Okanogan County, Washington

Community Wildfire Protection Plan

2013

UPDATE

Buckhorn Fire, Okanogan County, Washington – September 2012

This plan was developed by the Okanogan County Community Wildfire Protection Plan committee in cooperation with the Okanogan County Department of Emergency Management, Washington Department of Natural Resources, and Northwest Management, Inc.

Acknowledgments

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

Okanogan County Commissioners
and the employees of Okanogan County

Washington State Department of Natural Resources

USDI Bureau of Land Management

USDA Forest Service

USDI Bureau of Indian Affairs

USDI Fish & Wildlife Service

Confederated Tribes of the Colville Reservation

Federal Emergency Management Agency

Washington Military Department
Emergency Management Division

City of Omak
City of Okanogan
City of Oroville
City of Tonasket
City of Brewster
City of Pateros

Okanogan C. D. C.

Town of Conconully
Town of Nespelem
Town of Elmer City
Town of Coulee Dam
Town of Riverside
Town of Twisp
Town of Winthrop

Okanogan County Fire Districts #1 - 16
City of Omak Fire Department
City of Okanogan Fire Department
Town of Conconully Fire Department
Town of Coulee Dam Fire Department

Okanogan County Sheriff's Department
Okanogan County Public Utilities District
Okanogan Conservation District
&
Local Businesses and Citizens of Okanogan County

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Forward

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

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

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

*The **Okanogan County Community Wildfire Protection Plan** was updated in 2013, and supersedes the 2009 version, by the Okanogan County CWPP committee, the Okanogan County Conservation District, and the Washington Department of Natural Resources with project facilitation and support provided by Northwest Management, Inc. of Moscow, Idaho. Funding for the project was provided by Title III Funds. This Community Wildfire Protection Plan will be reviewed bi-annually and updated at least every five years starting from the year of adoption.*

The Community Wildfire Protection Plan was developed in compliance with the Federal Emergency Management Agency requirements for a wildfire mitigation plan, a chapter of a countywide Multi-Hazard Mitigation Plan.

Chapter 1

Overview of this Plan and its Development

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

- Okanogan County Commissioners and County Departments
- City of Omak
- City of Okanogan
- City of Oroville
- City of Tonasket
- City of Brewster
- City of Pateros
- Town of Conconully
- Town of Nespelem
- Town of Elmer City
- Town of Coulee Dam
- Town of Riverside
- Town of Twisp
- Town of Winthrop
- Okanogan County Fire Districts
- City of Omak Fire Department
- City of Okanogan Fire Department
- City of Coulee Dam Fire Department
- Town of Conconully Fire Department
- Washington Department of Natural Resources
- Confederated Tribes of the Colville Reservation
- Colville Agency, Bureau of Indian Affairs
- Washington Department of Fish and Wildlife
- Okanogan County Public Utilities District
- Okanogan County Public Health
- USDI Bureau of Land Management
- Washington Military Department, Emergency Management Division
- Okanogan County Conservation District
- USDA Forest Service

- Okanogan County Sheriff's Department and Emergency Management
- Northwest Management, Inc.

The Okanogan County CWPP steering committee solicited competitive bids from companies to lead the assessment and writing of the **Okanogan County Community Wildfire Protection Plan**. Northwest Management, Inc. (NMI) was selected to provide this service to the county. The project manager from NMI was Mr. Brad Tucker.

Goals and Guiding Principles

Planning Philosophy and Goals

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

Mission Statement

The Okanogan County Community Wildfire Protection Plan identifies wildfire response capability, educates homeowners to reduce the ignitability of structures, evaluates critical infrastructure throughout the County, identifies prioritized areas for hazardous fuel reduction treatments on Federal, State, and Private land, and builds on existing efforts to restore healthy forest conditions within the County. This plan will clarify our priorities for the protection of life, property, and critical infrastructure as well as identify wildland-urban interface areas.

Vision Statement

Promote a Countywide wildfire hazard mitigation concept through leadership, professionalism, and excellence, guiding the way to a safe, sustainable Okanogan County.

Goals

1. To reduce the area of WUI land burned and losses experienced because of wildfires
2. Prioritize the protection of people, structures, infrastructure, and unique ecosystems contributing to our way of life and the sustainability of the local and regional economy
3. Educate communities about the unique challenges of wildfire in the wildland-urban interface (WUI)
4. Establish mitigation priorities and develop mitigation strategies in Okanogan County
5. Strategically locate and plan fuel reduction projects
6. Provide recommendations for alternative treatment methods, such as modifying forest stand density, herbicide treatments, fuel reduction techniques, and disposal or removal of treated slash
7. Meet or exceed the requirements of the National Fire Plan and FEMA for a County-level Wildfire Protection Plan

United States Government Accountability Office (GAO)

Since 1984, wildland fires have burned an average of more than 850 homes each year in the United States and, because more people are moving into fire-prone areas bordering wildlands,

the number of homes at risk is likely to grow. The primary responsibility for ensuring that preventative steps are taken to protect homes lies with homeowners. Although losses from fires made up only 2 percent of all insured catastrophic losses from 1983 to 2002, fires can result in billions of dollars in damages.

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

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

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

State and Federal CWPP Guidelines

This Community Wildfire Protection Plan will include compatibility with FEMA requirements for a Hazard Mitigation Plan, while also adhering to the guidelines proposed in the National Fire Plan, and the Healthy Forests Restoration Act (2004). This Community Wildfire Protection Plan has been prepared in compliance with:

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

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

Additional information detailing the state and federal guidelines used in the development of the Okanogan County Community Wildfire Protection Plan is included in Appendix 5.

Integration with Other Local Planning Documents

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

Okanogan County Multi-Hazard Mitigation Plan – 2013

In the 2013 Draft of the Multi-Hazard Mitigation Plan, the Task Force was developing ways to raise the community awareness of the natural hazards that threaten the public health and safety, the economic vitality of businesses, and the operational capability of important facilities and institutions. The draft plan identified the hazards threatening Okanogan County and provided an assessment of the risks posed. It also detailed the specific vulnerabilities of Okanogan County and many of the facilities that are important to the community's daily life. The plan included proposals to avoid or minimize those vulnerabilities. This information assisted individuals in understanding how the community could become safer from the impacts of future disasters. The work done and community supported garnered during the 2012-13 planning process has been incorporated in this Community Wildfire Protection Plan.

Okanogan County Comprehensive Plan

The Okanogan County Comprehensive Plan (Plan) is a 20-year guide for the future of Okanogan County. The Plan provides a framework to support growth, development, and public decision-making in the County. It provides the vision of how residents want the County to grow and evolve over time. It establishes the goals, policies, priorities, and actions that the County will pursue to allow maintenance and enhancement of the quality of life, preservation of the rural character, sustainability of agricultural and natural resource industries, provision of recreational opportunities for residents and visitors, and protection of environmentally sensitive areas.

A comprehensive plan is a document that can benefit private property owners, local businesses, County staff, cities and towns in the County, state and federal agencies, Tribes, community organizations and other interested parties. It is an effective management tool for elected officials, empowers community members to help define the future vision and character of the County, guide development patterns of the County, and provide predictability to property owners regarding the future use and enjoyment of their land.

The Okanogan County Comprehensive Plan has been updated throughout 2012 and the most recent edition is the Revised Final Draft that came out in May of 2013. The Okanogan County Community Wildfire Protection Plan will be incorporated as a tool for decision makers to further their knowledge of specific high risk areas in order to make more informed decisions on how development should occur in those areas. Although land use designations are expected to be revised, specific recommendations regarding the vulnerability or potential dollar losses of future buildings, infrastructure, and critical facilities is not possible at this time.

Okanogan County Hazard Identification and Vulnerability Assessment

The Hazard Identification and Vulnerability Assessment (HIVA) dated February 2004 describes natural and technological (human-made) hazards, which can potentially impact the people,

economy, environment, and property of Okanogan County. It serves as a basis for County-level emergency management programs. It is the foundation of effective emergency management and identifies the hazards that organizations must mitigate against, prepare for, respond to, and recover from in order to minimize the effects of disasters and emergencies. The HIVA is not a detailed study, but rather a general overview of hazards that can cause emergencies and disasters. The Okanogan County Multi Hazard Mitigation Plan is a much more comprehensive approach, is more detailed, and provides specific plans to approach the County's problem areas.

Okanogan County Comprehensive Emergency Management Plan (CEMP)

The Comprehensive Emergency Management Plan (CEMP) dated January 2011 considers the emergencies and disasters likely to occur, as described in the Okanogan County Hazard Identification and Vulnerability Assessment, and describes functions and activities necessary to implement the four phases of Emergency Management – mitigation, preparedness, response and recovery. The plan utilizes Emergency Support Functions, which identify primary and support agencies responsibilities/activities that County and local jurisdictions may need in order to implement all-hazard mitigation. It provides policies, information, recommendations and guidance to assist responsible officials making operational decisions. This plan is more the "who, what, when, where and why" activities in the event of an emergency. Emergency Support Functions (ESFs) = Transportation; Emergency Communications; Public Works & Engineering; Fire Protection; Information Analysis & Planning; Mass Care; Resource Management; Health & Medical Services; Search & Rescue; Hazardous Materials; Food & Water; Energy & Utilities; Military Support; Recovery & Restoration; Law Enforcement; and Damage Assessment**.** This plan does not conflict in any way with the Multi Hazards Mitigation Plan. CEMP updates will include support of initiatives and action items outlined in the Okanogan County Multi Hazard Mitigation Plan.

Okanogan County Zoning Ordinance

This ordinance does not identify hazard areas in great detail although there are a few zoning districts in the Methow Valley that prohibit new residences within the floodplain. These zones are the "Methow Review District", the "Rural Residential District", and the "Low Density Residential District".

Critical Areas Ordinance

This ordinance identifies protected and hazardous areas. Protected areas are fish and wildlife habitat conservation areas, aquifer recharge areas, and wetlands. Hazardous areas are frequently flooded areas, geologically hazardous areas, erosion hazard areas, landslide hazard areas, mine hazard areas, seismic hazard areas, and volcanic hazard areas.

Open Space Timber/Open Space Open Space Plans

The Open Space Timber (OST) and Open Space Open Space (OSOS) Plans could be affected by some fuel reduction practices. The effects are more beneficial than hazardous, if handled appropriately. OST requires the sustenance of healthy commercial-grade timber. Fuels reduction has been shown to increase timber health. OSOS requires the sustenance of priority resources, other than timber. Landowners must ensure that fire-safety practices do not damage priority resources that keep them in the program in which they receive a property tax reduction.

Master Program for Okanogan County Shoreline Management

The Master Program for Shoreline Management outlines allowed/prohibited uses within specific shoreline zoning designations. All shoreline designations allow forest practices within shoreline areas. Non-forestry related mitigation actions would be looked at individually, hopefully either allowed or allowed by permit. Most of the identified action items would have no effect on the shoreline areas such as road signs, evacuation plan, public education, fire-safe building materials etc. The shoreline ordinance is currently being revised and will conform to all existing regulations and plans. Upon approval of the Okanogan County Multi-Hazard Mitigation and Community Wildfire Protection Plans, the revised shoreline plan will acknowledge and support their adoption.

Edelweiss Development Community Wildfire Protection Plan

Citizens in the Edelweiss Development of Okanogan County have been concerned about the effects of wildfire since development began in the early 1970's. The community was placed on a Level II Evacuation Order during the Whiteface Fire in 1994. The 2004 Fawn Peak Fire and recent major fires in the Pasayten Wilderness and in the Chewuch Drainage keep this concern alive. The 2003 Needles Fire, that threatened the entire upper Methow Valley, provided another scare, evacuation alert and increased emphasis for fire safety. The Edelweiss Maintenance Commission (EMC), the association management body, took action in 2001 and applied for a National Fire Plan grant. They were successful in acquiring a $145,700 grant to conduct a "Fire Wise" workshop and risk assessments, to develop a Community Wildfire Protection Plan, to develop a fuel break along the Goat Creek Road and begin fuels treatment on demonstration lots and on the first bench. In 2002 the grant was amended to add $300,050 to continue additional fuels treatments. These funds have provided for increased awareness and support for the program and fuels treatment on 134 high priority acres, on about 25% of the development. But blocks of high-risk fuels still exist and the community desires to continue the program. Proposed projects are outlined in this Community Wildfire Protection Plan (CWPP).

The primary goal of the Edelweiss Community Wildfire Protection Plan (CWPP) is to identify and implement projects that will protect people in the CWPP area, including residents, firefighters, and emergency personnel, from injury and loss of life. The secondary goal is to minimize or eliminate damage or loss of property and essential infrastructure due to wildfire.

Pine Forest Community Wildfire Protection Plan

Citizens in the Pine Forest Development of Okanogan County [Methow Valley near Winthrop] have been concerned about the effects of wildfire since they began development in the early 1970's. This concern was amplified in 1995 when the Fire District, Department of Natural Resources and Forest Service conducted a fire simulation exercise that showed lives and the entire community would be lost during the simulated fire. Increased awareness and recent frequent fires in the Methow Valley provide the catalyst for reducing the fire risk. Pine Forest was the first community to address the fire risk conditions in the Methow Valley.

The Pine Forest Owners Association (PFOW), the association management body, took action in 1998 to develop a Forest Stewardship Plan to address the fuels loading and forest health conditions, starting with the community greenbelt areas. Initial treatments were commercial thinning, removing ladder fuels and hand piling and burning.

This was followed by three National Fire Program grants, totaling nearly $100,000, in 2001 and 2002 to continue the program. These funds provided for increased awareness and support for the program and fuels treatment on about 150 high priority acres, about 30% of the development. Current grants will complete the risk assessments, complete development of their local CWPP, and treat an additional 70 acres. Blocks of high-risk fuels will remain in the Pine Forest area; thus, the community desires to continue the program. Lack of safe ingress/egress continues to be a major concern.

Havillah Community Wildfire Protection Plan

The Havillah community is an unincorporated area in the northeast corner of Okanogan County. There are no Rural Fire Districts within the area covered by the Havillah CWPP. The area has a history of large wildfires which have burned numerous residences and structures in the vicinity, destroyed private and public timber stands and damaged crops and grazing acreage. The fires generally have had a negative economic and social impact on the area. The residents of the area felt that creating and adopting a community wildfire protection plan would help them deal with fire issues on private land in the area and help them influence neighboring public agencies to reduce fire risks that exist on the neighboring public lands. Due to the nature of large wild land fires which have occurred in the area, it is evident that private land owners and government agencies such as the US Forest Service and Washington State DNR must work in a cooperative manner to reduce the risk of large destructive fires as well as working cooperatively in the suppression of wildfires when they occur.

The Havillah CWPP has been created collaboratively by a small team of local residents. It incorporates ideas, comments, advice and input from other local residents. The process for development of the plan included meetings and discussions with a variety of local residents, various groups, and sharing the plan with area government agency representatives to obtain their input and advice. Local residents, the Okanogan County Commissioners, and the State Forester have approved (without financial obligation or liability) the contents of the Havillah Community Wildfire Protection Plan. The plan will be updated and modified in this same manner as necessary.

Methow Community Wildfire Protection Plan

The Methow Community Wildfire Protection Plan for the Methow Valley watershed of North Central Washington is the result of three years of voluntary collaborative work among no fewer than fifty individuals, representing approximately 24 agencies, fire districts, non-governmental organizations, businesses and community members. In a region renowned for contentious planning processes and controversial natural resource issues, this group's efforts serve as testimony that common objectives can produce effective results among even the most diverse participants.

This Plan is intended to operate as a work in progress, and to inform other planning efforts that address land use and natural resource planning by providing the most current information available concerning wildfire risk mitigation activities affecting public and private lands in the Methow Valley. The Plan will be an integral component to the Okanogan County CWPP.

Risk mitigation, fuels reduction, and ecosystem restoration activities are moving targets with ongoing needs for planning, prioritization and monitoring across ownerships. Consequently, the Methow CWPP is intended to be regularly updated and maintained through the collaborative

framework initially established with the Methow Community Fire Plan Coordinating Group and the Okanogan County Fire Plan Steering Committee.

Chapter 2

Documenting the Planning Process

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

Description of the Planning Process

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

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

The Planning Team

Leading the planning effort from Okanogan County was Scott Miller representing the Okanogan County Emergency Management and representatives from the Washington Department of Natural Resources.

Northwest Management Project Manager was Brad Tucker, B.S. Mr. Tucker received a Bachelor of Science degree in wildlife resources from the University of Idaho.

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

Multi-Jurisdictional Participation

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

- Okanogan County, Washington
- City of Brewster
- City of Okanogan
- City of Omak
- City of Oroville
- City of Pateros
- City of Tonasket
- Town of Conconully
- Town of Coulee Dam
- Town of Elmer City
- Town of Nespelem
- Town of Riverside
- Town of Twisp
- Town of Winthrop
- Okanogan Conservation District
- Okanogan County Public Utilities District
- Okanogan County Public Health
- City of Okanogan Fire Department
- City of Omak Fire Department
- City of Coulee Dam Fire Department
- Town of Conconully Fire Department
- Okanogan County Fire District #1
- Okanogan County Fire District #2
- Okanogan County Fire District #3
- Okanogan County Fire District #4
- Okanogan County Fire District #6
- Okanogan County Fire District #7
- Okanogan County Fire District #8
- Okanogan County Fire District #9
- Okanogan County Fire District #10
- Okanogan County Fire District #11
- Okanogan County Fire District #12
- Okanogan County Fire District #13
- Okanogan County Fire District #14
- Okanogan County Fire District #15
- Okanogan County Fire District #16

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

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

Like other areas of Washington and the United States, Okanogan County's human resources have many demands placed on them in terms of time and availability. A few of the elected officials (county commissioners and city mayors) do not serve in a full-time capacity; some of them have other employment and serve the community through a convention of community service. Recognizing this and other time constraints, many of the jurisdictions decided to

identify a representative to cooperate on the planning committee and then report back to the remainder of their organization on the process and serve as a conduit between the planning committee and the jurisdiction.

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Planning Committee Meetings

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

NAME	ORGANIZATION
• Bill Vallance	City of Brewster and Okanogan County Fire District #15
• Brad Armstrong	Town of Riverside and Okanogan County Fire District #7
• Brad Tucker	Northwest Management, Inc.
• Ray Campbell	Okanogan County Commissioner
• Chris Branch	Cities of Oroville and Tonasket, North Central WA RC&D
• David Dalstrom	Marshall Town of Winthrop
• Ken Bajema	Deputy Marshall Town of Winthrop
• Chuck Johnson	Washington DNR
• Dale Swedberg	Washington DF&W and Okanogan County Fire District #10
• Rob Burks	Chief of Police City of Tonasket and Okanogan County Fire District #4
• Don Waller	Okanogan County Fire District #6
• Glenda Beauregard	Okanogan County Emergency Management
• Gordon Hennigs	City of Okanogan and Okanogan County Fire District #3
• Greg Roberts	Washington DNR
• Zac Claussen	Town of Conconully
• Bob Bauer	Okanogan County Fire District #16
• Mike Woelke	Commissioner Fire District #16
• Renee Tillman	Town of Elmer City and Okanogan County Fire District #2
• John Foster Fanning	Okanogan County Fire District #14 and DNR
• Kevan Roberts	Washington DNR
• Kevin Bowling	City of Omak and Okanogan County Fire District #3
• Kristen Cook	Okanogan Conservation District
• Mark Vine	Okanogan County Fire District #12
• Dave Hilton	Okanogan County Public Health
• Phil Dart	Okanogan County Fire District #11
• Robert Jackson	Town of Coulee Dam
• Rod Noel	City of Oroville and Okanogan County Fire District #1

- Darryl Peery — Okanogan County Fire District #10
- Ron Wonch — Washington DNR
- Roy Schwilke — Okanogan County Public Utilities District
- Scott Miller — Okanogan County Emergency Management
- Ted Murray — Okanogan County GIS
- Tera King — Northwest Management, Inc.
- Tim Vugteveen — Washington DNR
- Mel Peterson — Okanogan County Fire District #9
- Barbara Peterson — Okanogan County Fire District #9
- Mike Solheim — BLM Fuels
- Richard Parrish — AFMO Fuels
- Paul Budrow — Chief of Police Town of Twisp
- Perry Huston — Okanogan County Planning Department
- Nobel Kelly — Chiliwist Citizen
- Peggy Kelly — Chiliwist Citizen
- Steve Cook — DNR
- Kathy Busee — USFS MV
- Donny Smith — DNR South
- Greg Saltsman — DNR South
- Cody Accord — Okanogan Fire District #6
- Tim Tugaw — Okanogan Fire District #9
- Bob Parten — Okanogan County Public Works
- Ron Morris — Citizen
- Sandy Morris — Citizen
- Ed Townsend — Okanogan Fire District #8
- Sarah Wilkinson — US Army Corps of Engineers Chief Joseph Dam
- Jen Croft — USFS Tonasket Ranger District
- Jeff Ayers — USAF Tonasket Ranger District
- Steve Harris — DNR NWR
- Monika Nicholson — USFS Methow Valley

Committee Meeting Minutes

The planning committee held a meeting in January of 2013. This meeting served to facilitate the sharing of information and to lay the groundwork for the Okanogan County CWPP. Following the committee meeting, information and concerns were shared via email and phone conversations.

Planning committee meeting minutes are included in Appendix 2.

Public Involvement

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

News Releases

Under the auspices of the Okanogan County planning committee, news releases were submitted to Methow Valley News, Omak Chronicle, Quad-City Herald, and the Wenatchee World newspapers. KOZI –Radio Lake Chelan, KCSY-FM Radio, and KOMW-North Cascade Broadcasting Inc. were three radio stations that were also provided with information regarding the public meeting. Informative flyers were also distributed around town and to local offices within the communities by the committee members.

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Figure 2.1. Press Release sent on November 14th, 2012.

From North Cascades Broadcasting News - komw.net/news

Local News

Okanogan County Set to Update Hazard Risk Plans

By NCBI

Nov 14, 2012, 15:12

Okanogan County has launched a project to update the Okanogan County Multi-Hazard Mitigation Plan and Community Wildfire Protection Plan. Local agencies and organizations in Okanogan County have created a committee to complete the required 5-year updates of these documents as part of the FEMA Pre-Disaster Mitigation program and National Fire Plan and Healthy Forests Restoration Act. The project is being funded through a Title III grant.

The planning update will include risk analyses, vulnerability assessments, and mitigation recommendations for the hazards of flood, landslide, earthquake, severe weather, wildland fire, and extended power outages.

Northwest Management, Inc. has been retained by Okanogan County to provide risk assessments, hazard mapping, field inspections, interviews, and to collaborate with the planning committee to update the Plans. The committee includes representatives from local communities, rural and wildland fire districts, Washington Department of Natural Resources, U.S Forest Service, Bureau of Land Management, highway districts, private landowners, area businesses, various Okanogan County departments, and others.

One of the goals of the planning process will be to increase the participating jurisdictions' eligibility for additional grants that will help minimize the risk and potential impact of disaster events. The plan will be located on the main page of the Emergency Management website at okanogandem.org. The planning team will be conducting a public meeting to discuss preliminary findings and to seek public input on the Plans' recommendations. A notice of the dates and locations of this meeting will be posted in local newspapers. Once completed, the updated draft Plans will also be available for public review and comment. For more information on the Okanogan County Multi - Hazard Mitigation Plan and Community Wildfire Protection Plan updates, contact Glenda Beauregard, Okanogan County Emergency Management, at 509-422-7206 or gbeauregard@co.okanogan.wa.us.

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

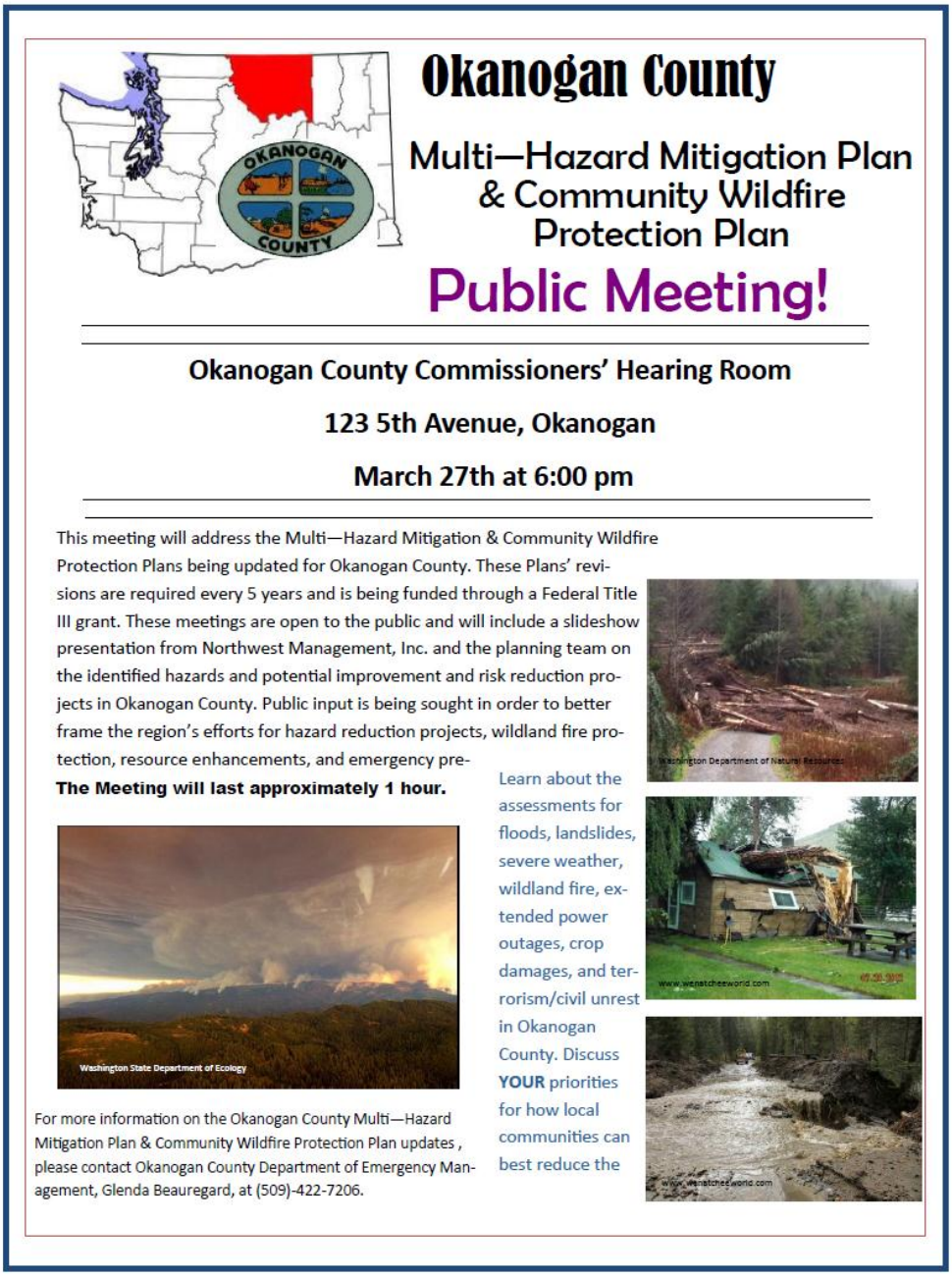
Public Meetings

Public meetings were scheduled at the Okanogan County Commissioners' Hearing room in Okanogan during the hazard assessment phase of the planning process to share information on the planning process, obtain input on the details of the hazard assessments, and discuss potential

mitigation treatments. Attendees at the public meetings were asked to give their impressions of the accuracy of the information generated and provide their opinions of potential treatments.

The public meeting in Okanogan County included one location. It was attended by a number of individuals on the committee and from the general public. There was a total attendance eight individuals. The public meeting announcement sent to the local newspapers, local citizen participation organizations, county departments, fire district representatives, and distributed by committee members is represented in Figure 2.2.

Figure 2.2. Public Meeting Flyer.



Documented Review Process

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

During the scheduled committee meeting in 2013, the committee met to discuss findings, review mapping and analysis, and provide written comments on draft sections of the document. During the public meetings, attendees observed map analyses and photographic collections, discussed general findings from the community assessments, and made recommendations on potential project areas.

The first draft of the document was prepared and presented to the committee on July 19th, 2013 for a full committee review. The draft document was released for public review on September 2nd, 2013. The public review period remained open until September 16th, 2013.

Continued Public Involvement

Okanogan County is dedicated to involving the public directly in review and updates of this CWPP. The Okanogan County Commissioners, working through the Okanogan County Department of Emergency Management, are responsible for review and update of the plan as recommended in chapter 6 of this document.

The public will have the opportunity to provide feedback about the plan at any time. Copies of the plan will be available at the Okanogan County Department of Emergency Management and on the Okanogan County website. Contact information for the project coordinator is listed on the Acknowledgements page.

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

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Chapter 3

Okanogan County Characteristics

Larger than several states, Okanogan Country is bordered on the north by the Canada, on the south by the Columbia River, on the east by Ferry County, and on the west by looming peaks of the North Cascade Mountains. The County covers 5,281 square miles, making it the largest County in Washington. Only 30% of the land within the County is in private ownership due to the amount of state and federal land. The Colville Indian Reservation, located in the southeast corner of the County, occupies approximately 700,000 acres and is an integral part of the heritage of the County.

The total area of Okanogan County is approximately 3,400,000 acres, of which 953,301 acres is privately owned and about 1,574,262 acres is federally owned. Over 95 percent of the federally owned land is encompassed within the jurisdiction of the United States Forest Service, primarily within the Okanogan National Forest, most of the Pasayten Wilderness, and portions of the Lake Chelan – Sawtooth Wilderness.

Only 30% of the land within the County is in private ownership due to the amount of state and federal land. The Confederated Tribes of the Colville Reservation) occupies approximately 675,000 acres in the County's southeast corner and is an integral part of the County's heritage.

Government, retail trade, services, and manufacturing are a few of the major employers within the County. Omak, the regional center for services and trade, is experiencing a great deal of growth. There is also increasing commercial development pressure in the area between the Canadian border and Oroville. The City of Coulee Dam is the location of Grand Coulee Dam, one of the largest concrete structures in the world, and largest electricity producer in the United States.

Geography and Climate

Forested highlands, shrub covered hills, and valleys with fertile farmlands comprise Okanogan County, which is located east of the Cascades along the Canadian border in the north-central part of Washington. Bordering the County on the west are Whatcom, Skagit, and Chelan Counties, to the east is Ferry County, and to the south is Douglas County. The western half of the County is comprised of dense, rugged, mountainous terrain, much of which is within Okanogan National Forest. Similar topography also can be found in the northeast corner of the county. From the north part of the County, the land descends into rolling hills, grassy ranges, and fertile valleys that extend through the center of the county.

Summers, on the plains, are sunny, warm and dry with some hot days. During 4 or 5 months, in the lower elevations extreme highs may be 100°F, while, in the higher elevations 1 or 2 months may reach above 90°F. In winter, minimum temperatures of -10° to -20°F are common although a few stations report -25° to -30°F. Normally, precipitation is light in the summer and heaviest in the winter. Valleys and lowlands receive and average of 10 to 14 inches of precipitation; in the mountains, precipitation increases with elevation where 25 to 30 inches per year can be expected on the higher ridges, with the majority occurring as snow. Growing seasons vary from over 180 days in the southwest to less than 80 days in the forested highlands.

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

Population and Demographics

Okanogan County grew in population over 220% around 1900 then 175% in 1910. Since the 1920 census, the average increase in population has averaged around 13% with the most recent census showing an increase of only about 4%.

The U.S. Census Bureau estimates that Okanogan County has only experienced a 3.9% increase in population since 2000 compared to a 14.1% increase statewide. The Census Bureau also reported that there were 1,164 private nonfarm establishments (2010) and 15,747 households (2010). The median income for a household in Okanogan County in 2010 was $40,537, which is less than the statewide median of $58,890.

Table 3.1. Okanogan County Historical Population Data.[1]

Census	Population
1890	1,467
1900	4,689
1910	12,887
1920	17,094
1930	18,519
1940	24,546
1950	29,131
1960	25,520
1970	25,867
1980	30,639
1990	33,350
2000	39,564
2010	41,120

[1] http://en.wikipedia.org/wiki/Okanogan_County,_Washington. Okanogan County. Accessed October, 2012.

Land Ownership

The vast majority of Okanogan County is federally owned. Much of the privately owned land is used for ranching and farming purposes; although, more and more residents are moving into the rural areas along the Lake Roosevelt shoreline. Numerous subdivisions and housing clusters are developing along the northern border of the county.

Table 3.2. Ownership Categories in Okanogan County.

Land Owner	Acres	Percent
USFS	1,502,860	44%
Private	767,803	23%
Tribal	669,286	20%
State	385,473	11%
BLM	58,865	2%
Water	12,111	<1%
FWS	2,891	<1%
Other	1,183	<1%
Total	3,400,472	**100%**

A map of the land ownership pattern in Okanogan County is included in Appendix 1.

Natural Resources

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

Vegetation

Vegetation in Okanogan County is a mix of forestland and agricultural ecosystems. An evaluation of satellite imagery of the region provides some insight to the composition of the vegetation of the area. The full extent of the county was evaluated for cover type by the USDA Forest Service in 2001 as determined from Landsat 7 ETM+ imagery in tabular format.

The most represented vegetated cover type is Douglas-fir at approximately 18% of the total area. The next most common vegetation cover types represented are a Herbacious at 16%, Shrub at 14%, Subalpine Forest Mix at 9%, and Ponderosa Pine at 9%. Urban areas and agriculture represents approximately 4.3% of the total area (Table 3.1).

Table 3.3. Vegetative Cover Types in Okanogan County.		
Cover	Acres	Percent
Douglas-fir	617,979	18.2%
Herbacious	555,344	16.3%
Shrub	461,886	13.6%
Subalpine Forest Mix	317,536	9.3%
Ponderosa Pine	291,774	8.6%
Lodgepole Pine	244,267	7.2%
Ponderosa Pine/Douglas-fir	193,040	5.7%
Agriculture	140,819	4.1%
Rock	139,852	4.1%
Dry Mixed Forest	116,988	3.4%
Low Canopy Closure Tree	44,811	1.3%
Deciduous	41,797	1.2%
Whitebark Pine	41,385	1.2%
Subalpine Fir	37,474	1.1%
Western Larch	34,355	1.0%
Water	33,090	1.0%
Englemann Spruce	26,871	0.8%
Subalpine Larch	14,895	0.4%
Burned Areas	13,372	0.4%
Snow	13,187	0.4%
Conifer/Deciduous Mixed	7,575	0.2%
Urban	5,174	0.2%
Moist Mixed Forest	4,833	0.1%
Pacific Silver Fir	1,889	0.1%
Mountain Hemlock	1,058	0.0%
Total	**3,401,252**	**100.0%**

Hydrology

The Washington Department of Ecology & Water Resources Program is charged with the development of the Washington State Water Plan. Included in the State Water Plan are the statewide water policy plan and component basin and water body plans, which cover specific geographic areas of the state (WDOE 2005). The Washington Department of Ecology has prepared general lithologies of the major ground water flow systems in Washington.

The state may assign or designate beneficial uses for particular Washington water bodies to support. These beneficial uses are identified in section WAC 173-201A-200 of the Washington Surface Water Quality Standards (WQS). These uses include:

- **Aquatic Life Uses:** char; salmonid and trout spawning, rearing, and migration; nonanadromous interior redband trout, and indigenous warm water species
- **Recreational Uses:** primary (swimming) and secondary (boating) contact recreation

- **Water Supply Uses:** domestic, agricultural, and industrial; and stock watering

While there may be competing beneficial uses in streams, federal law requires protection of the most sensitive of these beneficial uses.

A correlation to mass wasting due to the removal of vegetation caused by high intensity wildland fire has been documented. Burned vegetation can result in changes in soil moisture and loss of rooting strength that can result in slope instability, especially on slopes greater than 30%. The greatest watershed impacts from increased sediment will be in the lower gradient, depositional stream reaches.

Of critical importance to Okanogan County will be the maintenance of the domestic watershed supplies in the Lower Spokane Watershed (WRIA 54), Lower Lake Roosevelt Watershed (WRIA 53), and Upper Crab-Wilson Watershed (WRIA 43).

Air Quality

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

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

Smoke emissions from fires potentially affect an area and the airsheds that surround it. Climatic conditions affecting air quality in northern Washington are governed by a combination of factors. Large-scale influences include latitude, altitude, prevailing hemispheric wind patterns, and mountain barriers. At a smaller scale, topography and vegetation cover also affect air movement patterns. Air quality in the area is generally moderate to good. However, locally adverse conditions can result from occasional wildland fires in the summer and fall, and prescribed fire and agricultural burning in the spring and fall. All major river drainages are subject to temperature inversions which trap smoke and affect dispersion, causing local air quality problems. This occurs most often during the summer and fall months and would potentially affect all communities in Okanogan County. Winter time inversions are less frequent, but are more apt to trap smoke from heating, winter silvicultural burning, and pollution from other sources.

Washington State Smoke Management Plan

The Department of Natural Resources (DNR), Department of Ecology (DOE), U.S. Forest Service (USDA), National Park Service (NPS), Bureau of Land Management (BLM), U.S Fish and Wildlife Service (USDI), participating Indian nations, military installations (DOD), and small and large forest landowners have worked together to deal with the effect of outdoor burning on air.

Protection of public health and preservation of the natural attractions of the state are high priorities and can be accomplished along with a limited, but necessary, outdoor burning program. Public health, public safety, and forest health can all be served through the application of the provisions of Washington State law and this plan, and with the willingness of those who do outdoor burning on forest lands to further reduce the negative effects of their burning.

The Washington State Smoke Management Plan pertains to DNR-regulated silvicultural outdoor burning only and does not include agricultural outdoor burning or outdoor burning that occurs on improved property. Although the portion of total outdoor burning covered by this plan is less than 10 percent of the total air pollution in Washington, it remains a significant and visible source.

The purpose of the Washington State Smoke Management Plan is to coordinate and facilitate the statewide regulation of prescribed outdoor burning on lands protected by the DNR and on unimproved, federally-managed forest lands and participating tribal lands. The plan is designed to meet the requirements of the Washington Clean Air Act.

The plan provides regulatory direction, operating procedures, and advisory information regarding the management of smoke and fuels on the forest lands of Washington State. It applies to all persons, landowners, companies, state and federal land management agencies, and others who do outdoor burning in Washington State on lands where the DNR provides fire protection, or where such burning occurs on federally-managed, unimproved forest lands and tribal lands of participating Indian nations in the state.

The plan does not apply to agricultural outdoor burning and open burning as defined by Washington Administrative Code (WAC) 173-425-030 (1) and (2), nor to burning done "by rule" under WAC 332-24 or on non-forested wildlands (e.g., range lands). All future reference to burning in this plan will refer only to silvicultural burning unless otherwise indicated.

Chapter 4

Risk and Preparedness Assessments

Wildland Fire Characteristics

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

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

Weather

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

Topography

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

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

Fuels

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

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

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

Wildfire Hazards

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

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

Fire was once an integral function of the majority of ecosystems in northcentral Washington. The seasonal cycling of fire across the landscape was as regular as the July, August, and September lightning storms plying across the mountains. Depending on the plant community composition, structural configuration, and buildup of plant biomass, fire resulted from ignitions with varying intensities and extent across the landscape. Shorter return intervals between fire events often resulted in less dramatic changes in plant composition (Johnson 1998). The fires

burned from 1 to 47 years apart, with most at 5- to 20-year intervals (Barrett 1979). With infrequent return intervals, plant communities tended to burn more severely and be replaced by vegetation different in composition, structure, and age (Johnson *et al.* 1994). Native plant communities in this region developed under the influence of fire, and adaptations to fire are evident at the species, community, and ecosystem levels. Fire history data (from fire scars and charcoal deposits) suggest fire has played an important role in shaping the vegetation in the Columbia Basin for thousands of years (Steele *et al.* 1986, Agee 1993).

Wildfire Ignition Profile

Detailed records of fire ignitions and extents have been compiled by the Washington Department of Natural Resources. Using the data on past fire extents and ignition, the occurrence of wildland fires in the region of Okanogan County has been evaluated.

Detailed records of fire ignition and extent have been compiled by the Washington Department of Natural Resources of fire ignitions dating from 1972 to 2006. The Confederated Tribes of the Colville Reservation maintain detailed fire ignition and extent data for this region from 1983 to 2004. In addition the U.S. Forest Service has also maintained a database of fire ignitions and extent on their jurisdiction in Okanogan County from 1910 thru 2001. Using these data on past fire extents and fire ignition data, the occurrence of wildland fires in the region of Okanogan County has been evaluated.

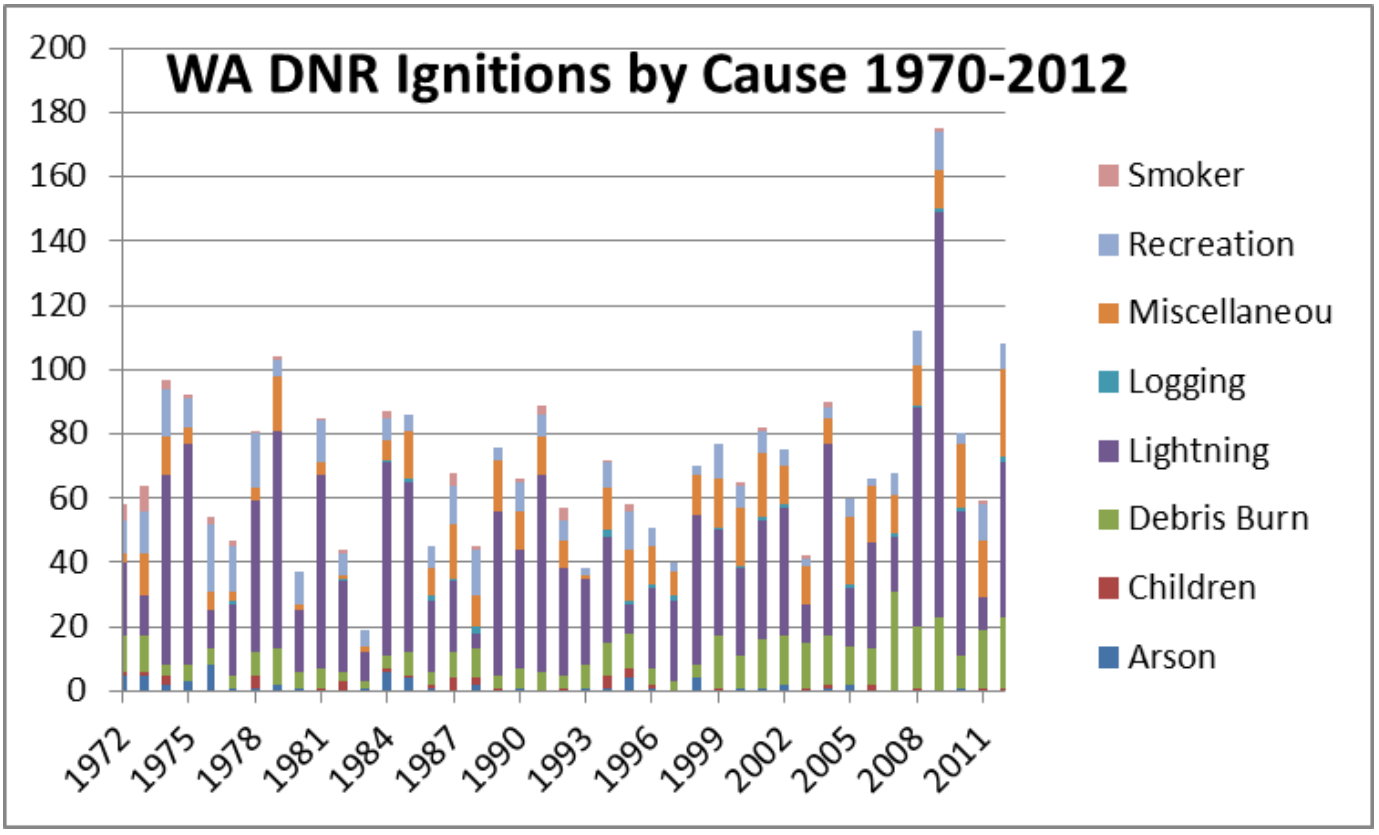
The Washington Department of Natural Resources database of wildfire ignitions for those areas where the Washington Department of Natural Resources provides primary wildfire suppression services includes data from 1972 through 2012. An analysis of the wildfire ignitions in Okanogan County reveals that during this period approximately 169,485 acres have burned as a result of 2,889 wildfire ignitions in Okanogan County on DNR protected lands Table (4.1).

Table 4.1. Summary of Okanogan County Wildfire Ignitions.

Cause	Acres Burned	Percent	Number of Ignitions	Percent
Children	1,608	<1%	40	1%
Debris Burning	10,394	6%	396	14%
Arson	444	<1%	62	2%
Lightning	99,168	59%	1,513	52%
Logging	13	<1%	26	<1%
Miscellaneous	52,710	31%	463	16%
Recreation	4,056	2%	339	12%
Smoker	1,093	<1%	50	2%
Total	**169,485**	**100%**	**2,889**	**100%**

The “Miscellaneous” category includes ignitions originating from structure fires, burning material from aircraft, burning material from auto (other than smoking), burning vehicle, electric fence, equipment crash, fireworks (other than children), hot ashes, power lines, sparks from auto exhaust, sparks from cutting torch or welder, sparks from farm tractors, spontaneous combustion (other than sawdust piles), use of fire (other than logging), woodcutting, and an “other” category

Figure 4.1. Washington DNR Recorded Ignitions 1970-2012.



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

Wildfire Extent Profile

Across the west, wildfires have been increasing in extent and cost of control. Data summaries for 2006 through 2012 are provided and demonstrate the variability of the frequency and extent of wildfires nationally.

Table 4.2. National Fire Season Summaries.

Statistical Highlights	2006	2007	2008	2009	2010	2011	2012
Number of Fires	96,385	85,705	78,979	78,792	71,971	74,126	67,315
10-year Average ending with indicated year	78,174	80,125	79,919	78,549	76,521	75,526	74,912
Acres Burned	9,873,745	9,328,045	5,292,468	5,921,786	3,422,724	8,711,367	9,211,281
10-year Average ending with indicated year	5,858,403	6,505,511	6,901,788	6,931,357	6,534,250	7,048,296	7,250,953
Structures Burned	Not Reported	Not Reported	Not Reported	Not Reported	Not Reported	Not Reported	Not Reported
Estimated Cost of Fire Suppression (Federal agencies only)	$1.93 billion	$1.84 billion	$1.85 billion	$1.24 billion	$1.13 billion	$1.73 billion	$1.9 billion

The National Interagency Fire Center maintains records of fire costs, extent, and related data for the entire nation. Tables 4.3 and 4.4 summarize some of the relevant wildland fire data for the nation and some trends that are likely to continue into the future unless targeted fire mitigation efforts are implemented and maintained. According to these data, the total number of fires and total number of acres burned are trending upward. Since 2000 there has been a significant increase in the number of acres burned.

Table 4.3. Total Fires and Acres 1983 - 2012 Nationally. (National Interagency Fire Center 2012)

Year	Fires	Acres	Year	Fires	Acres
2012	67,315	9,211,281	**1997**	66,196	2,856,959
2011	74,126	8,711,367	**1996**	96,363	6,065,998
2010	71,971	3,422,724	**1995**	82,234	1,840,546
2009	78,792	5,921,786	**1994**	79,107	4,073,579
2008	78,979	5,292,468	**1993**	58,810	1,797,574
2007	85,705	9,328,045	**1992**	87,394	2,069,929
2006	96,385	9,873,745	**1991**	75,754	2,953,578
2005	66,753	8,689,389	**1990**	66,481	4,621,621
2004	65,461	8,097,880	**1989**	48,949	1,827,310
2003	63,629	3,960,842	**1988**	72,750	5,009,290
2002	73,457	7,184,712	**1987**	71,300	2,447,296
2001	84,079	3,570,911	**1986**	85,907	2,719,162
2000	92,250	7,393,493	**1985**	82,591	2,896,147
1999	92,487	5,626,093	**1984**	20,493	1,148,409
1998	81,043	1,329,704	**1983**	18,229	1,323,666

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

Figure 4.3 above shows the extent of wildfires by acreage burned per year in Okanogan County. The various fire suppression agencies in Okanogan County respond to many wildland fires each year, but few of those fires grow to a significant size. According to national statistics, only 2% of all wildland fires escape initial attack however, that 2% accounts for the majority of fire suppression expenditures, which also threaten lives, properties, and natural resources. These large fires are characterized by a size and complexity that requires special management organizations, drawing suppression resources often from across the nation. It is these big fires that gobble acres and leave the most lasting effects. They create unique challenges to local communities by their quick development and the scale of their footprint. Okanogan County is located within an area where natural vegetation and weather combine to make dangerous fire conditions. Natural ignitions from lightning have been part of the history of the County and will continue to be. Even though firefighters understand this potential, it is impossible for agencies to guarantee 100% success in fire suppression. It is important for fire planners to understand what has happened in the past in order to be more effective in the future when preparing for the inevitable.

Wildfire Hazard Assessment

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

Historic Fire Regime

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

Many ecological assessments are enhanced by the characterization of the historical range of variability, which helps managers understand: (1) how the driving ecosystem processes vary from site to site; (2) how these processes affected ecosystems in the past; and (3) how these processes might affect the ecosystems of today and the future. Historical fire regimes are a critical component for characterizing the historical range of variability in fire-adapted ecosystems. Furthermore, understanding ecosystem departures provides the necessary context for managing sustainable ecosystems. Land managers need to understand how ecosystem processes and functions have changed prior to developing strategies to maintain or restore sustainable systems. In addition, the concept of departure is a key factor for assessing risks to

ecosystem components. For example, the departure from historical fire regimes may serve as a useful proxy for the potential of severe fire effects from an ecological perspective.

Table 4.4. Assessment of Historic Fire Regimes in Okanogan County.

Description	Percent	Acres
0-35 Year Return Interval, Low and Mixed Severity	15%	512,664
0-35 Year Return Interval, Replacement Severity	3%	101,394
35-200 Year Fire Return Interval, Low and Mixed Severity	59%	2,006,498
35-200 Year Return Interval, Replacement Severity	16%	557,726
200+ Year Return Interval, Any Severity	2%	82,376
Water	<1%	147
Barren	<1%	17,671
Sparsely Vegetated	<1%	1,812
Indeterminate Fire Regime	<3%	90,401
Total	**100%**	**3,401,253**

The table above shows the amount of acreage in each defined historic fire regime in Okanogan County. The historic fire regime model in Okanogan County shows that much of the river basins historically had a 35 to 200-year fire return interval and typically experienced stand replacement severity fires, however the majority of the County experienced low to mixed severity fires with the same return interval which includes much of the lower elevation forests and shrub steppe. The higher elevation forested areas experienced fire every 35-200 years while some areas experienced fire every 200+ years. This difference is likely due to the more variable topography and presence of snowpack for longer duration in these areas.

A map of Historic Fire Regimes in Okanogan County as well as an explanation of how the data was derived is included in Appendix 1 and 3, respectively.

Vegetation Condition Class

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

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

An analysis of Fire Regime Condition Class in Okanogan County shows that approximately 33% of the County is in Condition Class 1 (low departure), about 13% is in Condition Class 2 (moderate departure), with 47% of the area in Condition Class 3 (Table 4.6).

Table 4.5. Assessment of Current Vegetation Condition Class in Okanogan County.

	Condition Class	Percent	Acres
1	Condition Class 1	33%	1,113,857
2	Condition Class 2	13%	456,952
3	Condition Class 3	47%	1,593,127
5	Water	<1%	28,884
6	Urban	1%	39,883
7	Barren	<1%	17,680
8	Sparsely Vegetated	<1%	1,813
9	Agriculture	4%	148,909
	Total	**100%**	**3,401,253**

Approximately one third of the acres in Okanogan County that have not been converted for agricultural uses or developed into urban areas, have retained their historic fire regime. Over two million acres are either moderately or highly departed from historical regimes. Most of the valleys in the forested western half of the County appear to be defined as Condition Class 3. The higher elevations in the western half of the county are Condition Class 1. The remainder of the County contains a scattered mix of all three levels of Condition Classes with Classes 2 and 3 surrounding population centers and travel corridors.

A map depicting the Vegetation Condition Class as well as a more in-depth explanation of Vegetation Condition Class is presented in the Appendix 1 and 3, respectively.

Okanogan County's Wildland-Urban Interface

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

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

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

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

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

- **Interface Condition** – a situation where structures abut wildland fuels. There is a clear line of demarcation between the structures and the wildland fuels along roads or back fences. The development density for an interface condition is usually 3+ structures per acre;
- **Intermix Condition** – a situation where structures are scattered throughout a wildland area. There is no clear line of demarcation; the wildland fuels are continuous outside of and within the developed area. The development density in the intermix ranges from structures very close together to one structure per 40 acres; and
- **Occluded Condition** – a situation, normally within a city, where structures abut an island of wildland fuels (park or open space). There is a clear line of demarcation between the structures and the wildland fuels along roads and fences. The development density for an occluded condition is usually similar to that found in the interface condition and the occluded area is usually less than 1,000 acres in size.

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

- **Rural Condition** – a situation where the scattered small clusters of structures (ranches, farms, resorts, or summer cabins) are exposed to wildland fuels. There may be miles between these clusters.
- **High Density Urban Areas** – those areas generally identified by the population density consistent with the location of incorporated cities, however, the boundary is not necessarily set by the location of city boundaries or urban growth boundaries; it is set by very high population densities (more than 7-10 structures per acre).

Okanogan County's wildland-urban interface (WUI) is based on population density. Relative population density across the county is estimated using a GIS-based kernel density population model that uses object locations to produce, through statistical analysis, concentric rings or areas of consistent density. To graphically identify relative population density across the county, structure locations are used as an estimate of population density. For this analysis, physical addresses were used as an estimate of structure location. Okanogan County's GIS department

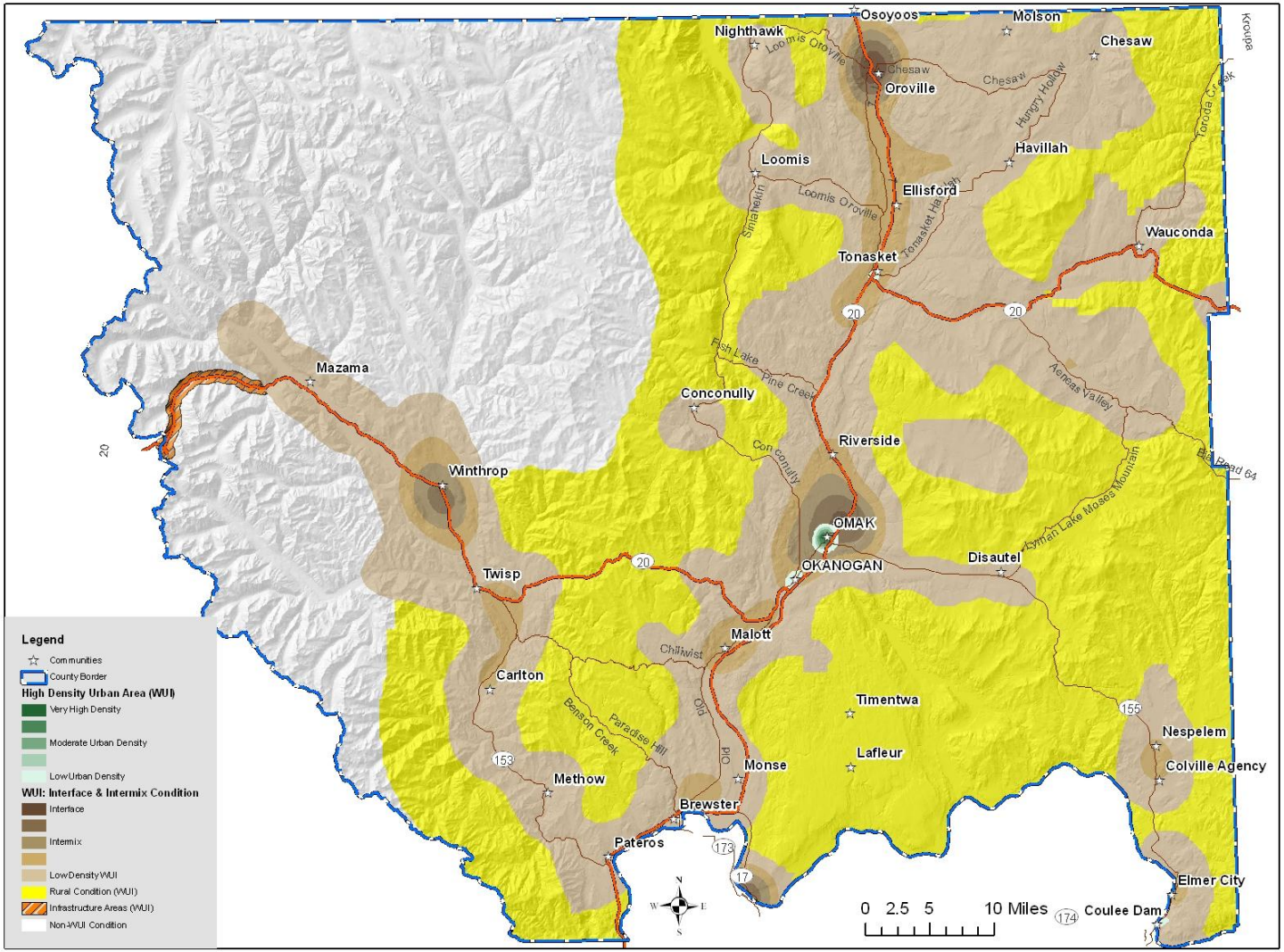
produced a 911 address data layer that was used to represent structure location as input for the model. The resulting output identified the extent and level of population density throughout the county. Highly populated areas are easily discernable from low population areas using this method, which enables the determination of urban verses rural populations. Rural areas of the WUI have an approximate density of one structure per 40 acres. The model also showed several small islands where no structures were recorded. Based on the planning committee's review and discussion, the final WUI boundary output was adjusted to incorporate the non-populated areas (no structures) due to their small size and scattered nature as well as their location in high fire risk areas.

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

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

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

Figure 4.2. Wildland-Urban Interface Map in Okanogan County, Washington.



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Potential WUI Treatments

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

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

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

It should also not be assumed that WUI designation on national or state lands automatically equates to a treatment area. The federal and state agencies are still obligated to manage lands under their control according to the standards and guides listed in their respective land management plans. Their adopted management plans have legal precedence over the WUI designation until such a time as these plans are revised to reflect updated priorities.

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

Landscape Risk Assessments

The total area of Okanogan County is approximately 3,400,000 acres, of which 953,301 acres is privately owned and about 1,574,262 acres is federally owned. Over 95 percent of the federally owned land is encompassed within the jurisdiction of the United States Forest Service, primarily within the Okanogan National Forest, most of the Pasayten Wilderness, and portions of the Lake Chelan – Sawtooth Wilderness.

Larger than several states, Okanogan Country is bordered on the north by the Canada, on the south by the Columbia River, on the east by Ferry County, and on the west by looming peaks of the North Cascade Mountains. The County covers 5,281 square miles, making it the largest

County in Washington. Only 30% of the land within the County is in private ownership due to the amount of state and federal land. The Colville Indian Reservation, located in the southeast corner of the County, occupies approximately 700,000 acres and is an integral part of the heritage of the County.

Forested highlands, shrub covered hills, and valley's with fertile farmlands comprise Okanogan County, which is located east of the Cascades along the Canadian border in the north-central part of Washington. Bordering the County on the west are Whatcom, Skagit, and Chelan Counties, to the east is Ferry County, and to the south is Douglas County. The western half of the County is comprised of dense, rugged, mountainous terrain, much of which is within Okanogan National Forest. Similar topography also can be found in the northeast corner of the County. From the north part of the County, the land descends into rolling hills, grassy ranges, and fertile valleys that extend through the center of the County.

Only 30% of the land within the County is in private ownership due to the amount of state and federal land. The Confederated Tribes of the Colville Reservation) occupies approximately 675,000 acres in the County's southeast corner and is an integral part of the County's heritage.

Government, retail trade, services, and manufacturing are a few of the major employers within the County. Omak, the regional center for services and trade, is experiencing a great deal of growth. There is also increasing commercial development pressure in the area between the Canadian border and Oroville. The City of Coulee Dam is the location of Grand Coulee Dam, one of the largest concrete structures in the world, and largest electricity producer in the United States.

In order to facilitate a mutual understanding of wildfire risks specific to commonly known areas in the county, the landscape-level wildfire risk assessments in the following sections are based on four predominant landscapes types that exhibit distinct terrain and wildland fuels. The four landscapes identified for the assessments are: agricultural lands, channeled scablands, western river breaks and eastern river breaks. These landscapes, although intermixed in some areas, exhibit specific fire behavior, fuel types, suppression challenges, and mitigation recommendations that make them unique from a planning perspective.

Overall Fuels Assessment

The wide valley bottoms and availability of irrigation water throughout much of Okanogan County allows for extensive agricultural operations, particularly fruit orchards. Agricultural fields and orchards infrequently serve to fuel a fire. Most of the orchards within the valleys are irrigated until late in the fire season, which drastically reduces their likeliness of an ignition. Other agricultural products such as hay tend to burn in much the same manners of low growing grasses. Fires in grass and rangeland fuel types tend to burn at relatively low intensities, with moderate flame lengths and only short-range spotting. Suppression resources are generally quite effective in such fuels. Homes and other improvements can be easily protected from the direct flame contact and radiant heat through adoption of precautionary measures around the structure. Although fires in these fuels may not present the same control problems as those associated with large, high intensity fires in timber fuel types, they can cause significant damage if precautionary measures have not taken place prior to a fire event. Wind driven fires in short grass fuel types spread rapidly and can be difficult to control. During extreme drought and pushed by high winds, fires in grassland fuel types can exhibit extreme rates of spread, thwarting suppression efforts.

The Okanogan Highlands are a patch-work of dry Douglas-fir and ponderosa pine forests that, in many areas, have become overstocked, resulting in multistoried conditions with abundant ladder fuels. During pre-settlement times, much of this area was characterized by low intensity fires due to the relatively light fuel loading, which mostly consisted of small diameter fuels. Frequent, low intensity fires generally kept stands open; free of fire intolerant species and maintained seral species such as ponderosa pine as well as larger diameter fire resistant Douglas-fir. In some areas, low intensity fires stimulated shrubs and grasses, maintaining vigorous browse and forage. The shrub layer could either inhibit or contribute to potential fire behavior, depending on weather and live fuel moisture conditions at the time of the burn.

In general, large fires that start in the Okanogan Highlands start high in elevation and move downhill. As fires move down in elevation, they encounter drier and flashier fuels in the lower elevations. Rolling embers and spot fires are a common method of downhill fire spread. Spot fires ignited on slopes trigger uphill runs that throw more spot fires, expanding the downward fire progression. Modifying fuels to reduce the likelihood of torching and crowning trees will in turn reduce the likelihood of spot fires.

Increased activities by pathogens will continue to increase levels of dead and down fuel, as host trees succumb to insect attack and stand level mortality increases. Overstocked, multi-layered stands and the abundance of ladder fuels lead to horizontal and vertical fuel continuity. These conditions, combined with an arid and often windy environment, can encourage the development of a stand replacing fire. These fires can burn with very high intensities and generate large flame lengths and fire brands that can be lofted long distances. Such fires present significant control problems for suppression resources, often developing into large, destructive wildland fires.

A probability that needs to be planned for is the likelihood of extended spot fires. Large fires may easily produce spot fires from ½ to 2 miles away from the main fire. How fire suppression forces respond to spot fires is largely dependent upon the fuels in which they ignite. Stands of timber that are managed for fire resilience are much less likely to sustain torching and crowning behavior that produces more spot fires. The objective of fuel reduction thinning is to change the fuels in a way that will moderate potential fire behavior. If fire intensity can be moderated by vegetation treatments, then ground and air firefighting resources can be much more effective.

Areas that have recently burned, such as the Tripod Fire, will be at low risk of wildfires starting and spreading for several years because fine fuels were consumed. However, the overall reduction in hazardous fuels in these areas is minimal, particularly in dry Douglas-fir and ponderosa pine forests which were dense, multi-storied stands prior to wildfire. Dense stands of snags will become heavy dead and down branches and logs within 10-20 years. Fine fuels will return to these sites as understory species re-establish and these fuels combined with the accumulated large fuels will provide the opportunity for severe fire in 20-30 years after the initial wildfire. Examples of these types of fires include the Thirty-Mile Fire in 2001 and the Okanogan Complex in 2012.

Overall Mitigation Activities

There are many specific actions that will help improve safety in a particular area; however, there are also many potential mitigation activities that apply to all residents and all fuel types. General mitigation activities that apply to all of Okanogan County are discussed below while area-specific mitigation activities are discussed within the individual landscape assessments.

The safest, easiest, and most economical way to mitigate unwanted fires is to stop them before they start. Generally, prevention actions attempt to prevent human-caused fires. Campaigns designed to reduce the number and sources of ignitions can take many forms. Traditional "Smokey Bear" type campaigns that spread the message passively through signage can be quite effective. Signs that remind people of the dangers of careless use of fireworks, burning when windy and leaving unattended campfires have been effective. Fire danger warning signs posted along access routes remind residents and visitors of the current conditions. It's impossible to say just how effective such efforts actually are; however, the low costs associated with posting of a few signs is inconsequential compared to the potential cost of fighting a fire.

Burn Permits: Washington State Department of Natural Resources is the primary agency issuing burn permits in forested areas of Okanogan County. The Washington DNR burn permits regulate silvicultural burning. Washington Department of Ecology (DOE) is the primary agency issuing burn permits for improved property and agricultural lands. All DOE burn permits are subject to fire restrictions in place with WA DNR & local fire protection districts. Washington DNR has a general burning period referred to as "Rule Burn" wherein a written burn permit is not required in low to some moderate fire dangers.

The timeframes for the Rule Burn are from October 16th to June 30th. Washington DNR allows for Rule Burns to be ten foot (10') piles of forest, yard, and garden debris. From July 1st to October 15th if Rule Burns are allowed, they are limited to four foot (4') piles.

Defensible Space: Effective mitigation strategies begin with public awareness campaigns designed to educate homeowners of the risks associated with living in a flammable environment. Residents of Okanogan County must be made aware that home defensibility starts with the homeowner. Once a fire has started and is moving toward a structure or other valued resources, the probability of that structure surviving is largely dependent on the structural and landscaping characteristics of the home. "Living with Fire, A Guide for the Homeowner" is an excellent tool for educating homeowners as to the steps to take in order to create an effective defensible space. Residents of Okanogan County should be encouraged to work with local fire departments and fire management agencies within the county to complete individual home site evaluations. Home defensibility steps should be enacted based on the results of these evaluations. Beyond the homes, forest management efforts must be considered to slow the approach of a fire that threatens a community.

Evacuation Plans: Development of community evacuation plans are necessary to assure an orderly evacuation in the event of a threatening wildland fire. Designation and posting of escape routes would reduce chaos and escape times for fleeing residents. Community safety zones should also be established in the event of compromised evacuations. Efforts should be made to educate homeowners through existing homeowners associations or creation of such organizations to act as conduits for this information.

Accessibility: Also of vital importance is the accessibility of the homes to emergency apparatus. If a home cannot be protected safely, firefighting resources will not jeopardize lives to protect a structure. Thus, the fate of the home will largely be determined by homeowner actions prior to the event. In many cases, homes' survivability can be greatly enhanced by following a few simple guidelines to increase accessibility such as widening or pruning driveways and creating a turnaround area for large vehicles.

Fuels Reduction: Recreational facilities such as campgrounds and boat launches along the Columbia River should be kept clean and maintained. In order to mitigate the risk of an escaped

campfire, escape proof fire rings and barbeque pits should be installed and maintained. Surface fuel accumulations in forests and shrubland can be kept to a minimum by periodically conducting pre-commercial thinning, clearing, pruning and limbing, and possibly controlled burns. Other actions that would reduce the fire hazard would be creating a fire resistant buffer along roads and power line corridors and strictly enforcing fire-use regulations.

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

Other Activities: Other specific mitigation activities are likely to include improvement of emergency water supplies, access routes, and management of vegetation along roads and power line right-of-ways. Furthermore, building codes should be revised to provide for more fire-conscious construction techniques such as using fire resistant siding, roofing, and decking in high risk areas.

Upper Okanogan River Valley Risk Assessment

The communities of Oroville, Tonasket, and Crumbacher all lay within the immediate Upper Okanogan River Valley floor and foothills. For the most part, all of these neighborhoods have been largely developed for commercial, residential, and agricultural purposes with population clusters occurring around the incorporated communities of Oroville, Tonasket, and Riverside and the unincorporated communities of Crumbacher, and Ellisforde. Due to the obliging climate and availability of water throughout the valley, various types of orchards are grown extensively.

Wildfire Potential

Most of the neighborhoods in the Okanogan River Valley are heavily developed for residential, commercial, or agricultural use. Orchards, livestock pasture, hay, or other crops are grown on nearly every available acre that has access to irrigation water. During the summer and fall, this creates a mosaic of lush green vegetation where there is irrigation and cured sage and grass in areas where there isn't.

Wildland fuels within the valley floor of the Oroville Neighborhood are minimal due to extensive commercial and residential development as well as the proliferation of the orchards and other crops. The foothills rising out of the valley are typically covered by sage brush and bunchgrasses that form a continuous fuel bed. The steepness of the topography is variable; however, the foothills near the valley have low to moderate steepness, but the degree of slope tends to increase on the mid and upper slopes. The slope rising from the east side of the valley between the community of Oroville and Swanson Mill Road is much steeper and sparsely forested by ponderosa pine. This slope is characterized by sheer rock faces and outcroppings; however, the lack of vegetation does not generally help to slow the upslope spread of wildfire.

Around the communities of Tonasket and Ellisforde in the Tonasket Neighborhood, wildland fuels are limited to ditches or small bare lots due to the existence of numerous structures and agricultural development. The foothills and some non-irrigated areas along Highway 97 tend to be vegetated by sagebrush and lower growing grasses, particularly bunchgrasses. These fuels

form a continuous fuel bed with similar fuels on the mid and upper slopes surrounding the valley.

The area around Crumbacher is made up of fuels consisting of sagebrush and grasses both within the valley and in the surrounding foothills. An open stand of ponderosa pine with a grassy understory surrounds and intermixes with the small population cluster known as the Crumbacher community.

Wildland fuels within the community of Riverside are fairly limited to ditches, empty lots, and the riverbanks due to extensive urban and agricultural development. Orchards and other crops grow both within the valley and on many of the low benches where irrigation water is available. The surrounding foothills are vegetated primarily by sagebrush and various lower growing grasses. Sparse ponderosa pine can be found in a few of the nearby draws. The slope rising from the east side of the river near Omak is steep, almost vertical in some places; however, it appears to be nearly solid rock with little soil available for plant growth.

Ingress-Egress

The main arterial through these neighborhoods and all of the Okanogan River Valley is U.S. Highway 97 from the Okanogan – Chelan County border all the way to Canadian border. These neighborhoods contain many of the populated communities in the County; therefore, there is a multitude of County and city roads. State Routes 20, 215, 17, 153, 173, and 155 also cross through the Okanogan River Valley.

Residents living in the populated centers and most subdivisions surrounding the towns have access to municipal water supply systems with public fire hydrants. Outside these areas, development relies on individual, co-op, or multiple-home well systems. Creeks, ponds, and developed drafting areas provide water sources for emergency fire suppression in the rural areas to a limited extent. Irrigation systems are capable of providing additional water supply for suppression equipment on a limited basis. Additional water resources distributed and documented throughout the agricultural landscape are needed to provide water for fire suppression.

There are a numerous bridges in the agricultural landscape of Okanogan County. Bridge load rating signs are mostly in place for the existing bridges and do not impose a limitation to access for firefighting equipment.

Local public electrical and telephone utility lines travel both above and below ground along roads and highways with limited exposure to failure during a wildfire event. Cell phone service is well-established in most parts of the county with only limited dead zones.

Infrastructure

All of the residents within the city limits of Oroville, Tonasket, and Riverside have access to the municipal water systems. Those outside the city limits and in unincorporated communities typically rely on personal or multiple home well systems.

Tonasket, Oroville and Ellisforde are served by the Oroville-Tonasket Irrigation District.

Grand Coulee Dam generates power, which is then distributed by high tension lines across the Colville Indian Reservation to the substations in Okanogan and to a substation located near Coleman Butte. This transmission line continues north to the City of Tonasket generally following the State Route 97 corridor.

Fire Protection

The Okanogan Fire Protection District #1 provides both structural and wildfire protection for nearly all of the Oroville Neighborhood. Okanogan County Fire Protection District #4 covers much of the communities of Ellisforde, Tonasket, Crumbacher, and a narrow corridor east along State Route 20 to the Aeneas Valley Road. Okanogan County Fire Protection District #7 provides protection for an area extending from the community of Riverside and including a small part of Omak suburbs. Okanogan County Fire Protection District #7 protection area encompasses part of the Crumbacher area.

Mutual aid agreements between fire districts supplement wildland fire protection when needed. Additional fire protection is provided by the Washington DNR, which provides wildfire protection and suppression on privately owned forestland and state-owned forestland. The DNR does not provide structural fire suppression, but does provide wildfire protection on non-forested land that threatens DNR-protected lands. The BLM provides wildfire protection on their ownership within Okanogan County and has mutual aid agreements with the DNR for protection of forested land. BLM also does not provide structural fire suppression.

Potential Mitigation Activities

Mitigation measures needed in the Upper Okanogan River Valley include maintaining a defensible space around structures and access routes that lie adjacent to annual crops and other wildland fuels. Around structures, this includes maintaining a green or plowed space, mowing weeds and other fuels away from outbuildings, pruning and/or thinning larger trees, using fire resistant construction materials, and locating propane tanks, fuel tanks and firewood away from structures. Roads and driveways accessing rural residents may or may not have adequate road widths and turnouts for firefighting equipment depending on when the residences were constructed. Performing road inventories in high risk areas to document and map their access limitations will improve firefighting response time and identify areas in need of enhancement. Primitive or abandoned roads that provide key access to remote areas should also be maintained in such a way that enables access for emergency equipment so that response times can be minimized. Roads can be made more fire resistant by frequently mowing along the edges or spraying weeds to reduce the fuels. Aggressive initial attack on fires occurring along travel routes will help ensure that these ignitions do not spread to nearby home sites. Designing a plan to help firefighters control fires in CRP lands that lie adjacent to agricultural crops would significantly lessen a fire's potential of escaping to the higher value resource. Mitigation associated with this situation might include installing fuel breaks or plowing a fire resistant buffer zone around fields and along predesigned areas to tie into existing natural or manmade barriers or implementing a prescribed burning program during less risky times of the year.

Maintaining developed drafting sites (for fire engines), increasing access to water from irrigation facilities, and developing other water resources throughout the agricultural landscape will increase the effectiveness and efficiency of emergency response during a wildfire.

South Central Landscape Risk Assessment

The channeled scablands are a dominant landscape in South Central Okanogan County. Major population centers within the South Central landscape include Malott, Monse, Brewster, Pateros, Okanogan, and Omak. This unique geological feature was created by ice age floods that swept across eastern Washington and down the Columbia River Plateau periodically during the Pleistocene era. The massive erosion caused by the flood events scoured the landscape down to the underlying basalt creating vast areas of rocky cliffs, river valleys, channel ways and pothole

lakes. Typical vegetation found throughout this landscape is grass, mixed shrub and sagebrush with areas of wetlands, marsh, ponderosa pine islands, cultivated crops and CRP fields. The channeled scablands landscape prevails in the southcentral portion of the county within the Colville Indian Reservation and along the major waterways of the Okanogan River, Columbia River, Tumwater Creek and Rice Canyon. Landownership is predominantly private or Tribal with areas owned by the State of Washington and the Bureau of Land Management occurring along the western fringes of the scablands. Tribal ownership includes numerous named and unnamed lakes that occur between the Okanogan River and Omak Lake. Private landownership includes cattle ranches and in holdings of cultivated farmland and CRP fields. New development occurs primarily near communities and along major roads. Most of the pressure for multi-housing subdivisions occurs in close proximity to the towns. Rural development is widely dispersed consisting primarily of isolated ranching headquarters, home sites, irrigation systems, and developed springs or wells. In nearly all developed areas, structures are in close proximity to vegetation that becomes a significant fire risk at certain times of the year.

Wildfire Potential

The channeled scablands landscape has a moderate to high wildfire potential due to a characteristically high occurrence of shrubby fuels mixed with grass, sloping terrain and somewhat limited access. Large expanses of open rangeland or pasture provide a continuous fuel bed that could, if ignited, threaten structures and infrastructure under extreme weather conditions. Cattle grazing will often reduce fine, flashy fuels reducing a fire's rate of spread; however, high winds increase the rate of fire spread and intensity of rangeland fires. A wind-driven fire in dry, native fuel complexes on variable terrain produces a rapidly advancing, very intense fire with large flame lengths, which enables spotting ahead of the fire front.

Wildfire risk in the channeled scablands landscape is at its highest during summer and fall when daily temperatures are high and relative humidity is low. Fires burning in some types of unharvested fields would be expected to burn more intensely with larger flame lengths due to the greater availability of fuels. Fields enrolled in conservation programs or managed for wildlife habitat, can burn very intensely due to an increased amount of fuel build-up from previous years' growth. Fires in this fuel type are harder to extinguish completely due to the dense duff layer, which often leads to hold-over fires that may reemerge at a later date causing additional fire starts.

Ingress-Egress

The main arterial through these neighborhoods and all of the Okanogan River Valley is U.S. Highway 97 from the Okanogan – Chelan County border all the way to Canadian border. These neighborhoods contain many of the populated communities in the County; therefore, there is a multitude of County and city roads. State Routes 20, 215, 17, 153, 173, and 155 also cross through the Okanogan River Valley.

County roads as well as rural ranch access roads are well distributed throughout most of the channeled scablands often following section lines or traversing the multitude of draws and drainage ways. In remote rural areas, county roads often change from a paved or maintained gravel surface to unimproved primitive roads making access possible only during certain times of the year. Limited access within remote areas and a lack of maintenance on existing travel routes, increases fire suppression response time and has a direct effect on fire spread leading to increased fire size and destructive potential.

Infrastructure

Residents living in the populated centers of Omak, Okanogan, Brewster, and Pateros have access to municipal water supply systems with public fire hydrants. Outside these areas, development relies on individual, co-op or multiple-home well systems. Creeks, ponds and developed drafting areas provide water sources for emergency fire suppression in the rural areas to a limited extent. Water tanks have been set up at several ranches throughout the area as a supplemental water supply during fire season. Irrigation systems are capable of providing additional water supplies for suppression equipment on a limited basis. Additional water resources distributed and documented throughout the agricultural landscape are needed to provide adequate water for fire suppression.

The bench west and north of Omak and Okanogan is served by the Okanogan Irrigation District. This is a pressurized system with two reservoirs; Lower Conconully Lake and Upper Conconully Lake. The water is released through a dam on the lower lake into Salmon Creek and then diverted from Salmon Creek about 3 miles upstream from its mouth at the Okanogan River. This water enters a concrete lined canal that takes it north and east across the Okanogan and Omak Flat where there are pumping stations. During periods of drought they can supplement this system by pumping from the Okanogan River. They also receive some water from Johnson Creek, which is diverted by pipe to Duck Lake on the North Omak Flat. There is also a small private water right (Swayze) that exists on Salmon Creek that covers several residences and small farms just west of the Okanogan city limits. This system also diverts water from Salmon Creek.

The Alta Vista Irrigation District is a small irrigation district within the boundaries of the City of Okanogan. This system draws its water from the Okanogan River and is dispersed into the neighborhood by buried pipe covering five blocks north of Pines Street to Irene Street west of the Okanogan River.

There are two electrical substations in close proximity to the City of Okanogan. They are both located on Van Duyn Street from which they distribute the power to various parts of the County. A transmission line to the upper Methow follows the same general route as State Route 20. This line terminates at a substation at the Town of Twisp. There is also a transmission line that goes south to the Brewster area following State Route 97 for 13 miles and then crosses the Okanogan River and ends in Brewster Flat.

Public utility lines travel both above and below ground along roads and cross-country to remote facilities. Many irrigation systems and wells rely on above ground power lines for electricity. These power poles pass through areas of dense wildland fuels that could be destroyed or compromised in the event of a wildfire. Cell phone service is well established in most parts of the county with only limited dead zones.

Fire Protection

Fire Protection District #3 covers a large part of the Okanogan River Valley including the majority of the Omak – Okanogan and Malott communities. Okanogan County Fire Protection District #15 provides structural and wildland fire protection for the communities of Pateros, Brewster, and Bridgeport Bar. Finally, Okanogan County Fire Protection District #8 provides structural and wildland fire protection for the Tribal land east of the Okanogan River which includes the communities of Timentwa and Lafleur. Mutual aid agreements between fire districts supplement the wildland fire protection response when needed. Additional fire protection is provided by the Washington DNR, which provides wildfire protection and

suppression on privately-owned forestland and state-owned forestland west of Highway 97 in Okanogan County. The DNR does not provide structural fire suppression, but it does provide wildfire protection on non-forested land that threatens DNR-protected lands. BLM provides wildfire protection on their lands within Okanogan County and has mutual aid agreements with the DNR for protection of forested land. BLM also does not provide structural fire suppression.

Potential Mitigation Activities

Mitigation measures needed in the channeled scabland landscape include maintaining a defensible space around structures and access routes that lie adjacent to wildland fuels. Around structures this includes maintaining a green or plowed space, mowing weeds and other fuels away from outbuildings, pruning and/or thinning larger trees, using fire resistant construction materials, and locating propane tanks and firewood away from structures. Roads and driveways accessing rural development need to be kept clear of encroaching fuels to allow escape and access by emergency equipment. Performing road inventories in high risk areas and documenting and mapping their access limitations will improve firefighting response time and identify areas in need of improvement. Primitive or abandoned roads that provide key access to remote areas should be maintained to allow access for emergency equipment so that emergency response times are minimized. Designing a plan to help firefighters control fires in conservation lands and wildlife habitat areas will significantly lessen a fire's potential of escaping to other areas. Mitigation associated with this situation might include managed grazing in designated fuel reduction areas, creating fuel breaks, and implementing a prescribed burning program during less risky times of the year.

Additional mitigation activities include installing more water storage sites, improving water access from irrigation facilities, and developing other water resources throughout the landscape. This will increase the effectiveness and efficiency of emergency response during a wildfire.

Methow River Valley Risk Assessment

Methow, Twisp, Carlton, and Mazama are the major communities within this assessment area. Subdivision of land for recreational and home site development is widespread throughout the valley. In nearly all developed areas, structures are in close proximity to vegetation on steep slopes that become a significant fire risk at certain times of the year. Sagebrush and grasses cover the rolling hillsides on both the east and west slopes. Agricultural development is prominent in the valley bottom and lower benches, particularly in the south end of the neighborhood closer to the mouth of the river. Sparse stands of ponderosa pine and Douglas-fir begin to occur about mid-slope on the west side of the valley and become more continuous and much more dense as the elevation increases. The north aspect in several of the smaller drainages on the west side of the valley such as Gold Creek, Squaw Creek, McFarland Creek, and Black Canyon Creek are also moderately to densely forested by ponderosa pine and Douglas-fir. The sagebrush and grass fuel complex extends further east on the east side of the valley. In some areas the shrub steppe ecosystems transition to old growth bitterbrush, which contains extremely volatile compounds. Much of the Buckhorn Mountain area is covered with grass and sage with only occasional stands of sparse ponderosa pine. Stands of ponderosa pine become more continuous near the upper extent of the French Creek drainage. Many of these stands are old reforested rye fields that have become overgrown. High grading of the timber has also caused many stands in the French Creek area to become overpopulated with small diameter stems and excessive ladder fuels. French Creek, Gold Creek (all forks), Squaw Creek, and Black Canyon Creek are all primed for big fire events due to the excessive fuels.

Ponderosa pine and some Douglas-fir are also present on the slopes surrounding Alta Lake and Alta Lake State Park. Fires within the Methow River Valley in the Lower Methow Neighborhood would tend to be low to moderate intensity surface fires. Agricultural and residential development along the valley floor and lower slopes tends to break up the fuel continuity, which helps slow the spread of fire. The forest stands in much of this neighborhood would tend to support moderate intensity fires with occasional crowning, torching, and jackpotting in areas with higher accumulations of fuels.

Wildfire Potential

The community of Winthrop has a moderate risk of experiencing a large wildland fire due to the extensive development and conversion of the native fuels to pasture or other agricultural use. There is; however, a high potential for an ignition from various sources as a result of the density of recreation or other human activities. Recreational activities along the Methow and Chewuch Rivers and at Pearrygin Lake State Park have a high likelihood of an ignition from campfires, BBQs, ATVs, etc. Careful maintenance of the fuels within and surrounding the park reduces this potential risk and helps protect the park from fires spreading into the area from the surrounding area. In the event of a threatening fire, the town of Winthrop may be at high risk due to the use of wood building materials on many of the buildings. The plank board siding, wooden walkways, and wood shingled roofs would be very receptive to ignition from fire brands.

The Twisp-Carlton communities are at moderate to high risk of wildfires. The continuity of fuels along much of the Methow River Valley bottom are broken by alfalfa fields to the east, which helps slow the spread of fire. Most of the fire risk in this neighborhood occurs on the mid and upper slopes and in the developed drainages. Libby Creek and Texas Creek were identified in the Methow Community Wildfire Protection Plan as potential "hot spots" for fire activity. Economic values, fuel types, fire history, and access issues led to this designation. The riparian fuels along the river banks may also support a wildfire later in the summer as the water level goes down and the thick grass and brush begins to dry out. Fire spread along the waterway has the potential to threaten many homes as several structures are located along or near the water's edge.

Nearly all of the Upper Methow River valley including; Mazama, Twisp River, Pine Forest subdivision, Wolf Creek, and Edelweiss subdivision have a very high risk of experiencing a damaging wildfire. Homes in this area are often scattered along both sides of the river. In some cases, there are well constructed bridges accessing groups of the homes on the other side; however, there are also several unrated bridges that may not support large fire suppression apparatus. Wildfires burning in this area may funnel smoke and hot gases up canyon, which may cause health problems and makes safe fire suppression very difficult and dangerous. Homes on the mid and upper slopes, such as those in the Skyline Ranch Subdivision have an increased fire risk due to the limited accessibility and the likelihood of up-canyon and upslope fire spread. Homes along the Lost River Road and in the Lost River Subdivision are typically completely surrounded by thick stands of timber and underbrush. Very few structures have any kind of defensible space and those that do are not likely to be adequate. Canopy closure throughout this area has a high probability of carrying a running crown fire, which is very difficult to suppress. The Lost River Road is in need of fuels treatments in order to serve as a safe evacuation route, especially since this is the sole escape route. Visible addressing is almost non-existent on private driveways. It is highly probably that several homes in this area would be lost in the event of a wildfire.

The Methow River Valley through the Lower Methow area has a moderate risk of fire due to the extensive agricultural development, which breaks up the continuity of fuels. Nevertheless, there are several areas within this neighborhood that have a much higher fire risk. French Creek and Black Canyon Creek were identified as "hot spots" in the Methow Community Wildfire Protection Plan due to higher risk fuels, increased residential development, and access issues. Gold Creek, Squaw Creek, and McFarland Creek are also at higher risk. Many of the homes in these drainages directly abut forest-type fuels and have limited access. Visible addressing on homes and driveways is also lacking in many of the more rural areas in this neighborhood.

The Alta Lake area including the State Park has a very high potential fire risk. Homes and recreational facilities were built very close together along the lake shore and lower slopes with forestland fuels intermingled and overhanging roofs. Wood siding, decking, and roofing are popular construction materials in this are as many of the structures are recreational or seasonal homes. The Alta Lake Road around the lake is fairly narrow with high risk fuels immediately abutting the travel surface. In addition, this is a dead end road with few areas large enough to turn fire suppression equipment around. The potential for an ignition in this area is very high due to the intensity of the recreational use. In the event of a fire in this area, there would likely be severe damage to many of the structures.

The Methow River Valley has been discovered as a prime recreational area and as such has experienced rapid subdivision development and scrutiny by developers. Many of the new homes going in are located in what used to be rural areas and are being built as vacation or seasonal use homes. In many cases, homes are being built in high fire risk areas with no precautions taken to reduce the wildfire threat around the home. Log homes are very popular and many homeowners are adamant about maintaining the trees and other "natural" landscaping on their property. This leads to several potential problems. Not only are these types of homes difficult and dangerous for firefighters to protect in a wildfire situation, but they also require additional suppression resources that could be used more effectively elsewhere to help stop the spread of the fire.

The growing number of residents living on their own power sources (off the grid) has allowed homes to extend further into the rural and backcountry areas of the County. Many of these homes are also not addressed, which makes them difficult to locate in emergency situations. Furthermore, concern over protection of these homes in compounded by the lack of water availability as many of these homeowners rely on deep wells with limited recharge.

Ingress-Egress

The primary access route from Twisp south is State Route 153, which is a paved, two-lane highway. State Route 20 is also a paved, two-lane highway that travels over Loup Loup Summit from the Okanogan River Valley, turns north at Twisp, passes through Winthrop, then heads west over the mountains via the North Cascades Highway. There is also a multitude of secondary roads accessing homes and other more rural parts of these neighborhoods. These roads are typically well-maintained gravel routes that travel up drainages. The access route into Alta Lake is a paved, two-lane route. The Gold Creek Road is also paved for a few miles up, but mostly as a single lane with pullouts. The Gold Creek Road does connect to the Libby Creek drainage to the north; however, this is a dirt road bordered by forest type fuels.

Several of the roads accessing homes in some of the small tributaries dead end or become dirt forest routes. Of particular concern is the Alta Lake Road, which dead ends near the south end of Alta Lake. This is the sole access route into this heavily populated area. French Creek Road is the sole access route for residents in the upper French Creek drainage. This road does connect

to the Texas Creek Road to the north; however, part of this route is accessible by 4x4 vehicles only. The lack of an alternate escape route puts residents in these areas at much higher fire risk.

Many private homes and subdivisions are accessed via unimproved, single-lane roads accessible only by small emergency vehicles. Often, access roads and driveways are steep and/or lined with wildland fuels that can limit or prohibit safe access during a wildfire. Many of these roads have only one way in and one way out and lack adequate turnout and turn-around areas for emergency vehicles. The inability of emergency resources to safely access structures reduces or may even eliminate suppression response. Most of the roads in newer subdivisions have been designed to accommodate emergency vehicles with either loop roads or cul-de-sacs with wide turning radii and easily negotiable grades, which are better-suited to all types of emergency response equipment.

Infrastructure

Residents within the communities of Winthrop and Twisp have access to municipal water systems. All other residents in the Winthrop, Twisp, Carlton, and Lower Methow Neighborhoods rely on personal or multiple home well systems.

Okanogan Public Utility District (PUD) and Okanogan Electric Cooperative (OCEC) provide electrical service to the Methow Valley. Most of the Methow Valley's electricity needs are presently served by a single transmission line, which starts in Okanogan at a substation and follows the route of State Route 20 over Loup Loup Pass to the Twisp substation in the town of Twisp. Okanogan PUD is responsible for maintaining the transmission line under an agreement between the two utilities and the Bonneville Power Administration. Okanogan PUD is currently engaged in an environmental review process to determine whether to construct a second transmission line to serve the valley. This second route would either be located in the upland hills on the east side of the valley or along the valley floor adjacent to State Route 153. Additionally, the valley's residents are served by a network of distribution lines that connect the transmission line to homes and businesses. The Okanogan PUD and OCEC share maintenance of the distribution system. Both utilities maintain some percentage of underground lines in the Methow Valley. The OCEC has reported that 95% of new distribution line construction and feeder upgrades in their service area are being installed underground. There is also a growing number of residents living off the power grid by creating their own power source via solar, wind, or generators.

Fire Protection

Okanogan County Fire District #6 is responsible for structural and wildland fire protection within most of the populated areas of the Winthrop, Twisp, Mazama, and Carlton. Okanogan County Fire Protection District #15 provides protection for the populated areas bordering the Methow River through the Lower Methow communities including; Methow, Pateros, Brewster, and Monse area.

All of the Okanogan County fire districts have signed a "Memorandum of Understanding" to assist any of the other districts in the County with fire suppression to the utmost of their abilities. State lands are the sole responsibility of the Washington Department of Natural Resources (suppression & reciprocal agreements may apply). Federal lands are the sole responsibility of the Federal management agency (reciprocal agreement may apply). Much of the private lands in Okanogan County are within joint jurisdiction between the County fire protection districts and the WA DNR.

The DNR provides wildfire protection during the fire season between April and October with a varying degree of resources available in the early spring and late autumn months. The U.S. Forest Service seasonally responds to all wildland fires on their jurisdiction and may also respond to wildland fires on state and private lands based on a reciprocal agreement with the DNR.

Potential Mitigation Activities

The best possible mitigation activity for all residents in the Winthrop, Twisp, Mazama, and Lower Methow communities is to construct and maintain a defensible space. In grass and sage dominated areas, this may include mowing and clearing grass and weeds away from structures. In forest areas, thinning undergrowth and pruning larger trees may also be necessary. Locating flammable items such as firewood and propane tanks away from structures will also help reduce their risk. Due to the proliferation of out-of-County homeowners, an in-depth educational outreach program may be necessary to convey wildfire prevention and mitigation information

Many of the smaller drainages throughout these neighborhoods are accessed by one-way in, one-way out roads. Insuring that these roads will be safe for an evacuation is critical. Fuels should be thinned away from the road surface. This not only creates a safe access corridor, but it can also serve as a potential fuel break. Private driveways should also be addressed with visible signs and safely accessible for fire suppression equipment. Longer driveways should have turnouts for vehicles to pass each other and an area large enough for a fire truck to turn around at the home site.

In general, due to the dispersed nature of the electrical infrastructure, all of the existing above ground power lines are exposed to varying levels of fire risk. Vegetation clearing under rights-of-way, multi-agency coordination of thinning adjacent to power line easements, and public education can help prevent this system from failure due wildfires as well prevent a potential ignition from these lines.

The Alta Lake State Park should be a high priority for fuels reduction and homeowner education. The slopes around the lake are in need of fuels reduction treatments to reduce the fire risk and trees and other vegetation around homes should be pruned or even evaluated for removal in some cases. Homeowners should be made aware that wood construction materials drastically increase the probability of ignition. Furthermore, due to the close proximity of homes and other structures, there is high possibility that one home burning could catch several others on fire. The Alta Lake Road should be either extended to form a loop around the lake or significantly widened to allow for a better and safer evacuation of residents and visitors in the area during any kind of emergency. Reducing the fuels along this road would also help protect people and structures by not only allowing for safer access, but could also serve as a fuel break.

The Methow Community Wildfire Protection Plan has been completed and approved (February 2006) for the Methow River Valley. Extensive local research and planning went into the development of this plan; therefore, specific recommendations outlined in that document should also be supported.

Conconully and Loomis Risk Assessment

The fuels in Conconully are somewhat variable. Sparse to moderate density ponderosa pine and Douglas-fir stands are dominant around the shores of Salmon Lake, Conconully Dam Reservoir, and extending to the west towards the Okanogan National Forest boundary. The understory vegetation is a mixture of open grass and shrub transitioning to mostly shrub and conifer

regeneration as the elevation increases. Where homes occur some of the larger trees and understory vegetation in the immediate area has been thinned to allow for development. The south and west aspect slopes near the community are mostly covered with various grasses, a few sparse shrubs, and an occasional ponderosa pine. Due to the variable topography and vegetation, fire behavior will also tend to be variable. Fires will typically burn more intensely were forest fuels are more dense such as in the Salmon Creek drainages. On grass slopes and in open, well spaced forest stands, fires will typically move quickly through the flashy surface fuels, but burn with less intensity. Many of the structures within the Conconully community were built using wood materials for siding, decking, and or roofing, which because of its ignitability, adds to the potential fuel load.

In the Sinlahekin Valley, which includes the community of Loomis, sagebrush and grasses dominate the lower and mid slopes. This type of fuel tends to dry out early in the summer and support very rapidly spreading surface fires. The topography consists of moderate to steep slopes rising out of the drainages, which tends to encourage the quick spread of fires upslope.

Sparse stands of ponderosa pine and Douglas-fir can typically be found in some draws and along the upper slopes in these neighborhoods. This type of dry forestland fuels can also be found along the shores of Wannacut Lake and the surrounding hillsides. The steep slopes around Palmer Lake are also partially forested with sparse ponderosa pine and Douglas-fir. Fires in this type of fuel would be expected to move very quickly along the surface with occasional torching and crowning of the canopy. Fuel loading in stands that have not been burned or otherwise been managed for many years may burn more intensely and have a higher rate of tree mortality.

The landscape to the west of the Sinlahekin Valley towards the Okanogan National Forest boundary is very rugged and covered by forestland fuels. Fires in these mountains would likely burn very intensely and be difficult to suppress. Aggressive initial attack would likely be able to keep fires in these forestlands from moving into populated areas due to the transition to sage and grassland vegetation on the lower slopes; however, this is not guaranteed and residents should be made aware of the potential risk.

Wildfire Potential

Residents in the Conconully community have a very high risk of experiencing wildfire as was seen during the 2006 Tripod Fire. Not only are the fuels and topography in this area very conducive to fire, but there is a high likelihood of an ignition due to the extreme recreational use. Campfires and ATV's are just a few of the potential human-caused ignition sources. Further increasing the risk is the popularity of wood siding, decking, and roofing on homes throughout the area. Many homes and other structures are crammed onto small lots between the lake shores and the access routes with forest fuels on the slope above and among the structures. In the event of a fire, these homes would form a continuous fuel bed that could facilitate the spread the fire from home to home.

The community of Loomis has a high potential fire risk due to the abundance of recreational activity and increased residential development. The Gold Hill and Cecile Creek areas west of the Loomis townsite have experienced a significant increase in the number of both seasonal and permanent homes. Many of these new home builders in the Loomis area are unaware that their investments may be outside of local fire protection district boundaries. The fire risk in these areas is particularly high due to the steep topography, limited access, and forest fuels. The fuels bordering the Loomis-Oroville Road corridor and surrounding Spectacle and Whitestone Lake are very conducive to an ignition as well as rapid fire spread. Structures in this area should be

protected from wildfires by creation of a defensible space involving green and clean lawns, fire resistant landscaping, and fire resistant siding, roofing, and decking.

Ingress-Egress

The primary ingress/egress route through all of these neighborhoods is the Loomis-Oroville Road, which travels in a big loop from Oroville through Nighthawk and Loomis and reconnects with Highway 97 near Ellisforde. This is a paved, two-lane highway throughout its extent. The Similkameen, Loomis, and Wannacut areas all have reasonable amount of alternative escape routes other than the Loomis-Oroville Road in the event of a fire-involved evacuation. Due to the steep topography; however, residents in the Palmer Lake area are limited to the main Loomis-Oroville Road as their sole escape route. Nevertheless, this route is likely to be the safest escape route from Palmer Lake either to the north or the south.

The primary access into the community of Conconully is provided by the Conconully Road. This is a paved, two lane route between Omak and Conconully. The Sinlahekin Road and the West Fork Road also provide graveled access to the town site from the north and south, respectively. There are a minimal number of secondary roads in this neighborhood, but those that exist are typically gravel or dirt routes traveling through the forested areas to the north and west of the community.

Many private homes and subdivisions are accessed via unimproved, single-lane roads accessible only by small emergency vehicles. Often access roads and driveways are steep and/or lined with wildland fuels that can limit or prohibit access during a wildfire. Many of these roads have one way in and one way out and lack adequate turnout and turn-around areas for emergency vehicles. The inability of emergency resources to safely access structures reduces or may even eliminate suppression response. Roads in newer subdivisions have been designed to accommodate emergency vehicles with either loop roads or cul-de-sacs with wide turning radii and easily negotiable grades, which are better-suited to all types of emergency response equipment.

Infrastructure

Residents near the Loomis community center and Conconully have access to a municipal water system, but all other residents in the Similkameen, Palmer, Pine Creek, Happy Hill, Cook Mountain, and Wannacut communities rely on personal or multiple home well systems. Irrigation water is provided to the Loomis, Spectacle Lake, and Whitestone Lake areas by the Whitestone Irrigation District.

The main transmission line extends from Tonasket to Oroville where it is distributed to the Similkameen, Loomis, Palmer, and Wannacut communities through public distribution lines.

The neighborhoods of Pine Creek, Happy Hill, and Cook Mountain are provided electrical power via public distribution lines stemming from the main transmission lines in the Okanogan River valley. A branch of one of the main transmission lines travels from the valley up Conconully Road to the Town of Conconully.

Fire Protection

Much of the rural area around Conconully have structural and wildland fire protection provided by Okanogan County Fire Protection District #9, excluding the north end of the Limebelt area and Pine Creek area. Additionally, the Town of Conconully maintains its own Volunteer Fire Department with fire protection responsibility within the community. Okanogan County Fire

Protection District #3 extends part way up State Route 20 and the Chilliwist Road to provide structural and wildland fire protection to residents in those areas.

Okanogan County Fire Protection District #10 provides structural and wildland fire protection to a small service area surrounding the community of Loomis and a narrow strip along the Loomis-Oroville Road to encompass most of the area immediately surrounding Spectacle Lake. Currently, the Fire District #10 does not have a structure to house any of their rolling stock; therefore, it is sitting, unprotected, in an empty field just outside of Loomis. Nearly all other structures in the Similkameen, Loomis, Palmer, and Wannacut Neighborhoods are not currently covered by a rural fire district (there are a few structures in the Loomis Neighborhood that are within Okanogan County Fire Protection District #4).

All of the Okanogan County fire districts have signed a "Memorandum of Understanding" to assist any of the other districts in the County with fire suppression to the utmost of their abilities. State lands are the sole responsibility of the Washington Department of Natural Resources (suppression & reciprocal agreements may apply). Federal lands are the sole responsibility of the Federal management agency (reciprocal agreement may apply). Much of the private lands in Okanogan County are within joint jurisdiction between the County fire protection districts and the WA DNR.

Washington Department of Fish & Wildlife has initiated an active program in fuels reduction & reconfiguration as well as prescribed burning on WDFW lands in the Sinlahekin area. Fuels reduction & reconfiguration has been completed on Scotch Creek Wildlife and Chesaw Wildlife Areas. Plans are in place for fuels reduction and reconfiguration on the Methow Wildlife Area as well as prescribed burning. WDFW has a well-equipped prescribe burn team that conducts prescribed burns when weather and regulations permit. Additionally WDFW currently has MOU's in place with USFS, State Parks, US Fish & Wildlife Service for reciprocal prescribed burning. WDFW is currently pursuing MOU's with the BLM and National Park Service for reciprocal prescribed burning.

The DNR provides wildfire protection during the fire season between April and October with a varying degree of resources available in the early spring and late autumn months. The U.S. Forest Service seasonally responds to all wildland fires on their jurisdiction and may also respond to wildland fires on state and private lands based on a reciprocal agreement with the DNR.

Potential Mitigation Activities

The best defense for homeowners in the Similkameen, Loomis, and Conconully communities is the construction of defensible space around homes. Homesites surrounded by fire resistant landscaping have a much better chance of surviving a flame front than those who do not. Several homes in these areas are reached by one-way in, one-way out roads; making it difficult for fire suppression vehicles to safely access the area. Providing pullouts and turnaround areas as well as reducing roadside fuels drastically improves the safety of both residents and firefighters. Additionally, efforts should be made to keep the Loomis-Oroville Road clear of fuels, which could include mowing or herbicide application, due to its being the primary ingress/egress route for all of these neighborhoods.

Education, particularly where there is an increased amount of recreational homes and activity should be a high priority. Awareness of the risk factors, potential ignition sources, and consequences can help avoid losses from wildfire as well as costly suppression. The Okanogan County building permit process should include an information assessment of all proposed

building sites to tell a prospective home builder whether or not they are within an established fire protection district.

In other forested areas such as along State Route 20 and in the Chilliwist Valley, forestland owners can reduce their fire risk by conducting fuels reduction projects. Thinning overstocked stands and removing non-commercial trees and other ladder fuels from the understory can significantly reduce their risk of loss to both their homes and their timber.

In developed recreational facilities, fires should be limited to escape proof fire rings and BBQ pits. Regulations concerning fireworks and fire use should be strictly followed and enforced throughout the County.

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Chapter 5

Fire Protection

Fire agency personnel are often the first responders during most emergencies. In addition to structural fire protection, they are called on during wildland fires, floods, landslides, and other events. The following is a summary of the agencies in Okanogan County and their resources and capabilities. A map of the Okanogan County fire districts and department boundaries is presented in Appendix 1.

Local Fire District Summaries

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

Appendix 4 contains contact information and a complete equipment list for each of the following fire service organizations.

City of Okanogan Fire Department

Department Summary: The City of Okanogan Fire Department covers approximately 3.2 square miles of commercial and residential area. The area is mostly valley floor with steep pitches of grass and sage brush hills to benches with residences. There are fire hydrants that cover 90% of the city at this time. There are 28 volunteers in the fire department with a paid Fire Chief. Volunteers cover both the City and part of Fire District #3. The Department is responsible for mainly structure fire protection but are trained and can respond to wildland fires within the City of Okanogan and Fire District #3 and surrounding areas. The City of Okanogan Fire Department provides lease space to Okanogan County Fire District #3. With residences mixed in with the wildland fuels, steep slopes, erratic winds, and dry summers coupled with elaborate private landscaping schemes can create extreme wildland fire behavior.

Priority Areas:

- ***Residential Growth:*** After little or no growth in the past, the City of Okanogan is experiencing a moderate to heavy expansion, with several new annexations and developments. These areas were previously agricultural areas that have been subdivided into varying densities; the upper benches are R-1 designations with the valley floor being of denser R-3 zoning.
- ***Communications:*** Dispatched by Okanogan County Sheriff's Office (OCSO) dispatch on the Pitcher Mountain repeater. Motorola pagers of varying age, Minitor 2 thru 5 pagers, and new Kenwood 2312 portable radios are utilized. The Department currently maintains a back-up dispatch system for emergency's when OCSO dispatch has a system failure. The Department currently has 2 licensed tactical channels in the City of Okanogan for fire department use.

- ***Burn Permit Regulations:*** The City of Okanogan has a burn permit program that was established 1989 by City Ordinance #716. The Outdoor burning code has been changed throughout the years to stay in compliance with the Clean Air Act. Permits cost $11.00 and are issued for one year, there is a period of no burning that starts on June 1 and goes through September 30. Permits are for natural vegetation only, minimal pile size and conditions pertain to each individual permit, violation of any part of OMC 8.36 results in a citation of $550.00.

District Needs: The major obstacle that stands before the fire department today is the limited amount of room for expansion of the Okanogan Fire Station; it has reached its capacity. The need for a much larger joint fire station would provide the area needed to increase equipment cache and provide a large classroom for training scenarios and the setup for training aids. In addition, a training burn tower facility for more advanced hands-on-training in operations and tactics.

At some point in the future the need for a 100' *aerial* will become a necessity and the need for a brush engine to cover smaller brush fires within the city limits.

Education grants for materials and staff to meet with the public and educate them on Firewise building methods and landscaping to reduce the catastrophic effects of wild fires.

Increase recruitment and retention of volunteer fire fighters is also a need for the department. Currently the Department has 28 volunteers but in reality need a number closer to 40 to provide response times under the NFPA standard of 8 minutes. The tax base doesn't currently provide the funding for paid staff to cover during periods of limited staffing during the day time.

About 10% of the city is not served by fire hydrants.

A dispatcher is needed that is solely dedicated to fire and EMS dispatch at the OCSO dispatch center.

City of Omak Fire Department

District Summary: The City of Omak Fire Department covers approximately 3.3 square miles of commercial and residential area. The area is mostly valley floor with steep pitches of grass and sage brush hills to benches with residences. With residences mixed in with the wildland fuels, steep slopes, erratic winds, and dry summers coupled with elaborate private landscaping schemes can create extreme wildland fire behavior.

The department is centrally located downtown at 16 North Ash Street. There are 31 volunteers in the fire department with a paid Fire Chief. The department is responsible for mainly structure fire protection but volunteers are trained and respond to wildland fires, vehicle fires, and vehicle accidents, hazardous materials incidents and assist with some EMS incidents. Volunteers cover both the City and part of Fire District #3. The department provides lease space to Okanogan County Fire District #3 to store equipment.

Priority Areas:

- ***Residential Growth:*** Currently experiencing light to moderate growth within the City of Omak.
- ***Communications:*** Since switching to narrow band, communications are good for the central valley locations. The City is tied into the County 911 response system.
- ***Burn Permit Regulations:*** There is a burn permit program that works very well inside the City of Omak.

Issues of Concern: For many years there has been a high number of wildland related fires caused by careless outdoor burning in rural areas all over the County. The local volunteer fire chiefs do not have the authority to enforce the outdoor burning. The department believes that if a County Fire Marshal were hired it would help to cut down on a lot of the wild fire threat through better public education and enforcement.

District Needs: No needs at this time.

Town of Conconully Fire Department

District Summary: The Town of Conconully is a small resort community nestled in a valley about 20 miles northwest of the City of Okanogan. The town has 210 residents, mostly retired. There are 189 housing units in the town, of which, only 54.5% are permanently occupied housing units.

The town borders National Forest, DNR, BLM and private lands. The town is flanked by two separate reservoirs managed by the US Bureau of Reclamation (Conconully and Salmon Lake Dams). The southern town limit is Conconully State Park.

In addition to providing support to the town citizens the Department has an MOU with Fire District #9 to provide structure protection within a 5 mile radius. The Department also provides EMS but do not transport (due to limited capabilities) unless deemed necessary.

The Department is a completely volunteer agency with 12 volunteer firefighters trained in structure and wildfire procedures.

Priority Areas:

- ***Residential Growth:*** Conconully has had a very slow growth rate during the last few years.
- ***Communications:*** The Department is dispatched through the OCSO Dispatch. Pagers and portable radios do not work in our area due to the town resting in a hole between several mountains.
- ***Burn Permit Regulations:*** The town does have regulations on burning, but can be hard to enforce.

Issues of Concern: The Fire Hall was condemned in 1980 but continues to be used.

District Needs: A new fire hall to house all of the Department's fire vehicles. A Class A fire engine is needed to replace some aging equipment. Conconully needs an increase of year round water sources for fire suppression. A repeater near town would solve some communication issues due to the geography surrounding Conconully.

The Department needs help with recruitment, retention, and training of volunteers. This is a problem because most residents are beyond the age of joining the department along with most working age folks cannot afford the high price to drive a 40 mile round trip to work to get to the Omak-Okanogan area so they do not live in Conconully very long.

The Department's fire vehicles are old and in need of some major repairs which the town cannot afford. The Department needs a 4 wheel drive brush truck. The fire department budget for the last several years has been a total of $14,000 which does not go far when maintaining vehicles, fire hall, PPE, training, etc.

Town of Coulee Dam Fire Department

Chief Robert Jackson

Telephone: 509-422-3830

E-mail: rdjackson99@hotmail.com

Address: 300 Lincoln Ave

Coulee Dam, WA 98116

District Summary: The Town of Coulee Dam is located in eastern Washington along the Columbia River with a population of 915 residents in Okanogan County and across the Columbia River there are another 315 residents in Douglas County. The Okanogan County portion of Coulee Dam lies within the Colville Indian Reservation and forms the southern limit of the Okanogan Highlands. The town has a total area of 0.7 square miles.

There are 20 volunteers in the fire department with NO paid staff. The volunteers perform structure protection and wildland firefighting duties.

Issues of Concern:

- ***Residential Growth:*** The population has only increased by 5.2% since 2000 with little or no development in the area.

- ***Communications:*** The Department is dispatched through the OC Sheriff's Office Communications Center/Dispatch. Tactical communication is still an issue.

Cooperative Agreements: Coulee Dam is part of the Okanogan Mutual Aid Agreement and has a mutual aid agreement with Fire District 3 from Douglas County. The department also has agreements with BIA and Bureau of Reclamation.

District Needs/Wish List:

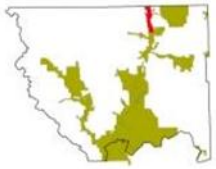
A repeater near town is needed to solve communication issues throughout the Department's jurisdiction. Narrow banding did not solve this problem it has left the area with only one channel to contact dispatch.

A new fire hall is needed as the current hall will not house all of the fire vehicles and equipment and does not provide adequate training areas.

Firefighter recruitment and retention continues to be a problem that the Department faces annually. This is a problem because most residents are beyond the age of joining the department.

The Department needs more training but this is hard to do with every member working their regular 40 hour+ jobs.

Okanogan County Fire District #1



District Summary: Okanogan County Fire District #1 covers approximately 2.2 square miles (2 miles in the district and 0.2 within Oroville city limits) along the Okanogan River valley. The City of Oroville sits on the south end of Lake Osoyoos and at the convergence of the Okanogan and Similkameen Rivers. The city is 4 miles south of the Canadian border.

The District and city has one combined Fire Department which is operated by the City of Oroville and contracts with FD #1 for services. All equipment and operations are housed and conducted from the city fire station in downtown Oroville.

The population of FD #1 and city is 3,641 full time residents. There are 25 volunteer firefighters with no fulltime paid staff. The economy is primarily based on agricultural with an influx of tourist during the summer months. There are numerous orchards within the town's limits and a few grape vineyards.

The fire district responds to structural fire, EMS major medical calls and rescue, wildland fire, vehicle accidents, hazardous material calls non-operational, and water rescues. The District/Department responded to 72 calls in 2011. The District will respond as initial attack to incidents on USFS and DNR lands until the responsible agency takes charge.

Priority Areas:

- ***Residential Growth:*** Growth in the area is primarily caused by the proximity to the Canadian market, just 4 miles away in British Columbia, Canada. Three vacation cottage developments have been built on the fringes of the city limits. Over 60% of the property owned on the US side of Lake Osoyoos is owned by Canadians.
- ***Communications:*** Development of a countywide communication plan is needed; the District is tied to Okanogan County 911 dispatch system. Pagers, portable radios, and mobile phones do not work in all areas as the district is in a low lying area surrounded by mountains.
- ***Burn Permit Regulations:*** The District/Department does not have a general burn permit program. However, it does issue recreational burn permits, which follow the requirements of IBC 307, once the County Commissioners declare a burn ban in all areas of the County.

District Needs: Localized training available without the need to send each volunteer to training centers outside our local area. A countywide Fire Marshal is needed for enforcement of the fire codes and building inspections.

Okanogan County Fire District #2

District Summary: Fire District #2 includes an area approximately 1 mile wide beginning at the northern edge of the Town of Coulee Dam and proceeds north approximately 6 miles. The District includes the Town of Elmer City and the unincorporated villages of Belvedere to the north, McGinnis Lake to the east, Lone Pine, Koontzville, and Seaton's Grove. Rural residences are scattered along both State Route 155 (Coulee Corridor Scenic Byway) and the Elmer City access road. Bureau of Reclamation land is located on the south and west sides of the district and Colville Tribal trust land is scattered throughout the area.

The district has no paid staff and therefore relies completely on volunteers. Currently 15 volunteers are trained on both structure protection and wildland fire.

Fire hydrants are located in the Town of Elmer City, a local trailer park, and the River View Subdivision.

Priority Areas:

- ***Residential Growth:*** Population is the district has remained about the same for the past few years. The town of Elmer City is approximately 240 and the rest of the district is approximately 250.
- ***Communications:*** FD #2 is tied into the Okanogan County 911 response system.
- ***Burn Permit Regulations:*** Follow US BIA (Mt. Tolman Fire Center) restrictions and guidelines. Permits are required and issued at the Elmer City Hall.

Issues of Concern: There is a current active effort to annex the villages of Belvedere to the north and McGinnis Lake to the east. This will effectively more than double the size of our district.

District Needs: Primary need is a new fire station and training facility. Updated equipment (i.e., a Class A structure truck with all equipment) is also a critical concern. Maintaining a volunteer firefighting work force is very difficult. People don't volunteer anymore or have reached an age that makes it hard for them to be a viable asset.

Okanogan County Fire District #3

District Summary: Okanogan County Fire District #3 is located in center of Okanogan County and currently has 78 volunteers serving a population of approximately 8,000 over 71 square miles. The area is predominately valley floor with steep slopes to benches, residences are located at the edge of these benches with very little regard to the wildland fuel that abuts there residence. Fuel types are natural grasses and sage, some areas have sage as tall as 10' in height. The area was heavy towards agriculture until recent years were the loss of orchard ground has provided large tracts of land that provide avenues for fire to enter the district or leave the district whatever the case maybe.

The area, which comprises FD #3, is fire prone with a high frequency of lighting ignitions in June, July, August and September. Additionally there are frequent human fire starts throughout the region.

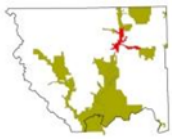
There are 3 stations within the fire district - Station 1 is located in downtown Omak, the fire district rents space from the City of Omak; Station 2 is located in downtown Okanogan this station is located approximately 5 miles from the Omak Station, the fire district rents space from the City of Okanogan; and Station 3 is located in Malott a non-incorporated community 7 miles south of Okanogan. Each station maintains its own roster and handles its own recruitment and training. Departments are responsible for mainly structure fire protection but are trained and respond to wildland fires, vehicle accidents, EMS calls, hazardous material spills, and other types of rescues.

Priority Areas:

- ***Residential Growth:*** One challenge FD #3 faces is the large number of houses in the urban/rural fringe compared to twenty years ago. The growing population has expanded further into traditional forest or resource lands and other rural areas. The "interface" between urban and suburban areas and unmanaged forest and rangelands created by this expansion has produced a significant increase in threats to life and property from fires and has pushed existing fire protection systems beyond original or current design or capability. Many property owners in the interface are not aware of the problems and threats they face and owners have done very little to manage or offset fire hazards or risks on their own property. Furthermore, human activities increase the incidence of fire ignition and potential damage.
- ***Communications:*** FD #3 is tied into the County 911 response system.
- ***Burn Permit Regulations:*** No burn permit program at this time other than those issued by the Department of Ecology.

District Needs: None at this time.

Okanogan County Fire District #4



District Summary: FD #4 covers 174 square miles and with a population of about 6,000. The District includes the incorporated City of Tonasket and the unincorporated communities of Ellisforde and Crumbacher, as well as a municipal airport. The City of Tonasket is about 20 miles south of the Canadian border. The town is at the intersection of US Highway 97 and State Highway 20, about 28 miles north of Okanogan, the county seat. Apple, pear, peach, apricot, plum, and cherry orchards, wineries, cattle ranches, dude ranches, farms and rugged mountain wilderness with sage-covered foothills make up the fire district.

FD #4 is 100% volunteer and currently has 35 volunteers. The district responds to both structural and wildland fires.

Priority Areas:

- ***Residential Growth:*** FD #4 growth is moderate to slow.
- ***Communications:*** FD #4 is tied into the County 911 response system and maintains interoperable with other districts and agencies (DNR & USFS).
- ***Burn Permit Regulations:*** Burn permits are issued by district personnel and DNR.

District Needs: A satellite station for Crumbacher, Thermal Iimager, new PPEs (structural and wildland), new SCBAs, replace hoses on fire trucks, and an updated structural engine.

Okanogan County Fire District #6

District Summary: Fire District #6 is the largest Fire District in the County by area covering approximately 350 square miles with a population of approximately 4,000. The District provides contracted support to the Towns of Twisp and Winthrop. The District has four stations in the main communities of Mazama, Winthrop, Twisp and Carlton. The District includes a wide variety of fuel types ranging from grassland to heavy timber and everything in between

It is an all-volunteer department except for a full time Chief and three Division Chiefs. Currently the District's roster consists of 35 volunteer firefighters. The top priority for the District is structure protection but responds to wildfires. The District lands have a dual jurisdiction with the DNR which results in a good working relationship. Also, much of the District borders National Forest and again cooperation with this agency is excellent.

Priority Areas:

- ***Residential Growth:*** FD #6 has the highest rate of new construction in Okanogan County. Most of the construction is residential in the urban interface areas. Urban interface area is the biggest concern.
- ***Communications:*** The Department is dispatched through the OC Sheriff's Communications Center/Dispatch. FD #6 has a good communications throughout the District..
- ***Burn Permit Regulations:*** FD #6 does not issue burning permits. When fire danger is high, a complete burn ban is instigated.

District Needs: The Winthrop Station is inadequate to handle equipment and training needs. Replacement of the station is the highest priority. Need to replace 2 water tenders and 3 brush trucks. Additional full time paid firefighter staff to provide better service to the area.

Okanogan County Fire District #7

District Summary: The District covers 33 square miles and is made up of orchards and other crops grown both within the valley area and on many of the low benches where irrigation water is available. The surrounding foothills are vegetated primarily by sagebrush and various lower growing grasses. Sparse ponderosa pine can be found in a few of the nearby draws.

The District provides coverage for the Town of Riverside (population 348) and is 100% volunteer with around 18 volunteers. The district responds to both structural and wildland fires.

Individual residents in the Tunk Valley have purchased land they hope will eventually house a small fire department. It should be noted that it is 28 miles of gradual incline from the beginning of Tunk Creek Road near Riverside to its culmination at Crawfish Lake; thus the response time for a neighboring fire department to respond to a fire in the upper extent of Tunk Valley could be significant.

Priority Areas:

- ***Residential Growth:*** FD #7's growth is moderate to slow.
- ***Communications:*** FD #7 is tied into the County 911 response system and maintains interoperable with other districts and agencies.
- ***Burn Permit Regulations:*** None at this time.

District Needs: New fire station with classroom facility and an urban interface engine.

Okanogan County Fire District #8

District Summary: District encompasses 160,000 acres all on the Colville Indian Reservation. The District is bordered on the south by the Columbia River (Brewster/Bridgeport), east and north by Columbia River Road, and west by Highway 97. Borders by Brewster/Bridgeport near Smith Ranch (Wakefield/Cameron Lake) exit. Population is approximately 350. The terrain is high plateau which breaks down to low elevations on all four compass points with scattered timbers, sagebrush and open grass areas. In addition, wheat field dominate approximately 15,000 acres mostly in central and south central district.

The District has 30 active volunteer members who are nearly all red card trained. All members receive annual refresher training through DNR and have completed their annual first aid training.

District 8 is a wildland fire only unit – no structure capabilities exist. The District has eight Type 6 engines, one 3,000 gallon tender and one command vehicle.

Priority Areas:

- **Residential Growth:** WUI with newcomers.
- **Communications:** The District is dispatched out of the County communications center and is adequate except for tone out issues.
- **Burn Permit Regulations:** Burn permits are issued by Mt Tolman, BIA.

Cooperative Agreements: Mutual aid agreements with Fire District #3 and Mt Tolman, BIA.

District Needs/Wish List:

- Tone out through county is sporadic; district doesn't use pagers due to terrain features – open to suggestions.
- With small budget, ($12,000 annually) vehicle upkeep is a constant concern.

Okanogan County Fire District #9

District Summary: District #9 is about 64 square miles. It is made up of farms, ranches and open range lands. Structures are fairly scattered in most parts. The District does surround the Town of Conconully; however the town has its own fire department. FD #9 only has wildland fire equipment; the residents rely on the Town of Conconully Fire Department for structure protection within 5 miles of the town. For other residents, FD #9 has a mutual aid agreement with FD #3 for structure protection. FD #9 borders FS, BLM, DNR, and Washington Fish and Wildlife.

FD #9 is an entirely volunteer fire district with **no** paid staff and 23 volunteer fire fighters.

Priority Areas:

- ***Residential Growth:*** Little to no growth within the last few years.
- ***Communications:*** FD #9 is dispatched by OCS Communication Center/Dispatch.
- ***Burn Permit Regulations:*** Burn permits through Okanogan County and WA Department of Natural Resources.

District Needs: A new fire hall is needed because the trucks are currently stored in a barn owned by Fish and Wildlife during the winter months. The barn has only one heated room big enough for our water tender and one brush truck.

The District needs a water tender, two brush trucks, and draftable mobile pumps.

FD #9 needs a repeater to improve the radio communications.

Volunteers need additional training; however, this is tough to do when all our members work 40 or more hours a week either on their own farms or regular jobs.

Okanogan County Fire District #10

District Summary: District #10 is about 24 square miles. It is made up of orchards, farms, ranches, open range lands and timber. Structures are fairly scattered in most parts. The District does surround the unincorporated Town of Loomis. The volunteers are responsible for both wildland fire and structure fire protection. FD #10 borders BLM, DNR, and Washington Fish and Wildlife.

FD #10 is an entirely volunteer fire district with **no** paid staff and 13 volunteer fire fighters.

Priority Areas:

- ***Residential Growth:*** Little to no growth within the last few years.
- ***Communications:*** FD #10 is dispatched by OCS Communication Center/Dispatch.
- ***Burn Permit Regulations:*** District 10 follows Washington DNR regulations**.**

District Needs: A new fire hall to replace the current fire hall in Loomis, which was built in 1963 and is in need of major repairs or replacement.

Update equipment, (i.e. water tender, newer brush trucks, etc.). Volunteers need additional training; however this is tough to do when all our members work 40 or more hours a week either on their own farms or regular jobs.

Okanogan County Fire District #11

District Summary: District Summary: Fire District #11 is located in North Central Okanogan County and encompasses 71,040 private acres (111 square miles) with approximately 550 citizens and an estimated 350 structures. The area is primarily mountainous with numerous drainages. Northern boundary is 13 miles of east/west international border with the closest Canadian fire station being 20 miles from our Molson satellite station. Western boundary follows Nine Mile road adjoining private ground. Eastern boundary is the Chesaw highway and adjoins private and USFS property. The Southern boundary is intermixed with FS and private property. FD #11 adjoins approximately 300,000 acres of land not protected by any fire protection district.

Historically, the fire regime has been frequent, low-severity wildfires. Successful fire suppression, coupled with the various land management practices have led to overstocking of small trees (dog hair thickets) and an excess of surface debris and brush. This overstocking of vegetation and buildup of surface fuels has led to conditions with higher potential to result in frequent moderate to high-severity wildfires. These fires come with an elevated potential for negative effects to our communities.

The area, which comprises FD #11, is fire prone with a high frequency of lighting ignitions in June, July, August and September. Additionally there are frequent human fire starts throughout the region. The DNR Urban Interface Risk Assessment program has completed assessments on over 260 structures.

Approximately 30,000 acres of FD #11 is privately managed timber in need of fuels reduction caused by numerous developments with poor forest practice planning i.e., extensive ladder fuels from developments, doghair thickets and logging slash. This greatly increases the risk of a severe wildfire event in FD #11 either from a lighting strike or human caused fire.

FD#11 has one centrally located station (Fields Hall) and three 'satellite' stations located in the communities of Molson and Chesaw and at Rawhide Road (located at the junction of Molson and Chesaw Highways).

FD #11 is a completely volunteer fire district with 42 volunteer firefighters who are trained as basic structural and wildland firefighting. The majority of the red carded members are also Firefighter type 1 rated. One officer is certified as Incident Commander Type 4, Single Resource Boss, Dozer Boss and Engine Boss.

Priority Areas:

- ***Residential Growth:*** The district continues to see unchecked development with urban interface neighborhoods. The district is made up of 20-acre parcels surrounded by large and small ranches, isolated mountain homes and cabins. Approximately 70% of land in North Central Okanogan County is under the governmental management of the USFS, Washington State Department of Natural Resources, Washington State Department of Fish and Wildlife and the Bureau of Indian Affairs.
- ***Communications:*** FD #11 is tied into the county 911 response system.
- ***Burn Permit Regulations:*** Permits are issued by DNR.

District Needs: While only one member is certified in a line rated position for wildland fire, we have many long term members who have skills, knowledge, and abilities as Resource Boss,

Strike Team Leader and other advanced levels. The majority of FD #11 members are red carded and the majority of those are FFT1 rated. The primary obstacle for obtaining more training is the unpaid time commitments for the several weeks of required training at the ISC 230, 231 & 232 plus ISC 290 and leadership courses. At present FD #11 performs a very limited rescue service due to lack of equipment and training. The Kinross Mine operations at Buckhorn Mountain greatly increase the training demands on FD #11. The district is not trained in the use of SCBA equipment due to lack of training, equipment, and facilities. A live fire training facility to facilitate training opportunities for district members would increase the effectiveness of firefighters and other emergency responders.

The district needs to update the fleet. A few newer vehicles have been obtained but this continues to be a problem. The initial response engines will need to be equipped with rescue gear as well as fire gear to handle the increased heavy equipment traffic caused by the mining operation, the increased population supporting the mine and the associated mining support services.

While the primary station in the district (Fields Hall) is located centrally in the district and is a relatively new 4 bay facility (built in 1999) the district still needs the additional development of stations. The stations in Molson, Chesaw and Rawhide are much less than adequate for current needs.

The district is severely lacking in personal equipment. At present no members have certified turnout gear. What turnout gear the district does have is outdated. Over 80% of the members have wildland gear but increased demands on the district will leave us short in the very near future.

Okanogan County Fire District #12

District Summary: Located in Northern Okanogan County with approximately 9,702 private acres (15.76 square miles) in size and a population of 302 citizens. Tax revenue estimate for 2012 is $11,900. Assessed value real property is $19,358,095. The area within the district is mountainous with rock bluffs, valleys, and many steep drainages.

Okanogan Fire District #12 has one fire station located on Swanson Mill Road approximately in the center of the district. The district has one operation division primarily for the purpose of wildland fire suppression. Every firefighter is trained in current First Aid/CPR, but there are no qualified EMS personnel or equipment.

The District currently has 18 volunteer firefighters (no paid staff) and is governed by a three member Board of Commissioners. All of the officers and fire commissioners have many years of involvement with the District. With an average of 18 volunteers in total, all have some level of experience on large and complex wildfires. Most of the firefighters have received training to the woodland Firefighter 1 level. DNR red cards are kept current with annual refresher classes. A current certification in basic First Aid is required of all firefighters. There are two Single Resource Bosses with several others in training. While wildfire ready, the district lacks in training for structure fires. And, although the District responds to vehicle accidents within the district, personnel are not EMS trained or equipped.

All of Okanogan Fire District #12 is under governmental management by DNR, BIA, BLM, and is adjacent to the USFS.

The western boundary is bordered by Fire District #4, Tonasket, and Fire District #1, Oroville, in the Okanogan Valley. The elevation ranges from 1400 ft. at these boundaries to 3800 ft. on the north where DNR, BLM, and USFS properties border. The eastern boundary is a point approximately one-half mile west of Fancher Lake. The southeast roughly parallels the western side of the Antoine Canyon. The southern boundary traverses broken country to the southwest corner two miles west of Ellisford.

A wide variety of fuel models exists within FD #12. The lowest elevations are in the south and west with a total gain of 2400 feet rising in the north and east half of the District. This creates an overall southern and western exposure. The fine low elevation grasses are typically dry enough to ignite easily by July. Sagebrush transitions into scattered ponderosa pine forests. This then becomes a complex mix with fir, tamarack and brush. This combination coupled with summertime upslope, up valley winds has historically created many fast moving large fires, very difficult to control. Roadways create the most significant firebreaks. Some overstocking and doghair thickets exist at various points along Swanson Mill Road. Water sources are limited/seasonal and widely scattered. Many water storage tanks are stationed on private lands throughout the District.

The area within FD #12 is fire prone with a high frequency of lightning ignitions in June, July, August, and September. Additionally there are frequent human fire starts through the area. There are many absentee owners who frequent their property to recreate during the summer and hunting season. The lack of local fire danger knowledge adds to the human caused fires.

Priority Areas:

- ***Residential Growth:*** The district is experiencing unchecked development of interface neighborhoods in mountains and valleys. Mountain homes and cabins are served by primitive county road and primitive auxiliary roads and driveways.
- ***Communications:*** The District is dispatch out of the County communications center.
- ***Burn Permit Regulations:*** Permits are issued by DNR.

District Needs: An aging fleet of vehicles remains our primary limitation to responses. All but two of our engines are loaned/leased old military surplus. The District owns a 2000 Chevy ¾ ton and a 1995 Ford F-350 purchased through DNR/Military surplus. The District needs to upgrade our overloaded engines with newer vehicles which would be more reliable and would provide the safety margin required by law. In the last year, our water tenders have been upgrade, but they still require some maintenance work to get them fully operational.

The FD #12's fire station is limited by size (two bays) to housing three vehicles year round. This severely limits our response time and capability for approximately 6 months out of the year, when freezing weather becomes a problem. The fire station has no well. The only water on site is a 10,000 gallon tank for seasonal firefighting use. All of the FD #12's water sources are located out of the district. Another fire station better located with a well would provide the district with a water source within the district and storage for additional apparatus. This would also provide room for training and education.

Our district has a 2-watt VHF radio repeater for in-district communications. Due to the steep terrain, our communications has many gaps. While the District now has access to the North County fire repeater which offers better coverage, it is generally reserved for inter-district communications and cannot be used as a tactical frequency. FD #12 would like to apply for a FCC license to increase the power wattage of our 2-watt VHF repeater, in order to improve communications throughout the district.

Some of our truck radios and handheld radios are not capable of all of the required frequencies and should be upgraded to newer, more capable radios. Only some of our radios can communicate on the required National Interoperability channels as recommended by the Department of Homeland Security.

Okanogan County Fire District #13

District Summary: The Okanogan Fire Protection District #13 is authorized and guided by Title 52 of the Revised Code of Washington for Fire Protection Districts. Its primary responsibility is the protection of structural improvements and developments on lands within its district. It also has joint protection responsibilities with the Washington State Department of Natural Resources for protection from wildland fires.

The fire district boundary generally coincides with that of the Republic School District #309, with the addition of an annexed portion extending westward from Ferry County into Okanogan County along the state highway route 20 corridor. The district area is approximately 140 square miles with a population of approximately 3300.

Fire district staffing consists of:

- 35 – Firefighters (volunteer)
- 3 - Fire Commissioners (volunteer)
- 1 - District Secretary (part-time paid)
- 1 – Maintenance Worker (part-time paid)

The fire district is generally situated within the wooded valleys of the San Poil River and the Curlew Lake valley, including their tributaries. The valley bottoms are typically open and grassy where agriculture and development has cleared the forests. Uplands are generally wooded. Natural vegetation throughout the district creates a widespread Wildland/urban interface fire threat potential.

Approximately 1/3 of fire district values lie within the city limits of Republic, Washington with remaining values existing in the rural areas of the district.

The local area has an active fire history. Large wildfires have been documented throughout Okanogan County. When large fires occur, citizens are reminded of the threat to their homes, and awareness of hazard fuels peaks for a time. However, the mental vividness of evacuations, warning bulletins, and firefighters and equipment pouring into the community to render assistance dulls with time. It is important for residents to understand the vulnerability of living within dense vegetation where dry summers create the potential for catastrophic fire events.

Priority Areas:

- ***Residential Growth:*** Fire prone developments in subdivisions surrounding Curlew Lake and up tributary creek drainages, and north of the City of Republic on Klondike Mountain.
- ***Communications:*** Establish another repeater for fire/ems to cover the dead spots around the boundary area between Curlew Lake and Malo.
- ***Fire Fighting Vehicles:*** The district will need an additional structural engine for the planned satellite station on the west side of Curlew Lake. The district will need to upgrade the old tender stationed at the East Lake Hall. The tank leaks and the pump is too small for efficient use of the vehicle. Some of the older vehicles in the fleet are higher maintenance than the newer vehicles, and also do not provide as many efficiencies and safety features for firefighters as newer models that are up to the latest standards.

Replacement or refurbishment of older apparatus must be an ongoing program as funding opportunities develop.

- ***Burn Permit Regulations:*** The fire district does not administer a burn permit system. The fire district has relied upon a system established by the Washington State Department of Natural Resources (DNR) that allows outdoor burning under certain times of the year according to particular rules.

During times of the year when DNR burning rules are relaxed, usually early spring and late fall, the fire district is frequently called out to suppress escaped fires started by homeowners burning grass and debris. Escape fire incidents have a negative impact upon the time and patience of volunteer firefighters. The volunteers are willing to help those in genuine need when fire threatens the community due to accidental reasons, but their enthusiasm wanes when their personal lives are interrupted by fires that have escaped due to poor planning or carelessness. Because of escaped burning incidents, there is a need to develop further cooperation and education between local law enforcement and Fire Chiefs to cooperatively enforce current laws regarding reckless and negligent fire use.

Issues of Concern: The trend of dwindling industrial activity in the fire district will degrade the tax revenues over time. Poor economics will continue to be a limiting factor in providing adequate fire protection unless business and industry can be attracted to the area.

District Needs: Fire district leaders have developed a list of general issues and considerations that pertain to multiple neighborhoods or the district in general, which have been incorporated into the Chapter 5 of this document.

Okanogan County Fire District #14

District Summary: Located in Northern Okanogan County with approximately 79,953 private acres (124 square miles) in size and a population of 1,700 citizens. The area within the district is mountainous with three major valleys and many steep drainages.

Okanogan Fire District #14 has one primary fire station located in Curlew and three satellite stations in the communities of Danville, Malo, and Toroda. The district has two operations divisions (fire and medical). Every firefighter is trained in current First Aid/CPR, but there are no qualified EMS personnel or equipment.

The District currently has 30 volunteer firefighters and 23 volunteer EMS providers (no paid staff) and is governed by a three member Board of Commissioners. All of the officers and fire commissioners have many years of involvement with the District. With an average of 30 volunteers in total, all have some level of experience on large and complex wildfires. Most of the firefighters have received training to the woodland Firefighter 1 level. DNR red cards are kept current with annual refresher classes. A current certification in basic First Aid is required of all firefighters. One commander is certified at Incident Command Type 3 and Division Group Supervisor.

Priority Areas:

- ***Residential Growth:*** There continues to be unchecked development of interface neighborhoods in narrow, mountainous valleys. Small ranches and farms make up the majority of development in the larger valley bottoms and some upland areas. Isolated homes and cabins exist in the mountainous areas of the District.
- ***Communications:*** The valley is difficult place for effective communications. The topography makes radio communication spotty, and the District does not have cell phone coverage to fall back on. Firefighters in the field frequently need contact with people or organizations that are only reachable by phone. The District's own dispatch attempts to make that connection but because the District relies on volunteers, someone to fill that role is not always available. Topography enters into the communications problem again because reported fires are often not easy to spot, due to limited vantage points, and a lot of time can be wasted in getting eyes on them and then trying to calculate a way into that area.
- ***Burn Permit Regulations:*** The fire district does not administer a burn permit system. The fire district has relied upon a system established by the Washington State Department of Natural Resources (DNR) that allows outdoor burning under certain times of the year according to particular rules.

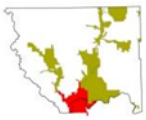
District Needs: The primary obstacle for obtaining wildland fire training is unpaid time commitments for the several weeks of required training at the ISC 230, 231, & 232 plus ISC 290 and leadership courses.

An aging fleet of apparatus is our primary limitation. The newest vehicle of our fleet is a 1999 F-450 Ford which came to the District surplus from the USFS Colville National Forest in 2005. Much of our heavy rolling stock is late 1960 vintage and up for replacement.

Additionally, the District currently has no water tenders on inventory. This is a gaping hole in our water transport and portable hydrant ability. We have recently acquired one surplus Kenworth tractor truck for building a tender but have not yet amassed the funding to do so.

While the primary station of the District is a new (2004/05) five bay facility located in the town of Curlew, the District is still in need of additional development of stations. The two bay, three apparatus station in Toroda (1998) is adequate for current needs. The single bay, single apparatus stations in Malo and Danville are much less than adequate for current needs. Stations similar to the Toroda station need to be built in both the Danville and Malo locations.

Okanogan County Fire District #15



District Summary: Fire District #15 covers 230 square miles in two counties (Okanogan and Douglas). Within those two counties FD #15 covers a population of over 4,000. The area is mostly agricultural in nature with apple, pears, cherries and wheat. Also FD #15 has a vast diversity of low income minority agricultural workers, mostly Hispanic. During the peak harvest months, August through November, the population of the district could double in numbers. The District also covers a wide range of topography, from grass/sagebrush to dense timber.

The district operates four stations: Brewster, Pateros, Methow and Rocky Butte on the Bridgeport Bar. The District provides coverage for the Cities of Brewster, Pateros, and Bridgeport. The district responds to over 120 calls a year covering brush fires, structure fires, vehicle fires and vehicle accidents. The district also owns and operates an ambulance service that employees 4 EMT-I's and an EMS Supervisor, who is also an EMT-l.

FD #15 has a paid District Fire Chief and over 60 volunteers. All our firefighters are red card qualified. Along with that the District has several who are Crew Boss and Engine Boss qualified.

Priority Areas:

- ***Residential Growth:*** The Alta Lake, Methow, and French Creek areas have had a big growth of new homes over the past two to three years. The District needs to improve fire service to those areas as well as Brewster, Pateros and Bridgeport Bar areas. The Alta Lake area has a State Park as well as a popular golf course with a motel, both of which has increased our call volume to those areas. The closest station to the Alta Lake area is 3-4 miles away in Pateros. The Alta Lake area should be covered more efficiently with a station and equipment assigned to the area.
- ***Communications:*** The District needs to improve our communications in the Methow area as well as the areas of our district surrounding Bridgeport. The topography in these areas makes it difficult to get good signal from the current repeater sites. Dispatched by OC Sheriff's Office Communications Center/Dispatch (911) for both counties.
- ***Burn Permit Regulations:*** The City of Brewster has a burn permit requirement and the cost is $30.00 and is good from Oct 1 – Apr 30. The district has no permit process in place at this time**..**

District Needs: A training facility, either within the district or somewhere within in the County, is necessary for volunteers to get good quality training without having the burden and costs of traveling out of the area, especially now with the proposed new LIVE fire training requirements.

A fire station and equipment (Class A Engine) in the Alta Lake and Methow areas to improve the current overcrowding conditions. Improve communications with repeaters in dead areas. Retention and recruitment of volunteers is a major problem. The District is always in need of volunteer firefighters and EMS.

Update contracts with neighboring agencies. Developing contingency plans for the urban interface areas of the district. The District needs to continue to improve relationships with the cities (Brewster, Pateros, and Bridgeport).

Okanogan County Fire District #16

District Summary: The Aeneas Valley is located in NE Okanogan County approximately 18 miles SE of Tonasket. The rough district boundaries are: all private land, on both sides the valley, from Peony Creek road to just past the Aeneas Valley Road general store. FD #16 encompasses approximately 51.5 square miles or 33,000 acres.

The general Aeneas Valley is a broad drainage running NW to SE with numerous smaller drainages dropping into the main valley from the surrounding mountains. The main valley floor at 2,200 - 2,600 feet is bordered to the east and west with mountains reaching up to 6,000. While the lower reaches of Aeneas Valley can be broad and open the topography is typically steeper and rugged approaching the higher elevations.

This topographic arrangement has multiple effects on fuels, demographics, infrastructure, landownership, and wildland fires (see topics below).

The valley floor is much denser in both structures and population with smaller parcels of land with easier access for fire equipment. The valley presents challenges with regards to both weather as well as an adequate water supply, especially in the higher elevations. There are also many isolated homes and cabins with difficult, often single road access and/or closely surrounded with heavy fuels. Most side roads are not maintained so access is, at best, difficult, and in the winter months it can be impossible. The district borders approximately 9 miles of the Okanogan National Forest. In the valley floor the vegetation ranges from grassland to smaller, isolated stands of Ponderosa pine. This trend continues as you move up in elevation, changing to a higher density of trees with 3,500' and up. The Northeast portion of the district borders the Okanogan National Forest with a very high density of ponderosa pines.

Aeneas Valley floor fuel composition is given to a mixture of timber plots, grazing pastures and irrigated agricultural lands. These are also a limited area of scrub brush and indigenous grasses. Stringers of timber extend into the valley floor from intersecting drainages. Both the lower valley area and the upper reaches of the surrounding mountains are dry site, fire prone landscapes.

Adjacent forests of ponderosa pine are intermixed with Douglas-fir and occasional western larch. These timber stands are often thick with heavy ground and ladder fuels. There is also a lack of management of these forests tracks leading to overstocking, unhealthy stands and fire prone conditions. At all levels grass and shrub fuels and needle cast are the primary fire carriers.

The Aeneas Valley is prone to lightning strikes throughout the dry-season summer months. With the rapid increase of population and structures the additional risk of human fire starts is increasing. The Washington DNR Interface Risk Assessment program lists the Aeneas Valley as a high-risk area.

Priority Areas:

- ***Residential Growth:*** One of the fastest growing areas in Okanogan County is the Aeneas Valley, which is a textbook example of the Wildland/Urban Interface (WUI). The population base is moving more towards retired couples building their retirement home. There are a few small, home-based businesses as well as those who commute to either Tonasket, Okanogan, or as far away as the West side of the state. The growth in the Aeneas Valley is well documented both by value through the Assessor's Office as well as

building permits issued through the Okanogan County Building Department. In the past 3 years, District 16 has experienced growth of 138%.

- ***Communications:*** The valley is difficult place for effective communications. The topography makes radio communication spotty, and the District does not have cell phone coverage to fall back on. Firefighters in the field frequently need contact with people or organizations that are only reachable by phone. The District's own dispatch attempts to make that connection but because the District relies on volunteers, someone to fill that role is not always available. Topography enters into the communications problem again because reported fires are often not easy to spot, due to limited vantage points, and a lot of time can be wasted in getting eyes on them and then trying to calculate a way into that area.
- ***Burn Permit Regulations:*** Enforcement of fire regulations will remain the responsibility of the Department of Natural Resources and the Okanogan County Sheriff's office.
- ***Manpower:*** Being an all-volunteer organization the manpower available at any given time for an incident can be rather slim with a lot of the same people being repeatedly called upon to respond. In fact during the hot dry summer we tend to have the least amount of people available. Our goal is to have approximately 30 training firefighters but we can't seem to get much above 20 at any given time. Because as is typical in volunteer organization, about 80% of the work is done by about 20% of the people. The loss of one or two key individuals can severely impact the ability of the fire district to adequately perform its duties.
- ***Other:*** Unless you're district has a very large tax base not only can't you hire full time employees, but you also cannot provide them with the necessary professional training needed. Seldom mentioned is the fact this problem extends onto the administrative side as well. For the commissioners on down, there are a multitude of RCW's and WAC's which seem to be written for large districts that have to be implemented and followed. Very little training, especially affordable training, is available to cover this area. This exposes the district, as well as the tax payers to potentially costly risk and litigation. People are stepping into roles for which they have no training and very little chance of getting it and being expected to perform flawlessly.

District Needs:

Currently District #16 has 19 red-carded firefighters. The goal is to have all firefighters trained to NWCG level of FF2. Other goals include trained qualified Engine Boss/Incident Commander Type 4 or higher. The District's biggest challenge is recruiting volunteers from the resident population. Training is limited to available open classes provided by DNR and FS. Our current high training priority is getting our physically able firefighters trained to fight structural fires, complete with SCBA (which is a big financial challenge.)

District #16 is at its desired number of fire department vehicles but most are 1990's vintage or older and are higher maintenance vehicles requiring more labor hours and therefore not as reliable. The District's goal is to upgrade vehicles and capacities as opportunities permit.

At this time there is not a district supplied place to park fire apparatus out of the weather therefore, an indoor heated training and maintenance facility would increase cold weather fire protection as well as reduce the use of district members' homes and property.

Other needs: A big concern is the availably of an adequate water supply in the district and surrounding area. Therefore, the district needs multiple water tenders. Qualified drivers for water tenders is the most critical skill shortage the district has.

Bureau of Land Management

Spokane District Mission Statement: The mission of the Spokane District is to share their unique capability and interest in sustaining the full diversity of natural and cultural landscapes across Washington State and invite their discovery and use. This includes protecting the natural resources, such as water for fish and wildlife; preserving environmental and cultural values on the lands they manage; providing for multiple uses, that include some commercial activities; and enhancing opportunities for safe and enjoyable outdoor recreation. The Spokane District also assesses energy and mineral resources and works to ensure that their development is in the best interest of the public. Another major responsibility is to ensure consideration of Tribal interests and administration the Department of Interior's trust responsibilities for American Indian Reservation communities.

Spokane District Summary: Up through the 1970's, BLM's policy was to divest ownership of all federal public (BLM) lands in the state of Washington. But in 1980, at the height of the Sage Brush Rebellion (a social movement to give control over federal lands to the states and local authorities), Washington voted to have the public lands remain under federal ownership and management. In the 1980 general election, the state put a measure on the ballot asking voters if the state constitution should "be amended to provide that the state no longer disclaim all rights to unappropriated federal public lands." Approximately 60% of the people and the majority in every county voted no, signaling to BLM that there was strong support for continued federal management of the public lands in the state.

The Spokane District Fire Management Program currently consists of 2 type six wildland engines (300 gallons) with two full time Engine Captains, four engine crew members, one Fuels Specialist, Seasonal Dispatcher, and a Fire Management Officer (FMO). One engine is stationed in Spokane at the District office and the other in Wenatchee at the field office. There are approximately 16 other specialist (staff) from across the district that assist the Fire Management Program in wildland and/or prescribed fire efforts. With the District's scattered ownership pattern, the engines are usually on scene after initial attack forces have arrived. Our engines and personnel are available for off District and out of state fire assignments that aide in support, training, and experience. The Spokane District BLM has cooperative agreements with the Colville National Forest, DNR, Spokane County FD #10 & #3, Grant County FD #5, Douglas County FD #4, Chelan County FD #1, Benton County FD #1, and Kennewick City FD.

USDA Forest Service

District Summary: The Okanogan-Wenatchee National Forests (OWF) cover nearly 4 million acres of forested lands on the eastern slopes of the Cascade Mountains. National forest lands span from the Canadian border south to the Yakima Indian Reservation and from the Cascade crest east to the Columbia River on the Wenatchee National Forest and to the Okanogan County line on the Okanogan National Forest. The OWF has 7 Ranger Districts, two of which are in Okanogan County. There are approximately 900 red carded Forest Service employees that participate directly in fire suppression or support fire suppression activities.

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Washington Department of Natural Resources

District Summary: Washington State Department of Natural Resources is the state's largest on-call fire department with employees who fight fire on about 12.7 million acres of non-federal (private, state and tribal) forest land. The DNR has the primary protection responsibilities on private and state forest land throughout Northeast Region in the State of Washington. The DNR may also respond to fires outside of DNR jurisdiction that threaten DNR protection. The DNR provides wildland fire prevention and regulation on private and state forestland. The DNR works cooperatively during suppression operations with the private sector, local protection entities, and other State and Federal agencies. The DNR does not provide formal EMT services. Most DNR employees have first-aid training and some, individually may have had EMT and/or first-responder training.

South Okanogan and Highlands Districts cooperate and share equipment, personnel and resources when initial attack resources are minimal.

The Northeast Region Interagency Communications Center (NEWICC) maintains lists of "call when needed" Faller Agreements and Dozer Agreements. Operators are equipped and trained for fire suppression throughout the local districts. Dozer sizes can range from D-4 to D-8.

DNR helicopter(s) are staged at the Omak Airport initially, and later at Colville throughout fire season for initial attack. The helicopter staged at the Omak Airport is usually a Bell 205 with helitack crew.

The Fire Boss (SEAT on pontoons) water scooper is generally staged at Deer Park.

The BIA SEAT has been available to DNR at the Omak Airport for initial attack during recent fire seasons.

Canadian air tankers and lead plane are requested for initial attack when needed.

The DNR South Okanogan District is located in the southwest quadrant of the Northeast Region of the State of Washington. The South Okanogan District spans more than 1,000,000 acres and is located geographically within the south half of Okanogan County. The district is comprised of private, county, state, federal and tribal property ownerships with numerous jurisdictions. Within the district there are approximately 250,000 acres of state land (including both WA DNR and WDFW managed lands), and approximately 300,000 acres of private land (including private lands within the Colville Reservation).

The Northeast Region Office is located in Colville, Washington. The South Okanogan District has 1 work center located at the Omak Airport. South Okanogan District Fire Control staff number 24 employees during the peak of fire season. Of which, 3 are permanent full time employees. The remaining 21 employees are comprised of 7 Natural Resource Worker 2 (NRW2), engine drivers and 14 firefighters. Employment duration for the 7 NRW2 positions is usually between mid-April and mid-October and employment duration for the firefighters is usually three months. South Okanogan District State Lands staff number 4 permanent employees who participate in the fire program as needed. DNR resources are neither trained nor equipped for structure suppression.

The South Okanogan District seasonally staffs 7 (4 - Type 6 and 3 - Type 5) 4X4 engines. The engines are usually staffed with a 3 person firefighting crew 5 days per week and are on offset schedules to provide 7 day a week coverage. Staffing levels vary as fire season begins and draws

to an end. A strike team of engines are requested to assist the district with initial attack when "Red Flag" warnings are predicted.

The DNR Highlands District is located in the northwest quadrant of the Northeast Region of the State of Washington; and spans a 1,330,000 acre mosaic of ownerships and jurisdictions. Highlands District is located in the northern portions of both Okanogan and Ferry Counties; and is bordered on the north by Canada, on the south by the boundaries of the Colville Confederated Tribes, on the west by the foothills of the Cascade Range, and on the East by the Kettle Range. The district is comprised of private, county, state, federal and tribal ownerships with numerous jurisdictions and interests. Within Highlands district in Okanogan County there are about 178,711 acres of WA DNR managed land, about 25,811 acres of WDFD managed land and about 601,193 acres of private land. Highlands district also has about 26,785 acres of WA DNR managed land located in Ferry county. Topographic variations range from 900' to 8,000'. Uplands are a mixture of very rugged, often rocky slopes giving way to either rolling highlands or partially timbered rounded mountains.

The Highlands district fire program has one work center at Highlands Fire Camp (HFC), two miles south of Loomis. There is a memo of understanding with two Fire Protection Dictricts (Tonasket and Curlew) for minimal office use. Highlands state lands staff use a work center in downtown Loomis. The Highlands District Fire Control staff totals 43 individuals at the peak of fire season of which includes 3 permanent employees, 7 career-seasonal employees who work from about April to October, and 33 seasonal fire fighter employees on staff from roughly June to September. The Highlands 20 Person Hand Crew resides and trains at Highlands Fire Camp, until they are needed for fire response anywhere in the District, or across the state. HFC also has a permanent Heli-spot and Fire Base Camp location. When needed, additional fire resources, such as Incident Management Teams and Strike Teams are brought in for peak workloads. Highlands State Lands staff has 8 additional staff that participate in the fire program when needed.

The Highlands District seasonally staffs six (five – Type 5 and one – Type 6) 4X4 Engines, with a three-person firefighting crew in each engine. Engine staffing is on a varied schedule that provides seven day per week coverage June through September. The DNR utilizes a "home guard" approach in that the seasonal engine drivers park their assigned engines at their residence within their assigned geographic area of the district. Supervisors also drive a type 7 4X4 Engine.

Inside the DNR Highlands District are portions of Ferry and Okanogan counties with two E-911 Dispatching Centers and Emergency Service Operations. Three incorporated cities; Oroville, Tonasket and Republic, all have WUI neighborhoods developing outside their city boundaries. Additionally six towns and numerous communities provide a multiplex of rural/urban interface neighborhoods developing in mountainous drainages within perennial fire ecology with a history of complex, costly wildfires.

Fire Protection Issues

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

Residential Growth

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

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

Rural Fire Protection

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

In most western states, state and federal agencies that have wildland fire protection responsibilities have launched a campaign to reiterate to the public that they do not provide structural fire protection. Much of the increasing costs of wildland fires can be directly related to the increasing number of structures in the wildland urban interface. State and federal agencies are trying to make it clear to the public that land and homeowners are responsible for reducing the fire risk on their property and that the agencies are not responsible for or required to provide structural protection.

The CWPP planning committee has made several recommendations targeting increased wildland fire awareness and education for residents living in or moving into the wildland urban interface of Okanogan County.

Pre-planning in High Risk Areas

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

One of the main goals of this CWPP is to identify areas with a high risk of experiencing wildland fires and take direct actions to mitigate those risks. However, in areas where mitigation may be difficult or will take a long period of time to implement, pre-disaster and emergency planning measures have been recommended.

Fireworks

Due to Okanogan County's close proximity to the Colville Reservations, fireworks are increasingly available to the public in Okanogan County. Even with the existing fireworks ban during periods of high wildland fire risk, the use of fireworks, particularly in recreational areas, is high. Both the CWPP planning committee and local residents have noted fireworks as a high risk factor for wildfire ignitions. So far, they have not resulted in large fires; however, there are several documented ignitions due to fireworks within Okanogan County.

The CWPP planning committee has identified fireworks as a serious threat to Okanogan County, and thus, has made recommendations for strict regulations and active enforcement of all fireworks-related restrictions.

Accessibility

Fire chiefs throughout the County have identified home accessibility issues as a primary concern in some parts of Okanogan County. Many existing housing developments and private driveways have been constructed without regard to access requirements of large emergency vehicles. Additionally, many of these roads are several miles long and dead end with no warning or plans for future connections to other access roads. The lack of road connectivity and general accessibility in some areas restricts engagement by fire suppression resources. Continued enforcement of Okanogan County's current standards regarding road and driveway construction regulations for fire apparatus would prevent accessibility issues in new developments. Wildfire risk can be lessened and firefighter safety can be improved by keeping vegetation including tall grass, brush, and trees a safe distance from the road right-of-way. This will not only improve accessibility, but will also allow the road to serve as a control point for suppression activities.

Additionally, the fire districts have identified several unimproved and unmaintained county roads that could serve as strategic access points for fire suppression activities if they were maintained periodically for this purpose. In some cases, these roads are partially maintained, but are limited by inadequate or nonexistent bridge crossings.

The planning committee involved in the development of this CWPP found accessibility to be one of the primary difficulties with safe emergency ingress and egress. It is a clear goal of this planning process to continue the enforcement and maintenance of the current road standards countywide. As part of this process, the committee has recommended an action item for improvement of existing substandard roads, driveways, and bridges, where necessary, to improve firefighter safety and suppression effectiveness.

Wildfire Suppression and Mobility

An important factor in fire suppression is mobility. The ability to transport personnel and equipment to and from the incident is essential for firefighting safety and efficiency. Portions of the topography of Okanogan County limit access. Some areas are difficult to reach and wildfires will develop before suppression resources arrive. Occasionally, suppression efforts employing defensible roads and topographic breaks as an in-direct strategy are necessary. Making the most of existing road systems is a prudent planning strategy and the effectiveness of those road systems can be maximized if fuel reduction thinning can occur where necessary.

Fire-Resistant Construction Materials

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

The planning committee has recommended that additional education regarding wildfire awareness issues and fire-resistant construction materials be provided to those engaged in new construction projects.

Road Signage and Rural Addressing

The ability to quickly locate a physical address is critical in providing services in any type of emergency response. Accurate road signage and rural addressing is fundamental to assure the safety and security Okanogan County residents. Currently, there are numerous areas throughout the County lacking road signs, rural addresses, or both. Signing and addressing throughout the County needs to be brought up to NFPA code in order to assure visibility and quick location.

Volunteer Firefighter Recruitment

The rural fire departments in Okanogan County are predominantly dependent on volunteer firefighters. Each district spends a considerable amount of time and resources training and equipping each volunteer, with the hope that they will continue to volunteer their services to the department for at least several years. One problem that all volunteer-based departments encounter is the diminishing number of new recruits. As populations continue to rise and more

and more people build homes in high fire risk areas, the number of capable volunteers has gone down. In particular, many departments have difficulty maintaining volunteers available during regular work day hours (8am to 5pm).

One of the goals of this CWPP is to assist local fire departments and districts with the recruitment of new volunteers and retention of trained firefighters. This is a very difficult task, particularly in small, rural communities that have a limited pool; however, providing departments with funding for training, safety equipment, advertising, and possibly incentive programs will help draw more local citizens into the fire organizations.

Public Wildfire Awareness

As more and more people move into the wildland urban interface of Okanogan County, the need for a coordinated wildfire education program becomes paramount. Many new residents in high wildland fire risk areas are not aware of the potential threat nor do they recognize the lack of defensibility and/or accessibility of their homes. It is important that the local fire districts and departments in Okanogan County have the funding and materials they need to develop educational programs for citizens in their response areas. General awareness of the risk, home defensible space, evacuation procedures, sheltering, and adequate access to structures are just a few of the potential topics that could be covered. A concerted effort to provide basic materials to all fire districts and other cooperating organizations should be considered by Okanogan County. This would reduce the overall and individual cost to the districts as well as improve the quality of education and materials to be presented.

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

Communication

There are several communication issues being addressed in Okanogan County. Many of the emergency responders have identified areas of poor reception for both radios and cell phones. The lack of communication between responders as well as with central dispatch significantly impairs responders' ability to effectively and efficiently do their job as well as lessens their safety. The conversion to a narrow band communication system is likely to exacerbate these issues unless numerous additional repeaters are installed.

On a smaller scale, many subdivisions or unincorporated population centers have identified the need to improve emergency communication between residents. In an emergency situation, there is no existing way of notifying each resident in an area of the potential danger, the need for evacuation, etc. Many groups of homeowners have begun to establish phone trees and contact lists in order to communicate information at the individual scale; however, this is not being done in all of the high wildfire risk areas within the County.

Another communication issue that was identified during the public meetings is the ability of wildfire suppression teams to tap the local knowledge of many of the area residents, particularly the larger landowners. There are a handful of local landowners that could be an excellent

resource advisor regarding the condition of county and private roads, access points, fuel conditions, etc.

Communication is a central issue for the planning committee; thus, numerous recommendations targeting the improvement of communications infrastructure, equipment, and pre-planning have been made.

Water Resources

Nearly every fire district involved in this planning process indicated the need to develop additional water resources in several rural areas. Developing water supply resources such as cisterns, dry hydrants, drafting sites, and/or dipping locations ahead of an incident is considered a force multiplier and can be critical for successful suppression of fires. Pre-developed water resources can be strategically located to cut refilling turnaround times in half or more, which saves valuable time for both structural and wildland fire suppression efforts.

Current Wildfire Mitigation Activities

Public Education Programs

Many of the county's fire departments and agencies are actively working on public education and homeowner responsibility by visiting neighborhoods and schools to explain fire hazards to citizens. Often, they hand deliver informative brochures and encourage homeowners to have their driveways clearly marked with their addresses to ensure more rapid and accurate response to calls and better access.

Mutual Aid Agreements

Currently the cities, towns, fire protection districts, and wildland fire agencies within Okanogan County have extensive mutual aid agreements that serve to increase the protection and effectiveness of all Okanogan County fire response jurisdictions. Municipal and county fire departments provide mutual aid for each other to the fullest extent possible. These agreements significantly improve the capabilities and effectiveness of any and all individual fire departments as well as provide assistance to the state and federal wildland fire teams. Not only does this improve the safety of Okanogan County residents, structures, infrastructure, and lands, but it also facilitates good interdepartmental working relationships.

Chapter 6

Mitigation Recommendations

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

The land management agencies in Okanogan County, including the Washington Department of Natural Resources, Washington Department of Fish and Wildlife, USFS, and the BLM, are participants in the planning process and have contributed to this plan's development. Where available, their schedule of land treatments has been considered in the planning process to improve the correlation between their identified planning efforts and the efforts of Okanogan County.

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

All risk assessments were made based on the conditions existing during 2013. Therefore, the recommendations in this section have been made in light of those conditions. However, the components of risk and the preparedness of the county's resources are not static. It will be necessary to fine-tune this plan's recommendations regularly to adjust for changes in the components of risk, population density changes, infrastructure modifications, and other factors.

Maintenance and Monitoring

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

Prioritization of Mitigation Activities

The action items recommended in this chapter were prioritized through a group discussion and voting process. The action items in Tables 6.1 – 6.4 are ranked as "High", "Moderate", or "Low" priorities. The CWPP committee does not want to restrict funding to only those projects

that are high priority because what may be a high priority for a specific community may not be a high priority at the county level. Regardless, the project may be just what the community needs to mitigate disaster. The flexibility to fund a variety of diverse projects based on varying criteria is a necessity for a functional mitigation program at the county and community level.

The proposed treatment areas listed in Table 6.5 were sorted by fire district or responsible agency and ranked on a 1, 2, 3 . . . hierarchical scale by the committee. This method results in a set of highest priority project recommendations for each jurisdiction.

Wildfire Mitigation Recommendations

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

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

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

Policy and Planning Efforts

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

Table 6.1. Action Items in Safety and Policy.

Action Item	Goals Addressed (see page 4)	Responsible Organization	Timeline	2013 Status
6.1.a: Develop County policy concerning building materials used in high-risk WUI areas on existing structures and new construction.	**CWPP Goal #1,2,4** Priority: High	**Lead:** County Commissioner's Office **Support:** Okanogan County Fire Districts, and all city and town fire departments	N/A	Deleted Action Item Due to Insufficient Funding
6.1.b: Distribute wildfire and emergency services awareness info with building permit requests.	**CWPP Goal #1,2,3** Priority: Medium	**Lead:** County Building Department **Support:** County Commissioners and incorporated cities of Oroville, Tonasket, Riverside, Omak, Okanogan, Conconully, Nespelem, Elmer City, Coulee Dam, Brewster, Pateros, Twisp, and Winthrop.	On-going	Original Action Item
6.1.c: Rural signage (road signs & house numbers) improvements across the County.	**CWPP Goal #1,2,4** Priority: Medium	**Lead:** County Planning Department **Support:** County Commissioners and Sheriff's Office	On-going	Original Action Item
6.1.d: Develop policy on requiring new home and business construction to install underground power lines.	**CWPP Goal #1,2,4** Priority: High	**Lead:** County Planning Department **Support:** County Commissioner's Office, Okanogan County Public Utilities District, and utilities companies.	N/A	Deleted Action Item Due to Insufficient Funding/Manpower
6.1.e: Develop a burn ordinance to enforce burning permits and fire restrictions throughout the County.	**CWPP Goal #1,2,4** Priority: High	**Lead:** DNR **Support:** City and County Planning Departments, Okanogan County Sheriff's Department	N/A	Completed pending approval of County Comprehensive Plan
6.1.f: Develop policy on adoption of WUI Code.	**CWPP Goal #1,2,4, 5,6** Priority: High	**Lead:** County Commissioner's Office **Support:** County Planning Department, Okanogan County Fire Districts	N/A	Deleted Action Item Due to Insufficient Funding/Manpower

Table 6.1. Action Items in Safety and Policy.

Action Item	Goals Addressed (see page 4)	Responsible Organization	Timeline	2013 Status
6.1.g: Continue development, support of the North Central Washington Prescribed Fire Council and Washington State Prescribed Fire Council.	**CWPP Goal #1,2,3, 4,5,6** Priority: High	**Lead:** North Central Washington Prescribed Fire Council and Washington State Prescribed Fire Council **Support:** County Commissioner's Office, Okanogan County Fire Districts, WDFW, USFS, DNR, & BLM	On-going	Original Action Item
6.1.h: : Incorporate this Community Wildfire Protection Plan into the Public Utility District's Emergency Preparedness and Contingency Plan.	**CWPP Goal #1,2,7** Priority: High	**Lead:** Okanogan County Public Utility District **Support:** Okanogan County Department of Emergency Management	N/A	Deleted Action Item Due to Insufficient Funding/Manpower
6.1.i: Incorporate the Okanogan County Community Wildfire Protection Plan into the Okanogan County Comprehensive Plan, where applicable.	**CWPP Goal #1,2,7** Priority: High	**Lead:** Okanogan County Commissioners **Support:** Okanogan County Planning Department	N/A	Completed- Pending Approval of County Comprehensive Plan
6.1.j: Adopt stringent regulations to insure fire-safe development of rural subdivisions (see FIREWISE or similar programs for specific recommendations).	**CWPP Goal #1,2,3, 6** Priority: High	**Lead:** Okanogan County Planning Department **Support:** County Commissioner's Office, County Building Department, Okanogan County Fire Districts	N/A	Completed- Pending Approval of County Comprehensive Plan
6.1.k: Maintain aboveground vegetation management on powerlines.	**CWPP Goal #1,2,4, 5,6** Priority: Moderate	**Lead:** Public Utility District **Support:** Okanogan County Electric Cooperative	Ongoing	New Action Item

Fire Prevention, Education, and Mitigation Projects

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

Many of the recommendations in this section involve education and increasing wildfire awareness among Okanogan County residents. These recommendations stem from a variety of factors including items that became obvious during the analysis of discussions during public meetings and observations about choices made by residents living in the wildland-urban interface.

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

Forest Management has a significant impact on the fuel composition and structure in Okanogan County. The forest management programs of the Washington DNR, Washington DFW, USFS, BIA, BLM and other landowners in the region have led to some reduction of wildland fuels where they are closest to homes and infrastructure; however, there is significant room for growth in these fuels reduction programs. Furthermore, forests are dynamic systems that will never be completely free from risk. Treated stands will need repeated treatments to reduce the risk to acceptable levels in the long term.

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

Prescribed fire can be used as a tool in forest and rangeland management programs to accomplish several goals. Prescribed fire, when done correctly and in appropriate areas, can help reduce hazardous fuel loads. Prescribed fire has also been used to prepare sites for seeding or planting, improve wildlife habitat, manage competing vegetation, control insects and disease, improve forage for grazing, enhance appearance, and improve access.

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

Action Item	Goals Addressed (see page 4)	Responsible Organization	Timeline	2013 Status
6.2.a: Implementation of Wildfire Educational Programs	**CWPP Goal #1,2,3** Priority**:** High	**Lead:** County Emergency Manager, Okanogan County Fire Districts **Support:** USFS, BIA, BLM, WA DNR, school districts	On-going	Original Action Item
6.2.b: Wildfire risk assessments of homes in identified neighborhoods	**CWPP Goal #1,2,3,4, 5,6** Priority**:** High	**Lead**: County Emergency Manager and Washington DNR **Support**: County Commissioner's, BIA, USFS, County LCG, local community organizations, Okanogan County Fire Districts	On-going About 50% Of County Complete	Original Action Item
6.2.c: Home site defensible space treatments	**CWPP Goal #1,2,4,5, 6** Priority**:** Medium	**Lead**: County Emergency Manager and Washington DNR **Support**: County Commissioner's, BIA, USFS, County LCG, local community organizations, Okanogan County Fire Districts	On-going	Original Action Item
6.2.d: Initiate an incentive based promotional program for community defensible zone treatments in rural subdivisions or housing clusters	**CWPP Goal #1,2,4,5, 6** Priority: Medium	**Lead**: County Emergency Manager and Washington DNR **Support**: County Commissioner's, BIA, USFS, County LCG, local community organizations, Okanogan County Fire Districts	N/A	Pending Approval of County Comprehensive Plan
6.2.e: Maintenance of home site defensible space treatments	**CWPP Goal #1,2,4,5, 6** Priority: Medium	**Lead**: County Emergency Manager and Washington DNR **Support**: County Commissioner's, BIA, USFS, County LCG, local community organizations, Okanogan County Fire Districts	N/A	Deleted Action Item Due to Insufficient Funding

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

Action Item	Goals Addressed (see page 4)	Responsible Organization	Timeline	2013 Status
6.2.f: Re-entry of home site defensible space treatments	**CWPP Goal #1,2,4,5, 6** Priority: Medium	**Lead**: County Emergency Manager and Washington DNR **Support**: County Commissioner's, BIA, USFS, County LCG, local community organizations, Okanogan County Fire Districts	N/A	Deleted Action Item Due to Insufficient Funding
6.2.g: Development of community evacuation plans and alternate safety zones.	**CWPP Goal #1,2,3,4, 5,6** Priority: Medium	**Lead**: County Emergency Manager **Support**: Okanogan County Fire Districts, local non-governmental community organizations, USFS, DNR, BIA, and BLM	N/A	Deleted Action Item Due to Insufficient Funding
6.2.h: Coordinated burn restriction system to allow residents to quickly find related information.	**CWPP Goal #1,2,3** Priority: Medium	**Lead**: DNR **Support**: County Commissioners, Fire Districts	On-going	New Action Item
6.2.i: Provide education to communities on becoming Firewise.	**CWPP Goal #1,2,3** Priority: Medium	**Lead**: DNR, Conservation District **Support**: Fire Districts, USFS, BLM	On-going	New Action Item

Infrastructure Enhancements

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

Table 6.3. Action Items for Infrastructure Enhancements.

Action Item	Goals Addressed (see page 4)	Responsible Organization	Timeline	2013 Status
6.3.a: Post "Emergency Evacuation Route" signs along the identified primary and secondary access routes.	**CWPP Goal #1,2,4** Priority: High	**Lead**: County Emergency Manager **Support**: County Public Works, County Commissioner's Office, Okanogan County Fire Districts	N/A	Deleted Action Item Due to Insufficient Funding
6.3.b: Thin vegetation and widen PUD and Okanogan Electric Co-op transmission lines in high risk areas	**CWPP Goal #1,2,4,5,6** Priority: High	Lead: Okanogan County Public Utilities District and Okanogan County Electric Co-op Support: adjacent landowners	On-going	Original Action Item
6.3.c: Create and maintain defensible space around critical infrastructure.	**CWPP Goal #1,2,4,5,6** Priority: High	**Lead**: County Emergency Manager **Support**: County Commissioners, incorporated cities, Okanogan County Public Utilities District	N/A	Deleted Action Item Due to Insufficient Funding

6.3.d: Connect dead end roads, where feasible, in one-way in, one-way out drainages to provide an additional escape route.	**CWPP Goal #1,2** Priority: Medium	**Lead**: County Emergency Manager **Support**: County Public Works, County Planning Department, USFS, BLM, DNR, BIA	N/A	Deleted Action Item Due to Insufficient Funding
6.3.e: Access improvements of bridges, cattle guards, culverts, and limiting road surfaces.	**CWPP Goal #1,2** Priority: High	**Lead**: County Public Works **Support:** County Commissioners, State of Washington (Lands and Transportation), USFS, DNR, BIA	N/A	Deleted Action Item Due to Insufficient Funding
6.3.f: Fuels mitigation along the primary and secondary access routes in the County to insure these routes can be maintained in the case of an emergency	**CWPP Goal #1,2,4,5,6** Priority: High	**Lead**: County Public Works and Washington Department of Transportation **Support**: County Commissioner's Office, USFS, DNR, BIA	N/A	Deleted Action Item Due to Insufficient Funding
6.3.g: Install a municipal water system in the Town of Conconully	**CWPP Goal #1,2,4,6** Priority: Medium	**Lead**: Town of Conconully **Support**: County Emergency Manager and County Commissioners	2018	Original Action Item

Resource and Capability Enhancements

There are a number of resource and capability enhancements identified by the rural and wildland firefighting districts in Okanogan County. All of the needs identified by the districts are in line with increasing the ability to respond to emergencies and are fully supported by the Community Wildfire Protection Plan committee. The implementation of each item will rely on either the isolated efforts of the rural fire districts or a concerted effort by the County to achieve equitable enhancements across all of the districts.

Table 6.4. Action Items for Resource and Capability Enhancements.

Action Item	Goals Addressed (see page 4)	Responsible Organization	Timeline	2013 Status
6.4.a: Enhance radio availability in each district, link into existing dispatch, improve range within the region, and conversion to consistent standard of radio types	**CWPP Goal #1,2,4** Priority: High	**Lead: Fire Districts** **Support: Communications Center**	On-going	Installed a repeater in the northern portion of the county – allows fire departments to use fire tactical response frequencies and not mobile-to-mobile. Enhanced delivery of information to the first responders – delivers detailed description of the event to cell phone or email.

Table 6.4. Action Items for Resource and Capability Enhancements.

Action Item	Goals Addressed (see page 4)	Responsible Organization	Timeline	2013 Status
6.4.a: Continued				Preparing and installing pre-identified response plans into the dispatch communications system –allows dispatchers to dispatch specific sets of responders to specific incidents or locations – 2nd half 2013. Completed narrow-banding for the entire county.
6.4.b: Retention of volunteer firefighters	**CWPP Goal #1,2,3** Priority: High	**Lead: Fire Districts** **Support: County Commissioners**	On-going	Original Action Item
6.4.c: Map onsite water sources such as hydrants or underground storage tanks and drafting or dipping sites	**CWPP Goal #1,2,4** Priority: High	**Lead:** Fire Districts **Support: County GIS**	N/A	Deleted Action Item Due to Insufficient Funding/Manpower
6.4.d: Increase training and capabilities of firefighters	**CWPP Goal #1,2,4** Priority: High	**Lead: Fire Districts** **Support: County Commissioners**	On-going	Original Action Item
6.4.e: Facility, land, and basic equipment for a joint City of Okanogan/Fire District #3 fire station	**CWPP Goal #1,2,4** Priority: High	**Lead: Fire Districts** **Support: County Commissioners**	Pending Funding	Original Action Item

Table 6.4. Action Items for Resource and Capability Enhancements.

Action Item	Goals Addressed (see page 4)	Responsible Organization	Timeline	2013 Status
6.4.f: Centralized Okanogan County fire training center to include large, modern classroom and training burn tower for more advanced, hands on training in operations and tactics	**CWPP Goal #1,2,4** Priority: High	**Lead: Fire Districts** **Support: County Commissioners**	Pending funding	Original Action Item
6.4.g: Obtain a 100 foot ladder truck for City of Okanogan Fire Department	**CWPP Goal #1,2,4** Priority: High	**Lead: Fire Districts** **Support: County Commissioners**	2018	Original Action Item
6.4.h: Facility, land, and basic equipment for a larger Okanogan County Fire District #2 fire station	**CWPP Goal #1,2,4** Priority: Medium	**Lead: Fire Districts** **Support: County Commissioners**	2018	Original Action Item
6.4.i: Facility, land, and basic equipment for a three small one-engine stations on outskirts of Okanogan County Fire District #3	**CWPP Goal #1,2,4** Priority: High	**Lead: Fire Districts** **Support: County Commissioners**	2018	Original Action Item
6.4.j: Facility, land, and basic equipment for a new station in the Alta Lake area on Okanogan County Fire District #15	**CWPP Goal #1,2,4** Priority: High	**Lead: Fire Districts** **Support: County Commissioners**	2018	Original Action Item
6.4.k: Obtain an urban interface apparatus for the Methow station, a rescue apparatus for the Pateros station, and update aging brush trucks on Okanogan County Fire District #15	**CWPP Goal #1,2,4** Priority: High	**Lead: Fire Districts** **Support: County Commissioners**	N/A	Completed
6.4.l: Additional funding to provide paid daytime staff at primary stations in Okanogan County Fire District #3, City of Okanogan Fire Department, and Town of Winthrop Volunteer Fire Department	**CWPP Goal #1,2,4** Priority: High	**Lead: Fire Districts** **Support: County Commissioners**	On-going	Town of Winthrop is now contracting with Fire District #6 – FD #6 is still looking at adding additional staff.

Table 6.4. Action Items for Resource and Capability Enhancements.

Action Item	Goals Addressed (see page 4)	Responsible Organization	Timeline	2013 Status
6.4.m: Facility, land, and basic equipment for a new Winthrop fire station in Okanogan County Fire District #6	**CWPP Goal #1,2,4** Priority: High	**Lead: Fire Districts** **Support: County Commissioners**	2018	Original Action Item
6.4.n: Facility, land, and basic equipment for a satellite station near Crumbacher in Okanogan County Fire District #4	**CWPP Goal #1,2,4** Priority: High	**Lead: Fire Districts** **Support: County Commissioners**	2018	Original Action Item
6.4.o: Obtain newer structural engine and thermal imager for Okanogan County Fire District #4	**CWPP Goal #1,2,4** Priority: High	**Lead: Fire Districts** **Support: County Commissioners**	N/A	Completed
6.4.p: Obtain three Type 4 engines for Okanogan County Fire District #3	**CWPP Goal #1,2,4** Priority: High	**Lead: Fire Districts** **Support: County Commissioners**	2018	Original Action Item
6.4.q: Facility, business plan, MOUs, and basic equipment for a new Okanogan County Fire District in Tunk Valley	**CWPP Goal #1,2,4** Priority: Medium	**Lead: Fire Districts** **Support: County Commissioners**	On-going	Developed Informal Fire Brigade & Water System
6.4.r: Increase station capacity to house equipment at all three Okanogan County Fire District #3 stations	**CWPP Goal #1,2,4** Priority: High	**Lead: Fire Districts** **Support: County Commissioners**	2018	Original Action Item
6.4.s: Hire a County Fire Marshal	**CWPP Goal #1,2,4** Priority: High	**Lead: County Commissioners** **Support: Fire Districts**	Pending Funding	Original Action Item
6.4.t: Improve safety equipment and personal protective equipment for all Fire Districts in Okanogan County	**CWPP Goal #1,2,4** Priority: High	**Lead: Fire Districts** **Support: County Commissioners**	On-going	Original Action Item
6.4.u: Facility, business plan, and basic equipment for an Okanogan County Fire District #11 satellite station in the Havillah area	**CWPP Goal #1,2,4** Priority: Medium	**Lead: Fire Districts** **Support: County Commissioners**	2018	Original Action Item

Table 6.4. Action Items for Resource and Capability Enhancements.

Action Item	Goals Addressed (see page 4)	Responsible Organization	Timeline	2013 Status
6.4.v: Obtain structural equipment, air packs, and necessary training for Okanogan County Fire District #11	**CWPP Goal #1,2,4** Priority: Medium	**Lead: Fire Districts** **Support: County Commissioners**	2018	Original Action Item
6.4.w: Obtain a 4x4 brush truck and funding for repairs to existing equipment for the Town of Conconully Fire Department	**CWPP Goal #1,2,4** Priority: Medium	**Lead: Fire Districts** **Support: County Commissioners**	2018	Original Action Item
6.4.x: Facility, land, and basic equipment for a fire station in Okanogan County Fire District #9	**CWPP Goal #1,2,4** Priority: Medium	**Lead: Fire Districts** **Support: County Commissioners**	2018	Original Action Item
6.4.y: Obtain a water tender, two brush trucks, and draftable mobile pumps for Okanogan County Fire District #9	**CWPP Goal #1,2,4** Priority: Medium	**Lead: Fire Districts** **Support: County Commissioners**	2018	Original Action Item (edited)
6.4.z: Facility, land, and basic equipment for a new and larger fire hall for the Town of Conconully Fire Department	**CWPP Goal #1,2,4** Priority: Medium	**Lead: Fire Districts** **Support: County Commissioners**	2018	Original Action Item
6.4.aa: Obtain a newer pumper truck and extrication vehicle and equipment for the Town of Winthrop Volunteer Fire Department	**CWPP Goal #1,2,4** Priority: Medium	**Lead: Fire Districts** **Support: County Commissioners**	N/A	Completed
6.4.ab: Begin locating sites for future development of at least three all weather water storage facilities in the Tunk Valley	**CWPP Goal #1,2,4** Priority: High	**Lead: Fire Districts** **Support: County Commissioners**	N/A	Completed
6.4.ac: Facility, land, and basic equipment for a new fire hall for the Town of Winthrop Volunteer Fire Department	**CWPP Goal #1,2,4** Priority: Medium	**Lead: Fire Districts** **Support: County Commissioners**	N/A	Completed
6.4.ad: Facility, land, and basic equipment for a new fire hall for Okanogan County Fire District #7	**CWPP Goal #1,2,4** Priority: Medium	**Lead: Fire Districts** **Support: County Commissioners**	2018	Original Action Item

Table 6.4. Action Items for Resource and Capability Enhancements.

Action Item	Goals Addressed (see page 4)	Responsible Organization	Timeline	2013 Status
6.4.ae: Obtain updated rolling stock (including a water tender), washer & dryer, a hose washer & dryer, and basic life support equipment for Okanogan County Fire District #7	**CWPP Goal #1,2,4** Priority: Medium	**Lead: Fire Districts** **Support: County Commissioners**	2018	Original Action Item
6.4.af: Support the maintenance and/or enhancement of State and Federal firefighting programs and resources in Okanogan County	**CWPP Goal #1,2,4** Priority: High	**Lead: Fire Districts** **Support: County Commissioners**	2018	Original Action Item
6.4.ag: Facility (including recruitment and training program) for the new Okanogan County Fire District #16	**CWPP Goal #1,2,4** Priority: Medium	**Lead: Fire Districts** **Support: County Commissioners**	2018	Original Action Item
6.4.ah: Obtain updated rolling stock for Okanogan County Fire District #12	**CWPP Goal #1,2,4** Priority: Medium	**Lead: Fire Districts** **Support: County Commissioners**	2016	Original Action Item
6.4.ai: Obtain funding for land and a new station at a better location in Okanogan County Fire District #12	**CWPP Goal #1,2,4** Priority: Medium	**Lead: Fire Districts** **Support: County Commissioners**	2018	Original Action Item
6.4.aj: Obtain two Type 6 4x4 wildland trucks, one Type 4 4x4 wildland truck, two 2,500+ gallon tenders, one short wheel-base 4x4 structure truck for Okanogan County Fire District #16, and funding for advanced training.	**CWPP Goal #1,2,4** Priority: Medium	**Lead: Fire Districts** **Support: County Commissioners**	On-going	Original Action Item
6.4.ak: Obtain updated rolling stock equipped with both fire and rescue gear for Okanogan County Fire District #11, and funding for advanced training.	**CWPP Goal #1,2,4** Priority: Medium	**Lead:** **Support:**	On-going	Original Action Item

Table 6.4. Action Items for Resource and Capability Enhancements.

Action Item	Goals Addressed (see page 4)	Responsible Organization	Timeline	2013 Status
6.4.al: Expand storage and bay capacity of both the Molson and Chesaw Fire Stations in Okanogan County Fire District #11	**CWPP Goal #1,2,4** Priority: Medium	**Lead: Fire Districts** **Support: County Commissioners**	2018	Partially Completed (built station in Fields Hall)
6.4.am: Updated turnouts and wildland firefighting personal gear for Okanogan County Fire District #11	**CWPP Goal #1,2,4** Priority: Medium	**Lead: Fire Districts** **Support: County Commissioners**	On-going	Original Action Item
6.4.an: Continue to update and verify GIS information is accurate throughout the County.	**CWPP Goal #1,2,4** Priority: Medium	**Lead: Fire Districts** **Support: County Commissioners**	On-going	New Action Item
6.4.ao: Continue to expand the Fire Districts to encompass more communities.	**CWPP Goal #1,2,4** Priority: Medium	**Lead:** County Commissioners **Support:** Fire Districts	2017	New Action Item

Proposed Treatment Project Areas

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

Every projects' priority ranking was decided by the CWPP planning group for each fire district or agency responsible for implementation of the project. The planning group also gave every project a risk rating of "high", "medium", or "low". Projects with a "high" risk rating show that the area being treated has a high probability of wildfire occurrence and a wildfire in the project area will have a high impact on the community. A "low" risk rating reflects that there is a low probability of a wildfire occurring in the project area and that a fire in the project area would not have a great impact on the community. A "moderate" risk rating shows that either the project area has a moderate probability of wildfire occurrence and a moderate potential impact on the community or one of these factors was rated as "low".

Okanogan County Fire District	Project Id Number	Project Name	Project Type	# of Acres	# of Structures	Miles of Road	Priority Ranking
1, 11	1	Nine Mile	Defensible Space	14,397	92	54	High
11	2	Pontiac Ridge	Defensible Space, Forest Mgmt, Roadside Fuels	18,407	138	61	High
14	3	Toroda Creek	Defensible Space, Forest Mgmt, Roadside Fuels	31,042	128	62	High
NA	4	Lost Lake	Defensible Space, Forest Mgmt, Roadside Fuels	3,709	23	10	High
NA	5	Bonaparte Lake	Defensible Space, Forest Mgmt, Roadside Fuels	1,985	28	7	High
11, 12	6	Havillah	Defensible Space, Forest Mgmt, Roadside Fuels	29,004	137	63	High
1, 4, 12	7	Mount Hull	Defensible Space, Forest Mgmt	14,290	293	64	High
NA	8	Wannacut	Defensible Space	8,681	94	49	High
10	9	Loomis	Defensible Space, Forest Mgmt, Roadside Fuels	5,938	115	12	High
4	10	Aeneas Valley	Defensible Space, Forest Mgmt, Roadside Fuels, Ed.	46,721	556	180	High

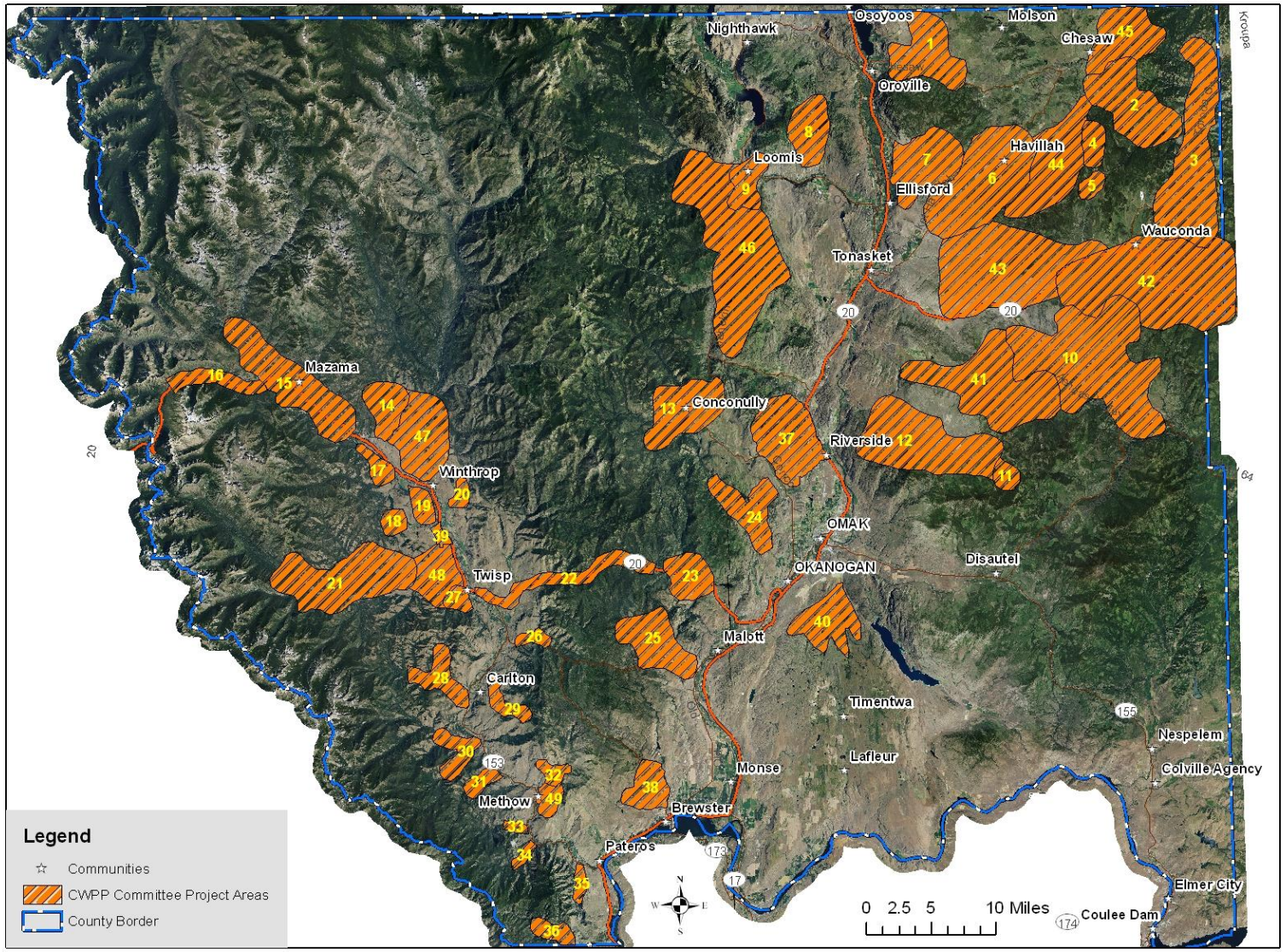
Okanogan County Fire District	Project Id Number	Project Name	Project Type	# of Acres	# of Structures	Miles of Road	Priority Ranking
NA	11	Crawfish Lake	Defensible Space, Forest Mgmt, Access, Ed.	2,449	45	5	High
NA	12	Twin Creeks Development	Access, Education, Water Issues	27,561	156	67	High
9	13	Conconully	Defensible Space, Forest Mgmt, Roadside Fuels, Ed.	14,448	317	25	High
6	14	Rendezvous	Defensible Space	6,964	41	23	High
6	15	Mazama	Defensible Space, Forest Mgmt, Roadside Fuels	21,959	728	71	High
6	16	Cascade Highway	Defensible Space, Forest Mgmt, Roadside Fuels	5,459	0	8	High
6	17	Wolf Creek	Defensible Space, Roadside Fuels	2,935	117	17	High
6	18	Pine Forest	Defensible Space, Forest Mgmt, Roadside Fuels	2,169	89	11	High
6	19	Twin Lakes	Education	2,877	331	22	High
6	20	Bear Creek	Defensible Space	1,709	30	8	High
6	21	Twisp River	Defensible Space, Forest Mgmt, Road Fuels/Widen	24,220	210	46	High
6	22	Hwy 20 Corridor	Defensible Space, Roadside Fuels	9,312	162	29	High
3	23	Buzzard Lake	Defensible Space, Roadside Fuels	7,086	48	25	High
3, 7, 9	24	Salmon Creek	Defensible Space	9,923	63	16	High
3, 15	25	Chiliwist	Defensible Space, Roadside Fuels, Rural Addressing	12,375	83	22	High
6	26	Benson Creek	Defensible Space	1,691	18	5	High
6	27	Alder Creek	Defensible Space	2,182	35	9	High
6	28	Libby Creek	Defensible Space	6,218	44	13	High
6	29	Texas Creek	Defensible Space	3,239	20	8	High
6	30	Gold Creek	Defensible Space, Forest Mgmt, Roadside Fuels	4,739	47	11	High
15	31	McFarland Creek	Defensible Space, Forest Mgmt, Roadside Fuels	2,377	14	4	High

Okanogan County Fire District	Project Id Number	Project Name	Project Type	# of Acres	# of Structures	Miles of Road	Priority Ranking
15	32	French Creek	Defensible Space, Forest Mgmt	2,068	33	8	High
15	33	Squaw Creek	Defensible Space, Forest Mgmt, Roadside Fuels	905	7	2	High
15	34	Black Canyon	Defensible Space, Forest Mgmt, Roadside Fuels	1,154	3	3	High
15	35	Alta Lake	Defensible Space, Education	1,561	124	8	High
NA	36	Antoine Creek	Defensible Space	2,961	29	7	High
7, 9	37	Limebelt	Defensible Space, Forest Mgmt, Roadside Fuels	16,945	154	45	High
15	38	Harmony Heights	Defensible Space, Access	6,382	46	26	High
6	39	Hoot N Holler	Defensible Space	970	36	7	High
8	40	Camron Lake	Defensible Space, Forest Mgmt, Roadside Fuels	10,666	24	17	High
NA	41	Bannon Mountain	Defensible Space, Forest Mgmt, Roadside Fuels	29,250	55	48	High
13	42	Wauconda	Defensible Space, Forest Mgmt, Roadside Fuels	48,405	113	56	High
4	43	Cayuse	Defensible Space, Forest Mgmt, Roadside Fuels	38,688	180	85	High
11	44	North Fork Bonapart	Defensible Space, Forest Mgmt, Roadside Fuels	18,057	26	16	High
11	45	Buckhorn	Defensible Space, Forest Mgmt, Roadside Fuels	12,629	98	19	High
NA	46	Loomis2	Defensible Space, Forest Mgmt, Roadside Fuels	41,620	48	57	High
6	47	Rendezvous2	Defensible Space, Forest Mgmt, Roadside Fuels	14,823	402	62	High
6	48	Twisp River2	Defensible Space, Forest Mgmt, Roadside Fuels	8,028	181	21	High
15	49	French Creek2	Defensible Space, Forest Mgmt, Roadside Fuels	2,704	45	19	High

*The number of structures is based on address points; thus, the number of actual buildings may be higher.

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

Figure 6.1. Map of Proposed Projects



Regional Land Management Recommendations

Wildfires will continue to ignite and burn depending on the weather conditions and other factors enumerated earlier. However, active land management that modifies fuels, promotes healthy forestland conditions, and promotes the use of natural resources (consumptive and non-consumptive) will ensure that these lands have value to society and the local region. The Washington DNR, Washington DFW, USFS, BIA, BLM, private forest landowners, and all agricultural landowners in the region should be encouraged to actively manage their wildland-urban interface lands in a manner consistent with reducing fuels and wildfire risks.

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Chapter 7

Supporting Information

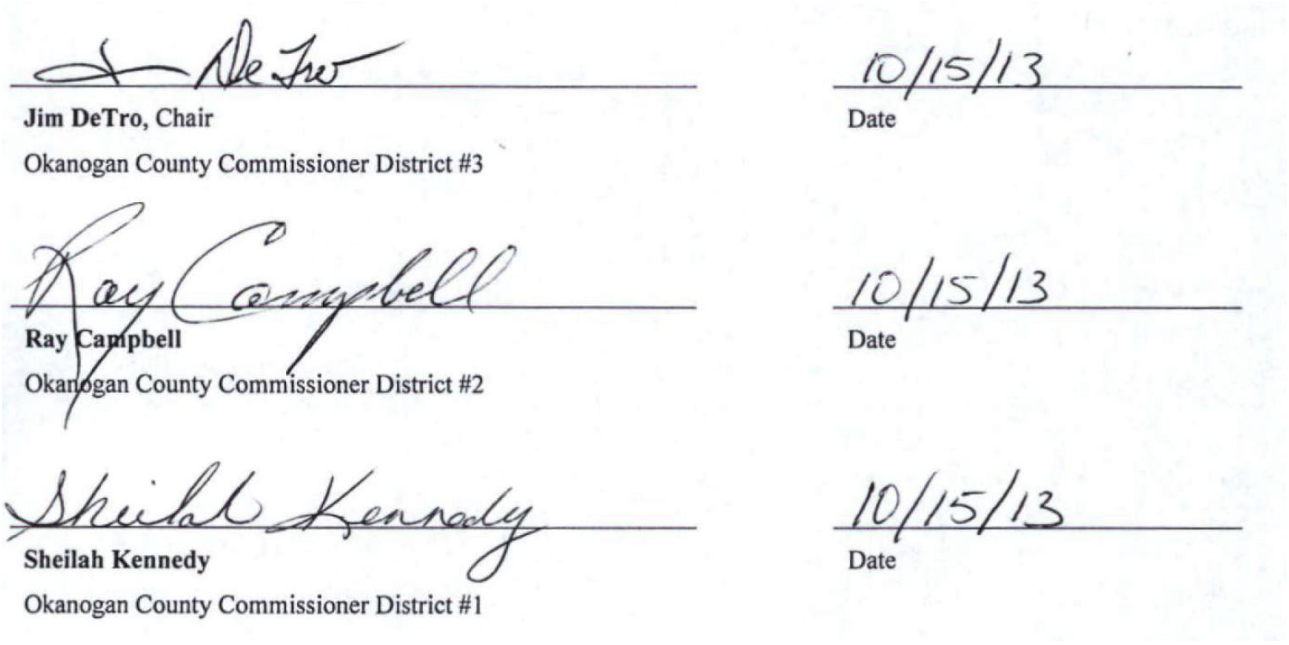
List of Tables

List of Figures

Signature Pages

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

Okanogan County Board of Commissioners



Jim DeTro, Chair
Okanogan County Commissioner District #3

10/15/13
Date

Ray Campbell
Okanogan County Commissioner District #2

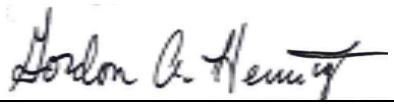
10/15/13
Date

Sheilah Kennedy
Okanogan County Commissioner District #1

10/15/13
Date

Signatures of Participation by Okanogan County Fire Districts and Departments

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

	9-25-2013
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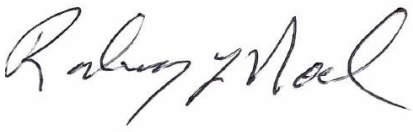
	9-25-13
City of Omak Fire Department	Date
	9-27-13
Town of Coulee Dam Fire Department	Date
Town of Conconully Fire Department	Date
	
Okanogan County Fire District #1	Date
	
Okanogan County Fire District #2	Date
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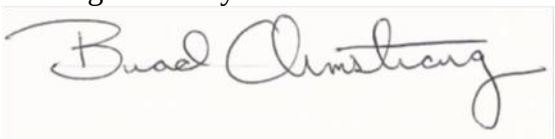
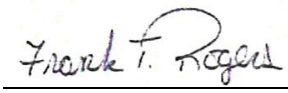
Okanogan County Fire District #3	Date
Okanogan County Fire District #4	Date
	9-25-13
Okanogan County Fire District #6	Date
	Oct. 11, 2013
Okanogan County Fire District #7	Date

Okanogan County Fire District #8	Date 10-10-13
Okanogan County Fire District #9	Date 9-26-13
Okanogan County Fire District #10	Date 10-31-13
Okanogan County Fire District #11	Date 9 26 13
Okanogan County Fire District #12	Date
Okanogan/Ferry County Fire District #13	Date
Okanogan/Ferry County Fire District #14	Date
Douglas/Okanogan County Fire District #15	Date 10-10-2013
Okanogan County Fire District #16	Date Oct. 24, 2013

Signatures of Participation by other Okanogan County Entities

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



10-26-13

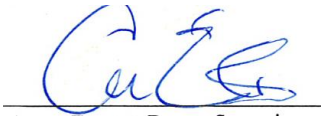
Sheriff Frank Rogers, Director,
Okanogan County Department of Emergency Management

Date

12.4.13

Linda Coates-Markle, Wenatchee Field Manager
Spokane District Bureau of Land Management

Date



12/13/13

Aaron Everett, Deputy Supervisor,
Forest Practices and Federal Relations, State Forester, Washington State Department of Natural Resources

Date

Michael Balboni, Forest Supervisor,
Okanogan-Wenatchee National Forest

Date

10/21/2013

Brad Tucker, Project Manager
Northwest Management, Inc.

Date

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