

# Benton County, Oregon

## Community Wildfire Protection Plan



**Adopted by the Benton County  
Board of Commissioners**

**June 2009**

**1500 Road Fire - Polk County, Oregon 2007**

# Acknowledgments

This Community Wildfire Protection Plan represents the efforts and cooperation of a number of organizations and agencies working together to improve preparedness for wildfire events while reducing factors of risk.

---



**West Oregon  
Forest Protective  
Association**



---

To obtain copies of this plan contact:

Chris Bentley, Project Coordinator  
Benton County Community Development Department  
360 SW Avery Avenue  
Corvallis, Oregon 97330

Phone: 541-766-6293  
Fax: 541-766-6891

# Table of Contents

<b>FORWARD</b> .....	<b>1</b>
<b>CHAPTER 1</b> .....	<b>3</b>
<b>OVERVIEW OF THIS PLAN AND ITS DEVELOPMENT</b> .....	<b>3</b>
GOALS AND GUIDING PRINCIPLES .....	4
Planning Philosophy and Goals .....	4
United States Government Accountability Office (GAO) .....	5
State and Federal CWPP Guidelines .....	5
INTEGRATION WITH OTHER LOCAL PLANNING DOCUMENTS .....	6
Benton County Multi-Hazard Mitigation Plan (2006) .....	6
Benton County Hazard Analysis – Emergency Operations Plan (2006) .....	7
Benton County Comprehensive Plan (2007) .....	7
Corvallis Forest Stewardship Plan (2006) .....	7
Marys River Estates and Vineyard Mountain Community Wildfire Protection Plans (2007) .....	8
Response Guide to Wildland Fires During Extreme Fire Behavior Events .....	8
Oregon Department of Forestry – West Oregon District Mobilization Plan .....	8
Oregon Forestland-Urban Interface Fire Protection Act of 1997 .....	9
Benton County Forestland Classification .....	9
Oregon’s Statewide Planning Goals and Guidelines .....	10
<b>CHAPTER 2</b> .....	<b>13</b>
<b>DOCUMENTING THE PLANNING PROCESS</b> .....	<b>13</b>
DESCRIPTION OF THE PLANNING PROCESS .....	13
THE PLANNING TEAM .....	13
Multi-Jurisdictional Participation .....	14
PLANNING COMMITTEE MEETINGS .....	15
Committee Meeting Minutes .....	15
PUBLIC INVOLVEMENT.....	16
News Releases .....	16
Public Mail Survey .....	17
Public Meetings .....	20
Documented Review Process .....	22
Continued Public Involvement .....	22
<b>CHAPTER 3</b> .....	<b>23</b>
<b>BENTON COUNTY CHARACTERISTICS</b> .....	<b>23</b>
GEOGRAPHY AND CLIMATE .....	23
POPULATION AND DEMOGRAPHICS .....	23
Land Ownership .....	24
NATURAL RESOURCES .....	25
Biota .....	25
Hydrology .....	26
Air Quality .....	26
Oregon State Smoke Management Plan .....	27
<b>CHAPTER 4</b> .....	<b>29</b>
<b>RISK AND PREPAREDNESS ASSESSMENTS</b> .....	<b>29</b>
WILDLAND FIRE CHARACTERISTICS .....	29
Weather .....	29
Topography .....	29
Fuels .....	30
WILDFIRE HAZARDS .....	30
History of Major Fires .....	30
Wildfire Ignition Profile .....	33
Wildfire Extent Profile .....	34
WILDFIRE HAZARD ASSESSMENT .....	37
Historic Fire Regime .....	37
Fire Regime Condition Class .....	38

Relative Fire Risk Assessment .....	39
<b>BENTON COUNTY’S WILDLAND-URBAN INTERFACE.....</b>	<b>41</b>
Potential WUI Treatments .....	45
<b>BENTON COUNTY CONDITIONS .....</b>	<b>45</b>
Overall Mitigation Activities.....	47
Overview of Fire Protection System.....	49
<b>FIRE PROTECTION ISSUES.....</b>	<b>63</b>
Urban and Suburban Growth.....	63
Rural Fire Protection .....	63
Debris Burning .....	63
Pre-planning in High Risk Areas.....	64
Fire Service “No Man’s Land” .....	64
Road and Bridge Standards .....	64
Oregon State University Forestlands .....	65
Wildland Fire Specific Building Regulations .....	65
Fire-Resistant Construction Materials.....	66
Volunteer Firefighter Recruitment .....	66
Public Wildfire Awareness.....	66
Water Resources.....	66
Corvallis Watershed .....	67
<b>CURRENT WILDFIRE MITIGATION ACTIVITIES .....</b>	<b>67</b>
Linn and Benton County Fire Protection Standards .....	67
Oregon Department of Forestry.....	68
Benton County Fire Defense Board.....	68
Oregon State University Extension .....	69
Public Education Programs .....	69
<b>CHAPTER 5 .....</b>	<b>71</b>
<b>STRATEGIC PLANNING AREAS.....</b>	<b>71</b>
STRATEGIC PLANNING AREA #1 – URBAN ZONE.....	71
STRATEGIC PLANNING AREA #2 – FARM ZONE .....	74
STRATEGIC PLANNING AREA #3 – NORTHERN FOREST ZONE.....	77
STRATEGIC PLANNING AREA #4 – WESTERN FOREST ZONE .....	80
STRATEGIC PLANNING AREA #5 – COASTAL RANGE ZONE .....	83
<b>CHAPTER 6 .....</b>	<b>87</b>
<b>MITIGATION RECOMMENDATIONS.....</b>	<b>87</b>
MAINTENANCE AND MONITORING .....	87
PRIORITIZATION OF MITIGATION ACTIVITIES .....	87
Scheme One.....	88
Scheme Two.....	89
WILDFIRE MITIGATION RECOMMENDATIONS .....	89
Policy and Planning Efforts.....	89
Fire Prevention, Education, and Mitigation Projects .....	91
Infrastructure Enhancements .....	94
Resource and Capability Enhancements.....	95
Proposed Project Areas.....	97
Benton County Public Works Access Improvement Projects.....	101
Benton County Natural Areas and Parks .....	102
Regional Land Management Recommendations .....	102
<b>CHAPTER 7 .....</b>	<b>105</b>
<b>SUPPORTING INFORMATION .....</b>	<b>105</b>
LIST OF TABLES .....	105
LIST OF FIGURES .....	106
SIGNATURE PAGES.....	107
Benton County Board of Commissioners .....	107
Signatures of Participation by Benton County Fire Districts and Departments .....	108
Signatures of Participation by other Benton County Entities .....	109
LITERATURE CITED.....	110

## Forward

The process of developing a Community Wildfire Protection Plan (CWPP) can help a community clarify and refine its priorities for the protection of life, property, and critical infrastructure in the wildland–urban interface on both public and private land. It also can lead community members through valuable discussions regarding management options and implications for the surrounding land base. Local fire service organizations help define issues that may place the county, communities, and/or individual homes at risk. Through the collaboration process, the CWPP planning committee discusses potential solutions, funding opportunities, and regulatory concerns and documents their resulting recommendations in the CWPP. The CWPP planning process also incorporates an element for public outreach. Public involvement in the development of the document not only facilitates public input and recommendations, but also provides an educational opportunity through interaction of local wildfire specialists and an interested public.

The idea for community-based forest planning and prioritization is neither novel nor new. However, the incentive for communities to engage in comprehensive forest planning and prioritization was given new and unprecedented impetus with the enactment of the Healthy Forests Restoration Act (HFRA) in 2003. This landmark legislation includes the first meaningful statutory incentives for the US Forest Service (USFS) and the Bureau of Land Management (BLM) to give consideration to the priorities of local communities as they develop and implement forest management and hazardous fuel reduction projects. In order for a community to take full advantage of this new opportunity, it must first prepare a Community Wildfire Protection Plan (CWPP).

A countywide CWPP planning committee generally makes project recommendations based on the issue causing the wildfire risk, rather than focusing on individual landowners or organizations. Thus, projects are mapped and evaluated without regard for property boundaries, ownership, or current management. Once the CWPP is approved by the county board of commissioners, the planning committee will begin further refining proposed project boundaries, feasibility, and public outreach as well as seeking funding opportunities.

*The Benton County Community Wildfire Protection Plan was developed in 2008 by the Benton County Fire Defense Board, the Oregon Department of Forestry, and the Benton County Community Development Department with project facilitation and support provided by Northwest Management, Inc. of Moscow, Idaho. Funding for the project was provided by the Board of County Commissioners for Benton County from the Secure Rural Schools Title III program. This Community Wildfire Protection Plan will be reviewed annually and updated at least every five years starting from the year of adoption.*

*The Community Wildfire Protection Plan expands on the wildfire chapter of the Benton County Multi-Hazard Mitigation Plan, which was approved by FEMA in 2006. Although published as a separate document, the Community Wildfire Protection Plan will be considered a supplement to the wildfire chapter of the Multi-Hazard Mitigation Plan.*

**[This page intentionally left blank.]**

# Chapter 1

## Overview of this Plan and its Development

This Community Wildfire Protection Plan (CWPP) for Benton County, Oregon, is the result of analyses, professional collaboration, and assessments of wildfire risks and other factors focused on reducing wildfire threats to people, structures, infrastructure, and unique ecosystems in Benton County. Agencies and organizations that participated in the planning process included:

- Benton County Fire Defense Board
  - Philomath Fire and Rescue
  - Corvallis Fire Department
  - Blodgett-Summit Rural Fire Protection District
  - Alsea Rural Fire Protection District
  - Adair Rural Fire Protection District
  - Albany Fire Department
  - Monroe Rural Fire Protection District
  - Hoskins-Kings Valley Rural Fire Protection District
- Benton County Commissioners and County Departments
  - Community Development
  - Public Works
  - Sheriff's Office (Emergency Management)
  - Natural Areas and Parks
- Oregon Department of Forestry
- West Oregon Forest Protective Association
- Oregon State Fire Marshal
- Alsea Emergency Preparedness Council
- Siuslaw National Forest
- Starker Forests, Inc.
- Benton County Oregon State University Extension
- U.S. Fish and Wildlife Service
- Northwest Management, Inc.

The Benton County Community Development Department solicited competitive bids from companies to lead the assessment and writing of the **Benton County Community Wildfire Protection Plan**. Northwest Management, Inc. was selected to provide this service to the county. Northwest Management, Inc. (NMI) is a professional natural resources consulting firm located in Moscow, Idaho. The Project Co-Managers from Northwest Management, Inc. were Mr. Vaiden Bloch and Mrs. Tera R. King.



## Goals and Guiding Principles

### Planning Philosophy and Goals

The goals of the planning process include integration with the National Fire Plan, the Healthy Forests Restoration Act, and the Disaster Mitigation Act. The plan utilizes the best and most appropriate science from all partners as well as local and regional knowledge about wildfire risks and fire behavior, while meeting the needs of local citizens and recognizing the significance wildfire can have to the regional economy.

The Community Wildfire Protection Plan builds on and supplements the wildfire chapter of the Benton County Multi-Hazard Mitigation Plan (2006) and upon adoption shall be incorporated as an element the Multi-Hazard Mitigation Plan.

### Mission Statement

To make Benton County residents, businesses, and resources less vulnerable to the negative effects of wildland fires.

### Vision Statement

Promote awareness of the countywide wildland fire hazard and propose workable solutions to reduce the wildfire potential.

### Goals

1. Identify and map Wildland-Urban Interface (WUI) boundaries
2. Identify and evaluate hazardous fuel conditions with an emphasis on communities adjacent to forest lands, prioritize areas for hazardous fuel reduction treatments, and recommend the types and methods of treatment necessary on private, state, and federal lands to protect the communities
3. Prioritize the protection of people, structures, infrastructure, natural resources, and unique ecosystems that contribute to our way of life and the sustainability of the local and regional economy
4. Where fires would threaten communities, reduce the area of land burned and losses experienced from wildfires in the wildland-urban interface
5. Develop regulatory measures such as building codes and road standards specifically targeted to reduce the wildland fire potential and reduce the potential for loss of life and property
6. Educate communities about the unique challenges of wildfire in the wildland-urban interface
7. Provide a plan that balances private property rights of landowners in Benton County with personal safety and responsibility
8. Improve fire agency awareness of wildland fire threats, vulnerabilities, and mitigation opportunities or options
9. Research structural ignitability risk factors and recommend measures that homeowners and communities can take to reduce the ignitability of structures
10. Improve county and local fire agency eligibility for funding assistance (National Fire Plan, Healthy Forest Restoration Act, FEMA, and other sources) to reduce wildfire



hazards, prepare residents for wildfire situations, and enhance fire agency response capabilities

11. Provide opportunities for meaningful discussions among community members and local, state, and federal government representatives regarding their priorities for local fire protection and forest management
12. Develop an inventory and regular maintenance schedule for both public and private infrastructural components
13. Meet or exceed the requirements of the National Fire Plan and FEMA for a county level Community Wildfire Protection Plan
14. Identify areas of inadequate fire protection, such as gaps in district coverage, and develop solutions
15. Develop a strategy for maintenance and regular updates of the CWPP
16. Continue collaborative efforts among Fire Defense Board, local jurisdictions, and other players to solve problems beyond the CWPP planning process

### **United States Government Accountability Office (GAO)**

Since 1984, wildland fires have burned an average of more than 850 homes each year in the United States and, because more people are moving into fire-prone areas bordering wildlands, the number of homes at risk is likely to grow. The primary responsibility for ensuring that preventative steps are taken to protect homes lies with homeowners. Although losses from fires made up only 2 percent of all insured catastrophic losses from 1983 to 2002, fires can result in billions of dollars in damages.

GAO was asked to assess, among other issues, (1) measures that can help protect structures from wildland fires, (2) factors affecting use of protective measures, and (3) the role technology plays in improving firefighting agencies' ability to communicate during wildland fires.

The two most effective measures for protecting structures from wildland fires are: (1) creating and maintaining a buffer, called defensible space, from 30 to 100 feet wide around a structure, where vegetation and other flammable objects are reduced or eliminated; and (2) using fire-resistant roofs and vents. In addition to roofs and vents, other technologies – such as fire-resistant windows and building materials, chemical agents, sprinklers, and geographic information systems mapping – can help in protecting structures and communities, but they play a secondary role.

Although protective measures are available, many property owners have not adopted them because of the time or expense involved, competing concerns such as aesthetics or privacy, misperceptions about wildland fire risks, and lack of awareness of their shared responsibility for fire protection. Federal, state, and local governments, as well as other organizations, are attempting to increase property owners' use of protective measures through education, direct monetary assistance, and laws requiring such measures. In addition, some insurance companies have begun to direct property owners in high risk areas to take protective steps (GAO 2005).

### **State and Federal CWPP Guidelines**

This Community Wildfire Protection Plan will include compatibility with FEMA requirements for a Hazard Mitigation Plan, while also adhering to the guidelines proposed in the National Fire

Plan, and the Healthy Forests Restoration Act (2004). This Community Wildfire Protection Plan has been prepared in compliance with:

- The National Fire Plan: A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment 10-Year Comprehensive Strategy Implementation Plan–December 2006.
- Healthy Forests Restoration Act (2003).
- The Federal Emergency Management Agency’s Region 10 guidelines for a Local Hazard Mitigation Plan as defined in 44 CFR parts 201 and 206, and as related to a fire mitigation plan chapter of a Multi-Hazard Mitigation Plan.
- National Association of State Foresters – guidance on identification and prioritizing of treatments between communities (2003).

The objective of combining these complementary guidelines is to facilitate an integrated wildland fire risk assessment, identify pre-hazard mitigation activities, and prioritize activities and efforts to achieve the protection of people, structures, the environment, and significant infrastructure in Benton County while facilitating new opportunities for pre-disaster mitigation funding and cooperation.

Additional information detailing the state and federal guidelines used in the development of the Benton County Community Wildfire Protection Plan is included in Appendix V.

### **Integration with Other Local Planning Documents**

During development of this Community Wildfire Protection Plan, several planning and management documents were reviewed in order to avoid conflicting goals and objectives. Existing programs and policies were reviewed in order to identify those that may weaken or enhance the mitigation objectives outlined in this document. The following sections identify and briefly describe some of the existing Benton County planning documents and ordinances considered during development of this plan.

#### **Benton County Multi-Hazard Mitigation Plan (2006)**

The Benton County Multi-Hazard Mitigation Plan covers each of the major natural and human-caused hazards that pose risks to the County. The primary objectives of this Mitigation Plan are to reduce the negative impacts of future disasters on the community, to enhance life safety, increase public awareness, protect natural systems, and build partnerships. This Mitigation Plan is a planning document, not a regulatory document.

This Mitigation Plan meets FEMA’s planning requirements by addressing hazards, vulnerability and risk. Hazard means the frequency and severity of disaster events. Vulnerability means the value, importance, and fragility of buildings and infrastructure. Risk means the threat to people, buildings and infrastructure, taking into account the probabilities of disaster events. Adoption of a mitigation plan is required for communities to remain eligible for future FEMA mitigation grant funds.

The Benton County CWPP effectively accomplishes all short-term action items outlined in the Multi-Hazard Mitigation Plan, and establishes strategies to implement the Plan’s ongoing action items. The Multi-Hazard Mitigation Plan Action Item list can be found in Appendix 7.

### **Benton County Hazard Analysis – Emergency Operations Plan (2006)**

The Benton County Emergency Operations Plan (EOP) is based on a thorough analysis of the natural and human-made hazards that could affect the county. This analysis is the first step in planning for mitigation, response, and recovery actions. The method used in this analysis provides a sense of hazard priorities, or relative risk. It does not predict the occurrence of a particular hazard, but it does "quantify" the risk of one hazard compared with another. By doing this analysis, planning can then be focused where the risk is the greatest.

### **Benton County Comprehensive Plan (2007)**

The Comprehensive Plan is the official policy guide for decisions about growth, development, services, and resource management in Benton County outside of incorporated cities. The policies of the Comprehensive Plan serve as the basis for developing and implementing regulations of the Development Code.

The Comprehensive Plan is based on the physical, economic and social characteristics of the county; the desires and needs of county citizens, state laws, and programs and policies of other local, state, and federal governmental agencies. Overall, the Plan is intended to provide a framework for consistent and coordinated public and private land use decisions.

Chapter 7 of the Comprehensive Plan addresses natural hazards, and, Section 7.6 establishes specific policies for wildfire. These policies are:

- 7.6.1** Benton County shall work with the Oregon Department of Forestry and fire agencies to identify high wildfire hazard areas.
- 7.6.2** Benton County shall reduce fire risk to life and property, using non-regulatory and regulatory programs that respond to local and state uniform fire codes.
- 7.6.3** Benton County shall identify and map all areas within the county that are unprotected by structural fire protection agencies.
- 7.6.4** Benton County shall work together with Oregon Department of Forestry and the Benton County Fire Defense Board to develop a Wildfire Protection plan.
- 7.6.5** Benton County shall require that plans for new development adequately provide for fire protection.
- 7.6.6** Benton County shall adopt standards for wildfire protection of structures and resource land.

Excerpts from the Benton County Comprehensive Plan addressing wildfire can be found in Appendix 7.

### **Corvallis Forest Stewardship Plan (2006)**

This is a stewardship plan for the 2,352 acre City of Corvallis ownership, which encompasses the lower elevations of the 10,000 acre Rock Creek Watershed on the northeast flanks of Marys Peak. Rock Creek is one of the sub-watersheds of Marys River Watershed, which is in turn one of the many large rural watersheds in the Willamette River Basin. The water that is diverted into City pipes flows not primarily from City-owned lands, but from federal forestland located above the intakes and managed by the Forest Service.

Stewardship polices in this plan cover these resources: wildlife habitat, forest health and structure, water quality, fish habitat and stream structure, public access and involvement, native vegetation and invasive species, and planning and monitoring.

### **Marys River Estates and Vineyard Mountain Community Wildfire Protection Plans (2007)**

The Marys River Estates CWPP and the Vineyard Mountain CWPP have two main goals. First, to provide silvicultural prescriptions that can reduce the risk of property loss due to wildland fire in the subdivisions. Second, to promote a better understanding of how to take preventative measures that may help prevent the loss of structures during a wildland fire. These plans also discuss the potential for both crown fires and surface fires in the Marys River Estates and Vineyard Mountain subdivisions and makes recommendations to help reduce the risk of property loss in the case of such fires.

The Benton County CWPP planning committee supports the results and continued implementation of the Marys River Estates CWPP and the Vineyard Mountain CWPP; thus, the recommendations and action items detailed in the Marys River Estates and Vineyard Mountain documents are integrated into the Benton County CWPP.

### **Response Guide to Wildland Fires During Extreme Fire Behavior Events**

The Benton County Fire Defense Board (BCFDB) recognizes that during extreme fire conditions there is a need to quickly mitigate all wildland fires in the county. Fires that grow beyond local control could adversely affect all fire control agencies and quickly overwhelm countywide resources. The BCFDB recognizes the need for an aggressive initial attack, in the beginning stages of the fire, during extreme fire conditions. To that end, The BCFDB has developed a plan that will send a fire apparatus from each Department or District in the county on the initial dispatch. The goal of this plan is to bring multiple resources into and under local control as quickly as possible to stop a wildfire in the incipient stage.

The purpose of this response guide is to provide a reference for all agencies involved in the dispatching and mitigation of wildland fires in Benton County.

### **Oregon Department of Forestry – West Oregon District Mobilization Plan**

The purpose of the West Oregon District Mobilization Plan is to provide critical information necessary to direct activities for wildfire and other emergencies. The Mobilization Plan details the District’s critical information including: lists of personnel, vehicle inventories, provides standard report forms, outlines the District’s fire operations plan, lists cooperators, and inventories available equipment and other resources. The plan also covers the District’s emergency and support services, details their radio operations, provides an extended attack plan, and discusses the District’s procedures for dealing with other incidents that may arise during a fire event. The district mobilization plan is updated annually before the start of the fire season.

The Benton County CWPP planning committee supports the West Oregon District’s efforts to develop formal documentation in advance of fire events to help coordinate their response as well as the response of other fire service organizations that may be providing assistance.

## **Oregon Forestland-Urban Interface Fire Protection Act of 1997**

The Oregon Forestland-Urban Interface Fire Protection Act of 1997 (often referred to as Senate Bill 360) enlists the aid of property owners toward the goal of turning fire-vulnerable urban and suburban properties into less volatile zones where firefighters may more safely and effectively defend homes from wildfires. In counties that have adopted Senate Bill 360, the law requires property owners in identified forestland-urban interface areas to reduce excess vegetation, which may fuel a fire, around structures and along driveways. In some cases, it is also necessary to create fuel breaks along property lines and roadsides.

While Senate Bill 360 has not yet been implemented in Benton County, the intent of the legislation is to identify a forestland-urban interface committee in each county that will classify forestland-urban areas. This process is undertaken separately and independently of the CWPP, and the CWPP process and mapping products are not intended for use in the SB 360 process. The forestland-urban interface committee should be composed of five members -- three appointed by the county, one by the state fire marshal and one by the state forester. The process of identifying forestland-urban interface areas follows steps and definitions described in Oregon Administrative Rules 629-044-1005 through 629-044-0145. Briefly, the identification criteria include:

- Lands within the county that are also inside an Oregon Department of Forestry protection district.
- Lands that meet the state’s definition of “forestland.”
- Lands that meet the definition of “suburban” or “urban;” in some cases, “rural” lands may be included within a forestland-urban interface area for the purpose of maintaining meaningful, contiguous boundaries.
- Lots that are developed, that are 10 acres in size or smaller, and which are grouped with other lots with similar characteristics in a minimum density of four structures per 40 acres.

Once forestland-urban interface areas are identified, the forestland-urban interface committee applies fire-risk classifications to the areas. The classifications range from “low” to “extreme,” and the classification is used by a property owner to determine the size of a fuel break that needs to be established around a structure.

After the forestland-urban interface committee completes its draft identification and classification maps, a public hearing is held to formally exhibit the committee’s findings and hear testimony. The maps are finalized by the committee after the hearing, and the findings are filed with the county clerk and the Oregon Board of Forestry. At that point, the Oregon Department of Forestry assumes administrative responsibility and notifies the owners of properties within the county's forestland-urban interface areas. Property owners have two years after receiving their letter of notification to comply with the fuel-reduction standards described in OAR 629-044-1050 through 629-044-1085.

## **Benton County Forestland Classification**

ODF’s forestland classification system originated with passage of the Forest Land Classification Act by the 1937 Oregon Legislature. Classification of lands as “forestland” essentially determined where ODF’s protection responsibilities were. By the 1950’s, the system had been adopted statewide with significant regional variation in interpretation and application.

Today, the wildfire protection environment, social and ecological systems, land uses, values and overall attitudes are much different. The population has increased and greater numbers of people are living within traditional forestlands with their fire prone fuels. This Wildland-Urban Interface (WUI) covers significantly larger portions of the forest protection district than in the past, and includes thousands of private dwellings. Consequently, many of the conditions pertaining to the original forestland classification system no longer apply, and ODF's fire protection program has escalated in complexity and costs.

ODF reviewed the statutes, rules and policies that make up its forestland classification system. Review goals were to update the classification system to reflect current conditions, and identify ways to improve the efficiency and consistency of its application and administration. One of the outcomes of this policy review was to emphasize the establishment of county committees which will re-examine forestland classifications of all lands in the state, including Benton County lands within ODF's West Oregon Protection District.

Oregon Revised Statute (ORS) 526, the West Oregon District of ODF, and the Benton County Commissioners authorized formation of such a committee in the spring of 2008. The committee chose the name Benton County Forestland Classification Committee (BCFCC). It is examining all lands within ODF's West Oregon Forest Protection District in Benton County and classifying lands as "forestland" or "not forestland" according to fire risk potential, vegetation type (fire fuel), community structure, and proximity to other forestland. It is hoped that the committee's efforts will help resolve issues pertaining to ODF's fire suppression role on public and private forestlands within the District. This work should be completed in 2009.

### **Oregon's Statewide Planning Goals and Guidelines**

Since 1973, Oregon has maintained a strong statewide program for land use planning. The foundation of that program is a set of 19 Statewide Planning Goals developed by the Oregon Department of Land Conservation and Development. The goals express the state's policies on land use and on related topics, such as citizen involvement, housing, and natural resources. Oregon's statewide goals are achieved through local comprehensive planning. State law requires each city and county to adopt a comprehensive plan and the zoning and land-division ordinances needed to put the plan into effect.

Goals 2, 4, 5, 6, 7, and 14 apply directly to many of the issues discussed in this Community Wildfire Protection Plan.

#### ***Goal 2: Land Use Planning***

To establish a land use planning process and policy framework as a basis for all decision and actions related to use of land and to assure an adequate factual base for such decisions and actions.

#### ***Goal 4: Forest Lands***

To conserve forest lands by maintaining the forest land base and to protect the state's forest economy by making possible economically efficient forest practices that assure the continuous growing and harvesting of forest tree species as the leading use on forest land consistent with sound management of soil, air, water, and fish and wildlife resources and to provide for recreational opportunities and agriculture.



***Goal 5: Natural Resources, Scenic and Historic Areas, and Open Spaces***

To protect natural resources and conserve scenic and historic areas and open spaces. Local governments shall adopt programs that will protect natural resources and conserve scenic, historic, and open space resources for present and future generations. These resources promote a healthy environment and natural landscape that contributes to Oregon’s livability.

***Goal 6: Air, Water and Land Resources Quality***

To maintain and improve the quality of the air, water and land resources of the state. All waste and process discharges from future development, when combined with such discharges from existing developments shall not threaten to violate, or violate applicable state or federal environmental quality statutes, rules and standards. With respect to the air, water and land resources of the applicable air sheds and river basins described or included in state environmental quality statutes, rules, standards and implementation plans, such discharges shall not exceed carrying capacity of such resources, considering long range needs; degrade such resources; or threaten the availability of such resources.

***Goal 7: Areas Subject to Natural Hazards***

To protect people and property from natural hazards. Local governments shall adopt comprehensive plans to reduce risk to people and property from natural hazards. Natural hazards for purposes of this goal are: floods (coastal and riverine), landslides, earthquakes and related hazards, tsunamis, coastal erosion, and wildfires. Local governments may identify and plan for other natural hazards.

***Goal 14: Urbanization***

To provide for an orderly and efficient transition from rural to urban land use, to accommodate urban population and urban employment inside urban growth boundaries, to ensure efficient use of land, and to provide for livable communities.



[This page intentionally left blank.]

## Chapter 2

### Documenting the Planning Process

Documentation of the planning process, including public involvement, is necessary to meet FEMA's DMA 2000 requirements (44CFR§201.4(c)(1) and §201.6(c)(1)). This section includes a description of the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how all of the involved agencies participated.

### Description of the Planning Process

The Benton County Community Wildfire Protection Plan was developed through a collaborative process involving all of the organizations and agencies detailed in Chapter 1 of this document. The planning process included five distinct phases which were in some cases sequential (step 1 then step 2) and in some cases intermixed (step 4 completed throughout the process):

1. **Collection of Data** about the extent and periodicity of the wildfire hazard in and around Benton County.
2. **Field Observations and Estimations** about risks, location of structures and infrastructure relative to risk areas, access, and potential treatments.
3. **Mapping** of data relevant to pre-wildfire mitigation and treatments, structures, resource values, infrastructure, risk assessments, and related data.
4. **Facilitation of Public Involvement** from the formation of the planning committee to news releases, public meetings, public mail surveys, public review of draft documents, and acknowledgement of the final plan by the signatory representatives.
5. **Analysis and Drafting of the Report** to integrate the results of the planning process, provide ample review and integration of committee and public input, and signing of the final document.

### The Planning Team

Leading the planning effort from Benton County was Chris Bentley representing the Benton County Community Development Department and representatives from the Benton County Fire Defense Board. The Fire Defense Board is chaired by the Monroe Fire Department Chief, Rick Smith, and is made up of all the local fire service organizations as well as interested federal and state agencies, county departments, and emergency management and response organizations.

Northwest Management Project Co-Managers were Vaiden Bloch, M.S., B.S. and Tera R. King, B.S. Mrs. King received a Bachelor of Science degree in natural resource management from the University of Idaho and Mr. Bloch has earned a Master of Science degree in forest products and a Bachelor of Science degree in forest management from the University of Idaho.

The planning philosophy employed in this project included the open and free sharing of information with interested parties. Information from federal, state, and local agencies was integrated into the database of knowledge used in this project. Meetings with the committee were held throughout the planning process to facilitate a sharing of information between participants. When the public meetings were held, many of the committee members were in attendance and

shared their support and experiences with the planning process and their interpretations of the results.

### Multi-Jurisdictional Participation

44 CFR §201.6(a)(3) calls for multi-jurisdictional planning in the development of Hazard Mitigation Plans which impact multiple jurisdictions. This Community Wildfire Protection Plan impacts the following jurisdictions:

- Benton County
- City of Corvallis
- City of Philomath
- City of Adair Village
- City of Albany
- City of Monroe
- Unincorporated communities of Benton County
- Philomath Fire and Rescue
- Corvallis Fire Department
- Blodgett-Summit Rural Fire Protection District
- Alsea Rural Fire Protection District
- Adair Rural Fire Protection District
- Albany Fire Department
- Monroe Rural Fire Protection District
- Hoskins-Kings Valley Rural Fire Protection District
- Oregon Department of Forestry

These jurisdictions were represented on the planning committee and in public meetings either directly or through their servicing fire department or district. They participated in the development of hazard profiles, risk assessments, and mitigation measures. The monthly planning committee meetings were the primary venue for authenticating the planning record. However, additional input was gathered from each jurisdiction in the following ways:

- Planning committee leadership visits to local group meetings (e.g. county departmental meetings, city council meetings, planning commission meetings) where planning updates were provided and information was exchanged.
- One-on-one visits between the planning committee leadership and representatives of the participating jurisdictions (e.g. meetings with county commissioners, city councilors and/or mayors, fire district commissioners, or community leaders).
- Written correspondence between the planning committee leadership and each jurisdiction updating the participating representatives on the planning process, making requests for information, and facilitating feedback.

Like other areas of Oregon and the United States, Benton County's human resources have many demands placed on them in terms of time and availability. A few of the elected officials (county commissioners and city mayors) do not serve in a full-time capacity; some of them have other employment and serve the community through a convention of community service. Recognizing this and other time constraints, many of the jurisdictions decided to identify a representative to cooperate on the planning committee and then report back to the remainder of their organization on the process and serve as a conduit between the planning committee and the jurisdiction.

## Planning Committee Meetings

The following people participated in planning committee meetings, volunteered time, or responded to elements of the Benton County Community Wildfire Protection Plan’s preparation.

<b>NAME</b>	<b>ORGANIZATION</b>
• Al Kitzman.....	Benton County Natural Areas and Parks
• Amy Schoener.....	Benton County Planning Commission
• Andrew Monaco.....	Benton County Public Works
• Barb Fick.....	Oregon State University Extension
• Bob Lupcho.....	Benton County resident
• Braydon Bigam.....	Corvallis Fire Department
• Chris Bentley.....	Benton County Community Development
• Dave Lynse.....	Oregon State University
• Douglas Baily.....	Corvallis Fire Department
• Ed Young.....	Blodgett/Summit Rural Fire District
• George Crosiar.....	Oregon State Fire Marshal’s Office
• George Foster.....	Alsea Rural Fire District
• Greg Verret.....	Benton County Community Development
• Jay Dixon.....	Benton County Board of Commissioners
• Jeff Powers.....	Benton County Parks and Natural Areas
• Jen Warren.....	Oregon Department of Forestry
• John Bradner.....	Albany Fire Department
• Mary King.....	Benton County Sheriff’s Office
• Mike Totey.....	Oregon Department of Forestry
• Randy Hereford.....	Starker Forests, Inc
• Rick Smith.....	Monroe Rural Fire District
• Roger Irvin.....	Benton County Public Works
• Steven Smith.....	U.S. Fish and Wildlife Service
• Tara Picken.....	Siuslaw National Forest
• Ted Erdmann.....	Oregon Department of Forestry
• Tera R. King.....	Northwest Management, Inc.
• Tim O’Neill.....	Alsea Emergency Preparedness Council
• Tom Phelps.....	Philomath Fire and Rescue
• Vaiden Bloch.....	Northwest Management, Inc.

### Committee Meeting Minutes

The planning committee began monthly meetings in June of 2008. These meetings served to facilitate the sharing of information and to lay the groundwork for the Benton County CWPP. Monthly planning meetings were held the third Wednesday of the month to coincide with the monthly Fire Defense Board meetings held on the third Thursday of each month. Northwest Management, Inc. as well as other planning committee leadership attended the monthly Fire Defense Board meetings to provide the group with regular updates on the progress of the document and gather any additional information needed to complete the Plan.

Planning committee meeting minutes are included in Appendix 2.

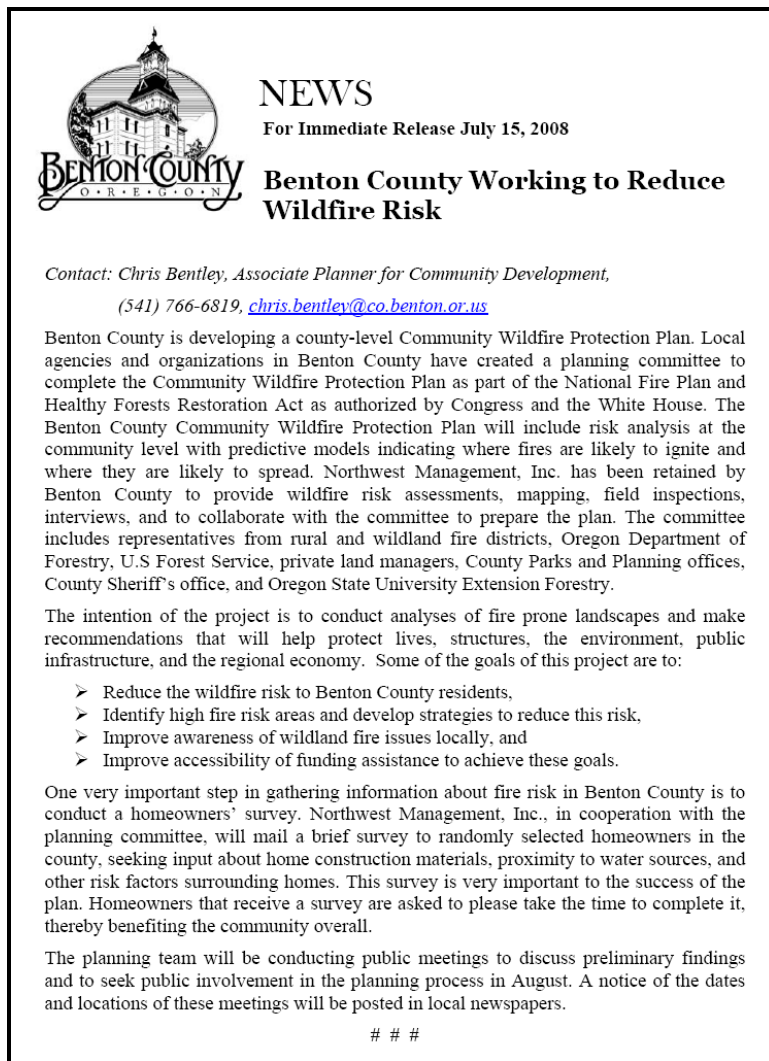
## Public Involvement

Public involvement was made a priority from the inception of the project. There were a number of ways that public involvement was sought and facilitated. In some cases, this led to members of the public providing information and seeking an active role in protecting their own homes and businesses, while in other cases it led to the public becoming more aware of the process without becoming directly involved in the planning.

### News Releases

Under the auspices of the Benton County planning committee, news releases were submitted to the *Albany Democrat Herald*, the *Corvallis Gazette Times*, the *Daily Barometer*, *Wrenditions*, the *Alsea Valley Voice*, the *Philomath Bulletin*, *Tri-County News*, KEZI, KGAL, KMTR, and KVAL. Informative flyers were also distributed around town and to local offices within the communities by the committee members.

**Figure 2.1. Press Release sent on July 15<sup>th</sup>, 2008.**



A record of articles published in local news media is included in Appendix 2.

## Public Mail Survey

A survey of Benton County homeowners was conducted to collect a broad base of perceptions about wildland fire and individual risk factors. Approximately 309 county residents were randomly selected to receive the survey.

The survey developed for this project has been used in the past by Northwest Management, Inc., during the preparation of other mitigation plans. The survey uses the Total Design Method (Dillman 1978) as a model to schedule the timing and content of letters sent to selected recipients. Copies of each cover letter and survey are included in Appendix II.

The first in the series of mailings was sent on August 21<sup>st</sup>, 2008 and included a cover letter, a survey form, and an offer for receiving a custom 11"x17" aerial photograph of Benton County if they would complete and return the survey. The free photo incentive was tied into assisting their community and helping their interests by participating in the process. Each letter also informed residents about the planning process. A return, self-addressed envelope was included in each packet. A postcard reminder was sent to non-respondents on September 4<sup>th</sup>, 2008, encouraging their response. A final mailing, with a revised cover letter urging them to participate, was sent to non-respondents on September 17<sup>th</sup>, 2008.

Surveys were returned during the months of August, September, and October. A total of 146 residents responded to the survey as of October 14, 2008. The effective response rate for this survey was 47%. Statistically, this response rate allows the interpretation of all of the response variables significantly at the 99% confidence level.

## Survey Results

A summary of the survey's results is presented here and referred to during the ensuing discussions on the need for various treatments, education, and other information.

Of the 146 total respondents in the survey, approximately 31% were from the Corvallis area, 29% were from the Philomath area, 10% were from Adair, 9% were from Lewisburg, 8% were from North Albany, and 3% each were from the Monroe, Alpine, and Alsea areas. The remaining respondents were from other areas in the county at a rate of about 1% per community. Nearly 90% of the respondents indicated that their property in Benton County was their primary residence.

Nearly all (97%) of the respondents said they had phone services, either a landline or cellular, available on their property. When asked if their property was covered by a fire district 97% said they were, 2% said they were not, and 1% indicated the question was not applicable. The second part of this question asked respondents to write in the name of the fire district in which their property was located. Of the respondents for which the question was applicable, 12% said they did not know what fire district they were in and 17% indicated the incorrect district based on which community they lived closest to.

Respondents were asked to indicate the type of roofing material covering the main structure of their home. Approximately 81% of respondents indicated their homes were covered with a composite material (asphalt shingles). About 13% indicated their homes were covered with a metal (e.g., aluminum, tin) roofing material, and 4% of the respondents indicated they have a wooden roof (e.g. shake, shingles). When asked if they kept a green lawn around their home year round, 74% of those that had a lawn (90%) said they did. In addition, when asked about the proximity of trees on their property, 1% of respondents said there were no trees within 200 feet

of their home, 25% said there were less than 10, 30% said there were between 10 and 25 trees, and 40% said there were more than 25 trees within 200 of their home.

The average driveway length of respondents to the survey was 286 feet long (.05 miles). The longest reported was ½ mile. Of those respondents with a driveway over 300 feet long, 43% do not have turnouts allowing two vehicles to pass. None of those respondents with a driveway indicated having a dirt surface, while 54% had gravel or rock and 46% had a paved driveway. Approximately 53% of the respondents indicated an alternate escape route was not available in an emergency that cut off their primary driveway access.

Respondents were asked what type of tools they had on hand to use against a wildfire that threatens their home. Table 2.1 summarizes these responses.

---

**Table 2.1. Tabulation of Homes with Firefighting Tools Available.**

---

95% – Hand tools (shovel, axe, etc.)
3% – Portable water tank
15% – Fixed/Stationary water tank
26% – Pond, lake, swimming pool, or stream water supply close
15% – Water pump and fire hose
68% – Well or cistern
22% – Equipment suitable for creating fire breaks (bulldozer, cat, farm tractor, etc.)

---

Respondents were asked to complete a fuel hazard rating worksheet to assess their home’s fire risk rating. The following is an example of the worksheet and a summarization of responses (Table 2.2).



**Circle the ratings in each category that best describe your home.**

<b>Table 2.2. Fuel Hazard Rating Worksheet</b>		<b>Rating</b>	<b>Results</b>
<b>Fuel Hazard</b> (within 200 feet of structures)	Small, light fuels (grasses, non-woody plants, weeds, shrubs)	1	32%
	Medium size fuels (brush, large shrubs, small trees)	2	35%
	Heavy, large fuels (woodlands, timber, heavy brush)	3	33%
<b>Slope Hazard</b> (within 200 feet of structures)	Mild slopes (0-5%)	1	60%
	Moderate slope (6-20%)	2	32%
	Steep Slopes (21-40%)	3	7%
	Extreme slopes (41% and greater)	4	1%
<b>Structure Hazard</b>	Noncombustible roof and noncombustible siding materials	1	22%
	Noncombustible roof and combustible siding material	3	46%
	Combustible roof and noncombustible siding material	7	10%
	Combustible roof and combustible siding materials	10	22%
<b>Additional Factors</b>	Rough topography that contains several steep canyons or ridges	+2	Average -2.93 pts
	Areas having history of higher than average fire occurrence	+3	
	Areas exposed to severe fire weather and strong winds	+4	
	Areas with existing fuel modifications or usable fire breaks	-3	
	Areas with local facilities (water systems, rural fire districts, dozers)	-3	

Values below are the average responses to each question for those living in both rural and urban areas.

Fuel hazard	2.12	x	Slope Hazard	1.5	=	3.18
Structural hazard		+		4.58		
Additional factors		(+ or -)		-2.93		
Total Hazard Points		=		4.83		

**Table 2.3. Tabulation of Homeowner Assessed Risk.**

- 00% – Extreme Risk = 26 + points
- 36% – High Risk = 16–25 points
- 34% – Moderate Risk = 7–15 points
- 63% – Low Risk = 6 or less points

Respondents were asked a series of questions regarding mitigation activities they had recently done or currently do on their property. The first question asked if they conducted a periodic fuels reduction program near their home; 92% said that they did. Respondents were also asked if livestock were grazed around their home; 21% indicated there were.

Finally, respondents were asked “If offered in your area, would members of your household attend a free or low cost, ½ -day training seminar designed to share with homeowners how to

improve the defensible space surrounding their home and adjacent outbuildings?” Approximately 62% of respondents indicated a desire to participate in this type of training.

Homeowners were also asked, “How Hazard Mitigation projects should be funded in the areas surrounding homes, communities, and infrastructure such as power lines and major roads?” Responses are summarized in Table 2.4.

**Table 2.4. Public Opinion of Hazard Mitigation Funding Options.**

	<b>100% Public Funding</b>	<b>Cost-Share (Public &amp; Private)</b>	<b>Privately Funded (Owner or Company)</b>
<b>Home Defensibility Projects</b>	16%	42%	42%
<b>Community Defensibility Projects</b>	52%	43%	5%
<b>Infrastructure Projects (i.e. roads, bridges, etc.)</b>	74%	19%	7%
<b>Fuels Reduction or Forest Health Projects on Private Lands</b>	15%	37%	48%

### Public Meetings

Public meetings were scheduled in several of the communities in Benton County during the hazard assessment phase of the planning process to share information on the planning process, obtain input on the details of the hazard assessments, and discuss potential mitigation treatments. Attendees at the public meetings were asked to give their impressions of the accuracy of the information generated and provide their opinions of potential treatments.

The initial schedule of public meetings in Benton County included five locations. They were attended by a number of individuals on the committee and from the general public. Total attendance was as follows: 5 in Monroe, 20 in Alsea, 19 in Wren, 16 in Corvallis, and 14 in Adair. The public meeting announcement sent to the local newspapers, local citizen participation organizations, county departments, fire district representatives, and distributed by committee members is included below in Figure 2.2.

Figure 2.2. Public Meeting Flyer.

## *Benton County, Oregon*



# **Community Wildfire Protection Plan Public Meetings!**

---

**Monroe:** Monday, September 15th, Monroe Fire Station (680 Commercial St) at 6:30 pm  
**Alsea:** Tuesday, Sept 16th, Alsea Community Library (19192 Alsea Highway) at 6:30 pm  
**Wren:** Wednesday, Sept 17th, Community Hall (35515 Kings Valley Highway) at 6:30 pm  
**Corvallis:** Thursday, Sept 18th, Corvallis Public Library (645 NW Monroe) at 2 pm  
**Adair Village:** Thursday, Sept 18th, Officer's Clubhouse (6097 NE Ebony Lane) at 6:30 pm

---

These public meetings will address the **Community Wildfire Protection Plan** being developed for Benton County. Public input is being sought to better understand the vulnerability of County residents, businesses, and resources to wildfire. The purpose of this plan is to promote awareness of the countywide wildland fire hazard and propose workable solutions to reduce the wildfire risk.

The planning committee is working on:

- Mapping the Wildland Urban Interface in Benton County
- Improving public awareness and educating the public about wildfire risk
- Evaluating strategies for landowners to lessen wildfire potential
- Developing inventories of public and private infrastructure
- Addressing areas of inadequate fire protection
- Recommending risk mitigation projects



*Biscuit Fire, Oregon 2002*

These meetings are open to the public and will include slideshow presentations by wildfire specialists and local personnel working to develop the plan.

Learn about the assessments of wildfire risk and the wildland urban interface of Benton County. Discuss **YOUR** priorities for how our community can best mitigate these risks.

***Please attend and participate!***



The planning committee would like to provide the opportunity for meaningful discussions among community members and local, state, and federal government representatives regarding their priorities for local fire protection and forest management.

For more information on the Community Wildfire Protection Plan project, contact Chris Bentley, Benton County Community Development, at 541-766-6293 or Tera King at Northwest Management, Inc. 208-883-4488 ext 133.

### **Documented Review Process**

Review and comment on this plan has been provided through a number of avenues for the committee members as well as the members of the general public.

During regularly scheduled committee meetings in 2008, the committee met to discuss findings, review mapping and analysis, and provide written comments on draft sections of the document. During the public meetings, attendees observed map analyses and photographic collections, discussed general findings from the community assessments, and made recommendations on potential project areas.

The first draft of the document was prepared after the public meetings and presented to the committee on September 17<sup>th</sup>, 2008 for a full committee review. The draft document was released for public review on February 2<sup>nd</sup> 2009. The public review period remained open until March 16<sup>th</sup>, 2009.

### **Continued Public Involvement**

Benton County is dedicated to involving the public directly in review and updates of this Community Wildfire Protection Plan. The Benton County Commissioners, working through the Community Development Department and the Fire Defense Board, are responsible for review and update of the plan as recommended in chapter 5 of this document.

The public will have the opportunity to provide feedback about the Plan at any time. Copies of the Plan will be available at the Benton County Community Development office and on the Benton County website. Contact information for the project coordinator is listed on the Acknowledgements page.

A public meeting will also be held as part of each formal plan review or when deemed necessary by the planning committee. The meetings will provide the public a forum in which they can express concerns, opinions, or ideas about the Plan. The Benton County Community Development Office will publicize the public meetings and maintain public involvement through the county's webpage and newspapers.

## Chapter 3

### Benton County Characteristics

Benton County, Oregon is located towards the southern end of the Willamette Valley. The western half of the county is dominated by coniferous forestlands including public lands held by the State, the Forest Service, and the Bureau of Land Management as well as a significant portion in private or industrial ownership. There are several small communities within these forested areas; however, this part of the county is very rural. The eastern half of the county is characterized by the foothills and lowland areas of the Willamette Valley. Agriculture, including numerous grass seed farms, tree farms, and vineyards, dominates the landscape. Additionally, the major population centers of Corvallis, Philomath, and Monroe are located within the valley bottom. Historically, this area transitioned from the native grasses to an oak woodland/savanna vegetation type on the lower and mid slopes of the foothills; however, much of this ecosystem has either been developed for housing or other human use or encroached on by Douglas-fir.

### Geography and Climate

*Adapted from the Benton County Multi-Hazard Mitigation Plan 2006.*

Benton County is located in western Oregon and covers about 676 square miles. The geography, topography, climate, and other natural attributes such as vegetation vary significantly across Benton County. The geographic diversity of Benton County is an important factor to consider in wildfire mitigation planning.

The Coast Range, in the western portion of Benton County, is a relatively low population, heavily forested area, generally characterized by heavy rainfall. The eastern slopes typically receive less rainfall than the western slopes. The Willamette Valley in eastern Benton County, characterized by flat or gently rolling topography and agricultural lands, is the most heavily populated area.

The climate in Benton County is moderate. Mean daily temperatures range from highs of about 81 degrees and lows of about 51 degrees in July and August to highs of about 46 degrees and lows of about 33 degrees in December and January. The average annual rainfall is about 41 inches. Average monthly precipitation varies from about 6 to 7 inches in November through January to about 0.4 inches in July. Average annual snowfall is about 6.1 inches. At higher elevations in the Coast Range, temperatures are typically lower with higher amounts of precipitation. Average annual precipitation exceeds 140 inches per year in the mountainous areas of western Benton County.

### Population and Demographics

*Adapted from the Benton County Multi-Hazard Mitigation Plan 2006.*

Benton County was created from Polk County in 1847 from an area originally inhabited by the Klickitat and Calapooia Native Americans. When created, Benton County extended from the Willamette River to the coast and south to the California border. Lane, Douglas, Jackson, Lincoln, Josephine, Curry and Coos Counties were created later from portions of the original Benton County.

Benton County population was 78,153 according to the 2000 Census. The 2003 population estimate was 79, 335. Population data for Benton County and for the incorporated cities in Benton County are shown below in Table 3.1.

**Table 3.1. Benton County Population Data.**

<b>Location</b>	<b>2000 Census</b>	<b>July 2003 Estimate</b>
Benton County	78,153	79,335
Adair Village	536	519
Corvallis	49,322	50,126
Monroe	607	594
Philomath	3,838	4,198
Albany (North)	6,984	N/A

The City of Corvallis has more than 60% of Benton County’s total population. Together, the three largest population concentrations (Corvallis, Philomath, and North Albany) contain nearly 80% of the county’s population. The remaining 20% of Benton County’s population is scattered in small communities and in rural areas.

Historical population data for Benton County since 1900 are shown below in Table 3.2. These long-term data show the steady growth of population in Benton County over the decades.

**Table 3.2. Benton County Historical Population Data.**

<b>Census</b>	<b>Population</b>
1900	6,706
1910	10,663
1920	13,744
1930	16,555
1940	18,629
1950	31,570
1960	39,165
1970	53,776
1980	68,211
1990	70,811
<b>2000</b>	<b>78,153</b>

### Land Ownership

A relatively large percentage of the county is privately owned. Private parcels are becoming more and more expensive as the population grows and more property is developed. This factor combined with the mountainous nature of the topography in the western half of the county is expected to produce significantly higher demands on privately held land in the future.



**Table 3.3. Ownership Categories in Benton County.**

<b>Land Owner</b>	<b>Percent</b>
Bureau of Land Management	13.6%
City	1.5%
Benton County	0.4%
Forest Industry	25.2%
Oregon Department of Fish and Game	0.0%
Oregon Department of Transportation	0.0%
Oregon State Fish and Wildlife	0.0%
Oregon State Game Commission	0.4%
Oregon State Parks	0.1%
Oregon State University	3.6%
Private	47.4%
School District	0.1%
State of Oregon	2.1%
U.S. Forest Service	4.3%
U.S. Fish and Wildlife Service	1.2%

## Natural Resources

Benton County is a diverse ecosystem with a complex array of vegetation, wildlife, and fisheries that have developed with, and adapted to fire as a natural disturbance process. Nearly a century of wildland fire suppression coupled with past land-use practices (primarily timber harvesting and agriculture) has altered plant community succession and has resulted in dramatic shifts in the fire regimes and species composition. As a result, some forests in Benton County have become more susceptible to large-scale, high-intensity fires posing a threat to life, property, and natural resources including wildlife and plant populations. High-intensity, stand-replacing fires have the potential to seriously damage soils, native vegetation, and fish and wildlife populations. In addition, an increase in the number of large, high-intensity fires throughout the nation’s forest and rangelands has resulted in significant safety risks to firefighters and higher costs for fire suppression (House of Representatives, Committee on Agriculture, Washington, DC, 1997).

### Biota

**Fish and Wildlife** – Benton County is home to a diverse array of fish and wildlife species. Benton County streams provide habitat for Coho salmon, Chinook salmon, and steelhead, including populations that are listed as threatened under the federal Endangered Species Act. Forest lands and interface areas are important habitat for many species of birds and mammals.

**Vegetation** - In the early 1800s (pre-European settlement), the landscape in Benton County was strikingly different than that which is seen today. Conditions mirrored those found throughout the Willamette Valley and western Oregon. At that time, four major vegetation types occurred in the area: prairie, riparian forest and wetlands, open woodland and upland forest. Open grasslands dominated the vegetation from the floodplain margins to the hillsides of most valleys of the area. Isolated groves of trees were primarily white oak and Douglas-fir. This prairie condition had been intentionally cultivated by the local Calapooia Indians, who routinely burned the valley grasses to maintain important food and fiber “crops,” including oak, camas, hazel, and berries, to



encourage lush grass growth for game, and to make travel easier. When the first settlers began arriving in the Willamette Valley in the 1840s, there was little standing in the way of pioneer settlement. Diseases brought into the area by early trappers and explorers had already decimated native Indian populations (reducing their numbers by nearly 75 percent). Vegetation patterns changed quickly as a result of the cessation of native vegetation burning, and the beginning of farming and grazing practices by early settlers.

Vegetation in Benton County is a mix of forestland, riparian, and agricultural ecosystems. An evaluation of satellite imagery of the region provides some insight to the composition of the vegetation of the area. Douglas-fir/western hemlock/western red cedar forest is currently the most represented cover type in Benton County at 50% of the total land base followed by agriculture at 34%, mixed conifer/mixed deciduous forest at 6%, and urban at 3%.

**Table 3.4. Vegetative Cover Types in Benton County.**

Cover	Acres	Percent
Agriculture	146,168	33.7%
Douglas-fir/White Oak Forest	5,567	1.3%
Douglas-fir-W. Hemlock-W. Red Cedar Forest	217,337	50.1%
Grass-shrub-sapling or Regenerating young forest	7,717	1.8%
Hawthorn-Willow Shrubland	1,907	0.4%
Mixed Conifer/Mixed Deciduous Forest	26,091	6.0%
Non-tidal Emergent Wetland	2,718	0.6%
Open Water	3,006	0.7%
Oregon White Oak Forest	6,592	1.5%
Wetland Forest	924	0.2%
Red Alder Forest	1,523	0.4%
Urban	14,531	3.3%

### Hydrology

The Willamette Valley is one of Oregon’s fastest growing regions and depends heavily on groundwater for private wells, public drinking water, irrigation, industrial operations, and other beneficial uses.

The Oregon Department of Environmental Quality (DEQ) considers the Southern Willamette Valley to be a priority area for groundwater assessment and protection.

The Willamette River has played a significant historical role in shaping the geology and soil compositions on land near the river. Some 12,000 to 15,000 years ago, massive flooding events distributed large cobbles, gravels, sands, and silts over the valley and created temporary lakes in the area. Finer-grained materials eventually settled out of these lakes, and created the hydrogeologic unit know as the Willamette Silt.

### Air Quality

The primary means by which the protection and enhancement of air quality is accomplished is through implementation of National Ambient Air Quality Standards (NAAQS). These standards address six pollutants known to harm human health including ozone, carbon monoxide, particulate matter, sulfur dioxide, lead, and nitrogen oxides (USDA Forest Service 2000).

The Clean Air Act, passed in 1963 and amended in 1977, is the primary legal authority governing air resource management. The Clean Air Act provides the principal framework for national, state, and local efforts to protect air quality. Under the Clean Air Act, the Organization for Air Quality Protection Standards (OAQPS) is responsible for setting the NAAQS standards for pollutants which are considered harmful to people and the environment. OAQPS is also responsible for ensuring these air quality standards are met, or attained (in cooperation with state, Tribal, and local governments) through national standards and strategies to control pollutant emissions from automobiles, factories, and other sources (Louks 2001).

Smoke emissions from fires potentially affect an area and the airsheds that surround it. Climatic conditions affecting air quality in Oregon are governed by a combination of factors. Large-scale influences include latitude, altitude, prevailing hemispheric wind patterns, and mountain barriers. At a smaller scale, topography and vegetation cover also affect air movement patterns. Locally adverse conditions can result from occasional wildland fires in the summer and fall, and prescribed fire and agricultural burning in the spring and fall.

Due principally to local wind patterns, air quality in Benton County is generally good, rarely falling below Oregon Department of Environmental Quality (DEQ) pollution standards. Emissions from motor vehicles are the primary and most persistent cause of the degradation of local air and noise quality. Occasional intrusions of smoke from field and slash burning and the use of wood stoves also occur.

### **Oregon State Smoke Management Plan**

Under the federal Clean Air Act and state implementing laws, the Oregon Department of Forestry Fire Program is responsible for regulating forestland slash burning in the state. Controlled burning after timber harvest reduces residual fuel hazards and prepares the site for replanting by releasing nutrients and removing competing vegetation. In spring and fall, meteorologists monitor weather conditions as they coordinate hundreds of burning requests from private and public forest landowners. ODF's implementation of the Oregon Smoke Management Plan seeks to enable landowners to manage their forests and safely reduce fire hazards while maintaining air quality in populated areas.

[This page intentionally left blank.]

## Chapter 4

### Risk and Preparedness Assessments

#### Wildland Fire Characteristics

An informed discussion of fire mitigation is not complete until basic concepts that govern fire behavior are understood. In the broadest sense, wildland fire behavior describes how fires burn; the manner in which fuels ignite, how flames develop and how fire spreads across the landscape. The three major physical components that determine fire behavior are the fuels supporting the fire, the topography in which the fire is burning, and the weather and atmospheric conditions during a fire event. At the landscape level, both topography and weather are beyond our control. We are powerless to control winds, temperature, relative humidity, atmospheric instability, slope, aspect, elevation, and landforms. It is beyond our control to alter these conditions, and thus impossible to alter fire behavior through their manipulation. When we attempt to alter how fires burn, we are left with manipulating the third component of the fire environment; fuels which support the fire. By altering fuel loading and fuel continuity across the landscape, we have the best opportunity to control or affect how fires burn.

A brief description of each of the fire environment elements follows in order to illustrate their affect on fire behavior.

#### Weather

Weather conditions contribute significantly to determining fire behavior. Wind, moisture, temperature, and relative humidity ultimately determine the rates at which fuels dry and vegetation cures, and whether fuel conditions become dry enough to sustain an ignition. Once conditions are capable of sustaining a fire, atmospheric stability and wind speed and direction can have a significant effect on fire behavior. Winds fan fires with oxygen, increasing the rate at which fire spreads across the landscape. Weather is the most unpredictable component governing fire behavior, constantly changing in time and across the landscape.

#### Topography

Fires burning in similar fuel conditions burn very differently under varying topographic conditions. Topography alters heat transfer and localized weather conditions, which in turn influence vegetative growth and resulting fuels. Changes in slope and aspect can have significant influences on how fires burn. Generally speaking, north slopes tend to be cooler, wetter, more productive sites. This can lead to heavy fuel accumulations, with high fuel moistures, later curing of fuels, and lower rates of spread. In contrast, south and west slopes tend to receive more direct sun, and thus have the highest temperatures, lowest soil and fuel moistures, and lightest fuels. The combination of light fuels and dry sites leads to fires that typically display the highest rates of spread. These slopes also tend to be on the windward side of mountains. Thus these slopes tend to be “available to burn” a greater portion of the year.

Slope also plays a significant role in fire spread, by allowing preheating of fuels upslope of the burning fire. As slope increases, rate of spread and flame lengths tend to increase. Therefore, we can expect the fastest rates of spread on steep, warm south and west slopes with fuels that are exposed to the wind.

## Fuels

Fuel is any material that can ignite and burn. Fuels describe any organic material, dead or alive, found in the fire environment. Grasses, brush, branches, logs, logging slash, forest floor litter, conifer needles, and buildings are all examples. The physical properties and characteristics of fuels govern how fires burn. Fuel loading, size and shape, moisture content, and continuity and arrangement all have an effect on fire behavior. Generally speaking, the smaller and finer the fuels, the faster the potential rate of fire spread. Small fuels such as grass, needle litter and other fuels less than a quarter inch in diameter are most responsible for fire spread. In fact, “fine” fuels, with high surface to volume ratios, are considered the primary carriers of surface fire. This is apparent to anyone who has ever witnessed the speed at which grass fires burn. As fuel size increases, the rate of spread tends to decrease due to a decrease in the surface to volume ratio. Fires in large fuels generally burn at a slower rate, but release much more energy and burn with much greater intensity. This increased energy release, or intensity, makes these fires more difficult to control. Thus, it is much easier to control a fire burning in grass than to control a fire burning in timber.

When burning under a forest canopy, the increased intensities can lead to torching (single trees becoming completely involved) and potential development of crown fires. That is, they release much more energy. Fuels are found in combinations of types, amounts, sizes, shapes, and arrangements. It is the unique combination of these factors, along with the topography and weather, which determines how fires will burn.

The study of fire behavior recognizes the dramatic and often-unexpected effect small changes in any single component have on how fires burn. It is impossible to speak in specific terms when predicting how a fire will burn under any given set of conditions. However, through countless observations and repeated research, some of the principles that govern fire behavior have been identified and are recognized.

## Wildfire Hazards

In the 1930s, wildfires consumed an average of 40 to 50 million acres per year in the contiguous United States, according to US Forest Service estimates. By the 1970s, the average acreage burned had been reduced to about 5 million acres per year. Over this time period, fire suppression efforts were dramatically increased and firefighting tactics and equipment became more sophisticated and effective. For the 11 western states, the average acreage burned per year since 1970 remained relatively constant at about 3.5 million acres per year.

The severity of a fire season can usually be determined in the spring by how much precipitation is received, which in turn determines how much fine fuel growth there is and how long it takes this growth to dry. These factors, combined with the annual easterly wind events typically in September and October, drastically increase the chance a fire start will grow and resist suppression activities. Furthermore, harvest operations are typically also occurring throughout the months of August and September. Occasionally, harvesting equipment causes an ignition that can spread into populated areas and timberlands.

## History of Major Fires

Major historical fires in Oregon dating from the mid-19<sup>th</sup> century include the 1865 Silverton Fire and the 1849 Siletz Fire, which consumed 988,000 and 800,000 acres of wildland, respectively. In the 20<sup>th</sup> century four major fires occurred between 1933 and 1945, with each fire consuming

between 180,000 and 240,000 acres. In 1987, the Silver Fire, burned 97,000 acres. Recent major fires include the 2002 Biscuit Fire that burned nearly 500,000 total acres (with about 471,000 acres in Oregon and nearly 29,000 acres in California) and the 2003 B&B Complex fire that burned 90,769 acres.

In recorded history, there have only been a few major fires in or threatening land in Benton County: the Tillamook Burn (1933-1951), the Shady Lane Fire (1987), and the Rockhouse Creek Fire (1987). The following narratives describe these fire events.

### The Tillamook Burn

One spark on a hot August afternoon in 1933 changed people's lives, the landscape, and the future of what is known today as the Tillamook State Forest. A series of devastating wildfires transformed the original forest into a virtual wasteland, but one of the world's largest reforestation projects has returned the area to a sea of green.

The Tillamook Burn became the collective name for a series of large fires that began in 1933 and struck at six-year intervals through 1951, burning a combined total of 355,000 acres. The fires had profound environmental, economic and social repercussions for the coastal counties of northwest Oregon. The logging industry, a mainstay of local economies, ground to a halt. Some species of wildlife native to the area were decimated due to habitat loss while other wildlife populations exploded. Rivers were choked with sediment and debris. Seed cones—the genetic blueprint for a new forest—were annihilated by fire.

In the years since the fires, foresters, professional tree planters and volunteers have worked painstakingly to reestablish the forest and its many resources. Oregon voters passed a constitutional amendment in 1948 authorizing \$12 million in bonds to rehabilitate the land. The long reforestation project, the largest ever undertaken, began in 1949. Helicopters were used for the first time for large-scale aerial seeding. On the ground, forestry crews, prison inmates and school groups planted trees by hand. In total, helping hands planted 72 million seedlings, giving the burned-over landscape a new start.

The Tillamook Burn was officially renamed the Tillamook State Forest by Oregon Governor Tom McCall on July 18, 1973. Today the area is covered with young trees, but the charred trunks left by the old burn still testify to the fragility of the forest resources and the ever-present need to be careful with fire.

### 1987 Fire Season

The fire season of 1987 started three weeks earlier than normal, lasted longer than any season on record, and resulted in fires in California and Oregon that were historic in both magnitude and duration.

It was the third season in a row of below normal rainfall. By early May conditions were like July, and the first large fire of the year broke out in Linn County. The Calapooia Fire burned 1,800 acres.

A lightning storm the week of July 15 started several fires in southwest Oregon. An ignition on Bland Mountain took the lives of two loggers and burned 10,000 acres.

On August 30 a more extensive dry lightning storm ignited hundreds of fires in California and southern Oregon. More than 600 fires started in southern Oregon from 1,600 lightning strikes

recorded in a 12-hour period. Hot, dry weather allowed the fires to spread, often combining with adjacent fires. Temperature inversions slowed the firefighting efforts and spread a layer of smoke over southern Oregon and northern California. The extent of the firefighting effort in the two states put a severe strain on the resources available for firefighting in the entire country.

Fires in southern Oregon burned across 183,000 acres of forestland; fourteen of the 1,500 fires contained more than 1,500 acres each; and elsewhere in Oregon 11,000 more acres burned during the same period. Almost 3,000 people were evacuated and 1,100 homes were threatened. Most of the fires were under control by the end of October. It was the most massive firefighting effort in the nation's history.

Just as the fires down south seemed to be under control, the West Oregon District began to have problems of its own. Just after noon on Friday, October 9<sup>th</sup>, a fire started in timber and brush at a logging site eight miles south of Dallas. Fanned by some strong northeast winds, the Shady Lane Fire grew to more than 500 acres within hours, forcing the evacuation of 150 people. Three hundred firefighters were mobilized, including a State Forestry project fire team, crews from local timber industry and rural fire departments, and even a crew from Virginia. A fire camp was set up at the Polk County fairgrounds. Despite the work of retardant planes and helicopter water drops, by the end of the day on Friday the fire had burned 1,000 acres, jumped roads and firebreaks, and come within 2 miles of the town of Pedee.

A unified command group was established by the ODF, the rural fire departments in Polk County and the Polk County Sheriff's office. The site was declared a potential for disaster, making the fire eligible for federal financial assistance.

By Saturday evening the fire was declared contained and all the evacuees were allowed to return home. The Shady Lane Fire had burned 1,140 acres, caused \$280,000 in damages, and suppression costs totaled more than \$400,000.

Following the Shady Lane Fire and several other fires on the west side of Oregon in the same period, the State Fire Marshall issued a ban on all open burning. Six new fires a day were being reported in Oregon.

On the night of Sunday, October 18<sup>th</sup>, fire crews from the Dallas Unit were called to investigate a fire near the Dallas watershed. By the time they arrived at the fire trees were crowning out in the dark and by morning the fire had grown to 400 acres. Retardant drops began at daybreak, but strong northeast winds increased the Rockhouse Creek Fire to 1,000 acres by noon. Another statewide ODF fire team arrived, camping once again at the Polk County Fairgrounds.

On October 20<sup>th</sup>, the Deputy State Forester announced that ODF was closing down 10.3 million acres of state-protected forestlands west of the Cascades due to the extreme fire emergency, lack of rainfall, and unseasonably high temperatures. Any entry into the forest was by permit only. A closure of this type hadn't been ordered since 1967.

The fire burned through the Dallas watershed, jumped the reservoir, and was spotting a mile ahead of itself by Monday night. A portion of the Black Rock Experimental State Forest was burned and two camps and 24 homes in the community of Black Rock were evacuated. The blaze continued to burn for a week, causing more than \$5 million worth of damage and burning more than 5,000 acres. Suppression costs totaled \$2.6 million. Efforts by the Polk County Soil Conservation Service began immediately to reseed ground cover on the steep terrain in the watershed in order to slow siltation in the nearby reservoir.



These two fires were the largest ever experienced in the West Oregon District. It was also the first time the District had hosted a statewide fire team. The 1987 fire season was costly as well as long. Unbudgeted suppression costs in Oregon climbed to more than \$31 million.

### Wildfire Ignition Profile

In interpreting these data, it is important to keep in mind that these data are for Oregon Department of Forestry (ODF) responsibility areas only, and do not include all fires in areas covered only by local fire departments or areas where federal agencies (specifically the U.S. Forest Service) have fire suppression responsibility. However, for Benton County, ODF responsibility lands include about 69% of the entire county (Goettell 2006). The Oregon State Fire Marshal’s Office does maintain a database of fires reported by local fire departments; however, due to differences in reporting schemes, this data does not accurately reflect wildland fire occurrences in Benton County.

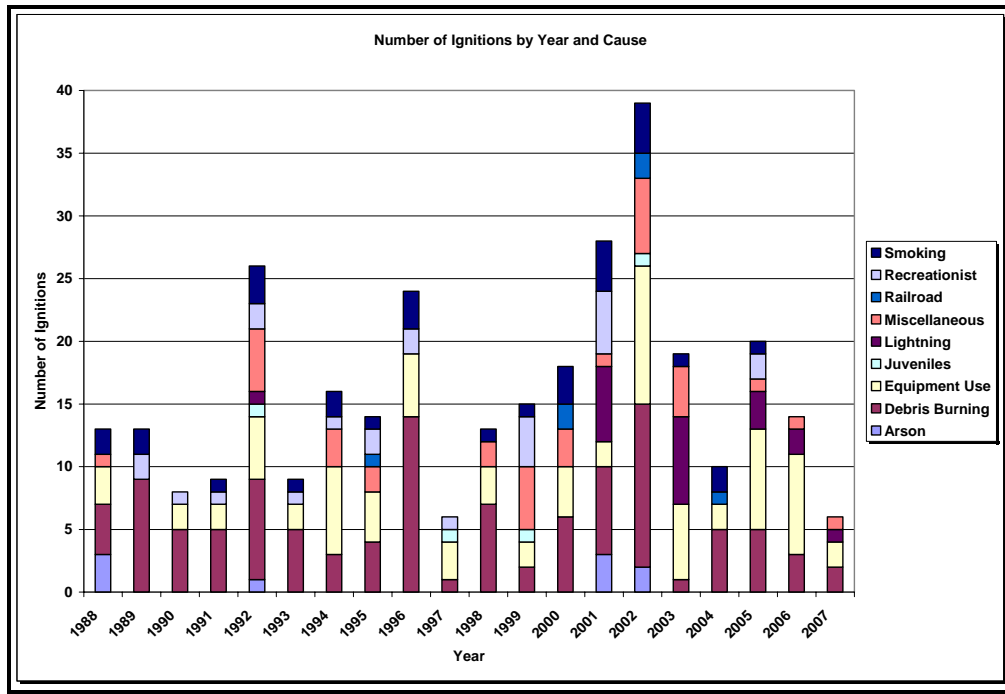
Using data on past fire extents and fire ignition compiled by the ODF, the occurrence of wildland fires in the region of Benton County has been evaluated. The ODF database of wildfire ignitions used in this analysis includes ignition and extent data from 1988 through 2007 within their jurisdiction. An analysis of the ODF reported wildfire ignitions in Benton County reveals that during this period approximately 715 acres burned as a result of 320 ignitions, which results in an average of 2.2 acres burned per fire.

**Table 4.1. Summary of ignitions in Benton County from ODF database 1988-2007.**

Cause	Acres Burned	Square Miles Burned	Percent	Number of Ignitions	Percent
Arson	62	.097	9%	9	3%
Debris Burning	445	.695	62%	109	34%
Equipment Use	79	.123	11%	81	25%
Juveniles	<1	<.0016	0%	4	1%
Lightning	10	.016	1%	20	6%
Miscellaneous	44	.688	6%	35	11%
Railroad	22	.034	3%	6	2%
Recreationist	9	.014	1%	24	8%
Smoking	45	.07	6%	32	10%
<b>Total</b>	<b>715</b>	<b>1.117</b>	<b>100%</b>	<b>320</b>	<b>100%</b>

Within the Oregon Department of Forestry’s protection area 99% of the fires during this period were human-caused with the majority of the ignitions caused by debris burning or equipment use. To assist with reducing these types of fires, the Benton County Fire Defense Board imposes a burn ban during ODF’s closed fire season each summer. This has helped considerably in reducing fire starts not just within the ODF protection area, but also in local fire agency boundaries.

**Figure 4.1. Wildfire Ignitions within ODF Protection Area 1988-2007.**



Ideally, historical fire data would be used to estimate the annual probability for fires in the wildland-urban interface areas of Benton County. However, current data do not appear adequate to make credible calculations because the data for local, state, and federal responsibility areas are not reported by the same criteria. Nevertheless, the data reviewed above provide a general picture of the level of wildland-urban interface fire risk for Benton County overall.

However, there are several reasons why the fire risk may be higher than suggested above, especially in developing wildland-urban interface areas.

- 1) Large fires may occur infrequently, but statistically they will occur. One large fire could significantly change the statistics. In other words, 10 years of historical data may be too short to capture large, infrequent wildland fire events.
- 2) The level of fire hazard depends profoundly on weather patterns. A several year drought period would substantially increase the probability of large wildland fires in Benton County. For smaller vegetation areas, with grass, brush and small trees, a much shorter drought period of a few months or less would substantially increase the fire hazard.
- 3) The level of fire hazard in wildland-urban interface areas is likely significantly higher than for wildland areas as a whole due to the greater risk to life and property. The probability of fires starting in interface areas is much higher than in wildland areas because of the much higher population density. Most wildland or interface fires have human sources of ignition. Thus, the probability of a given acre burning is probably higher in interface areas than for the wildland areas of Benton County as a whole.

### Wildfire Extent Profile

Across the west, wildfires have been increasing in extent and cost of control. Data summaries for 2000 through 2006 are provided and demonstrate the variability of the frequency and extent of wildfires nationally.

**Table 4.2. National Fire Season Summaries.**

<b>Statistical Highlights</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
Number of Fires	122,827	84,079	88,458	85,943	77,534	66,753	96,385
10-year Average ending with indicated year	106,393	106,400	103,112	101,575	100,466	89,859	87,788
Acres Burned	8,422,237	3,555,138	6,937,584	4,918,088	6,790,692	8,689,389	9,873,745
10-year Average ending with indicated year	3,786,411	4,083,347	4,215,089	4,663,081	4,923,848	6,158,985	6,511,469
Structures Burned	861	731	2,381	5,781	1,095	--	--
Estimated Cost of Fire Suppression (Federal agencies only)	\$1.3 billion	\$917 million	\$ 1.6 billion	\$1.3 billion	\$890 million	\$876 million	--

The National Interagency Fire Center maintains records of fire costs, extent, and related data for the entire nation. Tables 4.2 and 4.3 summarize some of the relevant wildland fire data for the nation and some trends that are likely to continue into the future unless targeted fire mitigation efforts are implemented and maintained. According to these data, the total number of fires is trending downward while the total number of acres burned is trending upward. Since 2000 there has been a significant increase in the number of acres burned.

**Table 4.3. Total Fires and Acres 1960 - 2004 Nationally.**

<b>Year</b>	<b>Fires</b>	<b>Acres</b>	<b>Year</b>	<b>Fires</b>	<b>Acres</b>
2008	68,594	4,723,810	1994	114,049	4,724,014
2007	85,822	9,321,326	1993	97,031	2,310,420
2006	96,385	9,873,745	1992	103,830	2,457,665
2005	66,753	8,689,389	1991	116,953	2,237,714
2004	77,534	6,790,692	1990	122,763	5,452,874
2003	85,943	4,918,088	1989	121,714	3,261,732
2002	88,458	6,937,584	1988	154,573	7,398,889
2001	84,079	3,555,138	1987	143,877	4,152,575
2000	122,827	8,422,237	1986	139,980	3,308,133
1999	93,702	5,661,976	1985	133,840	4,434,748
1998	81,043	2,329,709	1984	118,636	2,266,134
1997	89,517	3,672,616	1983	161,649	5,080,553
1996	115,025	6,701,390	1982	174,755	2,382,036
1995	130,019	2,315,730	1981	249,370	4,814,206
			1980	234,892	5,260,825

(National Interagency Fire Center 2007)

These statistics are based on end-of-year reports compiled by all wildland fire agencies after each fire season. The agencies include: Bureau of Land Management, Bureau of Indian Affairs, National Park Service, US Fish and Wildlife Service, Forest Service, and all state agencies.

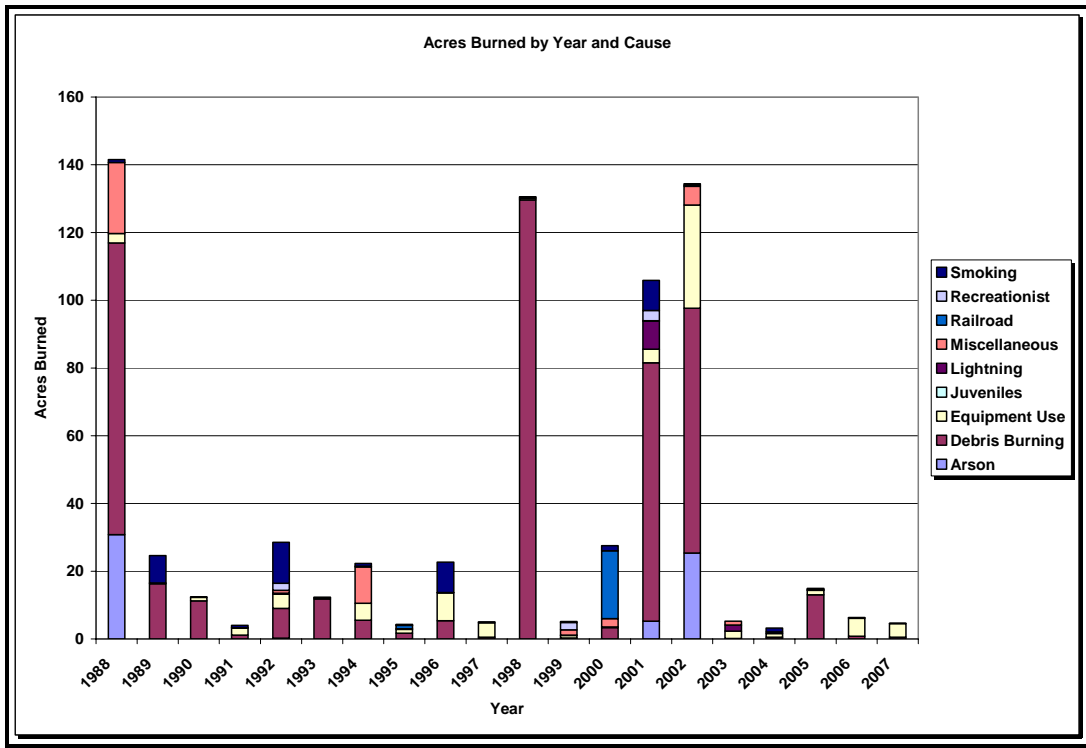
Figure 4.2 shows the extent of wildfires by acreage burned per year within ODF protection areas in Benton County. The fire suppression agencies in Benton County respond to numerous wildland fires each year, but few of those fires grow to a significant size. According to national statistics, only 2% of all wildland fires escape initial attack. However, that 2% accounts for the majority of fire suppression expenditures and threatens lives, properties, and natural resources. These large fires are characterized by a size and complexity that require special management organizations drawing suppression resources from across the nation. These fires create unique challenges to local communities by their quick development and the scale of their footprint.

Benton County has not directly experienced a significant wildfire event in the last 50 years; however, this does not mean that the county is at low risk. In fact, many of the fire professionals in Benton County believe the question is not “if” there will be a large fire in this area; it is “when.” The last big fire event near Benton County was the Tillamook Burn from 1933 to 1951, which burned a combined total of 355,000 acres in the counties of Washington, Yamhill, and Tillamook north of Benton County. If Benton County experienced a fire event similar to any of the Tillamook Fires today, it would have a much more severe impact on the present community. It is important that regional planners as well as local residents understand what has happened in the past in order to be more effective in the future when preparing for the inevitable.

A study published in 2007 by Headwaters Economics showed that of the 11 western states, Oregon has the largest area of undeveloped, forested private land bordering fire-prone public lands and is ranked third in the amount of forested land where homes have already been built next to public lands. Additionally, Oregon has 6,000 square miles of forested private land that borders public lands, of which 90% has not been developed. In Benton County, only 6% of the private forest lands adjacent to public lands has been developed (Headwaters Economics 2007). However, under Oregon’s existing statewide land use regulations, only a very small portion of undeveloped lands adjacent to public lands are available for development, unlike other western states. Nevertheless, Oregon law is under constant pressure from development interests, and a change in the regulatory framework could lead to an increase in residential development adjacent to public lands.

According to Headwaters Economics, only 14% of forested western private land adjacent to public land is currently developed for residential use. Based on current growth trends, there is tremendous potential for future development on the remaining 86%. Given the skyrocketing cost of fighting wildfires in recent years (on average \$1.3 billion each year between 2000-2005), this potential development would create an unmanageable financial burden for taxpayers. If homes were built in 50% of the forested areas where private land borders public land, annual firefighting costs could range from \$2.3 billion to \$4.3 billion per year. By way of comparison, the U.S. Forest Service’s total annual budget is approximately \$4.5 billion (Headwaters Economics 2007).

Figure 4.2. Acres burned in ODF Protection Areas 1988-2007.



## Wildfire Hazard Assessment

Benton County was analyzed using a variety of models, managed on a Geographic Information System (GIS) system. Physical features of the region including roads, streams, soils, elevation, and remotely sensed images were represented by data layers. Field visits were conducted by specialists from Northwest Management, Inc. and others. Discussions with area residents and local fire suppression professionals augmented field visits and provided insights into forest health issues and treatment options. This information was analyzed and combined to develop an objective assessment of wildland fire risk in the region.

### Historic Fire Regime

Historical variability in fire regime is a conservative indicator of ecosystem sustainability, and thus, understanding the natural role of fire in ecosystems is necessary for proper fire management. Fire is one of the dominant processes in terrestrial systems that constrain vegetation patterns, habitats, and ultimately, species composition. Land managers need to understand historical fire regimes, the fire return interval (frequency) and fire severity prior to settlement by Euro-Americans, to be able to define ecologically appropriate goals and objectives for an area. Moreover, managers need spatially explicit knowledge of how historical fire regimes vary across the landscape.

Many ecological assessments are enhanced by the characterization of the historical range of variability which helps managers understand: (1) how the driving ecosystem processes vary from site to site; (2) how these processes affected ecosystems in the past; and (3) how these processes might affect the ecosystems of today and the future. Historical fire regimes are a critical component for characterizing the historical range of variability in fire-adapted ecosystems. Furthermore, understanding ecosystem departures provides the necessary context for managing

sustainable ecosystems. Land managers need to understand how ecosystem processes and functions have changed prior to developing strategies to maintain or restore sustainable systems. In addition, the concept of departure is a key factor for assessing risks to ecosystem components. For example, the departure from historical fire regimes may serve as a useful proxy for the potential of severe fire effects from an ecological perspective.

**Table 4.4. Assessment of Historic Fire Regimes in Benton County.**

Description	Percent	Acres
0-35 Year Return Interval, Low and Mixed Severity	42%	182,318
0-35 Year Return Interval, Replacement Severity	3%	11,413
35-200 Year Fire Return Interval, Low and Mixed Severity	25%	109,693
35-200 Year Return Interval, Replacement Severity	11%	46,480
200+ Year Return Interval, Any Severity	19%	81,926
Water	<1%	1,878
Barren	<1%	193
Indeterminate Fire Regime	<1%	179
<b>Total</b>	<b>100%</b>	<b>434,082</b>

The table above shows the amount of acreage in each defined fire regime in Benton County. The historic fire regime model in Benton County shows that much of the valley bottom historically had an approximate 35 year fire return interval or frequency and typically experienced low and mixed severity fires. The transition zone between the valley bottom and forestlands historically experienced low and mixed severity fires as well; however, the return interval ranged from 35 to 200 years. Much of this area would have likely been vegetated by oak savanna and native grasses. Much of the forested area on the west side of the county historically experienced fires every 35 to 200 years. The severity of fires in this area was variable; however, many localized pockets were characterized by stand-replacement severity fires. In addition, some areas along the Willamette River also had a mixed to replacement severity fire regime. Interestingly, forestlands between Hoskins and Adair were characterized by low to mixed severity fires with a typically more frequent return interval than forests west of Kings Valley.

A map of Historic Fire Regimes in Benton County as well as an explanation of how the data were derived is included in Appendix 4.

### Fire Regime Condition Class

A natural fire regime is a general classification of the role fire would play across a landscape in the absence of modern human mechanical intervention, but including the influence of aboriginal burning (Agee 1993, Brown 1995). Coarse scale definitions for historic fire regimes have been developed by Hardy *et al.* (2001) and Schmidt *et al.* (2002) and interpreted for fire and fuels management by Hann and Bunnell (2001).

A fire regime condition class (FRCC) is a classification of the amount of departure from the historic regime (Hann and Bunnell 2001). The three classes are based on low (FRCC 1), moderate (FRCC 2), and high (FRCC 3) departure from the central tendency of the natural (historical) regime (Hann and Bunnell 2001, Hardy *et al.* 2001, Schmidt *et al.* 2002). The central tendency is a composite estimate of vegetation characteristics (species composition, structural stages, stand age, canopy closure, and mosaic pattern); fuel composition; fire frequency, severity,

and pattern; and other associated natural disturbances. Low departure is considered to be within the natural (historical) range of variability, while moderate and high departures are outside.

An analysis of Fire Regime Condition Classes in Benton County shows that a significant portion of the county is either moderately departed (32%) or severely departed (11%) from its natural fire regime and associated vegetation and fuel characteristics. In most scenarios, the more departed an area is from its natural fire regime, the higher the wildfire potential; however, this is not true 100% of the time.

**Table 4.5. Assessment of Current Condition Class in Benton County.**

	<b>Condition Class</b>	<b>Acres</b>	<b>Percent</b>
1	Condition Class 1	99,869	23%
2	Condition Class 2	136,820	32%
3	Condition Class 3	49,106	11%
5	Water	1,878	0%
6	Urban	11,159	3%
7	Barren	193	<1%
8	Agriculture	135,057	31%
	<b>Total</b>	<b>434,082</b>	<b>100%</b>

There are some areas within the forestlands on the west side of Benton County that are in Condition Class II, however, the vegetation, fuel composition, and fire frequency and severity remains much the same as it was historically. The majority of the departure from natural fire regimes has occurred in the foothills areas that were historically part of the oak savanna/grasslands ecosystem. Not only has the vegetative composition changed in these areas, but increasing development has altered the natural frequency and severity of fire events.

A map depicting Fire Regime and Condition Class as well as a more in-depth explanation of FRCC is presented in the Appendix 4.

### Relative Fire Risk Assessment

To identify relative fire risk within Benton County, Oregon, Northwest Management, Inc. performed a risk assessment based on inputs identified by the CWPP planning committee. This GIS based assessment attempts to model relative risk within the county based on the input variables of topography, vegetation and available fire protection. These variables were determined by the planning committee to be the most prominent factors leading to wildfire ignition risk and rate of spread.

Topography is identified as slope and aspect in this analysis. As slope increases, wildfire spread potential tends to increase without the influence of weather. Aspect, or the direction a slope faces, determines the degree of fuel drying that occurs during daylight hours. In general, slopes with south and west aspects tend to be drier than north and east aspects and will exhibit a higher relative wildfire risk while northerly aspects tend to be cool and moist with lower relative wildfire risk.

Vegetation identifies the available fuels across the landscape. “Fire Protection” in this analysis identifies relative fire risk based on inclusion in a fire protection department or district. Protection variables range from low to high with low identified as areas within ¼ mile of a road and in a structural fire protection district, moderate risk is identified as areas greater than ¼ mile



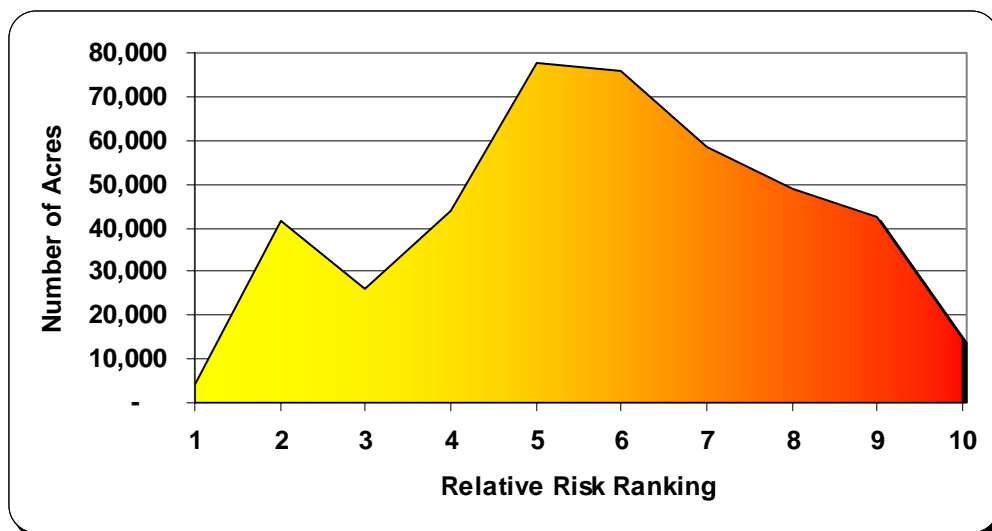
from a road within a structural fire protection district or within an ODF fire protection district, and high relative risk is identified as areas with no fire protection services. One area on the east central side of the county has no established structural fire protection and is outside the ODF fire protection district, and is therefore the only area of the county identified as being high relative risk based on fire protection in this analysis.

This analysis is meant to only approximate the relative fire risk in Benton County based solely on the variables used and may differ dramatically from actual conditions on the ground. A map of the Relative Fire Risk for Benton County and an explanation of how the data were derived were included in Appendix 1 and 4, respectively.

**Table 4.6. Relative Fire Risk Assessment for Benton County.**

Color Code	Value	Total Acres	Percent of Total Area
	0	4,038	1%
	1	41,616	10%
	2	26,232	6%
	3	43,835	10%
	4	77,738	18%
	5	75,963	17%
	6	58,475	13%
	7	48,906	11%
	8	42,533	10%
	9	14,745	3%
	10	4,038	1%

**Figure 4.3. Distribution of Relative Fire Risk in Benton County.**



In general, most of the valley bottom has a low to moderate relative fire risk except for a large area surrounding Greenberry that is classified as moderate trending to high due to the lack of fire protection from a local fire district and ODF. The relative fire risk begins to transition from a moderate fire risk to high potential fire risk in the forestlands and on the steeper slopes. Forestlands on south facing slopes have the highest relative fire risk in the county. Marys Peak,

the Corvallis Watershed, Highway 34, and the McDonald-Dunn Forest managed by Oregon State University are in areas largely consisting of high relative risk factors.

## Benton County's Wildland-Urban Interface

The wildland-urban interface (WUI) has gained attention through efforts targeted at wildfire mitigation; however, this analysis technique is also useful when considering other hazards because the concept looks at where people and structures are concentrated in any particular region.

A key component in meeting the underlying need for protection of people and structures is the protection and treatment of hazards in the wildland-urban interface. The wildland-urban interface refers to areas where wildland vegetation meets urban developments or where forest fuels meet urban fuels such as houses. The WUI encompasses not only the interface (areas immediately adjacent to urban development), but also the surrounding vegetation and topography. Reducing the hazard in the wildland-urban interface requires the efforts of federal, state, and local agencies and private individuals (Norton 2002). “The role of [most] federal agencies in the wildland-urban interface includes wildland firefighting, hazard fuels reduction, cooperative prevention and education, and technical experience. Structural fire protection [during a wildfire] in the wildland-urban interface is [largely] the responsibility of Tribal, state, and local governments” (USFS 2001). The role of the federal agencies in Benton County is and will be much more limited. Property owners share a responsibility to protect their residences and businesses and minimize danger by creating defensible areas around them and taking other measures to minimize the risks to their structures (USFS 2001). With treatment, a wildland-urban interface can provide firefighters a defensible area from which to suppress wildland fires or defend communities against other hazard risks. In addition, a wildland-urban interface that is properly treated will be less likely to sustain a crown fire that enters or originates within it (Norton 2002).

By reducing hazardous fuel loads, ladder fuels, and tree densities, and creating new and reinforcing existing defensible space, landowners can protect the wildland-urban interface, the biological resources of the management area, and adjacent property owners by:

- minimizing the potential of high-severity ground or crown fires entering or leaving the area;
- reducing the potential for firebrands (embers carried by the wind in front of the wildfire) impacting the WUI. Research indicates that flying sparks and embers (firebrands) from a crown fire can ignite additional wildfires as far as 1¼ miles away during periods of extreme fire weather and fire behavior (McCoy *et al.* 2001);
- improving defensible space in the immediate areas for suppression efforts in the event of wildland fire.

Three wildland-urban interface conditions have been identified (Federal Register 66(3), January 4, 2001) for use in wildfire control efforts. These include the Interface Condition, Intermix Condition, and Occluded Condition. Descriptions of each are as follows:

- **Interface Condition** – a situation where structures abut wildland fuels. There is a clear line of demarcation between the structures and the wildland fuels along roads or back fences. The development density for an interface condition is usually 3+ structures per acre;

- **Intermix Condition** – a situation where structures are scattered throughout a wildland area. There is no clear line of demarcation; the wildland fuels are continuous outside of and within the developed area. The development density in the intermix ranges from structures very close together to one structure per 40 acres; and
- **Occluded Condition** – a situation, normally within a city, where structures abut an island of wildland fuels (park or open space). There is a clear line of demarcation between the structures and the wildland fuels along roads and fences. The development density for an occluded condition is usually similar to that found in the interface condition and the occluded area is usually less than 1,000 acres in size.

In addition to these classifications detailed in the Federal Register, Benton County has included four additional classifications to augment these categories:

- **Rural Condition** – a situation where the scattered small clusters of structures (ranches, farms, resorts, or summer cabins) are exposed to wildland fuels. There may be miles between these clusters.
- **High Density Urban Areas** – those areas generally identified by the population density consistent with the location of incorporated cities, however, the boundary is not necessarily set by the location of city boundaries or urban growth boundaries; it is set by very high population densities (more than 7-10 structures per acre).
- **Infrastructure Area WUI** – those locations where critical and identified infrastructure is located outside of populated regions and may include high tension power line corridors, critical escape or primary access corridors, municipal watersheds, areas immediately adjacent to facilities in the wildland such as radio repeater towers.
- **Non-WUI Condition** – a situation where the above definitions do not apply because of a lack of structures in an area or the absence of critical infrastructure. This classification is not considered part of the wildland-urban interface.

In summary, the designation of areas by the Benton County planning committee includes:

- Interface Condition: WUI
- Intermix Condition: WUI
- Occluded Condition: WUI
- Rural Condition: WUI
- Infrastructure Areas: WUI
- High Density Urban Areas: WUI
- Non-WUI Condition: Not WUI, but present in Benton County

Benton County’s wildland-urban interface (WUI) is based on population density. Relative population density across the county was estimated using a GIS based kernel density population model that uses object locations to produce, through statistical analysis, concentric rings or areas of consistent density. To graphically identify relative population density across the county, structure locations are used as an estimate of population density. Benton County’s GIS department produced a “Buildings” data layer that was used for structure location. This layer was updated and verified using the current parcel master listing then converted into a point location data file for input into the kernel density model. The resulting output identified the extent and level of population density throughout the county. Based on committee review and discussion, the resulting output was adjusted to include areas of significant infrastructure and to

incorporate gaps along important transportation routes. The updated and revised population density model output was adopted as the WUI for Benton County, Oregon.

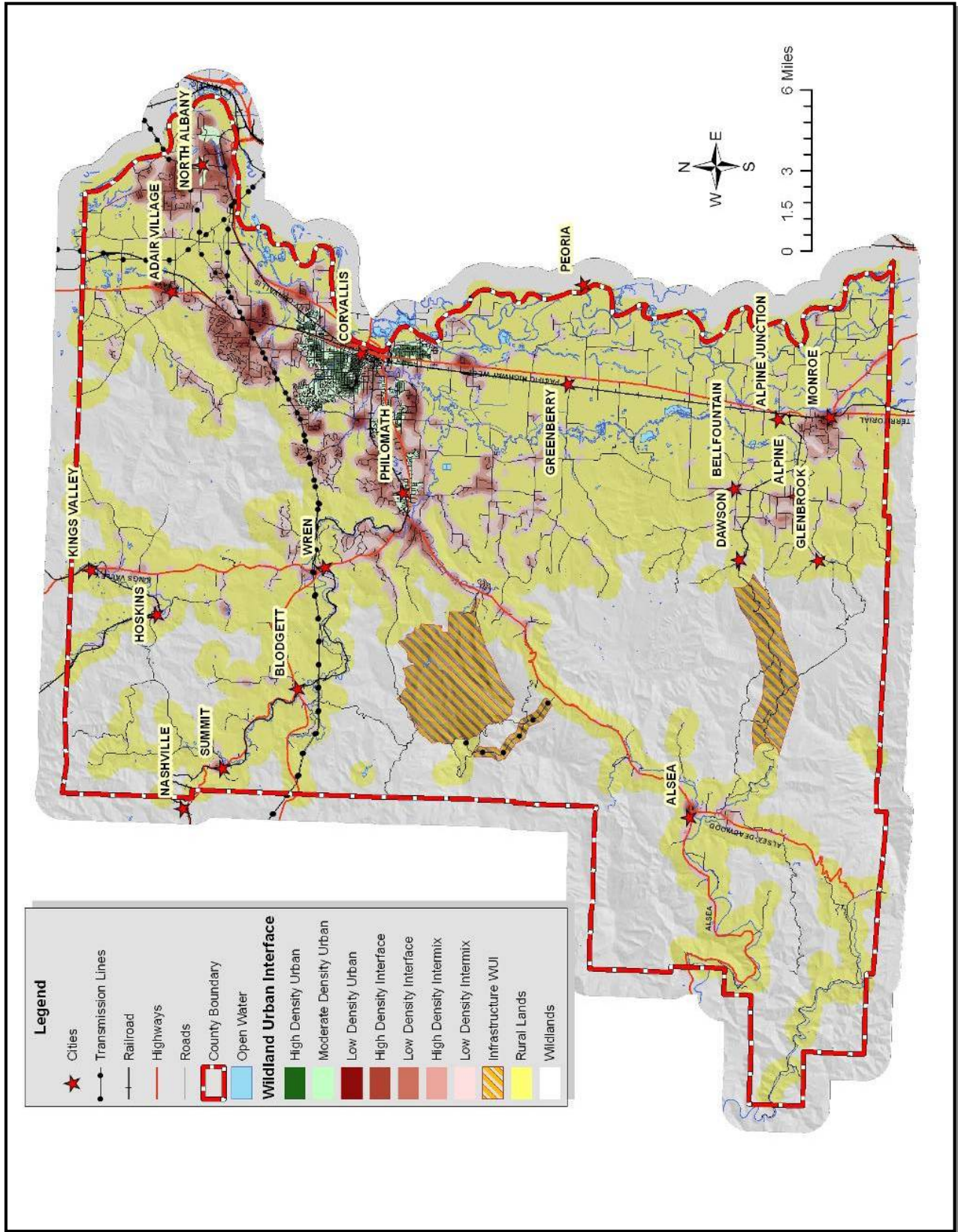
By evaluating structure density in this way, WUI areas can be identified on maps by using mathematical formulae and population density indexes. The resulting population density indexes create concentric circles showing high density areas, interface, and intermix condition WUI, as well as rural condition WUI (as defined above). This portion of the analysis allows us to “see” where the highest concentrations of structures are located in reference to relatively high risk landscapes, limiting infrastructure, and other points of concern.

The WUI, as defined here, is unbiased and consistent, allows for edge matching with other counties, and most importantly – it addresses all of the county, not just federally identified communities at risk. It is a planning tool showing where homes and businesses are located and the density of those structures leading to identified WUI categories. It can be determined again in the future, using the same criteria, to show how the WUI has changed in response to increasing population densities. It uses a repeatable and reliable analysis process that is unbiased.

The Healthy Forests Restoration Act makes a clear designation that the location of the WUI is at the determination of the county or reservation when a formal and adopted Community Wildfire Protection Plan is in place. It further states that the federal agencies are obligated to use this WUI designation for all Healthy Forests Restoration Act purposes. The Benton County Community Wildfire Protection Plan planning committee evaluated a variety of different approaches to determining the WUI for the county and selected this approach and has adopted it for these purposes. In addition to a formal WUI map for use with the federal agencies, it is hoped that it will serve as a planning tool for the county, the Oregon Department of Forestry, and local fire districts.



Figure 4.4. Wildland-Urban Interface Map in Benton County, Oregon.



## Potential WUI Treatments

The definition and mapping of the WUI is the creation of a planning tool to identify where structures, people, and infrastructure are located in reference to each other. This analysis tool does not include a component of fuels risk. There are a number of reasons to map and analyze these two components separately (population density vs. fire risk analysis). Primary among these reasons is the fact that population growth often occurs independent from changes in fire risk, fuel loading, and infrastructure development. Thus, making the definition of the WUI dependent on all of them would eliminate populated places with a perceived low level of fire risk today, which may in a year become an area at high risk due to forest health issues or other concerns.

By examining these two tools separately, the planner is able to evaluate these layers of information to see where the combination of population density overlays areas of high current relative fire risk and then take mitigative actions to reduce the fuels, improve readiness, directly address factors of structural ignitability, improve initial attack success, mitigate resistance to control factors, or (more often) a combination of many approaches.

It should not be assumed that just because an area is identified as being within the WUI, that it will therefore receive treatments because of this identification alone. Nor should it be implicit that all WUI treatments will be the application of the same prescription. Instead, each location targeted for treatments must be evaluated on its own merits: factors of structural ignitability, access, resistance to control, population density, resources and capabilities of firefighting personnel, and other site specific factors.

It should also not be assumed that WUI designation on national or state forest lands automatically equates to a treatment area. The Forest Service, Bureau of Land Management, and Oregon Department of Forestry are still obligated to manage lands under their control according to the standards and guides listed in their respective forest plans. The adopted forest plan has legal precedence over the WUI designation until such a time as the forest plan is revised to reflect updated priorities.

Most treatments may begin with a home evaluation, and the implicit factors of structural ignitability (roofing, siding, deck materials) and vegetation within the treatment area of the structure. However, treatments in the low population areas of rural lands (mapped as yellow) may look closely at access (two ways in and out) and communications through means other than land-based telephones. On the other hand, a subdivision with densely packed homes (mapped as brown – interface areas) surrounded by forests and dense underbrush, may receive more time and effort implementing fuels treatments beyond the immediate home site to reduce the probability of a crown fire entering the subdivision.

## Benton County Conditions

Oak woodland and savanna ecosystems' historic fire regime typically consisted relatively low-intensity fires on a short fire return interval (5-25 years). With the current and past fire suppression efforts and changes in land use, we have dramatically increased this interval. By suppressing fires, we have changed this ecosystem, allowing coniferous trees, such as Douglas-fir, to establish and overtop the oak trees that once dominated the landscape. In many cases these forests have been altered to the point where oak is no longer the primary tree species and the understory is dominated by woody shrubs, rather than grasses and forbs.

Fire suppression often depends on two important factors: availability of fire suppression resources and access. Fire suppression resources include firefighting personnel, equipment and apparatus as well as water and chemical fire suppressants. The greater the availability of fire suppression resources, the more likely it is that a given fire will be contained quickly. Fire suppression also depends on access. Fires in remote areas without ground access are more difficult to fight and thus harder to contain than are fires in roaded areas. Access and effective response is partially a function of land management objectives. Lands managed for natural conditions where roads have not been built or the existing roads have been obliterated tend to have a much poorer fire suppression response than commercial forestlands where road systems are maintained.

Because wildland fires are being effectively suppressed, the patterns and characteristics of fires are changing. Vegetation that historically would have been minimized by frequent fires has become more dominant. Over time, some species have also become more susceptible to disease and insect damage, which leads to an increase in mortality. The resulting accumulation of dead wood and debris creates the types of fuels that promote intense, rapidly spreading fires.

Decades of logging and fire suppression have also changed the characteristics of forests, trending towards younger forest stands. Mature forests are typically less dense, with smaller numbers of large, more fire-resistant trees. Young forests are denser with larger numbers of small, less fire-resistant trees. Younger trees have thinner bark and may sustain more economic damage than an older stand.

Areas subject to wildland-urban interface fires have very different fire hazard characteristics. The defining characteristic of the wildland-urban interface area is that structures are built in areas with essentially continuous (and often high) vegetative fuel loads. In other words, structures are built in areas subject to wildland fires. When wildland fires occur in such areas, they tend to spread quickly and structures in these areas may, unfortunately, become little more than additional fuel sources for wildland fires. The siting of homes has also changed over time. Historically pioneering families built their homes in low lands, close to water and the fields they intended to work. In the last 30 years or so, rural homes have increasingly been built in locations chosen because of the view or other amenities. Thus, many newer homes are in locations more difficult to defend against wildland fires.

Fire risk to structures and occupants in wildland-urban interface areas is high due to high vegetative fuel loads and limited fire suppression resources compared to urban or suburban areas. Homes in wildland-urban interface areas are most commonly on wells rather than on municipal water supplies, which limits the availability of water for fire suppression. Less availability of water resources makes it more likely that a small wildland fire or a single structure fire will spread before it can be extinguished.

In many areas of Benton County, narrow winding roads, dead end driveways, and inadequate bridges impede access by firefighting apparatus. As with water supplies, the lower availability of firefighting personnel and apparatus and longer response times increase the probability that a small wildland fire or a single structure fire will spread.

Developments in wildland-urban interface areas often face high fire risk because of the combination of high fire hazard (high vegetative fuel loads) and limited fire suppression capabilities. Unfortunately, occupants in many wildland-urban interface areas also face high life safety risk, especially from large fires that may spread quickly. Life safety risk in interface areas



is often exacerbated by limited numbers of roads (in the worst case only one access road) that are often narrow and winding and subject to blockage by a wildland fire.

Life safety risk in interface areas is also often increased by homeowners' reluctance to evacuate homes quickly. Instead, homeowners often try to protect their homes with whatever fire suppression resources are available. Such efforts generally have very little effectiveness. Unfortunately, homeowners who delay evacuation often place their lives in jeopardy.

Developments in rural wildland-urban interface areas face a range of risk factors. Developments that have all or most of the following attributes are at the highest level of risk:

- 1) Location in or surrounded by heavy fuel loads with a high degree of continuity (i.e. few significant firebreaks). Risk may be particularly high if the fuel load is grass, brush, and smaller trees subject to low moisture levels in short duration drought periods.
- 2) Steep slopes, which cause fires to spread more rapidly.
- 3) Limited fire suppression capacity including limited water supply capacity for fire suppression purposes, limited firefighting personnel and apparatus, and typically long response times for fire alarms.
- 4) Limited access for firefighting apparatus and limited evacuation routes for residents at risk.
- 5) Construction of structures to less than fully fire-safe practices,
- 6) Lack of maintenance of firebreaks and defensible zones around structures.

Overall, the threat of wildland fire appears moderate for Benton County, in large part because of the typically high levels of rainfall. However, for portions of Benton County, depending on conditions in specific developments in wildland-urban interface areas, the threat may be moderate to high, especially during periods of drought.

### Overall Mitigation Activities

There are many actions that will help improve safety in a particular area; there are also many mitigation activities that can apply to all residents and all fuel types. General mitigation activities that apply to all of Benton County are discussed below while area-specific mitigation activities are discussed within the strategic planning area assessments.

**Prevention.** The safest, easiest, and most economical way to mitigate unwanted fires is to stop them before they start. Generally, prevention actions attempt to prevent human-caused fires. Campaigns designed to reduce the number and sources of ignitions can be quite effective and can take many forms. Traditional “Smokey Bear” type campaigns that spread the message passively through signage can be effective. Interpretive signs that remind folks of the dangers of careless use of fireworks, burning when windy, and leaving unattended campfires can also be effective.

Active prevention techniques can involve mass media, radio, and the local newspapers. Fire districts in Benton County have contributed to the reduction in human-caused ignitions by printing a weekly “run blotter,” similar to a police blotter, in the paper. The blotter briefly describes the fire response calls for the week and is followed by a “tip of the week” to reduce the threat from wildland and structure fires. The federal government and the Oregon Department of Forestry have been champions of prevention, and could provide ideas for such tips. When fire

conditions are high, brief public service messages could warn of the hazards of misuse of fire or any other ignition sources.

**Limiting Use.** Areas within the ODF Protection District boundary are also subject to Public Use Restrictions, referred to as “Regulated Use”, during fire season in an attempt to limit, or manage use of activities known to cause fires. The countywide ban on debris or “backyard” burning established by the Benton County Fire Defense Board during the fire season is another example of actions specifically taken to prevent wildfires.

**Defensible Space.** Effective mitigation strategies begin with public awareness campaigns designed to educate homeowners of the risks associated with living in a flammable environment. Residents of Benton County must be made aware that home defensibility starts with the homeowner. Once a fire has started and is moving toward a structure, the probability of that structure surviving is largely dependent on the structural and landscaping characteristics of the building. *“Living with Fire, A Guide for the Homeowner”* is an excellent tool for educating homeowners on the steps to take in order to create an effective defensible space. Residents of Benton County should be encouraged to work with local fire departments and fire management agencies within the county to complete individual home site evaluations. Home defensibility steps should be enacted based on the results of these evaluations. Beyond the homes, forest management efforts must be considered to slow the approach of a fire that threatens a community. The public survey conducted during preparation of this Community Wildfire Protection Plan indicated that approximately 62% of the respondents are interested in participating in wildfire education programs.

**Evacuation.** Development of community evacuation plans is necessary and critical to assure an orderly evacuation in the event of a threatening wildland fire. Designation and posting of escape routes would reduce chaos and escape times for fleeing residents. Community safety zones should also be established in the event safe evacuation is impossible and ‘sheltering in place’ becomes the better option. Efforts should be made to educate homeowners through existing homeowners associations or citizen participation organizations.

**Access.** Also of vital importance is the accessibility of homes to emergency apparatus. The fate of a home will often be determined by homeowner actions prior to the event. A few simple guidelines such as widening or pruning along driveways and creating a turnaround area for large vehicles, can greatly enhance home survivability.

**Facility Maintenance.** Recreational facilities near communities or in the surrounding forests such as parks or natural areas should be kept clean and maintained. In order to mitigate the risk of an escaped campfire, escape-resistant fire rings and barbeque pits should be installed and maintained. In some cases, restricting campfires during dry periods may be necessary. Surface fuel accumulations in nearby forests can also be kept to a minimum by periodically conducting pre-commercial thinning, pruning and limbing, and possibly controlled burns.

**Fire District Response.** Once a fire has started, how much and how large it burns is often dependent on the availability of suppression resources. In most cases, rural fire departments are the first to respond and have the best opportunity to halt the spread of a wildland fire. For many districts, the ability to reach these suppression objectives is largely dependent on the availability of functional resources and trained individuals. Increasing the capacity of departments through funding and equipment acquisition can improve response times and subsequently reduce the potential for resource loss.

**Development Standards.** Furthermore, county policies can be revised to provide for more fire conscious techniques such as using fire resistant construction materials; improved road, driveway, and bridge standard, establishment of permanent water resources, and adoption of a WUI building code.

**Other Mitigation.** Other actions to reduce fire hazards are thinning and pruning timbered areas, creating a fire resistant buffer along roads and power line corridors, and strictly enforcing fire-use regulations. Ensuring that areas beneath power lines have been cleared of potential high risk fuels and making sure that the buffer between the surrounding forest lands is wide enough to adequately protect the poles as well as the lines is imperative.

### Overview of Fire Protection System

Oregon has a Fire Service Mobilization Plan developed by the Oregon State Fire Marshal's Office and approved by the State Fire Defense Board as mandated by The Emergency Conflagration Act (ORS 476.501 to 476.610). The Plan provides an organized structure and operating guidelines for rapid deployment of Oregon's fire service forces under a common command structure. The plan establishes operating procedures for emergencies beyond the capabilities of the local fire service resources.

Mutual aid agreements are made with nearby districts and the Oregon Department of Forestry to supplement resources of a fire agency or district during a time of critical need. Mutual aid is given only when equipment and resources are available.

Oregon has a common communication channel for fire services' use during multiple-agency responder incidents. This system is called Fire NET. It utilizes a system of 23 mountain-top microwave base stations and a master control console to form a radio and telephone access communication network throughout the state.

Benton County has a 911 Emergency Communication System in place to link citizens with emergency response agencies. The system receives telephone requests for fire, medical or police services and dispatches those calls through a computer aided dispatch system to the appropriate agencies for response. Referenced in this arrangement is a rural addressing system that identifies home locations by address. Rural address numbers are displayed at the entrance to most home sites along access routes to assist in emergency response.

Fire agency personnel are often the first responders during emergencies. In addition to structural fire protection, they are called on during wildland fires, floods, landslides, and other events. The following is a summary of the agencies in Benton County and their resources and capabilities. A map of the Benton County fire districts and department boundaries is presented in Appendix I.

### Statewide Fire Resource Mobilization

The Office of the Oregon State Fire Marshal assists and supports the Oregon fire services during major emergency operations through the Emergency Conflagration Act (ORS 476.510). The Conflagration Act was developed in 1940 as a civil defense measure and can be invoked only by the Governor. Under the Act, local firefighting forces will be mobilized when the State Fire Marshal believes that a fire is causing, or may cause, undue jeopardy to life and/or property and the Act is invoked. State funding for use of the resources is provided when the Act is invoked.

The Emergency Conflagration Act required the State Fire Marshal to prepare a plan for the most practical utilization of the state's firefighting resources in time of grave fire emergency. The

resulting plan, called the Oregon Fire Service Mobilization Plan provides the organizational structure and operating guidelines for mobilization and direction of fire service forces, promotes effective communication among the fire service agencies, coordinates the efforts of the participating agencies through use of a common command structure and common terminology, and ensures prompt, accurate, and equitable apportionment of fiscal responsibility for fire suppression or other emergency response activity.

The Fire Service Mobilization Plan may be used separately from the Conflagration Act to mobilize local structural fire agencies for any emergency situation exceeding local mutual aid resources. However, reimbursement for responding resources is assured only when the Governor invokes the Conflagration Act.

### Response Guide to Wildland Fire During Extreme Fire Behavior Events

The Benton County Fire Defense Board (BCFDB) recognizes that during extreme fire conditions there is a need to quickly mitigate all wildland fires in the county. Fires that grow beyond local control could adversely affect all fire control agencies and quickly overwhelm countywide resources. The BCFDB recognizes the need for an aggressive initial attack, in the beginning stages of the fire, especially during extreme fire conditions. To that end, The BCFDB has developed a plan that will send a fire apparatus from each Department or District in the county on the initial dispatch. The goal is to bring multiple resources into and under local control as quickly as possible to stop a wildfire in the incipient stage.

The purpose of the response guide is to provide a reference for all agencies involved in the dispatching and mitigation of wildland fires in Benton County. The Guide does not set policy for individual agencies and is not intended to replace the decisions of the Fire Chief or Incident Commander for any event.

There are two different models utilized by the Benton County Fire Defense Board Chief to establish a high-risk response.

#### Model 1

If any two of the three following conditions are met, then a fire day should be in effect.

- \*Anytime the temperature is above 90 degrees.
- \*Anytime the wind velocity is above 15 miles per hour.
- \*Anytime the relative humidity falls below 25 %.

#### Model 2

\*If the Burn Index is 38 or higher, then a high fire danger exists. The Burn Index can be obtained from the Oregon Department of Forestry (Philomath) by calling 541-929-3266.

It is the responsibility of the Benton County Fire Defense Board Chief to notify Dispatch when either model goes into effect. Dispatch will use the “Wednesday Night Tone Test” tones to notify all agencies of a wildland fire originating in any fire district in Benton County. The tones will be followed with the current dispatch information.

All County agencies would then respond with their pre-designated apparatus. Each agency will be responsible for assigning their apparatus and personnel for out-of-district response. The plan does not prohibit the Incident Commander on scene from ordering more resources or from

canceling all or part of the responding resources. All incidents that include a countywide response will be reviewed at the regularly scheduled BCFDB meetings.

### Authority for Fire Emergency Evacuations

The state of Oregon has an existing authority that would authorize state, county, or city police or fire officials to order the mandatory evacuation of an area due to an imminent threat of fire causing human death or injury. If the Governor declares an emergency under ORS 401.055, the Governor may specifically order evacuation of persons from the area covered by the order. Under “home rule” provisions of the Oregon Constitution, local governments also may adopt specific ordinances ordering mandatory evacuation of an area in a fire emergency. Sheriff’s or state or local police officers may carry out the Governor’s orders or those authorized by local ordinances. Fire officials and firefighters would have authority to enforce the Governor’s order or an emergency evacuation order as detailed in ORS 476 under the Mobilization Plan when the Conflagration Act has been invoked by the Governor.

Protecting public health and safety is a fundamental government interest which justifies summary action in emergencies. A Governor’s order or local ordinance ordering evacuation is constitutional so long as the order or evacuation ordinance has a real and substantial relationship to public safety and contains an opportunity for prompt post-evacuation review of the action.

### Local Fire Department and District Summaries

The firefighting resources and capabilities information provided in this section is a summary of information provided by the fire chiefs or representatives of the wildland firefighting agencies listed. Each organization completed a survey with written responses. Their answers to a variety of questions are summarized here. These synopses indicate their perceptions and information summaries.

Appendix IV contains contact information and a complete equipment list for each of the following fire service organizations.



## Adair Rural Fire Protection District

**District Summary:** Adair Rural Fire Protection District encompasses Adair Village and the surrounding area covering approximately 18 square miles. The district boundary extends from one mile south of Adair Village to the northern county line. On the east, it is bounded by the Willamette Pacific rail line. On the west, it takes in the Tampico Road and Soap Creek Road areas. The main fire station is located in Adair Village and a

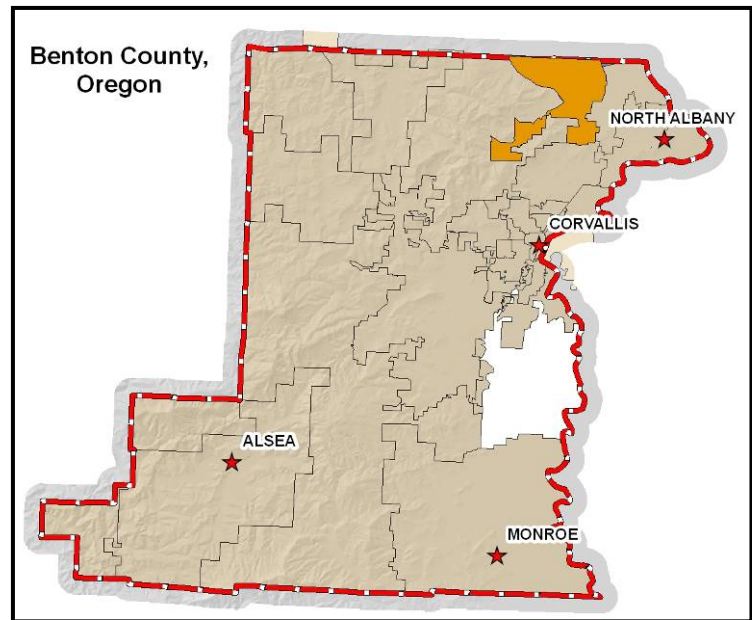
second station is on Soap Creek Road.

The District responds to all types of emergencies including fire, medical, and rescue and is staffed by 13-17 volunteer firefighters. All firefighters are required to be trained to NFPA Firefighter 1 and EMS First Responder levels. The rescue squad vehicle serves as an emergency medical quick response unit and the Corvallis Fire Department ambulance provides full emergency ambulance service.

**Issues of Concern:** The majority of residential growth in this district is occurring within the city limits of Adair Village with the prospect of approximately 400 new homes; however, homes sites on acreage are also being built in the rural areas. The District's primary areas of concern for wildland fire are Soap Creek, Trillium, Coffin Butte, and Arboretum.

Inadequate access into new and existing structures in the rural area continues to be problematic for the District, particularly the lack of standards and a maintenance program for private bridges.

Due to the District's reliance on volunteer help, maintaining a viable work force is always difficult. New recruits are rare and the availability of day time responders is limited.







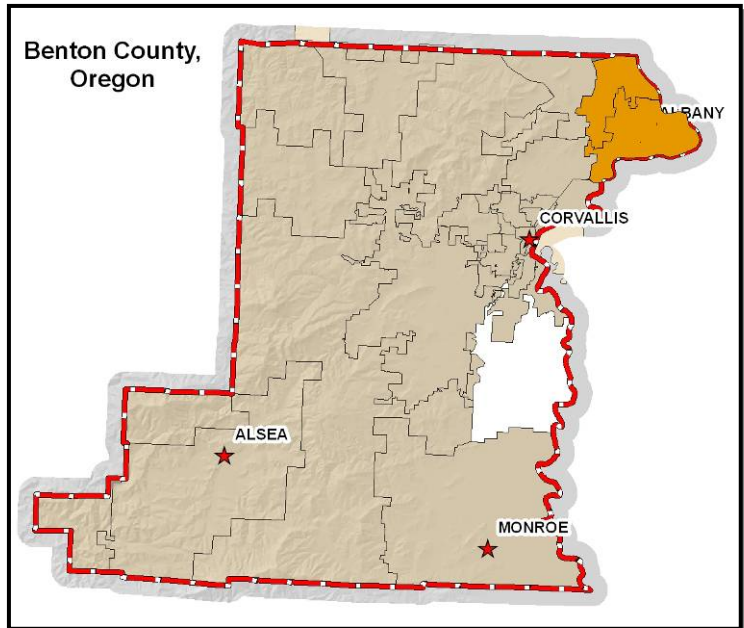
## Albany Fire Department

**District Summary:** The City of Albany Fire Department includes the portions of the city that are located in Benton County. Protection of the rural areas of northeast Benton County is provided by the North Albany Rural Fire District and Palestine Rural Fire District under contract. The city’s population in Benton County is 6,000 with 1,684 residents in North Albany Rural and 989 residents in Palestine Rural.

The Albany Fire Department operates out of four stations with one of the stations located on Gibson Hill Rd. The department is a career organization with 64 personnel assigned shift and 6 administrative staff that respond to emergencies in command roles. All personnel are trained for wildland response and the suppression vehicles are equipped to address wildland risks.

**Issues of Concern:** The North Albany area has experienced tremendous growth in the last ten years. Some of the new development has taken place in areas that were previously allowed to develop with inadequate considerations for access and/or with inadequate consideration given to water availability, fire resistant construction, and other techniques that would minimize the wildland fire risks.

There is also a lack of defensible space surrounding existing and new structures. There are numerous privately owned bridges with unknown load ratings and steep road grades that make it difficult or impossible to gain access to structures. Long narrow driveways with structures at the end with no turnarounds or space to create safety zones and no alternate escape routes are also common.





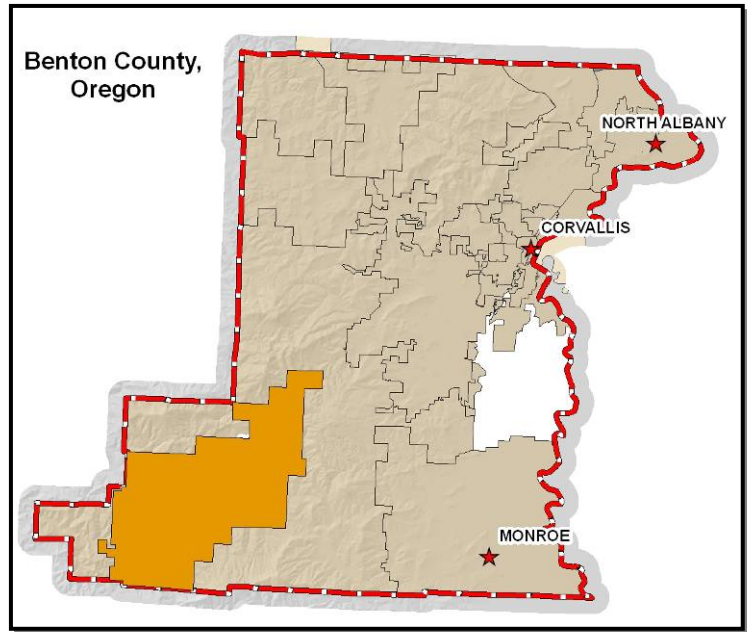


## Alsea Rural Fire Protection District

**District Summary:** The Alsea Rural Fire Protection District commences in the east at Marys Peak Road and Highway 34. It extends twenty three miles to the west and terminates at Fall Creek Road. To the southwest, the District includes portions of the Alsea-Deadwood Highway

into Lobster Valley. The total District coverage is approximately 84 square miles. The primary station is located in Alsea with an additional sub-station located in Lobster Valley. The District currently has 22 volunteers. The responders are on an on-call basis with the station unmanned most of the time. Building and equipment maintenance is largely provided by the volunteers.

**Issues of Concern:** The last two decades have seen little or no growth in the community. A number of industries, including the U.S. Forest Service Office, have left the area due to economic conditions.





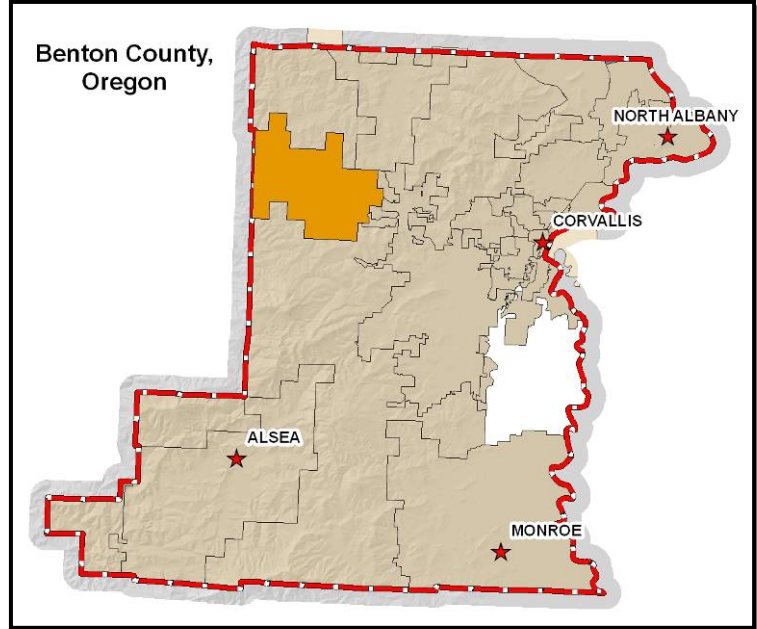
## Blodgett-Summit Rural Fire Protection District

**District Summary:** The Blodgett-Summit Rural Fire Protection District incorporates 32 square miles and serves a population of approximately 1,500 residents and 250 dwellings. The primary land use in this area is timber production.

The District has two stations. The main station is located in Blodgett off of Highway 20 and the other station is located on Happy Hollow Road in the community of Summit. There are currently 11 volunteers serving the District.

**Issues of Concern:** There are numerous occurrences of inadequate bridges and private driveways that limit the District's ability to respond.

The District would also like to develop additional water resources located strategically throughout the service area.





## City of Corvallis Fire Department & Corvallis Rural Fire Protection District

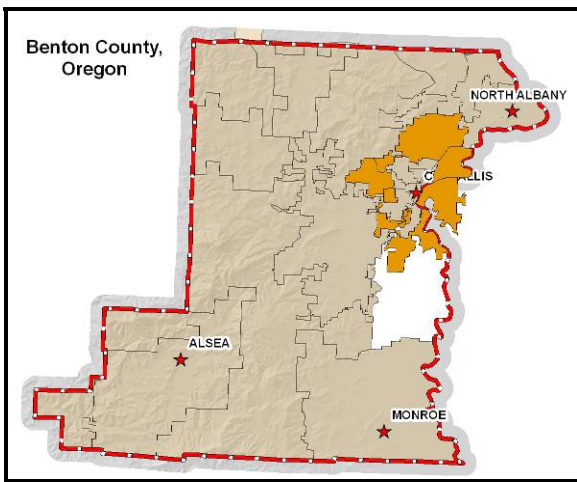
**District Summary:** The Corvallis Fire Department provides fire protection and prevention services to the citizens of the City of Corvallis and the surrounding Rural Fire Protection District. The city is approximately 15 square miles and the rural district approximately 30 square miles in Linn and Benton Counties. Corvallis Fire Department protects the property of Oregon State

University within the city and in the rural district. Corvallis Fire Department serves as the transporting Advanced Life Support (ALS) Ambulance for a 765 square mile Ambulance Service Area (ASA). The rural district stretches from the valley floor to the ridgeline of the Coast Range foothills. It is a mix of residential, cultivated agriculture, and forest lands.

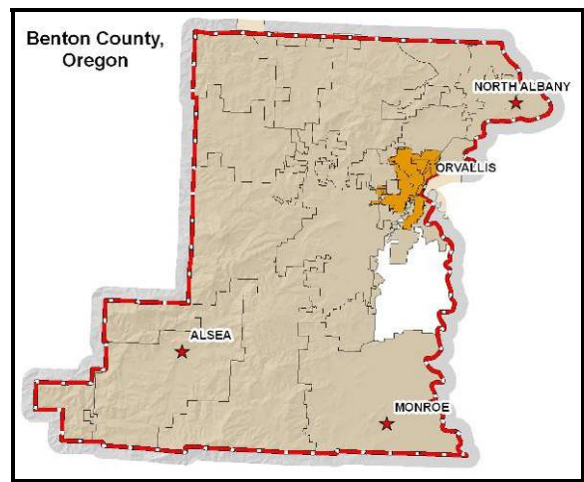
Residential growth within the city has been fairly consistent for the past several years. Primary areas of growth have been in the south, west, and north. Rural district growth has been primarily in the Lewisburg area north of Corvallis.

**Issues of Concern:** The Skyline West area, annexed in the late 1980s, poses several concerns for the Department. There is only one, 22 foot wide road in and out of the area. Within the subdivision, the access road is 25 feet wide. The area is not served by the municipal water system and there are approximately 220 homes in the subdivision.

Access and egress, which encompasses bridge and road standards, are significant concerns for new and existing developments. The adoption of a WUI code and consistent code adoption and application statewide need to be addressed. When providing mutual aid to surrounding jurisdictions Corvallis Fire needs to be able to continue to address normal calls for service and maintain transport ambulance availability for the ASA. Corvallis Fire would also like to see a renewed public education effort to inform property owners of the steps they can take to mitigate hazardous conditions on their property(ies).



Corvallis Rural Fire Protection District



Corvallis Fire Department

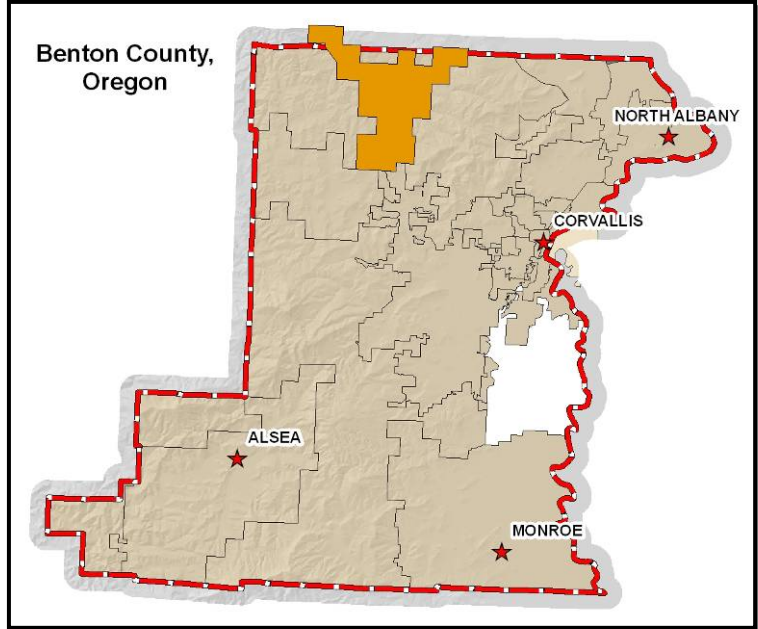


## Hoskins-Kings Valley Rural Fire Protection District

**District Summary:** The Hoskins-Kings Valley Rural Fire Protection District (H-KV RFPD) covers about 27 square miles of northwestern Benton County. The District contains approximately 175 households and a population of about 500 scattered throughout a

mix of timberland and farmland. The District currently has 12 volunteers that provide a combination of fire suppression and EMS services.

**Issues of Concern:** The Kings Valley area is in danger of a large wildland/interface fire. There are many homes in a wildland setting and very few access points. The District is working on establishing water sites every 5 miles to provide adequate water resources throughout the entire area.





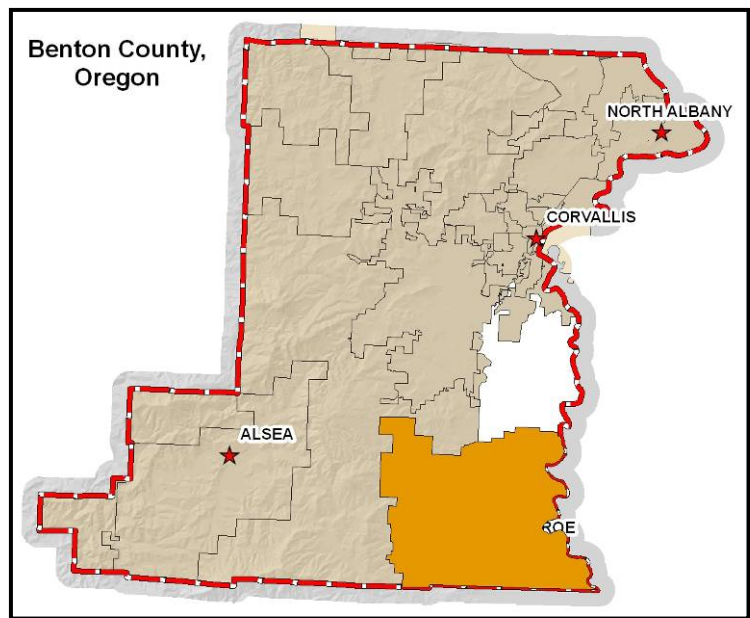
## Monroe Rural Fire Protection District

**District Summary:** The Monroe Rural Fire Protection District is a combination fire department with a maximum force of 30 volunteers and one paid position. The current population of the fire district is approximately 3,500, with the city of Monroe being approximately 850 of that total population. The District provides emergency medical services, fire protection and hazardous materials response for the communities of Monroe, Alpine, Bellfountain and a surrounding rural area of approximately 134 square miles. The fire district maintains three stations with the primary station located in Monroe. The sub-stations are located in the communities of Alpine and Bellfountain. The fire district maintains a continuous program of fire prevention & suppression along with medical intervention including CPR training and public education within the community.

**Issues of Concern:** Residential growth has been primarily outside the Monroe city limits in the rural area and is generally on 1 to 5 acre parcels. There is currently a developer in negotiations with the city to place a 250 home development within the city limits of Monroe, which would add approximately another 750 people to the total fire district population.

Within the State of Oregon, fire districts are forced to operate under tax limitation measures 5 and 47/50. These measures either limit our ability to increase the taxable income or limit our ability to increase taxable income through new tax levies. This combined with the increasing costs of fuel, vehicle replacement, maintenance, equipment, and training have made the financial aspects of running a fire district extremely challenging today and impossible in the near future.

The staffing of the fire district is another challenge with decreasing volunteer involvement, the rise in calls for help, and financial constraints making it very hard to maintain the District's current level of service and operations standards.





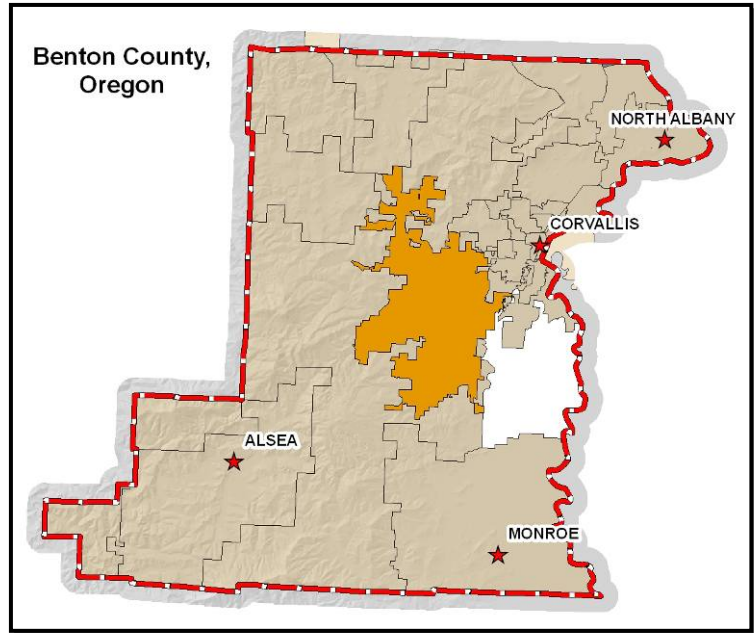


## Philomath Fire & Rescue

**District Summary:** Philomath Fire and Rescue is a combination department consisting of 7 paid staff and 30 volunteers. The District is 68 square miles and has a population of approximately 8,500. The district runs from the western edge of the valley floor to the foothills of the Coast Range. The district's main station is in downtown Philomath.

Two additional outstations are located in Wren and 5 miles south of Philomath on Llewellyn Road. Philomath Fire and Rescue responds to fire and EMS calls and provides public education and prevention.

**Issues of Concern:** Increased residential building in the rural parts of our district has led to areas and properties with poor access in the event of an emergency. In addition, the current trend of building homes in excess of 3,000 square feet taxes the District's ability to adequately provide suppression.





## Oregon Department of Forestry – West Oregon District

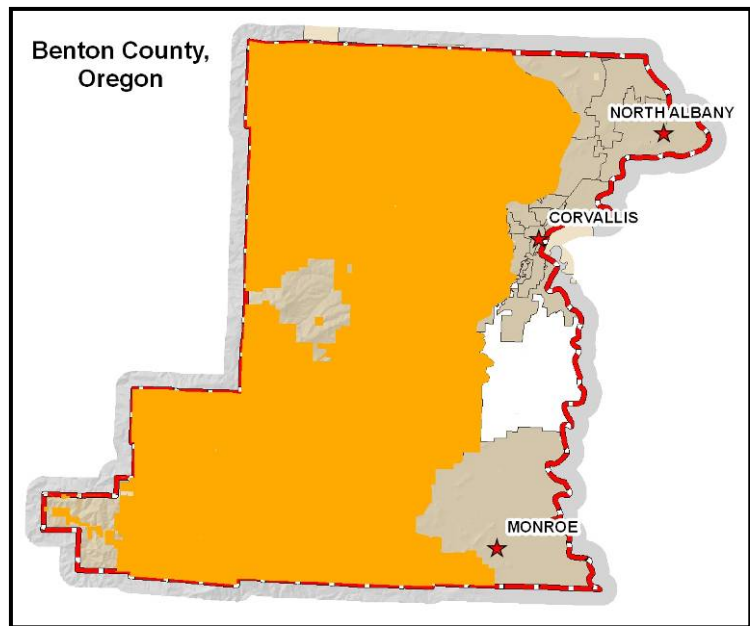
**District Summary:** The West Oregon District, which contains 3 unit offices (Philomath, Dallas, Toledo), is one of five districts within the Northwest Oregon Area.

The District provides forest fire prevention, detection, and suppression on approximately 1.1 million acres of forest land in portions of five counties (Benton, Lincoln, Polk, Tillamook, and Yamhill), 285,000 acres of which is in Benton County; contributes to a complete and coordinated forest protection system on a local and statewide basis; provides for cooperative work to public and private landowners to supplement the fire protection system; provides for environmental protection on commercial forest land through the administration of the Forest Practices Act; administers assistance programs to private forest landowners through the Private Forests Program; and intensively manages 37,672 acres of State Forest land. The Oregon Department of Forestry does not provide any structural protection.

The District accomplishes this work with a biennial budget of approximately \$8 million and employment of 29 permanent and 26 seasonal and temporary employees.

The District is able to cover the majority of the service area with a four repeater radio system: Marys Peak, Euchre Mountain, Hebo Mountain, and Prairie Peak.

The West Oregon District has mutual aid agreements with all seven rural fire protection districts in Benton County as well as a closest forces agreement with the Siuslaw National Forest.



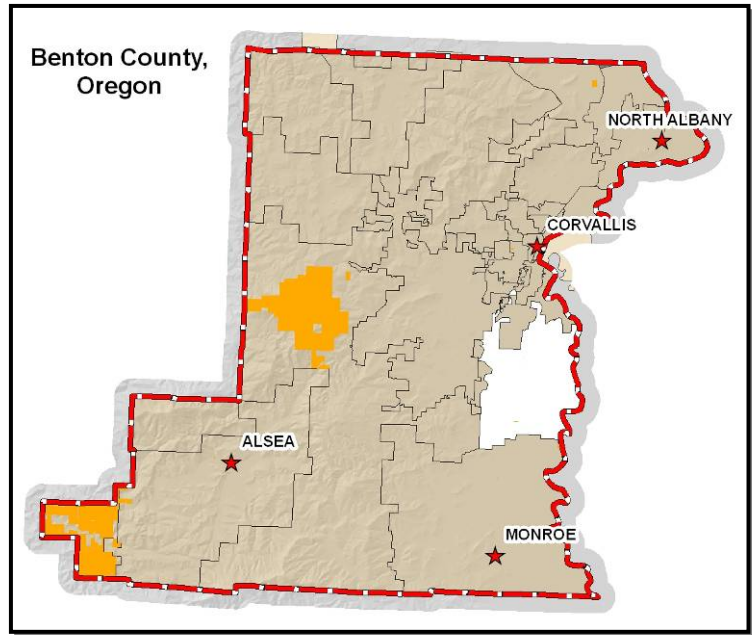




## Siuslaw National Forest

**Forest Summary:** The Siuslaw National Forest is approximately 630,000 acres. It is located along the Oregon Coast from Tillamook to Coos Bay and extends into the coast range. The Forest spans 8 different counties. In Benton County, there is approximately 18,000 acres of Forest Service land.

The Forest has two districts, the Central Coast Ranger District and The Hebo Ranger District. The Forest has fire personnel and equipment located at three Stations: Hebo, Alsea (Benton County), and Mapleton. Resources are shared as needed across the Forest and the Forest has a cooperative agreement with ODF for initial attack.



## **West Oregon Forest Protective Association**

**Association Summary:** The West Oregon Forest Protective Association (WOFPA) was formed when the former Benton County Fire Patrol, Lincoln County Fire Patrol, and Polk County Fire Patrol merged together in 1962. The earlier landowner fire patrol association began forming in the district as early as 1910.

WOFPA's primary objectives are the protection of forest resources within its area from possible damages caused by the destructive forces of fire and/or other causes as determined by vote of the Board of Directors and the achievement of effective communications with other organizations and agencies to ensure wise policy decision affecting forest protection.

To accomplish this, the WOFPA works with the West Oregon District (ODF) to ensure an adequate budget is prepared to provide for the protection of their members' lands. The Association maintains a close liaison of public and private landowners and provides feedback to ODF on the protection services they provide.

Currently, the association is comprised of 30 landowner members and 6 affiliate members.

## Fire Protection Issues

The following sections provide a brief overview of the many difficult issues currently challenging Benton County in providing wildland fire safety to citizens. These issues were discussed at length both during the committee process and at several of the public meetings. In most cases, the committee has developed action items (see Chapter 6) that are intended to begin the process of effectively mitigating these issues.

### Urban and Suburban Growth

One challenge Benton County faces is the large number of houses in the urban/rural fringe compared to twenty years ago. Since the 1970s, despite statewide regulation of residential development in resource lands, a segment of Oregon's growing population has expanded further into traditional forest or resource lands. The “interface” between urban and suburban areas and the resource lands created by this expansion has produced a significant increase in threats to life and property from fires, and has pushed existing fire protection systems beyond original or current design or capability. Many property owners in the interface are not aware of the problems and threats they face and owners have done very little to manage or offset fire hazards or risks on their own property. Furthermore, human activities increase the incidence of fire ignition and potential damage.

*It is one of the goals of this document to help educate the public on the ramifications of living in the wildland-urban interface, including their responsibilities as landowners to reduce the fire risk on their property and to provide safe access to their property for all emergency personnel and equipment. Homeowners building in a high fire risk area must understand how to make their properties more fire resistant using proven firesafe construction and landscaping techniques, and they must have a realistic understanding of the capability of local fire service organizations to defend their property.*

### Rural Fire Protection

People moving from urban to more rural areas frequently have high expectations for structural fire protection services. Often, new residents do not realize they are living outside a fire protection district, or that the services provided are not the same as in an urban area. The diversity and amount of equipment and the number of personnel can be substantially limited in rural areas. Fire protection may rely more on the landowner's personal initiative to take measures to protect his or her property. Furthermore, subdivisions on steep slopes and the greater number of homes exceeding 3,000 square feet are also factors challenging fire service organizations. In the future, public education and awareness may play a greater role in rural or interface areas. Great improvements in fire protection techniques are being made to adapt to large, rapidly spreading fires that threaten large numbers of homes in interface areas.

### Debris Burning

Local burning of trash and yard debris has been identified as a significant and growing problem as well as the number one cause of wildfires throughout Benton County. Not only are some people regularly burning outside of the designated time frame, but escaped debris fires impose a very high fire risk to neighboring properties and residents. A growing portion of local fire

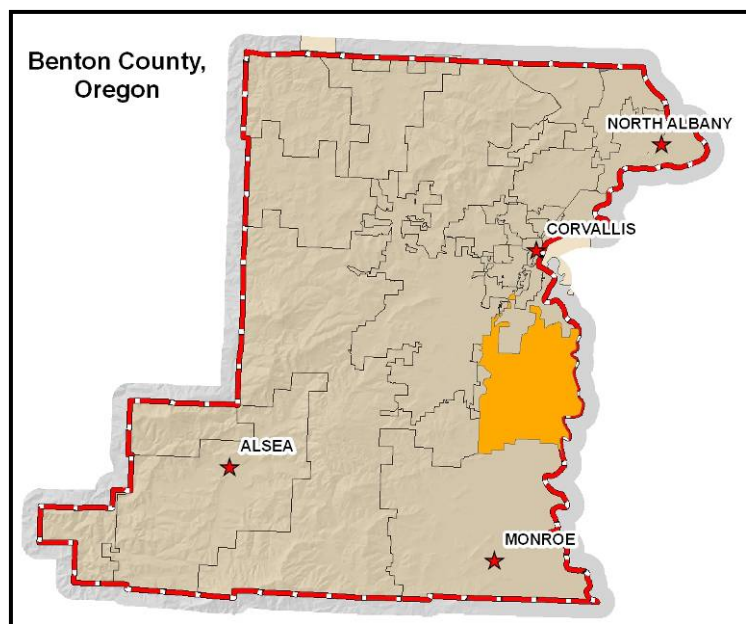
department calls are in response to debris fires or “backyard burning” that either have escaped the landowner’s control or are causing smoke management problems. It is likely that regulating this type of burning will always be a challenge for local authorities and fire departments; however, improved public education regarding the county’s burning regulations and permit system as well as potential risk factors would be beneficial.

### Pre-planning in High Risk Areas

Although conducting home, community, and road defensible space projects is a very effective way to reduce the fire risk to communities in Benton County, recommended projects cannot all occur immediately and many will take several years to complete. Thus, developing pre-planning guidelines specifying which and how local fire agencies and departments will respond to specific areas is very beneficial. These response plans should include assessments of the structures, topography, fuels, available evacuation routes, available resources, response times, communications, water resource availability, and any other factors specific to an area. All of these plans should be available to the local fire departments as well as dispatch personnel.

### Fire Service “No Man’s Land”

A large area of the Willamette Valley in Benton County between Corvallis and Monroe is not currently within a structural fire protection district, including approximately 232 structures. In many cases, the homeowners are not aware that they do not have structural fire protection. Additionally, some landowners are aware of the inadequacy, but are resistant to formation of a new fire district or annexation into an existing district for various reasons. Benton County and the Fire Defense Board support researching the options available to improve the fire services in this area, which may involve a well-organized public awareness campaign to insure homeowners in the area are aware of the situation and understand the ramifications.



### Road and Bridge Standards

Fire chiefs throughout Benton County have identified home accessibility issues as a primary concern in many of the rural areas in the county. Many private driveways are too narrow and/or too steep and most do not have adequate turnouts, turnaround areas, or alternative escape routes. In addition, many privately-maintained rural access roads have become overgrown by vegetation, effectively restricting safe access, particularly in a wildfire situation.

Inadequate private bridges lacking weight rating signage are also a common problem. Due to the risk of bridge failure and resulting personnel injury and equipment damage, fire and medical

service organizations will not cross bridges that may be incapable of handling the weight of emergency response apparatus.

*The planning committee involved in the development of this CWPP found accessibility due to nonexistent or ineffective driveway and private bridge standards to be the number one difficulty for safe emergency ingress and egress. It is a clear goal of this planning process to begin the development, enforcement, and maintenance of accepted road, driveway, and private bridge standards countywide. As part of this process, the committee has recommended an action item for improvement of substandard roads, driveways, and private bridges as well as development of an inventory and certification process for privately owned bridges.*

### **Oregon State University Forestlands**

Oregon State University (OSU) owns and manages four tracts of forestland in Benton County totaling over 11,700 acres. These tracts are used as learning centers for students as well as a source of income for the University. An extensive system of hiking and biking trails and other recreational facilities has been established on the McDonald and Dunn forest tracts that attract an estimated 175,000 recreational-based visits annually.

Although OSU conducts periodic silvicultural treatments including slash disposal after harvesting on their forests, currently there are minimal efforts underway specifically targeting wildland fire risk reduction.

Given the intense recreational use, accidental ignitions are highly probable. In addition to current fire patrols, public outreach efforts and fuels management in high use areas would help lessen the risk of an ignition.

Furthermore, OSU forestlands border numerous private landowners. Due to the lack of fuel breaks, there is a high potential for fires on OSU forestlands to spread to neighboring properties or vice versa. Responsible wildfire risk management by OSU and its neighbors will not only protect OSU forestlands from losses due to wildland fire, but will protect neighboring properties as well.

### **Wildland Fire Specific Building Regulations**

As the trend to build in the wildland-urban interface continues, many counties and communities have begun to develop wildland-urban interface codes for new construction that regulate the use of certain building materials (roofing, siding, vents, decking, etc.) in high fire risk areas. In addition, WUI codes regarding road and bridge standards, availability of water resources, proximity of vegetation, and other requirements have been adopted in communities and counties across the United States.

*The CWPP planning committee has recommended an action item in this document to begin researching and formulating an appropriate urban interface code for use in high fire risk areas of Benton County. It is the goal of the committee that this type of local code help prevent the high fire risk situations that are characteristic in numerous rural subdivisions already existing in Benton County.*

### Fire-Resistant Construction Materials

Due to the multitude of highly publicized wildland-urban interface fires occurring in the western states, there has been an increased level of research, development, and marketing of more fire-resistant construction materials. Information on high risk materials as well as fire-resistant alternatives can be readily found online or local fire departments.

Outdated subdivision covenants requiring the use of certain high wildfire risk materials need to be revised to allow for the use of fire-resistant materials. In most circumstances, the fire-resistant materials closely resemble the most popular trends in construction materials and do not degrade the aesthetic value of homes.

### Volunteer Firefighter Recruitment

The rural fire departments in Benton County are predominantly dependent on volunteer firefighters. Each district spends a considerable amount of time and resources training and equipping each volunteer, with the hope that they will continue to volunteer their services to the department for at least several years. One problem that all volunteer-based departments encounter is the diminishing number of new recruits. As populations continue to rise and more and more people build homes in high fire risk areas, the number of capable volunteers has gone down. In particular, many departments have difficulty maintaining volunteers available during regular work day hours (8am to 5pm).

### Public Wildfire Awareness

As the potential fire risk in the wildland-urban interface continues to increase, it is clear that fire service organizations cannot be solely responsible for protection of lives, structures, infrastructure, ecosystems, and all of the intrinsic values that go along with living in rural areas. Public awareness of the wildland fire risks as well as homeowner accountability for the risk on their own property is paramount to protection of all the resources in the wildland-urban interface.

*Developing a mechanism to increase public awareness regarding wildfire risks and promoting “do it yourself” mitigation actions is a primary goal of the CWPP planning committee as well as many of the individual organizations participating on the committee.*

### Water Resources

Even though water is fairly abundant in Benton County, access to this resource for fire suppression is not always available. Nearly every fire district involved in this planning process indicated the need to develop additional water resources in several rural areas. Developing water supply resources such as cisterns, dry hydrants, drafting sites, and/or dipping locations ahead of an incident is considered a force multiplier and can be critical for successful suppression of fires. Pre-developed water resources can be strategically located to cut refilling turnaround times in half or more, which saves valuable time for both structural and wildland fire suppression efforts.

*The CWPP planning committee has identified inventorying and mapping of existing water resources as well as the development of new resources as a priority action item in this document.*



## Corvallis Watershed

The city of Corvallis owns 2,352 acres in the lower elevations of the Rock Creek Watershed, which covers approximately 10,000 acres on the northeast flanks of Marys Peak. In 2006, the City of Corvallis hired a consultant to assess the current forest conditions and work with the Watershed Commission and citizens to develop a stewardship plan for the city-owned lands in the watershed. The resulting document promoted forest health and ecosystem biodiversity while addressing current resources needs. Recommended management actions for the city's property includes: control of invasive species, improvement of wildlife habitat by creating snags and selective thinning of overstocked plantations and some middle-aged stands, establishment of an expanded reserve system to more effectively protect streams and other sensitive resources, improving fish passage through infrastructure, establishing a stream monitoring plan to study water quality issues, allowing non-motorized public access to Old Peak Road, and annual public tours of the City's forest to promote public involvement.

It is the policy of the City of Corvallis to protect their watershed lands from wildfire and to manage forest stands to reduce fire risk. The City has a policy of active suppression of any fires and cooperates with the Oregon Department of Forestry for fire protection and monitoring. To minimize fire hazards and risks, the water plant staff regularly mow roadsides and around facilities to reduce fine fuels, clear blow-downs on roads to maintain vehicle access, and patrol roads for trespass. Public access closure of the watershed eliminates the most probable cause of fires.

Although the Stewardship Plan calls for several fire preventative measures and immediate suppression of wildfires, there are no silvicultural recommendations for fuels modification or reduction. The city's watershed is critical to the community and should be protected from wildfire to the greatest extent possible. It is also imperative that neighboring landowners, including the U.S. Forest Service, take responsibility for wildfire protection as well to help prevent a fire moving from a neighboring property into the watershed or vice versa. The potential impacts of a large stand-replacing fire in this area could negatively impact the city of Corvallis via potential flooding, erosion, and degradation of water quality. A severe wildfire in this watershed could cause serious injury to this resource by removing vegetation, creating ash and sediments, and impairing soil properties. Mitigation treatments prior to a fire event are a high priority and are imperative to conserving the functionality of the watershed following a wildland fire.

*The CWPP planning committee has recommended an action item to develop a wildfire mitigation plan for the Corvallis Watershed to include a fuels reduction program as well as other techniques.*

## Current Wildfire Mitigation Activities

### Linn and Benton County Fire Protection Standards

The Linn and Benton County Fire Defense Boards have jointly been collaborating with the State Fire Marshal's Office to develop fire protection standards consistent with the Oregon Fire Code. The guidelines being developed are meant to clarify how local fire code officials will apply best practices that are considered to be in compliance with the intent of the Oregon Fire Code. By addressing selected issues that arise under what are considered normal situations or conditions,

this guide is intended to address those aspects of the Oregon Fire Code where additional clarification may be necessary. The Linn and Benton County Fire Protection Standards provides a common set of specifications regarding how fire apparatus access and fire protection water supplies should be designed and maintained.

### **Oregon Department of Forestry**

The Oregon Department of Forestry (ODF) is an active member of the Benton County Fire Defense Board and assists local fire departments through mutual aid agreements and by providing wildland firefighting training. Trainees can obtain their wildland fire training documentation and attend extensive workshops combining elements of structural and wildland firefighting, defending homes, and operations experience.

ODF has been involved with emergency managers to provide support during non-fire events and, for years, ODF has worked with industrial partners (industrial timber companies) to share equipment in the case of extremely large fires.

Furthermore, ODF implements and enforces an Industrial Fire Precaution Level (IFPL) system for all commercial forestlands. The IFPL is a four level system:

**Level 1** - Fire Season is declared. Operators/loggers are required to have firefighting equipment on site; conduct fire watches after completing operations for the day; and take some preventative measures.

**Level 2** - Partial “Hootowl” is declared, which requires the shut down of some activities at 1pm.

**Level 3** - Partial Shutdown is declared, which restricts some activities and nearly all other activities are curtailed.

**Level 4** - General Shutdown is declared, which restricts all activities.

ODF also implements three levels of closures that apply to public and non-industrial activities.

**Regulated Use Closure** - Regulated use closures do not restrict access, but does restrict certain activities. Affected lands will often be marked with signs along with instructions and prevention reminders. Common restrictions include: smoking, campfires, non-industrial use of chainsaws, use of motor vehicles, and fireworks.

**Permit Closure** - When fire danger increases, a permit closure may be announced. Permit closures require people, including landowners, to obtain permits before entering designated forest lands.

**Absolute Closure** - This closure prohibits all use of forested areas within a designated area. All forms of travel and all recreational activities are prohibited during an absolute closure.

### **Benton County Fire Defense Board**

The Benton County Fire Defense Board is comprised of all the local fire chiefs within the county and also includes ex-officio representatives from the State Fire Marshal’s Office and the Oregon Department of Forestry. Pursuant to the Oregon Fire Service Mobilization Plan, the Fire Defense Board is charged with the following responsibilities:

- Develop a fire service plan with provisions permitting local departments to respond with mutual aid forces upon request of other local departments in the county.
- Administer the State Fire Mobilization Plan within the county.

- Maintain response procedures for alert, transfer, and dispatch of firefighting equipment and personnel.
- Maintain liaison with other agencies capable of augmenting firefighting resources.
- Maintain inventories of firefighting equipment in the county.
- Develop dispatch plans for mobilization requests and conduct exercises as necessary to ensure efficient operations.
- Develop expedient procedures for providing and dispatching incident command overhead teams and logistical support.
- Hold regular meetings.

The Benton County Fire Defense Board meets regularly with representatives from a number of other agencies in the County to coordinate prevention and response activities and issues. Those agencies/individuals include Benton County Community Development Department, Benton County Sheriff’s Office, and Corvallis Regional 911 Communication Center.

### **Oregon State University Extension**

The Benton County office of the OSU Extension Service helps reduce the risk of wildfires in Benton County by offering a variety of educational programs and materials to Benton County citizens. Citizens can access OSU and other publications on such topics as Firewise landscaping, fire prevention, and fuels management via the office in Corvallis or via their website at <http://extension.oregonstate.edu/benton/>. In addition, OSU Extension provides a free newsletter 6 times per year, which gives additional information, through articles written by OSU Extension agents and others. Issues during the spring and summer usually include articles pertaining to fire on rural properties. OSU volunteer training for its Master Gardener and Master Woodland Manager volunteer programs includes information that volunteers in turn use during their volunteer service activities to show other citizens how to reduce the risk of wildfires. OSU Extension Forester, Rick Fletcher has also initiated a new “woodland owner fire school,” in conjunction with Oregon Department of Forestry, rural fire districts and local landowners. The annual program provides hands on experience for rural owners regarding activities they can undertake on their properties to reduce fire as well as how to use fire safely.

### **Public Education Programs**

Many of the county’s fire departments and agencies are actively working on public education and homeowner responsibility by visiting neighborhoods and schools to explain fire hazards to citizens. Often, they hand deliver informative brochures and encourage homeowners to have their driveways clearly marked with their addresses to ensure more rapid and accurate response to calls and better access. The Firewise Program is also being utilized to help fire response organizations communicate fire hazards to the public. Benton County’s Community Development Department distributes information to residents and prospective residents of forested areas, describing best practices for creating a homesite that is defensible in wildland fire events.

[This page intentionally left blank.]

## Chapter 5

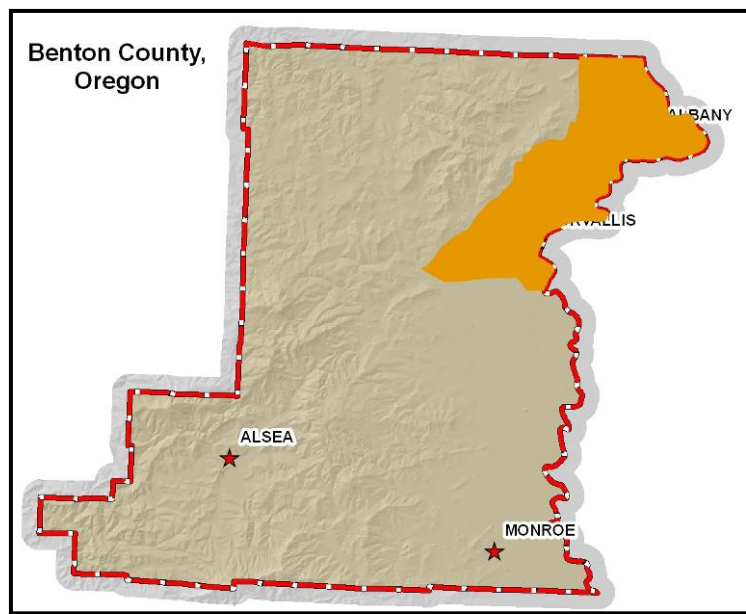
### Strategic Planning Areas

In order to facilitate the mutual understanding of wildfire risks specific to commonly referred to areas in Benton County, the planning committee identified Benton County subregions. These subregions, called “Strategic Planning Areas (SPAs)”, are distinguished by similar fuel conditions and would require similar initial attack techniques. Typically, SPA boundaries lie along local zoning boundaries, fuel or vegetative cover type changes, or logical topographic features. Narrative assessments have been written for each SPA to augment the risk analysis models.

A composite map of the Strategic Planning Areas in Benton County is included in the Appendices.

#### Strategic Planning Area #1 – Urban Zone

SPA 1 is located in the northeastern corner of Benton County within the Willamette River Valley and includes the cities of Corvallis, Albany, Philomath and Adair Village. This is a heavily populated urban and semi-urban area intermixed with parks, farmland, wooded river bottomland, forested knolls, foothills and major transportation corridors. SPA 1 is bordered on the east by the Willamette River, SPA 3 (Northern Forest Zone) to the west, Polk County to the north and SPA 2 (Farm Zone) to the south. Land ownership is predominantly private with several large tracts owned by Oregon State University, Benton County, Oregon State Parks and Recreation and the E.E. Wilson Wildlife Area operated by the Oregon Department of Fish and Wildlife. Forest and shrubland vegetation is common in and around many residential areas developed near foothills and riparian waterways. Development in the agricultural land is widely dispersed on isolated parcels surrounded by seasonal crops, tree farms and orchards. Homesite and subdivision development is increasing throughout the area by expanding into the wooded areas and farmland as zoning allows, particularly in the North Albany, Vineyard Mountain, Cascade Heights, Skyline West, Oak Creek and the Cardwell Hills areas.



#### Wildfire Potential

Wildfire potential is low within the urban areas of Corvallis, Philomath and Albany, and steadily increasing in the outlying residential areas adjacent to open space, farmland, wooded foothills and river drainages. Native and non-native landscape vegetation is especially dense in the older

residential clusters and many of these areas lie adjacent to ignitable fuels. Privacy and seclusion created by landscaping is highly desirable in closely arranged subdivisions, which limits opportunities for creation of wildfire defensible space and creates large accumulations of potentially flammable biomass in yards and on roof tops. Under extreme wildfire conditions or during an extreme wind event, heavily vegetated residential areas have the potential to carry an advancing fire front, fueling the fire with landscape vegetation, litter and ultimately the home itself as seen in many of the recent southern California wildfires. Similar fires have occurred in agricultural areas when a wind driven grain or grass fire moves into adjacent developed areas igniting landscape vegetation that could threaten or destroy buildings and infrastructure or cut off access to escape routes.

Wildfire potential is very high in the wooded foothills and wooded residential lots of SPA 1 due to the heavy concentration of forest vegetation, ladder fuels, steep slopes and numerous potential ignition sources. Wildland fuels are a mix of oak savanna and grassland at the lower elevations and transitions into variable density Douglas-fir/Hemlock forest mixed with oak and maple species at higher elevations. Homesite development and timber management has transformed these areas into a mosaic of multi-aged stands of timber mixed with open areas of pasture and farmland. Human activity increases the probability of a wildfire during the dry season or during a high wind event. The human factor combined with heavy accumulation of mixed fuels can often result in a rapidly spreading and potentially destructive wildfire. The rate of wildfire spread in a forest environment is dependent on the structure of the forest, weather, aspect and slope. Heavy understory vegetation in multi-storied forests creates a situation conducive to a rapidly advancing, highly destructive crown fire.

### **Ingress-Egress**

Ingress and egress within the heavily populated urban areas of SPA 1 is currently regulated through planning and building codes. This minimizes hazards associated with emergency access and provides multiple emergency escape routes. However, some residences constructed prior to today's codes in the outlying foothills' subdivisions and occluded woodlots are accessed via unimproved, single-lane roads accessible only by small emergency vehicles. In these areas, access roads and driveways are often steep and/or lined with shrubs and mature trees that can limit or prohibit access during a wildfire. Many of these roads have a single access point for both ingress and egress and lack adequate turnout and turn-around areas for emergency vehicles. The inability of emergency resources to safely access structures reduces or may even eliminate suppression response. Most of the roads in newer subdivisions have been designed to accommodate emergency vehicles with either loop roads or cul-de-sacs with wide turning radii and easily negotiable grades, which are better suited to all types of emergency response equipment.

### **Infrastructure**

Urban residents throughout most of SPA 1 have municipal water systems, which includes a network of public fire hydrants. New development is required by the International Fire Code to have hydrant placement in their development plan. Subdivisions and development outside municipal boundaries typically rely on community water systems or multiple-home well systems.

Above ground, high voltage transmission lines cross the planning area in many directions in corridors cleared of most vegetation, which provides for a defensible space around the power line infrastructure and may provide a control point for fire suppression, if well maintained. Local public electrical utility lines are both above and below ground traveling through back



yards and along roads and highways. Many of these lines are exposed to damage from falling trees and branches. Power and communications may be cut to some of these during a wildfire event.

### **Fire Protection**

Structural fire protection in SPA 1 is provided by the Corvallis Fire Department, Albany Fire Department, Adair Rural Fire Protection District and Philomath Fire and Rescue. The Oregon Department of Forestry has jurisdiction for wildfires in the forested foothills along the western edge of SPA 1; however, ODF does not provide structural fire protection. Mutual aid agreements between ODF and fire districts supplement wildland fire protection when needed.

### **Community Assessment**

Residents within SPA 1 have a low risk of experiencing a wildland fire in the urban areas and moderate to high risk in the outlying foothills and farmland. Residential areas with dense landscaping adjacent to wildland fuels are at a relatively higher risk due to the continuity of fuels and litter accumulations. Development is increasing in the forested foothills as people seek to live in seclusion and remain in close proximity to urban amenities. As this trend continues, it will put increased pressure on fire protection services and the need for improved infrastructure and education. Vegetation, slope, and wind direction can be factors in determining whether a non-threatening ground fire spreads to the forest canopy and becomes a dangerous crown fire. In agricultural areas adjacent to forestlands, clearings and fuel breaks will disrupt a slow moving wildfire enabling suppression before heavier fuels can ignite. During a fast moving wildfire event, escape and containment is the priority. It is imperative that homeowners implement fire mitigation measures and have an escape plan in place prior to any emergency event.

### **Mitigation Activities**

Due to the low risk of wildfires in urban areas, mitigation is less of an issue than it is in the wooded foothills or in areas bordering open space parks or agricultural fields. Measures that can be taken in densely landscaped urban residential areas include watering yards, clearing litter accumulations from both the yard and the roof, and mowing grass and weeds. Designing fuel breaks between wildland fuels and residential areas would significantly lessen a fire's potential of igniting structures or landscape vegetation.

Mitigation measures needed in forested areas include construction of a defensible space around structures and along access routes, pruning and thinning trees, mowing and removing weeds and other vegetation and moving flammable items such as propane tanks and wood piles to a safe distance. Maintaining a clean and green yard around dwellings is also an effective fire mitigation measure. Additionally, using fire resistant siding, decking, and roofing will help reduce the ignitability of the structure. Many homesites in the wooded foothills and woodlots of this SPA have adequate defensible space, but this more proactive condition is non-continuous due to neighbors' lack of education, desire for seclusion, or lack of funding to accomplish treatments. Without education and widespread mitigation treatments, significant loss of life and property is possible.

Many access routes in the wooded foothills are located in areas of moderate to high fire risk due to the close proximity of continuous fuels. In the event of a wildland fire, it is likely that one or more escape routes would become impassable. Landowners should clearly understand the designated emergency evacuation routes for their area. Signage of unrestricted, alternate escape routes would reduce confusion and save time during a wildfire or other emergency event. Many

roads and driveways accessing rural residential areas do not have adequate road widths or turnouts for firefighting equipment, particularly in older developments. Current fire codes now require compliance with minimum road standards for new construction.

Ignitions are often concentrated around roads and rail lines due to the intense activity and available of ignition sources such as cigarettes. These travel corridors can be made more fire resistant by frequently mowing along the edges to reduce the fuels or planting more fire resistant grasses in these fire prone areas. Aggressive initial attack on fires occurring along travel routes will help insure that these ignitions do not spread to nearby residential areas.

Maintaining developed water resources and mapping alternative sites such as ponds and stock tanks in areas that do not have a municipal hydrant system will increase the effectiveness and efficiency of fire suppression in a wildfire situation.

## Strategic Planning Area #2 – Farm Zone

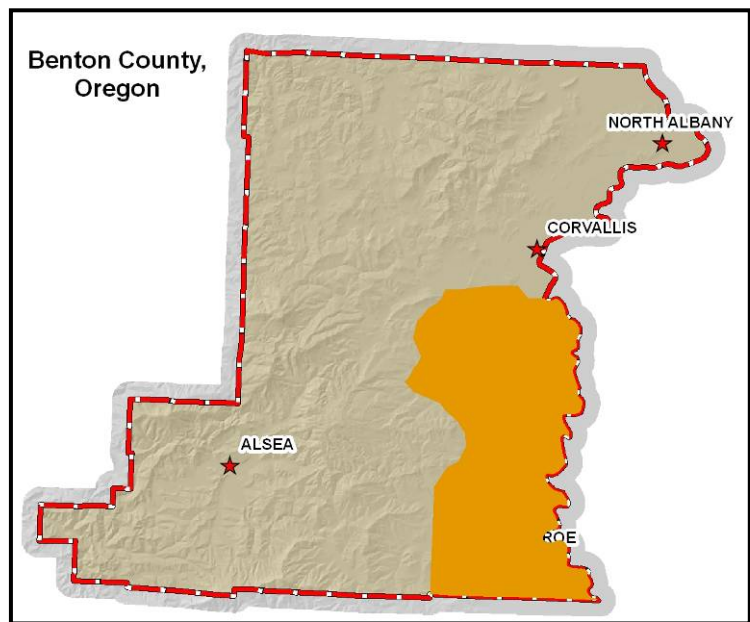
SPA 2 is located in the southeastern portion of Benton County within the Willamette River Valley and includes the communities of Monroe, Alpine, Alpine Junction, Bellfountain and Greenberry. This planning area is predominantly rural farmland interspersed with wooded hilltops and shrubby riparian areas. SPA 2 is bordered on the east by the Willamette River and Linn County, dense forestland on the west, SPA 1 (Urban Zone) on the north and Lane County to the south. Land ownership is predominantly private with a few large tracts owned by Benton County, forest industry and the William Finley National Wildlife Refuge operated by the United States Fish and Wildlife Service.

Muddy Creek and its tributaries pass through the center of the planning area creating widely diverse woodlands and riparian habitat. Widely-scattered homesite development is common in the forested areas and along wooded draws that flank cultivated farmland.

Development in the rural farmland is widely distributed. New development occurs primarily near communities and along major roads. Occasionally farmland is subdivided between family members for new home sites or for development of new farming facilities. Most of the pressure for multi-housing subdivisions occurs in close proximity to existing cities, due to requirements of the Oregon statewide land use system. In nearly all developed areas, structures are in close proximity to vegetation that becomes a significant fire risk at certain times of the year.

### Wildfire Potential

Wildfire potential in SPA 2 is low to moderate in the rural farmland and moderate to high in the wooded riparian areas and patches of forestland. Fuels in the forested areas consist of several



conifer and hardwood species mixed with a variety of understory shrubs and grasses. Forested areas in this SPA are often adjacent to or surrounded by agricultural crops or rangeland.

Agricultural and riparian lands adjacent to forested land are a considerable wildfire concern. Depending on the time of year, slope, and weather, fuels such as grasses, brush and agricultural crops can easily ignite. If these fuel types are within close proximity to forested areas, a surface fire may move into the forest, creating a wildfire situation during times when forest fire risk is normally low. A wind-driven fire in agricultural fuels or dry native fuel complexes would produce a rapidly advancing, but variable intensity fire. Fires burning in some types of unharvested fields would be expected to burn more intensely with larger flame lengths due to the greater availability of fuels. Fields enrolled in conservation programs or set aside for wildlife habitat, can burn very intensely due to an increased amount of fuel build-up from previous years' dead growth. Larger flame lengths and intense heat make fires in these fields difficult to control. Under extreme weather conditions, particularly strong winds, there is a high potential for a rapidly advancing fire.

### **Ingress-Egress**

Highway 99W and Bellfountain Road are the primary ingress and egress routes traveling north-south through SPA 2. Highway 99W is the main highway between the communities of Corvallis and Monroe. Primary routes traveling east and west include the Decker/Greenberry Road and the Alpine to Alsea access road. Commercial forestlands generally have good logging roads enabling access for fire suppression equipment, however many residences are accessed via unimproved, narrow roads and driveways accessible only by small emergency vehicles. Many of these roads lack adequate turnout and turn-around areas for emergency vehicles. The inability of firefighters to safely access structures reduces or may even eliminate suppression response.

### **Infrastructure**

Residents living in Monroe have access to a municipal water system with public fire hydrants. Outside of Monroe, development typically relies on individual or multiple-home well systems. Creeks, ponds and developed drafting areas provide water sources for emergency fire suppression in the rural areas to a limited extent. Additional water resources distributed throughout the planning area are needed to provide water for fire suppression in a timely manner.

Local public electrical utility lines travel both above and below ground along roads and highways with some exposure to damage from wind and falling trees. Power and communications may be cut to some of these areas during a wildland fire event.

### **Fire Protection**

Structural fire protection in SPA 2 is provided by the Monroe Rural Fire Protection District, Philomath Fire and Rescue, and the Corvallis Fire Department. These departments provide the first level of emergency response within their respective districts. The Oregon Department of Forestry has jurisdiction for wildfires in the forested foothills along the western edge of the SPA; however, ODF does not provide structural fire protection. Mutual aid agreements between ODF and fire districts supplement wildland fire protection when needed.

A large area in the east central portion of the planning area has no assigned fire protection district and is outside the ODF jurisdictional boundary. Fires in this area are primarily managed by the local citizens and a cooperative of local farmers.

Emergency response is coordinated by the county emergency dispatch system. All fire districts and the ODF have mutual aid agreements. This is an agreement that allows for support, additional resources, and specialized teams from other districts or agencies. Mutual aid agreements enable the utilization of nearby assets when needed, providing timely fire and rescue response to all areas of the county based on available resources.

### **Community Assessment**

Residents within SPA 2 have a variable risk of experiencing a wildland fire depending on their location and proximity to vegetative cover. Residences in wooded areas are at the highest relative risk and residences in the rural farmland are at a lower risk. As more forested land is developed for home sites, increasing pressure will be placed on fire services for protection. Vegetation, slope, and wind direction can be a factor in determining whether a non-threatening surface fire spreads to the forest and becomes a more dangerous crown fire.

Agricultural and ranching activities throughout the area have the potential to increase the risk of a human-caused ignition. Large expanses of wildlife habitat, conservation lands or annual crops provide areas of continuous fuels that have the potential to threaten homes and farmsteads. Under extreme weather conditions, escaped agricultural or open range fires can threaten individual homes or a town site; however, this type of fire is usually quickly controlled. In agricultural areas adjacent to forested land, clearings and fuel breaks will disrupt a slow moving wildfire enabling suppression before a fire can ignite heavier fuels. High winds increase the rate of fire spread and intensity of rangeland fires. It is imperative that homeowners implement fire mitigation measures to protect their structures and families prior to a wildfire event.

There are also numerous residences located in the portion of this SPA that are currently not covered by a fire protection service. These structures and families have a much greater risk of experiencing a wildfire due to this lack of protection. Several of the local farmers and ranchers have equipment available to help suppress any ignitions in this area. This system of fire protection has been fairly effective for the type of fires they've experienced so far; however, these residents are not trained to fight fire and therefore, may be putting their personal safety at risk.

### **Mitigation Activities**

Mitigation measures needed in wooded areas include constructing a defensible space around structures and along access routes, pruning and thinning trees, mowing and removing weeds and other vegetation, and moving flammable items such as propane tanks and wood piles to a safe distance. Maintaining a clean and green yard around homes is also an effective fire mitigation measure. Additionally, using fire resistant siding, decking, and roofing will help reduce the ignitability of the structure. Many homesites in the wooded foothills and woodlots of this SPA have adequate defensible space, but this more proactive condition is non-continuous due to neighbors' lack of education, desire for seclusion, or lack of funding to accomplish treatments. Without education and widespread mitigation treatments, significant loss of life and property is possible.

Many access routes in this SPA are located in areas of moderate to high fire risk due to the close proximity of continuous fuels along the roadway. Additionally, numerous access routes and private driveways are too narrow, lack adequate turnouts and turnaround areas, and have bridges that are underrated for heavy equipment. In the event of a wildland fire, it is likely that one or more of the escape routes would become impassable. Signing of unrestricted, alternate escape

routes would reduce confusion and save time during a wildfire event. Roads and driveways accessing rural residential areas may or may not have adequate road widths and turnouts for firefighting equipment depending on when the residences were constructed. Performing road inventories in high risk areas documenting or mapping their access limitations and substandard bridges, will improve firefighting response time and identify areas in need of improvement. Roads can be made more fire resistant by frequently mowing along the edges to reduce the fuels or planting more fire resistant grasses. Aggressive initial attack on fires occurring along travel routes will help insure that these ignitions do not spread to nearby homesites.

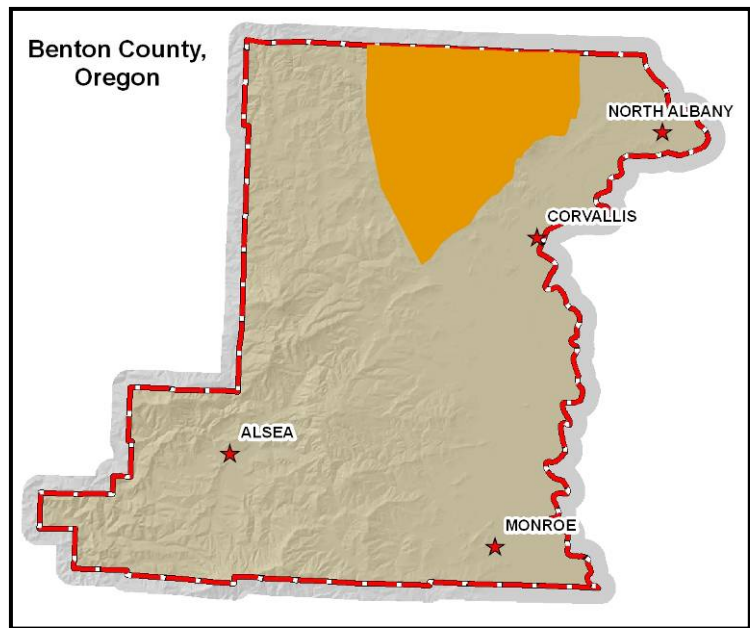
Designing a plan to help firefighters control fires in conservation areas and on agricultural lands that lie adjacent to forest or wooded areas would significantly lessen a fire’s potential of escaping to the heavier timber-type fuels. Mitigation associated with this situation might include plowing a fire resistant buffer zone around fields and along pre-designed areas to tie into existing natural or manmade barriers or implementing a prescribed burning regime during less risky times of the year.

Maintaining developed drafting sites and developing more water resources throughout the planning area will increase the effectiveness and efficiency of emergency response during a wildfire.

It is important to Benton County and neighboring fire service organizations that the large area in this SPA currently not covered by any structural or wildland fire service organization be addressed. It is clear that many of the landowners in this area are either resistant to the formation of a new fire district or annexation into an existing district for a variety of reasons; however, it is also clear that many of the landowners in this area do not realize they don’t have any fire protection. Researching the available options as well as conducting an educational campaign to ensure landowners understand the ramifications of the situation would be a good first step; followed by a survey of local opinion on the matter to help decision makers address the issue.

### Strategic Planning Area #3 – Northern Forest Zone

SPA 3 is located in the north central portion of Benton County from Kings Valley to Soap Creek and includes the communities of Kings Valley, Hoskins, and Wren. This planning area is predominantly forestland on mountainous terrain and agricultural areas along the valley bottoms. SPA 3 includes all of the Paul Dunn and McDonald Forests managed by OSU as well as large expanses of commercial forestland actively managed by timber companies and non-industrial private landowners. The SPA is bordered on the west by SPA 4 (Western Forest Zone), on the north by Polk County, and SPA 1 (Urban Zone) to the east and south. Land ownership consists of private and industry held tracts, Oregon State





University (State of Oregon), BLM and Benton County. Homesite development in this planning area is confined primarily to areas in and around Kings Valley, Soap Creek, Oak Creek, Wren/Blakesley Creek and Highways 20 and 223 west of Philomath. Extensive homesite development is occurring in forested areas surrounding the valleys and highways in close proximity to wildland fuels. These homes are typically accessed by timbered forest routes; some with roads with a single access providing both ingress and egress. A main railroad spur linking the coast to inland resources passes through this area.

### **Wildfire Potential**

Wildfire potential in SPA 3 is low to moderate in the farmland, valley bottoms and highways, and moderate to high in the forested areas. Wildland fuels in forested areas consist of several conifer and hardwood species mixed with a variety of understory shrubs and grasses. Timber management throughout this area has created a mosaic of forest stands with widely varying age and size classes enhancing stand density and structure, which can increase ladder fuels and wildland fire potential. In many areas along the valley bottoms, agriculture and forested land lie adjacent to residential developments and individual home sites. Oregon State Experimental Forest (McDonald-Dunn Forests) in the east central portion of this planning area and industrial timberlands to the west provide a multitude of recreational opportunities including hunting, camping, hiking and biking. This area is a popular recreation and interpretive area experiencing heavy use throughout the year. Adjacent land subdivision and development continues, to the extent allowed by limited availability of residentially-zoned land, in the wooded foothills due to its close proximity to the Corvallis area. Development and human activity in areas with heavy fuel loads increases wildfire risk and the chances for major property damage or loss of life.

### **Ingress-Egress**

Primary ingress and egress routes traveling north-south through SPA 3 include Highway 20 and 223 on the west and south side. Primary access from the Soap Creek area to Highway 99W is via Soap Creek and Tampico Roads in the northeast corner of the planning area. Other secondary access routes from developed areas include Maxfield Creek Road, Blakesley Creek Road, Marys River Estates Road, Cardwell Hill Drive, and Oak Creek Road. Many of these are narrow, windy routes with most roads providing only one access for both ingress and egress, passing through heavily forested areas. During a fire event, evacuation as well as access by emergency services would be difficult.

### **Infrastructure**

Residents within the communities of Kings Valley, Hoskins and Wren as well as the surrounding areas do not have access to municipal water systems; thus, no public fire hydrants are available. Development throughout this SPA typically relies on individual or multiple-home well systems. Ponds, rivers, creeks and developed drafting sites provide additional water sources for fire suppression in emergency situations.

Remote forested areas within the planning area generally have logging road access enabling access for fire suppression equipment. Most of these roads were designed for logging trucks, and also accommodate larger fire equipment.

Above ground, high voltage transmission lines cross the planning area in corridors cleared of most vegetation, which provides for a defensible space around the power line infrastructure and may provide a control point for fire suppression, if well maintained. Local public electrical utility lines are both above and below ground traveling through back yards and along roads and



highways. Many of these lines are exposed to damage from falling trees and branches. Power and communications may be cut to some of these areas during a wildfire event.

### **Fire Protection**

Structural fire protection in SPA 3 is provided by the Hoskins-Kings Valley Rural Fire District, Philomath Fire and Rescue, Corvallis Fire Department and Adair Rural Fire Protection District. These departments provide the first level of emergency response within their respective districts. The Oregon Department of Forestry has jurisdiction for wildfires in the forestlands; however, ODF does not provide structural fire protection. Mutual aid agreements between ODF and fire districts supplement wildland fire protection, when needed.

### **Community Assessment**

Residents within SPA 3 have a variable risk of experiencing a wildland fire depending on location and proximity to vegetation cover. Residences within the forest and woodland areas are at the highest relative risk and residences in the valley bottoms and surrounded by farmland are at a lower risk. Development is increasing in the forested foothills as people seek to live in seclusion yet remain in close proximity to urban amenities. As this trend continues, it will put increased pressure on fire protection services and the need for improved infrastructure and education. Vegetation, slope, and wind direction can be factors in determining whether a non-threatening ground fire spreads to the forest canopy and becomes a dangerous crown fire. In forested areas, clearings and fuel breaks will disrupt a slow moving wildfire, which better enables suppression efforts. During a fast moving wildfire situation, escape and containment are the priorities. Many homes in the forested areas are surrounded by high risk forest fuels and only a few have taken measures to reduce this risk by creating a defensible space. The desire for seclusion, views, and privacy creates dangerous living conditions in the forest environment, often without the landowner's awareness of the potential consequences. Fuels along driveways also increase homeowner's risk as both access by fire equipment and escape from the area may become difficult during a fire event.

Outdoor recreation and desire for rural living is increasing in popularity, especially in the mountains and forested areas. As more forested areas are used for recreation and habitation, the probability of a human-caused ignition increases. Special consideration is needed to increase public education and fuels mitigation treatments where recreation and development coexist in high risk wildland fire areas.

### **Mitigation Activities**

Mitigation measures needed in forested areas include constructing a defensible space around structures and along access routes, pruning and thinning trees, mowing and removing weeds and other vegetation, and moving flammable items such as propane tanks and wood piles a safe distance away. Maintaining a clean and green yard around home sites is also an effective fire mitigation measure. Additionally, using fire resistant siding, decking, and roofing will help reduce the ignitability of the structure. Many homesites in the wooded foothills and woodlots of this SPA have adequate defensible space, but this more proactive condition is non-continuous due to neighbors' lack of education, desire for seclusion, or lack of funding to accomplish treatments. Without education and widespread mitigation treatments, significant loss of life and property is possible.

Many access routes and driveways in this planning area are overgrown with vegetation, have bridges that are underrated for heavy equipment, are too narrow, or lack adequate turn out/turn

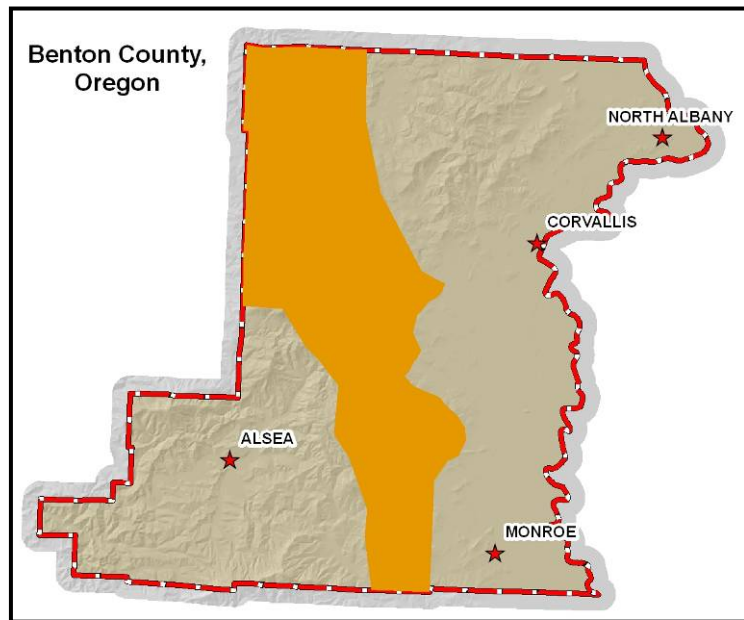
around areas. In the event of a wildland fire, it is likely that one or more of the designated escape routes would become impassable. Performing road inventories in high risk areas, and documenting or mapping access limitations, such as substandard bridges, will improve emergency response time and identify areas in need of improvement. Roads and rail lines can be made more fire resistant by frequently mowing along the edges to reduce the fuels or planting more fire resistant grasses such as western wheatgrass and blue grama.

Designing a plan to help firefighters control fires in farmland and open areas adjacent to forests would significantly lessen the spread of fire. Mitigation activities would include plowing a fire resistant buffer zone around fields and along pre-designed areas to tie into existing natural or manmade barriers or implementing a prescribed burning regime during less risky seasons of the year. Maintaining developed drafting sites and mapping alternative water resources such as underground tanks near rural subdivisions will also increase the effectiveness and efficiency of emergency response.

### Strategic Planning Area #4 – Western Forest Zone

SPA 4 is located in the west central portion of Benton County running the entire length of the county from north and south with SPA 2 & 3 to the east and SPA 5 and Lincoln County on the west. SPA 4 includes the communities of Summit, Blodgett, Dawson and Glenbrook. This planning area is nearly all forestland except for a few areas where farmland extends up river valleys or timber has been cleared for a farmstead. Land ownership in this area is predominantly BLM, U.S. Forest Service (Siuslaw National Forest), Oregon Board of Forestry (State), forest industry, City of Corvallis and scattered holdings of non-industrial private forestland. Due to the rural nature of this area, forest zoning, and vast expanses of commercial timberland, development has occurred only along major highways and river corridors as well as areas at the edge of the farmland on the east side of the planning area. Throughout the developed areas, structures have been built in close proximity to wildland fuels along timbered forest routes, some with roads with a single access providing both ingress and egress..

The Corvallis Watershed, owned by the City of Corvallis and the US Forest Service, is located within this planning area. Corvallis obtains almost half of its annual water needs from this area.



### Wildfire Potential

Wildfire potential in SPA 4 is moderate to high in the forested areas and moderate in the few areas of farmland and valley bottoms. Wildland fuels are primarily mixed conifer and deciduous forest with areas of shrubs, mixed crops and orchards. The topography is rolling to steep in the mountain areas and flat to gently rolling in the river valleys. In the forested area, the timber is a

patchwork of age classes created from timber harvest and reforestation. Clearcutting followed by planting is the most common harvest and regeneration method practiced in the region. Slash generated from timber harvest is often piled after logging and burned in the wet season after it has cured for an appropriate length of time. Large expanses of forest are even-aged due to these reforestation practices. This creates a situation in which younger stands may act as ladder fuels for neighboring stands due to finer fuels and increased woody material closer to the ground. In the older, more mature timber stands shade has played a role in the stands' development. The understory vegetation and lower branches are reduced due to the lack of available light. The reduced ground vegetation and ladder fuels lessen the ease with which a ground fire can move into the canopy.

Vast expanses of forestland, especially public forest land, provide recreational opportunities including hunting, fishing, camping, off-road vehicle use, hiking and biking. This area is a popular recreation area and experiences heavy use throughout the year. Land subdivision and development continues on the outskirts of this SPA due to its close proximity to urban areas, subject to the limitations of resource zoning. Development and human activity increases the chance of a human caused wildfire with a high potential for major property damage or loss of life.

Throughout this SPA openings have been cut for development of farmsteads and home sites, especially near the main roads and rural towns. Small land clearings for pasture development as well as for cash crops, open space, and orchards are common. These openings can act as fuel breaks by creating a discontinuous fuel bed, which can help slow a wildfire and improve suppression efforts. The concern is that with more development adjacent to wildland fuels, the potential fire danger increases due to increased ignition sources caused by human activity.

### **Ingress-Egress**

Primary access in the northern part of SPA 4 is via Highway 20 (Corvallis-Newport Highway). Secondary access funneling into Highway 20 includes the Summit/Blodgett Road, Hoskins/Summit Road and Marys River Road. Highway 34 (Alsea Highway) provides primary access through the middle of the area and the South Fork Access Road, from Alsea to Alpine, provides primary access in the south as well as emergency access for residents east of the Coast Range summit. Highways 20 and 34 are heavily traveled main roads that provide access through the Coast Range to the Oregon Coast. There are also a multitude of paved and graveled secondary roads that crisscross the timbered areas. Many are single lane roads providing both ingress and egress, leading to home sites or logging units.

### **Infrastructure**

Residents along the Alsea Highway near Philomath have limited access to a municipal water system. Those outside the city limits and in unincorporated areas typically rely on individual or multiple-home well systems.

Remote forested areas within the planning area generally have logging road access, which enables access for fire suppression equipment. Most of these roads were designed for logging trucks, and also can accommodate larger fire equipment.

Above ground, a high voltage transmission line crosses the planning area in a corridor cleared of most vegetation, which provides for a defensible space around the power line infrastructure and may provide a control point for fire suppression, if well maintained. Local public electrical utility lines are both above and below ground traveling through back yards and along roads and

highways. Many of these lines are exposed to damage from falling trees and branches. Power and communications may be cut to some of these areas during a wildfire event.

### **Fire Protection**

Structural fire protection in SPA 4 is provided by Blodgett-Summit Rural Fire Protection District, Philomath Fire and Rescue, and Monroe Rural Fire Protection District. These departments provide the first level of emergency response within their respective districts. The Oregon Department of Forestry has jurisdiction for wildfires on all forestlands within their jurisdictional boundary with the exception of the U.S. Forest Service lands; however ODF does not provide structural fire protection. Mutual aid agreements between ODF and fire districts supplement wildland fire protection, when needed.

### **Community Assessment**

Residents within SPA 4 have a moderate to high risk of experiencing a wildland fire due to the extensive forestland present and the current trend towards development in the wildland-urban interface. As this trend continues, pressure will increase on fire protection services and require improved infrastructure and education. The age of the surrounding timber stands can be a factor in determining whether a non-threatening ground fire will spread to the canopy and become a dangerous crown fire. Clearings and fuel breaks will disrupt a slow moving wildfire enabling more successful suppression efforts. During a fast moving wildfire situation, evacuation of people and containment of the fire are the priorities.

Recreation, agriculture, logging and ranching activities throughout the area increase the risk of a human-caused wildfire spreading to forested areas. Fields enrolled in conservation programs or non-annual cash crops near development provide areas of continuous fuels that have potential to threaten several homes and farmsteads and possibly escape into forested areas. Under extreme weather conditions, fires could threaten individual homes or a town site. High winds increase the rate of spread and intensity of fires. It is imperative that homeowners implement fire mitigation measures to protect their structures and families prior to a wildfire event. Most homeowners can maintain an adequate defensible space around structures by watering their yards, clearing brush and ladder fuels, and mowing grass and weeds.

### **Mitigation Activities**

Mitigation measures needed in forested areas include constructing a defensible space around structures and along access routes, pruning and thinning trees, mowing and removing weeds and other vegetation, and moving flammable items such as propane tanks and wood piles a safe distance away. Maintaining a clean and green yard around home sites is also an effective fire mitigation measure. Due to the proximity of forestlands and mountainous terrain, an increased defensible space around structures and greater efforts to maintain or improve forest health in the surrounding areas may be necessary to lessen the fire risk.

Additionally, using fire resistant siding, decking, and roofing will help reduce the ignitability of the structure. Many homesites in the wooded foothills and woodlots of this SPA have adequate defensible space, but this more proactive condition is non-continuous due to neighbors' lack of education, desire for seclusion, or lack of funding to accomplish treatments. Without education and widespread mitigation treatments, significant loss of life and property is possible.

Many access routes and driveways in this planning area are overgrown with vegetation, have bridges that are underrated for heavy equipment, are too narrow, or lack adequate turn out/turn around areas. In the event of a wildland fire, it is likely that one or more of the designated

escape routes would become impassable. Performing road inventories in high risk areas documenting or mapping access limitations, such as substandard bridges, will improve emergency response time and identify areas in need of improvement. Roads and rail lines can be made more fire resistant by frequently mowing along the edges to reduce the fuels or planting more fire resistant grasses in fire prone areas.

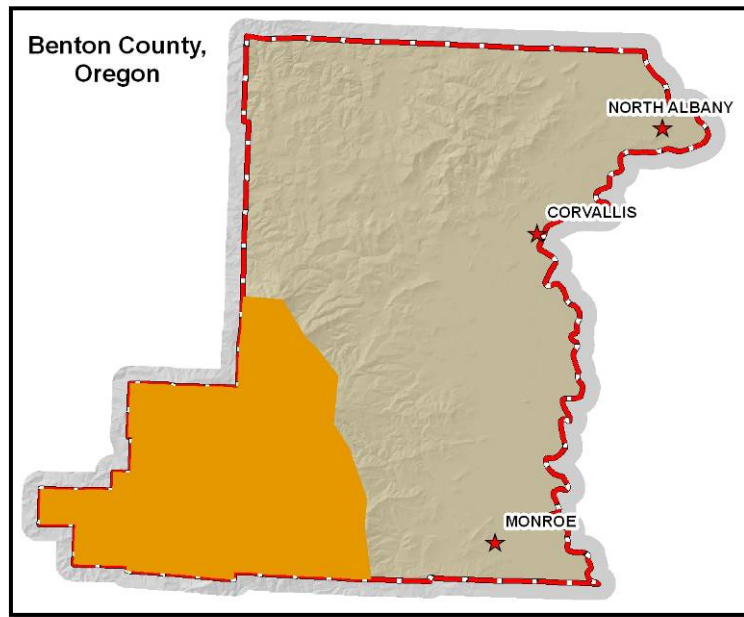
Designing a plan to help firefighters control fires in farmland and open areas adjacent to forest would significantly lessen the spread of fire. Mitigation activities would include plowing a fire resistant buffer zone around fields and along pre-designated areas to tie into existing natural or manmade barriers or implementing a prescribed burning regime during less risky seasons of the year. Maintaining developed drafting sites and mapping alternative water resources such as underground tanks near rural subdivisions will increase the effectiveness and efficiency of emergency response in a wildfire situation.

### Strategic Planning Area #5 – Coastal Range Zone

SPA 5 is located in the southwest corner of Benton County within the coastal mountain range. This planning area is bordered on the north and west by Lincoln County, south by Lane County and on the east by SPA 4 (Western Forest Zone). Asea, a rural unincorporated community, is the only community in this planning area. SPA 5 is nearly all forested with scattered development and farmsteads occupying the fertile river valleys and highway corridors. Land ownership in this area is predominantly BLM, U.S. Forest Service (Siuslaw National Forest), forest industry and non-industrial private forest land.

#### Wildfire Potential

Wildfire potential in SPA 5 is moderate to high in the forested areas and moderate to low in the valley bottoms. Wildland fuels are a mix of conifer and deciduous trees (Douglas-fir, hemlock and big leaf maple) with areas of shrubs, mixed crops and orchards. The topography is rolling to steep in the mountain areas and flat to gently rolling in the river valleys. Forest management has created a patchwork of stands in a wide array of age classes and stocking densities, depending on ownership. Clearcutting followed by planting is the most common harvest and regeneration method practiced in the region. Slash generated from timber harvest is often piled after logging and burned in the wet season after it has cured for an appropriate length of time. Site preparation with prescribed fire is seldom used due to high annual precipitation and a narrow burning window. Large expanses of forest are even-aged due to these reforestation practices. This creates a situation in which younger stands may act as ladder fuels for neighboring stands due to finer fuels and increased woody material closer to the ground. In the older, more mature timber stands shade has played a role in the stands' development. The understory vegetation and lower





branches are reduced due to the lack of available light. The reduced ground vegetation and ladder fuels lessen the ease with which a ground fire can move into the canopy.

Most of the development in this SPA is farmsteads and home sites occurring along the main highway corridors and river bottoms. Land clearing for pasture, cash crops, open space, and orchards is common. These openings can act as fuel breaks by creating a discontinuous fuel bed, which can help slow a wildfire and improve suppression efforts. The concern is that with more development adjacent to wildland fuels, the potential fire danger increases due to increased ignition sources caused by human activity.

Vast expanses of forestland, especially public forests, provide recreational opportunity including hunting, fishing, rafting, camping, off-road vehicle use, hiking and biking. This area is a popular recreation area experiencing heavy use throughout the year. Due to the ownership pattern, resource zoning, and remote location, there is less pressure for land subdivision and development in this planning area than other parts of the county. However, development still occurs and often it is in areas with high risk for wildfire. As more area is developed and human use rises, the chance of a human caused wildfire will increase.

### **Ingress-Egress**

Primary access in SPA 5 is Highway 34 (Alsea Highway) and Lobster Valley/Alsea Road. Highway 34 is a heavily traveled route through the Coastal Range to the Oregon Coast. There are also a multitude of paved and graveled secondary roads leading off the main highways into the forested areas. Many roads are timber-covered lanes leading to homesites or logging units with a single access point providing both ingress and egress,.

### **Infrastructure**

Residents within the town of Alsea have access to municipal water systems. In this area, public fire hydrants are available. Outside of Alsea, development typically relies on individual or multiple-home well systems. Ponds, rivers, creeks and developed drafting sites provide additional water sources for fire suppression in emergency situations.

Remote forested areas within the planning area generally have established logging roads enabling access for fire suppression equipment. Most of these roads were designed for loaded logging trucks; thus, they also accommodate larger fire equipment.

Local public utility lines traveling along roads and highways and are exposed to damage from falling trees. Power and phone service into forested areas are both above and below ground. Power and communications may be cut to some of these areas during a wildfire.

### **Fire Protection**

Structural fire protection in SPA 5 is provided by Alsea Rural Fire Protection District which provides the first level of emergency response within its districts. The Oregon Department of Forestry has jurisdiction for wildfires on all forest land within their jurisdictional boundary with the exception of the U.S. Forest Service lands; however, ODF does not provide structural fire protection. Mutual aid agreements between ODF and the fire district supplement wildland fire protection when needed.

### **Community Assessment**

SPA 5 is a rural area where most of the residential development occurs along the river valleys and major highway corridors. Residents within SPA 5 have a moderate to high risk of



experiencing a wildland fire since it is heavily forested and has extensive recreational use. The age of the surrounding timber stands can be a factor in determining whether a non-threatening ground fire will spread to the canopy and become a dangerous crown fire. Clearings and fuel breaks will disrupt a slow moving wildfire enabling more successful suppression. During a fast moving wildfire event, evacuation of people and containment of the fire are the highest priorities.

Recreation, agriculture, logging and ranching activities throughout the area increase the risk of a human-caused wildfire spreading to forested areas. Fields enrolled in conservation programs or non-annual cash crops near development provide a continuous fuel bed that has the potential to escape into forested areas. Under extreme weather conditions, fires could threaten individual homes or the Alsea town site. High winds increase the rate of spread and intensity of fires. It is imperative that homeowners implement fire mitigation measures to protect their structures and families prior to a wildfire event. Most homeowners can maintain an adequate defensible space around structures by watering their yards, clearing brush and ladder fuels, and mowing grass and weeds.

### **Mitigation Activities**

Mitigation measures needed in forested areas include constructing a defensible space around structures and along access routes, pruning and thinning trees, mowing and removing weeds and other vegetation, and moving flammable items such as propane tanks and wood piles a safe distance away. Maintaining a clean and green yard around home sites is also an effective fire mitigation measure. Due to the proximity of forestlands and mountainous terrain, an increased defensible space around structures and greater efforts to maintain or improve forest health in the surrounding areas may be necessary to lessen the fire risk.

Additionally, using fire resistant siding, decking, and roofing will help reduce the ignitability of a structure. Many homesites in the wooded foothills and woodlots of this SPA have adequate defensible space, but this more proactive condition is non-continuous due to neighbors' lack of education, desire for seclusion, or lack of funding to accomplish treatments. Without education and widespread mitigation treatments, significant loss of life and property is possible.

Many access routes and driveways in this planning area are overgrown with vegetation, have bridges that are underrated for heavy equipment, are too narrow, or lack adequate turn out/turn around areas. In the event of a wildland fire, it is likely that one or more of the designated escape routes would become impassable. Performing road inventories in high risk areas and documenting or mapping access limitations, such as substandard bridges, will improve emergency response time and identify areas in need of improvement. Roads and rail lines can be made more fire resistant by frequently mowing along the edges to reduce the fuels or planting more fire resistant grasses in fire prone areas.

Designing a plan to help firefighters control fires in farmland and open areas adjacent to forest would significantly lessen the spread of fire. Mitigation activities would include plowing a fire resistant buffer zone around fields and along pre-designated areas to tie into existing natural or manmade barriers or implementing a prescribed burning regime during less risky seasons of the year. Maintaining developed drafting sites and mapping alternative water resources such as underground tanks near rural subdivisions will increase the effectiveness and efficiency of emergency response in a wildfire situation.

[This page intentionally left blank.]

## Chapter 6

### Mitigation Recommendations

Critical to implementation of this Community Wildfire Protection Plan are the identification and implementation of an integrated schedule of action items targeted at achieving a reduction in the number of human caused fires and the impact of wildland fires in Benton County. This section of the plan identifies and prioritizes potential mitigation actions, including treatments that can be implemented in the county to pursue that goal. As there are many land management agencies and thousands of private landowners in Benton County, it is reasonable to expect that differing schedules of adoption will be made and varying degrees of compliance will be observed across various ownerships.

The land management agencies in Benton County, including the Oregon Department of Forestry, are participants in the planning process and have contributed to this plan's development. Where available, their schedule of land treatments has been considered in the planning process to improve the correlation between their identified planning efforts and the efforts of Benton County.

Benton County encourages the building of disaster resistance in normal day-to-day operations. By implementing plan activities through existing programs and resources, the cost of mitigation is often a small portion of the overall cost of a project's design or program.

All risk assessments were made based on the conditions existing during 2008. Therefore, the recommendations in this section have been made in light of those conditions. However, the components of risk and the preparedness of the county's resources are not static. It will be necessary to fine-tune this plan's recommendations regularly to adjust for changes in the components of risk, population density changes, infrastructure modifications, and other factors.

### Maintenance and Monitoring

As part of the policy of Benton County, the Community Wildfire Protection Plan will be reviewed at least annually at special meetings of the planning committee, open to the public and involving all municipalities/jurisdictions, where action items, priorities, budgets, and modifications can be made or confirmed. The Benton County Community Development Department (or other designee of the Benton County Commissioners) is responsible for scheduling, publicizing, and leading the review meetings. During these meetings, participating jurisdictions will report on their respective projects and identify needed changes and updates to the existing plan. Maintenance of the plan will be detailed at these meetings, documented, and attached to the formal plan as an amendment. Complete re-evaluation of the plan will be made every five years. The five year review will include updates to the GIS data and mapping, re-evaluation of other Benton County planning documents, re-evaluation of wildfire extent and ignition profiles, and revision of community assessments.

### Prioritization of Mitigation Activities

All of the action item and project recommendations made in this CWPP were prioritized by the planning committee using one of two prioritization schemes.

The action items in Table 6.1, “Safety and Policy”, and Table 6.2, “Fire Prevention, Education, and Mitigation”, are more general in nature and typically affect the county as a whole. These mitigation action items were prioritized using a numerical scoring system referred to as Scheme One. Prioritization Scheme One is made up of nine scoring criteria for non-planning projects and four criteria for planning-related projects. All of the criteria as well as the scoring results are outlined in Appendix 5.

The action items recommended in Table 6.3, “Infrastructure Enhancements”, Table 6.4., “Resource and Capability Enhancements”, and Table 6.5, “Proposed Project Areas”, were prioritized through a group discussion and voting process referred to as Scheme Two.

### Scheme One

A numerical scoring system was used to prioritize “Safety and Policy” and “Fire Prevention Education and Mitigation Projects” action items. This prioritization serves as a guide for the county when developing mitigation activities. The CWPP committee does not want to restrict funding to only those projects that are high priority because what may be a high priority for a specific community may not be a high priority at the county level. Regardless, the project may be just what the community needs to mitigate disaster. The flexibility to fund a variety of diverse projects based on varying criteria is a necessity for a functional mitigation program at the county and community level.

To implement this case-by-case concept, a more detailed process for evaluating and prioritizing projects has been developed. This prioritization scheme has been used in statewide all hazard mitigation plans. Since planning projects are somewhat different than non-planning projects, different criteria will be considered when prioritizing them.

The factors for the non-planning projects include:

- Benefit / Cost
- Population Benefit
- Property Benefit
- Economic Benefit
- Project Feasibility (environmentally, politically, socially)
- Hazard Magnitude/Frequency
- Potential for repetitive loss reduction
- Potential to mitigate hazards to future development
- Potential project effectiveness and sustainability

The factors for the planning projects include:

- Benefit / Cost
- Vulnerability of the community or communities
- Potential for repetitive loss reduction
- Potential to mitigate hazards to future development

Since some factors are considered more critical than others, two ranking scales have been developed. A scale of 1-10, with 10 being the best, is used for cost, population benefit, property benefit, economic benefit, and vulnerability of the community. Project feasibility, hazard magnitude/frequency, potential for repetitive loss reduction, potential to mitigate hazards to future development, and potential project effectiveness and sustainability are all rated on a 1-5

scale, with 5 being the best. The highest possible score for a non-planning project is 65 and for a planning project is 30.

A detailed explanation of the prioritization scheme including a description of each factor and the final scoring of action items is included in Appendix 5.

### **Scheme Two**

The CWPP committee chose to rank “Infrastructure Enhancements”, “Resource and Capability Enhancements” action items as well as the “Proposed Project Areas” recommendations through a group discussion and voting process. Projects in these sections are rated on a 1, 2, 3 . . . hierarchical scale and were voted on by the committee. Individual fire districts or other entities will still apply for some types of funding opportunities on their own; thus, it is possible that action items ranked lower by the committee may be funded before the highest priority projects as ranked by the CWPP committee.

## **Wildfire Mitigation Recommendations**

As part of the implementation of wildfire mitigation activities in Benton County, a variety of management tools may be used. Management tools include but are not limited to the following:

- Homeowner and landowner education
- Policy changes for structures and infrastructure in the wildland-urban interface
- Home site defensible zone through fuels modification
- Community defensible zone through fuels alteration
- Access improvements
- Emergency response enhancements (training, equipment, locating new fire stations, new fire districts, pre-planning)
- Regional land management recommendations for private, state, and federal landowners

Sound risk management is a foundation for all fire management activities. Risks and uncertainties relating to fire management activities must be understood, analyzed, communicated, and managed as they relate to the cost of either doing or not doing an activity. Net gains to the public benefit will be an important component of all mitigation decisions. Maintaining private property rights will also be a guiding principle in mitigation decision-making, and all planned programs will be voluntary and incentive-based.

### **Policy and Planning Efforts**

Wildfire mitigation efforts must be supported by a set of policies and regulations at the county level that maintain a solid foundation for safety and consistency. The recommendations enumerated here serve that purpose. Because these items are regulatory in nature, they will not necessarily be accompanied by cost estimates. These recommendations are policy related and therefore are recommendations to the appropriate elected officials; debate and formulation of alternatives will serve to make these recommendations suitable and appropriate.

**Table 6.1. Action Items in Safety and Policy.**

<b>Action Item</b>	<b>Goals Addressed (see page 4)</b>	<b>Responsible Organization</b>	<b>Timeline</b>
<b>6.1.a: Incorporate the Benton County Community Wildfire Protection Plan as a supplement to the Benton County Multi-Hazard Mitigation Plan.</b>	<b>CWPP Goal #2, 3, 4, 5, 11, 12, and 16</b>  Planning Priority: High	<b>Lead:</b> Benton County Emergency Management  <b>Support:</b> Benton County CWPP Planning Committee	6 months
<b>6.1.b: Incorporate the Benton County Community Wildfire Protection Plan, by reference, in the Benton County Comprehensive Plan.</b>	<b>CWPP Goal #3, 5, 11, and 16</b>  Planning Priority: High	<b>Lead:</b> Benton County Community Development  <b>Support:</b> Benton County CWPP Planning Committee	Immediate
<b>6.1.c: Provide support for a committee to address building and development issues within areas considered high wildfire risk. One of the committee’s first tasks shall be to evaluate and develop a recommendation regarding adoption of the Urban Wildland Interface Building Code to lessen wildfire risk by specifying construction materials, access standards, defensible space, water supply, etc.</b>	<b>CWPP Goal #2, 4, 5, 9, and 16</b>  Planning Priority: High	<b>Lead:</b> Benton County Community Development  <b>Support:</b> Benton County CWPP Planning Committee	1 Year
<b>6.1.d: Distribute Firewise-type educational brochures with building permit applications.</b>	<b>CWPP Goal #2, 4, 6, 9, and 11</b>  Non-Planning Priority: Medium	<b>Lead:</b> Benton County Community Development  <b>Support:</b> Benton County Fire Defense Board	Immediate and Ongoing
<b>6.1.e: Assess areas currently outside of existing fire districts for annexation or formation of new district due to increasing population or high fire risk.</b>	<b>CWPP Goal #15</b>  Planning Priority: High	<b>Lead:</b> Benton County Board of Commissioners  <b>Support:</b> Benton County Fire Defense Board	2 Years
<b>6.1.f: Continue pre-planning emergency evacuation routes with specifications for varying conditions.</b>	<b>CWPP Goal #2, 3, and 16</b>  Planning Priority: Medium	<b>Lead:</b> Benton County Sheriff’s Office  <b>Support:</b> Benton County Fire Defense Board and Benton County Emergency Management	Ongoing
<b>6.1.g: Support prescribed burning as an effective tool to reduce hazardous fuels in the WUI within applicable regulations.</b>	<b>CWPP Goal #2, 3, and 4</b>  Planning Priority: Low	<b>Lead:</b> Benton County CWPP Planning Committee  <b>Support:</b> Benton County Fire Defense Board	Ongoing
<b>6.1.h: Develop a program to assist landowners with the certification, signage, and maintenance of private bridges, and improvements to existing substandard driveways.</b>	<b>CWPP Goal #12 and 16</b>  Planning Priority: Low	<b>Lead:</b> Benton County Fire Defense Board  <b>Support:</b> Benton County CWPP Planning Committee and Benton County Public Works	2 Years



**Table 6.1. Action Items in Safety and Policy.**

<b>Action Item</b>	<b>Goals Addressed (see page 4)</b>	<b>Responsible Organization</b>	<b>Timeline</b>
<b>6.1.i: Identify areas with inadequate fire protection and work with residents and fire service agencies to develop solutions.</b>	<b>CWPP Goals #14 and 16</b>  Planning Priority: High	<b>Lead:</b> Benton County Fire Defense Board  <b>Support:</b> Benton County CWPP Planning Committee	1 Year
<b>6.1.j: Develop a common road and bridge access standard that is consistent with the Benton County Development Code and the Oregon Fire Code as implemented by the Fire Defense Board.</b>	<b>CWPP Goals #14 and 16</b>  Planning Priority: High	<b>Lead:</b> Benton County Community Development  <b>Support:</b> Benton County Fire Defense Board	1 Year
<b>6.1.k: Develop an Emergency Evacuation Plan for the Wren to Cardwell Hill area.</b>	<b>CWPP Goal #2, 3, and 6</b>  Planning Priority: Medium	<b>Lead:</b> Benton County Sheriff's Office  <b>Support:</b> Benton County Community Development Department	1 Year
<b>6.1.l: Coordinate with all Benton County fire protection agencies to develop uniform standards for fire district review of all building permits and development proposals.</b>	<b>CWPP Goals #2, 3, 4, 5, 6, 7, 8, 9, 11, and 16</b>  Planning Priority: Medium	<b>Lead:</b> Benton County Community Development  <b>Support:</b> Benton County Fire Defense Board	6 months
<b>6.10.m: Establish a central location and designated staff for coordination of all tasks associated with this CWPP.</b>	<b>CWPP Goals #5, 6, 12, 15</b>  Planning Priority: Medium	<b>Lead:</b> Benton County Community Development  <b>Support:</b> Benton County Fire Defense Board and Benton County Emergency Management	Ongoing

### **Fire Prevention, Education, and Mitigation Projects**

The protection of people and structures will be tied together closely because the loss of life in the event of a wildland fire is generally linked to a person who could not, or did not, flee a structure threatened by a wildfire or to a firefighter combating that fire. Many of the recommendations in this section will define a set of criteria for implementation while others will be rather specific in extent and application.

Many of the recommendations in this section involve education and increasing wildfire awareness among Benton County residents. These recommendations stem from a variety of factors including items that became obvious during the analysis of the public surveys, discussions during public meetings, and observations about choices made by residents living in the wildland-urban interface. Over and over, a common theme was present, pointing to a situation of landowners not recognizing risk factors:

- ☀ Fire District personnel pointed to numerous examples of inadequate access to homes of people who believe they have adequate access.
- ☀ Discussions with the general public indicated an awareness of wildland fire risk, but they could not generally identify specific risk factors.
- ☀ A large number of the respondents to the public mail survey (62%) indicated that they want to participate in educational opportunities focused on the WUI and what they can do to increase their home’s chances of surviving a wildfire.

Residents and policy makers of Benton County should recognize certain factors that exist today, the absence of which would lead to increased risk of wildland fires in Benton County. The items listed below should be acknowledged and recognized for their contributions to the reduction of wildland fire risks:

**Forest Management** has a significant impact on the fuel composition and structure in Benton County. The forest management programs of the Oregon Department of Forestry and numerous industrial forestland companies in the region have led to some reduction of wildland fuels where they are closest to homes and infrastructure; however, there is significant room for growth in these organizations’ fuels reduction programs. Furthermore, forests are dynamic systems that will never be completely free from risk. Treated stands will need repeated treatments to reduce the risk to acceptable levels in the long term.

**Agriculture** is a significant component of Benton County’s economy. Much of the interface area is made up of a mosaic of agricultural crops. The original conversion of these lands to agriculture from forestland or oak savanna was targeted at the most productive soils and juxtaposition to water. Many of these productive ecosystems were consequently at some of the highest risk to wildland fires because biomass accumulations increased in these productive landscapes. The result today is that much of the landscape historically prone to frequent fires has been converted to agriculture, which is at a much lower risk than prior to its conversion. The preservation of a viable agricultural economy in Benton County is integral to the continued management of wildfire risk in this region.

**Table 6.2. Action Items for Fire Prevention, Education, and Mitigation.**

Action Item	Goals Addressed (see page 4)	Responsible Organization	Timeline
<b>6.2.a: Implementation of youth and adult wildfire educational programs.</b>	CWPP Goal #6 and 11  Non-Planning Priority: Medium	<b>Lead:</b> Benton County Fire Defense Board  <b>Support:</b> Benton County Extension and Benton County CWPP Planning Committee	Ongoing
<b>6.2.b: Prepare for wildfire events in high risk areas by conducting home site risk assessments and developing area-specific “Response Plans” to include participation by all affected jurisdictions and landowners.</b>	CWPP Goal #2, 4, 6, 8, 9, and 11  Non-Planning Priority: High	<b>Lead:</b> Benton County Fire Service Organizations  <b>Support:</b> Oregon Department of Forestry and landowners	Ongoing

**Table 6.2. Action Items for Fire Prevention, Education, and Mitigation.**

Action Item	Goals Addressed (see page 4)	Responsible Organization	Timeline
6.2.c: Wildfire risk assessments of homes in the wildland-urban interface.	CWPP Goal #1, 2, 4, and 7  Non-Planning Priority: High	<b>Lead:</b> Benton County Fire Service Organizations  <b>Support:</b> Oregon Department of Forestry and volunteers	Ongoing
6.2.d: Implementation of home site defensible space treatments.	CWPP Goal #2, 4, 7, and 9  Non-Planning Priority: Medium	<b>Lead:</b> Landowners, Homeowner’s Associations, and Benton County Fire Service Organizations  <b>Support:</b> Oregon Department of Forestry	Ongoing
6.2.e: Implementation of community defensible zone treatments in rural subdivisions or housing clusters.	CWPP Goal #2, 4, 7, and 9  Non-Planning Priority: Medium	<b>Lead:</b> Landowners, Homeowner’s Associations, and Benton County Fire Service Organizations  <b>Support:</b> Oregon Department of Forestry	Ongoing
6.2.f: Maintenance of home site defensible space.	CWPP Goal #2, 4, 7, and 9  Non-Planning Priority: Medium	<b>Lead:</b> Landowners, Homeowner’s Associations, and Benton County Fire Service Organizations  <b>Support:</b> Oregon Department of Forestry	Ongoing
6.2.g: Work with area homeowner’s associations to foster cooperative approach to fire protection and awareness and identify mitigation needs.	CWPP Goal #2, 4, 6, 7, 9, and 11  Planning Priority: Medium	<b>Lead:</b> Landowners, Homeowner’s Associations, and Benton County Fire Service Organizations  <b>Support:</b> Oregon Department of Forestry, Benton County Emergency Management and Community Development, and OSU Extension	Ongoing
6.2.h: Work with OSU Extension and Master Gardeners to offer Firewise landscaping clinics to assist property owners in maintaining fire-resistant defensible space around structures.	CWPP Goal #4, 6, 9, and 11  Planning Priority: Medium	<b>Lead:</b> OSU Extension and Master Gardeners  <b>Support:</b> Benton County Fire Defense Board	Ongoing
6.2.i: Work with a local recycling center to develop an onsite neighborhood chipping program or drop boxes for large limbs generated by fuels mitigation projects.	CWPP Goal #4 and 9  Planning Priority: Medium	<b>Lead:</b> OSU Extension  <b>Support:</b> Process and Recovery Center and landowners	1 Year

## Infrastructure Enhancements

Critical infrastructure refers to the communications, transportation (road and rail networks), energy transport supply systems (gas and power lines), and water supply that service a region or a surrounding area. All of these components are important to northwest Oregon and to Benton County specifically. These networks are, by definition, a part of the wildland-urban interface in the protection of people, structures, **infrastructure**, and unique ecosystems. Without supporting infrastructure, a community's structures may be protected, but the economy and way of life lost. As such, a variety of components will be considered here in terms of management philosophy, potential policy recommendations, and mitigation recommendations.

Projects in this section are ranked by the CWPP committee through a group discussion and voting process.

**Table 6.3. Action Items for Infrastructure Enhancements.**

Action Item	Goals Addressed (see page 4)	Responsible Organization	Timeline	Estimated Cost
<b>6.3.a: Develop inventory, map, rate, and sign all private bridges countywide. *</b>	<b>CWPP Goal #12</b>  Committee Priority: #1	<b>Lead:</b> Benton County Fire Service Organizations, Benton County GIS, and landowners <b>Support:</b> Benton County Public Works	2 Year	\$25,000
<b>6.3.b: Inventory, map, and sign all potential evacuation routes and procedures countywide and educate the public on use. *</b>	<b>CWPP Goal #3, 6, and 12</b>  Committee Priority: #2	<b>Lead:</b> Benton County Sheriff's Office <b>Support:</b> Benton County CWPP Planning Committee and Benton County Fire Defense Board	Ongoing	\$5,000
<b>6.3.c: Implement a fuels management and reduction program along Bonneville Power Administration power line corridor.</b>	<b>CWPP Goal #2 and 4</b>  Committee Priority: #10	<b>Lead:</b> Bonneville Power Administration <b>Support:</b> Benton County Fire Defense Board	Ongoing	\$25,000 (per year)
<b>6.3.d: Make access improvements to substandard bridges and culverts and limiting road surfaces on public and private rights-of-way not already identified. *</b>	<b>CWPP Goal #2, 5, 6, and 7</b>  Committee Priority: #7	<b>Lead:</b> Landowners, Benton County Public Works, and Oregon Department of Transportation <b>Support:</b> Benton County Fire Defense Board	Ongoing	\$1,000,000
<b>6.3.e: Coordinate with private landowners regarding the use of key boxes on gates to improve emergency response times. *</b>	<b>CWPP Goal #6</b>  Committee Priority: #9	<b>Lead:</b> Fire Service Organizations and landowners	1 Year	\$500 (per year)

**Table 6.3. Action Items for Infrastructure Enhancements.**

Action Item	Goals Addressed (see page 4)	Responsible Organization	Timeline	Estimated Cost
<b>6.3.f: Map, develop GIS database, and provide signage for onsite water sources such as hydrants, underground storage tanks, and drafting or dipping sites on all ownerships across the county. *</b>	<b>CWPP Goal #4, 8, and 12</b>  Committee Priority: #5	<b>Lead:</b> Benton County Fire Defense Board  <b>Support:</b> Benton County Fire Defense Board, Benton County GIS, and landowners	1 Year	\$10,000
<b>6.3.g: Develop wildfire protection-specific management plan, including a fuels reduction program, for the City of Corvallis Watershed and adjacent properties.</b>	<b>CWPP Goal #1, 2, 3, 4, and 12</b>  Committee Priority: #8	<b>Lead:</b> City of Corvallis and landowners  <b>Support:</b> U.S. Forest Service and Oregon Department of Forestry	3 Years	\$20,000
<b>6.3.h: Physically improve the Cardwell Hill emergency evacuation route. *</b>	<b>CWPP Goal #2, 3, and 6</b>  Committee Priority: #6	<b>Lead:</b> Chinook Road Department  <b>Support:</b> Benton County Public Works	Ongoing	\$300,000
<b>6.3.i: Support the development and implementation of an improved water system in Alsea that will meet industry standards as well as sustain wildland fire protection of the community and residences.</b>	<b>CWPP Goal #2, 3, 4, and 12</b>  Committee Priority: #3	<b>Lead:</b> Alsea Emergency Preparedness Council  <b>Support:</b> Town of Alsea and Benton County Public Works	6 Months	\$750,000
<b>6.3.j: Install a pumped hydrant on Wildwood Road, Maxfield Creek Road, and on the downtown Kings Valley mill site. *</b>	<b>CWPP Goal #2, 3, 4, and 12</b>  Committee Priority: #4	<b>Lead:</b> Hoskins-Kings Valley Rural Fire Protection District  <b>Support:</b> Benton County Public Works	6 Months	\$20,000 (each)

**\* Improvements on private land will proceed only with landowner consent.**

### Resource and Capability Enhancements

There are a number of resource and capability enhancements identified by the rural and wildland firefighting districts in Benton County. All of the needs identified by the districts are in line with increasing the ability to respond to emergencies and are fully supported by the Community Wildfire Protection Plan committee.

The implementation of each item will rely on either the isolated efforts of the rural fire districts or a concerted effort by the County Fire Defense Board to achieve equitable enhancements across all of the districts. Given historic trends, individual departments competing against neighboring departments for grant monies and equipment will not necessarily achieve countywide equity. However, the Oregon Department of Forestry may be an organization uniquely suited to work with all of the districts in Benton County and adjacent counties to assist in the prioritization of needs across district and even county lines. Once prioritized, the Benton County Fire Defense Board is in a position to assist these districts with identifying, competing for, and obtaining grants and equipment to meet these needs.

Projects in this section are ranked by the CWPP committee through a group discussion and voting process.

**Table 6.4. Action Items for Resource and Capability Enhancements.**

Action Item	Goals Addressed (see page 4)	Responsible Organization	Timeline	Estimated Cost
<b>6.4.a: Improve mitigation capabilities by developing a more stable funding mechanism for mitigation and education activities outside of the regular operating budget of local fire districts.</b>	CWPP Goal #10  Committee Priority: #9	<b>Lead:</b> Fire Service Organizations <b>Support:</b> Benton County Fire Defense Board	Ongoing	\$5,000 (per year)
<b>6.4.b: Develop additional water resource sites to supplement fire suppression efforts throughout Benton County.</b>	CWPP Goal #2, 4, and 12  Committee Priority: #1	<b>Lead:</b> Benton County Fire Defense Board and landowners <b>Support:</b> Fire Service Organizations	Ongoing	\$15,000 (each)
<b>6.4.c: Improve departmental capability by establishing a program to increase the retention and recruitment of volunteer firefighters.</b>	CWPP Goal #3 and 10  Committee Priority: #3	<b>Lead:</b> Benton County Fire Service Organizations <b>Support:</b> Benton County Fire Defense Board	Ongoing	\$1,000 (per year)
<b>6.4.d: Update personal protective equipment for all fire districts in Benton County.</b>	CWPP Goal #3 and 10  Committee Priority: #4	<b>Lead:</b> Fire Service Organizations <b>Support:</b> Benton County Fire Defense Board	Ongoing	\$15,000 (per district)
<b>6.4.e: Obtain funding for an updated engine and fire hall expansion for the Hoskins-Kings Valley Rural Fire Protection District.</b>	CWPP Goal #10  Committee Priority: #6	<b>Lead:</b> Hoskins-Kings Valley Rural Fire Protection District <b>Support:</b> Benton County Fire Defense Board	Ongoing	\$450,000
<b>6.4.f: Obtain funding for a Type III wildland engine for the Albany Fire Department.</b>	CWPP Goal #10  Committee Priority: #8	<b>Lead:</b> Albany Fire Department <b>Support:</b> Benton County Fire Defense Board	Ongoing	\$250,000
<b>6.4.g: Obtain funding for an updated water tender and structural engine for the Alsea Rural Fire Protection District.</b>	CWPP Goal #10  Committee Priority: #5	<b>Lead:</b> Alsea Rural Fire Protection District <b>Support:</b> Benton County Fire Defense Board	2 Years	\$400,000
<b>6.4.h: Obtain funding for an updated Type 1 engine for the Blodgett-Summit Rural Fire Protection District.</b>	CWPP Goal #10  Committee Priority: #7	<b>Lead:</b> Blodgett-Summit Rural Fire Protection District <b>Support:</b> Benton County Fire Defense Board	2 Years	\$350,000



**Table 6.4. Action Items for Resource and Capability Enhancements.**

Action Item	Goals Addressed (see page 4)	Responsible Organization	Timeline	Estimated Cost
<b>6.4.i: Obtain additional funding for training and necessary training equipment and supplies for all fire districts in Benton County.</b>	CWPP Goal #10  Committee Priority: #2	<b>Lead:</b> Benton County Fire Service Organizations <b>Support:</b> Benton County Fire Defense Board and Oregon Department of Forestry	Ongoing	\$10,000 (per district)
<b>6.4.j: Support a fuel source initiative to support the Hoskins-Kings Valley Rural Fire Protection District efforts due to loss of local fuel supplier.</b>	CWPP Goal #3, 4, and 10  Committee Priority: #10	<b>Lead:</b> Hoskins-Kings Valley Rural Fire Protection District <b>Support:</b> Benton County Public Works	1 Year	\$375,000

### Proposed Project Areas

The following project areas were identified by the CWPP planning committee as having multiple factors contributing to the potential wildfire risk to residents, homes, infrastructure, and the ecosystem. Treatments within the project areas will be site specific, but will likely include homeowner education, creation of a wildfire defensible space around structures, fuels reduction, and access corridor improvements. All work on private property will be performed with consent of, and in cooperation with the property owners. Specific site conditions may call for other types of fuels reduction and fire mitigation techniques as well. Defensible space projects may include, but are not limited to commercial or precommercial thinning, pruning, brush removal, chipping, prescribed burning, installation of greenbelts or shaded fuel breaks, and general forest health improvements.

**Table 6.5. Proposed Project Areas.**

Strategic Planning Area	Project Name	Project Type	# of Acres	# of Structures	Miles of Road	Priority Ranking
1	Vineyard Mountain-Lewisburg Area	Improve Structural Defensible Space, Install Additional Turnouts and/or Widen Access Roads, Improve Access Road Connectivity	5,903	2554	47.1	1
1	Deer Run-Live Oak Roads	Improve Access Road Connectivity	153	50	1.3	2
1	Skyline West	Widen Access Roads, Improve Access Road Connectivity, Extension of Municipal Water System	283	220	2.9	3
1	Arboretum	Improve Structural Defensible Space, Install Additional Turnouts and/or Widen Access Roads, Improve Access Road Connectivity	160	93	1.9	4
1	North Albany #1	Improve Structural Defensible Space, Install Additional Turnouts and/or Widen Access Roads, Improve Access Road Connectivity	152	98	2.5	5

**Table 6.5. Proposed Project Areas.**

Strategic Planning Area	Project Name	Project Type	# of Acres	# of Structures	Miles of Road	Priority Ranking
1	North Albany #2	Improve Structural Defensible Space, Install Additional Turnouts and/or Widen Access Roads, Improve Access Road Connectivity	143	77	2.8	6
1	North Albany #3	Improve Structural Defensible Space, Install Additional Turnouts and/or Widen Access Roads, Improve Access Road Connectivity	290	225	1.2	7
1	North Albany #4	Improve Structural Defensible Space, Install Additional Turnouts and/or Widen Access Roads, Improve Access Road Connectivity	653	357	5.6	8
2	Monroe	Improve Structural Defensible Space, Install Additional Turnouts and/or Widen Access Roads, Improve Access Road Connectivity	791	371	6.6	1
3	Cardwell Hill - Oak Creek	Improve Structural Defensible Space, Install Additional Turnouts and/or Widen Access Roads, Improve Access Road Connectivity, Improve Substandard Bridges	1,714	575	16.6	1
3	Soap Creek	Improve Structural Defensible Space, Install Additional Turnouts and/or Widen Access Roads, Improve Access Road Connectivity, Improve Substandard Bridges	2,457	250	11.6	2
3	Marys River Estates	Install Additional Turnouts and/or Turnaround Areas, Conduct Fuels Reduction Treatments	983	191	6.2	3
3	Wren	Install Additional Turnouts and/or Widen Access Roads, Improve Access Road Connectivity, Improve Substandard Bridges	2,100	284	10.4	4
3	Trillium	Improve Structural Defensible Space, Install Additional Turnouts and/or Widen Access Roads, Improve Access Road Connectivity	393	60	3.1	5
3	Coffin Butte	Improve Structural Defensible Space, Install Additional Turnouts and/or Widen Access Roads, Improve Access Road Connectivity	320	34	1.1	6
4	Pioneer Village	Improve Structural Defensible Space, Install Additional Turnouts and/or Widen Access Roads, Improve Access Road Connectivity, Reduce Structural Ignitability Factors	241	66	3.1	1

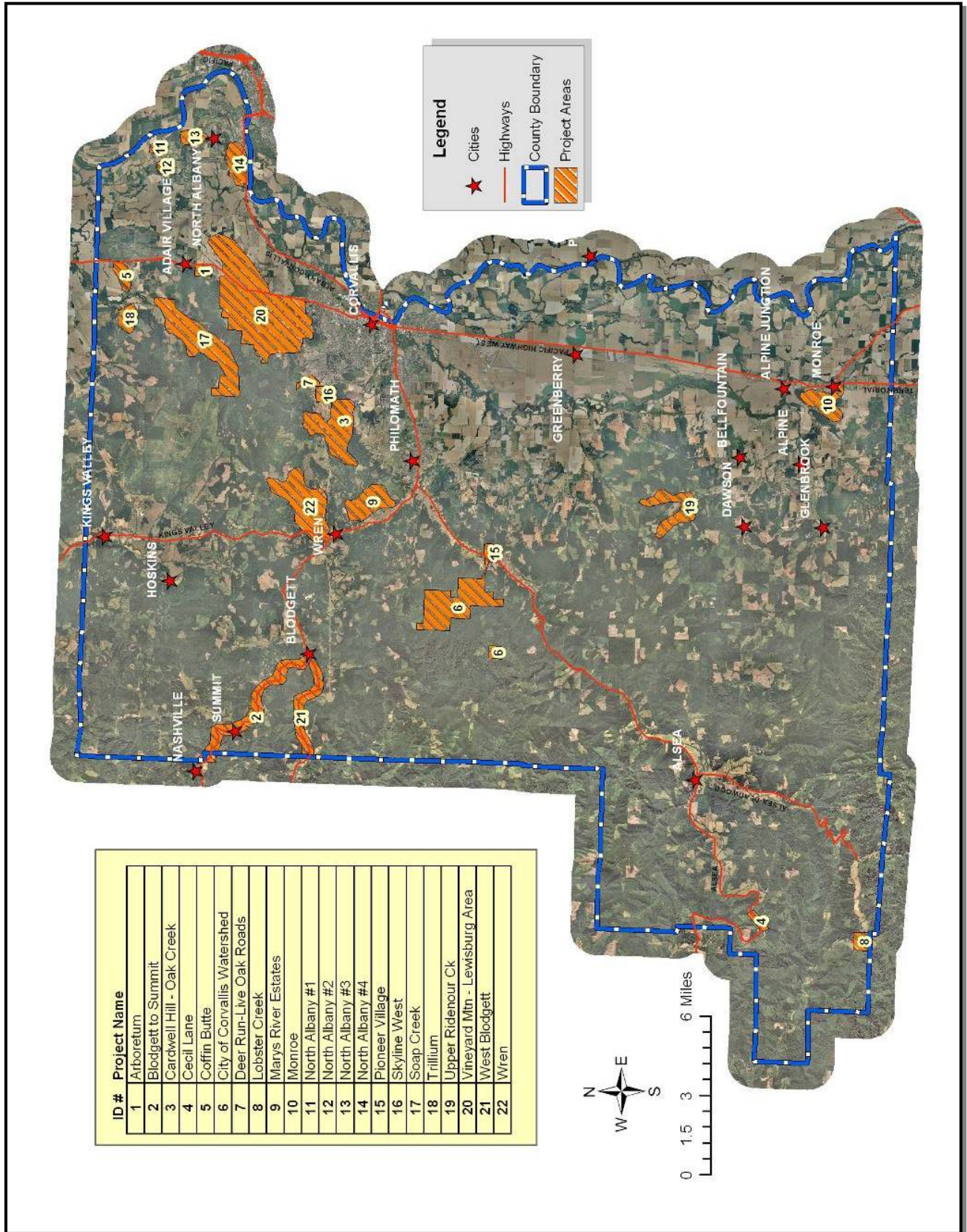
**Table 6.5. Proposed Project Areas.**

Strategic Planning Area	Project Name	Project Type	# of Acres	# of Structures	Miles of Road	Priority Ranking
4	Blodgett to Summit	Improve Structural Defensible Space, Install Additional Turnouts and/or Widen Access Roads, Improve Substandard Bridges	1,688	137	7.6	2
4	Corvallis Watershed	Hazardous Fuels Reduction and Forest Health Improvement	2,354	10	1.2	3
4	West Blodgett	Improve Structural Defensible Space, Install Additional Turnouts and/or Widen Access Roads, Improve Substandard Bridges	1,023	72	7.5	4
4	Upper Ridenour Creek	Improve Access Road Connectivity	1,013	37	4.6	5
5	Cecil Lane	Widen Access Road, Roadside Fuels Treatments, Install Additional Turnouts and/or Turnarounds	179	22	1.6	1
5	Lobster Creek	Bridge Replacement	283	3	7.6	2

The Oregon Department of Forestry, U.S. Fish and Wildlife Service, Bureau of Land Management, Siuslaw National Forest, and/or individual fire protection districts may take the lead on implementation of many of these projects; however, project boundaries were purposely drawn without regard to land ownership in order to capture the full breadth of the potential wildland fire risk. Coordination and participation by numerous landowners will be required for the successful implementation of the identified projects.

The top projects in each SPA were given a priority ranking based on the recommendations of committee members.

Figure 6.1. Map of Proposed Projects





## Benton County Public Works Access Improvement Projects

The following access improvement project areas were identified by Benton County Public Works as providing secondary emergency access into residential areas that have limited connectivity.

Benton County Public Works may take the lead on implementation of many of these projects; however, coordination with individual fire protection or road districts and in some cases private parties would be an integral part of project completion. Many of these projects have been described in the County Transportation Plan (an element of the Comprehensive Plan) for many years, and have been included in the plans of specific developments as they have occurred.

The estimated project cost was calculated by assuming an average installation cost of \*\$150 per lineal foot. The physical improvements are for a 20 foot wide gravel road that is capable of supporting passenger and fire apparatus traffic. The projects vary in terms of physical improvements and Right-of-Way or easements already in place. Several of these connectors are shown in existing public Rights-of-Way. Those that cross private property would require the county to work with private property owners to acquire Rights-of-Way and establish acceptable alignments..

Projects where physical access does not exist into areas with only one connection were given the highest priority. It is anticipated that many of these projects would be phased.

☀ **Phase 1** - Easement or Right-of-Way acquisition and full earthwork with a 10 foot lane to allow one way traffic

☀ **Phase 2** - Once most connections are made, create the full 20 foot two-way surface.

It is also possible that development along some of these routes would trigger improvements in a different order than ranked.

**Table 6.6. Benton County Public Works' Access Improvement Projects.**

Road Name	Start Point	End Point	Current Owner	Existing Right-of-Way	Length (feet)	Cost	Priority Ranking
Dawnwood Drive	Dawnwood	Panorama	Private	No	6,436	\$965,389	1
Mitchell Drive	Waneta	Mitchell	County ROW, Private	Partial	932	\$139,780	2
Ponderosa	Ponderosa	Oak Creek	OSU	No	3,514	\$527,096	3
Tansy Extension	Tansy	Garrett	County ROW, Private	Partial	607	\$91,092	4
Deer Run	Deer Run	Live Oak	County ROW, Private	Partial	647	\$97,001	5
Starr Creek Road	Starr Creek	Hells Canyon Road	County	Yes	4,254	\$638,127	6
Fair Oaks Drive	Fair Oaks	Walnut	Private	No	2,070	\$310,521	7

\* Costs are based on local experience installing equivalent structures in 2008.

**Table 6.6. Benton County Public Works’ Access Improvement Projects.**

Road Name	Start Point	End Point	Current Owner	Existing Right-of-Way	Length (feet)	Cost	Priority Ranking
Northwest Cardwell Hill Drive	Cardwell East	Cardwell West	County	Yes	14,296	\$2,144,369	8
Airport Avenue	Airport	Greasy Creek	County	Yes	9,617	\$1,442,491	9
Cardwell-Panorama Connector	Cardwell	Panorama	County	Yes	5,160	\$774,056	10
Panorama Extension	Panorama	Dawnwood	County	Yes	2,058	\$308,673	11
Heritage Hills Road	9th	Panorama	Private	No	11,494	\$1,724,051	12

A map of the Benton County Public Works’ proposed access improvement projects is included in Appendix 1.

### **Benton County Natural Areas and Parks**

The Benton County Natural Areas and Parks Department has used prescribed burns to help restore and maintain native habitats, reduce fuel loads and offer training opportunities for fire crews and departmental staff since around 2000. As a general rule, departmental staff, in conjunction with the Oregon Department of Forestry and local fire districts, carries out prescribed burns on a four year rotation. Prescribed burns have taken place within Fort Hoskins Park, Fitton Green Park and the Jackson-Frazier Wetland. The department remains open to the prospect of using fire as a management tool in appropriate circumstances and conditions within any Natural Area or Park under county management.

The department also regularly engages in other habitat management and restoration activities such as; invasive species control, removal of encroaching Douglas-fir from meadows and prairies, and thinning of overstory which provide the additional benefit of wildfire protection. The Beazell Stewardship Management Plan, Fitton Green Management Plan, Fort Hoskins Management Plan, and the Jackson-Frazier Wetland Management Plan have been developed to guide the department’s strategy for management in these specific areas. These plans seek in varying degrees to incorporate fire protection and habitat management activities on a site specific basis.

### **Regional Land Management Recommendations**

Wildfires will continue to ignite and burn depending on the weather conditions and other factors enumerated earlier. However, active land management that modifies fuels, promotes healthy forestland conditions, and promotes the use of natural resources (consumptive and non-consumptive) will insure that these lands have value to society and the local region. The Oregon Department of Forestry, U.S. Fish and Wildlife Service, U.S. Forest Service, and industrial forestland owners, private forestland owners, and all agricultural landowners in the region should be encouraged to actively manage their wildland-urban interface lands in a manner consistent with reducing fuels and risks in this zone.



The following sections help identify were some of the land management agencies in Benton County have planned, current, or proposed fuel reduction projects. Where possible, these projects have also been mapped and are presented in Appendix I. Knowing where agency projects are located can help other agencies prioritize their own fuels reduction projects. Simultaneous fuels reduction projects occurring on adjacent properties is not only encouraged, but this can also help cut down on costs.

### Oregon Department of Forestry – West Oregon District

There are no planned fuels reduction activities on ODF managed forestlands, primarily due to the lack of adjacency to developed areas. ODF will be involved with coordination and implementation of other forest fuel reduction where appropriate.

### U.S. Forest Service – Siuslaw National Forest

Most of the Siuslaw National Forest’s upcoming project areas in Benton County are associated with commercial thinning of plantations. A few project areas have also been identified to receive underburning and/or meadow burning as fuels reduction treatments. Slash from logging operations is typically treated via pile burning either at the landings or along key roads.

**[This page intentionally left blank.]**

# Chapter 7

## Supporting Information

### List of Tables

Table 2.1. Tabulation of Homes with Firefighting Tools Available.....	18
Table 2.2. Fuel Hazard Rating Worksheet.....	19
Table 2.3. Tabulation of Homeowner Assessed Risk.....	19
Table 2.4. Public Opinion of Hazard Mitigation Funding Options.....	20
Table 3.1. Benton County Population Data.....	24
Table 3.2. Benton County Historical Population Data.....	24
Table 3.3. Ownership Categories in Benton County.....	25
Table 3.4. Vegetative Cover Types in Benton County.....	26
Table 4.1. Summary of ignitions in Benton County from ODF database 1988-2007.....	33
Table 4.2. National Fire Season Summaries.....	35
Table 4.3. Total Fires and Acres 1960 - 2004 Nationally.....	35
Table 4.4. Assessment of Historic Fire Regimes in Benton County.....	38
Table 4.5. Assessment of Current Condition Class in Benton County.....	39
Table 4.6. Relative Fire Risk Assessment for Benton County.....	40
Table 6.1. Action Items in Safety and Policy.....	90
Table 6.2. Action Items for Fire Prevention, Education, and Mitigation.....	92
Table 6.3. Action Items for Infrastructure Enhancements.....	94
Table 6.4. Action Items for Resource and Capability Enhancements.....	96
Table 6.5. Proposed Project Areas.....	97
Table 6.6. Benton County Public Works' Access Improvement Projects.....	101


## List of Figures

Figure 2.1. Press Release sent on July 15 <sup>th</sup> , 2008. ....	16
Figure 2.2. Public Meeting Flyer. ....	21
Figure 4.1. Wildfire Ignitions within ODF Protection Area 1988-2007. ....	34
Figure 4.2. Acres burned in ODF Protection Areas 1988-2007.....	37
Figure 4.3. Distribution of Relative Fire Risk in Benton County. ....	40
Figure 4.4. Wildland-Urban Interface Map in Benton County, Oregon. ....	44
Figure 6.1. Map of Proposed Projects .....	100

## Signature Pages

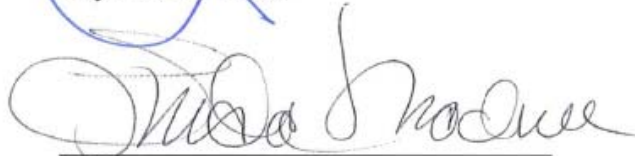
This Benton County Community Wildfire Protection Plan has been developed in cooperation and collaboration with representatives of the following organizations and agencies.

### Benton County Board of Commissioners



---

Jay Dixon, Chair



---

Linda Modrell, Commissioner



---

Annabelle Jaramillo, Commissioner

## Signatures of Participation by Benton County Fire Districts and Departments

This Community Wildfire Protection Plan and all of its components identified herein were developed in close cooperation with the participating entities listed.



By: Chuck Harris, Chief  
Adair Rural Fire Protection District

6-18-09

Date



By: George Foster, Chief  
Alsea Rural Fire Protection District

6-18-09

Date



By: John Bradner, Chief  
Albany Fire Department

6-22-09

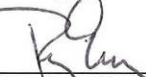
Date



By: Ed Young, Chief  
Blodgett/Summit Rural Fire Protection District

7-8-09

Date



By: Roy Emery, Chief  
City of Corvallis Fire Department &  
Corvallis Rural Fire Protection District

6-30-09

Date



By: Dave Evans, Chief  
Hoskins/Kings Valley Rural Fire Protection District

7-15-09

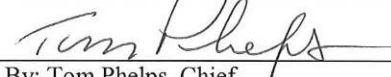
Date



By: Rick Smith, Chief  
Monroe Rural Fire Protection District

6-16-09

Date



By: Tom Phelps, Chief  
Philomath Fire and Rescue

6-26-09

Date



### Signatures of Participation by other Benton County Entities

This Community Wildfire Protection Plan and all of its components identified herein were developed in close cooperation with the participating entities listed.

 By: Mike Totey, District Forester Oregon Department of Forestry	<u>7/17/2009</u> Date
 By: Rick Smith, Chair Benton County Fire Defense Board	<u>6-16-09</u> Date
 By: Nancy Ashlock, Fire Staff Siuslaw National Forest	<u>7-21-2009</u> Date
 By: Steve Smith U.S. Fish and Wildlife Service	<u>7-22-09</u> Date
 By: Mary King Benton County Sheriff's Office, Emergency Services	<u>6/16/09</u> Date
 By: Randy Hereford Starker Forests	<u>7/16/08</u> Date
 By: Rick Fletcher Benton County Extension	<u>6/16/09</u> Date
 By: Tera R. King, Project Co-Manager Northwest Management, Inc.	<u>June 16, 2009</u> Date

## Literature Cited

- Agee, J.K. 1993. Fire ecology of the Pacific Northwest forests. Oregon: Island Press.
- Agee, J.K. 1998. The Landscape Ecology of Western Forest Fire Regimes. Northwest Science, Vol. 72, Special Issue 1998.
- Benton County. 2007. Benton County Comprehensive Plan. Benton County Community Development Department. Corvallis, Oregon.
- Benton County. Benton County Comprehensive Plan. Volume II – Comprehensive Framework for the Urban Area.
- Benton County. Benton County Website. Available online at [www.co.washington.or.us](http://www.co.washington.or.us) .
- Brown, J.K. 1995. Fire regimes and their relevance to ecosystem management. Pages 171-178 *In* Proceedings of Society of American Foresters National Convention, Sept. 18-22, 1994, Anchorage, AK. Society of American Foresters, Wash. DC.
- City of Portland. Forested and Wildland Interface Areas Fire Protection Annex – Draft. March 12, 2007.
- Dillman, D.A. 1978. Mail and Telephone Surveys: The Total Design Method. Hoboken: John Wiley & Sons, Incorporated. 344 p.
- Ferguson, Scott. Corvallis Forest Stewardship Plan. Trout Mountain Forestry. Portland, Oregon. December 2006. 119 p.
- Gagliasso, Donald. Community Wildfire Protection Plan for Vineyard Mountain. Forest Restoration Partnership. Philomath, Oregon. August 2007. 41p.
- General Accountability Office. Technology Assessment – “Protecting Structures and Improving Communications during Wildland Fires”. GAO-05-380. April 2005.
- Goettel Kenneth A. 2006. Multi-Hazard Mitigation Plan for Benton County, Oregon. Goettel & Associates, Inc. Davis, California.
- Hann, W.J., Bunnell, D.L. 2001. Fire and land management planning and implementation across multiple scales. *Int. J. Wildland Fire*. 10:389-403.
- Hardy, C.C., Schmidt, K.M., Menakis, J.M., Samson, N.R. 2001. Spatial data for national fire planning and fuel management. *International Journal of Wildland Fire* 10:353-372.
- Headwaters Economics. 2007. Home Development on Fire Prone Lands – West-Wide Summary. Headwaters Economics. Bozeman, Montana. Available online at <http://www.headwaterseconomics.org/wildfire/index.php#top>.
- Lane Council of Governments. 2006. Southern Willamette Valley Groundwater Management Area Action Plan. Southern Willamette Valley Groundwater Management Area Committee. Oregon Department of Environmental Quality. December 2006.
- Louks, B. 2001. Air Quality PM 10 Air Quality Monitoring Point Source Emissions; Point site locations of DEQ/EPA air monitoring locations with monitoring type and pollutant. Oregon Department of Environmental Quality. Feb. 2001. As GIS Data set. Boise, Id.
- McCoy, L., K. Close, J. Dunchrack, S. Husari, and B. Jackson. 2001. May 6 –24, 2001. Cerro Grande Fire Behavior Narrative.

- National Interagency Fire Center. 2008. Available online at <http://www.nifc.gov/>.
- Norton, P. 2002. Bear Valley National Wildlife Refuge Fire Hazard Reduction Project: Final Environmental Assessment, June 20, 2002. Fish and Wildlife Service, Bear Valley National Wildlife Refuge.
- Oregon Department of Forestry. Backgrounder – Protecting forest from fire. January 2007.
- Oregon Department of Forestry. Oregon Department of Forestry Website. Available online at <http://egov.oregon.gov/ODF/index.shtml> . Accessed March 2007.
- Oregon State Fire Marshal. Fire Protection Standards – Guidelines for the Application of Oregon’s Fire & Life Safety Regulations within Linn and Benton Counties. Draft 2008.
- Schmidt, K.M., Menakis, J.P. Hardy, C.C., Hann, W.J., Bunnell, D.L. 2002. Development of coarse-scale spatial data for wildland fire and fuel management. General Technical Report, RMRS-GTR-87, U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fort Collins, CO.
- USDA-Forest Service (United States Department of Agriculture, Forest Service). 2000. Incorporating Air Quality Effects of Wildland Fire Management into Forest Plan Revisions – A Desk Guide. April 2000. – Draft
- Wildland Fire Leadership Council 2006. A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment: 10-Year Strategy Implementation Plan. Available online at [http://www.forestsandangelands.gov/plan/documents/10-YearStrategyFinal\\_Dec2006.pdf](http://www.forestsandangelands.gov/plan/documents/10-YearStrategyFinal_Dec2006.pdf). Accessed November 2008.

This plan was developed by Northwest Management, Inc. under contract with Benton County. Funding for the project was provided by the Board of County Commissioners for Benton County from the Secure Rural Schools and Community Self-Determination Act of 2000, Title III program.

**Citation of this work:**

King, Tera R. and V. Bloch. *Lead Authors*. Benton County, Oregon, Community Wildfire Protection Plan. Northwest Management, Inc., Moscow, Idaho. 2009. Pp 112.

King, Tera R. and V. Bloch. *Lead Authors*. Benton County, Oregon, Community Wildfire Protection Plan Appendices. Northwest Management, Inc., Moscow, Idaho. 2009. Pp 73.



**Northwest Management, Inc.**  
233 East Palouse River Drive  
PO Box 9748  
Moscow ID 83843

208-883-4488 Telephone  
208-883-1098 Fax  
[NWManage@consulting-foresters.com](mailto:NWManage@consulting-foresters.com)  
<http://www.Consulting-Foresters.com/>