



**Walker Range
Community Wildfire Protection Plan**

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A project of:
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An electronic version of this document is available at
www.odf.state.or.us/AREAS/eastern/walkerrange.

Walker Range Community Wildfire Protection Plan

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Walker Range Community Wildfire Protection Plan

Executive Summary

Purpose

Wildland fire is a natural part of the ecosystems of central Oregon. It has shaped the forests and rangelands valued by the area's residents and visitors. However, the forests and rangelands in Walker Range have been significantly altered. The area's forests are a mosaic of private, public, and industrial forestland. Decades of logging, grazing, and fire suppression have increased forest fuels, in some cases resulting in more closed, thicker forests that tend to burn more intensely than in the past. Much of the private industrial timberlands, however, tend to be more open due to past harvests. In addition, recent population growth has led to more residential development close to the forests, in what is called the wildland urban interface (WUI). To address these issues, a multi-jurisdictional group of agencies, organizations, and individuals have collaborated to develop the Walker Range Community Wildfire Protection Plan (CWPP).

The purpose of the Walker Range CWPP is to protect human life and reduce property loss due to wildland fire in the communities and surrounding areas of the Crescent, Crescent-Odell Lakes, Chemult, and Oregon Outback Rural Fire Protection Districts and the Walker Range Forest Protective Association. Although reducing the threat of wildland fire is the primary motivation behind this plan, managing the forests and rangelands for hazardous fuel reduction and fire resilience is only one part of the larger picture. Residents and visitors alike want healthy, fire-resilient forests that provide habitat for wildlife, recreation opportunities, and scenic beauty.

The plan outlines a strategy, identifies priorities for action, and suggests immediate steps that can be taken to protect the communities from wildland fire while simultaneously protecting other important social and ecological values.

The goals of the Walker Range CWPP are to:

- Increase public understanding of living in a fire-adapted ecosystem
- Instill a sense of personal responsibility for taking preventative actions regarding wildland fire
- Restore fire-adapted ecosystems
- Improve the landscape's fire resilience while protecting other social and ecological values
-

To achieve these goals, the plan contains several objectives, including:

- Assess the risk and hazard of wildland fire on all lands within the plan boundary
- Identify priorities for fuel reduction projects
- Examine emergency operations within the plan area and identify areas to improve community response and preparedness for wildland fire
- Create an action plan that prioritizes actions to reduce hazardous fuels, enhance emergency response, and strengthen public education and prevention activities

The Walker Range CWPP integrates information from a variety of sources to present a comprehensive picture of risk and possible treatments on the landscape and enable community organizations and their partners to act in a coordinated fashion. A completed plan also allows the adjacent federal land management agencies to make use of the recent expedited authorities provided by the Healthy Forest Initiative (HFI) and the Healthy Forest Restoration Act (HRFA). In addition, for communities seeking federal grant funding from the National Fire Plan, a completed community wildfire protection plan has become a *de facto* requirement. Lastly, developing a community wildfire protection plan is a powerful tool to help get local residents and visitors involved in fire protection efforts.

Planning Area Boundaries

The Walker Range CWPP is multi-jurisdictional and addresses all lands and all ownerships within the boundaries of the plan area. It includes the following communities:

- Odell Lake Summer Homes
- Crescent Lake Summer Homes
- Crescent Lake Junction
- Oregon Outback
- Schoonover and vicinity
- Crescent/Gilchrist
- Hwy 97 West
- Two Rivers/Little Deschutes River

The Walker Range plan area contains the Walker Range Forest Protective Association and the following five rural fire protection districts:

- Chemult Rural Fire Protection District
- Crescent Rural Fire Protection District
- Crescent-Odell Lakes Rural Fire Protection District
- LaPine Rural Fire Protection District
- Oregon Outback Rural Fire Protection District

Geography and the Environment

Walker Range is located in central Oregon, in northern Klamath County, on the east side of the Cascade Mountains. The community fire protection plan boundary parallels the boundary of the Walker Range Forest Protective Association and lies within the larger area of the eastern Cascade slopes and foothills.

The plan area contains several vegetative ecosystems: the high desert dominated by western juniper, sage brush, and grasses in the east, and a transition from open dry-site ponderosa pine

and lodgepole pine to mixed conifer to a sub-alpine mix of tree species near the crest of the Cascades in the west. The vegetation is adapted to the prevailing dry, continental climate and is highly susceptible to wildland fire.

Wildland Fire Risk Assessment

The CWPP steering committee undertook a wildland fire assessment to gauge the relative risk and hazard due to wildland fire for the lands and communities within the planning area. It is a tool to direct implementation of wildfire mitigation activities to the highest priority areas and promote cross-boundary coordination. The assessment:

- 1) Assessed risk, hazard, fire protection capability, structural vulnerability, and values to be protected
- 2) Identified and ranked “communities at risk” within the plan area. These community rankings identified the priority areas for fuel reduction activities and other mitigation projects within the plan area.
- 3) Identified the wildland urban interface (WUI) across the plan area

The Walker Range CWPP used the risk assessment methodology from the National Association of State Forester and the Oregon Department of Forestry. The assessment considers five categories in determining the relative severity of fire risk:

- **Risk**– the likelihood of a fire occurring (based on past occurrences of human and lightning caused fires)
- **Hazard**– the conditions that hinder control of a wildland fire once it starts (fuels, slope, aspect, elevation and weather)
- **Values**– the people, property, natural resources, and other resources that could be lost in a wildland fire event
- **Structural Vulnerability**– the elements of a structure (roof type and building materials, access to the structure, and existing defensible space or fuels reduction around the structure) that affect its likelihood of burning
- **Protection Capability**– the ability to mitigate losses and prepare for, respond to, and suppress wildland and structural fires

Wildland Fire Assessment Findings

Risk

The map shows that large numbers of fires are most heavily concentrated in and around the populated areas (ex. Crescent Lake Junction and Crescent/Gilchrist). Moreover, with the added risk from higher structural densities, these areas are at an even higher risk.

Hazard

The areas of highest hazard are located around the Odell Lake, Crescent Lake, and Crescent Lake Junction community clusters. In addition, the Schoonover and vicinity cluster contains many medium-to-high hazard level areas. Most of the communities/subdivisions themselves

are at medium to high hazard, while the surrounding lands are often lower hazard. The clusters of Hwy 97 West, Oregon Outback, Two Rivers/Little Deschutes River, and Crescent/Gilchrist contain a number of lower hazard areas outside of the subdivisions.

Values Protected

Most of the highest risk areas for Values Protected layer are a result of high structural density areas within the at-risk communities. Clusters containing a number of high-risk areas include: Crescent Lake Junction, Crescent/Gilchrist, Hwy 97 West, and Oregon Outback.

Structural Vulnerability

Balducci Acres (in the Crescent Lake Junction cluster) is the only subdivision/community rated as extreme for structural vulnerability. All of the other clusters contain at least one area that rates as medium. Areas outside of the at-risk communities were not evaluated but are addressed in the action plan for structural vulnerability.

Protection Capability

This map provides a simplistic display of the fire protection capacity of local rural fire protection districts by community cluster. The local fire professionals rated each cluster based on fire response times and community preparedness. Based on these criteria, the clusters of Crescent Lake Junction, Crescent Lake Summer Homes, and Odell Lake Summer Homes show the lowest protection capability while the Crescent/Gilchrist and Hwy 97 West cluster have the highest. A lower level of protection capability (and longer response times) translates to higher risk for the communities.

Assessment Summary

The assessment summary map shows a combination of the five landscape layers of the assessment (risk, hazard, values protected, structural vulnerability, and protection capability). The at-risk communities in each cluster emerge as the areas with the highest risk and hazard, due to the high density of structures and the structural vulnerability ratings. However, Odell Lake Summer Homes, Crescent Lake Summer Homes, and Crescent Lake Junction are the clusters that have the highest total risk values for land *directly surrounding* the subdivisions and communities within the 1½-mile buffer. While the other clusters contain subdivisions and communities with areas of extreme risk, most of the adjacent lands are classified at a risk of medium or below. The tables below provide a ranking for each at-risk community and its surrounding 1½-mile buffer.

Assessment Community Rankings

Community Name	Average Score
Odell Lake Summer Homes	229
Crescent Lake Summer Homes	227
Crescent Lake Junction	201
Two Rivers	195
Schoonover and vicinity	183
Hwy 97 West	176
Oregon Outback	169
Crescent/Gilchrist	164

Assessment 1½ Mile Community Buffer Rankings

Community Name	Average Score
Crescent Lake Junction Buffer	114
Odell Lake Summer Homes Buffer	111
Crescent Lake Summer Homes Buffer	105
Schoonover and vicinity Buffer	93
Oregon Outback Buffer	83
Hwy 97 West Buffer	80
Two Rivers Buffer	73
Crescent/Gilchrist Buffer	73

Action Plan Goals and Objectives

Using the risk assessment as a guide, the CWPP steering committee developed goals and objectives in a number of key areas.

Hazardous Fuel Reduction Goals

Community Cluster	Recommended Hazardous Fuel Reduction Actions
Crescent Lake Summer Homes	Intense treatment around structures
	Improve defensible space, widen driveways
	Improve evacuation routes
	Reduce crown bulk density, decrease likelihood of crown fire
Crescent/Gilchrist	Develop defensible space
	Control bitterbrush on Cascade Timberland
	Maintenance schedule for all ownerships, revisit plan in five years
Crescent Lake Junction	Work on evacuation and escape routes
	Complete all planned fuel reduction treatments on federal lands
	Meet or exceed SB 360 standards around residences and structures
Hwy 97 West	Treat vegetation on roadsides of Michaels Rd
	Build access to river in Little River Ranch for firefighting
	500 ft buffer on east side of Wagon Trail Ranch (WTR) and Stagecoach
	Intensive treatment on BLM blocks and west side of river
	Improve evacuation routes for River Pine Estate (treat and maintain vegetation and sign the route)
	Treat west side of Little River Pines and Wildwood (Cascade)

Community Cluster	Recommended Hazardous Fuel Reduction Actions
	Maintain Cascade Timberland surface fuel at low levels Treat common lands and vacant lots in Wagon Trail Ranch. Put in hiking trail and fire break Work with homeowners to develop defensible space
Odell Lake Summer Homes	Treat Forest Service land up to wilderness boundary Add or improve evacuation routes
Oregon Outback	Treat evacuation routes out of Forest Meadows to Split Rail, and on Michael Rd Expand existing THAW treatment buffers to 1500 feet Treat west of railroad tracks and east of Old Howard, north side of Sun Forest and Hwy 31 Develop defensible space on private property around residences in interior of the subdivision Protect future home of fire station on Beale Rd. Proposed treatment: homeowners and Cascade
Schoonover and vicinity	Treat roadsides – widen and add better signs, control brush Improve proposed evacuation routes, provide signage Complete Forest Service planned treatments Meet or exceed Senate Bill 360 standards around residences and structures
Two Rivers/Little Deschutes	Put proposed evacuation route on west side of gates Decrease vegetation on either side of evacuation routes Treat southwest corner, use pre-commercial thinning (PCT) Treat east side with PCT

Hazardous Fuel Reduction Private Residential Land Goals

- Protect the safety of people, property, and natural resources from wildland fire
- Increase the ability to suppress a wildland fire in the wildland urban interface by treating hazardous fuels
- Protect and restore watersheds
- Meet landowners’ objectives for forest health and restoration
- Maintain a balance of hazardous fuel reduction, aesthetics, wildlife habitat, and property values
- Priority areas for hazardous fuel reduction treatments in the wildland urban interface include:
 - Defensible space around homes and structures
 - Emergency escape routes
 - Roadside fuel reduction treatments along main transportation corridors
- Meet or exceed the standards set by Senate Bill 360
 - Establish a fuel break around structures
 - Create fuel breaks along roadsides and property lines
 - Improve driveway access for fire trucks
 - Remove tree branches near chimneys and dead branches overhanging roofs

- Move firewood away from structures or cover it
- Remove flammables from under decks and stairways¹

Hazardous Fuel Reduction Private Forest Land Goals

- Focus treatments around developed home sites and access routes
- Treat fuels adjacent to subdivisions and communities identified as high priority in the wildland fire assessment
- Decrease the risk of uncharacteristic wildland fire behavior by decreasing hazardous fuels to create flame lengths less than four feet
- Treat dense seedlings, saplings and pole stands and contiguous bush to a condition that can be maintained by mechanical means in treatment buffers adjacent to identified communities at risk
- Continue to meet existing standards for multiple objectives (Oregon Forest Practices Act and federal requirements under grant payments)
- Protect adjacent properties and resources from a wildland fire that originates on private forestland
- Meet landowner's objectives for forest health and restoration

Hazardous Fuel Reduction Federal Land Priority Goals

- Focus hazardous fuel reduction treatments in the wildland urban interface around communities identified as high risk by the wildland fire assessment.
- Reduce hazardous fuels with the goal of achieving Condition Class 1 while protecting and enhancing key ecological and social values associated with the areas.
 - Establish maintenance program to address future fuel build-up
 - Address on a landscape, not acre by acre
- Decrease the risk of uncharacteristic wildland fire behavior by reducing hazardous fuels in order to achieve flame lengths less than four feet
 - Reduce crown fire potential
- Continue to meet existing standards for multiple objectives (Wild and Scenic Rivers, Endangered Species Act, National Environmental Policy Act, etc.)
- Protect private property, tribal property, and natural resources
- Protect and restore watersheds
-

Fire Protection Capacity Goals

The primary goal of fire protection capacity is to improve communities' ability to prepare for and respond to wildland fire events. Much of the effort to develop the goals and actions regarding community fire protection capacity was completed by the Fire Protection Capacity Working Group. The working group developed the following broad goals:

¹ Oregon Forestland-Urban Interface Fire Protection Act, *Property Evaluation and Self-Certification Guide for Deschutes County*, August 2004.

- Improve and expand ability to deliver water for fire suppression
- Improve and maintain communication between all jurisdictions
- Improve the ability of the rural fire protection districts to respond to wildland and structural fires
- Improve emergency access routes
- Improve residential and street signage
- Encourage compliance with state and local fire codes (e.g. SB360 and Klamath County Article 69)

Education

- Increase homeowner responsibility
 - Increase level of compliance with SB 360 and Klamath County Article 69
 - Increase responsibility for treating vacant lots
 - Improve home addressing, evacuation route signage
 - Increase local and visitors' understanding of living with wildland fire
 - Increase and enhance existing education programs
- Improve web page
 - Post CWPP plan on the web
 - Get information to local builders/zoning officials
- Keep working with education cooperatives
 - Provide education kits for local rural fire protection districts
 - Educate people about noxious weeds and how to address them
 - Recognize need for long-term maintenance
- Distribute the Defensible Space Checklist at appropriate opportunities (see Appendix D)

Structural Vulnerability

- Increase the fire-safe characteristics of structures within the plan area
- Increase the likelihood of communities and structures surviving a wildland fire
- Meet or exceed the standards set for Senate Bill 360 and Klamath County Article 69
 - Establish a fuel break around structures
 - Create fuel breaks along roadsides and property lines
 - Improve driveway access for fire trucks
 - Remove tree branches near chimneys and dead branches overhanging roofs
 - Move firewood away from structures or cover it
 - Remove flammables from under decks and stairways

- Implement neighborhood recognition award for property owners who comply with SB360 and Article 69

Social and Ecological Values to be Protected

- Protect life and property while maintaining and enhancing the communities' sense of place
- Protect the areas and locations that are important to the community and visitors historic, cultural, ecological, and economic values
- Meet existing federal and state standards for natural resource protection
-

Biomass Utilization

- Support increased local and regional manufacturing capacity to utilize and add economic value to woody biomass
- Support the implementation of the Coordinated Resource Offering Protocol (CROP) in Central Oregon
- Support the development and implementation of the Business Alliance for Sustainable Energy (BASE)

Implementation

- Evaluate progress toward meeting goals
- Set priorities
- Update goals and maps
- Review grant opportunities

Table of Contents

Chapter

1: Introduction	1
Why a Community Wildfire Protection Plan?	2
Walker Range CWPP Mission Statement	3
Organization of the Plan	3
Planning Area Boundaries	4
The Planning Process	5
2: Community Profile	8
Geography and the Environment.....	8
Walker Range Communities.....	9
Population	10
Development.....	10
Transportation	10
Walker Range Fire Protection Districts	11
3: Forest Conditions and Wildland Fire	13
Ecotypes.....	13
Wildland Fire History	15
4: Wildland Fire Assessment Methods	18
Definition of Terms.....	18
Communities at risk in Walker Range	20
Wildland Fire Assessment Methodology	21
Wildland Urban Interface.....	25
Analysis.....	26
Limitations of the Wildland Fire Assessment Data	26
5: Wildland Fire Assessment Findings	28
Landscape Assessment	28
Wildland Fire Assessment Rankings	30
Community Cluster Wildland Fire Assessment.....	35
6: Community Outreach	38
First Round of Community Meetings	38
Second Round of Community Meetings	40
7: Action Plan Goals and Objectives	41
Hazardous Fuel Reduction	41

Fire Protection Capacity	44
Education.....	57
Structural Vulnerability.....	58
Social and Ecological Values to be Protected.....	58
Biomass Utilization	58
Monitoring and Evaluation.....	59
Implementation.....	59

Appendix

<i>A: Fire Policies and Programs.....</i>	<i>61</i>
<i>B: Community Meeting Summary.....</i>	<i>64</i>
<i>C: Wildfire Hazard Rating Form</i>	<i>73</i>
<i>D: Defensible Space Checklist.....</i>	<i>75</i>
<i>E: GIS Data Sources.....</i>	<i>76</i>

Tables

1: Acres Burned by Decade in Central Oregon, 1900-2000	15
2: Structures Lost to Wildland Fire in Central Oregon, 1981-2003	16
3: Wildland Fires within Walker Range, 1900-2005	16
4: Walker Range CWPP Wildland Fire Assessment, Category and Point Summary	21
5: Walker Range CWPP Wildland Fire Assessment, Categories, Elements, Points, and Data Sources	23
6: Subdivision Structural Vulnerability Assessment	31
7: Protection Capability Rankings	33
8: Walker Range Wildland Fire Assessment Rankings by Cluster	34
9: Hazardous Fuel Reduction Recommendations	41
10: Proposed Prioritized Water Sources	45
11: Walker Range Response Area Radio Frequency List	47
12: Crescent-Odell Lakes RFPD Apparatus	49
13: Crescent RFPD Apparatus	51
14: Chemult RFPD Apparatus	51
15: Oregon Outback RFPD Apparatus	52
16: Walker Range RFPD Apparatus	53
17: US Forest Service, Crescent Ranger District FPO Apparatus	54
18: Summary of Monitoring Tasks	59

Chapter 1

Introduction

Wildland fire is a natural part of the ecosystems of central Oregon. It has shaped the forests and rangelands valued by the area's residents and visitors. However, the forests and rangelands in Walker Range have been significantly altered. The area's forests are a mosaic of private, public, and industrial forestland. Decades of logging, grazing, and fire suppression have increased forest fuels, in some cases resulting in more closed, thicker forests that tend to burn more intensely than in the past. Much of the private industrial timberlands, however, tend to be more open due to past harvests.

In addition to denser forests, more people now live and recreate in or near forestlands. Recent population growth and increased residential development close to the forests in the wildland urban interface (WUI) have significantly increased the risk and potential losses from wildland fire.

This plan promotes two broad concepts: intergovernmental cooperation and personal responsibility. First, the plan is envisioned as a way to coordinate hazardous fuel reduction treatments across boundaries because wildland fires pay no attention to our boundaries. The development of the Walker Range Community Wildfire Protection Plan (Walker Range CWPP) has been a multi-jurisdictional collaborative effort and implementation will continue in the same vein.

Second, this plan seeks to promote better understanding of living in a fire-adapted environment and promote personal responsibility for taking preventative action. It is hoped that with education by example and incentives, residents will take the steps necessary to protect their homes and property from wildland fire. By working together, citizens, government, and the private sector can create fire resilient communities in the Walker Range area.

Although reducing the threat of wildland fire is the primary motivation for this plan, managing the forests and rangelands for hazardous fuel reduction and fire resilience is only one part of the larger picture. Residents and visitors alike want healthy, fire-resilient forests that provide habitat for wildlife, recreation opportunities, and scenic beauty. The forests and rangelands in and around the communities in Walker Range contribute significantly to the community's sense of place. Balancing the need for fuel reduction with protecting and enhancing the sense of place unique to the Walker Range is also an important goal of the wildland fire protection plan.

The purpose of the Walker Range CWPP is to protect human life and reduce property loss due to wildland fire in lands within the plan area. The boundary of the plan parallels the boundary of the Walker Range Forest Protective Association. The plan outlines a strategy, identifies priorities for action, and suggests immediate steps that can be taken to protect the communities from wildland fire while simultaneously protecting other important social and ecological values.

In recent years, the Central Oregon area (namely Klamath, Deschutes, Crook, and Jefferson counties) has been hit with several large wildland fires, including the B & B, Davis Lake, 18, Spring, Odell, Muttonchop, and Little Deschutes fires. These fires have highlighted the need to address wildland fire risk in and around local communities.

Why a Community Wildfire Protection Plan?

Currently, there is no law that requires communities to develop community wildfire protection plans. Beyond the inherent logic of working together to coordinate fuel reduction treatments, education and prevention programs, and emergency preparedness activities, the development of a community wildfire protection plan is opportunistic and strategic. It allows communities and their federal land management partners to act more quickly and effectively.

A community wildfire protection plan provides several concrete benefits. It brings together a large volume of information to present a comprehensive picture of risk, hazard, emergency preparedness and possible hazardous fuel reduction treatments across the landscape. This enables community organizations and their partners to act in a coordinated fashion. A completed plan also allows the adjacent federal land management agencies to make use of the recent expedited authorities provided by the Healthy Forest Initiative (HFI) and the Healthy Forest Restoration Act (HRFA). In addition, for communities seeking federal grant funding from the National Fire Plan, a completed community wildfire protection plan has become a *de facto* requirement. Lastly, a plan is a powerful tool to help get local residents and visitors involved in fire protection efforts. For more on fire plan policies and programs see Appendix A.

Recent state and local legislation have also heightened the interest in developing community wildfire protection plans. During the summer of 2005, the Oregon Department of Forestry began implementing the Oregon Forestland-Urban Interface Fire Protection Act, known as Senate Bill 360. This law encourages homeowners in fire-prone areas to take steps to protect their properties from wildland fire through a voluntary certification program. Also, Klamath County began developing a county ordinance that would set development standards to promote safe and appropriate rural development in areas at risk from wildland fire. These two developments, in addition to those mentioned above, have provided some of the motivation behind the creation of this community wildfire protection plan.

In April 2004, the Walker Range Forest Protective Association, local fire departments, the USDA Forest Service – Crescent Ranger District, Bureau of Land Management (BLM), and Cascade Timberlands, LLC teamed up with a non-profit organization, the Watershed Research and Training Center, to develop a community wildfire protection plan. The plan includes the communities and residences within the Walker Range Forest Protective Association boundary, as well as other nearby neighborhoods (see Walker Range CWPP Boundary Map).

Walker Range CWPP Mission Statement

The mission of the Walker Range CWPP is to reduce the loss to life, property, and natural resources from wildland fire in the communities within the plan.

The goals of the plan are to:

- Increase public understanding of living in a fire-adapted ecosystem
- Instill a sense of personal responsibility for taking preventative actions regarding wildland fire
- Restore fire-adapted ecosystems
- Improve the landscape's fire resilience while protecting other social and ecological values.

To achieve these goals, the plan contains several objectives including:

- Assess the risk and hazard of wildland fire on all lands within the plan boundary
- Identify priorities for fuel reduction projects
- Examine emergency operations within the plan area and identify areas to improve community response and preparedness for wildland fire
- Create an action plan that prioritizes actions to reduce hazardous fuels, enhance emergency response, and strengthen public education and prevention activities

Organization of the Plan

The plan is organized into six chapters and several appendices.

Chapter 1 (Introduction) describes the mission and intent of the Walker Range CWPP. This chapter also describes how the plan was developed, who was involved, and what steps were taken during the process.

Chapter 2 (Community Profile) provides a brief overview of the communities and rural fire protection districts involved in the Walker Range CWPP.

Chapter 3 (Forest Conditions and Wildland Fire) examines the forest types, trends, and fire history for the lands in the plan area.

Chapter 4 (Wildland Fire Assessment Methods) illustrates the purpose and methods, of the assessment of wildland fire risk and hazard in the plan area. The chapter provides details on data sources, methods, data limitations, and future data needs.

Chapter 5 (Wildland Fire Assessment Findings) discusses the findings from the wildland fire assessment.

Chapter 6 (Community Input) provides a brief summary of the community priorities, values to be protected, threats, and potential actions that community residents identified through public meetings and written comments.

Chapter 7 (Action Plan Goals and Objectives) states the goals of the Walker Range CWPP and describes steps to achieve those goals. This section includes priorities for private residential, private industrial, public land. The action plan and objectives cover hazardous fuel reduction, fire protection capability, education, structural vulnerability, social and ecological values to be protected, biomass utilization, and monitoring and evaluation.

Appendix A (Fire Policies and Programs) reviews some of the key local, state, and federal laws that relate to community wildfire protection planning such, as the Healthy Forest Restoration Act and the Oregon Forestland Urban Interface Fire Protection Act of 1997 (Senate Bill 360).

Appendix B (Community Meeting Summary) provides a synopsis of the community meetings held in the fall and winter of 2004 in various communities in the Walker Range area, showing the variety of comments, questions, and concerns participants raised about wildland fire in their communities.

Appendix C (Wildfire Hazard Rating Form) presents the form used by Walker Range Forest Protective Association to assess and evaluate communities' structural vulnerability to wildland fire.

Appendix D (Defensible Space Checklist) comes from the Josephine County Integrated Fire Plan and outlines steps that homeowners can take to increase defensible space around their homes.

Appendix E (GIS Data Sources) identifies the data sources and statistical methods used to develop and calculate scores for the wildland fire assessment.

Planning Area Boundaries

The Walker Range CWPP is multi-jurisdictional and addresses all ownerships within the boundaries of the plan area. The plan includes the Walker Range Forest Protective Association and surrounding unprotected areas (see the Walker Range CWPP Base Map). Communities north of the Klamath-Deschutes boundary are covered by the Oregon Department of Forestry and the La Pine Rural Fire Protection District. For the purpose of the plan, we identified eight community "clusters" within the plan boundary to simplify the analysis and prioritization of potential actions. The eight community clusters are: Odell Lake Summer Homes, Crescent Lake Summer Homes, Crescent Lake Junction, Oregon Outback, Schoonover and vicinity, Crescent/Gilchrist, Hwy 97 West, and Two Rivers/Little Deschutes River. The Walker Range CWPP is a strategic plan; it provides a broad framework for all agencies and ownerships – private, private industrial, county, state, and federal – within the plan area. Specific planning and implementation is the responsibility of each landowner/jurisdictional agency, acting in concert with the guidelines expressed in the plan.

The Planning Process

The development of the Walker Range CWPP was a collaborative effort that relied upon the participation and input from many different organizations and individuals. The plan was developed by four main committees and incorporated public input gathered at a series of public meetings. The four committees were as follows:

- Steering Committee
- Fire and Fuels Committee
- Fire Protection Capacity Committee
- Education and Prevention Committee

The Steering Committee:

- Provided oversight to all activities related to the CWPP
- Developed and refined goals for fire protection in the planning area
- Developed a long-term structure for sustaining the efforts of the CWPP

Participants on the steering committee included:

Dennis Fiore	Bureau of Land Management, Prineville District
Todd Hansen	Cascade Timberlands LLC & Olympic Resource Mgmt
Lisa Clark	Central Oregon Fire Management Service
Barry Petznick	Crescent Rural Fire Protection District
Tim Cramblit	Crescent-Odell Lakes Rural Fire Protection District
Tom Andrade	Oregon Department of Forestry
Dave Egerton	Oregon Outback Rural Fire Protection District
Bob Cambreleng	Two Rivers/Little Deschutes River
Amanda Barnes	US Forest Service, Deschutes National Forest
Phil Cruz	US Forest Service, Deschutes National Forest
Gary Morehead	US Forest Service, Deschutes National Forest
RD Buell	Walker Range Forest Protective Association
Echo Murray	Walker Range Forest Protective Association
Ron Sommerfeldt	Walker Range Forest Protective Association

The steering committee met monthly from April 2004 through November 2004 and more frequently after that. Although the steering committee did not identify a specific decision-making process, almost all decisions were made by consensus to ensure that the outcomes were strongly supported.

The Watershed Research and Training Center was developing the Greater Sisters Country Community Wildfire Protection Plan in northern Deschutes County at the same time as the Walker Range Community Wildfire Protection Plan. Both community fire plans address lands on the Deschutes National Forest and the Prineville District of the BLM. To increase coordination and reduce duplication of efforts, the two steering committees jointly established one Fire and Fuels Technical Committee to serve both community fire plan efforts.

The Fire and Fuels Technical Committee:

- Advised steering committee on technical issues related to wildland fire
- Advised geographic information system (GIS) contractor on the development of the wildland fire assessment
- Advised steering committee on the development of hazardous fuel treatment projects

Participants on the Fire and Fuels Technical Committee included:

Dennis Fiore	Bureau of Land Management, Prineville District
Lisa Clark	Central Oregon Fire Management Service
Tom Goheen	Central Oregon Fire Management Service, Cascade Division
Doug Johnson	Central Oregon Fire Management Service, Newberry Division
Mark Rapp	Central Oregon Fire Management Service, Cascade Division

The Fire and Fuel Technical Committee met monthly during the initial phases of the wildland fire assessment. They played an important role in identifying and interpreting data and ensuring that the Walker Range CWPP was consistent with other ongoing fire management efforts.

The Fire Protection Capacity Committee:

- Developed goals, objectives, and timelines to increase and improve the ability of the local community to prepare and respond to wildfire events

Participants on the Fire Protection Capacity Committee included:

Todd Hansen	Cascade Timberlands LLC & Olympic Resource Mgmt
Barry Petznick	Crescent Rural Fire Protection District
Tim Cramblit	Crescent-Odell Lakes Rural Fire Protection District
Brad Kahler	Crescent-Odell Lakes Rural Fire Protection District
Dave Egerton	Oregon Outback Rural Fire Protection District
Bill Leech	Oregon Outback Rural Fire Protection District
Wade Bryan	Oregon Outback Rural Fire Protection District
Leon Walker	Oregon Outback Rural Fire Protection District
Bob Cambreleng	Two River/Little Deschutes River
Jeff Bishop	US Forest Service, Deschutes National Forest
Gary Morehead	US Forest Service, Deschutes National Forest
Darrel Smith	US Forest Service, Deschutes National Forest
RD Buell	Walker Range Forest Protective Association
Mike Carlson	Walker Range Forest Protective Association
Echo Murray	Walker Range Forest Protective Association
Ron Sommerfeldt	Walker Range Forest Protective Association
Marcus Kauffman	Watershed Research and Training Center

The Education and Outreach Committee:

- Developed goals and objectives aimed at improving local residents' understanding of wildfire
- Developed goals and objectives that increase homeowners' sense of responsibility for preventative action regarding wildfire safety

Participants on the Education and Outreach Committee included:

Lisa Clark
Darrel Smith
Echo Murray

Central Oregon Fire Management Service
US Forest Service, Deschutes National Forest
Walker Range Forest Protective Association

Chapter 2

Community Profile

This chapter provides a brief overview of the Walker Range area. It discusses the communities, the general environment, and population growth, and profiles the structural and wildland fire protection districts within the area.

Geography and the Environment

Walker Range is located in central Oregon, in northern Klamath County, on the east side of the Cascade Mountains. The community fire protection plan boundary lies within the larger area of the eastern Cascade slopes and foothills.

Due to the rain shadow effect of the Cascade Mountains, most of the planning area has significant temperature extremes and less precipitation than the areas west of the Cascades. However, the higher elevation Willamette Pass area in the northwest section of the plan area receives significant annual precipitation. Temperatures vary throughout the plan area, depending on elevation. Summer temperatures in the Crescent/Gilchrist area range from average highs in the upper 70s (degrees Fahrenheit) to average lows in the mid 40s. Average highs in winter are in the low 40s and average lows in the low 20s. Annual precipitation values range from under 20 inches on the eastern side of the Walker Range boundary to 70-80 inches near Willamette Pass in the northwestern area.² The climate in central Oregon is typical of the east slopes of the Cascade Mountains, with most of the annual precipitation coming as winter snow, or fall and spring rain. Summers are dry and prone to frequent thunderstorms that may be wet or dry. These thunderstorms frequently cause multiple fire ignitions during any given storm.

July, August, and September are the most active months for wildland fire occurrences.

Depending on elevation, vegetation greens between late March and early May. The general pattern in central Oregon is for fire potential to increase through June, with July, August and September being the most active months for fire suppression. The end of fire season is often signaled by snow in the fall.³

The plan area contains several vegetative ecosystems: the high desert dominated by western juniper, sage brush, and grasses in the east and a transition from open dry-site ponderosa pine and lodgepole pine to mixed conifer to a sub-alpine mix of tree species near the crest of the Cascades in the west. The vegetation is adapted to the prevailing dry, continental climate and is highly susceptible to wildland fire. Volcanic cones and buttes dot the landscape across much of the region. Most of the communities in the area lie at an elevation of 4,200 feet and higher.⁴

2 Spatial Climate Analysis Service, "Prism Data Explorer," <http://mistral.oce.orst.edu/www/mapserv/nn/index.phtml> (accessed May 19, 2005).

3 Central Oregon Fire Management Services, *Fire Management Plan*, 2004, Section III, page 10.

4 Deschutes County Emergency Management, Oregon Emergency Management, Federal Emergency Management, *Deschutes Natural Hazard Mitigation Plan* (Oregon: 2004).

The plan area is located entirely within northern Klamath County. The plan area is approximately 692,000 acres. The federal government manages about 73 percent of the land in Walker Range plan area (about 69 percent Forest Service and 4 percent BLM). Twenty-six percent of the land is privately owned, and less than 1 percent is owned by the state. Cascade Timberlands owns approximately 157,000 acres within the plan boundary.

Walker Range Communities

In general, the communities in the plan area are small, rural, and isolated. Almost all of the communities are located in the wildland urban interface and all are surrounded by either public forestland or private industrial forestland. The plan area contains three unincorporated towns—Gilchrist, Crescent, and Crescent Lake Junction—and a number of subdivisions. These areas can be classified as rural residential land. For the purposes of the fire plan, nearby towns and subdivisions have been grouped together into the following eight community “clusters”:

- Odell Lake Summer Homes
- Crescent Lake Summer Homes
- Crescent Lake Junction
- Oregon Outback
- Schoonover and vicinity
- Crescent/Gilchrist
- Hwy 97 West
- Two Rivers/Little Deschutes River

The eight community “clusters” are comprised of thirty-eight towns and/or communities. The list below shows the towns and/or communities within each cluster.

Odell Lake Summer Homes Cluster

Odell Lake Summer Homes

Crescent Lake Summer Homes Cluster

Crescent Lake Summer Homes

Crescent Lake Junction Cluster

Balducci Acres

Brewer Ranchos

Cres-Del Acres

Crescent Lake Junction

Crescent Meadows

Crescent Pines

Diamond Peaks/Leisure Woods

Oregon Outback Cluster

Antelope Meadows

Beal Road

Schoonover and vicinity Cluster

Cascade Estates

Marsha Way

Schoonover

Tall Pines

Crescent/Gilchrist Cluster

Crescent

Friendly Acres

Gilchrist

Kaehn/Riddle Road Area

Ramey Acres

River West

Robert River Acres

Hwy 97 West

Chapman Tracks

Doreen Meadows

Oregon Outback Cluster, cont.

Forest Meadows
Ingle Estates
Old Howard Estates
Split Rail
Sun Forest Estates

Hwy 97 West Cluster, cont.

Jackpine Village
Little River Ranch
Mahn Acres
River Pines Estates
Stage Coach
Sun Country
Wagon Trail Ranch
Wild Wood

Population

The Walker Range area contains about 10,000 permanent, year-round residents and has no incorporated towns or cities. Gilchrist has a population of 500, Crescent has a population of 1,000⁵, and Crescent Lake Junction is home to a population of approximately 125 people⁶. There is a growing senior citizen community of retirees as well as part-time residents and large numbers of tourists in the winter and summer. Central Oregon has recently experienced a period of rapid population growth. Increased business and residential development, as well as recreational use, heightens the need for wildland fire mitigation activities.

Development

Gilchrist originated as a private lumber mill town in 1937. Since its inception, the communities in the plan area have been dependent on natural resources. In the past, the wood products sector mostly drove the local economy. More recently, tourism and second home development draw residents and visitors to the area.

Property values in northern Klamath County have been growing rapidly and are estimated to have doubled in the last decade. A lumber mill, grade school, and tourist-related businesses provide employment opportunities for some residents, while others commute to larger communities such as Bend. New subdivisions are planned for the future and are currently in the permit application process. Tourism is a large part of the area's economic base. Willamette Pass Ski Area attracts many tourists during the winter (and summer) and both Odell Lake and Crescent Lake have resorts and areas containing cross country ski trails and snowmobile trails. During other times of the year, tourists visit the area to take advantage of many outdoor activities, including biking, hiking, camping, horseback riding, hunting, fishing, boating, and mushroom collecting. Tourists can increase the area's population by several thousand during peak periods.

Transportation

The communities of the Walker Range CWPP are bound together by US Highway 97 and Oregon State Highways 58 and 31. The Walker Range area is also traversed by County Highways 46 and 61, the Burlington Northern and Union Pacific Railroads, the Little Deschutes River, and Crescent Creek.

⁵ Crescent and Gilchrist population numbers are based on 1996 population estimate, Klamath County Chamber of Commerce.

⁶ Personal communication, Tim Cramblit, Crescent-Odell Lakes Rural Fire Protection District, June 13, 2005.

With the recent growth of central Oregon, more residents and tourists travel the highways and increase congestion, particularly during the summer months when fire season reaches its peak. Improving the transportation system could augment emergency response by improving access routes in the event of a major wildland fire.

Walker Range Fire Protection Districts

The Walker Range plan area contains five rural fire protection districts and the Walker Range Forest Protective Association:

Crescent Rural Fire Protection District

The Crescent Rural Fire Protection District is located in the southern part of central Oregon, in northern Klamath County along Highway 97, 50 miles south of Bend, Oregon. The district provides structural fire protection, first responder hazardous materials response, rescue/extrication, and advanced life support. The district also works closely with and provides mutual aid to the Walker Range Forest Protective Association for wildland and interface fire protection. The ambulance service area coverage extends from the Highway 97 –Highway 58 Junction north to milepost 174 on Highway 97, and west to the Willamette Pass Summit on Highway 58, as well as the towns of Crescent and Gilchrist. The District recently annexed a portion of the Jackpine Village and Hackett Drive subdivisions north of its main operations, expanding the district boundary by nine square miles.

Crescent-Odell Lakes Rural Fire Protection District

The Crescent-Odell Lakes Rural Fire Protection District is nestled in the Cascade Mountains in northern Klamath County and has elevations ranging from approximately 4,000 feet to over 6,600 feet. Located approximately 120 miles north of the California-Oregon border, the district is 75 miles from Eugene-Springfield or Bend and approximately 100 miles from Klamath Falls, the county seat. The district protects the Oregon State Highway 58 corridor and adjoining lands, including Crescent and Odell Lakes and the area from Willamette Pass Ski Area to Crescent Creek, about 13 miles east.

District population varies from a few hundred full-time residents to many thousands during the winter and summer recreation seasons. The district operates out of the Crescent Lake Community Service Center/Fire Station, located near Crescent Lake Junction, which houses six apparatus and provides the base for response operations. A 24/7 lighted helipad is located at the station and the Crescent Lake State Airport is approximately ¼ mile northeast.

District personnel include ten firefighters, eight emergency medical service (EMS) personnel and approximately 50 auxiliary members who provide support and assistance to the district and its residents. The district currently employees no paid staff, relying entirely on volunteers. District services include: fire and EMS first response and mutual aid support for adjoining districts.

Chemult Rural Fire Protection District

The Chemult Rural Fire Protection District serves rural communities in northern Klamath County. It is a small volunteer district operating out of three stations. The Chemult district provides fire protection for the Two Rivers North subdivision at the southernmost part of the Walker Range plan area.

La Pine Rural Fire Protection District

La Pine Rural Fire Protection District protects about 20,000 people including the community of La Pine. It operates out of three stations, protecting a primarily rural area. The department was formed in 1971 and is a combination of career and volunteer firefighters. The district provides and receives mutual aid from Sunriver Fire District, which covers the resort community to the north. The district covers 110 square miles and has an ambulance service area of 1,000 square miles. All shift personnel are certified paramedics. In addition, the district operates a snowmobile rescue response team that covers the many snowmobile parks and hundreds of miles of snowmobile trails in the surrounding area and in the Cascade Mountain Range. Within the Walker Range plan area, the La Pine Rural Fire Protection District provides fire protection for a few subdivisions directly south of the Klamath/Deschutes county line including Old Howard Estates, and Wagon Trail Ranch.⁷

Oregon Outback Rural Fire Protection District

The Oregon Outback is the newest fire protection organization in the Walker Range area. Local residents passed a levy in October 2004 and formed a board of directors. The district is located in northern Klamath County, just south of the Deschutes County boundary and west of Highway 31. The district covers about 35 square miles and serves about 700 residents. The forestland in the district consists mostly of lodgepole pine. The district is still in the formative stages but has been making steady progress. It has acquired numerous apparatus and several of the volunteers have recently completed beginning fire fighter and EMS trainings. The Oregon Outback Rural Fire Protection District provides fire protection for Antelope Meadows, Beal Road, Forest Meadows, Ingle Estates, Split Rail, and Sun Forest Estates.

Walker Range Forest Protective Association

The Walker Range Forest Protective Association is located in central Oregon and High Desert recreation areas and provides wildland fire protection to approximate 200,000 thousand acres of private, county, and state lands in northern Klamath and Lake counties. The Association employs five full time personnel and 20 seasonal firefighters. The Association covers portions of Oregon State Highways 58 and 31, and a part of US Highway 97, including the towns of Crescent Lake Junction, Crescent, Gilchrist and approximately 38 wildland-urban interface communities located within Northern Klamath County.

The owners of Shevlin Hixon Company, Fremont Land Company, Gilchrist Timber Company, and Ralph E. Gilchrist formed the Association in May 1927 to protect commercial forests from fire and insect depredations. The original place of business was in Deschutes County in Bend, Oregon, with stations at Shevlin Stations, La Pine and Crescent. In 1975, the boundary lines of the Association were changed, dropping Deschutes County and keeping Klamath and Lake Counties as the northern boundary.

⁷ La Pine Rural Fire Protection District, <http://departments.firehouse.com/dept/LaPineOR> (accessed June 2, 2005).

Chapter 3

Forest Conditions and Wildland Fire

A basic understanding of the landscape characteristics and functions is important to effective land management. Timber harvest, fire suppression, and development have all dramatically altered the landscape of central Oregon (Klamath, Deschutes, Jefferson, and Crook Counties). This chapter describes the main ecotypes in the plan area, their characteristics, and fire ecology. It also offers a brief narrative on recent wildland fire history and trends.

Ecotypes

Walker Range is a mosaic of forest types.

- 1) Mixed conifer (Douglas-fir/true fir/ponderosa pine/larch/lodgepole pine on both wet and dry sites)
- 2) Ponderosa pine
- 3) Lodgepole pine
- 4) Western juniper woodlands⁸

- 1) **Mixed conifer (wet and dry)** is a complex forest type that varies considerably depending on elevation and site conditions. In the plan area, dry mixed conifer and wet mixed conifer forest types occur.

The dry mixed conifer includes Douglas-fir, ponderosa pine, and true fir. On the eastern slope of the Cascades, this forest type is usually found below the subalpine fir zone and above the Douglas fir or ponderosa pine zone at elevations ranging from 3,600 to 4,500 feet. Depending on conditions, any one of the species can dominate. The dry mixed conifer forest type is found at lower elevation than the true fir mixed conifer forest type discussed above. It is a mix of Douglas-fir, ponderosa pine, larch, and lodgepole pine and occupies a transitional zone between the higher elevation mixed conifer zone and the true ponderosa pine or lodgepole pine zone.

The wet mixed conifer plant association is found in the higher elevations (4,000 – 7,000 feet) on the west side of the fire plan area. Productivity in wet mixed conifer wet sites is generally higher than in the dry mixed conifer plant associations. Similar to the dry mixed conifer sites, vegetation consists of Douglas-fir, white fir, ponderosa pine, western larch, and lodgepole pine. Spruce can be found in the wetter riparian areas. Understory vegetation may include traditional dry site species as well as species that survive well in wetter, more shaded areas such as golden chinkapin and swordfern.

The fire regimes—the combination of fire frequency, predictability, intensity, seasonality, and extent characteristic of fire in an ecosystem—can vary considerably in the mixed conifer types.

⁸ William G. Loy, ed., *Atlas of Oregon* (Eugene: University of Oregon Press, 2001).

The fire cycle or fire return interval can range from 35 to 200 years. Fires may be of variable intensity; from low intensity maintenance burns to stand replacement events.⁹

The exclusion of natural fire in this forest type (as a result of fire suppression activities over the past 100 or more years) has led to the build up of fuels and stands that are more closed in appearance than when fire was a more frequent visitor. According to Agee, “Frequent low intensity fires kept such sites open so that they were less likely to burn intensely even under severe fire weather... Fires are more likely to be more intense over time with [fire] protection.”¹⁰

- 2) The **ponderosa pine forest type** is relatively rare in the Pacific Northwest, though it is locally prevalent. It generally separates the more closed and dense dry mixed conifer forests described above and the juniper and grassland communities found in drier and lower elevations. It also often borders lodgepole pine forest types in the southern reaches of the plan area.

Historically, ponderosa pine forest types contained more understory grasses and shrubs than are present today. These plants, combined with fallen pine needles, formed fast-burning fuel that led to frequent widespread burning. Frequent, low-intensity ground fires that occur on a fire return interval of 11 to 15 years characterize the fire regime for ponderosa pine. The pattern of low ground fires and stand dynamics resulted in the open park-like conditions that early inhabitants and visitors to the region found.

The suppression of naturally occurring fires and decades of timber harvest have significantly altered the ponderosa pine forest type. Removal of the larger “yellow belly” pines has dramatically decreased clumpy, open forest, replacing them with more evenly spaced and smaller “black-bark” forests. Similar to the mixed conifer forest type described above, the exclusion of fire has greatly increased the stocking levels (number of trees) and density of trees, creating ladder fuels, and putting the stands at risk of attacks from insects and disease. These factors have contributed to more intensive fires in ponderosa pine in recent years.

- 3) The climax **lodgepole pine forest type** in central Oregon is characterized by dense, uniform stands, an absence of other species, and a general lack of understory shrub or herbs (although bitter brush is often associated with climax lodgepole pine). The lodgepole pine forest type exhibits a moderate severity fire regime with a fire return interval between 60 and 80 years. Fire can be low, moderate, or severe over time. In addition to fire, mountain pine beetles are an important disturbance agent and the two processes are linked.

The fire cycle in lodgepole pine is 60 to 80 years, and occurs as follows: A stand replacement fire leads to stand regeneration. Dead snags from the fire fall to the forest floor and fuels begin to accumulate. A windstorm blows more trees to the ground. A forest fire burns some of the downed logs and leads to heart rot in the standing trees. The heart rot in the trees stresses the stand and makes it vulnerable to attack by the mountain pine beetle. A major outbreak of the beetle causes significant mortality and soon the conditions are ripe for another stand replacing fire.¹¹

⁹ James K. Agee, *Fire ecology in Pacific Northwest forests* (Washington D.C.: Island Press, 1993).

¹⁰ *Ibid.*, 294.

¹¹ *Ibid.*, 348.

- 4) **Western juniper woodlands** occur on the driest sites in the region that are able to support forest cover (the easternmost portion of the Walker Range plan area). Where western juniper is often the climax species with dominant plant associations of big sagebrush and, to a lesser extent, rabbitbrush, Idaho fescue, and bluebunch wheatgrass. The fire return interval in western juniper woodlands is approximately 25 years and is generally limited by the availability of fuels. Western juniper trees have thin bark and fires kill them easily.

Western juniper appears to be expanding its range over the previous century. Several factors may account for the expansion: a) fire suppression which allows the stands to grow unchecked by fire, b) overgrazing by domestic livestock which opens up new sites for colonization, c) reestablishment of juniper after being logged, and d) climate change.¹²

Wildland Fire History

The forests and rangelands of central Oregon have evolved with wildland fire as a part of the landscape. Most observers agree that in recent years, wildland fires have been burning hotter, moving faster, and scorching more acres than the historical pattern. Six of the top thirteen most destructive wildland-urban interface fires in Oregon's history have occurred in central Oregon.¹³

Table 1 shows that the acres burned in central Oregon between 2000 and 2004 exceeds the number of acres burned in the previous hundred years. This recent and dramatic increase in large fires has heightened community awareness and willingness to address fire safety.

Table 1
Acres Burned by Decade in Central Oregon, 1900-2000

Decade	Acres burned	% of total
1900-1909	11,913	5%
1910-1919	45,564	18%
1920-1929	5,491	2%
1930-1939	699	0%
1940-1949	13,761	5%
1950-1959	1,123	0%
1960-1969	10,640	4%
1970-1979	5,605	2%
1980-1989	5,932	2%
1990-1999	25,519	10%
2000-2004	128,817	51%
Total	255,064	

Source: Central Oregon Fire Atlas, The Nature Conservancy, Upper Deschutes Fire Learning Network Project, v2.0, February 9, 2004 as cited in the Deschutes County Natural Hazard Mitigation Plan, 2004

¹² *Ibid.*, 376.

¹³ Forest Log, National Interagency Coordination Center situation reports, as cited in Oregon Department of Forestry, http://egov.oregon.gov/ODF/FIRE/SB360/wui_history_table.shtml (accessed June 8, 2005).

Wildland fires destroyed 83 structures during the last 22 years in the greater central Oregon area (see Table 2), though none were in the Walker Range area. One of the closest fires to the Walker Range area was the Lone Pine Fire in 1992, which burned 31,000 acres and three homes east of Chiloquin.

Table 2
Structures Lost to Wildland fire in Central Oregon, 1981-2003

Year	# of Structures Lost to Wildland Fire	% of total
1981	5	6%
1990	22	27%
1996	30	36%
2001	5	6%
2002	20	24%
2003	1	1%
Total	83	

Source: Central Oregon Fire Atlas, The Nature Conservancy, Upper Deschutes Fire Learning Network Project, v2.0, February 9, 2004 as cited in the Deschutes County Natural Hazard Mitigation Plan, 2004

Wildland Fires in the Walker Range Area

A number of wildland fires have occurred within the Walker Range plan boundary over the last century and are listed in the Table 3 below.

Table 3
Wildland Fires within Walker Range, 1900-2005

Year	Fire Name	Acres	Cause	Description
2005	Crescent Lake Junction	8	Wind	Powerline
2003	Davis Lake	21,116	Human	
2003	Odell	14	Human, unknown	
2002	Little Deschutes	110	Human, unknown	
2001	Odell Pasture	1	Wind	Powerline
2001	McCarty Butte	20	Lightning	Lightning
2000	Muttonchop	78	Human, unknown	
1990	Spring Butte	946	Human	Arson
1980	Beales Butte Slash	6		
1979	Walker Mt (US 97)	80		
1947	Big Marsh	49		
1940	Fremont Siding	1,946		
1930	Maklaks Mtn	62		
1919	County Line	702		
1919	Hinkle Town	2,040		
1918	Rim Rock Butte	3,797		

Year	Fire Name	Acres	Cause	Description
1914	Spring Butte	1,032		
1914	Ipsoot Butte	180		
1911	North Odell Lake	61		
1910	Ringo Butte	65		
1910	Odell Spring	1,449		
UNK	Hemlock Butte	141		
UNK	Odell Butte	92		

Source: Walker Range Forest Protective Association; Deschutes National Forest 2003 geographic information systems (GIS) data

Chapter 4

Wildland Fire Assessment Methods

One of the central purposes of planning is to enable action based on current, comprehensive information. Although funding for hazardous fuel reduction and other activities around communities has increased in recent years, the need for funding greatly outstrips available resources. The consistent budget shortfall highlights the importance of targeting implementation to the highest priority areas.

The purpose of the wildland fire assessment is to gauge the relative risk and hazard due to wildland fire for the lands and communities within the planning area. It is a tool to direct implementation to the highest priority areas and promote cross-boundary coordination. The assessment is key to developing an understanding of the risk of potential losses to life, property, and natural resources during a wildland fire. Specifically, the assessment:

- 4) Assesses risk, hazard, fire protection capability, structural vulnerability, and values to be protected.
- 5) Identifies and ranks “communities at risk” within the plan area. These community rankings identify the priority areas for fuel reduction activities and other mitigation projects within the plan area.
- 6) Identifies the wildland urban interface across the plan area.

The Walker Range CWPP used the wildland fire assessment methodology based on guidance from the National Association of State Foresters and adapted by the Oregon Department of Forestry. The steering committee chose this method because it provided a simple and consistent approach that will enable comparison with other communities across that state.

Definition of Terms

Communities at Risk

The Healthy Forest Initiative (HFI) and the Healthy Forest Restoration Act (HFRA) provide multiple benefits to communities at risk from wildland fire. A community at risk is one that:

- Is an interface community as defined in the Federal Register notice of January 4, 2001, or a group of homes and other structures with basic infrastructure and services (such as utilities and collectively maintained transportation routes) in or adjacent to federal land
- Has conditions conducive to large-scale wildland fire
- Faces a significant threat to human life or property as a result of a wildland fire¹⁴
-

All of the communities in the Walker Range area are considered to be communities at risk.

¹⁴ USDA Forest Service, DOI Bureau of Land Management, *The Healthy Forests Initiative and the Healthy Forests Restoration Act: Interim Field Guide* (February 2004).

Wildland Urban Interface

Title I of HFRA defines the wildland urban interface as:

- A. An area within or adjacent to an at-risk community that is identified in a community wildfire protection plan; or
- B. In the case of any area for which a community wildfire protection plan is not in effect:
 - a. An area extending ½ mile from the boundary of an at-risk community;
 - b. An area within 1½ miles of the boundary of an at-risk community, including any land that—
 - i. Has sustained steep slopes that creates that potential for wildfire behavior endangering the at-risk community
 - ii. Has a geographic feature that aids in creating an effective fire break, such as a road or a ridge top; or
 - iii. Is in Condition Class 3, as documented in a project-specific environmental analysis.
 - c. An area that is adjacent to an evacuation route for an at-risk community, that requires hazardous fuel reduction to provide safer evacuation from the at-risk community.

HFRA states that community wildfire protection plans can identify the wildland urban interface for the at-risk communities in the plan. The Walker Range CWPP identifies the WUI based on historic fire patterns, prevailing wind, and hazardous fuels.

Healthy Forest Initiative

HFI provides several categories of projects that can be categorically excluded from an environmental assessment (EA) or an environmental impact statement (EIS). Hazardous fuel reduction projects are only one of the categories. To be categorically excluded under HFI, a proposed hazardous fuel reduction activity must meet the following requirements:

- Hazardous fuel reduction activities using prescribed fire are less than 4,500 acres
- Hazardous fuel reduction activities using mechanical methods are less than 1,000 acres
- Activities shall be limited to areas in the wildland urban interface or to areas in Condition Classes 2 and 3 in Fire Regime Groups I, II, or III outside of the wildland urban interface
- Projects shall be identified collaboratively using the framework identified in A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment: 10-Year Comprehensive Strategy Implementation Plan.¹⁵

¹⁵ Department of the Interior and Department of Agriculture, *The Healthy Forests Initiative and the Healthy Forests Restoration Act: Interim Field Guide*, August 2001.

Healthy Forest Restoration Act

HFRA authorizes special procedures for environmental assessments and environmental impact statements for a variety of land management goals including authorized hazardous fuel reduction. The Forest Service and the BLM are not required to analyze alternatives to the proposed action, as is typically required by the National Environmental Policy Act, if:

- The project area is inside the wildland urban interface and is within 1½ miles of the boundary of an at-risk community except if the proposed action does not implement the recommendations in the adopted community wildfire protection plan. In that case, the agencies are required to analyze the recommended actions in the plan as an alternative to the proposed action.¹⁶

The use of both the categorical exclusion from HFI and the “one alternative” analysis with HFRA may be powerful tools to streamline the planning process and accomplish more work on the ground. Use of both tools requires the identification of communities at risk, a determination of the wildland urban interface, and a completed community wildfire protection plan.

Communities at risk in Walker Range

To determine communities at risk, the steering committee first had to define “community.” The steering committee used three criteria to determine communities within the plan area:

- 1) Established city/town
- 2) Recognized development (e.g. Odell Lake Resort); and
- 3) Significant grouping of structures (e.g. Sun Forest Estates)

These criteria identified 38 at-risk communities.

Odell Lake Summer Homes Cluster

Odell Lake Summer Homes

Crescent Lake Summer Homes Cluster

Crescent Lake Summer Homes

Crescent Lake Junction Cluster

Balducci Acres

Brewer Ranchos

Cres-Del Acres

Crescent Lake Junction

Crescent Meadows

Crescent Pines

Diamond Peaks/Leisure Woods

Schoonover and vicinity Cluster

Cascade Estates

Marsha Way

Schoonover

Tall Pines

Crescent/Gilchrist Cluster

Crescent

Friendly Acres

Gilchrist

Kaehn/Riddle Road Area

Ramey Acres

River West

Robert River Acres

¹⁶ *Ibid.*

Oregon Outback Cluster

Antelope Meadows
 Beal Road
 Forest Meadows
 Ingle Estates
 Old Howard Estates
 Split Rail
 Sun Forest Estates

Hwy 97 West

Chapman Tracks
 Doreen Meadows
 Jackpine Village
 Little River Ranch
 Mahn Acres
 River Pines Estates
 Stage Coach
 Sun Country
 Wagon Trail Ranch
 Wild Wood

There are several structures and residences in the plan area that are beyond the boundaries of the 38 communities named above. Although not included on the list of communities at risk, the plan addresses all lands and all property regardless of its designation.

Wildland Fire Assessment Methodology

The previous section defines the communities at risk in the Walker Range area. This section outlines the methodology used to assess the relative wildfire risk to these communities. The Walker Range wildland fire assessment describes the relative level of risk to life, property, and natural resources within the plan area. The assessment compares communities and lands to each other rather than to a set standard. The assessment considers five categories to determine the relative severity of fire risk. The assessment uses a point system for each category of the analysis. The categories are added together to produce a final score, which is displayed graphically using GIS technology.

**Table 4
 Walker Range CWPP Wildland Fire Assessment
 Category and Point Summary**

Assessment Categories	Elements	Score
Risk	Ignition Density (human and lightning caused from the last 10 years)	0-40
Hazard	Fuels (developed from vegetation information), Slope, Aspect, Elevation, Weather	0-80
Values	Structural Density (derived from tax assessor's information on structures values over \$1,000.)	0-50
Structural Vulnerability	Based on the community and subdivision assessments conducted by Walker Range Forest Protective Association	0-90
Protection Capability	Based on the capacity of the rural fire protection districts as evaluated by local fire protection professionals and volunteers	0-40
TOTAL		300

Source: Walker Range CWPP

Risk—the likelihood of a fire occurring: This factor uses density of historical fire ignitions (human and lightning caused). The layer combines historic fire ignition and structural densities from the Oregon Department of Forestry and the Deschutes National Forest.

Hazard – the conditions that may hinder control of a wildland fire: The hazard factor is a compilation of weather, topography, and fuels information.

Weather is the most important factor in the hazard layer. This factor is based on the number of days per season that forest fuels are capable of producing a significant fire event. This score is constant across the Walker Range CWPP area (although the western part of the plan area is significantly wetter than the east) because all of central Oregon is in Zone 3—the most hazardous rating.

Topographic characteristics include slope, aspect and elevation. Steeper slopes can cause wildland fires to spread more quickly and increase the difficulty of suppression efforts. Aspect is divided into three classes roughly corresponding to the amount of insolation or sun exposure expected on the site. Finally, elevation values are broken at 3,500 and 5,000 ft. Lower elevations are considered more hazardous due to generally drier conditions.

Natural vegetation fuel hazard describes the condition of the vegetation across the landscape and its ability to influence fire behavior. It is comprised of three parts: fuel model, crown fire potential, and local knowledge. The fuel model classification refers to the amount of dead and down woody debris on the surface of the forest floor, which could ignite and burn during a wildfire. Crown fire potential refers to the ability of the forest canopy to sustain a high intensity fire above the forest floor. (A passive crown fire refers to a small group of trees torching; active means that there is a surface fire and crown fire moving through the forest canopy; and independent indicates that the crown fire is moving through the forest canopy without a surface fire.) Crown fires are a challenge to control in the wildland-urban interface.

The hazard factor also uses local knowledge and experience to account for recent hazardous fuels reduction treatments that do not appear in the fuel model and crown fire potential data used in the other two layers. Local fire professionals created a series of bands around the perimeter of the at risk communities and evaluated each one for surface fuels and crown fuels. The bands went from the community perimeter to 500 ft., from 500 ft. to 1,500 ft., and from 1,500 ft. to 1½ miles. The fire professionals evaluated the bands and assigned scores. The bands were converted to polygons and then to raster data and incorporated into the fuel model and crown fire potential information.

Values—the people, property, natural and other resources that could be lost in a wildland fire: The wildland fire assessment identified structures with an assessed value over \$1,000 to determine values to be protected. The members of the steering committee, community residents, and local fire professionals also contributed their knowledge of the other values to be protected such as the location of riparian areas, wildlife habitat, and other scenic and natural areas. However, lacking comprehensive data on other important values, the wildland fire assessment only accounts for structures valued over \$1,000. All communities received an additional 20 points for natural resources and community infrastructure.

Structural Vulnerability—the elements that affect vulnerability and ignitability of individual structures: The analysis examined the vulnerability of existing structures to wildland fire in the plan area. This layer uses information developed by the Walker Range Forest Protective Association as part of their efforts to improve the fire safety of the communities and subdivisions in their area. During the last three years, the Walker Range Community Fire Planner evaluated each of the 38 communities and subdivisions using a wildfire hazard rating form developed by the Federal Emergency Management Administration. Each community received a score based on subdivision design (roads, access, lot size, street signs), vegetation (fuel type, defensible space), topography, roofing material, fire protection, construction material, and utilities. The score was based on the percentage of residences in the community that fit into each category. Each community received a low, moderate, high, or extreme rating. These ratings were converted to numerical scores and incorporated into the wildland fire assessment.

Protection Capability—the ability to mitigate losses, prepare for, respond to and suppress wildland and structural fires: The numerical values for this layer were based on the evaluation of the fire response capacity (response time, equipment, personnel) of each of the local rural fire protection districts and the Walker Range Forest Protective Association.

The local fire professionals evaluated each district based on a worst-case scenario. In addition to the capacity of each district, the communities were awarded points for community preparedness on the assumption that more organized, active communities would be better prepared. Communities that were organized and active in fire prevention and/or education efforts were given no additional points, while those communities that had no active effort at the time were given up to four points.

**Table 5
Walker Range CWPP Wildland Fire Assessment
Categories, Elements, Points, and Data Sources**

Category	Elements	Points
Risk	Density of fire ignitions per 1000 acres per 10 years	0–40
Historic occurrence	Density of fire ignitions per 1000 acres per 10 years	0-30
Low	0-0.1 ignitions per 1,000 acres	3
Moderate	0.1-1.1 ignitions per 1,000 acres	15
High	1.1 or more ignitions per 1,000 acre	30
Structural Density	Home density: homes per 10 acres	0-10
Rural	0.1-0.9 homes per 10 acres	0
Suburban	1.0-5.0 homes per 10 acres	5
Urban	>5.0 home per 10 acres	10
Source: Deschutes Fire Atlas – fire ignitions 1990-2002		
Hazard	Weather, topography, and fuels	0–80
Weather	The number of days per season that fuels are capable of producing a significant fire event.	0–40

Category	Elements	Points
Zone 1	Oregon Coast	0
Zone 2	Willamette Valley	20
Zone 3	Southwestern, central, and eastern Oregon	40
Source: Oregon Department of Forestry		
Topography	Slope, aspect, and elevation	0–10
<i>Slope</i>	0-25 %	0
	26-40 %	2
	More than 40 %	3
<i>Aspect</i>	N, NW, NE	0
	W, E	3
	S, SW, SE	5
<i>Elevation</i>	More than 5,000 feet	0
	3,501-5,000 feet	1
	0-3,500 feet	2
Fuels (vegetation)	Natural vegetation fuel hazard	0–30
Fuel Model		0-20
	Non-forest	0
	Fuel hazard factor 1	5
	Fuel hazard factor 2	10
Crown Fire Potential	Fuel hazard factor 3	20
		0-10
	Passive-Low	0
	Active-Moderate	5
	Independent-High	10
Source: Deschutes Fire Atlas 2004, BLM vegetation layer, local knowledge/local fire expertise		
Values Protected	Density of structures valued over \$1,000	0–50
Structural Density	Structures per 10 acres	0-30
Rural	0.1–0.9	2
Suburban	1.0–5.0	15
Urban	5.1 or more	30
Source: Klamath County Tax lots; improved value over \$1,000		
Natural Resources	Presence of identified natural resources	0-10
	None	0
	One present	5
	More than one	10
Source: Walker Range CWPP Steering Committee		
Community Infrastructure	Presence of identified community infrastructure	0-10
	None	0

Category	Elements	Points
	One present	5
	More than one	10
Source: Walker Range CWPP Steering Committee		
Structural Vulnerability	Walker Range Subdivision Assessment	0–90
	Medium	30
	High	60
	Extreme	90
Source: Walker Range Forest Protective Association		
Protection Capability	The ability to mitigate losses, prepare for, respond to and suppress wildland fire and structural fire.	0–40
Fire Response		0-36
	Organized structural response < 10 min	0
	Inside structure protection district, but response >10 min	7
	Structural protection with delayed and/or limited response > 20 min	14
	No structural protection, wildland/rangeland response < 20 min	21
	Mutual aid request response > 20 min	28
	No structural response but has wildland protection > 20 min	36
Source: Walker Range CWPP Steering Committee and local fire professionals		
Community Preparedness		0-4
	Organized stakeholder group	0
	Primarily agency effort	2
	No effort	4
Source: Walker Range CWPP Steering Committee and local fire professionals		
TOTAL		300

Wildland Urban Interface

The 2004 Central Oregon Fire Management Service (COFMS) Fire Management Plan identifies the wildland urban interface (WUI) as a 1½-mile area surrounding each community on the list of over 100 central Oregon at-risk communities identified in the federal register.¹⁷ The steering committee considers the 1½-mile area a sufficient distance for firefighters to safely control a crown fire (and blowing embers) and cause the fire to drop to the surface and burn with manageable intensities. Flame lengths of less than four feet are considered manageable by ground-based suppression forces.

The Walker Range CWPP steering committee began their evaluation of the wildland urban interface with the guidelines set by the COFMS Fire Management Plan, establishing the WUI at

¹⁷ Central Oregon Fire Management Service. *Fire Management Plan*. 2004.

1½ mile around each community. This method was applied across the plan area with two exceptions:

- The southern end of Two Rivers/Little Deschutes River, where the large accumulations of downed wood debris and strong winds necessitated increasing the WUI to 2 miles.
- Crescent Lake Summer Homes – prevailing winds and topography resulted in the extension of the WUI to include the Boy Scout Camp located on the southern shore of Crescent Lake.

Analysis

The Walker Range CWPP Wildland Fire Assessment examined all of the lands within the boundary of the plan area. Of the five factors in the analysis, four factors (risk, hazard, values protected, and protection capability) are evaluated across the entire plan area using 30-meter pixels. The 38 identified at-risk communities were also awarded the numerical scores developed for the structural vulnerability ranking. The inclusion of the structural vulnerability layer completed the development of the five “layers” of the wildland fire assessment. The lands outside of the at-risk communities did not receive scores for structural vulnerability, as they did not meet the criteria for a “community”.

Once the layers were completed, each community was given a composite score by summing the scores for each of the layers inside the boundaries of the community. This produced a ranking of the relative risk inside the communities. However, this number told us little about the risk and hazard of wildland fire outside of the communities. To better understand the relative risk immediately adjacent to the communities, we developed a 1½-mile buffer¹⁸ and calculated the scores for the five layers within the buffer. This analysis produced two final scores, an interior score for each community at risk and a second score for the 1½-mile buffer around each community at risk.

The Wildland Fire Assessment Findings section discusses the scores for the communities and the buffers in more detail.

Limitations of the Wildland Fire Assessment Data

“All models are wrong, some are useful.”¹⁹ This quote neatly sums up the perils of using computer models to predict and evaluate real world conditions. The wildland fire assessment is an approximation of what we predict to be present on the landscape. Some of the data used can no longer be considered current and some of the data are subjective. Also, some important information is not included in the analysis. For example, the only values protected considered in the wildland fire assessment analysis are structures valued over \$1,000. Obviously, communities contain critical infrastructure and facilities that are essential to protect from wildland fire. Also the assessment does not systematically factor in information about other natural resource values, such as habitat, recreation, or ecologically important areas. We lacked the resources to accurately

¹⁸ The 1½ mile buffer here and in the remainder of the document refers to both the 1½ mile buffer and the two exceptions noted on page 26.

¹⁹ G. E. P. Box. “Robustness in scientific model building,” in *Robustness in Statistics*, eds. R. L. Launer, & G. N. Wilkinson (New York: Academic Press, 1979), 202.

identify and analyze all of the special ecological, cultural, and recreational resources in the Walker Range area.

Implementation of fuel reduction projects could and should identify critical infrastructure and ecological values. Also, the next iteration of the plan could more accurately assess how well these assets and resources are protected.

Chapter 5

Wildland Fire Assessment Findings

This chapter describes the results from the risk assessment. The risk assessment resulted in a series of maps and tables that display the results of the analysis. A base map sets the boundary of the CWPP area, shows the at-risk communities, ownership, and the wildland urban interface. Six landscape maps show the five layers of the risk assessment and the summary calculation for the plan area. In addition, two other landscape maps show the perimeter of large fires over the last 10 years and display ecologically important areas in the plan boundary.

The 38 at-risk communities in Walker Range are also displayed on smaller-scaled “community” maps. These maps are intended as a tool for more specific project planning and implementation. They show the summary calculation (incorporating the five layers) from the risk assessment with the planned and completed hazardous fuel reduction treatments. While the five layers of the risk assessment identify and prioritize risk and hazard across the planning area, the community maps help identify priorities areas for treatment within and around the individual at-risk communities.

Landscape Assessment

Walker Range CWPP Base Map

This map shows the boundary of the plan area, the eight community clusters, the at-risk communities, land ownership, major roads, railroads, rivers, lakes, and the location of the wildland urban interface (WUI).

Risk

The risk map is based on a) historic fire occurrence (fire start information from 1990-2002) and b) ignition risk (based on home density). The map shows that large numbers of fires are most heavily concentrated in and around the populated areas (ex. Crescent Lake Junction and Crescent/Gilchrist). Moreover, with the added risk from higher structural densities, these areas are at an even higher risk. The areas with the highest concentrations of fires and ignition risk (structural density) are shown in red and those with the least are shown in light gray.

Hazard

The hazard map displays variations in the ability to control a wildland fire. The map is a compilation of weather, topography, and natural vegetation fuel hazard (comprised of fuel model and crown fire potential). Weather is fairly constant across the plan area and topography variations are minimal; therefore the map mostly displays variations in fuel hazards and crown fire potential. The areas with the highest hazard are displayed in red and those with the least in blue.

The map shows that large portions of Walker Range are classified as high hazard. The areas of highest hazard are located around the Odell Lake, Crescent Lake, and Crescent Lake Junction community clusters. In addition, the Schoonover and vicinity cluster contains many

medium-to-high hazard level areas. Most of the actual communities or subdivisions themselves are at medium to high hazard, while the lands around them are often lower hazard. The clusters of Hwy 97 West, Oregon Outback, Two Rivers/Little Deschutes River, and Crescent/Gilchrist contain many areas of a lower hazard outside of the subdivisions.

Values Protected

This map displays the location of structures valued over \$1,000 and is colored according to the density of structures. Each cluster received the full 20 points for the presence of natural resources and community infrastructure. The areas ranking the highest for values protected are shown in red and those with the lowest are shown in light purple. Clusters containing a number of high-risk areas include: Crescent Lake Junction, Crescent/Gilchrist, Hwy 97 West, and Oregon Outback.

Structural Vulnerability

Structural vulnerability is mapped according to the analysis completed by the Walker Range Forest Protective Association. Each community is colored according to the evaluation. The map shows that Balducci Acres (in the Crescent Lake Junction cluster) is rated as extreme. All of the other clusters contain at least one area that rates as medium. Areas outside of the at-risk communities were not evaluated but are addressed in the action plan for structural vulnerability.

Protection Capability

This map provides a simplistic display of the fire protection capacity of local rural fire protection districts by community cluster. The local fire professionals rated each cluster based on fire response times and community preparedness. Based on these criteria, the clusters of Crescent Lake Junction, Crescent Lake Summer Homes, and Odell Lake Summer Homes show the lowest protection capability while the Crescent/Gilchrist and Hwy 97 West cluster have the highest. A lower level of protection capability (and longer response times) translates to higher risk for the communities.

Assessment Summary

The assessment summary map shows a combination of the five landscape layers of the assessment (risk, hazard, values protected, structural vulnerability, and protection capability). The at-risk communities displayed on the map emerge as the areas with the highest risk and hazard, due to the high density of structures and the structural vulnerability ratings. Table 8 provides a ranking for each at-risk community and 1½ mile buffer surrounding each community. All of the community clusters contain some areas of extreme risk. However, Odell Lake Summer Homes, Crescent Lake Summer Homes, and Crescent Lake Junction are the clusters that have the highest total risk values for land *directly surrounding* the subdivisions and communities within the 1½ mile buffer. While the other clusters contain subdivisions and communities with areas of extreme risk, most of the adjacent lands are classified at a risk of medium or below.

Historic Large Fires

Three large fires have burned in Walker Range from 1994 to 2003. The largest fire was the Davis Fire of 2003 (delineated on the map), which burned in the northern portion of the Walker Range area. The two other fires are Muttonchop (2000) and Little Deschutes (2002). These two fire perimeters are not represented on the map.

Ecological and Special Areas

Walker Range contains numerous identified ecological and special areas. Community residents also noted many additional special and important places during the community meetings. The Walker Range Ecological and Special Areas map is taken from the Forest Plan from the Deschutes National Forest and does not contain information on private land or lands managed by the BLM.

The map of the ecological and special areas would be useful when considering hazardous fuel reduction activities and how to protect other important resource values.

Wildland Fire Assessment Rankings

The Walker Range Wildland Fire Assessment used five factors (risk, hazard, protection capability, structural vulnerability, and values protected) to calculate the relative risk of wildland fire to the 38 at-risk communities in the plan area. This section provides community by community or cluster by cluster results for structural vulnerability and protection capability, and then discusses five layer aggregate scores for the at-risk communities.

Structural Vulnerability

The vulnerability of individual structures to wildland fire is an important aspect of fire protection. The steering committee was fortunate that the Walker Range Forest Protective Association had been actively addressing this issue for several years prior to the development of the community fire plan. The community fire planner from Walker Range assessed the structural vulnerability communities and subdivisions in Walker Range during 2002 through 2005. The evaluation was completed on a community or subdivision level and provided key local level data that could be easily incorporated into the wildland fire assessment.

The evaluation of structural vulnerability examined many factors, including defensible space, roof type, and building materials and suppression/response characteristics of primary roads, water sources, topography, and fuels characteristics. Table 6 shows the evaluation results; higher scores indicate increased risk and vulnerability. Acres refer to the average lot size in a particular subdivision/community. The wildfire hazard rating form used in the assessment is included in Appendix C.

**Table 6
Subdivision Structural Vulnerability Assessment**

Subdivision Name	Rating	Acres	Risk Factors			Suppression/Response Factors			
			Dfnsbl Space	Roof Type	Building Materials	Primary Roads	Water Sources	Topography	Fuels Characteristics
Airport Drive crescent	Mod.	1+	3	5	5	5	1	1	Blow down, grass, and continuous ladder fuels
Antelope Meadows	Mod.	1	5	5	10	1	7	1	Build up of grasses
Balducci Acres	Extre.		3	10	10	5	5	10	Blow down & ladder fuels
Brewer Ranchos	High	1	5	10	10	5	7	4	Blow down & ladder fuels
Cascade Estates	High		5	10	10	5	10	10	Blow down & ladder fuels
Chapman	Mod.	1	5	5	5	1	7	1	Blow down & ladder fuels
Crescent	Mod.		1	10	10	1	1	1	Some blown down, grass
Crescent Cut-Off Road	Mod.	1+	3	10	10	1	1	1	Blow down, grass, and continuous ladder fuels
Crescent Lake Area	High		5	10	10	5	7	1	Heavy blow down, grass, ladder fuels
Crescent Meadows	High	1	3	10	10	1	10	1	Blow down and grass
Crescent Pines	High	1+	5	10	10	5	7	7	Blow down, grass, reprod, & ladder fuels
Cres-del Acres	High		5	10	10	1	2	7	Blow down and grass
Diamond Peak	Mod.	1	5	5	5	5	1	10	Blow down with ladder fuels
Friendly Lane	Mod.	1-5	5	10	10	5	1	1	Blow down, grass, and continuous ladder fuels
Forest Meadows	Mod.	1+	5	10	10	1	10	1	Blow down, grass, and continuous ladder fuels
Gilchrist Town	Mod.		1	5	5	1	1	4	
Jackpine village	Mod.	1	3	3	5	1	10	1	Blow down with ladder fuels
Old Howard Estates	High		5	10	10	5	10	1	Blow down, grass on east side
Pinney's Acres	High	1	5	10	10	5	1	1	Blow down, grass, and continuous ladder fuels

Subdivision Name	Rating	Acres	Risk Factors			Suppression/Response Factors			
			Dfnsbl Space	Roof Type	Building Materials	Primary Roads	Water Sources	Topography	Fuels Characteristics
Ramey Acres	Mod.		3	10	10	5	1	1	Blow down, grass, and continuous ladder fuels
Kaehn Road	Mod.	Lots	3	10	10	5	1	1	Blow down and grass
Little River	Mod.		3	5	5	5	2	4	Blow down, grass and continuous ladder fuels
Mahn Acres	High	1	5	10	10	5	7	4	Heavy blow down, grass, ladder fuels
Riddle Road	Mod.	1	3	10	10	5	2	1	Grass and ladder fuels
River Pine	High	1	5	10	10	5	10	1	Blow down and grass
Robert River Acres	High		5	10	10	5	7	1	Blow down, grass, and continuous ladder fuels
Schoonover	High		5	10	10	1	7	10	Blow down, grass, and continuous ladder fuels
Split Rail	Mod.		5	10	5	1	10	1	Blow down, grass build up, and ladder fuels
Stage Coach	High		5	10	10	5	10	1	Blow down, grass, and continuous ladder fuels
Sun forest	High		5	10	10	1	10	1	Blow down, grass, and continuous ladder fuels
Tall Pines	High		5	3	5	5	10	1	Blow down, grass, and continuous ladder fuels
Two Rivers North	High	1	5	10	10	5	10	4	Blow down, grass, and continuous ladder fuels
Wagon Trail Ranch	High	1	5	10	10	5	10	7	Blow down, grass, and continuous ladder fuels
Willis Lane	Mod.		5	10	10	5	2	4	Blow down, grass, and continuous ladder fuels

Balducci Acres was the only subdivision that was rated as ‘extreme’ based on poor access, steep slopes, building materials and roof type, and dense fuels. Other subdivisions that ranked as ‘high’ were Brewer Ranchos, Cascade Estates, Crescent Lake Junction,

Protection Capability Rankings

Protection capability rankings were comprised of response time for each fire protection district (based on a worst-case scenario) and community preparedness (whether or not communities were involved in fire prevention/education efforts). A maximum of 36 points could be awarded based on response time and a maximum of 4 points for community preparedness. The combination of these two factors resulted in a protection capability ranking for each cluster, shown in Table 7. Higher numerical scores indicate lower protection capability and greater risk.

**Table 7
Protection Capability Rankings**

Cluster Names	Fire Response (local RFPD)	Community Preparedness	Total
Crescent Lake Junction	28	4	32
Crescent Lake Summer Homes	28	2	30
Odell Lake Summer Homes	28	2	30
Oregon Outback	28	0	28
Schoonover and vicinity	23	2	25
Two Rivers/Little Deschutes River	14	4	18
Crescent/Gilchrist	12	4	16
Hwy 97 West	14	2	16

Source: Walker Range Fire Protection Capacity Group

At-Risk Community Rankings

The Walker Range CWPP wildland fire assessment used a combination of five factors (risk, hazard, protection capability, structural vulnerability, and values protected) to calculate the relative risk to wildland fire to the eight community clusters in the plan area (Table 8). It is important to note that the minimum and maximum scores within each community varied considerably. This is key when considering potential hazardous fuel reduction treatments as it signals that not all acres within the community boundary are equally at risk.

Table 8
Walker Range Wildland Fire Assessment Rankings by Cluster
(for 1½ mile buffer and inner community perimeter)

Community Clusters				
Name	Min	Max	Mean	Assessment Ranking
Odell Lake Summer Homes	130	259	229	Extreme
Crescent Lake Summer Homes	135	256	227	Extreme
Crescent Lake Junction	106	268	201	Extreme
Two Rivers	95	242	195	Extreme
Schoonover and vicinity	78	237	183	High
Hwy 97 West	63	240	176	High
Oregon Outback	74	254	169	High
Crescent/Gilchrist	71	235	164	High
1½ Mile Buffers				
Name	Min	Max	Mean	Assessment Ranking
Crescent Lake Junction Buffer	74	239	114	Medium
Odell Lake Summer Homes Buffer	73	259	111	Medium
Crescent Lake Summer Homes Buffer	73	256	105	Medium
Schoonover and vicinity Buffer	47	224	93	Medium/Low
Oregon Outback Buffer	45	229	83	Medium/Low
Hwy 97 West Buffer	36	206	80	Low
Two Rivers Buffer	47	198	73	Low
Crescent/Gilchrist Buffer	37	207	73	Low

Source: Walker Range CWPP Wildland Fire Assessment

The assessment maps and the tables above clearly indicate that the communities at greatest risk from wildfire are located in the northwest portion of the Walker Range area, in the clusters of Odell Lake Summer Homes, Crescent Lake Junction, Crescent Lake Summer Homes, and Two Rivers/Little Deschutes River. Although community clusters such as Oregon Outback and Crescent/Gilchrist rank relatively low, it is important to note that the maximum score for each community is 254 and 235 respectively. This indicates that there are places within those community clusters that present high risk and hazard but they are few in number. The

community clusters with high maximum scores but low mean (or average scores) suggests pockets of high risk and hazard.

In most of the community clusters, the buffer areas—the 1½ to 2 mile band around the communities—is much lower than the score for the community clusters. The score for the community cluster accounts for more factors of the wildland assessment than do the lands in the buffer. The interior of the at-risk communities contains data on risk, hazard, values protected, protection capability, and structural vulnerability. The buffers, on the other hand, only contain information on risk, hazard, and protection capability. The evaluation of the buffers was conducted to provide a clearer picture of the relative risk and hazard on the lands immediately adjacent to the communities.

The scores in Table 8 indicate that the communities with the highest risk and hazard around them are also located in the northwest quadrant of the Walker Range area. Most of the community clusters and buffers are similarly ranked. However, community cluster of Two Rivers/Little Deschutes River has a score of 195—fourth out of eight—whereas the buffer for Two Rivers/Little Deschutes River is ranked last and scores only 73 (with 114 from Crescent Lake Junction buffer as the high). These differences indicate that the lands surrounding the community represent a lower risk and hazard than the interior of the community.

Community Cluster Wildland Fire Assessment

We produced maps for each of the community clusters as tools for smaller scale project planning and implementation. The cluster maps show the composite scores for each cluster: both the interior at-risk communities and their surrounding 1½ mile buffers. In addition, a second set of cluster maps displays both planned and completed hazardous fuel reduction treatments by the Forest Service and BLM for each area. Completed fuel reduction treatments are shown with black crosshatches. Planned treatments are displayed in varying shades of pink, depending on the type of treatment. Planned treatments for the Forest Service may occur up to seven or more years out. Often, the map shows planned treatments over top of completed treatments to indicate follow-up entries or maintenance activities. It is important to note that planned treatments are just that –planned– and may or may not actually occur in the exact manner specified on the maps.

Completed treatments include: thinned, thinned and treated, underburned, and THAW (interagency fuels treatments). Planned treatments include: thinning and treating (T&T), thinning, treating and underburning, and underburning. Thinned treatments are areas either commercially thinned via a timber sale, post and pole sale, firewood sale, or some other type of sale where commercially usable products are removed and sold, or pre-commercially thinned where small trees that do not have commercial value are cut. These treatments aim to reduce the crown bulk density and/or remove ladder fuels to improve forest health and reduce intense fire behavior.

Treated areas are areas where the slash (leftover limbs, tops, and trees that have been cut during thinning) from thinning is either removed (piled/burned, piled/removed, utilized for firewood, poles, etc.) or minimized in some way either by underburning or mastication of some kind (chipping, broken into small pieces close to the ground so it will degrade more quickly).

Underburned treatments are areas where ground fuels and some ladder fuels are burned and reduced by low intensity prescribed fire. It is important to note that areas labeled ‘Thin, Treat, and Underburn’ represent a mix of treatments and do not necessarily indicate that all three types of treatment will take place on every acre.

The THAW treatments that appear on the Oregon Outback cluster map represent an interagency hazardous fuels reduction project involving the BLM, Forest Service, Oregon Department of Fish and Wildlife (ODF&W), Walker Range, and many local community members. The project has resulted in approximately 825 acres of fuels treatment including hand-thinning/pile burning, mowing, and slash busting (mastication).

The five landscape layers of the wildland fire assessment identify and prioritize risk and hazard across the planning area. The cluster maps help identify priorities areas for treatment within the boundaries of an individual at-risk community.

Odell Lake Summer Homes

Areas of highest risk in this cluster are the homes on the perimeter of the lake. There are only a few small areas of land surrounding Odell Lake that have been treated. Planned treatments include thinning and treating lands northeast and southeast of the lake. An evacuation route is proposed for the south end of the lake.

Crescent Lake Summer Homes

The cluster of structures on the northwest perimeter of the lake presents the highest risk area on Crescent Lake. Several treatments have been accomplished to the east and southeast of Crescent Lake. In addition, the Forest Service completed a large treatment to the northeast of the lake between the Southern Pacific Railroad and the community of Crescent Meadows. Planned treatments include large areas to the southeast and northeast of the lake. A proposed evacuation route runs from Crescent Lake Summer Homes on the west side of the lake around to the southeast side.

Crescent Lake Junction

The areas of highest risk lie within the community perimeters, especially to the west of Oregon State Highway 58. The largest fuel treatments in this cluster include a treatment southwest of Crescent Meadows, extending to the east side of the Southern Pacific Railroad, and a treatment directly east of Crescent Lake Junction. A number of smaller patchy treatments exist primarily in the south and southeast area, right inside of the 1½ mile buffer. A number of thinning and treating projects are planned for areas west of the railroad tracks, east and northeast of Diamond Peak/Leisure Woods, north of Balducci Acres, and surrounding Crescent Lake Junction and Crescent Meadows.

Oregon Outback

The areas of highest risk in this community cluster are Sun Forest Estates and the northern part of Old Howard Estates. According to the map, most of the communities have had THAW treatments around some or all of their perimeters where they border BLM land. Proposed

treatments include expanding the existing THAW project buffers to 1,500 feet around the communities of Sun Forest Estates, Forest Meadows, Split Rail, and Antelope Meadows.

Schoonover and vicinity

Each of the communities within this cluster has pockets of extreme risk. Most of the accomplished treatments have been carried out in the southern part of the cluster, especially around Cascade Estates and Tall Pines. Planned treatments include thinning, treating, and underburning projects surrounding Cascade Estates, the western side of Tall Pines, and areas west of Crescent and in a number of Forest Service lands within the cluster.

Crescent/Gilchrist

Robert River Acres is the highest risk area in this cluster. Cascade Timberlands owns most of the land surrounding the communities of Crescent and Gilchrist. The Forest Service has completed some thinning and burning treatments to the west and southwest of the community, south of County Highway 61. The Forest Service plans to maintain and expand these treatments (thin, mow, and burn), as well as add a treatment to the south of the Kaehn/Riddle Road Area. The map does not show any treatments planned for the northern or eastern boundary.

Hwy 97 West

The areas of highest risk are River Pines Estates, Mahn Acres, Wagon Trail Ranch, and parts of Stage Coach. There are no treatment areas within the 1½ mile buffer in this cluster and no planned treatments. However, the Walker Range Steering Committee identified a number of hazardous fuel reduction actions for the area including treating areas on BLM lands, along Michaels Rd, behind Hackett- River Pines and Wildwood, and areas in and to the west and north of Wagon Trail Ranch and Stagecoach.

Two Rivers/Little Deschutes River

More than fifty percent of the community of Two Rivers is classified as extreme risk. The lands surrounding Two Rivers have been thinned and treated and underburned, especially to the south and southwest of the community, along the Little Deschutes River. The completed treatments will be maintained or continued with a mix of thinning, mowing, and prescribed burning. Additional treatments are also planned for areas to the northeast along the Little Deschutes River and to the southwest of Two Rivers. Few treatments are planned to the east of the community.

Chapter 6

Community Outreach

Community wildfire protection plans rely on coordinated action and strong local involvement to be effective. The steering committee wanted to ensure that the needs, issues, and suggestions from the public were identified and incorporated into the community wildfire protection plan whenever possible. The steering committee also wanted to make sure that the public had the opportunity to understand the risk of wildland fire and what they should do about it.

In addition to educating and motivating local residents, the information gathered at the community meetings helped the steering committee tailor proposed fuel reduction projects and emergency response improvements to identified local needs. The wildland fire assessment examined risk and hazard across the landscape in the Walker Range area. The community meetings identified the perspectives and insight from local residents at the community scale. These two sources of information allowed us to better link the landscape issues to local actions.

We held two rounds of community meetings, one at the beginning of the planning process and one toward the end. The first series of meetings aimed to inform the public about the plan and identify the areas they thought were at risk and any areas that might hinder effective emergency response in the wildland urban interface (e.g. locked gates, lack of evacuation routes, long narrow driveways, etc.). The meetings also had residents identify the places (beyond their homes) that were important to them to protect from wildland fire.

The second round of meetings was held toward the end of the planning process after the completion of the wildland fire assessment and the draft action plan. The purpose of these meetings was to notify the public about the analysis and the accompanying action plan and solicit their responses.

First Round of Community Meetings

In fall of 2004, the Walker Range Fire Plan Team hosted a series of six community meetings about the Walker Range Community Wildfire Protection Plan. The objectives of the meetings were to:

- Inform the community about the purpose of the wildfire protection plan
- Identify the community values that local residents most want protected from wildfire
- Identify local residents most pressing concerns about wildfire
- Identify potential emergency response improvements
- Invite local leaders to participate in the planning process

Each of the meetings included an overview of the wildfire plan and a discussion of key issues. The meetings offered participants the opportunity to identify on a map the values that they most wanted protected and the places that they considered at high risk to fire. Below is a summary of the common themes and key findings that emerged at the community meetings. Also included is

a summary of the issues and mapping exercise that was completed at each community meeting (a more detailed summary appears in Appendix B).

Common Themes and Issues

- Treating vacant lots. This issue emerged strongly at the community meetings. Ideas to address the issue included:
 - Developing buffers on public and private lands around particularly bad vacant lots
 - Developing a vacant lot ordinance similar to Deschutes County
 - Continuing peer pressure tactics and letters from Walker Range
- Priority for federal land treatment: create a series of buffers around the perimeter of the communities
- Protecting important community infrastructure such as:
 - Fire stations, community centers, utility lines, radio towers, water tanks, roads, schools, cemeteries, historic homes, camp grounds, horse camps, trails and trailheads
- Protecting adjacent ecologically important areas such as:
 - Preserving wildlife habitat in fuel reduction projects
 - Riparian areas and meadows
 - Big game migration corridors (especially elk)
 - Great gray owl habitat
- Improving emergency evacuation by:
 - Widening, thinning along roadsides, taking out locked gates
 - Developing new evacuation routes
 - Avoid unduly providing access for off highway vehicles (OHVs)
- Treating common areas within subdivisions.
 - Emerged strongest in Wagon Trail Ranch
- Need to build in a maintenance program into the strategy
 - Many brush/shrub communities will grow rapidly when the overstory is thinned
 - Need to take care of brush piles—brush piles tend to make homeowners nervous
- Improving signage—most pressing in Schoonover, Tall Pines, and Wagon Trail Ranch
- Improving emergency response capacity
 - Developing water sources in the Outback area
 - Generally, improve capacity of local fire departments
- Make firewood available off of public lands
- Concerns with smoke associated with prescribed burning and burning slash piles
- Better communication in general with federal agencies (concerning things like burning, planned projects, firewood availability etc....)
 - Improve communication to homeowners
 - Provide advance information about what to expect during fuel reduction projects
- Concerns with how federal agencies leave the land looking

- Concern that the area will lose its rural forest feel—too many trees cut

Meeting Locations

The meetings were held at the following locations:

- Crescent/Gilchrist, Crescent Community Club
- Hwy 97 West, Wagon Trail Clubhouse
- Oregon Outback, Bill Leech's Garage
- Two Rivers/Schoonover, Chemult RFPD Station
- Crescent Lake Junction, Crescent-Odell Lakes RFPD Fire Station

Second Round of Community Meetings

In May of 2005, the Walker Range Fire Plan Team hosted a second series of five community meetings about the Walker Range Community Wildfire Protection Plan. The meetings were intended to:

- Inform residents of the status of the Walker Range Community Wildfire Protection Plan.
- Educate residents about the outcomes of the draft plan.
- Solicit public feedback on the priorities of the plan.
- Encourage public participation and help people understand what they could do to protect their property from wildland fire.

Each of the meetings included an overview of the wildfire plan, the major priorities, and key strategies. The meetings also included an overview of defensible space, fire safety prevention, and education. The meetings were held at various locations across the Walker Range area.

Meeting Locations

- Crescent/Gilchrist, Crescent Community Club
- Hwy 97 West, Wagon Trail Clubhouse
- Oregon Outback, Bill Leech's Garage
- Two Rivers/Schoonover, Chemult RFPD Station
- Crescent Lake Junction, Crescent-Odell Lakes RFPD Fire Station

Public Comments on the Draft Walker Range CWPP

The second round of public meetings drew about 80 people. In general, attendees were pleased with the overall strategy of reducing fuels in the wildland urban interface and the priorities in the plan. At several meetings, participants suggested activities or issues that could be address in the plan. Many of these comments addressed additional emergency evacuation routes. As a result of this feedback, many new emergency evacuation routes were added to the priorities in the action plan.

Chapter 7

Action Plan Goals and Objectives

The purpose of the action plan is to guide implementation based on the results of the wildland fire assessment, community meetings, and planning process. The steering committee, fire protection capacity committee, and education committee developed goals and objectives for action in three key areas: hazardous fuel reduction, fire protection capacity, and education. Proposed actions were also developed for structural vulnerability, social and ecological values to be protected, biomass utilization, and monitoring and evaluation. The group then developed an implementation strategy to achieve these goals and objectives.

Hazardous Fuel Reduction

Reducing hazardous fuels in the wildland urban interface was one of the primary purposes of the Walker Range CWPP. The steering committee used the community cluster maps showing the wildland fire assessment information, the planned and completed treatment maps, and their extensive local knowledge to develop the following hazardous fuel reduction recommendations for each of the eight community clusters in the Walker Range area.

**Table 9
Hazardous Fuel Reduction Recommendations**

Community Cluster	Recommended Hazardous Fuel Reduction Actions
Crescent Lake Summer Homes	Intense treatment around structures
	Improve defensible space, widen driveways
	Improve evacuation routes
	Reduce crown bulk density, decrease likelihood of crown fire
Crescent/Gilchrist	Develop defensible space
	Control bitterbrush on Cascade Timberland
	Maintenance schedule for all ownerships, revisit plan in five years
Crescent Lake Junction	Work on evacuation and escape routes
	Complete all planned fuel reduction treatments on federal lands
	Meet or exceed SB 360 standards around residences and structures
Hwy 97 West	Treat vegetation on roadsides of Michaels Rd
	Build access to river in Little River Ranch for firefighting
	500 ft buffer on east side of Wagon Trail Ranch (WTR) and Stagecoach
	Intensive treatment on BLM blocks and west side of river
	Improve evacuation routes for River Pine Estate (treat and maintain vegetation and sign the route)
	Treat west side of Little River Pines and Wildwood (Cascade)
	Maintain Cascade Timberland surface fuel at low levels

Community Cluster	Recommended Hazardous Fuel Reduction Actions
	Treat common lands and vacant lots in Wagon Trail Ranch. Put in hiking trail and fire break Work with homeowners to develop defensible space
Odell Lake Summer Homes	Treat Forest Service land up to wilderness boundary Add or improve evacuation routes
Oregon Outback	Treat evacuation routes out of Forest Meadows to Split Rail, and on Michael Rd Expand existing THAW treatment buffers to 1500 feet Treat west of railroad tracks and east of Old Howard, north side of Sun Forest and Hwy 31 Develop defensible space on private property around residences in interior of the subdivision Protect future home of fire station on Beale Rd. Proposed treatment: homeowners and Cascade
Schoonover and vicinity	Treat roadsides – widen and add better signs, control brush Improve proposed evacuation routes, provide signage Complete Forest Service planned treatments Meet or exceed Senate Bill 360 standards around residences and structures
Two Rivers/Little Deschutes	Put proposed evacuation route on west side of gates Decrease vegetation on either side of evacuation routes Treat southwest corner, use pre-commercial thinning (PCT) Treat east side with PCT

In addition to the community-specific goals described above, more general goals divided by the main types of land ownership (private residential, private forestland, and federal land) are listed below.

Private Residential Land Goals

- Protect the safety of people, property, and natural resources from wildland fire
- Increase the ability to suppress a wildland fire in the wildland urban interface by treating hazardous fuels
- Protect and restore watersheds
- Meet landowners' objectives for forest health and restoration
- Maintain a balance of hazardous fuel reduction, aesthetics, wildlife habitat, and property values
- Priority areas for hazardous fuel reduction treatments in the wildland urban interface include:
 - Defensible space around homes and structures
 - Emergency escape routes
 - Roadside fuel reduction treatments along main transportation corridors
- Meet or exceed the standards set by Senate Bill 360
 - Establish a fuel break around structures

- Create fuel breaks along roadsides and property lines
- Improve driveway access for fire trucks
- Remove tree branches near chimneys and dead branches overhanging roofs
- Move firewood away from structures or cover it
- Remove flammables from under decks and stairways²⁰

Private Forest Land Goals

- Focus treatments around developed home sites and access routes
- Treat fuels adjacent to subdivisions and communities identified as high priority in the wildland fire assessment
- Decrease the risk of uncharacteristic wildland fire behavior by decreasing hazardous fuels to create flame lengths less than four feet
- Treat dense seedlings, saplings and pole stands and contiguous bush to a condition that can be maintained by mechanical means in treatment buffers adjacent to identified communities at risk
- Continue to meet existing standards for multiple objectives (Oregon Forest Practices Act and federal requirements under grant payments)
- Protect adjacent properties and resources from a wildland fire that originates on private forestland
- Meet landowner's objectives for forest health and restoration

Federal Land Priorities

- Focus hazardous fuel reduction treatments in the wildland urban interface around communities identified as high risk by the wildland fire assessment.
- Reduce hazardous fuels with the goal of achieving Condition Class 1 while protecting and enhancing key ecological and social values associated with the areas.
 - Establish maintenance program to address future fuel build-up
 - Address on a landscape, not acre by acre
- Decrease the risk of uncharacteristic wildland fire behavior by reducing hazardous fuels in order to achieve flame lengths less than four feet
 - Reduce crown fire potential
- Continue to meet existing standards for multiple objectives (Wild and Scenic Rivers, Endangered Species Act, National Environmental Policy Act, etc.)
- Protect private property, tribal property, and natural resources
- Protect and restore watersheds

²⁰ Oregon Forestland-Urban Interface Fire Protection Act, *Property Evaluation and Self-Certification Guide for Deschutes County*, August 2004.

Fire Protection Capacity

The primary goal of fire protection capacity is to improve communities' ability to prepare for and respond to wildland fire events. Much of the effort to develop the goals and actions regarding community fire protection capacity was completed by the Fire Protection Capacity Working Group. The working group developed the following broad goals:

- 1) Improve and expand ability to deliver water for fire suppression
- 2) Improve and maintain communication between all jurisdictions
- 3) Improve the ability of the rural fire protection districts to respond to wildland and structural fires
- 4) Improve emergency access routes
- 5) Improve residential and street signage
- 6) Encourage compliance with state and local fire codes (e.g. SB360 and Klamath County Article 69)

Water Source Development

The development of adequate and dependable water sources is a crucial aspect of community fire preparedness. Of the 38 communities in the Walker Range plan area, only three have pressurized wet fire hydrants: Crescent, Gilchrist, and Diamond Peaks/Leisure Woods. All of the other communities rely on a variety of sources to supply water during fires, including dry hydrants (hydrants that are plumbed to a water source but require drafting), tanks, ponds, and open sources (like swimming pools).

The fire protection capacity committee developed the following goal and objectives to guide the process of improving water sources.

Goal: Improve and expand ability to deliver water to respond to wildfires

Objectives:

- 1) Provide readily accessible information about location and capacity of all sources to all structural and wildland fire protection organizations
- 2) Develop new water sources; dip ponds, dry hydrants, and drafting sources (e.g. creeks, lakes, ponds, tanks)

In 2004, the Walker Range Forest Protective Association received funds from the Klamath County Advisory Council to develop new ponds and install dry hydrants. As part of the process of improving water sources, the working group mapped all of the existing water sources on public and private land. The working group also set the following standards for all water sources:

- All developed water sources will be made accessible to all fire protection jurisdictions via a permanent easement and deeded access (contact Walker Range Forest Protective Association for a copy of a sample easement and the Oregon Water Resources Department website for a water source permit²¹).
- All piped water sources will use 3 to 6-inch plumbing with 2½” or 4½” national standard thread (NST) attachment fittings. Adapters must be available for all apparatus.
- Hydrant and couplings will be the same size (existing hydrants have 2½” or 2½” and 4½” ports)

With a map of existing water sources completed, the working group was able to identify the high and medium priorities for new water source development. Table 10 below contains proposed prioritized water source development needs for dry hydrants, ponds, and tanks.

Table 10
Proposed Prioritized Water Sources

Type	Name	Location	Capacity	FPD
High Priority				
Dry Hydrant	Crescent Pines	Buzzard Lane Bridge on Crescent Creek		Walker Range
Dry Hydrant	Two Rivers	on Little Deschutes River on Chinquapin Dr. 1. 60 road		Walker Range
Dry Hydrant	Cliff Ranch Rd.	at Hackett Dr. in irrigation canal		Walker Range
Dry Hydrant	Wagon Trail Ranch	at Wagon Trail Clubhouse in Little Deschutes River		Walker Range
Dry Hydrant	Highway 58 @ Cold Creek			Crescent-Odell
Pond	Split Rail Pond	Split Rail Road	20,000 gal	Oregon Outback
Pond	Dove Pond		75,000 gal	Oregon Outback
Pond	Crescent Lake Jct - Dip Pond - Grizzly	South of Hwy 58, MP 71		Walker Range
Pond	CB11 Pond - Goldfish			Walker Range
Pond	Spring Butte Dip Pond	off of 800 Rd		Walker Range
Tank	Sun Forest Estates		5,000 gal	Oregon Outback
Tank		Hackett Dr./River Pines	5,000 gal	Crescent
Tank		Jackpine Subdivision	30,000-50,000 gal	Crescent

²¹ Application for a Permit to Store Water in a Reservoir, <http://www1.wrd.state.or.us/pdfs/storage.alt2003.pdf> (accessed July 13, 2005).

Type	Name	Location	Capacity	FPD
Medium Priority				
Dry Hydrant		Hwy 58 @ Odell Creek Bridge		Crescent-Odell
Dry Hydrant		Hwy 58 @ Crescent Creek Bridge		Crescent-Odell
Dry Hydrant		Odell Lake @ Shelter Cove Resort or Trapper Creek		Crescent-Odell
Dry Hydrant		Odell Lake @ Odell Creek Bridge near Odell Lake Resort		Crescent-Odell
Dry Hydrant		60 Road @ White Fish Creek Bridge		Crescent-Odell
Dry Hydrant		Hwy 58 @ Crescent Creek Bridge-Brewer Ranchos		Crescent-Odell
Dry Hydrant		Crescent Lake Hwy @ Crescent Creek near or at Crescent Lake Resort		Crescent-Odell
Dry Hydrant		Hwy 58 @ Little Deschutes River Bridge		Crescent-Odell
Dry Hydrant		Odell Lake @ Princess Creek CG ramp		Crescent-Odell
Dry Hydrant		Odell Lake @ Sunset Cove CG ramp		Crescent-Odell
Dry Hydrant		Crescent Lake CG ramp		Crescent-Odell
Tank		Storage Tank @ Crescent Junction	10,000 gal	Crescent-Odell
Tank		Storage Tank on Hwy 58 @ Balducci Acres	10-20,000 gal	Crescent-Odell
Dry Hydrant	Cres-Del Acres	Royce Mtn. Road bridge over Crescent Creek		Walker Range
Dry Hydrant	Tall Pines	bridge on Gulick Rd.		Walker Range
Dry Hydrant	Schoonover	on Little Deschutes River by gravel pile		Walker Range
Dry Hydrant	Masten Road	at Masten Rd. by County pullout		Walker Range

Communication

Communication during wildland fires and other events emerged as an important issue to address in the Walker Range CWPP. Currently, the Federal Communications Commission mandates that all federal, state, and local agencies adopt narrowband frequencies for communication. Most of the rural fire protection districts in Walker Range currently own wide band radios that do not support narrow band frequencies. They do not currently have the funds to purchase new narrow band radios. This problem has led to a situation where many rural fire protection districts cannot communicate with their state and federal partners during a wildfire event. The ability to communicate across radio frequencies is called “interoperability.”

In addition to incompatible frequencies, current communications capabilities are limited by the poor service and reception provided by the Walker Mountain Radio Repeater site. Numerous “dead spots” exist throughout the districts due to this poor coverage.

Goal: Improve and maintain communication between all jurisdictions

Objectives:

- 1) Maintain and improve interoperability between all jurisdictions
- 2) Improve communication during wildfire evacuations
- 3) Upgrade the rural fire protection districts’ communication equipment
- 4) Standardize radio channels/frequencies used by regional fire districts
- 5) Adopt National Incident Management System / Incident Command System (NIMS/ICS) as standard Incident Management System. Train personnel to minimum standards as soon as possible (FEMA IS-700, IS-100, IS-200, etc.).
- 6) Adopt “plain language” radio communications policies to reduce confusion over local use of “10 codes,” which may have other meanings or no meaning to responding mutual aid agencies

Actions:

- 1) Develop Walker Range interoperability plan
- 2) Acquire new communication tools for rural fire protection districts
- 3) Improve emergency management communication
- 4) Enhance coordination with Klamath County Emergency Services/KC911 for service improvements, coordination, and system standardization

The long-term goal of all the jurisdictions in the Walker Range plan area is to comply with the national and state standards for interoperability. However, in the short term (the 2005 fire season) the Fire Protection Capacity Working Group selected a set of tactical radio frequencies that will be used to maintain communication during wildland fire events. These frequencies and characteristics are described below in Table 11. Each agency has a frequency for receiving and transmitting and a few agencies have associated tones.

**Table 11
Walker Range Response Area Radio Frequency List**

	Agency	Receive	Tone	Transmit	Tone
1	KFALL 911	154.070		154.400	192.8
2	DES 911	154.175		154.175	
3	Walker MT.	151.145	151.4	151.400	131.8
4	DES.1ODEL	169.875		171.2625	146.2
5	Red Net	151.340		151.340	
6	White Net	151.310		151.310	

	Agency	Receive	Tone	Transmit	Tone
7	USFS Tactical	168.200		168.200	
8	USFS Project	170.500		170.500	
9	USFS Air	170.000		170.000	
10	Fire Marshal	154.280		154.280	
11	BLM Tactical	166.150		166.150	None

Source: Walker Range Fire Protective Association and Prineville BLM

Fire District Capacity

The previous sections addressed water sources and communication as related to fire protection capacity. This section examines the general capacity of the fire districts and associations in the plan area and outlines goals for increasing their ability to prepare for and respond to wildland fire.

In general, the Walker Range area has strong capacity to respond to wildland fires and much more limited capacity to respond to structural fires. All of the rural fire districts in the plan area are small, under-funded, and rely heavily on volunteers. The Crescent RFPD and the LaPine RFPD are the only two districts that have career firefighter staff. The other districts depend solely on volunteers. Raising the capacity of the rural fire protection districts is a key goal of the Walker Range CWPP.

The following section describes the current inventory of the facilities, personnel training, structural equipment, apparatus, and goals of the fire protection districts and associations in the Walker Range area. For the rural fire protection districts, acquiring more trained personnel is the highest priority.

Crescent-Odell Lakes Rural Fire Protection District

Facilities: Crescent Lake Community Service Center/Fire Station

Personnel Training:

- 8 EMS personnel; varied experience
- 2 certified firefighter/paramedics; each with over 25 years experience
- 8 new firefighters with 2 months experience (structural and wildland training)
- Department of Public Safety Standards and Training (DPSST) certified instructors for: Haz-Mat, technical rescue, firefighter, driver, apparatus operator, Incident Command System (ICS), etc.

Structural Equipment:

- 12+ self contained breathing apparatus (SCBA) units with spare cylinders
- Hydraulic Rescue Tool
- Air chisels

- Foam capability
- NFPA/ISO equipment complement on structure engines (ref. NFPA 1901)
- NFPA equipment complement on wildland apparatus (ref. NFPA 1906)

Apparatus:

**Table 12
Crescent-Odell Lakes RFPD Apparatus**

Type	Quantity	Capacity	Additional Capabilities	Year	Comments
1985 Pierce Engine/Telesquirt	1	1250 gpm, 500 gal	full NFPA 1901 structural equipment	1985	Type 1 engine
1978 Ford Structure Engine	1	1250 gpm, 750 gal	full NFPA 1901 structural equipment	1978	Type 1 engine, old/tired
1979 Chev. Mini-Pumper/Brush Engine	1	250 gpm, 250 gal	NFPA 1906 wildland equipment	1979	Type 6X engine
1980 GMC Mini-Pumper/Brush Engine	1	400 gpm, 300 gal	wildland, structure, and rescue equipment	1980	Type 6X engine
1983 Ford Rescue	1		EMS equipment	1983	Rescue Aid Vehicle
International 3000 gal Water Tender	1	80 gpm, 3000 gal	some wildland equipment	1980?	Type 2 tender

gal - gallons
gpm – gallons per minute
NFPA – National Fire Protection Association

Goals:

- 1) Response capable to all alarms for service with trained/certified personnel
- 2) Recruit, train and retain a cadre of 12+ certified personnel
- 3) Obtain, maintain, train and support; apparatus, equipment, facilities and personnel to meet applicable NFPA Standards, ISO ratings schedules, DPSST and NWCG certification standards
- 4) Reduce ISO rating from current ISO-9 to ISO-5 or 6 as soon as possible

Actions in support of goals:

- 1) New 4wd, type 1, structure engine on order, delivery 10/05
- 2) New Rescue on order, delivery 10/05
- 3) New wildland personal protective equipment (PPE) and gear on order, 6/05
- 4) New fire pumps on order, 6/05
- 5) Increase structural firefighter (FF) training for personnel, w/FF1 certification, summer 2005

- 6) Increase wildland firefighter training for personnel, w/Type 1 certification, summer 2005
- 7) Provide volunteer recruiting and retention incentives, 6/05
- 8) Improve water supply and delivery capacity through training and equipment, summer 2005
- 9) Improve citizen awareness and involvement through ongoing public information/education, training, open houses, mailings, recruiting, etc.

Crescent Rural Fire Protection District

Facilities: Station #1 at Crescent (main facility) and Station #2 at Hackett Drive (north end of the district)

Personnel Training:

- 2 full-time firefighters/paramedics
- 1 full-time firefighter/EMT-I
- 2 volunteer paramedics
- 1 volunteer EMT-I
- 4 EMT-Basics

Crescent has Oregon Department of Public Safety and Standards Training Accreditation for Fire at the following levels:

- entry level firefighter
- firefighter I
- NFPA driver,
- NFPA pumper operator
- Fire ground leader I
- S-130, S-190 wildland

Bi-monthly continuing education exists for all EMTs at all levels.

Structural Equipment:

- Holmotro (Jaws of Life) extraction tool and appliances
- Extrication air bags and chisel
- 20+ self contained breathing apparatus (SCBA) units
- Port-a-Tank (2500 gal) for water tender shuttle
- 2 water monitors for large gallon per minute (gpm) flow
- on board deck gun E-1111

Apparatus:

**Table 13
Crescent RFPD Apparatus**

Type	Quantity	Capacity	Additional Capabilities	Year	Comments
Type I structure engine	2				
Type III structure engine	1				
Type VI brush/rescue engine	1				
pumper/tender	1	3000 gal			
ALS/BLS ambulances	2				
command/training vehicle	1				
snowmobile/rescue/travois	1				

Goals:

- 1) Improve current ISO ratings for north portion of district (9 to 8b)
- 2) Maintain, train, and recruit more volunteers (ongoing goal)
- 3) Begin and maintain a sleeper program from the Fire Science Program at Central Oregon Community College (COCC)
- 4) Construct a new fire station within the next 4 years with a larger training room and sleeper quarters

Chemult Rural Fire Protection District

Facilities: Chemult (main), Beaver Marsh, Two Rivers North

Apparatus:

**Table 14
Chemult RFPD Apparatus**

Type	Quantity	Capacity	Additional Capabilities	Year	Comments
engines	1	1800 gal	foam		
	3	750 gal	foam		
	1	250 gal	foam		
tenders	2	5000 gal	foam		
	1	3500 gal	foam		
	1	3200 gal	foam		
ambulances	3		one w/rescue, foam		

Oregon Outback Rural Fire Protection District

Facilities: none

Personnel Training:

- 4 trained S130-190 wildland fire fighter

Structural Equipment:

- 3 pumpers

Apparatus:

**Table 15
Oregon Outback RFPD Apparatus**

Type	Quantity	Capacity	Additional Capabilities	Year	Comments
engines	2	1200 gal			
water tenders	1	5500 gal			
	1	3500 gal			
	1	1200 gal			
wildland trucks	1	750 gal	foam		
	2	250 gal			

Goals:

- 1) To make the department operational and be able to respond to fires and first responder medical emergencies
- 2) To recruit and train more volunteers
- 3) To construct a large shelter for rolling stock and equipment
- 4) To attempt to qualify for approximately 20 acres from the BLM to build an operational fire station

Walker Range Fire Protection District

Facilities: 135393 Hwy 97 N, Crescent

Personnel Training:*

- 1) All firefighters are Type 1 or higher qualified.
- 2) Single resources – Incident Command Type (ICT) 3
- 3) Dozer/tender operator
- 4) Single resource – ICT 4/Firefighter
- 5) Single resource – ICT 5/Firefighter
- 6) Staging manager
- 7) Firefighter II

* Dependent on ICS (Incident Command System) qualification under North West Coordination Group (NWGG).

Apparatus:

**Table 16
Walker Range FPD Apparatus**

Type	Quantity	Capacity	Additional Capabilities	Year	Comments
engines	1	1200 gal			CWN
	1	1000 gal			6 pack
	2	500 gal			
	3	200 gal			
water tenders	1	4000 gal			
dozers	2				one with 2100 gal tank
miscellaneous: crew cabs, administrative vehicles, etc.	8	750 gal	foam		

Goals:

Walker Range FPA will maintain current level of service while continuing to look for opportunities to enhance efforts.

The district's goals are to:

- 1) Minimize the total cost and loss resulting from fire in terms of suppression cost and damage to timber and other forest values
- 2) Assist in reducing trauma associated with emergencies

Specific objectives include:

- 1) Decrease human-caused fires
- 2) Aggressively fight and safely manage wildland fires
- 3) Be an integral member of the community

US Forest Service, Crescent Ranger District Fire Protection Organization

Facilities: 136471 Hwy 97 N, Crescent

Personnel Training:*

- 5 person handcrew, single resource Incident Command Type (ICT) 4 or higher

* Dependent on ICS (Incident Command System) qualification under North West Coordination Group (NWGG).

Apparatus:

Table 17
US Forest Service, Crescent Ranger District FPO Apparatus

Type	Quantity	Capacity	Additional Capabilities	Year	Comments
engines	1	1000 gal			
	1	300 gal			

Emergency Evacuation Routes

As noted earlier, many of the communities in the plan area are rural, isolated, and surrounded by forests (federal and private). Consequently, the lack of evacuation routes is a concern for many of the communities in the plan area. The vast majority of the communities in the plan area do not have recognized, signed, and permitted evacuation routes. Many of the existing and proposed emergency evacuation routes pass through federal lands prior to reaching a major road. In some cases, federal land managers have unknowingly eliminated communities' emergency evacuation routes while decommissioning forest roads for wildlife, sedimentation, or recreation control purposes.

The goal is to provide at least two routes into and out of subdivisions for use in the event of an emergency requiring mass evacuation. These routes shall be designated as "Emergency Evacuation Routes" for the subdivision and are not intended for use on a regular, non-emergency basis by non-emergency response personnel.

The fire protection capacity committee identified the improvement of evacuation routes out of subdivisions as a high priority.

Goals:

- 1) Provide signed, permitted, and mapped emergency evacuation routes for all communities within the plan area
 - a) Focus efforts on subdivisions and communities with one way in and one way out
 - b) Communicate location and schedule of existing and proposed evacuation routes to appropriate federal land management agency to facilitate special use permit process
 - c) Secure easements to provide access through private land
 - d) Sign routes and maintain signs
- 2) Identify and improve access routes currently inaccessible by fire apparatus

Evacuation routes were classified as follows:

- Existing routes (which currently have no easements)
- Proposed routes
- Subdivisions with no existing or proposed routes

Existing Evacuation Routes, no easements:

Crescent Lake Summer Homes:

- Crescent Lake Summer Homes: to Rd 6020 to Hwy 58 or Windigo Pass Rd

Crescent Lake Junction:

- Balducci Acres: to Hwy 58
- Brewers Ranchos: all roads feed to Hwy 58
- Crescent Lake Junction: feeds to Hwy 58 or Crescent Lake Hwy 429
- Crescent Meadows: to Hwy 429 to Hwy 58
- Crescent Pines: feeds to Hwy 58
- Cres-Del Acres: to Hwy 58
- Diamond Peaks/Leisure Woods: to Hwy 58

Oregon Outback:

- Antelope Meadows: to Howard Rd to Beal Rd to Hwy 31
- Antelope Meadows: to Michael Road to Hwy 97
- Forest Meadows: Split Rail to Sunforest to Hwy 31
- Forest Meadows: to Split Rail to Beal Rd to 31
- Old Howard Estates: Long Prairie to Beal Rd to Hwy 31
- Schoonover and vicinity:
- Cascade Estates: McNeal to Hwy 58
- Cascade Estates: Starlite to Hwy 58

Crescent/Gilchrist:

- Airport Drive: south airport to County Rd 61
- Airport Drive: to Friendly Acres to County Rd 61
- Ramey Acres: to County Rd 61
- Friendly Acres: Friendly Lane to County Rd 61
- West Friendly Lane: to 100 spur to Airport Rd to County Rd 61
- East Friendly Lane: west to Friendly Lane to County Rd 61
- East Friendly Lane: to 100 spur to Airport Rd to County Rd 61
- Crescent: to Hwy 97
- Gilchrist: to Hwy 97
- Kaehn/Riddle Roads: to Hwy 97
- Pinney Acres: to Hwy 97
- Ramey Acres: to County Rd 61

Hwy 97 West:

- Chapman Road: to Hwy 97
- Chapman Road: to Jackpine Village

- Jackpine Village: Gracie Rd to Hwy 97
- Jackpine Village: Old Cabin Rd to Hwy 97
- Little River Ranch: Collar Rd to Masten Rd to Hwy 97

Existing or Continuing Routes:

Oregon Outback:

- Split Rail: to Beal Rd to Hwy 31
- Split Rail: to Forest Meadows to Sun Forest to Hwy31
- Sun Forest Estates: to Hwy 31
- Sun Forest Estates: to Forest Meadows to Split Rail to Beal Rd to Hwy 31

Schoonover and vicinity:

- Schoonover: SCH-1 to railroad crossing right-of-way to Hwy 97 and ongoing
- Tall Pines: Wildriver Dr to FS 6125 south to Hwy 58
- Tall Pines: Mulley Drive across Cascade Timberlands to railroad right-of-way to Hwy 58 or 97
-

Crescent/Gilchrist:

- Roberts River Acres: Kreel Lane to Hwy 97
- Hwy 97 West:
- River Pine Estates: to Hwy 97
- Stagecoach Acres: Paul Dr to Hackett Rd to Hwy 97
- Wagon Trail Ranch: Wagon Trail Rd to Masten Rd to Hwy 97
- Willis Lane: to Hwy 97

Two Rivers/Little Deschutes River:

- Two Rivers: to Rd 5830 to 5825 to Hwy 58

Proposed Routes:

Crescent Lake Junction:

- Crescent Pines: to Buzzard Lane to 100 spur to Hwy 429
- Cres-Del Acres: Royce Mtn way to FS 170 to FS 100 to Hwy 429 or 100 spur to 6020 to 60 to Hwy 58
- Diamond Peaks/Leisure Woods: Brad Kahler is working on this with Amanda Barnes and Tim Cramblit

Oregon Outback:

- Forest Meadows: Split Rail to BLM road to Beal Rd to Hwy 31
- Forest Meadows: Bonneville Power Administration right-of-way to Hwy 31
- Old Howard Estates: Long Prairie Rd north to BLM road to Hwy 97
- Sun Forest Estates: ongoing with Oregon Outback Rural Fire Protection District

Schoonover:

- Cascade Estates: east to Monk Rd to USFS unnamed road to Hwy 58 at halfway house
- Cascade Estates: Monk Rd to Forest Service road to Hwy 58

Crescent/Gilchrist:

- Gilchrist: Albert Dr across Cascade Timberlands to Rd 9765 north to Hwy 97 or south to 9768 to Hwy 97
- Kaehn/Riddle Roads: to Klamath Northern Railroad south to Rd 9772 to Hwy 97
- Pinney Acres: east to pipeline right-of-way south to Rd 9768 to Hwy 97
- Roberts River Acres: Hauser land across Cascade Timberlands to GT-1 to Hwy 97

Hwy 97 West:

- Antelope Meadows: to Kurtz Rd to Beal Rd to Hwy 31
- Jackpine Village: Old Cabin Road to Michael Rd to Hwy 97 or east to Midstate Rd to Howard to Beal Rd to Hwy 31
- Little River Ranch: Collar to MH-1 to Masten Rd to Hwy 97
- Little River Ranch: to Alleghany road to MH-1 to Masten to Hwy 97
- Mahn Acres: MH-1 to Masten to Hwy 97
- Mahn Acres: across river to Stagecoach Acres to Hackett Rd to Hwy 97
- River Pine: Rector Drive to Cliff Ranch road to Hwy 97
- River Pine: Paul Dr to BLM road to Hwy 97
- Stagecoach Acres: to BLM road to Hwy 97
- Willis Lane: across Cascade Timberlands to Michael Rd to Hwy 97 or east through Antelope Meadows to Hwy 31
- Chapman Tract: to BSR
- Chapman Tract: to GT-2-2

Two Rivers/Little Deschutes River:

- Two Rivers North: ongoing with WRPA/USFS

Education

Education and outreach are primary goals for the Walker Range CWPP. The Education Committee developed several goals for these efforts.

Goals:

- Increase homeowner responsibility
 - Increase level of compliance with SB 360 and Klamath County Article 69
 - Increase responsibility for treating vacant lots
 - Improve home addressing, evacuation route signage
 - Increase local and visitors' understanding of living with wildland fire
 - Increase and enhance existing education programs

- Improve web page as a communication tool
 - Post CWPP plan on the web
 - Get information to local builders/zoning officials
- Continue to work with education cooperatives to reach the public about fire safety
 - Provide education kits for local rural fire protection districts
 - Educate people about noxious weeds and how to address them
 - Recognize need for long-term maintenance
- Distribute the Defensible Space Checklist at appropriate opportunities (see Appendix D)

Structural Vulnerability

Goals

- Increase the likelihood of communities and structures surviving a wildland fire
- Increase the fire-safe characteristics of structures within the plan area
- Meet or exceed the standards set for Senate Bill 360 and Klamath County Article 69
 - Establish a fuel break around structures
 - Create fuel breaks along roadsides and property lines
 - Improve driveway access for fire trucks
 - Remove tree branches near chimneys and dead branches overhanging roofs
 - Move firewood away from structures or cover it
 - Remove flammables from under decks and stairways
- Implement neighborhood recognition award for property owners who comply with SB360 and Klamath County Article 69

Social and Ecological Values to be Protected

Goals

- Protect life and property while maintaining and enhancing the communities' sense of place
- Protect the areas and locations that are important to the community and visitors historic, cultural, ecological, and economic values
- Meet existing federal and state standards for natural resource protection

Biomass Utilization

Goals

- Support increased local and regional manufacturing capacity to utilize and add economic value to woody biomass
- Support the implementation of the Coordinated Resource Offering Protocol (CROP) in Central Oregon

- Support the development and implementation of the Business Alliance for Sustainable Energy (BASE)

Monitoring and Evaluation

The purpose of this monitoring strategy is to track implementation of activities and evaluate how well the goals of the Walker Range CWPP are being met over time. The data will help identify if milestones are being met and whether implementation is proceeding as envisioned. The monitoring strategy also provides a way for the community to be accountable to the public about the outcomes of the plan.

Table 18
Summary of Monitoring Tasks

Objective	Monitoring Tasks	Timeline
Wildland Fire Assessment	Continue to use reliable and viable data that are compatible among the various partner agencies	Annually
	Update the assessment with new data as conditions change	Annually
	Continue to reflect community input from meetings in the assessment	Annually
Fuels Reduction	Track the number of acres changed from Fire Regime/Condition Class from 2 or 3 to 1	Annually
	Track the total acres treated through fuel reduction measures	Annually
	Track grants; dollars awarded, to whom, and activities accomplished	Annually
	Document number of residents that meet the requirements of Oregon Forestland-Urban Interface Fire Protection Act (Senate Bill 360)	Every 3 years
	Monitor number of evacuation routes and roads treated for fire protection on county, private, state and federal roads	Annually
	Track education programs and document how well they integrate fuels objectives.	Annually
Emergency Management	Track education efforts around emergency management	Annually
	Track progress on water source improvements	Annually
	Track progress on evacuation route improvements	Annually
	Track progress on access/egress improvements	Annually

Implementation

Development of the Walker Range CWPP has been a complex undertaking. Implementing and sustaining these efforts will require a significant commitment. Building a collaborative and cooperative environment between community-based organizations, fire districts, local government, and the public land management agencies has been the first step in reducing the risk

of wildland fire. Maintaining this cooperation is a long-term effort that requires the commitment of all partners.

Goals

The Walker Range Forest Protective Association will convene both the Steering Committee and Fire Protection Capacity Committee on a semi-annual basis or as needed to accomplish the following:

- Evaluate progress toward meeting goals
- Set priorities
- Update goals and maps
- Review grant opportunities

Appendix A

Fire Policies and Programs

Local, state, and federal agencies have enacted many policies and programs related to community wildfire protection planning and fire protection. This appendix briefly describes these policies, as well as related county, state and federal programs.

National Fire Plan and 10-Year Comprehensive Strategy

After the disastrous 2000 fire season, Congress directed the federal land management agencies to develop the National Fire Plan (NFP). The intent of the NFP is to actively respond to severe wildland fires and reduce their impacts to communities while assuring sufficient firefighting capacity for future suppression. The NFP aims to help protect lives, communities and natural resources, while fostering cooperation and communication among state and federal agencies, local governments, tribes and interested citizens.

The NFP focuses on 1) fire suppression and protection, 2) restoration/rehabilitation, 3) hazardous fuels reduction, 4) community assistance, and 5) accountability. Most NFP funding in Oregon goes to wildland fire preparedness and hazardous fuel treatment. The National Fire Plan calls for the development of community fire plans to aid in effectively implementing NFP goals.²²

Federal Emergency Management Agency Disaster Mitigation Act of 2000

Federal Emergency Management Agency (FEMA), Title 44 CFR Part 201 of the Disaster Mitigation Act of 2000 requires that local and Indian tribal governments applying for pre-disaster mitigation (PDM) funds to have an approved local mitigation plan. Activities eligible for funding include management costs, information dissemination, planning, technical assistance, and mitigation projects for all types of natural disasters, including wildland fires.

Healthy Forest Initiative and the Healthy Forest Restoration Act

In 2002, President Bush announced the Healthy Forest Initiative (HFI). HFI is designed to identify and remove barriers to the implementation of projects aimed at restoring the health of the nation's forests. HFI focuses on creating more effective and efficient forest restoration projects. In addition to other provisions, HFI authorizes new categorical exclusions that allow the federal agencies to move more quickly through the required environmental analysis and streamlined consultation for National Fire Plan projects.

Congress enacted the Healthy Forest Restoration Act (HFRA) in November 2003. It provides new tools and authorities to expedite fuel reduction projects on federal land. Title I of the HFRA addresses vegetation treatments on certain types of National Forest System and Bureau of Land Management lands that are at risk of wildland fire or insect and disease epidemics. This title:

- Encourages streamlined environmental analysis of HFRA projects

²² Western Governors Association, *A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment: 10-year Comprehensive Strategy*, August 2001, <http://www.fireplan.gov/reports/7-19-en.pdf> (accessed June 15, 2005).

- Encourages collaboration between federal agencies and local communities in preparing community wildland fire protection plans
- Requires using at least 50% of the funding allocated to HFRA projects to protect communities at risk of wildland fire
- Encourages courts that consider a request for an injunction on an HFRA-authorized project to balance environmental effects of undertaking the project against the effects of failing to do so

Title III of the Act also encourages communities to develop the community wildfire protection plans that identify their wildland urban interface (WUI), where HFRA projects may take place.

The Oregon Forestland Urban Interface Fire Protection Act of 1997 (Senate Bill 360):

The Oregon Forestland Urban Interface Fire Protection Act was designed to reduce fire risk to homes located in fire-adapted interface areas that are protected by the Oregon Department of Forestry. The law establishes a basis for reducing the ignitability of structures by:

- Establishing a hazard rating for each community protected by the Oregon Department of Forestry
- Offering treatment standards for each homesite
- Providing educational and professional fire prevention guidance for landowners
- Requiring landowners to conduct a fire prevention assessment of their land and then certify that their interface property meets or exceeds the state of Oregon standards
- Establishing a statewide data system to track community compliance
- Requiring landowners to re-certify their property every five years

The treatment standards found in the Oregon Forestland Urban Fire Protection Act of 1997 address the immediate area adjacent to a structure. These treatment standards are a result of over thirty years of research conducted by the USDA Fire Research Facility in Missoula, Montana, and directly reduce radiant heat and flame impingement, which are the leading causes of structure loss during an interface fire event. Deschutes and Jackson County are the first two counties in Oregon to implement SB 360.

Central Oregon Fire Management Service Fire Management Plan 2004

The Central Oregon Fire Management Service (COFMS) Fire Management Plan 2004 discusses all aspects of fire and fuels management in the COFMS area. COFMS includes the Deschutes and Ochoco National Forests and the Prineville District BLM. The purpose of Fire Management Plan is to identify and integrate all wildland fire management, guidance, direction, and activities required to implement national fire policy and fire management direction.

Article 69, Klamath County

This articles outlines development standards designed to “promote safe and appropriate rural development in areas where wildfire represents a threat to persons and property.” The standards apply to “all new development zoned Forestry and Forestry/Range, and to all new development

in other zoned land located within an area identified as having a medium, high, or extreme hazard rating on the Wildland Hazard Ratings map adopted as part of the Klamath County Comprehensive Plan.” Specific standards have been developed for road construction, building construction, water supply systems, power supply systems, fuel break/property development, and identification signs.

Appendix B

Community Meeting Summary

Summary of Fall 2004 Walker Range CWPP Community Meetings

In the fall of 2004, the Walker Range Fire Plan Team hosted a series of six community meetings about the Walker Range Community Wildfire Protection Plan. The objectives of the meetings were to:

- Inform the community about the purpose of the wildfire protection plan
- Identify the community values that local residents most want protected from wildfire
- Identify local residents most pressing concerns about wildfire
- Identify potential emergency response improvements
- Invite local leaders to participate in the planning process

Each of the meetings included an overview of the wildfire plan and a discussion of key issues. The meetings also had a mapping exercise where participants identified on a map the values that they most wanted protected and the places around their community that they considered wildfire threats. Below is a summary of the common themes and key findings that emerged at the community meetings. Also included is a summary of the issues and mapping exercise that was completed at each community meeting.

Common Themes and Key Findings

- Treating vacant lots. This issue emerged strongly at every community meeting. Ideas to address the issue included
 - Developing buffers on public and private lands around particularly bad vacant lots
 - Developing a vacant lot ordinance similar to Deschutes County
 - Continuing peer pressure tactics and letters from Walker Range
- Priority for federal land treatment-- a series of buffers around the perimeter of the communities
- Protecting important community infrastructure such as:
 - Fire stations, community centers, utility lines, radio towers, water tanks, roads, schools, cemeteries, historic homes, camp grounds, horse camps, trails and trailheads,
- Protecting adjacent ecologically important areas such as:
 - Preserving wildlife habitat in fuel reduction projects
 - riparian areas, meadows
 - Big game migration corridors

- Great gray owl habitat
- Improving existing evacuation routes
 - widening, thinning along roadsides, taking out locked gates
 - developing new evacuation routes
 - issue coupled with unduly providing access for OHVs
- Treating common areas within subdivisions.
 - emerged strongest in Wagon Trail Ranch
- Need to build in a maintenance program into the strategy
 - Many brush/shrub communities will grow rapidly when the overstory is thinned
- Improving signage—most pressing in Schoonover and Tall Pines, Wagon Trail Ranch too
- Improving emergency response capacity
 - Developing water sources in the Outback area
 - Fixing the bridge(s) in Schoonover
 - Generally, improve capacity of local fire departments
- Making firewood available off of public lands
- Concerns with smoke associated with prescribed burning and burning piles
 - Improve communication to homeowners
 - Provide advance information about what to expect
- Concerns with how federal agencies leave the land looking
 - Concern that the area will lose its rural forest feel—too many trees cut
 - Need to take care of brush piles—brush piles tend to make homeowners nervous
- Better communication in general with federal agencies (concerning things like burning, planned projects, firewood availability etc....)

Crescent-Odell Lakes Fire Protection District

October 16, 2004, 11:00 am-1:00 pm

Captain Tim Cramblit welcomed the group and expressed his enthusiasm for working together. He said that Crescent-Odell is rebuilding and he looks forward to improving the capacity of the district. He noted that they have made use of Walker Range's chipper to treat the fuels around the fire station.

Issues Identified

The fuel reduction video raised a concern that fuel reduction projects leave the landscape looking sterile, and result in reduced diversity of wildlife and habitat.

Mapping Results

In addition to specific locations noted on the map, several community members identified the value of maintaining diverse wildlife habitat within fuel reduction efforts.

- Treat the Forest Service lands around the shore of Crescent and Odell Lakes to protect the houses and summer homes.
- Treat the Forest Service lands directly adjacent to the Railroad tracks and RD 6015.
- Improve access for apparatus to lands around the perimeter of Crescent Lake.
- Treat fuels.
- Widen road.
- Protect Horse Camp at southwest tip of Crescent Lake-Forest Service land.
- Protect Boy Scout Camp on Crescent Lake-Forest Service land.
- Protect Simax Park/Beach -Forest Service land.
- Treat right of way for railroad.

Highway 58 East and Two Rivers North
October 16, 2004, 2:00 pm -3:30 pm

Location: Two Rivers North Fire Station

Isolated rural subdivision at least 10 miles east of Hwy 58.

Bob from the Board of Directors of the Chemult Rural Fire Protection District welcomed folks and noted that the Chemult Fire has not been very active and involved in their community. He remarked that the ambulance and emergency personnel don't know there way around the community and have to be escorted in.

Walker Range fuel reduction, assessment, and infrastructure activities

Ron and Echo from Walker Range have been doing a lot of work with the chipper in Two Rivers North. Many lots of have been treated.

Issues Identified

Vacant lots

- Community members voiced concerns about vacant lots not being included in SB 360.
- Deschutes County is passing a vacant lots ordinance to deal with this issue, and Klamath County might want to consider doing something similar.
- Forest Service could focus prescriptions around vacant lots.

Lack of notice for prescribed burns

- Community members voiced concerns about inadequate notice when the Forest Service burns units near their homes.
- Many community members suffer from asthma or health problems, and suffer from the smoke.
- The group discussed creating an effective phone tree, and looking at alternatives to burning.
- Amanda suggested giving the Forest Service direct phone numbers of people with serious concerns so they can be contacted directly.

Mapping Results

- There is a need to address private lots that pose high risks.
- There is an urgent need to address vacant lots, including dangers from windstorms.
- There was a desire to focus federal treatments around vacant lots.
- There needs to be better notification of Forest Service prescribed burns.
- The Forest Service should look at alternatives to burning.
- There was an interest in residential wood-cutting programs in areas with lots of downed wood.
- The group should follow up on getting a map of escape routes from Kate Sessions.
- There is an issue with gates on roads. How can you limit illegal access without limiting ingress?
- There was interest in the outcome of the Forest Service proposal to develop a day use area at Cow Camp off of 5830.

Wagon Trail, Little River Ranch, Mahn Acres
October 16, 2004, 11:00 am-1:00 pm

Issues Identified

A resident asked whether insurance premiums would be reduced because of SB 360 certification. Tom explained that insurance companies have shown interest in SB 360, but there is no guarantee premiums will go down. The program will ensure that people remain insured, in contrast to other areas of the country where insurance companies have started to back off of insuring interface areas.

Mapping Results

In addition to specific locations noted on the map, several community members identified the following values, issues, and concerns:

- Better street signs are needed in Wagon Trail Ranch for emergency responsive (reflective, larger lettering).
- The emergency evacuation route needs to be finished (marked on map).
- Common areas are a treatment priority.
- Nobody was present from Mahn Acres, but it was suggested that some areas of Mahn Acres would benefit from fuel reduction as well.
- Vacant lots are an issue.
- It was recommended to treat the west side of the river, as it poses the biggest threat.
- There is an interest in retaining wildlife values (ex. willow habitat), big game migration corridors, and great grey owl habitat (they prefer old lodgepole stands with leaning trees, close to clearings). (It was noted on the map where known owl habitat is or used to be.)

Crescent—Gilchrist
October 16, 2004, 11:00 am-1:00 pm

Issues Identified

- Does SB 360 entail landowner liability? Tom explained the guidelines of SB 360 and confirmed that the certification done by Walker Range exceeds SB 360 standards.
- A participant offered Deschutes County's chipping program is inadequate. Tom responded and offered the name of the program manager
- A comment noted a concern that opening up too much forest canopy would lead to heavy bitterbrush recruitment, which increase dangerous fuels buildup.
- There was interest in firewood utilization programs on federal lands. One landowner had been unable to get an adequate response in the past from the BLM.
- A resident was concerned un-burned hand piles left next to his house on adjacent BLM land.
- There were also concerns about smoke issues from burning piles.
- Vacant lands need to be treated
- Interest in making firewood available off of public lands
- Concern about bitterbrush growth in opened canopies
- Concern about brush piles being taken care of on BLM land
- Smoke concerns from burning on federal lands

- Evacuation routes in Schoonover and Michael Rd.
- Bridges in Schoonover need improvement
- Signage needs improvement (especially in Schoonover and Tall Pines)
- Fuels projects need to incorporate strategies for maintenance in the future
- Concern about protecting water quality in the watershed as it relates to fire

Mapping Results

- Need fuel break prior to private lands on surrounding Forest Service lands, south of Crescent Rd.
- Vacant lots need to be treated--between Jug and East Friendly Lane.
- Protect Meadow--private land, next to Riverview and railroad.
- Protect graveyard/headstones-- private land, written about 1.5 miles from the northern end of Crescent. South of Crescent Cutoff Rd.
- Treat vacant lots, with absentee landowners, near Friendly Lane—Private land, eastern end of South Airport.
- Protect Water Tank—on Cascade Timberlands, written about .25 miles east of the north-eastern tip of Crescent--about .25 miles east of the eastern end of Main.
- Protect Reservoir—on Cascade Timberlands, about .25 miles northeast of the Water tank in #7.
- Antelope Meadows, Michael Rd needs brushed out/widened BLM lands
- Protect electronic towers (WR. radio, TV, etc.) on Cascade Timberlands, about 1.75 miles from the northeastern end of Crescent.
- Protect Crescent School-- about .25 miles from the north eastern end of the pond.

Oregon Outback Rural Fire Department

11-6-04

Issues Identified

- Need to address vacant lots. Much interest in doing something similar to Deschutes County
 - Interest in working together. “Will you cover our backs if we go to the County?”
 - Deschutes County Draft Vacant Lot Ordinance applies to:
 - Undeveloped lots, individually owned, outside city limits
 - County lots- returned to county due to tax defaults
 - Grant funding to treat lots in subdivisions
 - 50% of the lots in Oregon Outback area are owned by absentee owners
- Improve and maintain access to water sources for emergency response and:

- Hold fleet
- Develop water sources
- Improve BLM response
- Local economic impact: Are locals being utilized to do the work? Can we get more local businesses involved?
 - Forest Service using corrections crews
 - Need to incorporate input from local loggers into plan
 - Local contractors doing work on THAW--slashbusters and such
- Can the marketplace be utilized?
 - increase value by claiming fire-resilient
 - working with real estate and title companies
 - include in realtor information in ads
- Lots of interest in intra-agency cooperation and collaborative planning
- Is Cascade Timberlands included in treatment areas?
 - Perimeter lands to be converted to buffers were included in the Cascade Timberland's 2005 logging plan; land is slated to be taken out of production after that.
 - 53 miles of perimeter around the Oregon Tree Farm
 - Cascade Timberlands had land burned from wildfire in other areas
- The work done to date looks great and is a huge benefit to property owners.
- BLM is currently identifying roads to close and keep open.
- Inform community when burning will happen, via CAT newsletter
- Firewood permits on THAW?
- Personal use permits on adjacent properties
- Fuel Reduction and Emergency Response Improvements
- Fire district goal of 50 ft-100 ft buffer around subdivisions
 - develop defensible space around homes
 - be able to do initial attack with equipment
 - reduce flame lengths to 2 feet
- Need for an extension and widening of Split Rail to Beal Road to create accessible and safe escape route
- Need for a perimeter road around the subdivisions for an access road and fire break

- Protect 20-acres on Beal Rd. (dirt road); future home of fire house
- Protect powerline corridors/utilities and Railroad—prevent fire starts

Mapping Results

- Thick vegetation and high hazard on BLM land immediately north of the northern end of Antelope Meadows and about .5 miles from the western end of Howard.
- Note: 100 ft buffer around private property with vehicle access.
- Need access on Burlington Northern right of way; on BLM land, next to northern section of Split Rail.
- 20 AC Oregon Outback RFPD community center and E.M.S. complete to include 5 AC air park helicopter. Pad location: BLM land, .12 miles from comment #1, next to northern section of Split Rail, next to railroad.
- Proposed 200k 6 gallon dipping pond on BLM land, immediately next to the middle of comment #2.
- Protect water hole on private land, .25 miles from the railroad, in southern section of Split Rail.
- Potential water source on private land, .2 miles from the railroad, .2 miles from the southern end of Split Rail.
- Water source underdevelopment; private land, immediately next to “Gait” and “Post,” in northern section of Forest Meadows.
- Create 100 ft. buffer around all subdivisions with vehicle access for fire patrol.
- Widen slash road for access of fire trucks only, keep dust down.
- Widen right of way, south side only, 50 ft right of way on BLM land; refers to the drawn evacuation route portion that connects Split Rail to Forest Meadows.
- 121 lots on the southern portion of Forest Meadows—about 20 of these lots are developed—rest need fuel reduction.
- Existing Hunter Trail drawn about .1 miles wide, and 2.75 miles long. Extends from the northern half of the railroad to northern half of Sun Forest Estates. All in BLM land.
- Potential evacuation route drawn about 3 miles long. Extends along the railroad for about 1.5 miles, extends through Split Rail for .5 miles, and 1 mile connects the southern half of Split Rail with the railroad and connects with Forest Meadows. Most of it in BLM land, .5 miles of it in Split Rail.
- Existing road or trail drawn about .5 miles long. Offshoot of the eastern end of Existing Hunter Trail- All in BLM land.
- Power line is .6 miles in length. Drawn from the eastern end of “Existing” drawing to .25 miles into Sun Forest Estates. .4 miles is in BLM land

- Access road is .6 miles in length. Drawn from the southern end of Forest Meadows to the southern end of Sun Forest Meadows.
- X drawn in the boxes all along Beechwood in the Sun Forest Estates to signify that areas need cleaning, fire hazard, junk yard-fire hazard. More X's along Larchwood, and Crosswood.

Summary of Spring 2005 Walker Range CWPP Community Meetings

Crescent Lake Junction

- Widen road into Crescent Lake Junction.
- Treat/remove creosote from "La Brea Tar Pits". (The comment referred to an abandoned railroad tie treatment area that had large deposits of creosote that, if ignited, would produce highly hazardous smoke during a wildfire.)

Hwy 97 West

- Wagon Trail Ranch should be a high priority for an evacuation route.
- Review easement document for dry hydrant on Yoke road

Two Rivers

- Proposed escape routes
- Chinkapin and Odell Roads
- Design "gate" to leave open enough for recreation vehicles but not vehicles
- Representatives from Walker Range and community members will get together to look at proposed escape route map

Appendix C

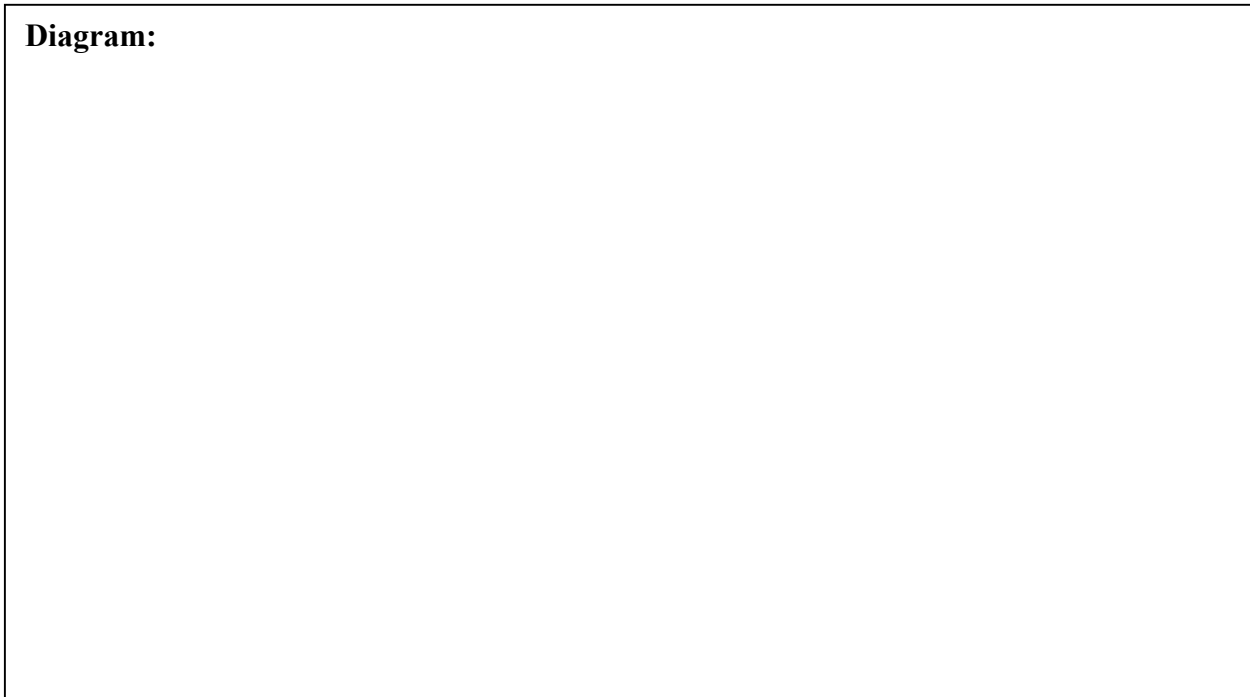
Wildfire Hazard Rating Form

Name of Subdivision _____		Date _____
County _____	Size (acres) _____	# Lots _____
Rating _____	Comments _____	

	Points		Points
A. Subdivision Design		C. Topography	
1. Primary Roads		1. Predominant Slope	
Two or more primary roads	1 _____	8% or less	1 _____
One road	3 _____	More than 8%, but less than 20%	4 _____
One way in, one way out	5 _____	20% or more, but less than 30%	7 _____
		30% or more	10 _____
2. Width of Primary Road		D. Roofing Material	
20 feet or more	1 _____	Class A Rated	1 _____
20 feet or less	3 _____	Class B Rated	3 _____
		Class C Rated	5 _____
		Non-Rated	10 _____
3. Accessibility		E. Fire Protection - Water Source	
Road Grade 5% or less	1 _____	500 GPM Hydrant within 1000'	1 _____
Road Grade 5% or more	3 _____	Hydrant farther than 1000' or draft site	2 _____
		Water source within 20 minutes or less, round trip	5 _____
		Water source farther than 20 min., and less than 45 min. round trip	7 _____
		Water source farther than 45 min., round trip	10 _____
4. Secondary Road		F. Existing Building Construction Materials	
Loop roads, cul-de-sacs with outside turning radius of 45 feet or greater	1 _____	Noncombustible siding/deck	1 _____
Cul-de-sac turnaround radius is less than 45 feet	2 _____	Noncombustible siding & combustible deck	5 _____
Dead end roads 200 feet or less in length	3 _____	Combustible siding & deck	10 _____
Dead end roads greater than 200 feet in length			
5. Average lot size		G. Utilities	
10 acres or larger	1 _____	All underground utilities	1 _____
Larger than 1 acre, but less than 10 acres	3 _____	1 underground, 1 above ground	3 _____
1 acre or less	5 _____	All above ground	5 _____
6. Street Signs		Total For Subdivision _____	
Present	1 _____		
Partially	3 _____		
Not Present	5 _____		
B. Vegetation		Rating Scale:	
1. Fuel Types		Moderate Hazard	
Light	1 _____	High Hazard	
Medium	5 _____	Extreme Hazard	
Heavy	10 _____		
2. Defensible Space			
70% or more of site	1 _____	Rated By _____	
30% or more, but less than 70%	3 _____	Date _____	
Less than 30% of site	5 _____		

Contributing and/or influencing factors surrounding subdivision) i.e.; fuel load, fuel types, access or escape routes, slope, tree species, bug, natural cause or snow damage, fuel characteristics (blow down, grass, major reprod patches, continuous ladder fuels etc.)

Diagram:



Appendix D

Defensible Space Checklist²³



YOUR DRIVEWAY:

- Post address signs so emergency responders can find you.
- Trim branches along your driveway at least 14' tall & 14' wide for fire trucks.
- Construct a fuelbreak along your driveway - 15' on both sides.



YOUR HOME:

- Replace wood shake roofs with non-flammable roofing material.
- Remove leaves & needles from gutters, roofs, & decks.
- Remove tree limbs that overhang roof.
- Keep decks free of flammable lawn furniture, doormats, etc.
- Screen vents and areas under decks with 1/8" metal mesh.
- Dispose of debris safely.



WITHIN 30' OF YOUR HOME:

- Maintain 30' around your home - lean, green & clean.
- Locate wood piles away from buildings.



WITHIN 100' OF YOUR HOME:

- Remove dead plants & brush.
- Remove low tree branches & shrubs.
- Mow grass to 6".

²³ Resource Innovations, *Josephine County Integrated Fire Plan*, March 2005.

Appendix E

GIS Data Sources

Wildland Fire Assessment Methods

Source of Data			
File Name	Date	Source	Treatment
FNLRiskRaster2	Fires from 1993-2003	Areas identified by fire managers	<p>Fire Density – State and Fed fires were combined and condensed to include only human and lightning caused. This was clipped to the Walker Range CWPP boundary and run through Spatial Analyst >Density with the following parameters: Kernel, search radius=3724ft (The radius of a 1000ac circle), 30ft cell size, Area Units=acres and reclassified to the state standard and assigned points as follows: Low or 0-.1 per 1000 acres per 10 years = 10pts; Moderate or .1-1.1 PER 1000 acres per 10 years = 20pts and High or 1.1+ per 1000 acres per 10years = 30pts. "FNLFIREDENS" is the final fire density raster. A point shapefile "Structures" was derived from Klamath County tax records using an improved value of \$1000 as the minimum improvement. The points were then run through Spatial Analyst>Density with the following parameters: Kernel, 372ft(113.386m)search radius (The radius of a 10ac circle), 30ft cell size (To maintain the 10m cell size of the rest of the data), Area Units = acres. Reclassified to the Homes per 10 acres density standard with 0 -.9 = 0 pts; 1-5 = 5 pts and 5.1+ = 10 pts. "FNLSTRUCTDENS2" is the final structural density raster and comprises 10 pts of the "Risk" category's 40 pts.</p> <p>These 2 rasters were combined to produce FNLRiskRaster2.</p>
FNLWRHAZD4-28	Obtained Nov 2004	Fire Atlas and DEMs and Deschutes National Forest	<p>DEMs used are 10-meter resolution downloaded from Oregon GIS data library. Each DEM was run through Spatial Analyst for Slope and Aspect. I used Arc View's default for determining North, Northeast, etc. Slope was calculated in % and then reclassified to 0-25%=0; 26-40%=1 and >40%=2. Aspect was reclassified: N, NW, NE=0; W,E=3; and S,SW,SE=5. The DEM was reclassified into 3 classes: 0-1133.8m (3500ft.) =2; to 1524m (5000ft.) =1 and above 5000=0.These 3 grids were added together in Raster calculator to produce "FNLWRTOPORAST", a 1-10 point breakdown of Topographic Hazard. A 4th raster was created from the CWPP boundary with all cells = 40pts (Weather). A 5th raster was created by reclassifying the Crown Fire Potential raster(FNLWRCFPRAST) derived from Deschutes National Forest data.15 points maximum was assigned A 6th raster was created by reclassifying the Fuel Model raster(FNLWRFUELRAS) obtained from the Fire Atlas.15 points maximum was assigned. A 7th raster was developed based on local</p>

Source of Data			
File Name	Date	Source	Treatment
			knowledge of fire treatments(TODDRCLASS). Cells within the 1.5 mile buffers were given values of -24, -15, and 0. The last 5 rasters were mosaicked in Raster Calculator to produce "FNLWRHAZD4-28"(80PTS).
FNLVALPROT4-8	Obtained Dec 2004	Klamath County	Klamath County tax records were used to derive a point shapefile, "Structures", using an improved value of \$1000 as the minimum improvement. The points were run through Spatial Analyst>Density with the following parameters: Kernel, 372ft(113.386m)search radius (The radius of a 10ac circle), 30ft cell size (To maintain the 10m cell size of the rest of the data), Area Units = acres and reclassified to the Homes per 10 acres density standard with 0-.9 =2pts;1-5 = 15pts and 5.1+ = 30pts. "VALPROTECTRAS2" is the final structural density raster and comprises 30 pts of the "Values Protected" category's 50 pts. All areas within buffers were deemed to contain "more than one" Natural Resource and Community Infrastructure. 20 points was added to each cell for "Community Infrastructure" and "Ecological and Recreational values"
FNLWRPROTCAP	Developed Jan 2005	Areas identified by fire managers	All cells within the CWPP boundary were given a value based on the knowledge of the local fire managers and the criteria of the ODF state standards.
FNLSTRCVULN4	Developed Jan 2005	Areas identified by fire managers	Converted to grid and reclassified according to the Walker Range Subdivision Assessment. 8 Areas were identified and assigned 30, 60 or 90 pts depending on their "Structural Vulnerability"
FNLCALCTODD	Developed Jan 2005	Developed by COIC GIS	The rasters were mosaicked. (added together) in Spatial Analyst>Raster Calculator. Each cell now has a risk value.
Individual Subdivision or Area of Interest Average Value	Developed Jan 2005	Developed by COIC GIS	Each Subdivision or Area of Interest was buffered by 1.5 miles and run through Spatial Analyst>Zonal Statistics to obtain average values for the area within the Subdivision or AOI and the area within the 1.5 mile buffer.