Elevation	0-2	2	2
	Vegetation	0-20	20	20
	Crown Fire	0-10	10	5
Hazard Rating			High	High
Values	Natural Resources	0-15	15	8
	Home Density	0-30	0	7
	Infrastructure	0-20	20	20
Values Rating			Moderate	Moderate
Protection	Response Capability	0-36	36	8
	Community Preparedness	0-4	0	4
Protection Rating			High	Moderate
Total		0-195	143	132
Overall Risk Rating			High	High

Ignition Risk: Most wildfires in Polk County are human-caused and the risk for wildfire ignition becomes greater as the density of homes increases. There are only a few homes in Zone 1, these being located on the eastern edge of the zone. The density of homes outside the incorporated cities is fairly uniform in Zone 2. However there is a concentration of homes in the suburbs of West Salem and Dallas. Not surprisingly, the number of fire starts in these areas is higher than in most areas. The Ignition Risk point

total for Zone 1 is 15 which is a Moderate rating. Zone 2 has a score of 32 which qualifies as a High Risk.

Hazard: Both Zones 1 and 2 are given a High Risk rating for the factor, Hazard. The high scores for this factor are primarily because of heavy fuel loads throughout both zones. Zone 1 does have heavier fuel loads overall, but the fuels in Zone 2 are considered flashy (easy to ignite and fast moving) which balances the heavier loads in Zone 1.

Values: Both Zones 1 and 2 have a Moderate Risk rating for the Values factor. Zone 1 has important natural resource values while Zone 2 has agricultural products and homes at risk from wildfire. Both have important infrastructure to be considered.

Protection Capability: While Zone 1 is vulnerable because response time from organized fire departments is high, it has proven mitigation efforts in place with loggers who are often on-site and have equipment for firefighting. Zone 2 lacks in community preparedness but response time from fire protection districts is good. Response capability for the Salem and Dallas Fire Departments is very strong. Both zones are rated as a Moderate Risk for the factor, Protection Capability.

Overall Wildfire Risk Rating: Both Zones 1 and 2 are considered a High Risk based on the combined scores of the four factors. Total scores that are more than 119 are considered in the High Risk category. Zone 1 has a combined score of 143 while Zone 2 has a total score of 132.

C. Assessment of Zone 1

Zone 1 is the forested, mountainous area located in the western portion of the county; it includes about 296 square miles making up 40 percent of the county. It has elevations ranging up to 3,725 feet above sea level and is generally considered commercial forest land. The zone includes all of the area outside of any County Fire Protection District. However, it is totally within the Oregon Department of Forestry's West Oregon Protection District. There is a mixture of private, industrial forest lands with some BLM and state forestry lands.

1. Factor 1 - Ignition Risk

Ignition Risk is the likelihood of a wildfire occurring. Its determination is based on a combination of the number of past fires which have occurred in the area, the density of human habitation, and other risk factors present.

Wildfire History (per 1000 acres per 10 years)

Possible score, 0-20 points.

From 1997 to 2007 there were approximately 125 wildfires reported in Zone 1.¹⁰ This amounts to around 0.66 fires per 1000 acres per 10 years resulting in a weighted score of ten points. Ten of the fires were lightning caused and the remainder was caused by humans. Most of the human caused fires were recreation related. Equipment use and

¹⁰ Oregon Department of Forestry records.

debris burning each accounted for several fires. Wildfires occurred across the zone during the 10 year period but there was a slight concentration around the Falls City area and to the south of it. In general, the frequency of reported fires increased in areas closer to human habitation. There was one large wildfire in the zone (more than 1,000 acres) reported in 1987.

Home Density (homes per ten acres)

Possible score, 0-10.

There are very few homes in the zone and these are located close to one of the Fire Protection Districts. Most of the zone is federal lands, or owned by industrial forest owners. On average there is less than one home per 10 acres across the zone and the weighted score is zero points

Other Wildfire Risk Factors:

Possible score, 0-10.

The zone contains several other wildfire risks including: transmission power lines, active logging, debris burning, dispersed camping, off-road vehicle use, wood cutting, highways, youth camps and lightning prone areas. The weighted score for this criterion is five.

Ignition Risk Rating (cumulative score of the three criteria)

0-13 Low, 14-27 Moderate, 28-40 High

The total score for the three criteria under Ignition Risk Factor is 15 which is a Moderate Risk rating.

2. Factor 2 - Hazard

Hazard is the resistance to control once a wildfire starts. It includes weather, topography, and vegetation (fuel) that adversely affects suppression efforts.

Weather

Possible score, 0-40

The number of days per season that forest fuels are capable of producing a significant fire event varies from year to year and by elevation. The fire season for much of Zone 1 is around 120 days. While the normal fire season is fairly short, the zone does experience periods of hot, dry weather causing high fire danger readings. Summer time sea breezes from the coastal area and east wind events add to the concern.

The Oregon Department of Forestry has established rating scores by default for three areas in Oregon. Area 1 includes coastal areas and has a score of zero. Area 3, the dry, eastern part of the state, is all scored a 40. Polk County is in Area 2 which includes the Willamette Valley and the eastern slopes of the coast range. It has a rating score of 20. The rating scores are based on an analysis of daily wildfire rating indices in each of the zones.

See Chapter III, A for a more detailed description of climate in Polk County.

Slope

Possible score, 0-3

There is a strong relationship between the steepness of slope and the rate of wildfire spread. The rate of fire spread becomes faster as the percent of slope increases.¹¹ Generally speaking, the rate of spread is twice as fast on a 30 percent slope as compared with a level surface. Combustion on steep slopes is accelerated because of increased heat transfer through radiation and convection. Fuels on the upslope side of a fire are warmed faster through radiant energy since they are closer to the source of heat. Further, these fuels are heated by convection currents which tend to rise upslope because of their lighter weight.¹²

The majority of Zone 1 has slopes ranging between 25 and 40 percent. There are areas with slopes less than 25 percent and some that are more than 40 percent. Overall, the zone is given a weighted score of two for the slope criterion.

Aspect

Possible score, 0-5

Aspect affects the amount of thermal energy reaching the ground and in turn the amount of moisture in fuels. South, southwest, and southeast aspects tend to have warmer microclimates causing drier conditions conducive to wildfire ignition and increased rate of fire spread. North, northwest, and northeast aspects are cooler and normally exhibit slower rates of fire spread. Aspect also influences the type of vegetation growing there which in turn, affects fire behavior.

The northern portion of Zone 1 has mainly a northeast aspect while the southern two-thirds face mostly to the southeast. The zone is assigned a score of three for the aspect criterion.

Elevation

Possible score, 0-2

In general, wildfire risk decreases as elevation increases. This is because temperatures are usually cooler at higher elevations. Vegetation differences also play a role as fuel loads are generally less at higher elevations. Almost all of Zone 1 is at an elevation less than 3,500 feet and is given weighted score of two.

Fuels

Possible score, 0-20

Most of Zone 1 is forested and contains heavy fuel loads. These forests are very productive and are considered valuable timber producing lands. Tree species include Douglas-fir, Sitka spruce, western hemlock, western redcedar, and red alder. The understory contains vine maple, blackberry, salmonberry, salal, Oregon grape, bracken fern and thimble-berry.

There is a mixture of mature, second growth, and recently harvested and regenerated areas. All of these areas have fuels capable of producing flame lengths in excess of eight

¹¹ Davis, Kenneth Pickett. 1959. *Forest Fire Control and Use*. McGraw-Hill Book Co. New York. 584 pages

¹² Barrows, J.S. 1951. *Fire Behavior in northern Rocky Mountain forests*. Northern Rocky Mountain Forest and Range Experiment Station. Station Paper N. 29. USDA Forest Service. Missoula, Montana. 103 pages.

feet, under the right conditions. The mature stands of trees may be less prone to ignition since there would be less human activity. However, once wildfires start in these areas, they can be some of the most difficult to suppress because access by firefighters is more difficult and fuel loads can be very heavy. Recently harvested areas have more flashy fuels and are subject to fast moving fires. Second growth stands have lots of ladder fuels¹³ making them prone to crown fires.

It is estimated that much of the zone is in Fire Regime Condition Class 2 or 3. This would indicate that they have missed one or more natural fire events and now contain unnaturally high fuel situations. See Appendix D for a definition of Fire Regime Condition Class.

The weighted score for the criterion, Fuels is 20.

Crown Fire Potential

Possible score, 0-10

Canopy closure, ladder fuels, and frequent windy conditions across much of Zone 1 make it vulnerable to crown fire events.

The weighted score for crown fire potential is 10.

Hazard Risk Rating

0-9 Low, 10-40 Moderate, 41-60 High

The total score for the factor, Hazard, is 57 which is at the upper end of the High Risk category.

3. Factor 3 - Values Protected

This factor includes human and economic value associated with communities or landscapes. Natural resources apply to areas with high values of commercial timber, wildlife, recreation, and domestic water supplies. Protection of life is the number one priority with all agencies and is best measured by the density of homes. The presence of community infrastructure is another consideration.

Natural Resources

Possible Score 0-15

There are important natural resources in the zone which can be threatened by wildfire. The value of merchantable trees is very high and wildland fires can quickly destroy trees of any age. Large trees can sometimes be salvaged after a fire but there is no monetary value left in the smaller trees once killed in a fire. Other values include the loss of wildlife habitat, recreation opportunities and watershed quality. Several communities depend on forested areas in the zone for their water supply. Large and severe fires can impair water supplies because of sedimentation and a change in the rate of runoff. The weighted score for Natural Resources in Zone 1 is 15.

¹³ Ladder fuels provide vertical continuity between surface and aerial fuels allowing fire to carry into the crowns of trees with relative ease. They help initiate and assure the continuation of crowning.

Home Density

Possible Score, 0-30

Since there are very few homes in Zone 1 the criterion Home Density is scored a zero.

Community Infrastructure

Possible score 0-20

Infrastructure improvements in the zone which can be threatened by wildfires include: high tension power lines, municipal watersheds, water supply distribution facilities, and communication sites.

The score for the criterion, Infrastructure, is 20. This is the highest rating available for infrastructure values.

Values Protected Rating

0-20 Low, 21-40 Moderate, 41-65 High

The factor, Values Protected, has a combined total of 35 points for Zone 1 which is considered a moderate risk rating.

4. Factor 4 - Protection Capabilities

Protection Capability is a combination of the capacities of the fire protection agencies, local government and community organizations. A high score indicates a high risk, low protection capability.

Response Capability

Possible score, 0-36

Wildfire Suppression for Zone 1 is accomplished through a combination of responses from the Oregon Department of Forestry, adjacent local fire protection districts, and in some situations, the logging community. There are five organized fire protection districts adjacent to the zone: West Valley, Sheridan, SW Polk, Polk County Fire District #1, and Hoskins-Kings Valley. First response to fires in the near vicinity of the fire protection districts is usually from the local fire protection districts under a Mutual Aid agreement with the Oregon Department of Forestry. Response time varies by district. The fire protection districts, with the exception of Hoskins-Kings Valley, have paid staff on duty 24/7. Response time from the fire stations with paid staff can be very fast but in some situations the distance to the fire can be great. Available resources also vary by fire protection districts but for the most part, they are well equipped for initial response to wildfires in Zone 1.

The Oregon Department of Forestry has the main responsibility for wildfire suppression in the zone. The zone is entirely within their West Oregon Protection District. See Chapter IIIB1 for a description of their responsibility and role in wildfire suppression. Response time from the Department depends on the location of the fire and available resources.

In some cases, logging companies and their personnel play an important role in the initial response and suppression actions on wildfires in Zone 1. Loggers are often in the vicinity of wildfires and they have useful equipment for suppression efforts. It is usually in their best interests to cooperate with the fire protection agencies.

In general, response time to a wildfire in Zone 1 is going to be more than 20 minutes. The criterion, Response Capability, has a score of 36.

Community Preparedness

Possible score 0-4

While there are no towns or cities in Zone 1, the logging community is somewhat organized and prepared for wildfire suppression. In many situations, loggers are onsite and have equipment available to fight fires. Therefore, Zone 1 is scored a 0 for the criterion, Community Preparedness.

Protection Capability Rating

0-9 Low, 10-16 Moderate, 17-40 High

For the factor, Community Preparedness, a total score of 36 points is assigned for Zone 1 which is a High Risk rating.

5. Overall Wildfire Risk Rating for Zone 1

0-51 Low, 52-118 Moderate, 119+ High

The weighted scores for Zone 1 considering the four risk factors were added and the following risk ratings were determined:

- Ignition Risk, 15 points – Moderate
- Hazard, 57 points - High
- Values Protected, 35 points - Moderate
- Protection Capability, 36 points – High
- Overall Rating, 143 points – High Risk

D. Assessment of Zone 2

Zone 2 contains about 450 square miles and includes all portions of the county east of Zone 1. It includes all areas within established fire protection districts. The zone is made up of agricultural land, incorporated cities, unincorporated communities, and scattered homes and wood lots (see description in Chapter IIIA). The land is generally level but there are some gently rolling slopes and a few steep hills. With the exception of a few federally owned acres, the zone is made up of privately owned land.

1. Factor 1 - Ignition Risk

Ignition Risk is the likelihood of a wildfire occurring. Its determination is based on a combination of the number of past fires which have occurred in the area, the density of human habitation, and other risk factors present.

Wildfire History (per 1000 acres per 10 years)

Possible score, 0-20

From 1997 to 2007 there were approximately 130 wildfires reported in the portion of Zone 2 which lies within the Oregon Department of Forestry's Protection District. This area is about 153 square miles or 98,000 acres in size. The number of wildfires per 1000

acres per 10 years is about 1.3. This would give a weighted score for the criterion Wildfire History of 20 points.

Of the 130 fires reported, seven were caused by lightning and the remainders were human caused. The majority of the human caused fires were from debris burning. The reported fires were spread fairly evenly throughout the area with some concentration around Dallas and Grand Ronde.

Oregon Department of Forestry records for the 10 year period are not available for the areas in the zone outside of their Protection District. However, the number of wildfires in the eastern portion of the zone is higher on a per acre basis. For example, the Salem Suburban Rural Fire District had 11 wildfires in 2008. This would amount to an average of nearly 11 wildfires per 1000 acres per 10 year period.

The obvious reason that there are more wildfires on a per acre basis in the eastern portion of the zone is that there are proportionally more people living there as compared with the western part. Human causes account for most of the wildfire starts in the county.¹⁴ Most wildfires have been small in size because of quick response from firefighters and nearby agricultural workers.

The weighted score for Wildfire History in Zone 2 is 20.

Home Density, (homes per 10 acres)

Possible score, 0-10

The housing density for most of Zone 2 is low and averages less than one house per ten acres. The weighted score for this level is zero. However, there are a few areas which average more than one home per 10 acres. In particular, the area surrounding West Salem and Dallas is much more densely populated than most of the zone. This accounts for the increased number of wildfires that occur in that part of the zone as well.

The weighted score for Home Density in Zone 2 is 2. This score accounts for the differences between sparsely populated portions of most of the zone and the more dense areas around Dallas and West Salem.

Other Wildfire Risks

Possible score, 0-10

There are several other wildfire risk factors present in Zone 2 including: state highways, county roads, public access roads, transmission power lines, above ground distribution lines, power substations, logging activities, debris burning, flammables present, mowing dry grass, wood cutting, equipment use, railroads, stables, farms/ranches.

Farming is an important activity in much of the zone and accounts for a significant portion of wildfire starts. Wheat farming presents a big risk when the grain is ripe and ready for harvest in the summer. Wheat field fires can be fast moving with high flame lengths making suppression difficult. At the time of this planning process, many farmers are switching their crops from grass seed to wheat because of better prices for grain. This will tend to increase the risk for large wildfires in agricultural areas.

¹⁴ Conversations with county fire chiefs and ODF officers, April 2009.



Homes on a wooded hillside with heavy fuels; high wildfire risk area.

Grass seed fields have high fuel loads but the risk from wildfire is less than from wheat fields because the farmers usually cut the grass when it is green. Christmas tree farms can be a low or high risk, depending on farming practices and the age of the crop. Some farmers control weeds when their crop is young so the fuel level is low. The wildfire risk increases as the trees reach merchantable size

While there are railroads which cross portions of the zone, the risk for wildfires from them is considered low. This is because the trains are slow moving and their frequency is low, about one per day on average.

State Highway 18 leading to the coast has frequent vehicle accidents, some resulting in wildfire starts.

The Other Wildfire Risks in Zone 2 result in a weighted score of 10 points for the criterion.

Ignition Risk Rating

0-13 Low, 14-27 Moderate, 28-40 High

The total score for the three criteria under Ignition Risk is 32 for Zone 2. This represents a High Risk rating.

2. Factor 2 - Hazard

Hazard is the resistance to control once a wildfire starts. It includes weather, topography, and vegetation (fuel) that adversely affects suppression efforts.

Weather

Possible score 0-40

The parameters affecting weather patterns in Zone 2 are primarily related to elevation and influences of the Coastal and Cascade Mountain Ranges. As elevation increases going west from the Willamette River, average seasonal temperatures tend to decrease which in turn increases fuel moisture levels and decreases the number of days per season that fuels are capable of supporting a significant fire event. The mountain ranges affect wind patterns which greatly influence fire behavior. During the fire season, “sea breezes” often come across the Coastal Range in the afternoons. These winds can be 20 MPH and since they are coming from the west, they could tend to drive a forest fire in the mountainous areas down to the populated portions of the zone. Another phenomenon involves winds from the Columbia River Gorge entering the zone from a northeasterly direction. These can also be strong winds that are typically warmer and drier with the potential of affecting wildfire behavior.

The Oregon Department of Forestry has established rating scores by default for three areas in Oregon. Area 1 includes coastal areas and has a score of zero. Area 3, the dry eastern parts of the state, is all scored a 40. Polk County is in Area 2 which includes the Willamette Valley and the eastern slopes of the coast range. It has a rating score of 20. The rating scores are based on an analysis of daily wildfire rating indices in each of the zones.

See Chapter III, A for a more detailed description of climate in Polk County.

Slope

Possible score, 0-3

There is a strong relationship between the steepness of slope and the rate of wildfire spread. Generally, the rate of spread is twice as fast on a 30 percent slope as compared with a level surface. Combustion on steep slopes is accelerated because of increased heat transfer through radiation and convection. Much of Zone 2 is quite level and the majority has slopes less than 25 percent. There are areas with slopes greater than 25 percent but this represents a small proportion of the zone. Overall, the zone is given a weighted score of one.

Aspect

Possible score, 0-5

Aspect affects the amount of thermal energy reaching the ground and in turn the amount of moisture in fuels. South, southwest, and southeast aspects tend to have warmer microclimates causing drier conditions conducive to wildfire ignition and increased rate of fire spread. North, northwest, and northeast aspects are cooler and normally exhibit slower rates of fire spread. Additionally, aspect influences the type of vegetation which also affects fire behavior.

The northern portion of Zone 2 has mainly a northeast aspect while the south part is more of a south to southeast aspect. Zone 2 is assigned a weighted score of five for Aspect.

Elevation

Possible score, 0-2

In general, wildfire risk decreases as elevation increases. This is because temperatures are usually cooler at higher elevations. Vegetation differences also play a role as fuel loads are generally less at higher elevations. All of Zone 2 is at an elevation less than 3,500 feet and is given weighted score of two.

Fuels

Possible score, 0-20

Wildfire hazard fuels in Zone 2 are made up of a combination of agricultural crops, scattered wood lots, and brushy river and creek bottoms. Much of the eastern portion of the zone is dominated by agricultural fields. There are pockets of wooded areas such as Eola Hills. The western portion of the zone has more of a mix of forest and agricultural lands. The main tree species include fir, spruce, and white and black oaks.

Agricultural products grown include: nursery crops, grass and legume seeds, dairy products, tree fruits and nuts, wine grapes, Christmas trees, poultry, grain and hay, and vegetables.

The wildfire risk represented by the various crops varies depending on the type and their maturity. Most crops are not considered to be a high wildfire hazard risk for the following reasons:

- Agricultural fields are typically level, or on gentle slopes.
- Most crops are harvested before they are in a dried-out stage, some are irrigated.
- Farmers usually keep weeds and unwanted vegetation out of their fields.
- In most cases, farmers and their neighbors are present, or nearby when a fire starts and are able to help suppress them when they are small in size.
- Farmers have equipment which can be used to help suppress wildfires.

However, there are some crops and situations which can pose a significant wildfire risk. Wheat fields represent a high risk situation when the crop is mature. Fires are easily ignited and can be fast moving with high flame lengths during wind events, making them very difficult to suppress. Wheat fields are becoming more common because of stronger markets for grain and a depressed demand for grass seed at the time of this planning process. Flame lengths during wheat field fires can exceed eight feet during windy conditions.

Christmas tree farms can present high wildfire risk situations, depending on farming practices and the maturity of the trees. Most young plantations are sprayed for weeds and fuels levels are low. However, some farmers do not spray for weeds and fuel conditions increase and can support fast moving fires during windy situations. As crop trees mature, fuel levels increase and distances between trees decrease which causes the wildfire risk to rise significantly. Flame lengths during a wildfire in a mature Christmas tree farm could easily exceed eight feet.



Wheat field fire. Note the high flame lengths even without a strong wind.

Small woodlots and brushy draws present high risk situations for wildfires during the dry season. The woodlots consist of conifer and hardwoods with underbrush. The underbrush can carry a surface fire and, under the right conditions, crown fires can occur. Flame lengths are generally from four to eight feet, but can be higher under the right conditions and when crown fires occur. A severe ice storm during the 2008-9 winter caused significant damage to hardwood species resulting in broken branches and dead trees. The overall effect was an increase in the amount of dead wood available causing a greater wildfire risk in those woodlots with large amount of hardwoods.

The weighted score for the Fuels criterion in Zone 2 is 20.

Crown Fire Potential

Possible score, 0-10

There is the potential for a crown fire in the wood lots or brushy draws in Zone 2 as there is crown closure in places and adequate ladder fuels. However, since there is only a small portion of the zone with these conditions, the weighted score for this criterion is only five.

Hazard Risk Rating

0-9 Low, 10-40 Moderate, 41-60 High

The total score for the Risk Factor, Hazard, is 53 which is a High Risk rating.

3. Factor 3 - Values Protected

This factor includes human and economic value associated with communities or landscapes. Natural resources apply to areas with high values of commercial timber, wildlife, recreation, and domestic water supplies. Protection of life is the number one priority with all agencies and is best measured by the density of homes. The presence of community infrastructure is another consideration.

Natural Resources

Possible Score: 0-15

Zone 2 has Natural Resource values but at a lower level as compared with Zone 1. There are scattered woodlots with some commercial timber and wildlife values. Because most of the land is devoted to agricultural uses, there is a relatively small portion left for Natural Resources. However, those portions in a natural state are quite important, especially for wildlife values. Zone 2 is given a weighted score of eight for Natural Resource values.

Home Density (homes per 10 acres)

Possible score, 0-30

Most of Zone 2 has a very sparse home density averaging less than one house per ten acres. The weighted score for this level is two. However, there are areas which average more than one but less than five homes per acre. The area surrounding much of West Salem and Dallas is much more densely populated than most of the zone.

The weighted score for most of the zone is two. For those portions where there is more than one home per 10 acres, the score would be 15. The score for the entire zone is set at seven which accounts for the differences between sparsely populated portions of the zone and the more dense areas around Dallas and West Salem.

Community Infrastructure

Possible score, 0-20

In Zone 2 there are: power substations and corridors, communication sites and facilities, transportation corridors, and water storage and distribution. The weighted score for this criterion is 20.

Values Protected Rating

0-20 Low, 21-35 Moderate, 36-65 High

The total score for the Risk Factor, Values Protected, is 35 which is a Moderate Risk rating.

4. Factor 4 - Protection Capabilities

Protection Capability is a combination of the capacities of the fire protection agencies, local government and community organizations. A high score indicates a high risk, low protection capability.

Wildfire Response Capability

Possible score, 0-36

Wildfire Suppression for Zone 2 is accomplished through a combination of responses from city fire departments, fire protection districts, Oregon Department of Forestry, and in some cases, local farmers. There are 10 fire protection districts and two city fire

departments in the county. Five of the fire protection districts are shared with adjacent counties. The headquarters for four of these districts, West Valley, Sheridan, Amity and Dayton, are located in Yamhill County to the north. The fifth district, Hoskins-Kings Valley is headquartered in Benton County to the south.

Most of the fire protection districts are made up of a combination of volunteers and paid staff; some have only volunteers. A few fire protection districts do not have equipment or firefighters; they contract for fire protection from nearby fire departments. The city fire departments have both paid and volunteer firefighters.

Response time in the rural areas varies by fire protection district. Some districts have paid staff on duty 24/7 while other districts are all-volunteer. Response time from the all-volunteer districts is generally slower as the volunteers are usually working other jobs during the day. Also, during evening and night-time, it takes time for the firefighters to get to the fire station. Response time from the fire station with paid staff can be very fast. Available resources also vary by fire protection district but for the most part, they are well equipped for initial response to wildfires in Zone 2. Fires occurring on agricultural fields are often initially attacked by nearby farmers. Their response can be very effective as they often have equipment on-hand that can be used to help suppress the fire.

About the western one-third of the zone is within the Oregon Department of Forestry's West Oregon Protection District. See Chapter IIIB1 for a description of their responsibility and role in wildfire suppression. Response time from the department depends on the location of the fire and available resources.

Water sources in rural areas are important for firefighters. While there are few natural lakes in the rural areas of the county, there are numerous stock watering ponds in the agricultural areas. Although these are on private lands, most would be available to firefighters for wildfire suppression efforts. Farmers may be willing to cooperate with firefighters in the use of their water for suppression actions. There is a need to inventory the ponds and determine their capacity and availability for firefighting apparatus. Firefighters would like to develop some of these as "dry hydrants" to make them more useful.

Zone 2 has both structural and wildland response for wildfires. In general, response time to a wildfire in Zone 2 is going to be more than 10 minutes. The criterion, Protection Capability, is given a weighted score of eight.

Community Preparedness

Possible score, 0-4

Other than the incorporated cities, there is little in the way of existing community preparedness for wildfire protection in Zone 2 at the time of this plan development. There are no organized stakeholder groups, phone trees, community plans, or mitigation efforts. There are some individual efforts by homeowners such as hazard fuel reduction and the creation of defensible space. Some fire departments and protection districts have made contact with homeowners in an effort to develop an awareness and interest in wildfire hazard reduction measures.

The weighted score for Community Preparedness for Zone 2 is four points.

Protection Capability Rating

0-9 Low, 10-16 Moderate, 17-40 High

The total score for the Risk Factor, Protection Capability, is 12 which is a Moderate Risk rating.

5. Overall Wildfire Risk Rating for Zone 2

0-51 Low, 52-118 Moderate, 119+ High

The weighted scores for the four risk factors were added for Zone 2 and the following risk ratings were determined:

- Ignition Risk, Score 32 – High
- Hazard, Score 53 - High
- Values Protected, Score 35 – Moderate
- Community Preparedness, Score 12 - Moderate
- Overall Rating, 132 – High Risk

E. Structural Vulnerability

Structural Vulnerability is the likelihood that a structure will be destroyed during a wildfire event. This likelihood can be assessed on an individual home basis by evaluating existing conditions and homeowner practices. The three primary evaluation factors considered are:

- Building materials, in particular the roofing assembly
- Defensible space around the home.
- Access to and from the home.

There are many good publications available which describe measures to take to make homes in the WUI (Wildland Urban Interface) less vulnerable to the threat of wildfire. Notably, the “Property Evaluation and Self Certification Guide” for the Oregon Forestland-Urban Interface Protection Act (SB 360) produced in 2004 by the Oregon Department of Forestry is an excellent source. Another good source is “Living With Fire, A Guide for the Homeowner” produced by the Pacific Northwest Wildfire Coordinating Group. The Firewise Program offers many good ideas for reducing wildfire risk around dwellings and structures. Importantly, personnel with local fire departments/districts, the Oregon Department of Forestry, and the State Fire Marshal and Soil and Water Conservation Districts have expertise and material useful to homeowners seeking information on how to protect their property.

Since every situation is different, each home needs to be evaluated separately. Individual home assessments can also be completed by using evaluation criteria identified in NFPA 1144 (National Fire Protection Association Standards), or SB 360.

While individual assessments have not been completed for most of the homes in Polk County, it can be assumed there are many homes that would be considered vulnerable during a wildfire situation. There is a need to complete these assessments, especially in areas identified as high priority for wildfire hazard reduction projects.

Appendix A gives the evaluation standards and measures which can be considered by homeowners to make their existing, or new, home less vulnerable to wildfires.

1. Fire Siting Standards for Dwellings and Structures.

Polk County has Fire Siting Standards that apply to portions of the county. These standards apply to new construction of dwellings and structures in the Timber Conservation and Farm/Forest zones but not to the Exclusive Farm Use zone. The Polk County Planning Department should be contacted to determine current zone boundaries and standards. The Fire Siting Standards for applicable zones at the time of this writing follow:

The following fire siting standards shall apply to all new dwellings or permanent structures:

- If a water supply is available and suitable for fire protection, such as a swimming pool, pond, stream, or lake, then road access to within 15 feet of the water's edge shall be provided for pumping units. The road access shall accommodate the turnaround of fire fighting equipment during the fire season. Permanent signs shall be posted along the access route to indicate the location of the emergency water source.
- Road access to the structure shall meet the County road design standards.
- A primary fuel break shall be constructed on land surrounding the dwelling that is owned and controlled by the owner, no less than 30 feet wide. The primary fuel break could include a lawn, ornamental shrubbery or individual or groups of trees separated by a distance equal to the diameter of the crowns adjacent to each other, or 15 feet, whichever is greater. All trees shall be pruned to at least eight feet in height. Dead fuels shall also be removed.
- A secondary fuel break shall also be constructed, on land surrounding the dwelling that is owned or controlled by the owner, of not less than 50 feet outside the primary fuel break. Dead fuels shall be removed from the fuel break area. It may be advisable to increase the secondary fuel break if the dwelling is located on a slope.
- No portion of a tree or any other vegetation shall extend to within 15 feet of the outlet of a stovepipe or chimney.
- The applicant shall obtain an address from the County, and shall display that number in a location on the property that is clearly visible from the road used as the basis for numbering. The numbers shall not be less than three inches in height, in a contrasting or visible color and shall comply with all other applicable standards for signs.
- The dwelling shall meet the following requirements:
 - The dwelling has a fire retardant roof.
 - The dwelling will not be sited on a slope of greater than 40 percent.
 - Evidence is provided that the domestic water supply is from a source authorized by the Water Resources Department and not from a Class F stream as designated by the State Board of Forestry.
 - The dwelling is located upon a parcel within a fire protection district or is provided with residential fire protection by contract.
- If the dwelling is not within a fire protection district, the applicant provides evidence that the applicant has asked to be included in the nearest such district.

- If the dwelling has a chimney or chimneys, each chimney has a spark arrester.
- If meeting the requirements of Section 177.090 (G) would be impracticable, alternative means for protecting the dwelling from fire hazards may be considered. The means selected may include a fire sprinkling system, on-site equipment and water storage or other methods that are reasonable, given the site conditions.



Homes without good defensible space. These may be dangerous to defend in a wildfire situation.

VI. Wildfire Risk Reduction Projects

This chapter describes several wildfire risk reduction projects identified by the Fire Protection Districts and Fire Departments in Polk County. Additional projects which apply throughout the county are also presented. The goal for these projects is to reduce the wildfire risk in the county and make the residents and their property safer from the threat of wildfires. The projects identified specifically for fire protection districts are mostly high priority projects in areas with high wildfire risks. There are many more areas in the county with varying degrees of wildfire risk. These will eventually have to be addressed by the county. Maps of projects by fire protection district are in Appendix F.

Most of the projects listed for the fire protection districts involve housing developments located in situations which could make it challenging for the fire agency to protect homes during a wildfire event. Common risk factors include: a lack of defensible space around buildings; heavy fuel loads in the form of conifer and deciduous trees, brush, and in some cases, agricultural fields; narrow access roads with only one way in and out; long response times for firefighters to get there; and steep slopes. In most cases there is a need to complete surveys of homes to identify specific wildfire risks and to make recommendations to homeowners about what they can do to reduce their risk during a wildfire event.

A. Wildfire Risk Reduction Projects by Fire Protection District

1. Amity Fire Protection District

Project – Bethel Road

General Location: Two and one-half miles east of McCoy.

Approximate Size: One square mile.

Issues/Objectives: Largely forested area with heavy fuels and a lack of readily available water for firefighting purposes. Several homes have one way roads serving them and there a need for better defensible space. The Perrydale water reservoir is located in this area. A survey is needed to identify specific wildfire risks and homeowners informed as to what they can do to reduce their vulnerability to wildfire.

Priority: Moderate.

2. Dayton Fire Protection District

Project – Bethel Heights Road

General Location: Between the south end of the Dayton Fire Protection District and the Yamhill/Polk County boundary.

Approximate size: Six square miles.

Issues/Objectives: This area has several homes mixed in with heavy fuel loads, Christmas tree farms, and steep slopes. Some roads serving residents are narrow and un-maintained. A survey is needed to identify specific wildfire hazards and recommendations to homeowners on what they can do to reduce their wildfire risks made.

Priority: Moderate.

3. Polk County Fire District #1

Project – Alsip Road

General Location: Three to five miles west of Monmouth.

Approximate Size: Three square miles.

Issues/Objectives: This area has several homes mixed in with heavy fuels and steep slopes. It has little or no water supply for firefighting purposes. A survey is needed to

identify specify wildfire hazards and recommendations to homeowners on what they can do to reduce their wildfire risks made.

Priority: High

Project – Fishback Road

General Location: Three to five miles west of Monmouth.

Approximate Size: Three square miles.

Issues/Objectives: This project involves several homes mixed in with heavy fuels and steep slopes. There is no readily available water supply for firefighting purposes. A survey is needed to identify wildfire hazards and to make recommendations to homeowners on what they can do to reduce their wildfire risks. A reliable water source for firefighting purposes should be developed.

Priority: High

Project – Smith Road

General Location: Six miles west of Monmouth and south of Highway 51.

Approximate Size: Two square miles.

Issues/Objectives: The area has several high value homes mixed in with heavy fuels and steep slopes. There is no readily available water supply for firefighting purposes. A survey is needed to identify wildfire hazards and to make recommendations to homeowners on what they can do to reduce their wildfire risks. A reliable water source for firefighting purposes should be developed.

Priority: High

4. Salem Suburban Fire Protection District

Project – Eola

General Location: 50th Avenue along with Bonnie, Andrea, and Maple Hill Streets.

Approximate Size. One and one-half square miles.

Issues/Objectives: This area is characterized by steep slopes (10% - 30%), southern aspect, and dense conifer/deciduous vegetation. Many homes have little, if any, defensible space and have construction features prone to ignition such as wood shake roofs and combustible siding. 50th Ave NW, north of Andrea is a long dead-end road that could present a safety risk to firefighters in a wind driven fire event as there are few appropriate safety zones available.

Bonnie Court NW is an approximately 1000 foot long cul-de-sac that runs Southeast from 50th Avenue NW. 50th Avenue comes to long dead-end after approximately 3,700 feet with no outlet. The limited access created by cul-de-sac's and long dead end roads of these types could create complications during a wildfire emergency. Providing at least an emergency outlet could improve community and firefighter safety during a wildfire.

The area specifically warrants an intensive public education effort including: individual property risk assessments, itemized recommendations to improve home

defensibility, and targeted public education reinforcing the need for defensible space improvements, access improvements, and escape planning.
Priority: High.

5. Sheridan Fire Protection District

Project – Gooseneck Road

General Location: Four to five miles south of Willamina on Gooseneck Road.

Approximate Size: One and one-half square miles.

Issues/Objectives: There are heavy fuels in the form of large forested areas surrounding the developments along this section of Gooseneck Road. Water for firefighting purposes is lacking. The road serving this area is a one way in and out situation. There are some secondary roads leading into the forested area but these may not be available for escape routes during a fire emergency. A dry hydrant draft site is needed and a survey done to identify specific wildfire risks to the residents in the area. Homeowners should be informed as to what they can do to reduce their risk during a wildfire.

Priority: High.

Project - Pleasant Hill Road

General Location: Two miles west of the community of Ballston.

Approximate Size: One square mile.

Issues/Objectives: Several homes along the Pleasant Hill and Blanchard Roads are in high risk areas because of surrounding wood lots and agricultural fields. There is a need for a water source for firefighting purposes. Homes should be surveyed and specific risks identified. Home owners should be advised as to what they can do to reduce their exposure to wildfire risks. A dry hydrant draft site needs to be developed for a reliable water source for firefighting.

Priority: High.

Project - Mill Creek Road

General Location: On Mill Creek Road two miles south of Highway 22.

Approximate size: One square mile.

Issues/Objectives: There are heavy fuels in the form of wood lots on all sides of homeowners living on this section of Mill Creek Road. Readily available water for firefighting is lacking and the access is basically a one way in and out situation. Homes need to be surveyed and wildfire risks identified and explained to residents. A dry hydrant draft site needs to be developed.

Priority: High

Project – Beck Road

General Location: Two miles southeast of Buell on Highway 22.

Approximate size: Two square miles.

Issues/Objectives: Scattered woodlots and agricultural fields present wildfire risks for residents along Beck Road. The need is to identify specific risks and inform homeowners on how to reduce their exposure to wildfire concerns. Better defensible

space will be needed for several homes. Also, a dry hydrant draft site is needed for a ready source of water for firefighting purposes.

Priority: Moderate.

6. Southwest Polk Fire Protection District

Project – Camp Tapawingo

General Location: Three miles west of Falls City.

Approximate Size: 160 acres.

Issues/Objectives: This year-round church retreat camp has cabins and a main lodge and is built in a forest setting with heavy fuels surrounding it. The access road is steep and in generally poor condition. Roads and driveways meander through the camp and are narrow with heavy fuels adjacent. Water is available from the creek which flows through it and an acceptable draft site has been located. There is a trailhead near the camp entrance and heavy use occurs on the nearby mountain bike trail system increasing the ignition risk because of human presence. Better defensible space is needed for the buildings and along the driveways and a general wildfire prevention effort implemented for the camp.

Priority: High.

Project: Rickreall Watershed

General Location: Seven miles west of the City of Dallas.

Approximate Size: Twenty thousand acres.

Issues/Objectives: Dallas draws its water supply from the Rickreall Creek watershed, located only a few miles west of the city. The watershed is moderately large, encompassing about 20,500 acres that range in elevation from about 500 to 3500 feet. Local precipitation is similarly variable from about 50 to 75 inches annually.

The City of Dallas owns a very small portion of the watershed, only 0.1% of the total area. Federal and state lands each represent about 2% of the watershed area. The remainder of the area is in private ownership. Vegetation on the watershed is primarily conifer forest, which covers about 80 % of the watershed. Mixed forest and grass-shrub types each occupy about 10% of the watershed.

Management activities include road maintenance, clear cutting, thinning & selective harvests, new road construction, herbicide application, and fertilizer application. Public access to the watershed is limited. During most of the year, access is limited to those holding special permits. The City of Dallas enforces a “no motor vehicles without permit” regulation. There is seasonal access during rifle elk hunting season. The 90 acre Mercer Reservoir stores water prior to filtration. A 5,000 acre wildfire in 1987 within the watershed caused significant silting problems. Much of the forest surrounding the reservoir is second growth created by that event. Any wildfire in the reservoir has the potential to negatively affect water quality.

The major industrial forest landowner in the Watershed must follow rules in the Oregon Forest Practices Act, but there is no other agreement with the city as to how

the forest will be managed. The city should encourage the industrial forest landowners to manage their forests in the watershed to maintain and enhance forest health which in turn will help protect water quality. Federal and state landowners should be encouraged to implement hazard fuel reduction projects.

Priority: High

Responsibility: City of Dallas, BLM.

Project – Falls City Area

General Location: Nine miles southwest of Dallas.

Approximate Size: Four square miles.

Issues/Objectives: Several areas on the outskirts of Falls City have homes located in a rural setting with heavy forest fuels, steep slopes, and roads that offer only one means of evacuation during a fire emergency. A ready supply of water is not available in most situations. A survey of homes along these roads (including but limited to: Sample, Lucas, Socialist Valley and Valsetz) needs to be completed to identify specific wildfire risks. This information must be made available to homeowners and assistance given to help them reduce their exposure to wildfire risks. Dry hydrant draft sites need to be located and developed where possible.

Priority: High.

Project – Fern Corner and Strong Roads Complex

General Location: Four Miles south of Dallas.

Approximate Size: Two square miles.

Issues/Objectives: There are many homes located in a forest setting with heavy fuels, no ready water supply for firefighting purposes, steep slopes, and in some situations, one-way in/out roads with a single route for evacuation. The Strong Roads area in particular is a box canyon situation with just one road available for evacuation purposes during a fire emergency. There are considerable dead and dying trees resulting from the 2009 ice storm. Surveys should be completed to identify specific wildfire risks and recommendations made to help homeowners reduce their wildfire threats. Water sources should be made available for firefighting needs. Alternate escape routes should be addressed.

Priority: High.

Project – Liberty Road Area

General Location: Two miles southwest of Dallas.

Approximate Size: Two square miles.

Issues/Objectives: This area has a large number of homes located in a forest setting with heavy fuels and a lack of readily available water for firefighting purposes. The Limestone and Mcbee Roads are both a box canyon situation with one narrow road for evacuation purposes. Homes should be surveyed to identify specific wildfire risks and recommendations made to homeowners on how to reduce these concerns. A ready source of water for firefighting should be located and made available. An alternate escape route should be explored.

Priority: Moderate.

Project – Pioneer, Reuben, and Brown Roads and Cochrane Lane Complex

General Location: From two to six miles northwest of Dallas.

Approximate Size: Four square miles.

Issues/Objectives: Steep slopes, heavy fuels, and a lack of readily available water for firefighting purposes place residents along these roads at high risk during a wildfire situation. The Brown Road has several bridges across a creek leading to homes. Some of these are not up to standards to support firefighting apparatus. There are roads and long narrow driveways which serve multiple residents but have only one in and out. A wildfire risk assessment is needed for homes and recommendations made available to residents as to how they can reduce their exposure to wildfire risks. Water sources should be identified and developed for firefighting purposes and bridges surveyed to determine their usability by fire apparatus. This complex may be the highest wildfire risk area in the district.

Priority: High.

7. Spring Valley Fire Protection District

Project – Gibson, 4H Roads Complex

General Location: Three miles northwest of West Salem.

Approximate Size: Three square miles.

Issues/Objectives: This area has multiple issues including: several communication tower sites, a 4H Conference Center, a YMCA Camp, and homes located in high wildfire risk situations. The Conference Center and YMCA Camp are built in a forested setting with heavy fuels. Better defensible space around the cabins and lodges are needed. The communication towers are located on a hill with steep slopes and heavy fuels. Better defensible space needs to be developed around these structures. The many homes along the roads serving this area need to be surveyed to determine specific wildfire risks. Recommendations should be provided to homeowners as to how they can reduce their risk from wildfires.

Priority: High

8. West Valley Fire Protection District

Project: Pioneer Heights

General Location: The southern and western city limits of Willamina.

Approximate size: Forty acres.

Issues/Objectives: This newer housing development is next to heavy fuels in the form of brush and tall trees. Better defensible space is needed for many of the homes. Homes need to be surveyed to determine what homeowners can do to reduce specific wildfire risks. Recommendations as to how homeowners can reduce their exposure to wildfire risks need to be made.

Priority: High.

B. Countywide Wildfire Risk Reduction Projects

The following projects may apply anywhere in the county where the need exists.

Project: CWPP Coordinator

Issues/ Objectives/ Opportunities: Plans such as this CWPP can and are often set aside when finished and not implemented in an aggressive manner. The Fire Defense Board should have ultimate responsibility for implementing the plan but may want to delegate it to a committee, or another body. The Polk Soil and Water Conservation District has indicated it is interested in taking this on. They would be a good fit as they have access to many grant programs which could be used in the implementation of the CWPP. The position could coordinate all Firewise activities as well.

Priority: High

Responsibility: Polk County Fire Defense Board.

Project – Loggers and Farmers Cooperation

Issues/Objectives/Opportunities: In many situations, wildfires occur where there are either loggers or farmers nearby. Both of these groups have equipment, or access to it, which could be used effectively to help suppress a wildfire. The logging community is somewhat more organized than the farmers. Both groups may be utilized for initial attack rather than mop-up activities as they will be anxious to get back to their work. Efforts should be made to address training and safety opportunities with both groups so they can be better prepared when involved with a wildfire event.

Priority: High

Responsibility: Oregon Department of Forestry, Fire Protection Districts, Emergency Management, CWPP Coordinator.

Project: BPA Power Line Corridors

Issues/Objectives/Opportunities: BPA power line corridors in Polk County represent a significant wildfire ignition source. Trees falling on power lines have caused wildfires in the past. The BPA lines are on leased lands from a combination of public and private land owners. The agency follows a plan to keep vegetation maintained in the corridor but unplanned situations can still develop. Land owners should be encouraged to plant vegetation under the power lines that is fire resistant and does not grow tall. Further, vegetation which favors wildlife habitat could be recommended in some situations.

Priority: Moderate

Responsibility: Polk County Soil and Water Conservation District, BPA, Oregon Department of Fish and Wildlife, CWPP Coordinator.

Project – Water Sources for Firefighting

Issues/Objectives/Opportunities: There are many water sources in the county which can, be used for firefighting purposes. There are many more sources which could be used with the proper form of development. Many of these potential sources are farm ponds. There is a need to complete an inventory of existing usable water sources, and those which have potential for development for firefighting purposes. Pertinent data showing existing or potential capability should be collected for each location and stored in a GIS Data base.

Needed information includes: GPS location, available access, existing gates, helicopter dip capability, dry hydrant, gravity flow filling device, pressurized filling device, approximate volume storage, gallons per minute flow in filling device, ownership. Agreements with landowners for the use of their water should be negotiated to protect the landowners and firefighters. Efforts should be made to find the best dry hydrant design that works well and is cost effective.

Adopt a countywide sign for directing firefighters to water source sites.

Priority: High

Responsibility: Fire Protection Districts, Oregon Department of Forestry, CWPP Coordinator, Soil and Water Conservation District.

Project – Roads and Driveway Assessment

Issues/Objectives/Opportunities: There are roads and driveways in the county that may present safety risks for homeowners served by them during a wildfire situation. Some roads are suitable only for one way traffic which would present a problem during a wildfire as homeowners try to evacuate and firefighters try to get to the fire. Many of these roads offer only one way in and out and could trap residents and, or, firefighters during a wildfire. Some roads and driveways have heavy fuel loads next to, and in some cases overhanging, the roadway which would make it dangerous for firefighters and residents using them during a wildfire. Some driveways have substandard bridges that might not support firefighting apparatus.

Improving road connectivity on those roads presently offering only one means of ingress and egress would reduce the risk to homeowners and firefighters during a wildfire situation. Polk County follows a planning process for future transportation projects; many of these projects would improve connectivity. The county will work with local fire agencies on transportation planning projects that would support firefighting capability.

An assessment is needed to identify and prioritize wildfire safety risks and firefighting capability related to roads and driveways.

Priority: High

Responsibility: Polk County Public Works, Oregon Department of Forestry, Fire Protection Districts, Emergency Management, CWPP Coordinator.

Project – Home Surveys

Issues/Objectives/Opportunities: Many homes in rural county areas are at risk from wildfires because of surrounding fuels, structural material, and substandard driveways. Some developments have numerous homes with serious risks while in some cases, there are isolated homes with problems. A survey and evaluation of homes using NFPA1144 or SB-360 criteria is needed to identify and prioritize homes needing wildfire hazard reduction measures. Information gathered should be placed on a county database and made available to fire protection districts. Homeowners should be notified about their situation and advised as to how they can reduce their wildfire risks. Grants should be

applied for from available sources to assist homeowners to offset some of the costs of wildfire risk reduction.

Priority: High

Responsibility: Fire Protection Districts, CWPP Coordinator, Emergency Management, Oregon Department of Forestry.



Narrow driveway and heavy fuels.

Project – Equipment and Facility Needs

Issues/Objectives/Opportunities: All of the Polk County Fire Protection Districts can use some new firefighting equipment to enhance their fire protection programs. Some districts need facility replacement or new substations to be more effective. There are many grant programs available to help defray some of the costs for such.

Priority: High

Responsibility: Fire Protection Districts, CWPP Coordinator.

Project – BLM Cooperation

Issues/Objectives/Opportunities: There are 66 square miles of federal lands in Polk County administered by the BLM. This represents nearly nine percent of the county. Some of this land is within the Wildland Urban Interface (WUI) boundary. The BLM is required to allocate a significant percentage of its wildfire hazard reduction money to areas within WUI boundaries. County representatives need to work with the BLM to be sure their hazard reduction dollars are spent effectively to help reduce the threat of wildfires on privately owned lands.

Priority: Moderate

Responsibility: CWPP Coordinator, Emergency Management.

Project – Railroad Maintenance

Issues/Objectives/Opportunities: There are railroad lines in Polk County and these represent an important wildfire ignition source. Rail maintenance activities conducted during the fire season can easily start a wildfire from welding and other activities. County officials should encourage the railroad to conduct their maintenance activities during appropriate times of the year to decrease the risk of starting a wildfire. They should also assure that provisions in the railroad's Fire Management Plan are complied with including vegetative management in their ROW and the presence of fire suppression apparatus during maintenance activities.

Priority: Moderate.

Responsibility: CWPP Coordinator, Polk County Public Works.

Project – Wildfire Prevention

Issues/Objectives/Opportunities: Wildfire suppression costs are very high and preventing just one such event could save a lot of money. Prevention costs are relatively small when compared with the cost of controlling a wildfire. There are many prevention programs which can be carried out including the following:

- Distribution of fire prevention literature and material to home owners.
- Placement of fire prevention signs at strategic locations. Develop a county-wide fire prevention sign plan in cooperation with the Oregon Department of Forestry and the BLM to identify type of signs, locations, maintenance schedule, etc.
- Place public service announcements about fire prevention on local and regional media outlets including the radio, TV and newspapers. Work with local media to produce public service announcements using local fire personnel and community members.
- Conduct fire prevention programs in schools.
- Have a fire prevention presence at local events such as the county fair.
- Do one-on-one landowner contacts to discuss fire prevention. Provide on site assessments, suggestions and assistance.
- Assist communities to become "Firewise Communities".
- Help communities to get organized and form neighborhood-type associations. Work with them to help identify fire prevention programs for their areas of concern.

Priority: High.

Responsibility: Oregon Department of Forestry, BLM, Polk County Soil and Water Conservation District, CWPP Coordinator.

Project – Address Locator Signs

Issues/Objectives/Opportunities: Every second counts during a fire emergency. Valuable time can be lost if address numbers are not clearly posted where emergency responders can see it. All homes in the rural areas of Polk County should have easy to see and reflective address locator signs. Fire Protection Districts should continue their on-going programs of distributing these signs on a voluntary basis.

Priority: high.

Responsibility: Fire Protection Districts, CWPP Coordinator, Emergency Management.

Project – Brush Disposal Sites

Issues/Objectives/Opportunities: To effectively create defensible space around the many structures in need of treatment in Polk County, there will be a huge amount of woody material to be disposed of. Burning of such is becoming more difficult and less desirable with air quality concerns. Having a site available for property owners to dispose of branches and brush created as part of wildfire hazard risk reduction efforts would be a great public service. It may actually encourage more people to carry out hazard reduction measures. Disposal methods should encourage the utilization of the woody biomass for alternative energy sources and landscaping purposes.

Priority: Moderate.

Responsibility: CWPP Coordinator, Oregon Department of Forestry.

Project – Fire Code

Issues/Objectives/Opportunities: The State Fire Code provides minimum standards regarding fire protection for new construction. The county has fire siting standards for new construction in forest and farm/forest zones. The county should continue to monitor building practices and consider enhancing those codes if conditions warrant.

Priority: Moderate.

Responsibility: Fire Protection Districts, County Planning Department.

Project – Communication Towers

Issues/Objectives/Opportunities: There are many communication towers in Polk County. A wildfire could damage these facilities. There is a need to survey the towers and identify wildfire risks and to make recommendations as to what can be done to reduce those risks.

Priority: Moderate.

Responsibility: CWPP Coordinator, Emergency Management.

VII. Continuing Actions

The Polk County Fire Defense Board Chief will be responsible for keeping this CWPP up-to-date and its implementation. The Chief may assign a CWPP Coordinator and a Steering Committee to assume these duties. The Steering Committee should have representatives from the various agencies involved with wildfire protection. Periodic meetings will be held to address wildfire hazards and concerns. The CWPP will be reviewed at least annually and revisions made as needed. Mitigation projects as listed in the CWPP will be evaluated and updated. Decisions as to project priority for grant application will be made by the steering committee. As new projects are identified they will be added to the CWPP as an addendum, completed projects will be deleted from the plan. The County Wildfire Coordinator will keep notes of steering committee meetings and distribute them to the steering committee members and the County Board of Commissioners.

The success of this CWPP will be measured over time by the accomplishment of the wildfire reduction projects identified in Chapter VI. The CWPP Coordinator should monitor and keep records of accomplishments. The coordinator should also identify barriers to the successful completion of projects. Opportunities should be sought to keep momentum going in the continued implementation of all aspects of this plan.

Since this is a working document it is expected that any minor additions or changes will not require the plan to be re-signed unless those changes result in significant adjustments or changes in the overall philosophy of the plan.

VIII Appendices

Appendix A. Wildfire Hazard Survey Criteria.

National Fire Protection Association Standard 1144 (NFPA 1144)

A	Subdivision Design	Points
1	Ingress & Egress	
	Two or more in/out	0
	One way in/out	7
2	Primary Road Width	
	Greater than 24ft	0
	Between 20 and 24 feet	2
	Less then 20 feet	4
3	All Season Road Condition	
	Surfaced, grade < 5%	0
	Surfaced, grade > 5%	2
	Non-surfaced, grade < 5%	2
	Non-surfaced, grade > 5%	5
	Other than all-season	7
4	Fire Service Access	
	< = 300ft, with Turnaround	0
	> = 300ft, with Turnaround	2
	< = 300ft, No Turnaround	4
	> = 300ft, No Turnaround	5
5	Street Signs	
	Present [4in (10.2 cm) in size and reflectorized]	0
	Not present	5
B	Vegetation (Fuel Models)	
1	NFDRS fuel models	

	Light (Grasses, forbs, sawgrasses and tundra.)	5
	Medium (Light brush and small trees)	10
	Heavy (Dense brush, timber and hardwoods)	20
	Slash (Timber harvesting residue)	25
2	Defensible space	
	More than 100ft (30.48m) of treatment from buildings	1
	More than 71 - 100 ft of treatment from buildings	3
	30 - 70ft of treatment from buildings	10
	Less than 30ft	25
C	Topography	
1	Slope	
	Less than 9%	1
	Between 10 and 20%	4
	Between 21 and 30%	7
	Between 31 and 40%	8
	Greater than 41%	10
D	Additional Rating Factors	
1	Topography that adversely effects wildland fire behavior	0 - 5
2	Areas with a history of higher fire occurrence	0 - 5
3	Areas of unusually severe fire weather and winds	0 - 5
4	Separation of adjacent structures	0 - 5
E	Roofing	
1	Construction Material	
	Class A roof [metal, tile]	1
	Class B roof [composite]	3
	Class C roof [wood shingles]	15
	Not rated	25
F	Existing building construction	
1	Materials (predominant)	
	Noncombustible siding/deck	0
	Noncombustible siding/wood deck	5
	Combustible siding and deck	10
2	Setback from Slopes > 30%	
	More than 30 ft to slope	1
	Less than 30 ft to slope	5
	Not Applicable	0
G	Available Fire Protection	
1	Water Source availability (on site)	
	500 gpm (1892.7 lpm) hydrants <1000ft (304.8m) apart	0

	250 gpm (1892.7 lpm) hydrants <1000ft (304.8m) apart	1
	More than 250 gpm non-pressurized, 2hrs	3
	Less than 250 gpm non-pressurized, 2hrs	5
	No hydrants	10
2	Water source availability (off site)	
	Sources within a 20 min round trip	1
	Sources within a 21 - 45 min round trip	5
	Sources > 46 min round trip	10
H	Utilities (Gas and Electric)	
1	All underground utilities	1
	One underground, one above ground	3
	All above ground	5
I	Totals for subdivision	
	Point totals	
	Low Hazard < 39 points	
	Moderate Hazard 40 - 69 points	
	High Hazard > 70 points	

Appendix B. Fire Suppression Rating Schedule (FSRS)

To determine a community's Public Protection Classification (PPC), ISO (Insurance Service Office) conducts a field survey. Expert ISO staff visit the community to observe and evaluate features of the fire-protection systems. Using a manual called the Fire Suppression Rating Schedule (FSRS), ISO objectively evaluates three major areas:

- Fire alarm and communications systems**
 A review of the fire alarm system accounts for 10% of the total classification. The review focuses on the community's facilities and support for handling and dispatching fire alarms.
- Fire department**
 The fire department accounts for 50% of the total classification. ISO focuses on a fire department's first-alarm response and initial attack to minimize potential loss. Here, ISO reviews such items as engine companies, ladder or service companies, distribution of fire stations and fire companies, equipment carried on apparatus, pumping capacity, reserve apparatus, department personnel, and training.
- Water supply**
 A review of the water-supply system accounts for 40% of the total classification. ISO reviews the water supply a community uses to determine the adequacy for fire-suppression purposes. They also consider hydrant size, type, and installation, as well as the inspection frequency and condition of fire hydrants.

Appendix C. Wildfire Risk Scoring System

Ignition Risk is the likelihood of a wildfire beginning within a particular area. The assessment for Ignition Risk looks at three criteria; historic fire occurrence (number of fires per 1000 acres per 10 years), density of homes per 10 acres, and other risk factors. The rating scores for Ignition Risk criteria are:

Fire Occurrence – per 1,000 acres per 10 years

0-0.1	5 points
0.1-1.1	10 points
1.1+	20 points

Home Density (homes per 10 acres)

0-0.9(rural)	0 points
1-5(suburban)	5 points
5.1+(urban)	10 points

Other Ignition Risk Factors Present in Vicinity (transmission power lines, power substations, active logging, construction, debris burning, slash burning, mining, dispersed or developed camping, off road vehicle use, flammables present, fireworks, mowing grass, woodcutting, railroads, highways, lightning prone areas, arson, schools, business, ranch/farm, dump.)

<8 present	0 points
8-15 present	5 points
>15 present	10 points.

(if railroad present add 5 points to each category)

Ignition Risk Factor Rating(cumulative score of the three criteria)

0-13	Low
14-27	Moderate
28-40	High

Wildfire Hazard is the resistance to control once a wildfire starts. It includes weather, topography, and vegetation (fuel) that adversely affects suppression efforts. The criteria and scoring system for Hazard follows:

Weather (The number of days per season that forest fuels are capable of producing a significant fire event) All communities and zones in eastern Oregon are assigned the maximum score of 40 points by default.

Slope

0-25%	0 points
26-40%	2 points
>40 %	3 points

Aspect

N,NW,NE	0 points
W,E	3 points
S,SW, SE	5 points

Elevation

5000 +	0 points
3,500-5,000	1 point
0-3,500	2 points

Surface Fuels (based on Fire Behavior Fuel Models). Hazard Value 1 or HV1 produces flame lengths up to five feet with little spotting, torching or crowning. HV2 has flame lengths from 5-8 feet with sporadic spotting, torching or crowning. HV3 has flame lengths of over 8 feet with frequent spotting, torching and crowning.

Non-forest	0 points
HV1	5 points
HV2	10 points
HV3	30 points

Aerial Fuels (Crown Fire Potential)

Passive – Low	0
Active-Moderate	5
Independent	10

Hazard Factor Rating (cumulative score of the six criteria)

Low	0-9
Moderate	10-40
High	41-60
Extreme	61-80

Values Protected is the human and economic value associated with communities or landscapes. Protection of life is the number one priority with all agencies and is measured by the density of homes. In addition, the presence of community infrastructure is another consideration.

Home density (homes per 10 acres)

0.1-0.9 (rural)	2 points
1.0-5.0 (suburban)	15 points
5.1+ (urban)	30 points

Community infrastructure (power substations and corridors, communication sites and facilities, transportation corridors, major manufacturing and utilities facilities, municipal watersheds, fish habitat, watershed hydrology, water storage and distribution, fuel storage

facilities, hospitals and health care facilities, landfills and waste treatment sites, schools, churches, community centers, and stores).

None present	0 points
One present	10 points
More than one	20 points

Values Protected Rating (cumulative score of the two criteria)

<u>Low</u>	0-15 points
<u>Moderate</u>	16-30 points
<u>High</u>	31-50 points

Protection Capability includes the capacity and resources to undertake fire suppression and prevention activities. It involves a combination of the capacity of the fire protection agencies, local government and community organizations. A high score represents a high risk/low protection capability.

Fire Response

Organized structural response < 10 minutes	0 points
Inside fire district, but structural response > 10 minutes	8 points
No structural protection, wildland response < 20 minutes	15 points
No structural response & wildland protection > 20 minutes	30 points

Community Preparedness (proven mitigation efforts by the community that will make the fire response effective)

Organized stakeholders group, community fire plan, phone tree, mitigation efforts	0 points
Primarily agency efforts	2 points
No effort	4 points

Protection Capability Rating (cumulative score of the two criteria)

<u>Low</u>	0-9 points
<u>Moderate</u>	10-16 points
<u>High</u>	17-40 points

Overall Wildfire Risk Rating

An overall Wildfire Risk rating for each zone was assigned based on the cumulative scores of the four risk factors (Structural Vulnerability is treated separately because only one zone has structures). The break points for the overall rating are:

Low	0-46
Moderate	47-113
High	114-190

Appendix D. Fire Regime Condition Class

A natural Fire Regime is a classification of the role fire would play across a landscape in the absence of modern human mechanical intervention, but including the influence of aboriginal burning¹⁵. The five natural (historical) Fire Regimes are classified based on average number of years between fires (fire frequency) combined with the severity (amount of replacement) of the fire on the dominant vegetation. The five regimes are:

- Regime I, 0-35 years frequency and low intensity (surface fire most common) to mixed severity (less than 75% of the dominant over story vegetation replaced).
- Regime II, 0-35 year frequency and high severity (greater than 75% of the dominant over story vegetation replaced).
- Regime III, 35-100 plus year frequency and mixed severity (less than 75% of the dominant over story replaced).
- Regime IV, 35-100 plus year frequency and high severity.
- Regime V, 200 plus year frequency and high severity.

A Fire Regime Condition Class (FRCC) is a classification of the amount of departure from the natural regime¹⁶. Three classes have been described¹⁷:

- Condition Class 1, These areas are within the natural (historical) range of variability of vegetation characteristics including fuel composition, fire frequency, severity and pattern, and other associated disturbances.
- Condition Class 2, Moderate departure from the natural regime of vegetation characteristics. Fire behavior and effects are moderate and risk of loss of key ecosystem components is moderate.
- Condition Class 3, High departure from the natural (historic) regime of vegetative characteristics. Fire behavior and effects are high and risk of loss of key ecosystem components is high.

¹⁵ Agee 1993, Brown 1995.

¹⁶ Hann and Bunnell, 2001

¹⁷ Hardy, et al., 2001 and Schmidt et al., 2001

Appendix E
Map of WUI and Fire Protection Districts

Appendix F
Maps of Wildfire Reduction Projects