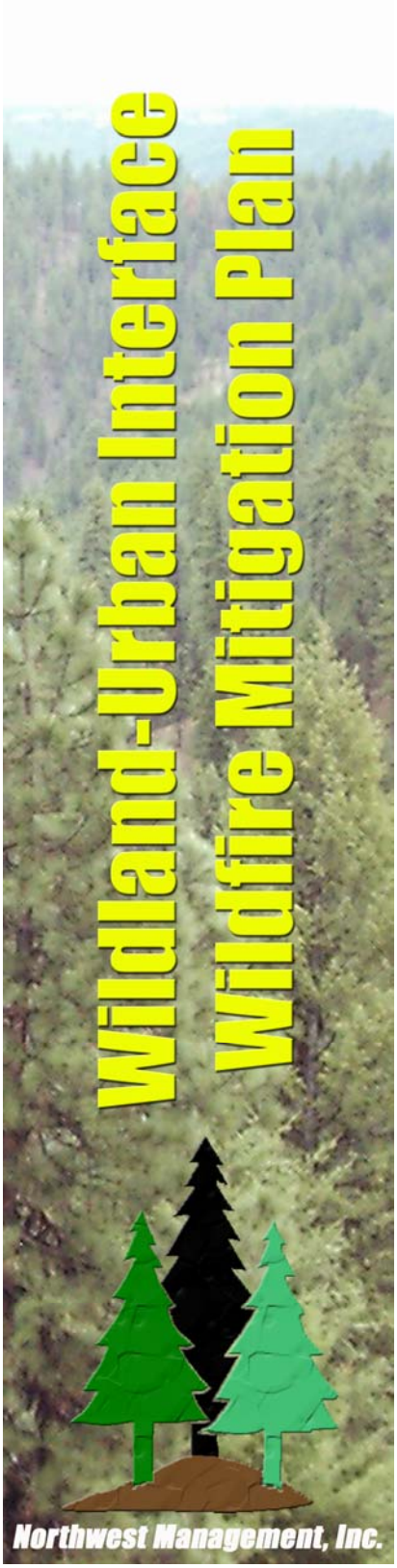

Clearwater County, Idaho, Wildland-Urban Interface Wildfire Mitigation Plan

Main Document

April 4, 2005

Vision: *Institutionalize and promote a countywide wildfire hazard mitigation ethic through leadership, professionalism, and excellence, leading the way to a safe, sustainable Clearwater County.*

This plan was developed by the Clearwater County Wildland-Urban Interface Wildfire Mitigation Plan Committee in cooperation with Northwest Management, Inc., 233 E. Palouse River Dr., P.O. Box 9748, Moscow, ID 83843, Tel: 208-883-4488, www.Consulting-Foresters.com

Acknowledgments

This Wildland-Urban Interface Wildfire Mitigation Plan represents the efforts and cooperation of a number of organizations and agencies, through the commitment of people working together to improve the preparedness for wildfire events while reducing factors of risk.

Clearwater County Commissioners
and the employees of Clearwater County

Clearwater Resource Conservation
and Development Council, Inc.

USDI Bureau of Land Management

USDA Forest Service

US Army Corps
of Engineers®
Walla Walla District

Idaho Bureau of Homeland Security

Federal Emergency Management Agency

Idaho Department of Lands

Clearwater-Potlatch Timber Protective Association

Evergreen Rural Fire District, Sunnyside Rural Fire District, Orofino City and Rural Fire, Grangemont Rural Fire District, Weippe Rural Fire District, Twin Ridge Rural Fire District, Greer Fire District, Pierce Fire Department, Elk River Fire Department,
the Potlatch Corporation, Local Businesses and
Citizens of Clearwater County

To obtain copies of this plan contact:

Clearwater County Commissioners Office
Clearwater County Courthouse
150 Michigan Ave.
P.O. Box 586
Orofino, Idaho 83544

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Chapter I: Overview of this Plan and its Development

1 Introduction

This Wildland-Urban Interface Wildland Fire Mitigation Plan for Clearwater County, Idaho, is the result of analyses, professional cooperation and collaboration, assessments of wildfire risks and other factors considered with the intent to reduce the potential for wildfires to threaten people, structures, infrastructure, and unique ecosystems in Clearwater County, Idaho. The planning team responsible for implementing this project was led by the Clearwater County Commissioners. Agencies and organizations that participated in the planning process included:

- USDI Bureau of Land Management
- USDA Forest Service
- Clearwater Resource Conservation and Development Council, Inc.
- Idaho Department of Lands
- Nez Perce Tribe
- Clearwater-Potlatch Timber Protective Association
- Potlatch Corporation
- U.S. Army Corps of Engineers
- Clearwater County Planning and Zoning
- Clearwater County Emergency Management
- Evergreen Rural Fire District
- Sunnyside Rural Fire District
- Orofino City and Rural Fire
- Grangemont Rural Fire District
- Weippe Rural Fire District
- Twin Ridge Rural Fire District
- Greer Fire District
- Pierce Fire Departments
- Elk River Fire Departments
- Northwest Management, Inc.

The Clearwater Resource Conservation and Development Council, Inc., solicited competitive bids from companies to provide the service of leading the assessment and the writing of the **Clearwater County Wildland-Urban Interface Wildland Fire Mitigation Plan**. The Clearwater Resource Conservation and Development Council, Inc., selected Northwest Management, Inc., to provide this service. Northwest Management, Inc., is a professional natural resources consulting firm located in Moscow, Idaho. Established in 1984 NMI provides natural resource management services across the USA. The Project Manager from Northwest Management, Inc. was Dr. William E. Schlosser, a professional forester and regional planner.

1.1 Goals and Guiding Principles

1.1.1 Federal Emergency Management Agency Philosophy

Effective November 1, 2004, a Local Hazard Mitigation Plan approved by the Federal Emergency Management Agency (FEMA) is required for Hazard Mitigation Grant Program (HMGP) and Pre-Disaster Mitigation Program (PDM) eligibility. The HMGP and PDM program provide funding, through state emergency management agencies, to support local mitigation planning and projects to reduce potential disaster damages.

The new local hazard mitigation plan requirements for HMGP and PDM eligibility is based on the Disaster Mitigation Act of 2000, which amended the Stafford Disaster Relief Act to promote an integrated, cost effective approach to mitigation. Local hazard mitigation plans must meet the minimum requirements of the Stafford Act-Section 322, as outlined in the criteria contained in 44 CFR Part 201. The plan criteria covers the planning process, risk assessment, mitigation strategy, plan maintenance, and adoption requirements.

FEMA will only review a local hazard mitigation plan submitted through the appropriate State Hazard Mitigation Officer (SHMO). Draft versions of local hazard mitigation plans will not be reviewed by FEMA. FEMA will review the final version of a plan prior to local adoption to determine if the plan meets the criteria, but FEMA will be unable to approve it prior to adoption. In Idaho the SHMO is:

Idaho Bureau of Disaster Services
4040 Guard Street, Bldg 600
Boise, ID 83705
Jonathan Perry, 208-334-2336 Ext. 271

A FEMA designed plan will be evaluated on its adherence to a variety of criteria.

- Adoption by the Local Governing Body
- Multi-jurisdictional Plan Adoption
- Multi-jurisdictional Planning Participation
- Documentation of Planning Process
- Identifying Hazards
- Profiling Hazard Events
- Assessing Vulnerability: Identifying Assets
- Assessing Vulnerability: Estimating Potential Losses
- Assessing Vulnerability: Analyzing Development Trends
- Multi-Jurisdictional Risk Assessment
- Local Hazard Mitigation Goals
- Identification and Analysis of Mitigation Measures
- Implementation of Mitigation Measures
- Multi-Jurisdictional Mitigation Strategy
- Monitoring, Evaluating, and Updating the Plan
- Implementation Through Existing Programs
- Continued Public Involvement

1.1.2 Additional State and Federal Guidelines Adopted

The Wildland-Urban Interface Wildfire Mitigation Plan component of this All Hazards Mitigation Plan will include compatibility with FEMA requirements while also adhering to the guidelines proposed in the National Fire Plan, the Idaho Statewide Implementation Plan, and the Healthy

Forests Restoration Act (2004). This Wildland-Urban Interface Wildland Fire Mitigation 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–May 2002.
- The Idaho Statewide Implementation Strategy for the National Fire Plan–July 2002.
- 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 Natural Hazards Mitigation Plan.

"When implemented, the 10-Year Comprehensive Strategy will contribute to reducing the risks of wildfire to communities and the environment by building collaboration at all levels of government."
- The NFP 10-Year Comprehensive Strategy August 2001

The objective of combining these four complimentary 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 Clearwater County while facilitating new opportunities for pre-disaster mitigation funding and cooperation.

1.1.2.1 National Fire Plan

The goals of this Wildland-Urban Interface Fire Mitigation Plan include:

1. Improve Fire Prevention and Suppression
2. Reduce Hazardous Fuels
3. Restore Fire-Adapted Ecosystems
4. Promote Community Assistance

Its three guiding principles are:

1. Priority setting that emphasizes the protection of communities and other high-priority watersheds at-risk.
2. Collaboration among governments and broadly representative stakeholders
3. Accountability through performance measures and monitoring for results.

This Wildland-Urban Interface Fire Mitigation Plan fulfills the National Fire Plan's 10-Year Comprehensive Strategy and the Idaho Statewide Implementation Strategy for the National Fire Plan. The projects and activities recommended under this plan are in addition to other Federal, State, and private / corporate forest and rangeland management activities. The implementation plan does not alter, diminish, or expand the existing jurisdiction, statutory and regulatory responsibilities and authorities or budget processes of participating Federal, State, and tribal agencies.

By endorsing this implementation plan, all signed parties agree that reducing the threat of wildland fire to people, communities, and ecosystems will require:

- Firefighter and public safety continuing as the highest priority.
- A sustained, long-term and cost-effective investment of resources by all public and private parties, recognizing overall budget parameters affecting Federal, State, Tribal, and local governments.
- A unified effort to implement the collaborative framework called for in the "Strategy" in a manner that ensures timely decisions at each level.
- Accountability for measuring and monitoring performance and outcomes, and a commitment to factor findings into future decision making processes.
- The achievement of national goals through action at the local level with particular attention on the unique needs of cross-boundary efforts and the importance of funding on-the-ground activities.
- Communities and individuals in the wildland-urban interface to initiate personal stewardship and volunteer actions that will reduce wildland fire risks.
- Management activities, both in the wildland-urban interface and in at-risk areas across the broader landscape.
- Active forestland and rangeland management, including thinning that produces commercial or pre-commercial products, biomass removal and utilization, prescribed fire and other fuels reduction tools to simultaneously meet long-term ecological, economic, and community objectives.

The National Fire Plan identifies a three-tiered organization structure including 1) the local level, 2) state/regional and tribal level, and 3) the national level. This plan adheres to the collaboration and outcomes consistent with a local level plan. Local level collaboration involves participants with direct responsibility for management decisions affecting public and/or private land and resources, fire protection responsibilities, or good working knowledge and interest in local resources. Participants in this planning process include Tribal representatives, local representatives from Federal and State agencies, local governments, landowners and other stakeholders, and community-based groups with a demonstrated commitment to achieving the strategy's four goals. Existing resource advisory committees, watershed councils, or other collaborative entities may serve to achieve coordination at this level. Local involvement, expected to be broadly representative, is a primary source of planning, project prioritization, and resource allocation and coordination at the local level. The role of the private citizen is not to be underestimated, as their input and contribution to all phases of risk assessments, mitigation activities, and project implementation is greatly facilitated by their involvement.

1.1.2.2 Idaho Statewide Implementation Strategy

The Strategy adopted by the State of Idaho is to provide a framework for an organized and coordinated approach to the implementation of the National Fire Plan, specifically the national "10-Year Comprehensive Strategy Implementation Plan".

Emphasis is on a collaborative approach at the following levels:

- County
- State

Within the State of Idaho, the Counties, with the assistance of State and Federal agencies and local expert advice, will develop a risk assessment and mitigation plan to identify local

vulnerabilities to wildland fire. A Statewide group will provide oversight and prioritization as needed on a statewide scale.

This strategy is not intended to circumvent any work done to date and individual Counties should not delay implementing any National Fire Plan projects to develop this county plan. Rather, Counties are encouraged to identify priority needs quickly and begin whatever actions necessary to mitigate those vulnerabilities.

It is recognized that implementation activities such as; hazardous fuel treatment, equipment purchases, training, home owner education, community wildland fire mitigation planning, and other activities, will be occurring concurrently with this County wide planning effort.

1.1.2.2.1 County Wildland Fire Interagency Group

Each County within the state has been requested to write a Wildland Fire Mitigation Plan. These plans should contain at least the following five elements:

1) Documentation of the process used to develop the mitigation plan. How the plan was developed, who was involved and how the public was involved.
2) A risk assessment to identify vulnerabilities to wildfire in the wildland-urban interface (WUI).
3) A prioritized mitigation strategy that addresses each of the risks. Examples of these strategies could be: training for fire departments, public education, hazardous fuel treatments, equipment, communications, additional planning, new facilities, infrastructure improvements, code and/or ordinance revision, volunteer efforts, evacuation plans, etc.
4) A process for maintenance of the plan which will include monitoring and evaluation of mitigation activities.
5) Documentation that the plan has been formally adopted by the involved agencies. Basically a signature page of all involved officials.

This five-element plan is an abbreviated version of the FEMA mitigation plan and will begin to meet the requirements for that plan. To develop these plans each county should bring together the following individuals, as appropriate for each county, to make up the County Wildland Fire Interagency Group. It is important that this group has representation from agencies with wildland fire suppression responsibilities:

- County Commissioners (Lead)
- Local Fire Chiefs
- Idaho Department of Lands representative
- USDA Forest Service representative
- USDI Bureau of Land Management representative
- US Fish and Wildlife representative
- Bureau of Indian Affairs
- Local Tribal leaders
- Bureau of Disaster Services
- LEPC Chairperson

- Resource Conservation and Development representative
- State Fish and Game representative
- Interested citizens and community leaders as appropriate
- Other officials as appropriate

Role of Resource Conservation and Development Councils (RC&D) if requested by the County Commissioners, the local RC&D's may be available to assist the County Commissioners in evaluating each County within their council area to determine if there is a wildland fire mitigation plan in place, or if a plan is currently in the development phase. If no plan is in place, the RC&D's, if requested, could be available to assist the Commissioners with the formation of the County Wildland Fire Interagency Group and/or to facilitate the development of wildland fire mitigation plan.

If a plan has been previously completed, the Commissioners will determine if the recommended five elements have been addressed. The Counties will provide a copy of the completed mitigation plan to the Idaho Department of Lands National Fire Plan Coordinator, which will include a contact list of individuals that developed the plan.

1.1.2.3 National Association of State Foresters

1.1.2.3.1 Identifying and Prioritizing Communities at Risk

This plan is written with the intent to provide the information necessary for decision makers (elected officials) to make informed decisions in order to prioritize projects across the entire county. These decisions may be made from within the council of Commissioners, or through the recommendations of ad hoc groups tasked with making prioritized lists of projects. It is not necessary to rank projects numerically, although that is one approach, rather it may be possible to rank them categorically (high priority set, medium priority set, and so forth) and still accomplish the goals and objectives set forth in this planning document.

The following was prepared by the National Association of State Foresters (NASF), June 27, 2003, and is included here as a reference for the identification of prioritizing treatments between communities.

Purpose: To provide national, uniform guidance for implementing the provisions of the "Collaborative Fuels Treatment" MOU, and to satisfy the requirements of Task e, Goal 4 of the Implementation Plan for the 10-Year Comprehensive Strategy.

Intent: The intent is to establish broad, nationally compatible standards for identifying and prioritizing communities at risk, while allowing for maximum flexibility at the state and regional level. Three basic premises are:

- Include all lands and all ownerships.
- Use a collaborative process that is consistent with the complexity of land ownership patterns, resource management issues, and the number of interested stakeholders.
- Set priorities by evaluating projects, not by ranking communities.

The National Association of State Foresters (NASF) set forth the following guidelines in the Final Draft Concept Paper; Communities at Risk, December 2, 2002.

Task: Develop a definition for "communities at risk" and a process for prioritizing them, per the Implementation Plan for the 10-Year Comprehensive Strategy (Goal 4.e.). In addition, this

definition will form the foundation for the NASF commitment to annually identify priority fuels reduction and ecosystem restoration projects in the proposed MOU with the federal agencies (section C.2 (b)).

1.1.2.3.2 Conceptual Approach

1. NASF fully supports the definition of the Wildland Urban Interface (WUI) previously published in the Federal Register. Further, proximity to federal lands should not be a consideration. The WUI is a set of conditions that exists on, or near, areas of wildland fuels nation-wide, regardless of land ownership.
2. Communities at risk (or, alternately, landscapes of similar risk) should be identified on a state-by-state basis with the involvement of all agencies with wildland fire protection responsibilities: state, local, tribal, and federal.
3. It is neither reasonable nor feasible to attempt to prioritize communities on a rank order basis. Rather, communities (or landscapes) should be sorted into three, broad categories or zones of risk: high, medium, and low. Each state, in collaboration with its local partners, will develop the specific criteria it will use to sort communities or landscapes into the three categories. NASF recommends using the publication "Wildland/Urban Interface Fire Hazard Assessment Methodology" developed by the National Wildland/Urban Interface Fire Protection Program (circa 1998) as a reference guide. (This program, which has since evolved into the Firewise Program, is under the oversight of the National Wildfire Coordinating Group (NWCG)). At minimum, states should consider the following factors when assessing the relative degree of exposure each community (landscape) faces.
    - **Risk:** Using historic fire occurrence records and other factors, assess the anticipated probability of a wildfire ignition.
    - **Hazard:** Assess the fuel conditions surrounding the community using a methodology such as fire condition class, or [other] process.
    - **Values Protected:** Evaluate the human values associated with the community or landscape, such as homes, businesses, and community infrastructure (e.g. water systems, utilities, transportation systems, critical care facilities, schools, manufacturing and industrial sites, and high value commercial timber lands).
    - **Protection Capabilities:** Assess the wildland fire protection capabilities of the agencies and local fire departments with jurisdiction.
4. Prioritize by project not by community. Annually prioritize projects within each state using the collaborative process defined in the national, interagency MOU "For the Development of a Collaborative Fuels Treatment Program". Assign the highest priorities to projects that will provide the greatest benefits either on the landscape or to communities. Attempt to properly sequence treatments on the landscape by working first around and within communities, and then moving further out into the surrounding landscape. This will require:
    - First, focus on the zone of highest overall risk but consider projects in all zones. Identify a set of projects that will effectively reduce the level of risk to communities within the zone.
    - Second, determining the community's willingness and readiness to actively participate in an identified project.

- Third, determining the willingness and ability of the owner of the surrounding land to undertake, and maintain, a complementary project.
- Last, set priorities by looking for projects that best meet the three criteria above. It is important to note that projects with the greatest potential to reduce risk to communities and the landscape may not be those in the highest risk zone, particularly if either the community or the surrounding landowner is not willing or able to actively participate.

5. It is important, and necessary, that we be able to demonstrate a level of accomplishment that justifies to Congress the value of continuing the current level of appropriations for the National Fire Plan. Although appealing to appropriators and others, it is not likely that many communities (if any) will ever be removed from the list of communities at risk. Even after treatment, all communities will remain at some, albeit reduced, level of risk. However, by using a science-based system for measuring relative risk, we can likely show that, after treatment (or a series of treatments), communities are at "*reduced risk*".

Similarly, scattered, individual homes that complete projects to create defensible space could be "counted" as "households at reduced risk". This would be a way to report progress in reducing risk to scattered homes in areas of low priority for large-scale fuels treatment projects.

Using the concept described above, the NASF believes it is possible to accurately assess the relative risk that communities face from wildland fire. Recognizing that the condition of the vegetation (fuel) on the landscape is dynamic, assessments and re-assessments must be done on a state-by-state basis, using a process that allows for the integration of local knowledge, conditions, and circumstances, with science-based national guidelines. We must remember that it is not only important to lower the risk to communities, but once the risk has been reduced, to maintain those communities at a reduced risk.

Further, it is essential that both the assessment process and the prioritization of projects be done collaboratively, with all local agencies with fire protection jurisdiction – federal, state, local, and tribal – taking an active role.

1.1.2.4 Healthy Forests Restoration Act

On December 3, 2003, President Bush signed into law the Healthy Forests Restoration Act of 2003 to reduce the threat of destructive wildfires while upholding environmental standards and encouraging early public input during review and planning processes. The legislation is based on sound science and helps further the President's Healthy Forests Initiative pledge to care for America's forests and rangelands, reduce the risk of catastrophic fire to communities, help save the lives of firefighters and citizens, and protect threatened and endangered species.

Among other things the Healthy Forests Restoration Act (HFRA):

- Strengthens public participation in developing high priority projects;
- Reduces the complexity of environmental analysis allowing federal land agencies to use the best science available to actively manage land under their protection;
- Creates a pre-decisional objections process encouraging early public participation in project planning; and
- Issues clear guidance for court action challenging HFRA projects.

The Clearwater County Wildland-Urban Interface Wildfire Mitigation Plan is developed to adhere to the principles of the HFRA while providing recommendations consistent with the policy

document which should assist the federal land management agencies (US Forest Service and Bureau of Land Management) with implementing wildfire mitigation projects in Clearwater County that incorporate public involvement and the input from a wide spectrum of fire and emergency services providers in the region.

1.1.3 Local Guidelines and Integration with Other Efforts

1.1.3.1 Clearwater County Fire Mitigation Planning Effort and Philosophy

The goals of this planning process include the integration of the National Fire Plan, the Idaho Statewide Implementation Strategy, the Healthy Forests Restoration Act, and the requirements of FEMA for a county-wide Fire Mitigation Plan; a component of the County's All Hazards Mitigation Plan. This effort will utilize the best and most appropriate science from all partners, the integration of local and regional knowledge about wildfire risks and fire behavior, while meeting the needs of local citizens, the regional economy, the significance of this region to the rest of Idaho and the Inland West.

1.1.3.1.1 Mission Statement

To make Clearwater County residents, communities, state agencies, local governments, and businesses less vulnerable to the negative effects of wildland fires through the effective administration of wildfire hazard mitigation grant programs, hazard risk assessments, wise and efficient fuels treatments, and a coordinated approach to mitigation policy through federal, state, regional, and local planning efforts. Our combined prioritization will be the protection of people, structures, infrastructure, and unique ecosystems that contribute to our way of life and the sustainability of the local and regional economy.

1.1.3.1.2 Vision Statement

Institutionalize and promote a countywide wildfire hazard mitigation ethic through leadership, professionalism, and excellence, leading the way to a safe, sustainable Clearwater County.

1.1.3.1.3 Goals

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

1.1.3.2 Clearwater Economic Development Association

The Clearwater Economic Development Association (CEDA) is a member driven private non-profit corporation established in 1968 to serve the geographic area including Clearwater, Idaho, Latah, Lewis, and Nez Perce Counties of Idaho (RegionIII). The CEDA has a Board of Directors and operates as an independent entity. The Board of Directors is made up of representatives from each eligible member group (Counties, Cities, any legally established special purpose group, local service districts, Nez Perce Tribe, Lewis-Clark State College and University of Idaho). At least two-thirds of the Board shall be elected officials. The whole board of Directors meet quarterly; an Executive Committee, made up of thirteen members meets monthly to address programmatic, financial and personnel functions of the Association.

1.1.3.2.1 Mission Statement

The Clearwater Economic Development Association is a member driven private non-profit corporation that operates in the public interest to improve economic opportunities, increase employment skills and sustain preferred lifestyles for residents, communities and businesses in north central Idaho.

Vision Statement

The Clearwater Economic Development Association works with residents, communities, and businesses to create a region that provides:

1. A healthy and diversified economy for all communities;
2. Strong local community capacity;
3. Clean and prosperous industries providing livable wages for employees;
4. A solid tax base throughout the region;
5. A well-trained work force
6. Outstanding educational opportunities with active community involvement and support;
7. Opportunities for recreation which invite a desirable level of tourism; and
8. Infrastructure that meets the present and future goals of our communities.

1.1.3.3 Project Impact

Project Impact is a nationwide initiative, sponsored by FEMA. At the heart of Project Impact is the concept of natural hazard mitigation, which is defined as sustained action taken to permanently reduce the loss of life and property resulting from natural hazards through long-term strategies comprised of planning, policies, programs and projects. Hazard mitigation seeks to reduce property damage and safeguard critical facilities in the event of a disaster. In this regard, hazard mitigation is economically justifiable because it seeks to avoid future losses. These losses usually dwarf the up-front costs of mitigation and decrease our need to respond to a disaster versus simply improving our ability to respond.

In August of 2001, Clearwater County contracted with FEMA to begin this mitigation process. Clearwater Economic Development Association (CEDA) was hired to coordinate planning and project implementation. On Sept. 18, 2002, 16 Stakeholders gathered for the "kick off" Steering Committee meeting. Since then, over 60 local individuals have been involved with the Project Impact initiative. Currently, the Clearwater County Project Impact Steering Committee is working with five subcommittees, organized by focus area: Wildfire, Flood, Landslide, Storm Water and Public Awareness. As a result, a number of projects are underway including training for local volunteer wildland fire fighters, increased signage for prevention/mitigation of fires, mapping for better location of property in emergencies and increased public awareness activities.

Chapter 2: Planning Process

2 Documenting the Planning Process

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

2.1.1 Description of the Planning Process

The Clearwater County Wildland-Urban Interface Wildfire Mitigation Plan was developed through a collaborative process involving all of the organizations and agencies detailed in Section 1.0 of this document. The County's local coordinator contacted these organizations directly to invite their participation and schedule meetings of the planning committee. The planning process included 5 distinct phases which were in some cases sequential (step 1 then step 2) and in some cases intermixed (step 4 completed though out the process):

1. **Collection of Data** about the extent and periodicity of wildfires in and around Clearwater County. This included an area encompassing Latah, Clearwater, Shoshone, and Kootenai Counties to insure a robust dataset for making inferences about fires in Clearwater County specifically; this included a wildfire extent and ignition profile.
2. **Field Observations and Estimations** about wildfire risks including fuels assessments, juxtaposition of structures and infrastructure to wildland fuels, access, and potential treatments by trained wildfire specialists.
3. **Mapping** of data relevant to wildfire control and treatments, structures, resource values, infrastructure, fire prone landscapes, and related data.
4. **Facilitation of Public Involvement** from the formation of the planning committee, to a public mail survey, news releases, public meetings, public review of draft documents, and acceptance of the final plan by the signatory representatives.
5. **Analysis and Drafting of the Report** to integrate the results of the planning process, providing ample review and integration of committee and public input, followed by acceptance of the final document.

Planning efforts were led by the Project Director, Dr. William E. Schlosser, of Northwest Management, Inc. Dr. Schlosser holds 4 degrees in natural resource management (A.S. geology; B.S. forest and range management; M.S. natural resource economic & finance; Ph.D. environmental science and regional planning). President of Northwest Management, Inc., Mr. Vincent Corrao, holds two degrees in natural resource management (A.S. forest management and B.S. forest resource management). Together, they led a team of resource professionals that included fire mitigation specialists, wildfire control specialists, resource management professionals, and hazard mitigation experts.

They were the point-people for team members to share data and information with during the plan's development. They and the planning team met with many residents of the county during the inspections of communities, infrastructure, and hazard abatement assessments. This methodology, when coupled with the other approaches in this process, worked effectively to integrate a wide spectrum of observations and interpretations about the project.

The planning philosophy employed in this project included the open and free sharing of information with interested parties. Information from federal and state 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 cooperators.

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.

2.2 Public Involvement

Public involvement in this plan 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 process.

2.2.1 News Releases

Under the auspices of the Clearwater County Wildland-Urban Interface Wildfire Mitigation Planning Committee, news releases were submitted to area news papers.

2.2.1.1 Newspaper Articles

Committee and public meeting announcements were published in the Clearwater Tribune and the Lewiston Morning Tribune ahead of each meeting. The following is an example of one of the newspaper announcements that ran in the local newspaper.

Clearwater County Wildfire Mitigation Plan

Orofino, ID --- The Clearwater County Commissioners, have created an Wildfire Mitigation Plan Committee to complete a Wildfire Mitigation Plan for Clearwater County. The Clearwater County Wildfire Mitigation Plan will include risk analysis at the community level for wildfires. Northwest Management, Inc. has been retained by Clearwater County to provide wildfire risk assessments, mapping, field inspections, interviews, and to collaborate with the committee to prepare the plan. The committee includes rural and wildland fire districts, land managers, elected officials, agency representatives, and others. Northwest Management specialists are conducting analyses of fire prone landscapes, and the wildland-urban interface. Specific mitigation activities for homes, structures, infrastructure, and resource capabilities will be proposed as part of the analysis.

The planning team will be conducting Public Meetings to discuss preliminary findings and to seek public involvement in the planning process from February 1-3, 2005. For more information on the Wildfire Mitigation Plan project in Clearwater County contact your County Commissioners, Dan Pierce at the Clearwater RC&D office at 208-882-4960 ext. 4, Tom Richards at the Northwest Management, Inc., office in Moscow at 208-883-4488, or Howard Weeks at C-PTPA in Orofino at 208-476-5612.

Public Information Meetings:
Weippe: February 1, 2005, Timberline High School, 7 pm - 9 pm.
Orofino: February 2, 2005, Ponderosa Banquet Room, 7 pm - 9 pm.
Pierce: February 3, 2005, Pierce Community Center, 7 pm - 9 pm.

2.2.2 Public Mail Survey

In order to collect a broad base of perceptions about wildland fire and individual risk factors of homeowners in Clearwater County, a mail survey was conducted. Using a state and county database of landowners in Clearwater County, homeowners from the Wildland-Urban Interface surrounding each community were identified. In order to be included in the database, individuals were selected that own property and have a dwelling in Clearwater County, as well as a mailing address in Clearwater County. This database created a list of unique names to which was affixed a random number that contributed to the probability of being selected for the public mail survey. A total of 234 landowners meeting the above criteria were selected.

The public mail survey developed for this project has been used in the past by Northwest Management, Inc., during the execution of other WUI Wildfire Mitigation Plans. The survey used The Total Design Method (Dillman 1978) as a model to schedule the timing and content of letters sent to the selected recipients. Copies of each cover letter, mail survey, and communication are included in Appendix III.

The first in the series of mailing was sent December 19, 2004, and included a cover letter, a survey, and an offer of receiving a custom GIS map of the area of their selection in Clearwater County if they would complete and return the survey. The free map incentive was tied into assisting their community and helping their interests by participating in this process. Each letter also informed residents about the planning process. A return self-addressed enveloped was included in each packet. A postcard reminder was sent to the non-respondents on January 26, 2005 encouraging their response. A final mailing, with a revised cover letter pleading with them to participate, was sent to non-respondents on February 3, 2005.

Surveys were returned during the months of December, January, and February. A total of 85 residents responded to the survey (as of February 21, 2005 – this will be updated until the final plan is completed. The effective response rate for this survey was 36%. Statistically, this response rate allows the interpretation of all of the response variables significantly at the 95% confidence level.

2.2.2.1 Survey Results

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

All of the respondents have a home in Clearwater County, and 96% consider this their primary residence. About 53% of the respondents were from the Orofino area, 12% were from the Pierce area, 11% were from the Weippe area, 5% from Ahsahka, 4% from Elk River, 4% from Grangemont, with the remainder from Riverside, Fraser, and Konkolville.

Almost all of the respondents (94%) correctly identified that they have emergency telephone 911 services in their area. However, their ability to correctly identify if they are covered by a rural fire district was less than hoped. Respondents were asked to identify if their home is protected by a rural or city fire district. Many of the county's residents have rural or city fire protection, with the exception of the homes in the areas of Dent and Headquarters, and the remote areas surrounding Pierce and Elk River. Of the respondents, 94% correctly identified they live in an area protected by a rural or city fire district. Approximately 16% responded they do not have a fire district covering their home, when in fact they do. Only 1% of the respondents indicated that they were inside of a fire protection district when in reality they are not protected.

Respondents were asked to indicate the type of roofing material covering the main structure of their home. Approximately 29% of respondents indicated their homes were covered with a

composite material (asphalt shingles). About 65% indicated their home were covered with a metal (eg., aluminum, tin) roofing material. Roughly 6% of the respondents indicated they have a wooden roofing material such as shakes or shingles.

Residents were asked to evaluate the proximity of trees within certain distances of their homes. Often, the density of trees around a home is an indicator of increased fire risk. The results are presented in Table 2.1

Table 2.1 Survey responses indicating the proximity of trees to homes.

Number of Trees	Within 250 feet of your home	Within 75 feet of your home
None	40%	56%
Less than 10	24%	27%
Between 10 and 25	34%	9%
More than 25	0%	0%

Approximately 86% of those returning the survey indicated they have a lawn surrounding their home. Of these individual home sites, 75% indicated they keep this lawn green through the fire season. 40% of respondents said they have brush within 75 feet of their homes.

The average driveway length of the respondents was approximately 551 feet long, from their main road to their parking area. Roughly 5% of the respondents had a driveway over ½ mile long, and a corresponding 13% had a driveway over ¼ of a mile long. Of these homes with lengthy driveways, roughly 19% have turnouts allowing two vehicles to pass each other in the case of an emergency. Approximately 59% of all homeowners indicated they have an alternative escape route, with the remaining 41% indicating only one-way-in and one-way-out. 85 of respondents indicated that their driveways are steep requiring 4-wheel drive during slippery or icy conditions.

Nearly all respondents (99%) indicated they have some type of tools to use against a wildfire that threatens their home. Table 2.2 summarizes these responses.

Table 2.2. Percent of homes with indicated fire fighting tools in Clearwater County.

93% – Hand tools (shovel, Pulaski, etc.)
20% – Portable water tank
18% – Stationery water tank
36% – Pond, lake, or stream water supply close
24% – Water pump and fire hose
26% – Equipment suitable for creating fire breaks (bulldozer, cat, skidder, etc.)

One survey question asked which type of media their household used to obtain information on emergencies situations within the county. 67% replied that they use the television, 80% the radio, 56% relied on newspapers, and 24% had a police scanner.

Roughly 47% of the respondents in Clearwater County indicated they have someone in their household trained in wildland fire fighting. Approximately 22% indicated someone in the household had been trained in structural fire fighting. Approximately 75% of respondent's households had someone trained in 1st Aid and CPR. However, it is important to note that these questions did not specify a standard nor did it refer to how long ago the training was received.

A couple of questions in the survey related to on-going fire mitigation efforts households may be implementing. Respondents were asked if they conduct a periodic fuels reduction program near their home sites, such as grass or brush burning. Approximately 59% answered affirmative to this question, while 34% responded that livestock (cattle, horses, sheep) graze the grasses and forbs around their home sites.

Respondents were asked to complete a fuel hazard rating worksheet to assess their home's fire risk rating. An additional column titled "results" has been added to the table, showing the percent of respondents circling each rating (Table 2.3).

Circle the ratings in each category that best describes your home.

Table 2.3. Fuel Hazard Rating Worksheet		Rating	Results
Fuel Hazard	Small, light fuels (grasses, forbs, weeds, shrubs)	1	56%
	Medium size fuels (brush, large shrubs, small trees)	2	24%
	Heavy, large fuels (woodlands, timber, heavy brush)	3	20%
Slope Hazard	Mild slopes (0-5%)	1	43%
	Moderate slope (6-20%)	2	28%
	Steep Slopes (21-40%)	3	27%
	Extreme slopes (41% and greater)	4	1%
Structure Hazard	Noncombustible roof and noncombustible siding materials	1	26%
	Noncombustible roof and combustible siding material	3	56%
	Combustible roof and noncombustible siding material	7	6%
	Combustible roof and combustible siding materials	10	11%
Additional Factors	Rough topography that contains several steep canyons or ridges	+2	Average -1.9 pts
	Areas having history of higher than average fire occurrence	+3	
	Areas exposed to severe fire weather and strong winds	+4	
	Areas with existing fuel modifications or usable fire breaks	-3	
	Areas with local facilities (water systems, rural fire districts, dozers)	-3	

Calculating your risk

Values below are the average response value to each question.

Fuel hazard	1.63	x Slope Hazard 1.86	= 3.05
Structural hazard	+	3.47	
Additional factors	(+ or -)	-1.92	
Total Hazard Points	=	4.59	

Table 2.4. Percent of respondents in each risk category as determined by the survey respondents.
00% – Extreme Risk = 26 + points
2% – High Risk = 16–25 points
32% – Moderate Risk = 6–15 points
66% – Low Risk = 6 or less points

Maximum household rating form score was 17 points, as assessed by the homeowners. These numbers were compared to observations made by field crews trained in wildland fire fighting. These results indicate that for the most part, these indications are lower than the risk rating assigned by the "professionals". Anecdotal evidence would indicate that Clearwater County landowners involved in this survey are unaware of some of the wildfire risk factors present in Clearwater County.

Finally, respondents were asked "if offered in your area, would members of your household attend a free, or low cost, one-day training seminar designed to teach homeowners in the wildland–urban interface how to improve the defensible space surrounding your home and adjacent outbuildings?" A majority of the respondents, 60% indicated a desire to participate in this type of training.

Homeowners were also asked, "How do you feel Wildland-Urban Interface Fire Mitigation projects should be funded in the areas surrounding homes, communities, and infrastructure such as power lines and major roads?" Responses are summarized in Table 2.5.

Table 2.5. Public Opinion of Wildfire Mitigation Funding Preferences.

	Mark the box that best applies to your preference		
	100% Public Funding	**Cost-Share (Public & Private)**	**Privately Funded (Owner or Company)**
Home Defensibility Projects	18%	33%	27%
Community Defensibility Projects	35%	36%	5%
Infrastructure Projects Roads, Bridges, Power Lines, Etc.	53%	12%	15%

2.2.3 Committee Meetings

The following list of people who participated in the planning committee meetings, volunteered time, or responded to elements of the Clearwater County Wildland-Urban Interface Wildfire Mitigation Plan's preparation.

- Tom Richards.....Northwest Management, Inc.
- Bill Maison.....Clearwater County Emergency Services
- Bill Wilkinson.....USDA Forest Service
- Chuck Doty.....Clearwater Resource and Development Council
- Dan Pierce .....Clearwater Resource and Development Council
- Dave Summers .....Idaho Department of Lands
- Dick Hodge.....Clearwater Resource and Development Council

- Don Ebert .....Clearwater County Commissioner
- Howard Weeks .....Clearwater-Potlatch Timber Protection Agency
- John Erixson .....Northwest Management, Inc.
- John Willard .....Sunnyside Rural Fire Department
- Kimberly Nelson .....USDA Forest Service
- Lauri Stifanick.....Clearwater County
- Mary Fritz .....Idaho Department of Lands
- Michael Caughran .....Clearwater County Emergency Services
- Mike Lubke.....USDA Forest Service
- Paul Pence.....U.S. Army Corps of Engineers
- Robert Tardif .....U.S. Army Corps of Engineers
- Rusty Eck .....Clearwater-Potlatch Timber Protection Agency
- Stan Leach .....Clearwater County Commissioner
- Tami Parkinson .....USDA Forest Service
- Tom McWilliams.....USDA Forest Service
- John DeGroot.....Nez Perce Tribe
- Sandy Holt.....Nez Perce Tribe

Committee Meetings were scheduled and held on the following dates:

2.2.3.1.1 September 28th, 2004 – Clearwater County Courthouse

Meeting began at approximately 9:00 AM. The meeting was well attended by Clearwater County Commissioners, Emergency Management, USFS, Idaho Department of Lands, Clearwater-Potlatch Timber Protective Association, Clearwater Fire Chiefs Assn., Clearwater RC&D, Bureau of Land Management, and US Army Corps of Engineers.

Meeting welcome by Tom Richards and John Erixson of Northwest Management, Inc. John Erixson presented slide show of FMP planning process for a FEMA compliant plan. Discussed what a WUI is, how it is defined. Did not have a current Clearwater County WUI map to show to committee members. NMI will bring a copy to the next committee meeting.

It was noted that Potlatch Corporation, Nez Perce Tribe, Rural Fire Departments, City Fire Departments were absent from the this first committee meeting. Those organizations will be invited to future meetings and be included on mailing and contact lists. Tom Richards will contact those organizations to get their representatives to the meetings.

NMI handed out a sample copy of the media release to be sent to the local newspapers. The Clearwater Tribune and the Lewiston Morning Tribune were identified as the newspapers that the Media Release will be sent to. It was suggested that Eric Barker of the Lewiston be contacted to write a story on Clearwater County's effort to reduce the wildfire losses within the county.

Changes within the Press Release—Tell where the money is coming from to fund the FMP. State that it is not funded by Clearwater County. The Press Release should originate from the

Clearwater County Commissioners, not Northwest Management, Inc. The word “mitigate should be changed to “reduce”. “Reduce” has a clearer meaning to people than “mitigate”.

Handed out and reviewed the Survey that will be sent to approximately 200 to 250 rural Clearwater County residents. Committee asked to review and critique.

Additional Questions—Add a question to ask the people where they get information on emergency situations within the county. Add a question asking if the residents rural address is identifiable and visible from the main access road.

Changes—Add a question to have the residents define the width of their driveway—to move equipment and emergency personnel in and out. Try to find out if the driveway is wide enough for emergency vehicles to pass—18’ min. width.

Handed out draft community assessments for communities that were identified by the federal government as communities at risk from wildfire. Discussion centered on what a community is. It was noted that most areas at risk from wildfire are not the traditional defined community, but are rather decentralized clusters of structures and residences. These areas need to be addressed in the plan. Howard Weeks said that the CPTPA has previously identified most of these areas within the county. He has agreed to supply this information to the committee.

Primary and Secondary Access Routes—Attempted to look at NMI supplied maps to identify Primary and Secondary access routes—Map was at a difficult scale to delineate these routes. It was agreed that we will look at this item at the next committee meeting. Also, Christine Frei, CEDA, said that this has been done for the Clearwater County all hazards plan. She will share this information with the committee and NMI for inclusion into the plan and for consistency between the two plans. She also indicated that through the AHMP process, they have identified the critical county structures. Tom Richards will try to set up meeting with Christine to review.

Rural Fire Districts—Bill Maison indicated that the Greer Fire District has been dissolved. There is a new fire district called the Upper Fords Creek Rural Fire district. At next Committee meeting, committee will review wildland and rural fire district boundaries. NMI will have maps with the boundaries on it.

Handed out the Resource and Capabilities Surveys to the Committee. Most of the City and Rural Chiefs were absent from the meeting. Bill Maison took these surveys and indicated that he will get the surveys to the appropriate organization. It was suggested that NMI attend a session of the Clearwater Fire Chiefs Assn. to go over FMP planning process with that group. Tom Richards will follow up on this suggestion.

Discussed fire treatments briefly at meeting. Most of the agency representatives will try to get something together with NMI.. Tom Richards will contact the following individuals to follow through on this.

Bill Wilkinson—USFS
Dave Summers—IDL
Mary Fritz—IDL
Howard Weeks—CPTPA
Mike VanderPas—BLM
Paul Pence—US Army Corps of Engineers

Did not definitively set the next Committee or the Public Meetings. Suggested that the public meetings should be held in Orofino, Weippe and Pierce. These meetings will likely be held in January. Next committee meeting to be held in mid-November. Tom Richards will contact all to set next committee meeting.

2.2.3.1.2 November 18th, 2004 – Clearwater County Courthouse

Meeting began at approximately 2:00 PM. Meeting welcome by Tom Richards and Bill Schlosser of Northwest Management, Inc.

The meeting was well attended by Emergency Management, USFS, Idaho Department of Lands, Clearwater-Potlatch Timber Protective Association, Clearwater Fire Chiefs Assn., Clearwater RC&D, and US Army Corps of Engineers, Potlatch Corporation.

Set Meeting Dates

Public Meetings—Week of January 31-3, 2005
Committee Meeting—Jan. 18, 2005
Committee Meeting—Feb. 15, 2005
Committee Meeting—Plan Review—March 1, 2005
Plan Public Review—March 8, 2005
All Plan Comments Due by March 22, 2005

Review of the Fire Mitigation Plan Process

Bill review the FMP planning process for a FEMA compliant plan.

Infrastructure

Roads—Identified Primary and Secondary Roads—Highlighted on maps

Primary Routes:

Southwick Highway
Dent Road
Musselshell Road
Carrot Ridge
FS Road 100

Roads limit access for fire/emergency vehicles—in new subdivisions P&Z should require a road with an 18' width minimum, also need to improve the current infrastructure

P&Z rules should be a mitigation item in policy.

Power lines—Well identified on maps

Water Supply—Reviewed on maps

Wells

Springs

Surface Water Collection points—Community water supplies—Elk River and Headquarters office have surface collection points. Also Orofino out of Orofino Creek.

Pierce—Is in need of a new water supply system.

Repeaters—Marked on map—Should have the following

Teakean Butte—Sheriff and resources(IDL, COE, CPTPA)
Norton Knob—Law enforcement
Elk Butte—Everyone
Gilbert Grade-USFS
Junction Mtn. -USFS
Gold Hill -USFS
Eagle Point-USFS
Hemlock Butte-USFS
Osier Ridge-USFS
Woodrat—IDL

Assessments

Howard Weeks said that the CPTPA will conduct Community Assessments on the following areas:

Rudo-Grangemont area
Dent
Lakeview Estates
Gilbert Grade
Sunnyside
Freeman Creek

Will address access, safety, fuels, structures, safety zones, water sources, power lines, and capabilities, etc.

Additional areas of concern

Wells Bench
The Ranchettes
Deception Saddle/Independence Creek—Kelly Creek area—many private cabins in that area.

Fire Service Capabilities

Need to strengthen capabilities county wide by supporting the RFD's financially.

2.2.3.1.3 January 21, 2005 – Clearwater National Forest Supervisor Office

Meeting began at approximately 2:00 PM

The meeting was well attended by Emergency Management, USFS, Idaho Department of Lands, Clearwater-Potlatch Timber Protective Association, Clearwater Fire Chiefs Assn., Clearwater RC&D, and US Army Corps of Engineers, Potlatch Corporation.

Updates

Provided updates on Public Survey and Public Meetings. Encouraged Committee members to inform residents of the upcoming Public Meetings.

CPTPA provided NMI with community assessments.

Priority Mitigation areas—Fuels Treatments—Includes home defensible space programs

Elk River Watershed and Elk River
Lakeview Estates
View Point
Sunnyside
Wells Bench Ranchettes
Gilbert Grade
Upper Fords Cr.
Grangemont/Rudo
Dent
Freeman Cr.

Infrastructure Improvements

Access Improvements:

Ahsahka Grade—Poor access for emergency equip. Randy Curtis has cost information for improvements.

Recommended New RFD's

Orofino RFD expansion up to Harmony Heights-Deer Creek Boundary
Twin Ridges expansion
Harmony Heights—New RFD Recommended

Gilbert Grade—New RFD recommended
Pierce to Headquarters area—New RFD recommended
Some uncovered areas in Lower Fords Creek
Dent area

FEMA has money available for building fire houses, but not purchasing land.

Water Development—Areas where water needed and what is needed

Sunnyside and Cavendish—10,000 gallon subsurface tanks

Ahsahka—Need pond water source

Howard Weeks will come up with cost for additional water development. Also number of new ponds needed.

Policy in new developments

(P&Z should Adopt and FMP should support this new policy)—That routes into subdivisions should be reviewed by local Fire Chief to insure that the road is built to standards for Emergency Equip.

Home Defensible Space Guidelines—Not Code but recommendations for new buildings within the interface—

Rural Addressing—County is still working on it.

2.2.4 Public Meetings

Public meetings were held during the planning process, as an integral component to the planning process. It was the desire of the planning committee, and the Clearwater County Commissioners to integrate the public's input into the development of the fire mitigation plan.

Formal public meetings were scheduled on February 1st, 2004, at Weippe, Idaho, on February 2nd, 2005, at Orofino, Idaho, and on February 3rd, 2005, at Pierce, Idaho. The purpose of these meetings was to share information on the planning process with a broadly representative cross section of Clearwater County landowners. Each meeting had wall maps posted in the meeting rooms with many of the analysis results summarized specifically for the risk assessments, location of structures, fire protection, and related information. The formal portion of the presentations included a PowerPoint presentation made by Toby Brown. During his presentations, comments from committee members, fire chiefs, and others were encouraged in an effort to engage the audience in a discussion.

2.2.4.1 Meeting Notices

Public notices of this meeting were printed in the Clearwater Tribune the week prior to and the week of the meetings. Announcements were posted around the county and distributed to fire districts in Clearwater County.

Figure 2.1. Public meeting announcement used in Clearwater County.

Clearwater County, Idaho Wildfire Mitigation Plan

Public Meetings!

Weippe: February 1, 2005, Timberline High School, 7 pm - 9 pm.
Orofino: February 2, 2005, Ponderosa Banquet Room, 7 pm - 9 pm.
Pierce: February 3, 2005, Pierce Community Center, 7 pm - 9 pm.

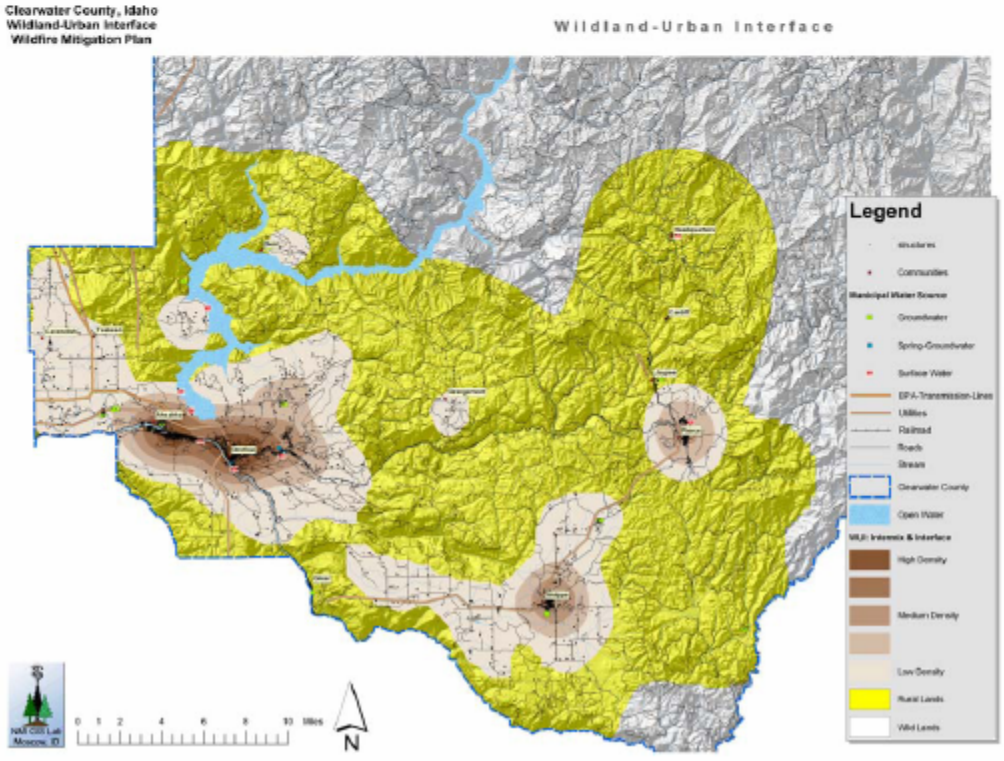
These public meetings will address the **Wildland-Urban Interface Wildfire Mitigation Plan** for our communities. These meetings are open to the public and will include slideshow presentations from wildfire mitigation specialists working on the Clearwater County Wildfire Mitigation Plan. Public input is being sought in order to better frame the County's efforts of wildfire mitigation treatments, fire district resource enhancements, and public land management.

This meeting will last for approximately 1.5 hours.

Please attend and participate!

Learn about the assessments of Wildfire Risk and the Wildland-Urban Interface of Clearwater County. Discuss ***YOUR*** priorities for how our communities can best mitigate these risks.

For more information on Hazard Mitigation Plan projects in Clearwater County, contact your County Commissioners, Dan Pierce with the Clearwater RC&D office at 208-882-4960 ext. 4, Tom Richards at the Northwest Management, Inc., office in Moscow at 208-883-4488, or Howard Weeks at C-PTPA in Orofino at 208-476-5612. ***We'll see you there!***



It was made clear to all in attendance that their input was welcome and encouraged, as specific treatments had not yet been decided, nor had the risk assessment been completed. Attendees were told that they could provide oral comment during these meetings, they could provide written comment to the meetings, or they could request more information in person to discuss the plan. In addition, attendees were told they would have an opportunity to review the draft plan prior to its completion to further facilitate their comments and input.

The formal presentations lasted approximately 1 hour and included many questions and comments from the audience. Following the meetings, many discussions continued with the committee members and the general public discussing specific areas, potential treatments, the risk analysis, and other topics.

The following are comments, questions or suggestions from the meetings:

2.2.4.2 Weippe Public Meeting

February 1st, 2005 – Timberline High School – 7 to 9 pm

Toby Brown presented an overview of the Fire Mitigation process that covered evaluation of risks, development of wildland urban interface zones, identification of mitigation activities and a summary of local resources and capabilities. Following Toby's presentation there was discussion among those that attended in regards to fire districts, resources and capabilities, mitigation activities and infrastructure needs for the county and local area.

Infrastructure Needs

Road improvements

Greer Grade—a lot of new home construction going on in this area. Need to make sure access roads to home are adequate for emergency vehicles. When new subdivisions are in the planning stage the developers are supposed to have the Rural Fire Chiefs check their access. This does not always happen. An Educational opportunity rather than a policy change. Could have a check off box on building permits to have the builders contact the appropriate Fire Chief.

Upper and Lower Fords Creek need road improvements

Grangemont Road needs improvement.

Lolo Creek-Roads going into homes are narrow, windy and steep.

Water Improvements

Commissioner Ebert would like to have the support of the Rural Fire Chiefs and Cptpa for the construction of Deyo Reservoir which is planned near Frasier.

Dry Hydrants—need them in both the Lower Fords Creek area and Weippe Prairie

Map of all the water sources—CPTPA has created this map and the fire chiefs would like to see it distributed more widely. Especially needed within the Frasier area.

Pierce needs extra water storage—they cannot re-fill their tank fast enough during high water use(fires) or droughty conditions. Set up a fill site in the creek during emergency fire.

Fire Stations

All Fire Departments need to have a backup power source-generator. There is also a need for building upgrades.

Rural Fire Districts

One is needed in the Pierce area. Only have a city department and it does not cover the area outside of town. Probably won't happen, tax/money problems.

Communications

Communications are adequate right now. However, if the country converts to digital radios there will a need for additional and new repeaters and radios. It will be expensive.

Mitigation Activities

A need for defensible space program around peoples homes. Clean-up brush and trees.

Road improvement—as stated above and into and out of homes and subdivisions—long term. Will be a major challenge for Clearwater County in the future.

Zoning

P and Z is updating zoning map which will guide future development in the rural areas of the County.

Education

Defensible Space—Education through schools, county fairs, pamphlets with the building permits, etc.

Education on the benefits of Rural Fire Districts—Assessment vs. insurance costs.

Volunteers and Training

All of the RFD's need additional bodies to help fight fire. Have tried High School, Junior Firefighters program, but it did not seem to work out. They have ample opportunity for training through the Fire Chiefs assn., CPTPA, it is just a matter of folks showing up for the training—they need the time and convincing to attend training.

2.2.4.3 Orofino Public Meeting

February 2nd, 2005 – Ponderosa Banquet Room – 7 to 9 pm

The public meeting at the Ponderosa Restaurant began at 7 pm with the formal presentation by Toby Brown from NMI. Afterwards, there was an informal discussion among attendees of the emergency response issues and pre-disaster mitigation projects that would help the county become more prepared for a wildland fire.

Fire Districts:

- International Fire Code is difficult for local fire departments to enforce. It would help if all permittees were notified of the minimum standards before construction.
- There are a lot of liability issues associated with fire departments including response to fires not within their jurisdiction and putting firefighters lives at risk to protect undefensible homes.
- All rural fire districts have multi-channel radios.
- There are mutual aid agreements set up between all rural fire departments and also with CPTPA

- Need rural fire protection in Harmony Heights, Dent Acres, and Lower Fords Creek either through annexation into an existing district or creation of a new one. Orofino RFD recently bought land to establish an additional station near Konkolville.
- Upper Fords RFD needs a station to house equipment.
- All fire departments need more and younger volunteers. Orofino RFD sponsors several high school programs designed to recruit volunteers that is working.
- Greer FD contracts the Orofino RFD to respond to their area due to a lack of funding, people, or need.
- It would be beneficial to everyone if the current fire districts joined together. This would reduce the amount of paperwork and increase funding opportunities. However, annexation and merging are complicated processes also.
- Most districts are in need of a grant writer due to the complexity of the process. It was suggested that all of the districts go to together to get funding for one grant writer for all of them to share.
- Getting PDM grants for buildings is easier if the structure can be used for multiple purposes such as emergency shelter, training facility, storage, food preparation, and has a back up power source.
- Most districts can't even afford matching funds although much of the matching can come from "in kind" hours such as training or volunteer labor. Nevertheless, several districts don't have a storage facility for new equipment.
- Upper Fords Creek RFD cannot reach many of the homes that are down in the canyon due to the steep and dangerous road conditions.
- Most county roads are need of some type of repair or reconstruction. Resurfacing, widening, general maintenance, or complete reconstruction is needed specifically on Wells Bench Cutoff, Upper Fords Creek Road, Lower Fords Creek Road, Old Ahsahka Grade, Old Peck Grade, Crockett Bench, Deer Creek Road, and Huckleberry Road. Many private roads, particularly around Freeman Creek, are too narrow and steep for fire trucks or have heavy timber type fuels abutting the road.
- Shores of Dworshak are too steep and long for a boat to be helpful to fight fires. There is one boat currently with a Mark III pump, but it would not be able to pump or draft to fill up trucks.
- Fire districts may be able to get more grants if they file jointly or under an umbrella organization like the RC&D.

Communication:

- Repeater locations: Bald Mountain, Teaken, and Elk Butte (installing another on Gilbert Grade – Forest Service land). County has good radio coverage.
- Elk Butte repeater has generator that will provide power for 20 days. Handheld radios will also last about 20 days on back up supplies of batteries.

Water Development

- CPTPA has developed water sources mapped throughout the county as well as a description of each one's capability; however, most of these are in the uplands areas. They also have many big tenders and giant pumps to refill them quickly.

- The county needs to get maps showing locations for all the water sources, including the WUI, that CPTPA doesn't have covered.

Miscellaneous

- The county needs to fund the GIS program to get decent maps, etc. for our fire depts., police, and other emergency responders.
- Recent emergency experiences show the capabilities and resilience of the county.
- The road department helps keep brush away from road right-of-way.
- Most county administration buildings, shelters, etc. do not have alternative power source.
- Landowners county-wide are in need of wildfire awareness education.
- Project Impact – this grant allowed the county to fund more wildfire training, erect fire prevention signs and current fire risk warning signs, and publish educational brochures. Brochures were handed out to real estate companies, schools, fire departments, federal and state agencies, and several other entities.
- Door-to-door education seems to be very effective. It would also be helpful to have some "example" homes that people could drive to. IDL has done door-to-door programs to give defensible space evaluations. They found that many people will volunteer to do mitigation work around their homes once they are aware of fire risk situation. Local districts may also benefit from this by finding new structures they weren't previously aware of. Insurance agencies may be the ones making the push for people to do mitigation work around homes by canceling policies for those who don't.
- Some locals refused to fill out the survey because they thought it was intrusive and they didn't know where the information was going. NMI needs to make sure the fire departments are aware of the survey, so they can answer local questions.

2.2.4.4 Pierce Public Meeting

February 3rd, 2005 – Pierce Community Center – 7 to 9 pm

Tera began the formal presentation at 7 pm and lasted approximately 30 minutes. After the presentation, the group engaged in a more informal discussion of the fire hazard issues in the Pierce area. Discussion points were as follows.

- The primary issues involve the inability of a local official to turn off the power during a fire. Instead they must wait (sometimes up to 2 hours) for an Avista employee to come all the way to Pierce in order to flip the switch. They also cannot shut power off from the substation in Orofino because that would shut down all of the power to the entire area, including the city water supply.
- Pierce uses surface water runoff from the Canal Creek Watershed for their main supply of drinking water. The watershed boundaries are encompassed by the current WUI. Pierce may need to update Watershed Management Plan. An alternative power supply is needed for the city water system.
- Alternative fuel sources are available during a prolonged power outage including the bulk plant in Jaypee and Orofino.
- The Pierce area would benefit from cell phone coverage.
- The local fire department needs access to GIS maps of current water sources and their descriptions.

- Rural addressing and road signs need improved (County is working on this project). Pierce area still working on familiarity basis.
- There are fire hazard education needs throughout the area. Many homeowners would probably volunteer to do fire mitigation projects if they were aware of the risk to their homes and families.
- Power company will trim lines around homes for free, but they need to be contacted. People also need to be aware that vegetation near power lines is a fire risk.
- Expansion of the Pierce rural fire department is being discussed. Judgetown area to the south needs protection.
- The Pierce RFD needs a more centrally located building as well as their own water tender. CPTPA may not be able to respond quickly enough with their tenders. Pierce also needs more volunteers and more training. May be able to bribe volunteers by discounting water or sewer bills.
- Many roads near Pierce need improvements, particularly paving. Gravel roads get very dusty, which causes visibility problems during an emergency response. They must stagger trucks in order to see the road.
- Developing dry hydrants near the creek running through town may alleviate some of the problems associated with turning off the power to the city water supply. The water can be pumped fast enough; however, it cannot be treated fast enough to keep the tank full. Need an alternative source.
- Due to the lack of rural homes in the area, it might be more feasible to do community defensible space projects rather individual home projects. This would be especially helpful around Judgetown.

2.2.4.5 Public meeting slide show

Figure 2.2. Clearwater County Public Meeting Slide Show.

The public meeting slide show (title slide above) is outlined below.

Table 2.6. Public meeting slide show

Slide 1

Slide 2

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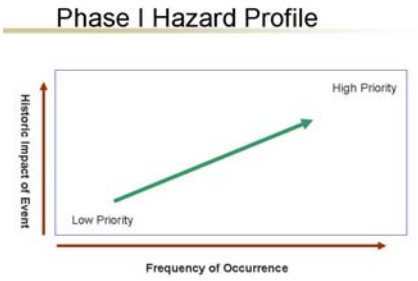

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Funding Opportunities

- **Federal Monies**
  - National Fire Plan
  - Healthy Forests Restoration Act
  - Federal Emergency Management Agency
- **State Monies**
  - Statewide Implementation Efforts
  - Idaho Bureau of Homeland Security
- **The Goal is Hazard Reduction**
  - Protection of People and Structures
  - Protection of Infrastructure
  - Protection of Economy
  - Protection of Ecosystems

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Recommendations

- WUI Safety & Policy
- People & Structures
- Infrastructure
- Resources & Capabilities
- Regional Land Management Recommendations

We will revisit this list at the end of the presentation…

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Hazard Mitigation Approach

- Hazard Profile
- Risk Assessment
- Vulnerability Appraisal
- Mitigation Strategy Development
- Prioritization and Planning
- Implement the Plan!

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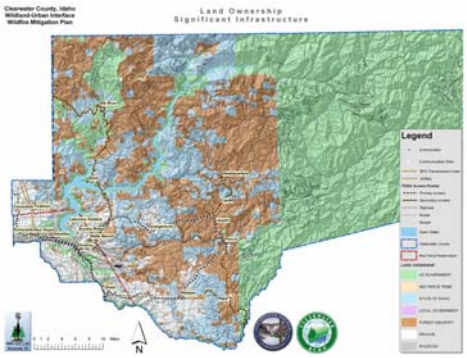

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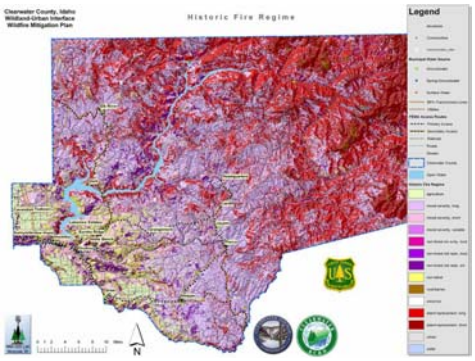

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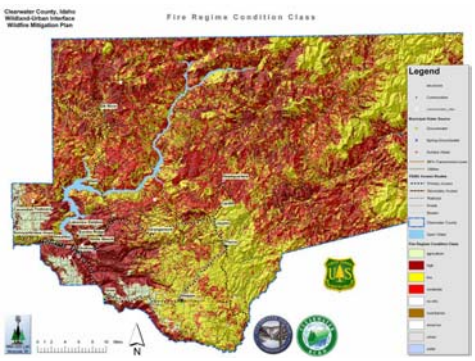

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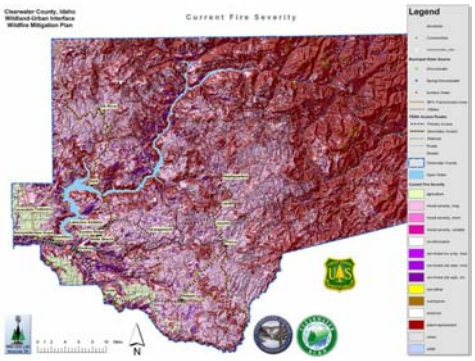

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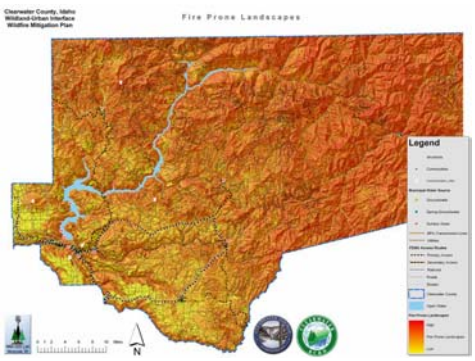

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Wildland-Urban Interface

- **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;
- **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; and
- **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.

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Defining Clearwater County's Wildland-Urban Interface

- Unique to each area & it changes over time
- Based on where structures are currently located
- Uses mathematical formulae and geospatial relationships to visually represent where the WUI exists
- *When you see it, you'll understand what we mean*

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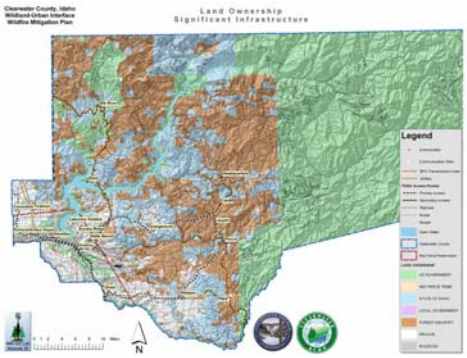

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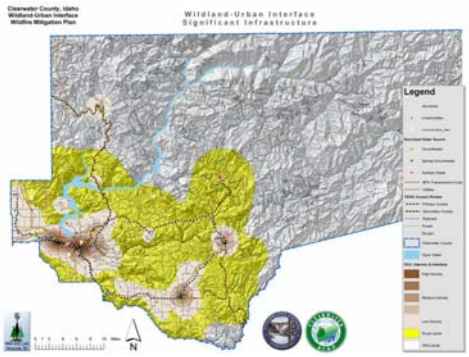

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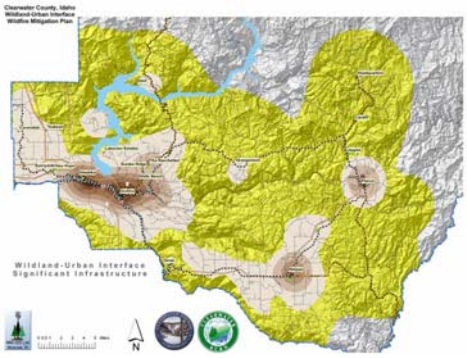

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Preparedness

- City Fire Protection
- Rural Fire Protection
- Wildland Fire Protection

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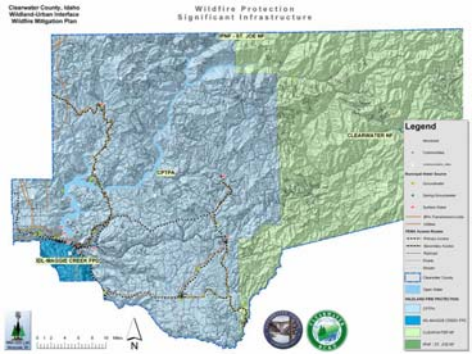

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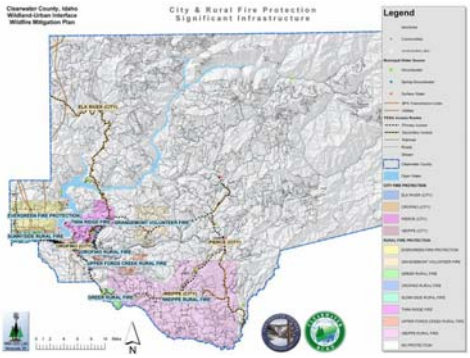

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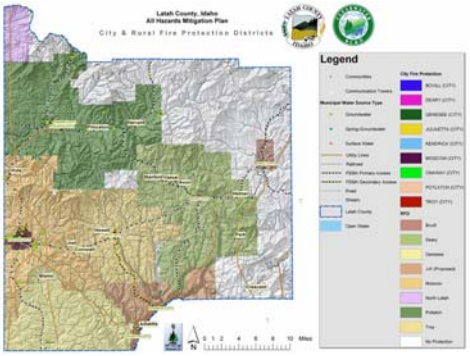

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Public Involvement

- Public Mail Survey was sent to 230 households in Clearwater County
  - A total of 35 surveys were returned so far (15% response rate), 3rd mailing this week
- Three Public Meetings will be held in February

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Written Plan Completion

- Committee will review the draft document first
- Public Review of the Draft document is next
- The final document will be presented for acceptance by the County Commissioners and others, target date by March 31, 2005

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Recommendations

- WUI Safety & Policy
- People & Structures
- Infrastructure
- Resources & Capabilities
- Regional Land Management Recommendations

Are we accomplishing these goals?

Slide 40

2.3 Review of the WUI Wildfire Mitigation Plan

Review of sections of this document were conducted by the planning committee during the planning process as maps, summaries, and written assessments were completed. These individuals included fire mitigation specialists, fire fighters, planners, elected officials, and others involved in the coordination process. Preliminary findings were discussed at the public meetings, where comments were collected and facilitated.

The results of these formal and informal reviews were integrated into the Wildland-Urban Interface Wildfire Mitigation Plan. This plan was given to members of the planning committee on February 22, 2005. The committee review process lasted from February 22, 2005 through March 8, 2005. Committee comments were integrated into a revised document which was distributed for public review on March 14, 2005. Formal public review lasted until March 25, 2005, although comments were received until April 1, 2005, and integrated into the final plan.

The Clearwater County Board of County Commissioners met on April 4, 2005, and formally adopted the final Wildland-Urban Interface Wildfire Mitigation Plan (signature pages). Additional municipalities, agencies, and organizations adopted the plan as indicated on the signature pages of this document.

2.4 Continued Public Involvement

Clearwater County is dedicated to involving the public directly in review and updates of the Hazard Mitigation Plan. The Clearwater County Commissioners, through the Interface Hazard Mitigation Committee are responsible for the annual review and update of the plan as recommended in the “Recommendations” section of this document.

The public will have the opportunity to provide feedback about the Plan annually on the anniversary of the adoption of this plan, at the meeting of the County Commissioners. Copies of the Plan will be catalogued and kept at all of the appropriate agencies in the county. The existence and location of these copies will be publicized. Instructions on how to obtain copies of the plan will be made available on the County’s Internet web site. The Plan also includes the address and phone number of the county Planning Division, responsible for keeping track of public comments on the Plan.

In addition, copies of the plan and any proposed changes will be posted on the county website. This site will also contain an email address and phone number to which people can direct their comments and concerns.

A public meeting will also be held as part of each annual evaluation or when deemed necessary by the Interface Hazard Mitigation Committee. The meetings will provide the public a forum for which they can express its concerns, opinions, or ideas about the Plan. The County Public Information Officer will be responsible for using county resources to publicize the annual public meetings and maintain public involvement through the public access channel, webpage, and newspapers.

Chapter 3: County Characteristics & Risk Assessment

3 Background and Area Description

3.1 Demographics

Clearwater County reported an increase in total population from 8,505 in 1990 to 8,930 in 2000. Clearwater County has four incorporated places, Elk River (pop. 142), Orofino (pop. 3,337), Pierce (pop. 638), and Weippe (pop. 408). Nearly 37% of the total county population resides in Orofino. Unincorporated communities include Greer, Ahsahka, Headquarters, Grangemont, and Cavendish. The total land area of the county is roughly 2,461.4 square miles (1,575,296 acres).

Table 3.1 summarizes some relevant demographic statistics for Clearwater County.

Table 3.1 Selected demographic statistics for Clearwater County, Idaho from Census, 2000.

Total population	**8,930**	**100.0**
SEX AND AGE		
Male	4,742	53.1
Female	4,188	46.9
Under 5 years	432	4.8
5 to 9 years	518	5.8
10 to 14 years	649	7.3
15 to 19 years	633	7.1
20 to 24 years	346	3.9
25 to 34 years	883	9.9
35 to 44 years	1,471	16.5
45 to 54 years	1,440	16.1
55 to 59 years	574	6.4
60 to 64 years	592	6.6
65 to 74 years	796	8.9
75 to 84 years	478	5.4
85 years and over	118	1.3
Median age (years)	41.9	(X)
18 years and over	6,883	77.1
Male	3,677	41.2
Female	3,206	35.9
21 years and over	6,619	74.1
62 years and over	1,724	19.3
65 years and over	1,392	15.6
Male	658	7.4
Female	734	8.2

Table 3.1 Selected demographic statistics for Clearwater County, Idaho from Census, 2000.

RELATIONSHIP		
Population	**8,930**	**100.0**
In households	8,331	93.3
Householder	3,444	38.6
Spouse	2,116	23.7
Child	2,220	24.9
Own child under 18 years	1,909	21.4
Other relatives	215	2.4
Under 18 years	84	0.9
Nonrelatives	336	3.8
Unmarried partner	177	2.0
In group quarters	599	6.7
Institutionalized population	573	6.4
Noninstitutionalized population	26	0.3
HOUSEHOLDS BY TYPE		
Households	**3,444**	**100.0**
Family households (families)	2,485	72.2
With own children under 18 years	1,014	29.4
Married-couple family	2,100	61.0
With own children under 18 years	762	22.1
Female householder, no husband present	246	7.1
With own children under 18 years	146	4.2
Nonfamily households	959	27.8
Householder living alone	827	24.0
Householder 65 years and over	371	10.8
Households with individuals under 18 years	1,081	31.4
Households with individuals 65 years and over	1,345	39.1
Average household size	2.42	(X)
Average family size	2.83	(X)
HOUSING TENURE		
Occupied housing units	**3,456**	**100.0**
Owner-occupied housing units	2,693	77.9
Renter-occupied housing units	763	22.1
Average household size of owner-occupied unit	2.47	(X)
Average household size of renter-occupied unit	2.20	(X)

(X) Not applicable
[1] Other Asian alone, or two or more Asian categories.
[2] Other Pacific Islander alone, or two or more Native Hawaiian and Other Pacific Islander categories.
[3] In combination with one or more other races listed. The six numbers may add to more than the total population and the six percentages may add to more than 100 percent because individuals may report more than one race.
Source: U.S. Census Bureau, Census 2000 Summary File 1, Matrices P1, P3, P4, P8, P9, P12, P13, P,17, P18, P19, P20, P23, P27, P28, P33, PCT5, PCT8, PCT11, PCT15, H1, H3, H4, H5, H11, and H12.

3.2 Socioeconomics

Clearwater County had a total of 3,456 occupied housing units and a population density of 3.6 persons per square mile reported in the 2000 Census. Ethnicity in Clearwater County is distributed: white 94.8%, black or African American 0.1%, American Indian or Alaskan Native 2.0%, Asian 0.4%, Hispanic or Latino 1.8%, two or more races 2.0%, and some other race 0.6%.

Specific economic data for individual communities is collected by the US Census; in Clearwater County this includes Elk River, Orofino, Pierce, and Weippe. Elk River households earn a median income of $30,000 annually, Orofino has a median income of $30,580, Pierce averages $34,318, and Weippe reported a median income of $26,442, all of which compares to the Clearwater County median income during the same period of $32,071. Table 3.2 shows the dispersal of households in various income categories in Clearwater County.

Table 3.2 Income in 1999.	**Clearwater County**	
	Number	**Percent**
Households	3,444	100.0
Less than $10,000	358	10.4
$10,000 to $14,999	305	8.9
$15,000 to $24,999	606	17.6
$25,000 to $34,999	590	17.1
$35,000 to $49,999	737	21.4
$50,000 to $74,999	564	16.4
$75,000 to $99,999	181	5.3
$100,000 to $149,999	68	2.0
$150,000 to $199,999	8	0.2
$200,000 or more	27	0.8
Median household income (dollars)	32,071	(X)

(Census 2000)

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations*, directs federal agencies to identify and address any disproportionately high adverse human health or environmental effects of its projects on minority or low-income populations. In Clearwater County, a significant number, 9.7%, of families are at or below the poverty level (Table 3.3).

Table 3.3 Poverty Status in 1999 (below poverty level).	**Clearwater County**	
	Number	**Percent**
Families	240	(X)
Percent below poverty level	(X)	9.7
With related children under 18 years	173	(X)
Percent below poverty level	(X)	16.4
With related children under 5 years	59	(X)
Percent below poverty level	(X)	17.0
Families with female householder, no husband present	85	(X)
Percent below poverty level	(X)	34.6
With related children under 18 years	83	(X)
Percent below poverty level	(X)	49.7

Table 3.3 Poverty Status in 1999 (below poverty level).	Clearwater County	
	Number	Percent
With related children under 5 years	31	(X)
Percent below poverty level	(X)	60.8
Individuals	1,128	(X)
Percent below poverty level	(X)	13.5
18 years and over	733	(X)
Percent below poverty level	(X)	11.6
65 years and over	110	(X)
Percent below poverty level	(X)	8.2
Related children under 18 years	377	(X)
Percent below poverty level	(X)	18.9
Related children 5 to 17 years	299	(X)
Percent below poverty level	(X)	19.1
Unrelated individuals 15 years and over	330	(X)
Percent below poverty level	(X)	25.6

(Census 2000)

The unemployment rate was 6.0% in Clearwater County in 1999, compared to 4.4% nationally during the same period. Approximately 13.9% of the Clearwater County employed population worked in natural resources, with much of the indirect employment relying on the employment created through these natural resource occupations.

Table 3.4 Employment & Industry	Clearwater County	
	Number	Percent
OCCUPATION		
Management, professional, and related occupations	818	25.0
Service occupations	655	20.0
Sales and office occupations	672	20.6
Farming, fishing, and forestry occupations	171	5.2
Construction, extraction, and maintenance occupations	372	11.4
Production, transportation, and material moving occupations	582	17.8
INDUSTRY		
Agriculture, forestry, fishing and hunting, and mining	455	13.9
Construction	218	6.7
Manufacturing	454	13.9
Wholesale trade	47	1.4
Retail trade	263	8.0
Transportation and warehousing, and utilities	153	4.7
Information	55	1.7
Finance, insurance, real estate, and rental and leasing	108	3.3
Professional, scientific, management, administrative, and waste management services	139	4.3
Educational, health and social services	715	21.9
Arts, entertainment, recreation, accommodation and food	218	6.7

Table 3.4 Employment & Industry	Clearwater County	
	Number	Percent
services		
Other services (except public administration)	136	4.2
Public administration	309	9.4

(Census 2000).

Approximately 59% of Clearwater County's employed persons are private wage and salary workers, while around 31% are government workers (Table 3.5).

Table 3.5 Class of Worker	Clearwater County	
	Number	Percent
Private wage and salary workers	1,927	58.9
Government workers	1,001	30.6
Self-employed workers in own not incorporated business	326	10.0
Unpaid family workers	16	0.5

(Census 2000)

3.2.1 European Settlement of Clearwater County

Information summarized from the Clearwater County Historical Museum.

The area now called Clearwater County in Idaho was originally inhabited by various bands of Nez Perce Indians. They had permanent villages along the Clearwater River at the western edge of the county. Hunting and fishing parties traveled in and out of the area and favorite root gathering spots were found in places like the Weippe Prairie and Musselshell Meadows, above the Clearwater River.

It is reported that the Lewis and Clark Expedition's Corps of Discovery (1805-1806) were the first white men and black man in Idaho. The expedition came into Clearwater County Sept. 20, 1805. They met the Nez Perce Indians on the Oyaip (Weippe) Prairie where the Nez Perce fed the starving men. Originally, the Nez Perce were unsure of this expedition's intent, discussed killing all of them, but a Nez Perce woman named Wat-Ku-ese told them that white people had helped her when she had been captured by another tribe. She asked that the Corps be spared. The Corps of Discovery moved down to Canoe Camp on the Kooskooskee (Clearwater River) and camped. The Nez Perce showed the men of the Corps how to burn out the center of logs to make the canoe building faster. Five canoes were made and the expedition left Orofino on Oct. 10, 1805 on their way to the Pacific Ocean.

On May 5, 1806, Lewis and Clark returned to Clearwater County where the Nez Perce welcomed them. The expedition came through near Orofino to collect the horses they had left with the Nez Perce the previous year. They also picked up supplies they had stored for the return trip. The Corps stayed at Long Camp near Kamiah until June 23, 1806, waiting for the snow to melt enough to allow passage through the mountains. During this time, the Corps and Nez Perce shared medicines, games, dancing and much more particular to the two cultures. Nez Perce guides helped Lewis and Clark get back over the mountains on their return to the eastern United States. The first treaty with the Nez Perce was signed in 1855 and gave them a large reservation including parts of Washington and Idaho.

Except for missionaries, few white men were seen after Lewis and Clark until the winter of 1859 when Captain Elias D. Pierce found gold. Due to restrictions on what had become part of the Nez Perce Reservation, he could not legally come into the area. However, he returned quietly in

the winter of 1860 with a party of 12. They camped on Canal Gulch near what is now the town of Pierce. One of the men made a significant gold discovery. That winter, 1860-61, Pierce City and Oro Fino City were established only two miles apart. Pierce City was to become Idaho's second oldest town, though it was originally in Washington Territory. Oro Fino burned down in 1867 and was not rebuilt. The town of Greer on the Clearwater River had a ferry that crossed the river making transport of goods up to the prairie for the mining settlements possible.

Clearwater County was originally in Washington Territory so the Washington Territorial Legislature included this area in Spokane County. The Washington Legislature established Shoshone County in 1861 with Pierce City as the county seat. Discovery of gold brought thousands of people to Pierce and increased the need for a more centrally located government, independent of Washington Territory. March 3, 1863, Idaho was declared a territory with Lewiston as the first capital. Still standing in Pierce is Idaho's oldest courthouse. It was built in 1862 at a cost of $3,500 to $4,000. The structure was used until 1884. It was later sold for a mere $50. Farmers and ranchers soon began moving onto the Weippe Prairie where the towns of Weippe and Fraser are today. Homesteading began on the prairie before the homesteading of land around the Clearwater River. The Nez Perce Reservation allotments were completed in November 1895 and homesteading on the unallotted land started Nov. 18, 1895. The town of Orofino on the Clearwater River, not to be mistaken for the old Oro Fino city near Pierce, was platted in 1898.

The Northern Pacific Railroad began laying tracks up the Clearwater River and by 1899, the railroad had completed tracks and a depot in Orofino. Some of the towns along the Clearwater River were named by the railroad for people who worked on building the line. The increase in population and promise of a transportation system encouraged more settlers to come.

The original Shoshone County included parts of Montana, Idaho and Washington and travel from this area to the second county seat in Wallace took a person through five counties and two states. Various proposals to split south Shoshone County to form a new county began. The Idaho Legislature passed an act authorizing annexation of south Shoshone County. The area was annexed to Nez Perce County in December 1904 by a vote in a general election. February 1911, the Idaho Legislature voided the act and established Clearwater County with Orofino as the county seat.

Timber became a valued commodity and changed the major industry from mining to logging. Other new towns sprouted up because of the logging such as Heaquarters and Elk River. The railroad soon reached out to these towns and brought millions of board feet of logs out to mills that popped up everywhere. Elk River built the first all electric sawmill. Headquarters fed and housed Camas Prairie Railroad men in addition to being a hub for logging.

3.3 Description of Clearwater County

Clearwater County is located in the magnificent North Central region of Idaho. From steep river canyons to high mountain vistas it has a wide variety of terrain and outdoor activities for both residents and visitors.

Clearwater County was established February 27, 1911. Clearwater County has altitudes ranging from 1,000 feet to 8,000 feet. The topography is extremely varied, from lower elevation prairies to high, steep mountainous terrain.

3.3.1 Highways

The main highways weaving through the county are U.S. 12, and State Routes 7, 8, 11, and 13. U.S. Highway 12 not only connects Orofino to other large population centers, but also makes

the trek over Lolo Pass connecting Clearwater County to Missoula, Montana and beyond. The state highways serve to unite the more remote communities of Elk River, Weippe, and Pierce. These two lane highways are typically winding, fairly narrow, and generally bordered by timberlands. Heavy recreational and large truck traffic is particularly intense during the summer and fall months.

3.3.2 Rivers

The major rivers in the county are the Clearwater and the North Fork of the Clearwater River. During the historic times and still today, these waterways served as large financial entities in Clearwater County providing many recreational and economic resources. There are also a plethora of mountain lakes, streams, and springs providing municipal, agricultural, industrial, and recreational resources.

3.3.3 Recreation

Clearwater County has many outstanding tourism and recreational facilities. The county offers a full panorama of recreational opportunities ranging from boating and fishing on Dworshak Reservoir or the Clearwater River to camping, hiking, hunting, and fishing in the County's vast backcountry.

The economic impacts of these activities to the local economy and the economy of Idaho have not been enumerated. However, they are substantial given the many months of the year that activities take place and the large numbers of visitors that travel to this location.

3.3.3.1 Clearwater National Forest

Part of Idaho's *Big Wild*, the Clearwater National Forest covers 1.8 million acres from the jagged peaks of the Bitterroot Mountains in the east to the river canyons and the rolling hills of the Palouse Prairie in the west.

The North Fork of the Clearwater and the Lochsa rivers provide miles of tumbling white water interspersed with quiet pools for migratory and resident fish. The mountains provide habitat for elk, moose, whitetail and mule deer, black bear, gray wolf, cougar, mountain goats, and many smaller mammals.

The ridges between the deep canyons have provided travel corridors across the mountains for centuries. These routes were used by the Nez Perce Indians and, in 1805-1806, the Lewis and Clark Expedition. Today the main travel route is U.S. Highway 12 following the dramatic canyon of the Middle Fork of the Clearwater River and its tributary the Lochsa River. Many developed camping and picnicking facilities are located along the Highway 12 corridor in addition to the vast recreational resources offered throughout the forest.

3.3.3.2 Dworshak State Park

Dworshak State Park is located among trees and open meadows on the western shore of Dworshak Reservoir. The area is known for its moderate summer nights and mild winter temperatures. Camping, boating, fishing, swimming, hiking and water-skiing are just some of the many activities that await park visitors. A boat ramp, handling dock, refueling station provide easy launching most of the year. A fish-cleaning station is nearby to help with the day's catch.

The campsites at Freeman Creek Campground each feature a picnic table and fire grill. Of the 105 sites, 46 have water and electrical hookups. Twenty-five sites are provided at lakeside for tent camping. Sites are also available for use by the disabled. Four camping cabins are also

available by reservation. There are three group-camping loops, designed to accommodate those camping groups that desire a more private setting. A modern central restroom and shower house are provided for campers, and vault toilets and water fountains are conveniently located throughout the area. An RV dump station is located near the entrance to the park. A picnic area with tables, grills and a modern restroom is nestled in the trees next to the swimming beach and playground. A large sun shelter is available and may be reserved for group use by contacting the park office.

Three Meadows Group Camp, nestled in a lush forest, is perfect for organized retreats and other functions. It offers a spacious lodge with modern kitchen facilities and eight bunk-style group cabins.

3.3.3.3 Boating

Boating is a very popular activity in Clearwater County. Dworshak Reservoir and the Clearwater River along with many of their tributaries offer excitement for various types of boaters and recreators throughout most of the year. Boat ramps, docks, and other facilities are conveniently located at several access points along the waterfront areas.

3.3.3.4 Camping

Camping is another popular activity enjoyed by the residents of Clearwater County. The Clearwater National Forest and Dworshak State Park as well as the Clearwater River corridor provides many developed and undeveloped campsites. The amenities vary from full RV hookup to only a cleared tent site. There are also numerous RV parks closer to populated areas.

3.3.3.5 Fishing and Hunting

Fishing and hunting is very important to Clearwater County both from a recreational standpoint and as an economic resource. A wide variety of fish can be caught in Clearwater County including: trout, salmon, steelhead, sturgeon, bass, catfish, crappie, perch, and pike. The river systems and many of the stocked lakes and mountain lakes provide excellent fishing.

For those who prefer a gun or bow to a fly rod, Clearwater County offers a bounty of hunting experiences. Wild birds and game, like deer, elk, moose, bear, mountain lion, pheasant, quail, partridge, chukar, grouse, wild duck, geese, and doves are found in abundance.

3.3.3.6 Winter Sports

For those people who enjoy winter sports, Clearwater County has a variety of activities to interest them. Snowmobilers and cross-country skiers will be exhilarated by the hills and trails in the Clearwater County backcountry and Clearwater National Forest.

3.3.4 Resource Dependency

Over the past century, employment through agricultural farming, timber harvesting and livestock ranching has been significant in the region. Forestry, logging, trucking, and related support industries have relied on timber harvests from this region. Livestock ranching has been and continues to be an important component of the economy of Clearwater County. Livestock grazing in Clearwater and surrounding Counties has provided stable employment while serving to keep rangelands and forestlands alike maintained at a lower wildfire risk than if they had not been present and managed.

Agriculture and timber processing have historically been important to Clearwater County and the State. The forest products industry provides a significant portion of the economic base for Clearwater County.

The communities of Clearwater County have been evaluated by the University of Idaho College of Natural Resources Policy Analysis Group (PAG) for the degree of natural resource dependency each community experiences.

Idaho communities with more than 10% employment in resource-based sectors (wood products, travel & tourism, agriculture, and mining) were evaluated by Harris *et al.* (2003). Their findings indicate the following (Harris *et al.* 2000):

- Orofino .....Wood Products Only
- Elk River.....Agriculture Only
- Pierce .....Wood Products Only
- Weippe .....Wood Products Only

From 1993 to 1998 sawmill capacity dropped rapidly in response to dwindling public log supplies. Only two of five dominant companies operating in 1995 were still operating in 1998, and one of these, Boise Cascade, closed two of its large sawmills during this period. In the mid-1980s Boise Cascade operated three sawmills, one plywood mill and a finishing-planer mill. Idaho closures included its Council and Horseshoe Bend sawmills. Only two facilities remained open in 1999, the sawmill in Cascade and a plywood mill in Emmett. In the last few years, both of these mills closed, along with Croman's mill.

Similar trends are occurring elsewhere in Idaho. In north central Idaho, Potlatch Corporation's Jaype mill in Pierce closed in 2002, and its Lewiston plant has been steadily reducing employees. Other recent closings of Idaho mills have occurred in Coeur d'Alene, Boise, and Grangeville, and in Baker, Oregon (Harris *et al.* 2000).

Harris *et al.* (2003) further evaluated Idaho communities based on their level of direct employment in several industrial sectors. Their findings for communities in Clearwater County are summarized in Table 3.6.

Table 3.6. Levels of direct employment by industrial sector

Community	Economic Diversity Index	Agriculture	Timber	Travel and Tourism	State / Local Gov.	Federal Gov.	Mining and Minerals
Orofino	High	Med. Low	Med. High	Med. Low	High	Med. Low	Low
Elk River	Low	High	Low	Med. Low	Low	Med. Low	Low
Pierce	Med. Low	Low	High	Low	Med. Low	Low	Low
Weippe	Med. Low	Med. Low	High	Low	High	Low	Low

A "low" level of direct employment represents 5% or less of total employment in a given sector; "med. low," 6 to 10%; "med. high" 11 to 19%; and "high" 20% or more of total employment in a given sector.

Source: Harris *et al.* 2000

3.4 Emergency Services & Planning and Zoning

In the past, addresses have been assigned by various sources including the County, post offices, developers, and utility companies. This has led to confusion and has compromised the safety of Clearwater County's citizens. In order to locate people in emergency situations and to facilitate rural postal delivery, every residence and place of business in Clearwater County will

be assigned a county street address. This address is made up of two components - an address number and a road name. The assigned address will provide the information necessary to pinpoint a location on a map.

An explanation of the rural addressing system and progress update is listed below.

- The goal of the Rural Addressing/911 project is to improve dispatching of emergency vehicles to rural addresses.
- The project covers all unincorporated areas of Clearwater County.
- A 9-1-1 address is the "physical" address of your structure.
- The address number is a four or five digit number based on 1,000 numbers per mile.

Obtaining an Address for New Construction: All new business or residence construction must obtain an address by contacting the rural Addressing department, Clearwater County at 208-476-7262, or by email ruraladdressing@clearwatercounty.

Currently, the County does not have Enhanced 911. The Clearwater County Sheriff's Department is the Central Dispatch for the County. It is the goal of the County to incorporate Enhanced 911 when funding becomes available.

Clearwater County recognizes the need for improved Road Standards. The Commission is actively researching design standards and plans to recommend that the County adopt standards for new construction that comply with the International Fire Code.

3.5 Cultural Resources

Cultural resource impacts were qualitatively assessed through a presence/absence determination of significant cultural resources and mitigation measures to be employed during potential fire mitigation activities such as thinning and prescribed fire.

The United States has a unique legal relationship with Indian tribal governments defined in history, the U.S. Constitution, treaties, statutes, Executive Orders, and court decisions. Since the formation of the union, the United States has recognized Indian tribes as domestic dependant nations under its protection. The Federal Government has enacted numerous regulations that establish and define a trust relationship with Indian tribes.

The relationship between Federal agencies and sovereign tribes is defined by several laws and regulations addressing the requirement of Federal agencies to notify or consult with Native American groups or otherwise consider their interests when planning and implementing Federal undertakings, among these are:

- **EO 13175, November 6, 2000**, Consultation and Coordination with Indian Tribal Governments.
- **Presidential Memorandum, April, 1994**. Government-Government Relations with Tribal Governments (Supplements EO 13175). Agencies must consult with federally recognized tribes in the development of Federal Policies that have tribal implications.
- **EO 13007, Sacred sites, May 24, 1996**. Requires that in managing Federal lands, agencies must accommodate access and ceremonial use of sacred sites and must avoid adversely affecting the physical integrity of these sites.
- **EO 12875, Enhancing Intergovernmental Partnerships, October 26, 1993**. Mainly concerned with unfunded mandates caused by agency regulations. Also states the intention of establishing "regular and meaningful consultation and collaboration with

state, local and tribal governments on matters that significantly or uniquely affect their communities."

- **Native American Graves Protection and Repatriation Act (NAGPRA) of 1989**. Specifies that an agency must take reasonable steps to determine whether a planned activity may result in the excavation of human remains, funerary objects, sacred objects and items of cultural patrimony from Federal lands. NAGPRA also has specified requirements for notifying and consulting tribes.
- **Archaeological Resources Protection Act (ARPA), 1979**. Requires that Federal permits be obtained before cultural resource investigations begin on Federal land. It also requires that investigators consult with the appropriate Native American tribe prior to initiating archaeological studies on sites of Native American origin.
- **American Indian Religious Freedom Act (AIRFA), 1978**. Sets the policy of the US to protect and preserve for Native Americans their inherent rights of freedom to believe, express, and exercise the traditional religions of the American Indian . . . including, but not limited to access to sacred sites, use and possession of sacred objects, and the freedom to worship through ceremonies and traditional rites.
- **National Environmental Policy Act (NEPA), 1969**. Lead agency shall invite participation of affected Federal, State, and local agencies and any affected Indian Tribe(s).
- **National Historic Preservation Act (NHPA), 1966**. Requires agencies to consult with Native American tribes if a proposed Federal action may affect properties to which they attach religious and cultural significance. (Bulletin 38 of the act, identification of Traditional Cultural Properties (TCP's), this can only be done by tribes.)
- Treaties (supreme law of the land) in which tribes were reserved certain rights for hunting, fishing and gathering and other stipulations of the treaty.
- Unsettled aboriginal title to the land, un-extinguished rights of tribes.

3.5.1 Nez Perce Indian Reservation

The Nez Perce people belong to the Sahaptin linguistic group of Northwest Plateau Region. At one time, they occupied an area that covered North Central Idaho, Northeastern Oregon, and Southeastern Washington. The 1855 Treaty reserved most of their ancestral homelands. However, the discovery of gold in the 1860's led to the Treaty Council of 1863, and the adjustment of the boundaries of the Reservation. The Reservation was reduced by seven million acres, leaving the Nez Perce with 757,000 acres. Some of the Nez Perce (the "Non-Treaty Nez Perce") refused to sign this treaty. The government attempted to force their compliance in 1877. A war resulted ending in a surrender at Bear Paw, Montana, following a 1,700 mile, four-month fighting retreat by these Nez Perce toward Canada. The Dawes General Allotment Act of 1877 followed, whereby the remaining land was distributed within the tribe. Then in 1893, the Nez Perce were pressured into signing an agreement in which all unallotted land was declared "surplus" and sold to the Government for homesteading. The result of the Dawes Act was a Nez Perce Reservation reduced to about 86,500 acres, less than 12% of the 1863 Treaty lands. In 1948, the Nez Perce Tribe became a self-governing body under an approved constitution and by-laws. The Nez Perce Tribal Executive Committee is composed of nine members distributed geographically throughout the reservation.

3.5.2 National Register of Historic Places

The National Park Service maintains the National Register of Historical Places as a repository of information on significant cultural locale. These may be buildings, roads or trails, places where historical events took place, or other noteworthy sites. The NPS has recorded sites in its database. These sites are summarized in Table 3.7.

Table 3.7. National Register of Historic Places in Clearwater County, Idaho.

Item Number	Resource Name	Address	City	Listed	Architect, builder, or engineer
1	Brown's Creek CCC Camp Barracks	105 1st St., E.	Weippe	1984	
2	Canoe Camp--Site 18	W of Orofino	Orofino	1974	
3	Lolo Trail	to U.S. 12 on ridges of Bitterroot Mountains, from Lolo Pass to Weippe	Lolo Hot Springs	1966	
4	Moore Gulch Chinese Mining Site		Pierce	1983	
5	Nez Perce National Historical Park	Area 90 mi. S and 150 mi. E of Spalding	Spalding	1966	
6	Orofino Historic District	2nd, Dewey, Main, Johnson, and 6th Sts	Orofino	1982	
7	Our Lady of the Woodland Catholic Church	112 Holmes Dr	Pierce	1979	
8	Pierce Courthouse	ID 11	Pierce	1972	
9	US Post Office	320 Michigan Ave	Orofino	1989	Simon,Louis A.
10	Weippe Prairie	S of Weippe and ID 11	Weippe	1966	

(NRHP 2003)

Fire mitigation activities in and around these sites has the potential to affect historic places. In all cases, the fire mitigation work will be intended to reduce the potential of damaging the site due to wildfire. Areas where ground disturbance will occur will need to be inventoried depending on the location. Such actions may include, but not be limited to, constructed firelines (handline, mechanical line, etc.), new roads to creeks to fill water tankers, mechanical treatments, etc. Only those burn acres that may impact cultural resources that are sensitive to burning (i.e., buildings, peeled bark trees, etc.) would be examined. Burns over lithic sites are not expected to have an impact on those sites, as long as the fire is of low intensity and short duration. Some areas with heavy vegetation may need to be examined after the burn to locate and record any cultural resources although this is expected to be minimal. Traditional Cultural Properties (TCPs) will also need to be identified. Potential impact to TCPs will depend on what values make the property important and will be assessed on an individual basis.

3.6 Transportation

Primary access to and from Clearwater County is provided by US 12 (part of the Lewis and Clark Trail), a two-lane highway which runs along the Clearwater River. This paved route is notorious for being narrow, windy, and dangerous during adverse weather conditions. State Highway 11 from Greer, through Weippe, and on to Pierce is a narrow and windy two lane highway. The steep and windy climb from Greer to the flatlands surrounding Weippe is particularly hazardous. Although this path is relatively well- maintained, emergency evacuation along this route could potentially be dangerous due to the slower nature of travel, sharp corners,

and the steepness of the Greer Grade portion. State Route 8 is the only paved pathway connecting the community of Elk River to the commercial hub of Moscow in Latah County. The Elk River Road connects Elk River to Dent and then on to Orofino; however, this path is not adequate for emergency travel due to steep grades, gravel surface, and abutting forest fuels.

Secondary roads maintained by the County, the Forest Service, or private entities provide access to the adjoining areas within the county, including the communities of Cavendish, Teaken, Headquarters, and Grangemont. A variety of trails and closed roads are to be found throughout the region.

Almost all of the roads in the county were originally built to facilitate logging and farming activities. As such, these roads can support timber harvesting equipment, logging trucks, and fire fighting equipment referenced in this document. However, many of the new roads have been built for home site access, especially for new sub-divisions. In most cases, these roads are adequate to provide access for firefighting equipment; however, some private roads are too narrow, too steep, or otherwise unsafe for large truck travel.

Transportation networks in the county have been challenged by a number of communities with only one, two, or three access points suitable for use during an emergency. The community of Elk River is a prime example. Other communities that may be at risk because of limited access include Greer, Weippe, Pierce, Headquarters, Grangemont, and Dent.

3.7 Vegetation & Climate

Vegetation in Clearwater County is a mix of forestland and rangeland ecosystems. An evaluation of satellite imagery of the region provides some insight to the composition of the forest vegetation of the area. The full extent of the county was evaluated for cover type as determined from Landsat 7 ETM+ imagery in tabular format, Table 3.9.

The most represented vegetated cover type is a Mixed Mesic Forest type at approximately 17% of the County's total area. The next most common vegetation cover type represented is a warm mesic shrubs cover type at 13% of the total area. Douglas-fir cover is the third most common plant cover type at 9%. A Douglas-fir / grand fir mixed forest represent approximately 9% of the total as well. Agricultural lands represent approximately 2% of the area of the county (Table 3.8).

Table 3.8. Cover Types in Clearwater County.

	Acres	Percent of County's Total Area
Mixed Mesic Forest	271,712	17%
Warm Mesic Shrubs	211,577	13%
Douglas-fir	146,695	9%
Douglas-fir/Grand Fir	146,062	9%
Western Red Cedar/Grand Fir Forest	138,574	9%
Grand Fir	121,075	8%
Ponderosa Pine	85,893	5%
Lodgepole Pine	63,049	4%
Mixed Subalpine Forest	55,989	4%
Foothills Grassland	49,109	3%
Agricultural Land	28,295	2%
Western Red Cedar	27,777	2%

Table 3.8. Cover Types in Clearwater County.	Acres	Percent of County's Total Area
Mixed Xeric Forest	26,185	2%
Douglas-fir/Lodgepole Pine	25,041	2%
Montane Parklands and Subalpine Meadow	23,426	1%
Western Red Cedar/Western Hemlock	18,548	1%
Water	17,529	1%
Western Larch/Douglas-fir	15,440	1%
Subalpine Fir	14,462	1%
Exposed Rock	13,844	1%
Engelmann Spruce	12,795	1%
Western Larch	12,790	1%
Shrub Dominated Riparian	9,761	1%
Western Hemlock	9,526	1%
Western Larch/Lodgepole Pine	8,325	1%
Needleleaf Dominated Riparian	7,679	0%
Mixed Needleleaf/Broadleaf Forest	6,176	0%
Graminiod or Forb Dominated Riparian	4,174	0%
Mixed Barren Land	3,810	0%
Mixed Riparian (Forest and Non-Forest)	3,357	0%
Cottonwood	3,260	0%
Needleleaf/Broadleaf Dominated Riparia	2,034	0%
Mixed Non-forest Riparian	1,800	0%
Broadleaf Dominated Riparian	1,436	0%
Urban	1,055	0%
Disturbed Grassland	879	0%
Curlleaf Mountain Mahogany	585	0%
Mixed Whitebark Pine Forest	481	0%
Cloud Shadow	408	0%
Shoreline and Stream Gravel Bars	308	0%
Perennial Ice or Snow	61	0%
Rabbitbrush	7	0%
Cloud	6	0%
Total	**1,590,998**	

Vegetative communities within the county follow the strong moisture and temperature gradient related to the major river drainages. Ample precipitation and soil conditions result in a relatively well vegetated environment. As moisture availability increases, so does the abundance of conifer species, with subalpine forest communities present in the highest elevations where precipitation and elevation provide more available moisture during the growing season.

3.7.1 Forest Management & Timber Harvesting

The harvest of timber and other products from forestland in Clearwater County is essential to the local economy. Continuation of harvest operations, thinning, and other silvicultural practices ensures the safety and improves the health and diversity of the land. Much of Clearwater

County's forested area is being used under a multiple use concept such as timber production, livestock grazing, wildlife habitat, recreation, and watershed protection. Certain areas are classified as critical, and have been set aside for a specific use, and should continue to be managed for that use.

3.7.2 Monthly Climate Summaries In or Near Clearwater County

3.7.2.1 Elk River

Period of Record Monthly Climate Summary
Period of Record : 1/ 1/1952 to 9/30/2004

Table 3.9 Climate summaries for Elk River, Clearwater County.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	34.3	39.9	46.0	54.3	63.9	71.6	81.2	81.4	71.8	58.6	42.2	34.5	56.6
Average Min. Temperature (F)	18.1	20.4	24.1	30.5	36.8	42.9	45.4	44.0	37.1	30.4	25.5	19.7	31.2
Average Total Precipitation (in.)	5.41	4.11	3.42	2.80	2.92	2.35	1.11	1.17	1.75	2.77	4.55	5.01	37.39
Average Total SnowFall (in.)	30.9	17.7	12.3	2.6	0.4	0.0	0.0	0.0	0.0	0.3	12.5	26.6	103.3
Average Snow Depth (in.)	23	24	15	2	0	0	0	0	0	0	2	11	7

Percent of possible observations for period of record. Max. Temp.: 97.9% Min. Temp.: 97.5% Precipitation: 98.7% Snowfall: 98.4% Snow Depth: 97.4%

3.7.2.2 Orofino

Period of Record Monthly Climate Summary
Period of Record : 8/ 1/1948 to 12/30/1981

Table 3.10 Climate summaries for Orofino, Clearwater County.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	37.6	46.9	54.6	64.7	74.1	81.8	91.8	90.5	80.6	64.1	48.0	40.0	64.6
Average Min. Temperature (F)	24.0	28.9	31.4	36.9	43.7	49.9	53.6	52.7	45.4	37.6	32.0	27.7	38.7
Average Total Precipitation (in.)	3.11	2.39	2.32	2.16	2.18	1.96	0.66	0.87	1.19	2.10	2.88	3.48	25.30
Average Total SnowFall (in.)	12.0	3.9	1.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	1.3	7.9	26.4
Average Snow Depth (in.)	3	2	0	0	0	0	0	0	0	0	0	1	1

Percent of possible observations for period of record. Max. Temp.: 97.7% Min. Temp.: 97.7% Precipitation: 98.5% Snowfall: 92.6% Snow Depth: 86.7%

3.7.2.3 Pierce

Period of Record Monthly Climate Summary
Period of Record : 1/ 1/1963 to 9/30/2004

Table 3.11 Climate summaries for Pierce, Clearwater County.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	32.6	37.7	44.8	53.0	63.5	71.3	81.2	81.1	70.3	57.2	40.7	32.1	55.5
Average Min. Temperature (F)	16.6	18.6	23.3	28.7	34.9	41.2	43.9	41.7	34.3	28.2	24.4	17.3	29.4
Average Total Precipitation (in.)	5.69	4.02	4.06	3.42	3.57	2.87	1.44	1.40	1.99	3.01	4.51	5.33	41.32
Average Total SnowFall (in.)	34.4	19.8	13.9	5.1	0.8	0.0	0.0	0.0	0.0	0.6	11.5	31.1	117.2
Average Snow Depth (in.)	24	29	24	8	0	0	0	0	0	0	2	13	8

Percent of possible observations for period of record. Max. Temp.: 86.1% Min. Temp.: 86.3% Precipitation: 88.9% Snowfall: 88.9% Snow Depth: 88.8%

3.8 Wildfire Hazard Profiles

3.8.1 Wildfire Ignition Profile

Fire was once an integral function of the majority of ecosystems in Idaho. The seasonal cycling of fire across the landscape was as regular as the July, August and September lightning storms plying across the canyons and 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).

Detailed records of fire ignition and extent have been compiled by the Idaho Department of Lands, with records of fire ignitions dating back to 1983. Using this data on past fire extents and fire ignition data, the occurrence of wildland fires in the region of Clearwater County has been evaluated.

Because of its excessive length, over 2,000 ignitions in a 20 year period, the wildfire ignition table compiled by the Idaho Department of Lands is attached to this document in Appendix III. It includes a summary of fire ignitions within Clearwater County as recorded by the Idaho Department of Lands for the period 1983-2002.

Many fires have burned in the region of Clearwater County (Table 3.10). Figures 3.1 & 3.2 summarize fire ignitions and acres burned by 5-year periods (1983-2002). There were approximately 2,017 fire ignitions during this 20 year period, with the highest number of total ignitions occurring over the past decade (1988-1992), Figure 3.1. Conversely, the total acres

burned during the period 1983-1987 peaked with 1,318 acres burned (Figure 3.2). A substantial portion (78%) of all wildfires are caused by lightning in Clearwater County.

The average number of acres burned each 5-year period since 1983 has been approximately 1.45 acres. The latest period of records (1998-2002) had an average fire size of 0.79 acres, while the period 1983-1987 had the largest average at 2.25 acres. Some of the larger fires within the Idaho Department of Land's protection area (including CPTPA) include the Gold Creek Reburn (427 acres), Deer Creek Fire (230 acres), Weitas Creek North Fire (154 acres), Heywood Logging Fire (128 acres), Cobbler's Knob Fire (100 acres), and the Winter Creek #1 Fire (100 acres).

Figure 3.1. Clearwater County Wildfire Ignition Profile.

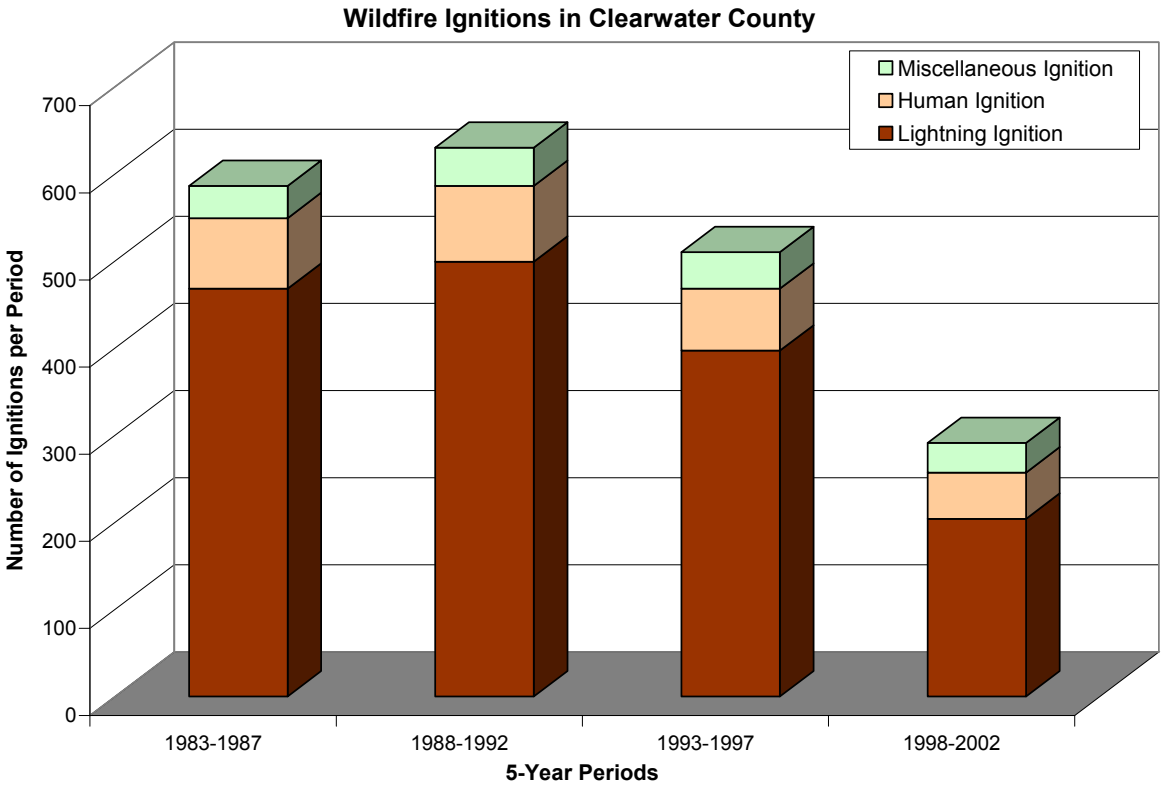


Figure 3.2. Clearwater County Wildfire Extent Profile

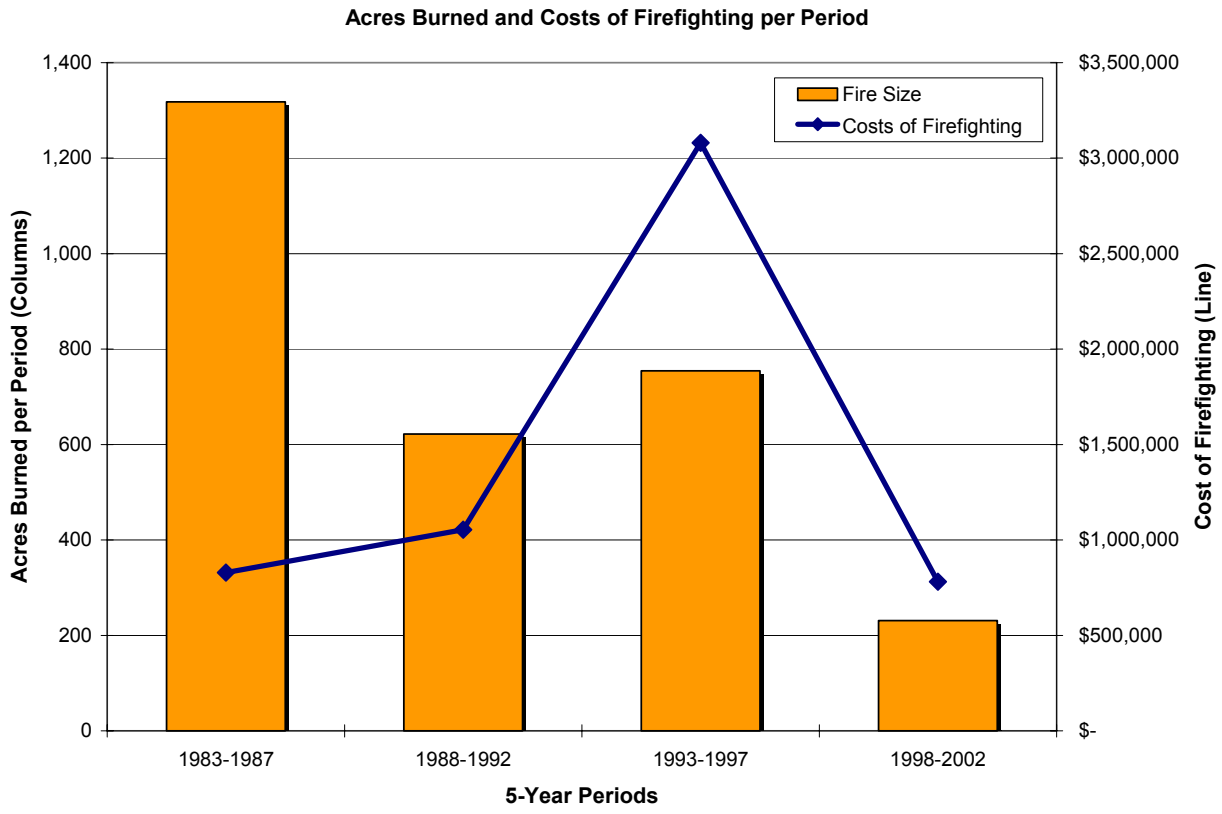


Table 3.12. Number of wildfire ignitions (profile) by 5-year period 1983-2002.

	1983-1987	1988-1992	1993-1997	1998-2002
Lightning Ignition	468	499	397	204
Human Ignition	81	87	71	53
Miscellaneous Ignition	37	44	42	34
Total Acres Burned	1,318	622	755	231

Since 1983, it would appear that roughly 78% of all fires in the Idaho Department of Lands protection area have been ignited by nature, while the remaining 22%, on average have been human caused (including miscellaneous causes). The data would seem to indicate that the total number of ignitions in Clearwater County increased through the 1988-1992 period, and are currently in a trend of decreasing ignitions. The total number of acres burned mimics this trend, however, the total acres burned during the last 5 year period (1998-2002) is still above the 20 year average of 200 acres every 5-years.

Table 3.13. Wildfire Ignitions by Cause in Clearwater County by cause.

		1983-2002[1]	
Cause	Cause Reference	Occurrence	Percent
Lightning	1	1,568	77.7%
Campfire	2	75	3.7%

Table 3.13. Wildfire Ignitions by Cause in Clearwater County by cause.

Cause	Cause Reference	1983-2002[1] Occurrence	Percent
Smoking	3	16	0.8%
Debris Burning	4	114	5.7%
Arson	5	7	0.3%
Equipment Use	6	61	3.0%
Railroad	7	2	0.1%
Children	8	17	0.8%
Miscellaneous	9	157	7.8%
Total		**2,017**	

[1] Data provided by the Idaho Department of Lands.

3.8.2 Wildfire Extent Profile

Across the west, wildfires have been increasing in extent and cost of control. The National Interagency Fire Center (2003) reports 88,468 wildfires in 2002 burned a total of nearly 7 million acres and cost $1.6 billion (Table 3.14). By most informed accounts, the 2003 totals will be significantly higher in terms of acres burned and cost.

Table 3.14. National Fire Season 2002 Summary

Number of Fires (2002 final)	88,458
10-year Average (1992-2001)	103,112
Acres Burned (2002 final)	*** 6,937,584**
10-year Average (1992-2001)	4,215,089
Structures Burned (835 primary residences, 46 Commercial buildings, 1500 outbuildings)	2,381
Estimated Cost of Fire Suppression (Federal agencies only)	$ 1.6 billion

- *This figure differs from the 7,184,712 acres burned estimate provided by the National Interagency Coordination Center (NICC). The NICC estimate is based on information contained in geographic area and incident situation reports prepared at the time fires occurred. The 6,937,584 estimate is based on agency end-of-year reports.*

The National Interagency Fire Center, located in Boise, Idaho, maintains records of fire costs, extent, and related data for the entire nation. Tables 3.15 and 3.16 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 in areas like Clearwater County.

Table 3.15. Total Fires and Acres 1960 - 2002 Nationally.

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

Year	Fires	Acres	Year	Fires	Acres
2002	88,458	*** 6,937,584**	1980	234,892	5,260,825
2001	84,079	3,555,138	1979	163,196	2,986,826
2000	122,827	8,422,237	1978	218,842	3,910,913
1999	93,702	5,661,976	1977	173,998	3,152,644

Table 3.15. Total Fires and Acres 1960 - 2002 Nationally.

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

Year	Fires	Acres	Year	Fires	Acres
1998	81,043	2,329,709	1976	241,699	5,109,926
1997	89,517	3,672,616	1975	134,872	1,791,327
1996	115,025	6,701,390	1974	145,868	2,879,095
1995	130,019	2,315,730	1973	117,957	1,915,273
1994	114,049	4,724,014	1972	124,554	2,641,166
1993	97,031	2,310,420	1971	108,398	4,278,472
1992	103,830	2,457,665	1970	121,736	3,278,565
1991	116,953	2,237,714	1969	113,351	6,689,081
1990	122,763	5,452,874	1968	125,371	4,231,996
1989	121,714	3,261,732	1967	125,025	4,658,586
1988	154,573	7,398,889	1966	122,500	4,574,389
1987	143,877	4,152,575	1965	113,684	2,652,112
1986	139,980	3,308,133	1964	116,358	4,197,309
1985	133,840	4,434,748	1963	164,183	7,120,768
1984	118,636	2,266,134	1962	115,345	4,078,894
1983	161,649	5,080,553	1961	98,517	3,036,219
1982	174,755	2,382,036	1960	103,387	4,478,188
1981	249,370	4,814,206	(National Interagency Fire Center 2003)		

(National Interagency Fire Center 2003)

Table 3.16. Suppression Costs for Federal Agencies Nationally.

Year	BLM	BIA	FWS	NPS	USFS	Totals
1994	$98,417,000	$49,202,000	$3,281,000	$16,362,000	$678,000,000	**$845,262,000**
1995	$56,600,000	$36,219,000	$1,675,000	$21,256,000	$224,300,000	**$340,050,000**
1996	$96,854,000	$40,779,000	$2,600	$19,832,000	$521,700,000	**$679,167,600**
1997	$62,470,000	$30,916,000	$2,000	$6,844,000	$155,768,000	**$256,000,000**
1998	$63,177,000	$27,366,000	$3,800,000	$19,183,000	$215,000,000	**$328,526,000**
1999	$85,724,000	$42,183,000	$4,500,000	$30,061,000	$361,000,000	**$523,468,000**
2000	$180,567,000	$93,042,000	$9,417,000	$53,341,000	$1,026,000,000	**$1,362,367,000**
2001	$192,115,00	$63,200,000	$7,160,000	$48,092,000	$607,233,000	**$917,800,000**
2002	$204,666,000	$109,035,000	$15,245,000	$66,094,000	$1,266,274,000	**$1,661,314,000**

(National Interagency Fire Center 2003)

Although many very large fires, growing to over 250,000 acres have burned in North Central Idaho, which Clearwater County is a part, actual fires in this county have usually been controlled at much smaller extents. This is not to imply that wildfires are not a concern in this county, but to point to the aggressive and professional manner to which the wildland and rural fire districts cooperate in controlling these blazes. The Clearwater-Potlatch Timber Protective Association and the Idaho Department of Lands provides primary wildfire protection in the western side of

Clearwater County. The US Forest Service has primary responsibility in the eastern portions of the county which are more remote and have few populated areas.

See Appendix I for a map of past fires in Clearwater County.

3.9 Analysis Tools and Techniques to Assess Fire Risk

Clearwater County and the adjacent counties of Kootenai and Shoshone Counties, were analyzed using a variety of techniques, managed on a GIS system (ArcGIS 8.2). Physical features of the region were represented by data layers including roads, streams, soils, elevation, and remotely sensed images from the Landsat 7 ETM+ satellite. Field visits were conducted by specialists from Northwest Management, Inc., and others. Discussions with area residents and fire control specialists augmented field visits and provided insights to forest health issues and treatment options.

This information was analyzed and combined to develop an assessment of wildland fire risk in the region.

3.9.1 Fire Prone Landscapes

Schlosser *et al.* 2002, developed a methodology to assess the location of fire prone landscapes on forested and non-forested ecosystems in the western US. Northwest Management, Inc., a natural resources consulting firm, completed fire prone landscapes assessments for Ada, Adams, Boise, Canyon, Elmore, Gem, Jerome, Minidoka, Owyhee, Payette, Shoshone, Twin Falls, Washington, and Valley Counties in Idaho. Northwest Management, Inc., completed Fire Prone Landscapes assessments on Clearwater, Idaho, Latah, Lewis, and Nez Perce Counties simultaneously as part of this analysis.

The goal of developing the Fire Prone Landscapes analysis is to make inferences about the relative risk factors across large geographical regions (multiple counties) for wildfire spread. This analysis uses the extent and occurrence of past fires as an indicator of characteristics for a specific area and their propensity to burn in the future. Concisely, if a certain combination of vegetation cover type, canopy closure, aspect, slope, stream and road density have burned with a high occurrence and frequently in the past, then it is reasonable to extrapolate that they will have the same tendency in the future, unless mitigation activities are conducted to reduce this potential.

The analysis for determining those landscapes prone to wildfire utilized a variety of sources.

Digital Elevation: Digital elevation models (DEM) for the project used USGS 10 meter DEM data provided at quarter-quadrangle extents. These were merged together to create a continuous elevation model of the analysis area.

The merged DEM file was used to create two derivative data layers; aspect and slope. Both were created using the spatial analyst extension in ArcGIS 8.2. Aspect data values retained one decimal point accuracy representing the cardinal direction of direct solar radiation, represented in degrees. Slope was recorded in percent and also retained one decimal point accuracy.

Remotely Sensed Images: Landsat 7 Enhanced Thematic Mapper (ETM+) images were used to assess plant cover information and percent of canopy cover. The Landsat ETM+ instrument is an eight-band multi-spectral scanning radiometer capable of providing high-resolution image information of the Earth's surface. It detects spectrally-filtered radiation at visible, near-infrared, short-wave, and thermal infrared frequency bands from the sun-lit Earth. Nominal ground sample distances or "pixel" sizes are 15 meters in the panchromatic band; 30 meters in the 6 visible, near and short-wave infrared bands; and 60 meters in the thermal infrared band.

The satellite orbits the Earth at an altitude of approximately 705 kilometers with a sun-synchronous 98-degree inclination and a descending equatorial crossing time of 10 a.m. daily.

Image spectrometry has great application for monitoring vegetation and biophysical characteristics. Vegetation reflectance often contains information on the vegetation chlorophyll absorption bands in the visible region and the near infrared region. Plant water absorption is easily identified in the middle infrared bands. In addition, exposed soil, rock, and non-vegetative surfaces are easily separated from vegetation through standard hyper-spectral analysis procedures.

Two Landsat 7 ETM images were obtained to conduct hyper-spectral analysis for this project. The first was obtained in 1998 and the second in 2002. Hyper-spectral analysis procedures followed the conventions used by the Idaho Vegetation and Land Cover Classification System, modified from Redmond (1997) and Homer (1998).

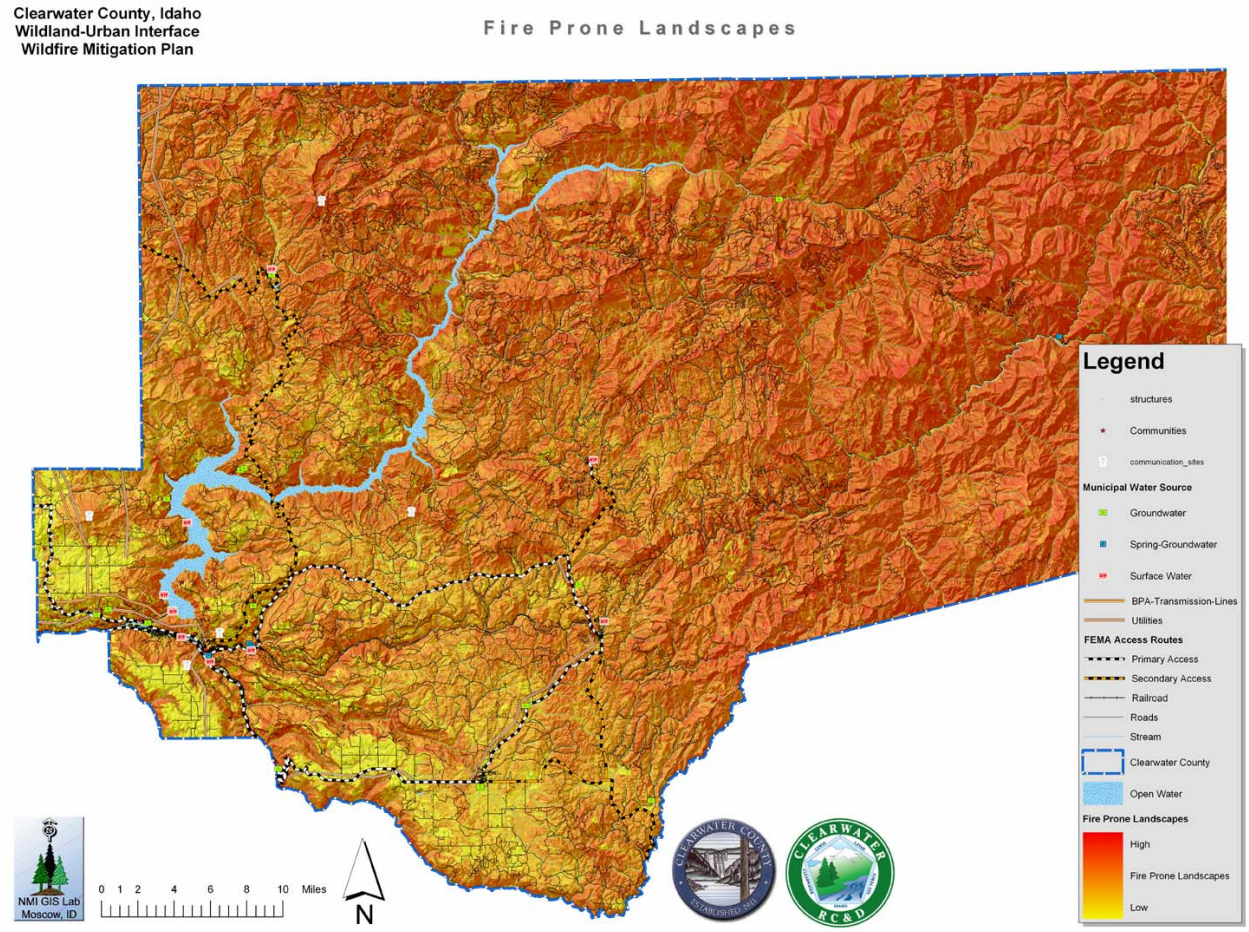
Riparian Zones: Riparian zones were derived from stream layers created during the Interior Columbia Basin Ecosystem Management Project (Quigley *et al.* 2001).

Wind Direction: Wind direction and speed data detailed by monthly averages was used in this project to better ascertain certain fire behavior characteristics common to large fire events. These data are spatially gridded Average Monthly Wind Directions in Idaho. The coverage was created from data summarized from the Interior Columbia Basin Ecosystem Management Project (Quigley *et al.* 2001).

Past Fires: Past fire extents represent those locations on the landscape that have previously burned during a wildfire. Past fire extent maps were obtained from a variety of sources for the central Idaho area including the USFS Panhandle National Forest and the Idaho Department of Lands.

Fire Prone Landscapes: Using the methodology developed by Schlosser *et al.* (2002), and refined for this project, the factors detailed above were used to assess the potential for the landscape to burn during the fire season in the case of fire ignition. Specifically, the entire region was evaluated at a resolution of 10 meters (meaning each pixel on the screen represented a 10 meter square on the ground) to determine the propensity for a particular area (pixel) to burn in the case of a wildfire. The analysis involved creating a linear regression analysis within the GIS program structure to assign a value to each significant variable, pixel-by-pixel. The analysis ranked factors from 0 (little to no risk) to 100 (extremely high risk) based on past fire occurrence. In fact, the maximum rating score for Clearwater County was 95 with a low of 23.

Figure 3.3. Fire Prone Landscapes in Clearwater County.



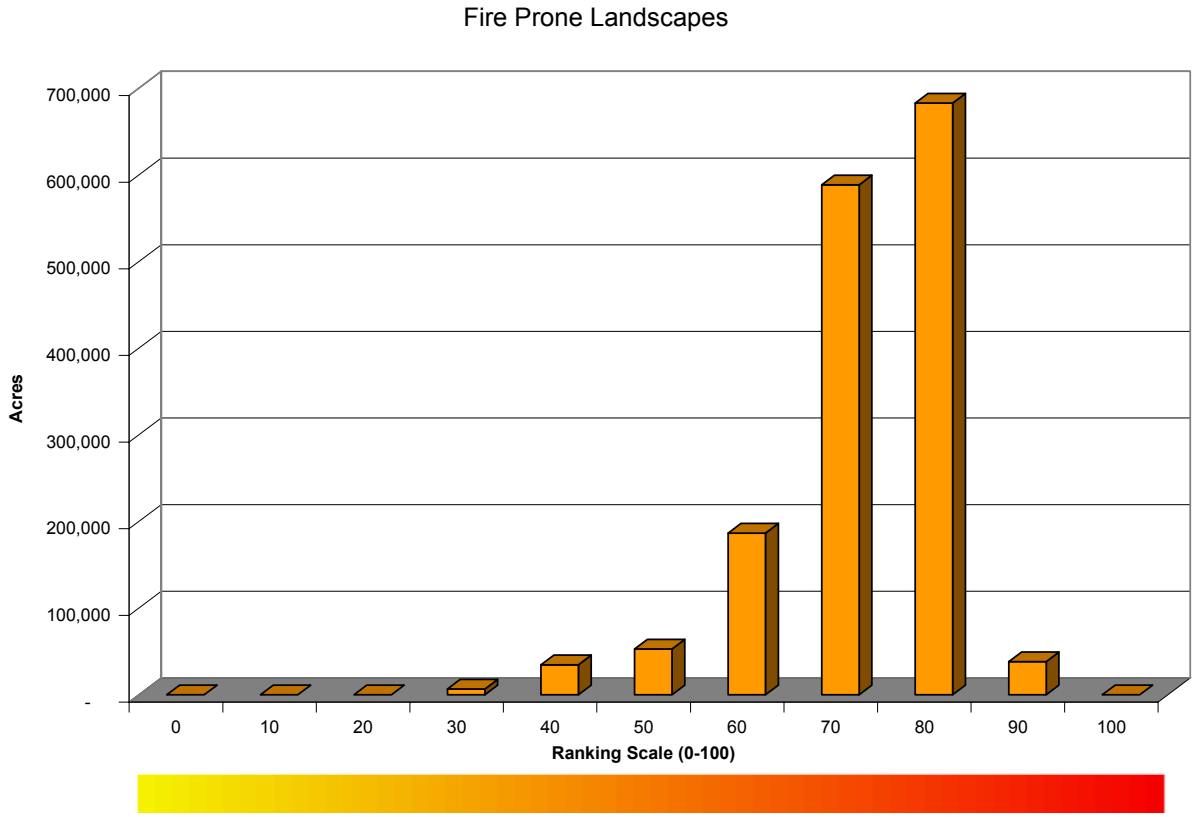
This map is presented for reference in this section of the plan. This map, and additional maps are detailed in Appendix I.

The maps depicting these risk categories display yellow as the lowest risk and red as the highest with values between a constant gradient from yellow to orange to red (Table 3.17). While large maps (16 square feet) have been provided as part of this analysis, smaller size maps are presented in Appendix I.

Table 3.17. Fire Prone Landscape rankings and associated acres in each category for Clearwater County.

Color Code	Value	Total	Percent of Total Area
	0	-	0%
	10	-	0%
	20	-	0%
	30	6,654	0%
	40	34,668	2%
	50	52,896	3%
	60	186,574	12%
	70	588,617	37%
	80	683,073	43%
	90	38,223	2%
	100	108	0%

Figure 3.4. Distribution of area by Fire Prone Landscape Class.



The risk category values developed in this analysis should be considered **ordinal data**, that is, while the values presented have a meaningful ranking, they neither have a true zero point nor scale between numbers. Rating in the “40” range is not necessarily twice as “risky” as rating in the “20” range. These category values also do not correspond to a rate of fire spread, a fuel loading indicator, or measurable potential fire intensity. Each of those scales is greatly influenced by weather, seasonal and daily variations in moisture (relative humidity), solar

radiation, and other factors. The risk rating presented here serves to identify where certain constant variables are present, aiding in identifying where fires typically spread into the largest fires across the landscape.

3.9.2 Historic Fire Regime

The US Forest Service has provided their assessment of Historic Fire Regimes for the forested areas of Clearwater County to this WUI Fire Mitigation Plan analysis. These measures of forest conditions are the standard method of analysis for the USDA Forest Service.

In the fire-adapted ecosystems of Idaho, fire is undoubtedly the dominant process in terrestrial systems that constrains vegetation patterns, habitats, and ultimately, species composition. Land managers need to understand historical fire regimes (that is, fire 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. Obviously, historical fire regimes are a critical component for characterizing the historical range of variability in the fire-adapted ecosystems of Idaho. 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.

We used a database of fire history studies in the region to develop modeling rules for predicting historical fire regimes (HFRs). Tabular fire-history data was stratified into spatial data ecoregions, potential natural vegetation types (PNVs), slope classes, and aspect classes to derive rule sets which were then modeled spatially. Expert opinion was substituted for a stratum when empirical data was not available.

Fire is the dominant disturbance process that manipulates vegetation patterns in Idaho. The HFR data were prepared to supplement other data necessary to assess integrated risks and opportunities at regional and subregional scales.

3.9.2.1 General Limitations

These data were derived using fire history data from a variety of different sources. These data were designed to characterize broad scale patterns of historical fire regimes for use in regional and subregional assessments. Any decisions based on these data should be supported with field verification, especially at scales finer than 1:50,000. Although the resolution of the HFR theme is 30 meter cell size, the expected accuracy does not warrant their use for analyses of areas smaller than about 10,000 acres (for example, assessments that typically require 1:24,000 data).

Table 3.18. Natural Historic Fire Regimes in Clearwater County, Idaho.

Natural Historic Fire Regime	Acres	Percent of Area
Non-lethal	72,660	5%

Mixed severity, short return interval	81,992	5%
Mixed severity, long return interval	633,177	40%
Mixed severity, variable return interval	1,331	0%
Stand replacement fires, short return interval	248,103	16%
Stand replacement fires, long return interval	400,697	25%
Non-forest stand replacement, short return interval	56,342	4%
Non-forest mixed severity, moderate return interval	5,146	0%
Non-forest stand replacement, moderate return interval	13,691	1%
Agriculture	30,171	2%
Rock / barren	27,281	2%
Snow / ice	8	0%
Urban	1,233	0%
Water	19,237	1%

3.9.3 Fire Regime Condition Class

The US Forest Service has provided their assessment of Fire Regime Condition Class for the forested areas of Clearwater County to this WUI Fire Mitigation Plan analysis. These measures of forest conditions are the standard method of analysis for the USDA Forest Service.

A natural fire regime is a general classification of the role fire would play across a landscape in the absence of modern human mechanical intervention, but including the influence of aboriginal burning (Agee 1993, Brown 1995). Coarse scale definitions for natural (historical) 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). The five natural (historical) fire regimes are classified based on average number of years between fires (fire frequency) combined with the severity (amount of replacement) of the fire on the dominant overstory vegetation. These five regimes include:

I – 0-35 year frequency and low (surface fires most common) to mixed severity (less than 75% of the dominant overstory vegetation replaced);

II – 0-35 year frequency and high (stand replacement) severity (greater than 75% of the dominant overstory vegetation replaced);

III – 35-100+ year frequency and mixed severity (less than 75% of the dominant overstory vegetation replaced);

IV – 35-100+ year frequency and high (stand replacement) severity (greater than 75% of the dominant overstory vegetation replaced);

V – 200+ year frequency and high (stand replacement) severity.

As scale of application becomes finer these five classes may be defined with more detail, or any one class may be split into finer classes, but the hierarchy to the coarse scale definitions should be retained.

A fire regime condition class (FRCC) is a classification of the amount of departure from the natural regime (Hann and Bunnell 2001). Coarse-scale FRCC classes have been defined and mapped by Hardy *et al.* (2001) and Schmidt *et al.* (2001) (FRCC). They include three condition classes for each fire regime. The classification is based on a relative measure describing the degree of departure from the historical natural fire regime. This departure results in changes to one (or more) of the following ecological components: vegetation characteristics (species composition, structural stages, stand age, canopy closure, and mosaic pattern); fuel

composition; fire frequency, severity, and pattern; and other associated disturbances (e.g. insect and diseased mortality, grazing, and drought). There are no wildland vegetation and fuel conditions or wildland fire situations that do not fit within one of the three classes.

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

Characteristic vegetation and fuel conditions are considered to be those that occurred within the natural (historical) fire regime. Uncharacteristic conditions are considered to be those that did not occur within the natural (historical) fire regime, such as invasive species (e.g. weeds, insects, and diseases), "high graded" forest composition and structure (e.g. large trees removed in a frequent surface fire regime), or repeated annual grazing that maintains grassy fuels across relatively large areas at levels that will not carry a surface fire. Determination of the amount of departure is based on comparison of a composite measure of fire regime attributes (vegetation characteristics; fuel composition; fire frequency, severity and pattern) to the central tendency of the natural (historical) fire regime. The amount of departure is then classified to determine the fire regime condition class. A simplified description of the fire regime condition classes and associated potential risks are presented in Table 3.19. Maps depicting Fire Regime and Condition Class are presented in Appendix I.

Table 3.19. Fire Regime Condition Class Definitions.

Fire Regime Condition Class	Description	Potential Risks
Condition Class 1	Within the natural (historical) range of variability of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances.	Fire behavior, effects, and other associated disturbances are similar to those that occurred prior to fire exclusion (suppression) and other types of management that do not mimic the natural fire regime and associated vegetation and fuel characteristics. Composition and structure of vegetation and fuels are similar to the natural (historical) regime. Risk of loss of key ecosystem components (e.g. native species, large trees, and soil) is low.
Condition Class 2	Moderate departure from the natural (historical) regime of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances.	Fire behavior, effects, and other associated disturbances are moderately departed (more or less severe). Composition and structure of vegetation and fuel are moderately altered. Uncharacteristic conditions range from low to moderate. Risk of loss of key ecosystem components is moderate.
Condition Class 3	High departure from the natural (historical) regime of vegetation characteristics; fuel	Fire behavior, effects, and other associated disturbances are highly departed (more or less severe).

	composition; fire frequency, severity and pattern; and other associated disturbances.	Composition and structure of vegetation and fuel are highly altered. Uncharacteristic conditions range from moderate to high. Risk of loss of key ecosystem components is high.

An analysis of Fire Regime Condition Class in Clearwater County shows that approximately 47% of the County is in Condition Class 1 (low departure), just about 26% is in Condition Class 2 (moderate departure), with 22% in Condition Class 3 (Table 3.20).

Table 3.20. FRCC by area in Clearwater County.

	Condition Class	Acres	Percent of Area
1	Low departure	740,008	47%
2	Moderate departure	416,509	26%
3	High departure	356,537	22%
4	Agriculture	30,171	2%
8	Rock / barren	27,281	2%
9	Snow / ice	8	0%
10	Urban	1,233	0%
11	Water	19,237	1%
13	No information	84	0%

See Appendix I for maps of Fire Regime and Conditions Class.

3.9.4 Predicted Fire Severity

Current fire severity (CFS) is an estimate of the relative fire severity if a fire were to burn a site under its current state of vegetation. In other words, how much of the overstory would be removed if a fire were to burn today. The US Forest Service (Flathead National Forest) did not attempt to model absolute values of fire severity, as there are too many variables that influence fire effects at any given time (for example, temperature, humidity, fuel moisture, slope, wind speed, wind direction).

The characterization of likely fire severity was based upon historic fire regimes, potential natural vegetation, cover type, size class, and canopy cover with respect to slope and aspect. Each cover type was assigned a qualitative rating of fire tolerance based upon likely species composition and the relative resistance of each species to fire. The US Forest Service researchers defined 3 broad classes of fire tolerance: high tolerance (<20 percent post-fire mortality); moderate tolerance (20 to 80 percent mortality); and low tolerance (>80 percent mortality). We would expect that fires would be less severe within cover types comprised by species that have a high tolerance to fire (for example, western larch and ponderosa pine). Conversely, fires would likely burn more severely within cover types comprised by species having a low tolerance to fire (for example grand fir, subalpine fir). Data assignments were based upon our collective experience in the field, as well as stand structure characteristics reported in the fire-history literature. For example, if they estimated that a fire would remove less than 20 percent of the overstory, the current fire severity would be assigned to the non-lethal class (that is, NL). However, if they expected fire to remove more than 80 percent of the overstory, the current fire severity was assigned to a stand replacement class (that is, SR or SR3).

3.9.4.1 Purpose

Fire is a dominant disturbance process in the Northern Rockies. The likely effect of fire upon vegetation (i.e., current fire severity) is critical information for understanding the subsequent fire effects upon wildlife habitats, water quality, and the timing of runoff. There have been many reports of how fire suppression and timber harvest has affected vegetation patterns, fuels, and fire behavior. The US Forest Service researchers from the Flathead National Forest, derived the current fire severity theme explicitly to compare with the historical fire regime theme to evaluate how fire severity has changed since Euro-American settlement (that is, to derive fire-regime condition class).

3.9.4.2 General Limitations

These data were designed to characterize broad scale patterns of estimated fire severity for use in regional and subregional assessments. Any decisions based on these data should be supported with field verification, especially at scales finer than 1:100,000. Although the resolution of the CFS theme is 90 meter cell size, the expected accuracy does not warrant their use for analyses of areas smaller than about 10,000 acres (for example, assessments that typically require 1:24,000 data).

Current fire severity rule-set was developed for an "average burn day" for the specific vegetation types in our area. Any user of these data should familiarize themselves with the rule sets to better understand our estimate of current fire severity.

Table 3.21. Predicted Fire Severity by area in Clearwater County.

	Predicted Fire Severity	Acres	Percent of Area
1	Non-lethal fires	224	0%
2	Mixed severity, short	3,885	0%
3	Mixed severity, long	588,265	37%
4	Mixed severity, variable	1,331	0%
5	Stand replacement	844,177	53%
6	Non-forest std replc, shr	56,334	4%
7	Non-forest mx svrty, mod	5,146	0%
8	Non-forest std replc, mod	13,691	1%
10	Agriculture	30,171	2%
11	Rock / barren	27,281	2%
12	Snow / ice	8	0%
13	Urban	1,233	0%
14	Water	19,237	1%
15	No information	86	0%

See Appendix I for a map of Predicted Fire Severity.

3.9.5 On-Site Evaluations

Fire control and evaluation specialists as well as hazard mitigation consultants evaluated the communities of Clearwater County to determine, first-hand, the extent of risk and characteristics of hazardous fuels in the Wildland-Urban Interface. The on-site evaluations have been summarized in written narratives and are accompanied by photographs taken during the site

visits. These evaluations included the estimation of fuel models as established by Anderson (1982). These fuel models are described in the following section of this document.

In addition, field personnel completed FEMA's Fire Hazard Severity Forms and Fire Hazard Rating Criteria Worksheets. These worksheets and standardized rating criteria allow comparisons to be made between all of the counties in the country using the same benchmarks. The FEMA rating forms are summarized for each community in Appendix II.

3.9.6 Fuel Model Descriptions

Anderson (1982) developed a categorical guide for determining fuel models to facilitate the linkage between fuels and fire behavior. These 13 fuel models, grouped into 4 basic groups: grass, chaparral and shrub, timber, and slash, provide the basis for communicating fuel conditions and evaluating fire risk. There are a number of ways to estimate fuel models in forest and rangeland conditions. The field personnel from Northwest Management, Inc., that evaluated communities and other areas of Clearwater County have all been intricately involved in wildland fire fighting and the incident command system. They made ocular estimates of fuel models they observed. In an intense evaluation, actual sampling would have been employed to determine fuel models and fuel loading. The estimations presented in this document (Chapter 3) are estimates based on observations to better understand the conditions observed.

Fuel Model 0- This type consists of non-flammable sites, such as exposed mineral soil and rock outcrops. Other lands are also identified in this type.

3.9.6.1 Grass Group

3.9.6.1.1 Fire Behavior Fuel Model 1

Fire spread is governed by the fine, very porous, and continuous herbaceous fuels that have cured or are nearly cured. Fires are surface fires that move rapidly through the cured grass and associated material. Very little shrub or timber is present, generally less than one-third of the area.

Grasslands and savanna are represented along with stubble, grass-tundra, and grass-shrub combinations that met the above area constraint. Annual and perennial grasses are included in this fuel model.

This fuel model correlates to 1978 NFDRS fuel models A, L, and S.

Fuel model values for estimating fire behavior

Total fuel load, < 3-inch dead and alive, tons/acre 0.74
Dead fuel load, ¼-inch, tons/acre 0.74
Live fuel load, foliage, tons/acre 0
Fuel bed depth, feet 1.0

3.9.6.1.2 Fire Behavior Fuel Model 2

Fire is spread primarily through the fine herbaceous fuels, either curing or dead. These are surface fires where the herbaceous material, in addition to litter and dead-down stemwood from the open shrub or timber overstory, contribute to the fire intensity. Open shrub lands and pine stands or scrub oak stands that cover one-third to two-thirds of the area may generally fit this model; such stands may include clumps of fuels that generate higher intensities an that may produce firebrands. Some pinyon-juniper may be in this model.

This fuel model correlates to 1978 NFDRS fuel models C and T.

Fuel model values for estimating fire behavior

Total fuel load, < 3-inch dead and alive, tons/acre 4.0
Dead fuel load, ¼-inch, tons/acre 2.0
Live fuel load, foliage, tons/acre 0.5
Fuel bed depth, feet 1.0

3.9.6.1.3 Fire Behavior Fuel Model 3

Fires in this fuel are the most intense of the grass group and display high rates of spread under the influence of wind. Wind may drive fire into the upper heights of the grass and across standing water. Stands are tall, averaging about 3 feet (1 m), but considerable variation may occur. Approximately one-third or more of the stand is considered dead or cured and maintains the fire. Wild or cultivated grains that have not been harvested can be considered similar to tall prairie and marshland grasses.

This fuel correlates to 1978 NFDRS fuel model N.

Fuel model values for estimating fire behavior

Total fuel load, < 3-inch dead and live, tons/acre 3.0
Dead fuel load, ¼-inch, tons/acre 3.0
Live fuel load, foliage tons/acre 0
Fuel bed depth, feet 2.5

3.9.6.2 Shrub Group

3.9.6.2.1 Fire Behavior Fuel Model 4

Fire intensity and fast-spreading fires involve the foliage and live and dead fine woody material in the crowns of a nearly continuous secondary overstory. Stands of mature shrubs, 6 or more feet tall, such as California mixed chaparral, the high pocosin along the east coast, the pinebarrens of New Jersey, or the closed jack pine stands of the north-central States are typical candidates. Besides flammable foliage, dead woody material in the stands significantly contributes to the fire intensity. Height of stand qualifying for this model depends on local conditions. A deep litter layer may also hamper suppression efforts.

This fuel model represents 1978 NFDRS fuel models B and O; fire behavior estimates are more severe than obtained by Models B or O.

Fuel model values for estimating fire behavior

Total fuel load, <3-inch dead and live, tons/acre 13.0
Dead fuel load, ¼-inch, tons/acre 5.0
Live fuel load, foliage, tons/acre 5.0
Fuel bed depth, feet 6.0

3.9.6.2.2 Fire Behavior Fuel Model 5

Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs and the grasses or forbs in the understory. The fires are generally not very intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material. Usually shrubs are short and almost totally cover the area. Young, green

stands with no dead wood would qualify: laurel, vine maple, alder, or even chaparral, manzanita, or chamise.

No 1978 NFDRS fuel model is represented, but model 5 can be considered as second choice for NFDRS model D or as third choice for NFDRS model T. Young green stands may be up to 6 feet (2m) high but have poor burning properties because of live vegetation.

Fuel model values for estimating fire behavior

Total fuel load, <3-inch dead and live, tons/acre 3.5
Dead fuel load, ¼-inch, tons/acre 1.0
Live fuel load, foliage, tons/acre 2.0
Fuel bed depth, feet 2.0

3.9.6.2.3 Fire Behavior Fuel Model 6

Fires carry through the shrub layer where the foliage is more flammable than fuel model 5, but this requires moderate winds, greater than 8 mi/h (13 km/h) at mid-flame height. Fire will drop to the ground at low wind speeds or at openings in the stand. The shrubs are older, but not as tall as shrub types of model 4, nor do they contain as much fuel as model 4. A broad range of shrub conditions is covered by this model. Fuel situations to be considered include intermediate stands of chamise, chaparral, oak brush, low pocosin, Alaskan spruce taiga, and shrub tundra. Even hardwood slash that has cured can be considered. Pinyon-juniper shrublands may be represented but may over-predict rate of spread except at high winds, like 20 mi/h (32 km/h) at the 20-foot level.

The 1978 NFDRS fuel models F and Q are represented by this fuel model. It can be considered a second choice for models T and D and a third choice for model S.

Fuel model values for estimating fire behavior

Total fuel load, <3-inch dead and live, tons/acres..... 6.0
Dead fuel load, 1/4 –inch, tons/acre 1.5
Live fuel load, foliage, tons/acre 0
Fuel bed depth, feet 2.5

3.9.6.2.4 Fire Behavior Fuel Model 7

Fires burn through the surface and shrub strata with equal ease and can occur at higher dead fuel moisture contents because of the flammability of live foliage and other live material. Stands of shrubs are generally between 2 and 6 feet (0.6 and 1.8 m(high. Palmetto-gallberry understory-pine overstory sites are typical and low pocosins may be represented. Black spruce-shrub combinations in Alaska may also be represented.

This fuel model correlates with 1978 NFDRS model D and can be a second choice for model Q.

Fuel model values for estimating fire behavior

Total fuel load, <3-inch dead and live, tons/acre 4.9
Dead fuel load, ¼-inch, tons/acre 1.1
Live fuel load, foliage, tons/acre 0.4
Fuel bed depth, feet 2.5

3.9.6.3 Timber Group

3.9.6.3.1 Fire Behavior Fuel Model 8

Slow-burning ground fires with low flame lengths are generally the case, although the fire may encounter an occasional “jackpot” or heavy fuel concentration that can flare up. Only under severe weather conditions involving high temperatures, low humilities, and high winds do the fuels pose fire hazards. Closed canopy stands of short-needle conifers or hardwoods that have leafed out support fire in the compact litter layer. This layer is mainly needles, leaves, and occasionally twigs because little undergrowth is present in the stand. Representative conifer types are white pine, and lodgepole pine, spruce, fire and larch

This model can be used for 1978 NFDRS fuel models H and R.

Fuel model values for estimating fire behavior

Total fuel load, <3-inch, dead and live, tons/acre 5.0
Dead fuel load, ¼-inch, tons/acre 1.5
Live fuel load, foliage, tons/acre 0
Fuel bed depth, feet 0.2

3.9.6.3.2 Fire Behavior Fuel Model 9

Fires run through the surface litter faster than model 8 and have longer flame height. Both long-needle conifer stands and hardwood stands, especially the oak-hickory types, are typical. Fall fires in hardwoods are predictable, but high winds will actually cause higher rates of spread than predicted because of spotting caused by rolling and blowing leaves. Closed stands of long-needled pine like ponderosa, Jeffrey, and red pines, or southern pine plantations are grouped in this model. Concentrations of dead-down woody material will contribute to possible torching out of trees, spotting, and crowning.

NFDRS fuel models E, P, and U are represented by this model. It is also a second choice for models C and S.

Fuel model values for estimating fire behavior

Total fuel load, <3-inch dead and live, tons/acre 3.5
Dead fuel load, ¼-inch, tons/acre 2.9
Live fuel load, foliage, tons/acre 0
Fuel bed depth, feet 0.2

3.9.6.3.3 Fire Behavior Fuel Model 10

The fires burn in the surface and ground fuels with greater fire intensity than the other timber little models. Dead-down fuels include greater quantities of 3-inch (7.6 cm) or larger limbwood, resulting from overmaturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting, and torching of individual trees are more frequent in this fuel situation, leading to potential fire control difficulties. Any forest type may be considered if heavy down material is present; examples are insect- or disease-ridden stands, wind-thrown stands, overmature situations with dead fall, and aged light thinning or partial-cut slash.

The 1978 NFDRS fuel model G is represented.

Fuel model values for estimating fire behavior

Total fuel load, < 3-inch dead and live, tons/acre 12.0
Dead fuel load, ¼-inch, tons/acre 3.0
Live fuel load, foliage, tons/acre 2.0
Fuel bed depth, feet 1.0

The fire intensities and spread rates of these timber litter fuel models are indicated by the following values when the dead fuel moisture content is 8 percent, live fuel moisture is 100 percent, and the effective windspeed at mid-flame height is 5 mi/h (8 km/h):

Table 3.22. Comparative Fire Intensities and Rates of Spread in Timber Fuel Models.

Fuel Model	Rate of Spread Chains/hour	Flame length Feet
8	1.6	1.0
9	7.5	2.6
10	7.9	4.8

Fires such as above in model 10 are at the upper limit of control by direct attack. More wind or drier conditions could lead to an escaped fire.

3.9.6.4 Logging Slash Group

3.9.6.4.1 Fire Behavior Fuel Model 11

Fires are fairly active in the slash and herbaceous material intermixed with the slash. The spacing of the rather light fuel load, shading from overstory, or the aging of the fine fuels can contribute to limiting the fire potential. Light partial cuts or thinning operations in mixed conifer stands, hardwood stands, and southern pine harvests are considered. Clearcut operations generally produce more slash than represented here. The less-than-3-inch (7.6-cm) material load is less than 12 tons per acre (5.4 t/ha). The greater-than-3-inch (7.6-cm) is represented by not more than 10 pieces, 4 inches (10.2 cm) in diameter, along a 50-foot (15 m) transect.

The 1978 NFDRS fuel model K is represented by this model.

Fuel model values for estimating fire behavior

Total fuel load, < 3-inch, dead and live, tons/acre 11.5
Dead fuel load, ¼-inch, tons/acre 1.5
Live fuel load, foliage, tons/acre 0
Fuel bed depth, feet 1.0

3.9.6.4.2 Fire Behavior Fuel Model 12

Rapidly spreading fires with high intensities capable of generating firebrands can occur. When fire starts, it is generally sustained until a fuel break or change in fuels is encountered. The visual impression is dominated by slash and much of it is less than 3 inches (7.6 cm) in diameter. The fuels total less than 35 tons per acres (15.6 t/ha) and seem well distributed. Heavily thinned conifer stands, clearcuts, and medium or heavy partial cuts are represented. The material larger than 3 inches (7.6 cm) is represented by encountering 11 pieces, 6 inches (15.3 cm) in diameter, along a 50-foot (15-m) transect.

This model depicts 1978 NFDRS model J and may overrate slash areas when the needles have dropped and the limbwood has settled. However, in areas where limbwood breakup and general weathering have started, the fire potential can increase.

Fuel model values fore estimating fire behavior

Total fuel load, < 3-inch, dead and live, tons/acre 34.6
Dead fuel load, ¼-inch, tons/acre 4.0
Live fuel load, foliage, tons/acre 0
Fuel bed depth, feet 2.3

3.9.6.4.3 Fire Behavior Fuel Model 13

Fire is generally carried across the area by a continuous layer of slash. Large quantities of material larger than 3 inches (7.6 cm) are present. Fires spread quickly through the fine fuels and intensity builds up more slowly as the large fuels start burning. Active flaming is sustained for long periods and a wide variety of firebrands can be generated. These contribute to spotting problems as the weather conditions become more severe. Clearcuts and heavy partial-cuts in mature and overmature stands are depicted where the slash load is dominated by the greater-tayhn-3-inch (7.6-cm) diameter material. The total load may exceed 200 tons per acre (89.2 t/ha) but fuel less than 3 inches (7.6 cm_ is generally only 10 percent of the total load. Situations where the slash still has "red' needles attached but the total load is lighter, more like model 12, can be represented because of the earlier high intensity and quicker area involvement.

The 1978 NFDRS fuel model I is represented. Areas most commonly fitting his model are old-growth stands west of the Cascade and Sierra Nevada Mountains. More efficient utilization standards are decreasing the amount of large material left in the field.

Fuel model values for estimating fire behavior

Total fuel load, < 3-inch dead and live, tons/acre 58.1
Dead fuel load, ¼-inch, tons/acre 7.0
Live fuel load, foliage, tons/acre 0
Fuel bed depth, feet 3.0

For other slash situations:

Hardwood slash .....Model 6
Heavy "red" slash.....Model 4
Overgrown slash .....Model 10
Southern pine clearcut slash.....Model 12

The comparative rates of spread and flame lengths for the slash models at 8 percent dead fuel moisture content and a 5 mi/h (8 km/h) mid-flame wind are presented in Table 3.23.

Table 3.23. Comparative Fire Intensities and Rates of Spread in Slash Fuel Models.

Fuel Model	Rate of Spread Chains/hour	Flame length Feet
11	6.0	3.5
12	13.0	8.0
13	13.5	10.5

3.10 Wildland-Urban Interface

3.10.1 People and Structures

A key component in meeting the underlying need is the protection and treatment of fire hazard 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). These areas encompass not only the interface (areas immediately adjacent to urban development), but also the continuous slopes and fuels that lead directly to a risk to urban developments. Reducing the fire hazard in the wildland urban interface requires the efforts of federal, state, local agencies, and private individuals (Norton 2002). "The role of [most] federal agencies in the wildland urban interface includes wildland fire fighting, 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). Property owners share a responsibility to protect their residences and businesses and minimize fire danger by creating defensible areas around them and taking other measures to minimize the fire risks to their structures (USFS 2001). With treatment, a wildland-urban interface can provide firefighters a defensible area from which to suppress wildland fires or defend communities. In addition, a wildland urban interface that is properly thinned 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 defensible space, landowners would protect the wildland-urban interface, the biological resources of the management area, and adjacent property owners by:

- minimizing the potential of high-severity ground or crown fires entering or leaving the area;
- reducing the potential for firebrands (embers carried by the wind in front of the wildfire) impacting the WUI. Research indicates that flying sparks and embers (firebrands) from a crown fire can ignite additional wildfires as far as 1¼ miles away during periods of extreme fire weather and fire behavior (McCoy *et al.* 2001 as cited in Norton 2002);
- improving defensible space in the immediate areas for suppression efforts in the event of wildland fire.

Four wildland/urban conditions have been identified for use in the wildland urban interface (Norton 2002). These include the Interface Condition, Intermix Condition, Occluded Condition, and Rural 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;
- **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; and

- **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.

The location of structures in Clearwater County have been mapped and are presented on a variety of maps in this analysis document; specifically in Appendix I. The location of all structures was determined by examining two sets of remotely sensed images. The more detailed information was garnered from digital ortho-photos at a resolution of 1 meter (from 1998). For those areas not covered by the 1 meter DOQQ images, SPOT satellite imagery at a resolution of 10 meters was used (from 2002). These records were augmented with data collected on hand-held GPS receivers to record the location of structures, especially in areas where new housing developments were seen.

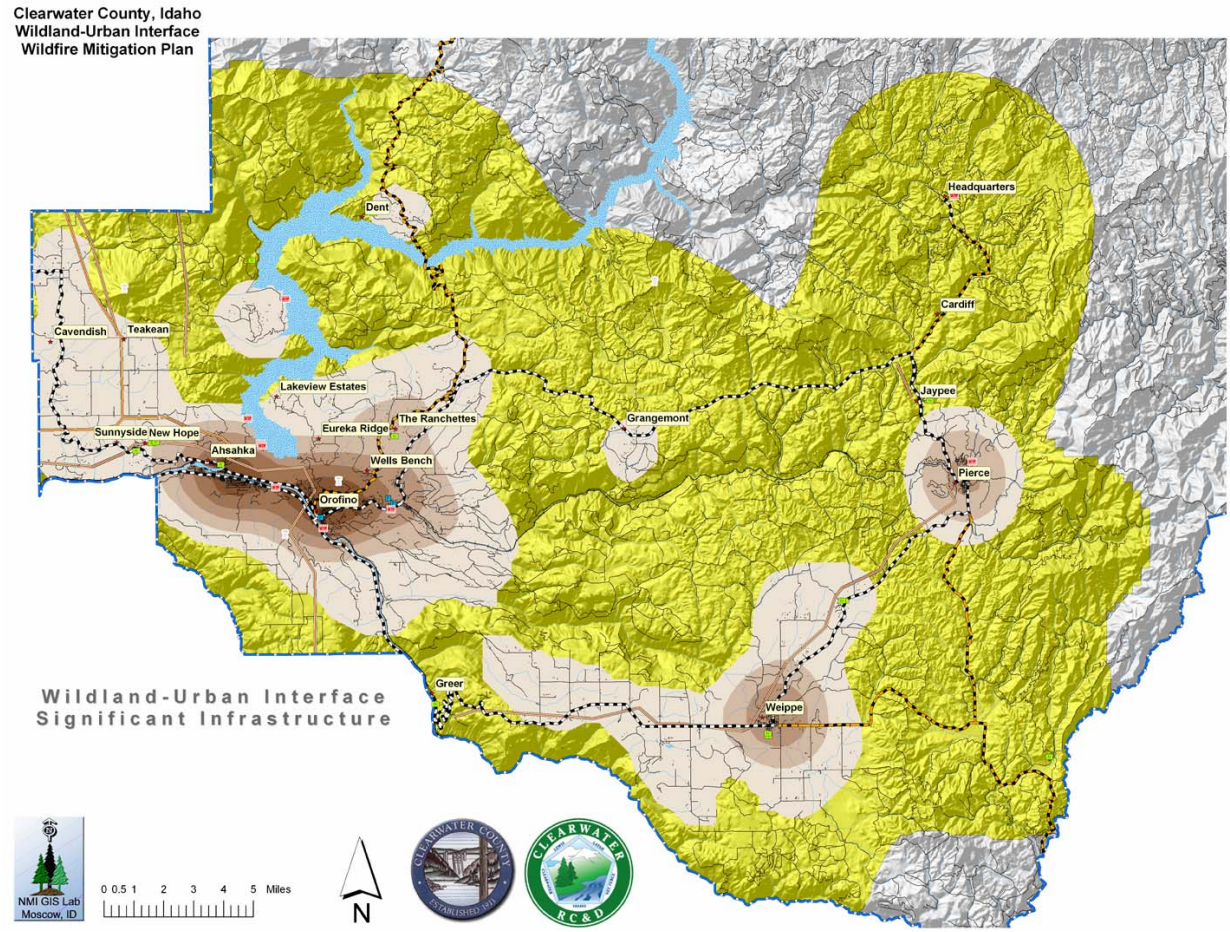
All structures are represented by a “dot” on the map. No differentiation is made between a garage and a home, or a business and a storage building. The density of structures and their specific locations in this management area are critical in defining where the potential exists for casualty loss in the event of a wildfire in the region.

By evaluating this structure density, we can define WUI areas on maps by using mathematical formulae and population density indexes to define the WUI based on where structures are located. The resulting population density indexes create concentric circles showing high density areas of Interface and Intermix WUI, as well as Rural WUI (as defined by Secretary Norton of the Department of Interior). 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.

It is critical to understand that in the protection of people, structures, infrastructure, and unique ecosystems, this portion of the analysis only serves to identify structures and by some extension the people that inhabit them. It does not define the location of infrastructure and unique ecosystems. Other analysis tools will be used for those items.

The WUI interface areas as defined here are presented in map form in Appendix I.

Figure 3.5. Wildland-Urban Interface of Clearwater County.



This map is presented for reference in this section of the plan. This map, and additional maps are detailed in Appendix I.

3.10.2 Infrastructure

Clearwater County has both significant infrastructure and unique ecosystems within its boundaries. Of note for this WUI Wildfire Mitigation Plan is the existence of highway routes (eg., U.S. Highway 12 and State Highways 7, 8, and 11), and the presence of power lines supplying surrounding counties. The County is also served by a freight-only (no passenger service) railroad, the First Subdivision of the Camas Prairie Railroad from Lewiston to Kamiah. These resources will be considered in the protection of infrastructural resources for Clearwater County and to the larger extent of this region, and the rest of Idaho.

Power lines have been mapped and are presented in Appendix I. Protection of these lines from loss during a wildfire is paramount in as much as the electrical power they provide serves not only the communities of Clearwater County but of surrounding counties. The protection of these lines allows for community sustainability, support of the economic viability of Clearwater County, and the protection of people who rely on that power. Fuels mitigation under power lines has received considerable attention in forested ecosystems as timber is thinned and heavy accumulations of brush are managed. This practice should be mandated into the future. However, the importance of management of rangeland ecosystems under power lines should

not be overlooked. Brush intermixed with grasses and other species, during extreme fire weather events, coupled with steep slopes can produce considerable heat and particulate matter. When this occurs under power lines, the result can be arching between lines and even failure of the electrical media itself. Fuel mitigation treatments in high risk areas, especially where multiple lines are co-located, will be recommended for treatments.

3.10.3 Ecosystems

Clearwater 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. A century of wildland fire suppression coupled with past land-use practices (primarily timber harvesting) has altered plant community succession and has resulted in dramatic shifts in the fire regimes and species composition. As a result, forests and rangelands in Clearwater County have become more susceptible to large-scale, high intensity fires posing a threat to life, property, and natural resources including wildlife and special status plant populations and habitats. 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).

3.11 Soils

Our soil resource is an extremely important component for maintaining a healthy ecosystem and economy. Fire can play an intricate role in this process, if it occurs under normal conditions of light fuels associated with low intensity underburns. However, the buildup of fuels and consequent high severity fires can cause soils to become water repellent (hydrophobic), and thus greatly increases the potential for overland flow during intense rains. Soil in degraded conditions does not function normally, and will not be able to sustain water quality, water yield, or plant communities that have normal structure, composition, and function. Fire is also strongly correlated with the carbon-nutrient cycles and the hydrologic cycle. Fire frequency, extent, and severity are controlled to a large degree by the availability of carbon, as well as the moisture regime (Quigley & Arbelbide 1997).

Low to moderate intensity fires would be not be expected to damage soil characteristics in the region, especially if the hotter fires in this range were limited to small extents associated with jackpots of cured fuels. Hot fires providing heat to the Bt horizon substrate depth have the potential to create hydrophobic characteristics in that layer. This can result in increased overland flow during heavy rains, following wildfire events, potentially leading to mass wasting. Rocky and gravelly characteristics in the A horizon layer would be expected to be displaced, while the silty and loamy fines in these soils may experience an erosion and displacement potential. These soils will experience the greatest potential impacts resulting from hot fires that burn for prolonged periods (especially on steep slopes).

The National Resource Conservation Service (NRCS) has mapped a large portion of Clearwater County in detail. Please refer the Clearwater County NRCS Soil Survey Report to view each soil unit in the County and the associated characteristics relating to the effects of wildland fire.

3.11.1 Fire Mitigation Practices to Maintain Soil Processes

Firelines constructed by hand or with the use of machinery will have varying impacts, depending upon construction techniques. If only the surface litter is removed in the fireline construction, minor increases to soil erosion may occur. If trenches are dug which channelize runoff down

steep slopes, heavy rilling or gullying could occur depending upon rock content of surface layers exposed. Jackpot burning and, to a greater extent, pile burning would result in greater soil heating and localized impacts. Loss of soil carbon, nitrogen, sulphur, phosphorus, potassium, and soil organisms would be high in the soil surface layer. Soil physical structure could be altered thereby creating hydrophobic soils, especially where clay content is moderate or high.

Indirect effects of prescribed burning to slope stability are highly variable in the soil types found in Clearwater County. Vegetation structure, including root strength after over burning, is maintained from three to fifteen years following low to moderate intensity burns and therefore soil saturation potential is not greatly altered. Re-vegetation of burned areas within this time frame will be a critical component to maintaining soil resources and pre-empting noxious weeds and invasive species from occupying the site. Locale experiencing high intensity burns will need to be evaluated immediately for mechanical erosion control followed by re-vegetation efforts. Holding soils in place will be a difficult challenge in many locations, especially on moderate to steep slopes.

Where heavy grazing has occurred in the past, there is also a possibility that soil productivity has been reduced. This is especially true in riparian areas where animal concentrations have historically been the greatest. These areas generally have easily compacted soils, and are where cattle tend to linger if not managed well. Mining also has significant effects on soil quality through soil compaction and mass displacement. Grazing across Clearwater County was observed to be maintained in a sustainable manner without the overgrazing found in other areas of the region.

Severe fires in the past have consumed surface organics and volatilized nitrogen into the air. On some sites, however, these severe burns are a natural process, and therefore the inherent soil productivity may not be reduced. On other sites, however, where low intensity underburns typically occurred, high intensity wildland fires have consumed amounts of soil organics in excess of the historic patterns. Furthermore, excessive soil heating in these intense fires likely resulted in creation of water repellent soils, and therefore increased overland flow and soil erosion. In these cases, it can be assumed that wildland fires have reduced long-term soil productivity. Soil compaction damage typically is persistent in the area; several decades of rest from further compactive forces are needed until adequate soil recovery occurs. Loss of organics due to displacement and severe fire also requires decades to recuperate. This slow recovery from soil damage makes cumulative effects to soil productivity and soil hydrologic function a major concern.

To avoid potential impacts, wherever possible firelines should be located outside of highly erosive areas, steep slopes, intermittent streams, and riparian and other sensitive areas. Following prescribed fire or fire suppression activities, firelines should be rehabilitated.

3.12 Hydrology

The Idaho Water Resource Board is charged with the development of the Idaho Comprehensive 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 (IDEQ 2003). The Idaho Department of Water Resources has prepared General Lithologies of the Major Ground Water Flow Systems in Idaho.

The state may assign or designate beneficial uses for particular Idaho water bodies to support. These beneficial uses are identified in sections 3.35 and 100.01 - .05 of the Idaho water quality standards (WQS). These uses include:

- **Aquatic Life Support:** cold water biota, seasonal cold water biota, warm water biota, and salmonid spawning;
- **Contact Recreation:** primary (swimming) and secondary (boating);
- **Water Supply:** domestic, agricultural, and industrial; and
- **Wildlife Habitat and Aesthetics**.

While there may be competing beneficial uses in streams, federal law requires DEQ to protect the most sensitive of these beneficial uses (IDEQ 2003).

The geology and soils of this region lead to rapid to moderate moisture infiltration. Slopes are moderate to steep, however, headwater characteristics of the watersheds in the south end of the county lead to a high degree of infiltration as opposed to a propensity for overland flow. Thus sediment delivery efficiency of first and third order streams is fairly low. The bedrock is typically well fractured and moderately soft. This fracturing allows excessive soil moisture to rapidly infiltrate into the rock and thus surface runoff is rare. Natural mass stability hazards associated with slides are low. Natural sediment yields are low for these watersheds. However, disrupted vegetation patterns from logging (soil compaction) and wildland fire (especially hot fires that increase soil hydrophobic characteristics), can lead to increased surface runoff and debris flow to stream channels.

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.

Water supplies in Clearwater County are of concern due to the potential for supplies to be cut off from power during a hazard event. In the case of watersheds which collect water for processing and supply to households, the potential for a watershed to be burned can cause the supply to be decreased or unusable for a period of time while increased sediment, ash in the water flow, or other restrictions apply. Table 3.24 lists all of the municipal water resources currently on record with the Idaho Department of Water Resources.

Table 3.24. Municipal water supplies in Clearwater County.

Name	System Type	Source Name	Source Type	LATITUDE	LONGITUDE	Population Served
AHSAHKA WATER AND SEWER DIST	Community	WELL 1	Groundwater	46.50539	-116.32391	85
CORPS BIG EDDY MARINA	Non-community Transient	DWORSHAK POOL	Surface Water	46.52767	-116.30477	25
CORPS DENT CAMPGROUND	Non-community Transient	ROADWAY WELL	Groundwater	46.62650	-116.21488	100
CORPS DENT CAMPGROUND	Non-community Transient	LAGOON WELL	Groundwater	46.62808	-116.21076	100
CORPS DWORSHAK PWR HSE VIEW PT	Non-community Non-transient	DWORSHAK POOL	Surface Water	46.51539	-116.29594	50
CORPS FREEMAN CREEK	Non-community	DWORSHAK POOL	Surface Water	46.58532	-116.27734	100

Table 3.24. Municipal water supplies in Clearwater County.

Name	System Type	Source Name	Source Type	LATITUDE	LONGITUDE	Population Served
CAMPGROUND	Transient					
ELK RIVER CITY OF	Community	6" WELL N	Groundwater	46.78241	-116.17625	165
ELK RIVER CITY OF	Community	8" WELL S	Groundwater	46.78241	-116.17625	165
GREER TAVERN AND CAFE	Non-community Transient	BN RR WELL	Groundwater	46.38810	-116.17473	30
KONKOLVILLE	Community	HILLSIDE SP-SM	Spring-Groundwater	46.48826	-116.20663	150
KONKOLVILLE	Community	HILLSIDE SPRING	Spring-Groundwater	46.48581	-116.20294	150
KONKOLVILLE	Community	OROFINO CREEK	Surface Water	46.48289	-116.20461	150
NEW HOPE SUBD	Community	WELL #2 DEEPEND	Groundwater	46.51594	-116.37223	65
NEW HOPE SUBD	Community	WELL #5 NEW	Groundwater	46.51641	-116.36954	65
OROFINO CITY OF	Community	CLEARWATER R	Surface Water	46.47400	-116.25228	1,609
OROFINO GOLF COURSE	Non-community Transient	SPRING	Spring-Groundwater	46.47917	-116.25417	150
OTHER			Surface Water			UNK
OTHER			Surface Water			UNK
PIERCE CITY OF	Community	CANNEL CR	Surface Water	46.50247	-115.79560	790
POTLATCH CORP JAYPE	Non-community Non-transient	NEW WELL #2	Groundwater	46.53217	-115.82455	225
RIVERSIDE INDEP WATER DIST	Community	M CLEARWATER R	Surface Water	46.49398	-116.28541	1,800
SUNNYSIDE PARK	Community	WELL #1	Groundwater	46.51234	-116.38334	30
THREE MEADOWS GROUP CAMP	Non-community Transient	WELL	Groundwater	46.60420	-116.30079	25
TIMBERLINE HIGH SCHOOL	Non-community Non-transient	WELL #1	Groundwater	46.43576	-115.88641	200
TIMBERLINE HIGH SCHOOL	Non-community Non-transient	WELL #2	Groundwater	46.43580	-115.88849	200
USFS CANYON WORK CENTER	Non-community Transient	WELL	Groundwater	46.83677	-115.58417	50

Table 3.24. Municipal water supplies in Clearwater County.

Name	System Type	Source Name	Source Type	LATITUDE	LONGITUDE	Population Served
USFS KELLY FORKS WORK CENTER CAMPGROUND	Non-community Transient	SPRING E.	Spring-Groundwater	46.72296	-115.26232	25
USFS KELLY FORKS WORK CENTER CAMPGROUND	Non-community Transient	SPRING W.	Spring-Groundwater	46.72306	-115.26244	25
USFS MUSSELL SHELL WORK CENTER	Non-community Transient	WELL	Groundwater	46.35861	-115.74465	35
USFW DWORSHAK NATIONAL FISH HATCHERY	Non-community Non-transient	DWORSHAK POOL	Surface Water	46.51431	-116.29478	25
WEIPPE CITY OF	Community	BIG WELL S. #2	Groundwater	46.37073	-115.94127	805
WEIPPE CITY OF	Community	SMALL WELL N #1	Groundwater	46.37197	-115.94173	805
WELLS BENCH WATER AND ROAD	Community	OLD WELL LOT 8	Groundwater	46.51823	-116.20155	28

3.12.1 Fire Mitigation Practices to Maintain Hydrologic Processes

The effects of wildland fire and prescribed burning on water quality are variable. The removal of the vegetative canopy will tend to reduce transpiration and increase water yield, especially during the growing season and immediately afterwards (MacDonald *et al.* 1991). Prescribed burning is used to maintain a healthy, dynamic ecosystem while meeting land management objectives. Prescribed burning objectives include reduction of natural fuels, assuring current and future habitat conditions for native plants and animals, improvement of forest health, and enhancement, protection, and maintenance of old growth and riparian areas. The majority of the burned areas are expected to receive a low intensity ground fire with some areas of moderate intensity. This may include occasional torching of single trees or larger clumps or trees and consumption of some patches of regeneration. Impacts to soil and large woody debris are expected to be minimal, given project targets. In rangeland ecosystems, prescribed fire will have variable impacts dependant on burn intensity and proximity to streams. Stream buffering (low intensity to no burn around streams) has been shown to preserve most if not all normal sediment filtering functions.

A large, stand-replacing fire could have negative effects on watershed conditions, thus affecting both fish and habitat in streams. Treatment with low to moderate intensity fire would result in a mosaic pattern of burned and unburned areas of ground level vegetation species and ground level natural fuels. Some patches of shade-tolerant, fire intolerant species may also be consumed. Prescribed burning is not designed to consume all vegetation within project areas. Each treatment will leave a mosaic of burned and unburned areas. Once the target fuels and the risk of fire carrying from one tributary to another have been reduced, hand ignition may be considered on a site-specific basis.

The effects on sediment yield vary according to the intensity of fire; degree of soil disturbance; steepness of the slope and drainage network; the size of the area burned; and the extent to which the vegetation controls the movement and storage of sediment. Fire also increases surface erosion and sediment delivery rates by removing the litter layer and organic debris that traps sediment both on slopes and in the stream channel (MacDonald *et al.* 1991). The magnitude of these effects will depend on the geomorphic sensitivity of the landscape, which is largely a function of slope steepness and parent material (Swanson 1978).

Fire can greatly increase surface erosion by temporarily creating a hydrophobic soil layer. Soils within the project area are generally at moderate risk for hydrophobic conditions due to their fine-grained textures and clay content. In addition, the relatively low burn intensity of the prescribed fires will also help prevent the formation of hydrophobic soils.

The effects of wildland fire or prescribed fire are generally considered in terms of potential short-term, negative effects and long-term benefits of fuels reduction, which will result in a decreased risk of high intensity, stand-replacing fire. Potential short-term effects to streams and fish include increased risk of landslides, mass movement and debris torrents, increases in surface sediment erosion, possible reduction in streamside vegetation resulting in changes within management areas, and possible increases in water yield depending on the amount and severity of the vegetation burned. Long-term effects include increases in nutrient delivery, possible increases in woody debris in streams, and possible increases in stream temperature if shading is significantly reduced. The design criteria described above minimizes the risk that landslides, mass movement, significant increases in surface sediment yield, and significant changes in water yield will occur.

Reduction of vegetation will mostly be limited to creeping ground fires, which will reduce understory vegetation, but will not affect mature trees or result in significant mortality to the overstory. Spring burning often results in minimal riparian vegetation burned because streamside areas have higher humidity and live plant moisture. Fall burning will more likely result in understory vegetation removal, with a possibility of some tree and large shrub mortality, especially outside of riparian zones where live plant moisture is less.

Riparian buffer strips will be maintained, thereby preserving canopy cover for shading, sediment filtering, and streambank and floodplain stability (PACFISH guidelines). Areas not burned will provide significant protection from adverse water quality impacts associated with wildland fire and prescribed burning. Therefore, effects to fish and habitat in these streams from increased water yield are unlikely. The area has been roaded from past management activities. Therefore, increased road densities from road construction are not expected to be of a magnitude to increase sedimentation to affected drainages, provided adequate planning for new road construction is implemented. Forest practices in the area will be conducted to meet the standards of the Idaho Forest Practices Act. These rules are designed to use best management practices that are adapted to and take account of the specific factors influencing water quality, water quality objectives, on-site conditions, and other factors applicable to the site where a forest practice occurs.

3.13 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).

Smoke emissions from fires potentially affect an area and the airsheds that surround it. Climatic conditions affecting air quality in Central Idaho 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. In Clearwater County, winds are predominantly from the southwest but occasionally blow from the west to northwest. Air quality in the area and surrounding airshed is generally good to excellent. 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 Clearwater County.

Smoke management in Clearwater County is managed by the Idaho/Montana Airshed Group. Much of the county is in Airshed Unit 12B; however, the southernmost region falls into Airshed Unit 13 and the westernmost region is in Airshed Unit 12A. An airshed is a geographical area which is characterized by similar topography and weather patterns (or in which atmospheric characteristics are similar, e.g., mixing height and transport winds). The USDA Forest Service, Bureau of Land Management, and the Idaho Department of Lands are all members of the Montana/Idaho State Airshed Group, which is responsible for coordinating burning activities to minimize or prevent impacts from smoke emissions. Prescribed burning must be coordinated through the Missoula Monitoring Unit, which coordinates burn information, provides smoke forecasting, and establishes air quality restrictions for the Montana/Idaho Airshed Group. The Monitoring Unit issues daily decisions which may restrict burning when atmospheric conditions are not conducive to good smoke dispersion. Burning restrictions are issued for airsheds, impact zones, and specific projects. The monitoring unit is active March through November. Each Airshed Group member is also responsible for smoke management all year.

The Clean Air Act, passed in 1963 and amended in 1977, is the primary legal authority governing air resource management. The act established a process for designation of Class I and Class II areas for air quality management. Class I areas receive the highest level of protection and numerical thresholds for pollutants are most restrictive for this Class. The large Selway Bitterroot Class 1 area and the Hell's Canyon Class 1 area could be affected by burning activity within Clearwater County borders.

All of the communities within Clearwater County could be affected by smoke or regional haze from burning activities in the region. Idaho Department of Environmental Quality maintains Air Pollution Monitoring Sites throughout Idaho. The Air Pollution Monitoring program monitors all of the six criteria pollutants. Measurements are taken to assess areas where there may be a problem, and to monitor areas that already have problems. The goal of this program is to control areas where problems exist and to try to keep other areas from becoming problem air pollution areas (Louks 2001).

The Clean Air Act provides the principal framework for national, state, and local efforts to protect air quality. Under the Clean Air Act, OAQPS (Organization for Air Quality Protection 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).

3.13.1 Fire Mitigation Practices to Maintain Air Quality

Smoke consists of dispersed airborne solids and liquid particles, called particulates, which can remain suspended in the atmosphere for a few days to several months. Particulates can reduce visibility and contribute to respiratory problems. Very small particulates can travel great

distances and add to regional haze problems. Regional haze can sometimes result from multiple burn days and/or multiple owners burning within an airshed over too short a period of time to allow for dispersion.

For prescribed fires, there are three principle strategies to manage smoke and reduce air quality effects. They include:

1. **Avoidance -** This strategy relies on monitoring meteorological conditions when scheduling prescribed fires to prevent smoke from drifting into sensitive receptors, or suspending burning until favorable weather (wind) conditions exist. Sensitive receptors can be human-related (e.g. campgrounds, schools, churches, and retirement homes) or wildlife-related (threatened and endangered species and their critical habitats);
2. **Dilution –** This strategy ensures proper smoke dispersion in smoke sensitive areas by controlling the rate of smoke emissions or scheduling prescribed fires when weather systems are unstable, not under conditions when a stable high-pressure area is forming with an associated subsidence inversion. An inversion would trap smoke near the ground; and
3. **Emission Reduction –** This strategy utilizes techniques to minimize the smoke output per unit area treated. Smoke emission is affected by the number of acres burned at one time, pre-burn fuel loadings, fuel consumption, and the emission factor. Reducing the number of acres burned at one time would reduce the amount of emissions generated by that burn. Reducing the fuel beforehand reduces the amount of fuel available. Prescribed burning when fuel moistures are high can reduce fuel consumption. Emission factors can be reduced by pile burning or by using certain firing techniques such as mass ignition.

If weather conditions changed unexpectedly during a prescribed burn, and there was a potential for violating air quality standards or for adverse smoke impacts on sensitive receptors (schools, churches, hospitals, retirement homes, campgrounds, wilderness areas, and species of threatened or endangered wildlife), the management organization may implement a contingency plan, including the option for immediate suppression. Considering 1) the proposed action would result in prescribed fire on a relatively small number of acres, 2) burning as part of this mitigation plan's implementation in the County will most likely occur over a 5-year or 10-year period at a minimum, and 3) the County will adhere to Montana/Idaho Airshed Group advisories and management strategies to minimize smoke emissions, prescribed fire activities would not violate national or state emission standards and would cause very minor and temporary air quality impacts. The greatest threat to air quality would be smoke impacts on sensitive receptors; however, the relative scarcity of sensitive receptors within the County minimizes this potential air quality impact.

In studies conducted through the Interior Columbia Basin Management Project, smoke emissions were simulated across the Basin to assess relative differences among historical, current, and future management scenarios. In assessing the whole Upper Columbia Basin, there was a 43 percent reduction in smoke emissions between the historical and current periods (Quigley and Arbelbide 1997). The projected smoke emissions varied substantially with the vastly different management scenarios. The consumptive demand and passive management scenarios were projected to substantially increase smoke emissions above current levels. The active management scenarios were projected to result in a decrease of current levels.

Although prescribed fire smoke would occur more frequently than wildland fire smoke, since prescribed fires are scheduled during the year, the effects of wildland fire smoke on visibility are more acute. Prescribed fires produce less smoke than wildland fires for comparatively shorter

periods, because they are conducted under weather conditions that provide for better smoke dispersion. In a study conducted by Holsapple and Snell (1996), wildland fire and prescribed fire scenarios for the Columbia Basin were modeled. In conclusion, the prescribed fire scenarios did not exceed the EPA particulate matter (PM 10) standard in a 24-hour period. Similar projections were observed for a PM 2.5 threshold. Conversely, all wildland fire scenarios exceeded air quality standards. Similar responses were reported by Huff *et al.* (1995) and Ottmar *et al.* (1996) when they compared the effects of wildland fire to prescribed fire on air quality. The impacts of wildland fire and management ignited prescribed fire on air quality vary because of the differences in distribution of acres burned, the amount of fuel consumed per acre (due to fuel moisture differences), and the weather conditions in which typical spring and fall prescribed burns occur. This analysis reveals wildland fire impacts on air quality may be significantly greater in magnitude than emissions from prescribed burns. This may be attributable, in part, to the fact that several states within the project area have smoke management plans requiring favorable weather conditions for smoke dispersion prior to igniting prescribed fires (Quigley and Arbelbide 1997).

Chapter 4: Summaries of Risk and Preparedness

4 Overview

4.1 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, the fuels which support the fire. By altering fuel loading and fuel continuity across the landscape, we have the best opportunity to determine how fires burn.

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

4.1.1 Weather

Weather conditions are ultimately responsible for determining fire behavior. Moisture, temperature, and relative humidity 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 affect 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.

4.1.2 Topography

Fires burning in similar fuel conditions burn dramatically different under different 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 lead 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 roll 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.

4.1.3 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 home sites (the structures) 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 affect 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, as surface to volume ratio decreases. 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 potentially development of crown fire. 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 determine 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.

4.2 Clearwater County Conditions

Clearwater County is characterized by relatively mild winters and warm, dry summers. Although infrequent, fires in the forest fuel types present throughout much of the County have the potential to result in large, intense and damaging fires such as the 1910 Fire or the Sundance Fire. Past timber harvest operations have created a mosaic of stand conditions that is evident from almost any viewpoint. The fire risk associated with these activities is highly variable depending on a plethora of factors, some of which include the amount of timber volume removed (i.e. number and size of trees left standing), treatment of slash post-harvest, reforestation success, use of equipment, and many site specific factors such as aspect. Generally, treatment of slash by prescribed burning or pile burning can significantly reduce the risk of intense wildfire by removing hazardous fuels in the understory.

Clearwater County has been experiencing steady growth, particularly in and around Orofino. At the same time, the number and value of resources at risk is on the increase, as more and more homes are built in the midst of fireprone fuels. Human use is strongly correlated with fire frequency, with increasing numbers of fires as use increases. The combination of frequent ignitions and flammable vegetation has greatly increased the probability that incendiary devices will find a receptive fuel bed, resulting in increased fire frequency. Discarded cigarettes, tire fires, and hot catalytic converters have increased the number of fires experienced along roadways. Careless and unsupervised use of fireworks also contributes their fair share to unwanted and unexpected wildland fires. Further contributing to ignition sources are the debris burners and “sport burners” who use fire to rid ditches of weeds and other burnable materials.

Fire departments within Clearwater County have reported a general increase in the number of fires within the county. Although there have been few homes lost to wildland fires in the recent past, the potential is growing. It is quite probable that homes will eventually be lost to wildland fire. However, there are a number of actions that can be taken now that can decrease the probability that these events will occur.

4.2.1 County Wide Potential Mitigation Activities

There are four basic opportunities for reducing the loss of homes and lives to fires. There are many single actions that can be taken, but in general they can be lumped into one of the following categories:

- Prevention
- Education/ Mitigation
- Readiness
- Building Codes

4.2.1.1 Prevention

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

Slightly more active prevention techniques may involve mass media, such as radio or the local newspaper. Fire districts in other counties have contributed the reduction in human-caused ignitions by running a weekly “run blotter,” similar to a police blotter, each week in the paper. The blotter briefly describes the runs of the week and is followed by a weekly “tip of the week” to reduce the threat from wildland and structure fires. The federal government has been a champion of prevention, and could provide ideas for such tips. When fire conditions become high, brief public service messages could warn of the hazards of misuse of fire or any other incendiary devise. Such a campaign would require coordination and cooperation with local media outlets. However, the effort is likely to be worth the efforts, costs and risks associated with fighting unwanted fires.

Fire Reporting: Fires cannot be suppressed until they are detected and reported. As the number and popularity of cellular phones has increased, expansion of the #FIRE program throughout Idaho may provide an effective means for turning the passing motorist into a detection resource.

Burn Permits: The issues associated with debris burning during certain times of the year are difficult to negotiate and enforce. However, there are significant risks associated with the use of fire adjacent to expanses of flammable vegetation under certain scenarios. Fire departments typically observe the State of Idaho Closed fire season between May 10 to October 20. During this time, an individual seeking to conduct an open burn of any type shall obtain a permit to prescribe the conditions under which the burn can be conducted and the resources that need to be on hand to suppress the fire, from a State of Idaho fire warden. In Clearwater County, the Clearwater-Potlatch Timber Protective Association is responsible for issuing and enforcement of burn permits. There is considerable confusion on the part of the public as to when a permit is

necessary and the procedure for which to obtain the permit. The best-intentioned citizen may unknowingly break this law for a lack of understanding. Clearly, there is a need to coordinate this process and educate the public. Recently, the Clearwater-Potlatch Timber Protective Association initiated a roadside Fire Prevention Board Program by posting fire season information and closed fire season dates in response to this need.

4.2.1.2 Education

Once a fire has started and is moving toward homes or other valued resources, the probability of that structure surviving is largely dependent on the structural and landscaping characteristics of the home. Also of vital importance is the accessibility of the home to emergency apparatus. If the 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.

The majority of the uncultivated vegetation in Clearwater County is comprised of timberlands. These fuels tend to be very flammable and can support very fast moving and intense fires. In many cases, homes can easily be protected by following a few simple guidelines that reduce the ignitability of the home. There are multiple programs such as FIREWISE that detail precautions that should be taken in order to reduce the threat to homes, such as clearing timber or cured grass and weeds away from structures and establishing a green zone around the home.

However, knowledge is no good unless acted upon. Education needs to be followed up by action. Any education programs should include an implementation plan. Ideally, funds would be made available to financially assist the landowner making the necessary changes to the home. The survey of the public conducted during the preparation of this WUI Fire Mitigation Plan indicated that approximately 60% of the respondents are interested in participating in this type of an activity.

4.2.1.3 Readiness

Once a fire has started, how much and how large it burns is often dependent on the availability of suppression resources. In some 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.

In order to assure a quick and efficient response to an event, emergency responders need to know specifically where emergency services are needed. Continued improvement and updating of the rural addressing system is necessary to maximize the effectiveness of a response.

4.2.1.4 Building Codes

The most effective, albeit contentious, solution to some fire problems is the adoption of building codes in order to assure emergency vehicle access and home construction that does not “invite” a fast and intense house fire. Codes that establish minimum road construction standards and access standards for emergency vehicles are an effective means of assuring public and firefighter safety, as well as increasing the potential for home survivability. County building inspectors should look to the fire departments in order to assure adequate minimum standards. Fire districts may want to consider apparatus that may be available during mutual aid events in order that the adopted standards meet the access requirements of the majority of suppression

resources. In Clearwater County, such standards may be drafted in consultation with the Fire Chiefs in order to assure accessibility is possible for all responding resources.

Coupled with this need is the potential to implement a set of requirements or recommendations to specify construction materials allowed for use in high risk areas of the county. While a resident of Cavendish may not put his or her structure at undue risk by the use of wooden decking materials, a shake roof, or wooden siding, the same structure in Pierce would be at tremendous risk through this practice. The Clearwater County Commissioners may want to consider a policy for dealing with this situation into the future as more and more homes are located in the wildland-urban interface.

4.3 Clearwater County's Wildland-Urban Interface

Individual community assessments have been completed for all of the populated places in the county. The following summaries include these descriptions and observations. Local place names identified during this plan's development include:

Table 4.1. Clearwater County Communities

Community Name	Planning Description	Vegetative Community	National Register Community At Risk?[1]
Ahsahka	Community	Rangeland	Yes
Cardiff	Community	Forestland	No
Cavendish	Community	Rangeland/Forestland	Yes
Dent	Community	Rangeland	Yes
Elk River	Community	Forestland	Yes
Grangemont	Community	Forestland	Yes
Greer	Community	Rangeland/Forestland	Yes
Headquarters	Community	Forestland	Yes
Jaype	Community	Forestland	No
Musselshell	Remnant	Forestland	No
Orofino	Community	Rangeland/Forestland	Yes
Pierce	Community	Forestland	Yes
Teaken	Remnant	Rangeland	Yes
Weippe	Community	Rangeland/Forestland	Yes

[1]Those communities with a "Yes" in the National Register Community at Risk column are included in the Federal Register, Vol. 66, Number 160, Friday, August 17, 2001, as "Urban Wildland Interface Communities within the vicinity of Federal Lands that are at high risk from wildfires". All of these communities have been evaluated as part of this plan's assessment.

Site evaluations on these communities are included in subsequent sections. The results of FEMA Hazard Severity Forms for each community are presented in Appendix II.

4.3.1 Mitigation Activities Applicable to all Communities

4.3.1.1 Home site Evaluations and Creation of Defensible Space

Individual home site evaluations can increase homeowners' awareness and improve the survivability of structures in the event of a wildfire. Maintaining a lean, clean, green zone around structures to reduce the potential loss of life and property is highly recommended. Assessing individual homes in the outlying areas can address the issue of escape routes and home

defensibility characteristics. Educating the homeowners in techniques for protecting their homes is critical in these environments.

4.3.1.2 Travel Corridor Fire Breaks

Ignition points are likely to continue to be concentrated along the roads and railway lines that run through the county. These travel routes have historically served as the primary source of human-caused ignitions. In areas with high concentrations of resource values along these corridors, fire lines may be considered in order to provide a fire break in the event of a roadside ignition. Access route mitigation can provide an adequate control line under normal fire conditions. Alternatively, permanent fuel breaks can be established in order to reduce the potential for ignitions originating from the main travel roads to spread into the surrounding lands.

4.3.1.3 Power Line Corridor Fire Breaks

The treatment opportunities specified for travel corridor fire breaks apply equally for power line corridors. The obvious difference between the two is that the focus area is not an area parallel to and adjacent to the road, but instead focuses on the area immediately below the infrastructure element. Protection under the high tension power lines is strongly recommended. This may be an opportunity for intensive livestock grazing practices as a tool for reducing fine fuels around significant infrastructure.

4.4 Communities of Clearwater County

4.4.1 Vegetative Associations

Vegetative structure and composition in Clearwater County is closely related to elevation, aspect and precipitation. Relatively mild and moist environments characterize the undulating topography of the region which transitions from the Palouse prairie plant communities of the northwest region to the forest ecosystems that characterize the vast majority of the land area in Clearwater County. These forest communities contain high fuel accumulations that have the potential to burn at moderate to high intensities. Highly variable topography coupled with dry, windy weather conditions typical of the region is likely to create extreme fire behavior.

At higher elevation mountainous regions, moisture becomes less limiting due to a combination of higher precipitation and reduced solar radiation. Vegetative patterns shift toward forested communities dominated by ponderosa pine, western larch, grand fir, and Douglas-fir at the lower and mid elevations, transitioning to lodgepole pine and subalpine fir at the higher elevations. Engelmann spruce and western red cedar are commonly found in moist draws and frost pockets. These forested conditions possess a greater quantity of both dead and down fuels as well as live fuels. Rates of fire spread tend to be lower than those in the grass and shrub lands, however, intensities can escalate dramatically, especially under the effect of slope and wind. These conditions can lead to control problems and potentially threaten lives, structures and other valued resources.

As elevation and aspect increase available moisture, forest composition transitions to moister habitat types. Increases in moisture keep forest fuels unavailable to burn for longer periods during the summer. This increases the time between fire events, resulting in varying degrees of fuel accumulation. When these fuels do become available to burn, they typically burn in mosaic pattern at mid elevations, where accumulations of forest fuels result in either single or group tree torching, and in some instances, short crown fire runs. At the highest elevations, fire events are typically stand replacing, as years of fuel accumulation fuel large, intense wildfires.

Many lower elevation forested areas throughout Clearwater County are highly valued for their scenic qualities as well as for their proximity to travel corridors. These attributes have led to increased recreational home development and residential home construction in and around forest fuel complexes. The juxtaposition of highly flammable forest types and rapid home development will continue to challenge the ability to manage wildland fires in the wildland-urban interface.

4.4.2 Overall Fuels Assessment

The majority of homes and structures within and surrounding these communities are along a spectrum from low to moderate to high risk of loss to wildland fire. Individual characteristics of each community and structure dictate the risk factors. The prevalence of tree and shrub fuels pose a moderate to high threat to homes surrounded by these fuels, as fire typically spreads quickly through the grasses and burns at relatively high intensities in the brush and forest tree fuels, especially where declining forest health is a factor. Many homes are at low risk because of the management of fuels in the area immediately surrounding the structures and their access routes. There are a number of individual homes that are at much higher risk to wildland fire loss in the area, largely due to use of highly ignitable materials in home construction, or by lack of defensible space surrounding the home. Home defensibility practices can dramatically increase the probability of home survivability. The amount of fuel modification necessary will depend on the specific attributes of the site. Considering the high spread rates possible in these fuel types, homes need to be protected prior to fire ignitions, as there is little time to defend a home in advance of fire.

4.4.3 Individual Community Assessments

4.4.3.1 Ahsahka

4.4.3.1.1 Fuels Assessment

The community of Ahsahka is located approximately 5 miles northwest of Orofino on Cavendish Road. Ahsahka is situated in the small gorge created by the main Clearwater River and North Fork of the Clearwater River on the eastern side of the Nez Perce Indian Reservation. Although many residents of this community live near the town center, there are several small clusters of homes along the Cavendish Highway to the west and the Old Ahsahka Grade to the north, as well as southeast toward Orofino and outlying areas. Ahsahka is nestled on the toe of Dworshak Reservoir to the east and a very steep slope rising northward toward the Cavendish Prairie. These slopes are dominated by ponderosa pine, Douglas-fir and various grasses.

The topography of the landscape near Ahsahka consists of mostly southern and western aspects. Ponderosa pine, Douglas-fir, and many grasses dominate the vegetative structure of the landscape. The surrounding area has been broken up into several ownerships including some state land, industrial property, and privately owned parcels. Different land management techniques on these mixed ownerships have led to varied vegetation and fuel types. Much of the over-story surrounding Ahsahka is represented by ponderosa pine and Douglas-fir with an under-story of grass, ninebark, and ocean-spray. Under normal weather conditions fire spread is primarily through the fine herbaceous fuels, either curing or dead. A mixture of various logging operations over many years constitutes different fuel types depending on the treatment of slash and the amount of volume left standing. Fires in these fuel types are rapidly spreading, high intensity surface and ground fires that are generally sustained until a fuel break or change in vegetation occurs. Fuel types that have been well managed tend to support much less intense surface fires due to lighter fuel loading and a lack of volatile material.

4.4.3.1.2 Community Risk Assessment

The primary fire risks to the community of Ahsahka lie within the several residents located along timbered forest routes leading into the surrounding rural and wildlands. These clusters of residences are commonly nestled into stands of timber on dead end secondary roads or driveways. The lack of a defensible space around homes increases its likelihood of ignition by oncoming wildfires. Residences throughout the area are frequently constructed with wood siding and decks; thus, further increasing their risk of ignition. Heavier fuel loading and steeper topography in these areas increases the chance of an uncontrolled wildfire endangering lives and property. Current logging and mining, recreational use, and an active railroad system increase the risk of fire by contributing to potential ignition sources.

The primary access into the area is from Cavendish Road, a paved two-lane highway. To the east of Ahsahka is Dworshak Reservoir and directly west is the Clearwater River. Two directions of travel are cut off for to vehicles, so the vehicle access is to the north and southeast along Cavendish Road. There are very few additional escape routes on forest roads that lead away from this community. Most of these routes are located in areas at moderate to high fire risk due to the close proximity of continuous fuels along the roadway. In the event of a wildland fire, it is likely that one or more of the escape routes would become impassable. Signing of drivable alternate escape routes would reduce confusion and save time in a wildfire situation. Additionally, many homes are located on high risk one-way in, one-way out secondary roads and/or private driveways that could become threatened by wildland fire. One-way in, one-way out access roads are not only dangerous for fire-fighters; they also increase the likelihood of residents becoming trapped.

Road names and house numbers are generally present throughout the area, yet many of the bridges in the vicinity of Ahsahka lack adequate signing and weight ratings. Most residences access water and power through personal wells or city water hook ups and above ground power lines. The Orofino City and Rural Fire Departments provide structural fire protection within the Ahsahka city limits, while the surrounding areas are protected from wildfire by the Clearwater-Potlatch Timber Protective Association.

4.4.3.1.3 Mitigation Activities

The community of Ahsahka is considered to be at a moderate risk to the effects of wildfire, due to its location next to the river and on the toe slope of the mountains to the east. Those structures located within the community are reasonably protected from wildland fire by ample water resources provided by the Clearwater River, Dworshak Reservoir, and several other small drainages. Small clumps of homes and individual homes built along Cavendish Road, the Old Ahsahka Grade, and other forest routes and on the lower slopes are at a significantly higher risk.

Many of the homes in the Ahsahka area were constructed with building materials and landscaping techniques unfavorable for protecting them against wildfire. Individual home site evaluations can increase homeowners' awareness and improve the survivability of structures in the event of a wildfire. Creating a defensible space around structures can significantly reduce the potential loss of life and property. This can be accomplished by individual residents by removing or pruning trees nearby or overhanging the home, keeping the area clear of surface fuels, and locating wood piles, propane tanks, and other flammable objects away from the home. Assessments of homes or subdivisions in the outlying areas can address the issue of escape routes and home defensibility characteristics. Educating homeowners in techniques for protecting their property is critical in areas where heavy fuels are present.

In general these communities should focus on small projects that will increase the safety of citizens and property in the event of a wildfire emergency. These projects could include providing signage and weight rating information at all bridge crossings and cattle guards, identifying dead end roads, signing escape routes, and pruning trees around power lines. Thinning or grazing on public lands near the wildland urban interface can significantly reduce fuel build ups; thus decreasing the likelihood of a wildfire reaching the community. It is also important that people recognize and follow rules concerning campfires and trail restrictions in designated recreation areas.

4.4.3.2 Cavendish

4.4.3.2.1 Fuels Assessment

Cavendish is a small farming community located just north of the Nez Perce Indian Reservation on Cavendish Road approximately 15 miles north of Ahsahka. This area can also be accessed by the Cavendish Road from Orofino from the south or from Southwick to the north. Most of this area is relatively flat and has been converted from forested land to agricultural fields. Few residents actually live near the town site; however, there are clusters of homes and structures scattered along this road from Orofino and Southwick. Although this area is primarily used for agricultural purposes, it is bordered by forested land to the north, south, and east characterizing Cavendish as an interface condition by the wildland urban interface classification system.

There are a few small streams flowing through the area, most of which drain into the Clearwater River to the west and Dworshak Reservoir to the east. Cavendish sits on a gentle west aspect that becomes much steeper a few miles further east and west of the community. This area is a mixture of agricultural, pasture land, and mixed conifer forests; thus, providing several different fuel types. Fires in one fuel type under normal weather conditions tend to be slow moving ground and surface fires with occasional “jackpot” burning, crowning, spotting, and torching, which can make suppression efforts difficult and dangerous for firefighters. The rate of fire spread another fuel type tends to be governed by the amount of continuous herbaceous fuels that have cured or are nearly cured. These fires consist of flashy fuels and are generally fast-moving surface fires.

4.4.3.2.2 Community Risk Assessment

Slopes surrounding Cavendish show evidence of numerous past and recent logging operations. Slash and growth of brush and dense regeneration on these sites adds to the amount of surface and dead and down fuels available. Furthermore, the close proximity of logging and recreational use on the forested land to the east of the town center further increases the fire risk by contributing to potential ignition sources. Although fuel accumulations in these areas could potentially lead to a severe wildland fire, due to its location and agricultural development, it is unlikely that the community would be threatened. However, a few homes in the outlying areas near the timber are at much higher risk.

Many of the homes in the community have been built using wood siding and decking, which is unfavorable for protection against wildfire. Some homeowners also stack firewood under decks or against structures. Nevertheless, large fields surrounding most of the homes in this area provide an adequate defensible space against oncoming wildfires early in the fire season, but add to the fire risks when the fields cure or during harvest with the equipment in the area.

The primary access into the area is on Cavendish Road, a two lane paved road from either Orofino or Southwick. Most of these roads are located in low fire risk areas near the community

and towards Cavendish Road; however, the fire risk significantly increases as forested land along roadways becomes more common to the east. Many of the homes in this area are located on one-way in, one-way out forest routes or private drives, some of which are bordered by timber. This not only increases the risk of the residents becoming trapped, it is also dangerous for firefighters.

Road names and house numbers are generally present throughout the area, yet bridges on many access roads lack adequate signing and weight ratings. Most residences in the area access water and power through personal wells and above ground power lines. The power line corridor stretching from Dworshak to Cavendish travels through sections of very heavy fuels. This corridor has been cut and pruned; however, this area still maintains a very high risk of ignition due to remaining surface fuels and nearby forest fuels. Cavendish is protected by the Evergreen Rural Fire Department.

The Evergreen Rural Fire District provides structural fire protection in this area, while the Clearwater-Potlatch Timber Protective Association and the Nez Perce Tribe provide wildland fire protection.

4.4.3.2.3 Mitigation Activities

The community of Cavendish is at low risk of wildland fire due primarily to its agricultural development and nearness to Cavendish Road. The higher risk forested areas upslope of the community could potentially support a severe wildland fire; however, the likelihood of a fire reaching the community is low. Homes in outlying areas closer to or surrounded by timber are at much higher risk.

Individual home site evaluations can increase homeowners' awareness and improve the survivability of structures in the event of a wildfire. Home assessments can address the issue of escape routes and home defensibility characteristics. Creating a defensible space around structures can significantly reduce the potential loss of life and property. This can be accomplished by individual residents by removing or pruning trees nearby or overhanging the home, keeping the area clear of surface fuels, and locating wood piles, propane tanks, and other flammable objects away from the home. Creating and widening turnouts and thinning fuels along access routes would reduce the risk of residents becoming trapped and increase the responsiveness and safety of suppression vehicles and personnel. Educating homeowners in techniques for protecting their homes is critical in areas where heavy fuels are present.

In general communities in this area should focus on small projects that will increase the safety of citizens and property in the event of a wildfire emergency. These projects could include providing signage and weight rating information at all bridges, identifying dead end roads, signing escape routes in residential areas, and pruning trees around power lines. Setting up a community wide program to keep vegetation around structures and along roadways green and clear of hazardous surface fuels would reduce the potential loss of life and property in the event of a wildfire. Thinning and grazing on public lands near the wildland urban interface can significantly reduce fuel build ups; thus decreasing the likelihood of a wildfire reaching the community. It is also important that people recognize and follow rules concerning campfires and trail restrictions in designated recreation areas.

4.4.3.3 Dent

4.4.3.3.1 Fuels Assessment

Dent Acres is located on the north shore of the North Fork of the Clearwater River near the entrance to the Dworshak Reservoir. This area, which is predominantly used for recreation, lies on a southern aspect with steep slopes. The vegetation can be characterized as scattered ponderosa pine and Douglas-fir, with brush and grasses. The elevation ranges from 1600 to 2600 feet. A recreational vehicle park is located near the banks of the reservoir. There are approximately 58 structures within the project area, many of which are in high risk wildfire zones according to the risk analysis.

The Dent area has a vast assortment of different structures, from year round residences to summer cabins to trailer parks and a public campground (with RV's, trailers and tents). Construction methods are highly variable ranging from manufacture homes to custom built cabins. Thus, the value of these structures also varies considerably. The spacing of these structures is very good throughout most of this area, with the exception of the trailer park and the campgrounds. The Dent area is becoming a very popular location for people to build summer cabins. With the sale of Potlatch land in this area and a couple of new subdivisions, more and more structures are popping up.

4.4.3.3.2 Community Risk Assessment

The primary concern in this area is the high recreational use coupled with a xeric landscape. This combination results in a high probability of ignition and a potentially high rate of fire spread. Campfires and heavy traffic around the campground near the aquatic interface increase the risk of wildfire spreading uphill to the recreational homes and improved RV campsites. Residences in the area are typically surrounded by scattered timber, brush and grasses, many lacking a defensible space. Prevailing winds out of the southwest would likely drive wildfire upslope towards residences.

Access to Dent Acres is limited. The Elk River Road from the north and Dent Bridge to the south provide access into and out of the area. Many of the residences and the RV park are accessed by narrow, one-way driveways contributing to the possibility of residents becoming trapped in the event of a wildfire. Due to the remoteness of the area, emergency response may be delayed. Developing adequate escape routes and evacuation plans for residents and campers should be given a high priority. This should include designated landing spots for helicopters placed in strategic locations.

The Dent area does not currently have any kind of rural structure fire protection. However, there are several individuals in the Dent area that have expressed an interest in forming a rural fire district. There are several grassy meadows that would make very good safety zones. There are also a number of good ponds located in the Dent area. Most of these are good sources of water for helicopters. Not all them lend themselves to engines, as drivable access to most is limited. The best water source for engines would most likely be Dworshak reservoir. The Dent area has both overhead and underground power lines.

4.4.3.3.3 Mitigation Activities

Many of the homes in the Dent area were constructed with building materials and landscaping techniques unfavorable for protecting them against wildfire. Individual home site evaluations can increase homeowners' awareness and improve the survivability of structures in the event of a

wildfire. Creating a defensible space around structures can significantly reduce the potential loss of life and property. This can be accomplished by individual residents by removing or pruning trees nearby or overhanging the home, keeping the area clear of surface fuels, and locating wood piles, propane tanks, and other flammable objects away from the home. In addition, the campground itself should be treated to increase the probability that recreational users in the campground have an area that can be protected in the event of a wildland fire. Fuel management along all main roads and escape routes should be a high priority in order ton insure safe travel for emergency services and evacuation purposes. Assessments of homes or subdivisions in the outlying areas can address the issue of escape routes and home defensibility characteristics. Educating homeowners in techniques for protecting their property is critical in areas where heavy fuels are present.

In terms of rural fire protection, the Dent area is without a structure protection and a rural fire district. It is recommended that a volunteer fire department be placed in this area with at least one rural engine and one wildland fire engine. Although Clearwater-Potlatch Timber Protective Association provides wildland fire protection services for this area, their closest engine and crew is located in Elk River, over half an hour away. This forward advanced engine would provide a rapid response to future wildland fires. In point of fact, the Clearwater-Potlatch Timber Protective Association often does place an engine in this area during the high use periods of the year. The addition of a rural engine (structure protection) would enhance the fire protection in this area greatly.

4.4.3.4 Elk River

4.4.3.4.1 Fuels Assessment

The community of Elk River is located approximately 17 miles southeast of Bovill at the end of State Highway 8. Elk River is situated in the small valley created by Elk Creek, Partridge Creek, and several other smaller draws that are bordered by the Clearwater National Forest and Potlatch Corporation. Elk Creek, Partridge Creek, Elk Creek Reservoir, and several other small streams provide ample water resources. There are only about 100 residents that live year round within Elk River's community, but there could be several hundred more loggers, hunters, campers, tourists, etc. during the summer months. Many of these homes in the area are nestled in or adjacent to stands of mixed conifer stands increasing their risk to fire.

The topography of the surrounding forestland near Elk River consists of all aspects. Much of the area surrounding the Elk River community is encompassed by the Clearwater National Forest and Potlatch Corporation. Grand fir, lodgepole pine, western red cedar, Douglas-fir, and other conifer species dominate the vegetative structure of the landscape. The surrounding areas are broken up into several ownerships including state land, federal land, industrial property, and privately owned parcels. Different land management techniques on these mixed ownerships have led to varied vegetation and fuel types. Much of the area surrounding Elk River is represented by a thick over-story and multi-level under-story creating ladder fuels. Furthermore, there is a layer of dead and down fuels that greatly increases the risk of higher intensity ground and surface fires. Occasional "jackpot" burning, crowning, spotting, and torching of individual trees also makes suppression efforts difficult and dangerous for firefighters. A mixture of various logging operations over many years constitutes several different fuel types depending on the treatment of slash and the amount of volume left standing. Fires in these fuel types tend to spread rapidly, creating high intensity surface and ground fires that are generally sustained until a fuel break or change in vegetation occurs. Furthermore, these fuel types tend to support much less intense surface fires due to lighter fuel loading and a lack of volatile material.

4.4.3.4.2 Community Risk Assessment

The primary fire risks to the community of Elk River lie within escape routes and the several residents located along timbered forest routes leading into the mountains and directly adjacent to forest land. These clusters of residences are commonly nestled into stands of timber on dead end secondary roads or driveways. The lack of a defensible space around homes increases its likelihood of ignition by oncoming wildfires. Residences throughout the area are frequently constructed with wood siding and decks; thus, further increasing their risk of ignition. Heavier fuel loading and steeper topography in these areas increases the chance of an uncontrolled wildfire endangering lives and property. Current logging, mining, and recreational use increase the risk of fire by contributing to potential ignition sources.

The primary access into the area is from State Highway 8, a paved two-lane highway that ends at Elk River. To the east, south, and north of Elk River is primarily logging roads that are two and one lane gravel roads with turnouts. There are several additional escape routes on forest roads that lead away from these communities in all directions; however, some may be restricted throughout parts of the year. Most of these forest routes are located in areas at moderate to high fire risk due to the close proximity of continuous fuels along the roadway. In the event of a wildland fire, it is likely that one or more of the escape routes would become impassable. Signing of drivable alternate escape routes would reduce confusion and save time in a wildfire situation. Additionally, many homes are located on high risk one-way in, one-way out secondary roads and/or private driveways that could become threatened by wildland fire. One-way in, one-way out access roads are not only dangerous for fire-fighters; they also increase the likelihood of residents becoming trapped.

Road names and house numbers are generally present throughout the area, yet many of the bridges in the vicinity of Elk River lack adequate signing and weight ratings. Most residences access water and power through personal wells or city water hook ups and above ground power lines. This community and surrounding areas are protected from wildfire by the Clearwater-Potlatch Timber Protective Agency.

4.4.3.4.3 Mitigation Activities

The community of Elk River is considered to be at a high risk to the effects of wildfire. Those structures located within the community are reasonably protected from wildland fire by patches of grass and ample water resources provided by the Reservoir and Elk Creek and several other small drainages. Small clumps of homes and individual homes built along Highway 8 and other forest routes and on the lower slopes are at a significantly higher risk.

Many of the homes in the Elk River area were constructed with building materials and landscaping techniques unfavorable for protecting them against wildfire. Individual home site evaluations can increase homeowners' awareness and improve the survivability of structures in the event of a wildfire. Creating a defensible space around structures can significantly reduce the potential loss of life and property. This can be accomplished by individual residents by removing or pruning trees nearby or overhanging the home, keeping the area clear of surface fuels, and locating wood piles, propane tanks, and other flammable objects away from the home. Assessments of homes or subdivisions in the outlying areas can address the issue of escape routes and home defensibility characteristics. Educating homeowners in techniques for protecting their property is critical in areas where heavy fuels are present.

In general these communities should focus on small projects that will increase the safety of citizens and property in the event of a wildfire emergency. These projects could include providing signage and weight rating information at all bridge crossings and cattle guards,

identifying dead end roads, signing escape routes, and pruning trees around power lines. Thinning or grazing on public lands near the wildland urban interface can significantly reduce fuel build ups; thus decreasing the likelihood of a wildfire reaching the community. It is also important that people recognize and follow rules concerning campfires and trail restrictions in designated recreation areas.

4.4.3.5 Freeman Creek

4.4.3.5.1 Fuels Assessment

The Freeman Creek recreation area lies approximately 6 miles east of Cavendish along the west shore of Dworshak reservoir. This area is heavily used by boaters, campers and seasonal homeowners. Located near the reservoir is a large established campground operated by the State of Idaho. The camping area contains several structures such as a dining hall, several cabins and boat launches. Above the campground there are approximately 75 structures in fairly dense timber. The majority of the structures are framed construction, with wood siding and metal roofs. Defensible spaces around numerous residences located within the forested area are inadequate. The eastern aspects are relatively steep, with mesic timberlands and elevations ranging from 1,600 to 2,600 feet. Western red cedar and grand fir dominate the lower slopes, while Douglas-fir and ponderosa pine dominate upslope. During drought conditions combined with a wind event these fuels could create extreme fire behavior. A small inlet exists on the southern portion of the recreational area. Douglas-fir, ponderosa pine, and western larch are dominant on this drier slope. Agricultural fields lie on the relatively flat ground west of Freeman Creek recreation area. These less hazardous areas could become a safety zone for both public and firefighter refuge during an extreme wildfire event. The primary access into the recreation area is a well-maintained, narrow, two-lane road with many switchbacks.

4.4.3.5.2 Community Risk Assessment

The primary concern in this area stems from the higher probability of ignition due to recreational use. Campfires and heavy traffic surrounding the campground near the shore increase the risk of wildfire spreading uphill to the structures. Even though the timber type on the eastern aspect does not support a high probability of ignition, it is a relatively drier western red cedar habitat with heavy accumulations of ladder fuels.

The primarily eastern exposure presents several additional risk factors. The predominate timber type in this area would support a fire with a high potential for spotting and crowning. Additionally, a fire in this area would likely have a high rate of spread. The prevailing winds out of the southwest would possibly thrust the fire into the adjacent eastern slopes. The probability of ignition is greater in this area given the drier site and heavy recreational use.

The residences in the area are typically located midslope along the eastern exposures. Many homesites are established on unmarked private driveways without adequate access for fire fighting equipment. Residences are placed in small openings often without prudent clearing of brush and timber away from buildings. Structure protection during an extreme wildfire event for many of these structures would impose serious danger to firefighters. These residences may be determined as not defendable during extreme wildfire triage events. There are a few ponds that provide engine fill and helicopter dip sites. There are additional needs for pond development and maintenance.

Some landowners have accomplished pruning, thinning, and brush disposal around their residences. These improvements in defensible space, combined with large green lawns will improve the homes survivability in a wildfire event.

The Freeman Creek road is the main paved arterial route to this area. This access road is not only difficult for fire fighting equipment to negotiate due to steepness and switchbacks, but it is also the only road available for ingress and egress. Heavy accumulations of timber and fuels are immediately adjacent to the road making it unsafe as an exit route in a wildfire situation. There is an additional escape route from the campground along the reservoir; however, drivability is questionable at this time and it would not serve residents upslope.

Overhead power lines provide power to all residences and state park facilities. Although these power lines are maintained regularly, they are vulnerable to falling trees during wind events creating possible fire ignitions during extreme fire conditions.

The Evergreen Rural Fire District protects structures within the Freeman Creek area. Evergreen Fire Department combined with C-PTPA has provided public education for residents to take measures to improve their homes survivability from wildfire.

4.4.3.5.3 Mitigation Activities

The Freeman Creek area has experienced ongoing development and expansion in rural residences. The recreational potential associated with Dworshak reservoir will cause this area to continue to grow. There will be an increasing need for public education concerning wildfire issues, subdivision planning, and improved fire service capabilities to keep up with the growing demand.

Many of the homes in the Freeman Creek area were constructed with building materials and landscaping techniques unfavorable for protecting them against wildfire. Individual home site evaluations can increase homeowners' awareness and improve the survivability of structures in the event of a wildfire. Creating a defensible space around structures can significantly reduce the potential loss of life and property. This can be accomplished by individual residents by removing or pruning trees nearby or overhanging the home, keeping the area clear of surface fuels, and locating wood piles, propane tanks, and other flammable objects away from the home. Assessments of homes or subdivisions in the outlying areas can address the issue of escape routes and home defensibility characteristics. Educating homeowners in techniques for protecting their property is critical in areas where heavy fuels are present.

Several preventative measures can be implemented to reduce the risk of fire spread that causes casualty loss. Included are thinning of forests in the treatment area, the removal and ongoing control of ladder fuels around residences, power lines, and passing and enforcing county ordnances to ban summertime campfires. There is a significant potential for residents to be trapped by fires that start at lower elevations. Developing escape routes and safety zones for residents should be given high priority. This should include an escape plan specific for each residence developed as part of the home site evaluations.

4.4.3.6 Gilbert Grade

The Gilbert Grade is the northern terminus of State Route 7 providing fairly rapid access from the Clearwater River corridor near Orofino to the farmland of the Camas Prairie above. The Gilbert Grade area is mainly composed of mature Douglas fir and ponderosa pine timber types and brush. Several grassy meadows and farm fields are located throughout the area, but timber is the dominant fuel type. The continuity of fuels is the major component aiding fire spread. Given the steepness of the area, a wind driven fire would quickly move through the area. The

topography varies from rolling, timbered hills to flat benches and steep, rocky cliffs. Dwellings are interspersed from the intersection of U.S. Highway 12 and State Route 7 southwest to the end of the Grade almost seven miles later.

There are a few narrow spots, but the Gilbert Grade right of way will accommodate large trucks. Given the limited accessibility and fuel continuity, a wind-driven fire would cause severe damage. Residents at either end of the grade have an excellent escape route, with the quality diminishing towards the middle. The timber's proximity to the road would inhibit the fuel break qualities a gravel road would normally demonstrate. A fire moving in the crowns of the trees would move across the road without hesitation. Crockett Bench and several other roads dead end at home sites, which poses accessibility issues for fire suppression forces. Power lines run up the hill from Orofino and cross the road about four miles from Highway 12.

Structures range from all wood to wood and metal and are located in both meadows and within the timber stands. There is a rural fire department in place to protect structures near the bottom of the grade. Existing safety zones, in the form of cleared agricultural fields or livestock pasture, are located from the mid-slope upwards, with the top of the grade flattening out into the Camas Prairie. Ponds capable of dipping or drafting are scattered throughout the area; however, few are visible or readily accessible from the main road.

The northern aspect of this site is generally less conducive to fire than a southern slope, nonetheless, a wind driven fire in dry fuel would move swiftly through the timber. Fuel breaks and road widening projects, along with a water development program would help to alleviate fire suppression obstacles. Public education and home treatment projects would also be advisable to create defensible space. Formulation of evacuation plans for all residents would also increase the safety and help reduce confusion during an emergency.

4.4.3.7 Grangemont and Rudo Area

The small town of Grangemont is located on Grangemont Road about half way between Orofino and Pierce. The Rudo area refers to the group of homes south of Grangemont scattered along Rudo Road towards the Orofino Creek drainage. The greater Grangemont and Rudo area is mainly composed of mature timber and brush. Several grassy meadows are located throughout the area, but timber is the dominant fuel type. The continuity is the major component aiding fire spread. The topography is primarily gently sloping with some smaller canyons and ridges tapering towards the Orofino Creek drainage. Construction materials for structures in this rural area range from all wood to wood and metal and are located in both open meadows and within the timber type fuels.

Given the limited accessibility and fuel continuity, a wind-driven fire would cause severe damage. The Grangemont Road is a paved, two lane access route that will accommodate emergency and large truck traffic in either direction. The Rudo Road, on the other hand, is a narrow, winding gravel road that would cause problems for equipment bigger than a pickup. The timber's close proximity to the road would inhibit the fuel break qualities a gravel road would normally demonstrate. A fire moving in the crowns of the trees would move across the road without hesitation. Power lines throughout Grangemont and Rudo appear to be in good condition. A power line corridor, relatively free of hazardous fuels, is maintained; however, it may not be wide enough given the adjacent timber fuels.

The Grangemont Volunteer Fire Department provides structural fire protection, while the Clearwater-Potlatch Timber Protective Association is responsible for wildland fire protection. There are several grassy meadows that would make adequate safety zones, the best being located around Grangemont and at the southern end of Rudo Road. There are also several

ponds capable of dipping or drafting scattered throughout the area. Some of these are visible from the road and some are not readily accessible.

The Grangemont and Rudo area has moderate to high fire risk. An ignition in the Orofino Creek drainage, depending on environmental conditions, would move rapidly through the timber. Access to homes on the Rudo Road and on dead end driveways is a major hindrance to fire suppression resources along with fuel type and continuity. Fuel breaks and road widening projects, along with a water development program would help to alleviate fire suppression obstacles. Public education and home treatment projects would also be advisable to create defensible space. Formulation of evacuation plans for all residents would also increase the safety and help reduce confusion during an emergency.

4.4.3.8 Greer

4.4.3.8.1 Fuels Assessment

The community of Greer is located approximately 8 miles southeast of Orofino at the intersection of U. S. Highway 12 and State Highway 11. Greer is situated in the small gorge created by the Clearwater River nestled on the eastern side of the Nez Perce Indian Reservation. Although many residents of this community live near the town center, there are several small clusters of homes along Highway 11 to the east toward Weippe and outlying areas. Greer is nestled on the toe of a very steep slope rising eastward toward the Weippe Prairie. These slopes are dominated by ponderosa pine, Douglas-fir and various grasses.

The topography of the landscape near Greer consists of mostly steep southern and western aspects. Much of the area surrounding the Greer community is encompassed by the private ownership. Ponderosa pine, Douglas-fir, and many grass types dominate the vegetative structure of the landscape. Various land management techniques on these ownerships have led to varied vegetation and fuel types. Much of the area surrounding Greer is represented by ponderosa pine and Douglas-fir over-story, with a mix of grass, ocean-spray, and ninebark under-story, which under normal weather conditions fire spread is primarily through the fine herbaceous fuels, either curing or dead. A mixture of various logging operations over many years constitutes different fuel types depending on the treatment of slash and the amount of volume left standing. Fires in other fuel types are rapidly spreading, high intensity surface and ground fires that are generally sustained until a fuel break or change in vegetation occurs. Other fuel types tend to support much less intense surface fires due to lighter fuel loading and a lack of volatile material.

4.4.3.8.2 Community Risk Assessment

The primary fire risks to the community of Greer lie within the several residents located along timbered forest routes leading into the mountains. These clusters of residences are commonly nestled into stands of timber on dead end secondary roads or driveways. The lack of a defensible space around homes increases its likelihood of ignition by oncoming wildfires. Residences throughout the area are frequently constructed with wood siding and decks; thus, further increasing their risk of ignition. Heavier fuel loading and steeper topography in these areas increases the chance of an uncontrolled wildfire endangering lives and property. Current logging and mining, recreational use, and active railroad system increase the risk of fire by contributing to potential ignition sources.

The primary access into the area is from State Highway 11, a paved two-lane highway. To the east of Greer is the Greer Grade, which is a steep windy road traveling to the east up slope to

the Weippe Prairie. There are very few additional escape routes on forest roads that lead away from this community. Most of these routes are located in areas at low to moderate fire risk due to the close proximity of continuous fuels along the roadway. In the event of a wildland fire, it is likely that one or more of the escape routes would become impassable. Signing of drivable alternate escape routes would reduce confusion and save time in a wildfire situation. Additionally, many homes are located on high risk one-way in, one-way out secondary roads and/or private driveways that could become threatened by wildland fire. One-way in, one-way out access roads are not only dangerous for fire-fighters; they also increase the likelihood of residents becoming trapped.

Road names and house numbers are generally present throughout the area, yet many of the bridges in the vicinity of Greer lack adequate signing and weight ratings. Most residences access water and power through personal wells or city water hook ups and above ground power lines. Greer has contracted the Orofino Rural Fire Department to provide structural protection to the community. The Clearwater-Potlatch Timber Protective Association is responsible for wildfire protection in this area.

4.4.3.8.3 Mitigation Activities

The community of Greer is considered to be at a low risk to the effects of wildfire, due to its location next to the river and on the toe slope of the mountains to the east. Those structures located within the community are reasonably protected from wildland fire by ample water resources provided by the Clearwater River and several other small drainages. Small clumps of homes and individual homes built along Highway 11 and other forest routes and on the lower slopes are at a significantly higher risk.

Many of the homes in the Greer area were constructed with building materials and landscaping techniques unfavorable for protecting them against wildfire. Individual home site evaluations can increase homeowners' awareness and improve the survivability of structures in the event of a wildfire. Creating a defensible space around structures can significantly reduce the potential loss of life and property. This can be accomplished by individual residents by removing or pruning trees nearby or overhanging the home, keeping the area clear of surface fuels, and locating wood piles, propane tanks, and other flammable objects away from the home. Assessments of homes or subdivisions in the outlying areas can address the issue of escape routes and home defensibility characteristics. Educating homeowners in techniques for protecting their property is critical in areas where heavy fuels are present.

In general these communities should focus on small projects that will increase the safety of citizens and property in the event of a wildfire emergency. These projects could include providing signage and weight rating information at all bridge crossings and cattle guards, identifying dead end roads, signing escape routes, and pruning trees around power lines. Thinning or grazing on public lands near the wildland urban interface can significantly reduce fuel build ups; thus decreasing the likelihood of a wildfire reaching the community. It is also important that people recognize and follow rules concerning campfires and trail restrictions in designated recreation areas.

4.4.3.9 Headquarters

4.4.3.9.1 Fuels Assessment

The community of Headquarters is located approximately 10 miles northeast of the Intersection of the Grangemont Road and State Highway 11. Headquarters is situated in the small valley

created by Reeds Creek, which is bordered by the land owned mainly by Potlatch Corporation. Reeds Creek, North Fork of Reeds Creek, and several other small streams provide ample water resources. There are only a few residents that live in within the Headquarters' communities there are several small clusters of homes along Highway 11 to the southwest toward Pierce and outlying areas. Many of these homes are nestled into stands of lodgepole pine, grand fir, and Douglas-fir or other fuels increasing their risk to fire.

The topography of the forestland near Headquarters consists of all aspects. Much of the area surrounding the Headquarters community is encompassed by the by Potlatch Corporation. Grand fir, lodgepole pine, Douglas-fir, and other conifer species dominate the vegetative structure of the landscape. The surrounding areas has been broken up into several ownerships including some mainly industrial property and some state and privately owned parcels. Different land management techniques on these ownerships have led to varied vegetation and fuel types. Much of the area surrounding Headquarters is represented by various mixtures of conifer trees, with a mixture of grasses and brush types, which under normal weather conditions tend to support higher intensity ground and surface fires due to greater quantities of dead and down fuels. Occasional "jackpot" burning, crowning, spotting, and torching of individual trees also makes suppression efforts difficult and dangerous for firefighters. A mixture of various logging operations over many years constitutes different fuel types depending on the treatment of slash and the amount of volume left standing. Fires in these fuel types are rapidly spreading, high intensity surface and ground fires that are generally sustained until a fuel break or change in vegetation occurs. Other fuel types tend to support much less intense surface fires due to lighter fuel loading and a lack of volatile material.

4.4.3.9.2 Community Risk Assessment

The primary fire risks to the community of Headquarters lie within the several residents located along timbered forest routes leading into the mountains, Potlatch Corporation's office, and recreationists. These clusters of residences are commonly nestled into stands of timber on dead end secondary roads or driveways. The lack of a defensible space around homes increases its likelihood of ignition by oncoming wildfires. Residences throughout the area are frequently constructed with wood siding and decks; thus, further increasing their risk of ignition. Heavier fuel loading and steeper topography in these areas increases the chance of an uncontrolled wildfire endangering lives and property. Current logging and mining and recreational use increase the risk of fire by contributing to potential ignition sources.

The primary access into the area is from State Highway 11, a paved two-lane highway that ends at Headquarters. To the east of Headquarters is primarily logging roads that are two and one lane gravel roads with turnouts. There are several additional escape routes on forest roads that lead away from these communities in all directions; however, some may be restricted throughout parts of the year. Most of these forest routes are located in areas at moderate to high fire risk due to the close proximity of continuous fuels along the roadway. In the event of a wildland fire, it is likely that one or more of the escape routes would become impassable. Signing of drivable alternate escape routes would reduce confusion and save time in a wildfire situation. Additionally, many homes are located on high risk one-way in, one-way out secondary roads and/or private driveways that could become threatened by wildland fire. One-way in, one-way out access roads are not only dangerous for fire-fighters; they also increase the likelihood of residents becoming trapped.

Road names and house numbers are generally present throughout the area, yet many of the bridges in the vicinity of Headquarters lack adequate signing and weight ratings. Most

residences access water and power through personal wells or city water hook ups and above ground power lines. This community and surrounding areas are protected by the CPTPA.

4.4.3.9.3 Mitigation Activities

The community of Headquarters is considered to be at a high risk to the effects of wildfire. Those structures located within the community are reasonably protected from wildland fire by patches of grass and ample water resources provided by the Reed Creek and several other small drainages. Small clumps of homes and individual homes built along Highway 11 and other forest routes and on the lower slopes are at a significantly higher risk.

Many of the homes in the Headquarters area were constructed with building materials and landscaping techniques unfavorable for protecting them against wildfire. Individual home site evaluations can increase homeowners' awareness and improve the survivability of structures in the event of a wildfire. Creating a defensible space around structures can significantly reduce the potential loss of life and property. This can be accomplished by individual residents by removing or pruning trees nearby or overhanging the home, keeping the area clear of surface fuels, and locating wood piles, propane tanks, and other flammable objects away from the home. Assessments of homes or subdivisions in the outlying areas can address the issue of escape routes and home defensibility characteristics. Educating homeowners in techniques for protecting their property is critical in areas where heavy fuels are present.

In general these communities should focus on small projects that will increase the safety of citizens and property in the event of a wildfire emergency. These projects could include providing signage and weight rating information at all bridge crossings and cattle guards, identifying dead end roads, signing escape routes, and pruning trees around power lines. Thinning or grazing on public lands near the wildland urban interface can significantly reduce fuel build ups; thus decreasing the likelihood of a wildfire reaching the community. It is also important that people recognize and follow rules concerning campfires and trail restrictions in designated recreation areas.

4.4.3.10 Lakeview Estates

The Lakeview Estates are located northeast of Orofino on Eureka Ridge. This small peninsula juts out into Dworshak Reservoir just north of the dam. The Lakeview Estates Development is primarily well-spaced, year around residences with the exception of a couple summer homes. Most homes in this area were constructed in the 1970's and 1980's with a few in the 1990's. Fuels on this southwest aspect are typical for a dry site consisting primarily of an open ponderosa pine stand with a grassy understory. Fires in these fuels would tend to spread rapidly, but burn at low intensities. These forest types historically burned relatively frequently.

The Eureka Ridge Road is the main access route into the Lakeview Estates and is capable of accommodating emergency vehicles. Nevertheless, most of the driveways accessing structures are narrow with only one way in and one way out and inadequate turnaround areas. These characteristics limit the size and number of emergency vehicles able to respond at one time.

Lakeview Estates is within the boundaries of the Twin Ridge Rural Fire District. Hayfields along the ridge could potentially serve as safety zones for both residents and fire fighters in the event of a compromised evacuation. The Lakeview Estates Development has constructed reservoirs that contain approximately 50,000 gallons of water with a pump system to fill emergency fire engines. There are also two large ponds, both containing approximately one million gallons each. These ponds are accessible by helicopter; however, there are power lines that could pose a safety hazard.

The Lakeview Estates Development has continued to grow since the 1970's. The major threat of wildfire to the Lakeview Estates comes from the U.S. Army Corps of Engineers land downslope of the development. Intense recreational traffic associated Dworshak Reservoir increases the risk of a fire starting on the Corp's ownership. In the spring of 2004, the Clearwater-Potlatch Timber Protective Association conducted home fire risk assessments in which approximately 75 percent of participating Lakeview Estates homeowners' with the conclusion that 50 percent of the homes are at high risk of loss in the event of a catastrophic fire. Mitigation of these risks before a wildfire occurs is imperative for homeowners' safety. Public education campaigns are effective for encouraging landowner's to make their property more fire resistant by creating a defensible space, removing hazardous materials away from structures, improving access for suppression vehicles, establishing an evacuation plan, and using more fire resistant building materials during construction projects. Hazardous fuel mitigation projects on U.S. Army Corps of Engineers property in high risk areas downslope of structures will also help improve survivability. Thinning, pruning, and prescribed burning not only reduces the fire risk, but it also improves the overall health of the forest.

4.4.3.11 Orofino

4.4.3.11.1 Fuels Assessment

The community of Orofino is located approximately 30 miles east of Lewiston along U. S. Highway 12. Orofino is situated in steep canyon created by the Clearwater River nestled on the eastern side of the Nez Perce Indian Reservation. Although many residents of this community live near the town center, there are several smaller communities in all directions out of the canyon. Orofino is nestled on the toe of a very steep slope rising eastward toward the Weippe Prairie. These slopes are dominated by ponderosa pine, Douglas-fir and various grasses.

The topography of the area surrounding Orofino consists of mostly southern and northern aspects. Much of the area surrounding the Orofino community is encompassed by the private ownership and the Nez Perce Indian Reservation. Ponderosa pine, Douglas-fir, and many grasses dominate the vegetative structure of the landscape. The surrounding areas have been broken up into several ownerships including some state land, industrial property, and privately owned parcels. Different land management techniques on these mixed ownerships have led to varied vegetation and fuel types. Much of the area surrounding Orofino is represented ponderosa pine and Douglas-fir over-story and grass, ocean spray, and nine bark in the under-story. Ponderosa pine and grass constitutes the southern aspects, and Douglas-fir, ninebark, and ocean-spray on the northern aspects. The ponderosa pine fuel type under normal weather conditions, fire spread is primarily through the fine herbaceous fuels, either curing or dead. The Douglas-fir fuel type supports higher intensity ground and surface fires, due to greater quantities of dead and down fuels. Occasional "jackpot" burning, crowning, spotting, and torching of individual trees also makes suppression efforts difficult and dangerous for firefighters. A mixture of various logging operations over many years constitutes a mixture of fuel types depending on the treatment of slash and the amount of volume left standing. Fires in one fuel type are rapidly spreading, high intensity surface and ground fires that are generally sustained until a fuel break or change in vegetation occurs, while other fuel types tend to support much less intense surface fires due to lighter fuel loading and a lack of volatile material.

4.4.3.11.2 Community Risk Assessment

The primary fire risks to the community of Orofino lie within the smaller communities located up the small timbered canyons in all directions from Orofino. These small clusters of residences are

commonly nestled into stands of timber on dead end secondary roads or driveways. The lack of a defensible space around homes increases its likelihood of ignition by oncoming wildfires. Residences throughout the area are frequently constructed with wood siding and decks; thus, further increasing their risk of ignition. Heavier fuel loading and steeper topography in these areas increases the chance of an uncontrolled wildfire endangering lives and property. Current logging and mining, recreational use, and active railroad system increase the risk of fire by contributing to potential ignition sources.

The primary access into the area is from State Highway 12, a paved two-lane highway that runs along the banks of the Clearwater River. To the east of Orofino is the Grangemont Road, which is a steep windy road traveling to the east up slope to the Weippe Prairie. There are very few additional escape routes on forest roads that lead away from this community. Most of these routes are located in areas at moderate to high fire risk due to the close proximity of continuous fuels along the roadway and steep funnel like canyons. In the event of a wildland fire, it is likely that one or more of the escape routes would become impassable. Signing of drivable alternate escape routes would reduce confusion and save time in a wildfire situation. Additionally, many homes are located on high risk one-way in, one-way out secondary roads and/or private driveways that could become threatened by wildland fire. One-way in, one-way out access roads are not only dangerous for fire-fighters; they also increase the likelihood of residents becoming trapped.

Road names and house numbers are generally present throughout the area, yet many of the bridges in the vicinity of Orofino lack adequate signing and weight ratings. Most residences access water and power through personal wells or city water hook ups and above ground power lines. The Orofino City and Rural Fire Departments provide structural protection, while the surrounding areas are protected from wildfire by the Clearwater-Potlatch Timber Protective Association and the Idaho Department of Lands.

4.4.3.11.3 Mitigation Activities

The community of Orofino is considered to be at a moderate risk to the effects of wildfire, due to its location next to the river and on the toe slope of the mountains in all directions. Those structures located within the community are reasonably protected from wildland fire by ample water resources provided by the Clearwater River and several other small drainages. Small clumps of homes and individual homes built along Highway 12, Grangemont Road, and other forest routes and on the lower slopes are at a significantly higher risk.

Many of the homes in the Orofino area were constructed with building materials and landscaping techniques unfavorable for protecting them against wildfire. Individual home site evaluations can increase homeowners' awareness and improve the survivability of structures in the event of a wildfire. Creating a defensible space around structures can significantly reduce the potential loss of life and property. This can be accomplished by individual residents by removing or pruning trees nearby or overhanging the home, keeping the area clear of surface fuels, and locating wood piles, propane tanks, and other flammable objects away from the home. Assessments of homes or subdivisions in the outlying areas can address the issue of escape routes and home defensibility characteristics. Educating homeowners in techniques for protecting their property is critical in areas where heavy fuels are present.

In general these communities should focus on small projects that will increase the safety of citizens and property in the event of a wildfire emergency. These projects could include providing signage and weight rating information at all bridge crossings and cattle guards, identifying dead end roads, signing escape routes, and pruning trees around power lines. Thinning or grazing on public lands near the wildland urban interface can significantly reduce

fuel build ups; thus decreasing the likelihood of a wildfire reaching the community. It is also important that people recognize and follow rules concerning campfires and trail restrictions in designated recreation areas.

4.4.3.12 Pierce

4.4.3.12.1 Fuels Assessment

The community of Pierce is located approximately 10 miles northeast of Weippe on State Highway 11. Pierce is situated in the small valley created by Orofino Creek, which is bordered by the Potlatch Corporation lands on all sides. Orofino Creek, Rhodes Creek, Jim Brown Creek, and several other small streams provide ample water resources. Although many residents of these communities live near the town center, there are several small clusters of homes along forest roads in outlying areas. Many of these homes are nestled into stands of lodgepole pine, grand fir, and Douglas-fir or other fuels increasing their risk to fire.

The topography of the surrounding forested land near Pierce consists of all aspects. Grand fir, lodgepole pine, Douglas-fir, and other conifer species dominate the vegetative structure of the landscape. The surrounding areas has been broken up into several ownerships including some state land, industrial property, federal, and privately owned parcels. Different land management techniques on these mixed ownerships have led to varied vegetation and fuel types. Much of the area surrounding Pierce is represented by Douglas-fir, grand fir, lodgepole pine, and other conifer species in the over-story and mixed brush species in the under-story, which under normal weather conditions tend to support higher intensity ground and surface fires due to greater quantities of dead and down fuels. Occasional “jackpot” burning, crowning, spotting, and torching of individual trees also makes suppression efforts difficult and dangerous for firefighters. A mixture of various logging operations over many years constitutes different fuel types depending on the treatment of slash and the amount of volume left standing. Fires in these fuel types are rapidly spreading, high intensity surface and ground fires that are generally sustained until a fuel break or change in vegetation occurs. Other fuel types within the area tend to support much less intense surface fires due to lighter fuel loading and a lack of volatile material.

4.4.3.12.2 Community Risk Assessment

The primary fire risks to the community of Pierce lie within the residential areas located along timbered forest routes leading into the mountains. These clusters of residences are commonly nestled into stands of timber on dead end secondary roads or driveways. The lack of a defensible space around homes increases its likelihood of ignition by oncoming wildfires. Residences throughout the area are frequently constructed with wood siding and decks; thus, further increasing their risk of ignition. Heavier fuel loading and steeper topography in these areas increases the chance of an uncontrolled wildfire endangering lives and property. Current logging and mining, recreational use, and active railroad system increase the risk of fire by contributing to potential ignition sources.

The primary access into the area is from State Highway 11, a paved two-lane highway that extends to the north and south. There are several additional escape routes on forest roads that lead away from these communities in all directions; however, some may be restricted throughout parts of the year. Most of these forest routes are located in areas at moderate to high fire risk due to the close proximity of continuous fuels along the roadway. In the event of a wildland fire, it is likely that one or more of the escape routes would become impassable.

Signing of drivable alternate escape routes would reduce confusion and save time in a wildfire situation. Additionally, many homes are located on high risk one-way in, one-way out secondary roads and/or private driveways that could become threatened by wildland fire. One-way in, one-way out access roads are not only dangerous for fire-fighters, they also increase the likelihood of residents becoming trapped.

Road names and house numbers are generally present throughout the area, yet many of the bridges in the vicinity of Pierce lack adequate signing and weight ratings. Most residences access water and power through personal wells or city water hook ups and above ground power lines. Structural protection in Pierce is provided by the Pierce Fire Department while the Clearwater-Potlatch Timber Protective Association and the USDA Forest Service provide wildland fire protection.

4.4.3.12.3 Mitigation Activities

The community of Pierce is considered to be at a high risk to the effects of wildfire. Those structures located within the community are reasonably protected from wildland fire by development of yards or pasture as well as readily available water sources. Small subdivisions and individual homes built along forest routes and on the lower slopes are at a significantly higher risk.

Many of the homes in the Pierce area were constructed with building materials and landscaping techniques unfavorable for protecting them against wildfire. Individual home site evaluations can increase homeowners' awareness and improve the survivability of structures in the event of a wildfire. Creating a defensible space around structures can significantly reduce the potential loss of life and property. This can be accomplished by individual residents by removing or pruning trees nearby or overhanging the home, keeping the area clear of surface fuels, and locating wood piles, propane tanks, and other flammable objects away from the home. Assessments of homes or subdivisions in the outlying areas can address the issue of escape routes and home defensibility characteristics. Educating homeowners in techniques for protecting their property is critical in areas where heavy fuels are present.

In general these communities should focus on small projects that will increase the safety of citizens and property in the event of a wildfire emergency. These projects could include providing signage and weight rating information at all bridge crossings and cattle guards, identifying dead end roads, signing escape routes, and pruning trees around power lines. Thinning or grazing on public lands near the wildland urban interface can significantly reduce fuel build ups; thus decreasing the likelihood of a wildfire reaching the community. It is also important that people recognize and follow rules concerning campfires and trail restrictions in designated recreation areas.

4.4.3.13 Sunnyside Area and New Hope Subdivision

The Sunnyside area and New Hope subdivision are located on the north side of the Clearwater River east of the Ahsahka extending to the Clearwater-Nez Perce County line. In the last ten years this area has experienced the largest growth in Clearwater County and this trend is expected to continue. Vegetation on this south aspect is typical of a dry site consisting primarily of open ponderosa pine with a grassy understory. Fires in these fuels will tend to spread very rapidly, particularly upslope due to convection. This fuel type historically burned relatively frequently, but at lower intensities.

The Ahsahka Grade and Sunnyside Road Bench Road access the lower slope while Cavendish Road, South Road, and Teaken Road access the mid and upper slope. These main roads are

adequate to accommodate large emergency vehicles; however, the private roads and driveways are narrow with typically only one way in and one way out. Both Sunnyside and New Hope have overhead power lines, which provide power to the homes. Additionally there is high voltage transmission lines that cross part of the New Hope subdivision.

Both areas are within the structural protection boundaries of the Sunnyside Rural Fire District. The Clearwater-Potlatch Timber Protective Association and the Nez Perce Tribe provide wildland fire protection. There are a number meadows and hay fields that could serve as safety zones for both residents and fire fighters in the event of a compromise evacuation. The Sunnyside Rural Fire District has installed two 10,000gallon water tanks with gravity fed hydrants. One is located at the fire station and the other at the top of the Old Peck Grade. The New Hope subdivision has a 40,000 gallon community reservoir. There are also many private ponds scattered throughout the area, most of which are accessible by helicopter.

The Sunnyside area and New Hope subdivision have moderate to high fire risk. An ignition near the Clearwater River, depending on environmental conditions, would move very rapidly upslope through the cured grasses. Access to homes on dead end driveways with hazardous fuels adjacent to the roadway is a major hindrance to fire suppression resources along with fuel type, topography, and continuity. Fuel breaks and road widening projects, along with a water development program would help to alleviate fire suppression obstacles. Public education and home treatment projects would also be advisable to create defensible space. Formulation of evacuation plans for all residents would also increase the safety and help reduce confusion during an emergency.

4.4.3.14 Wells Bench

The Wells Bench area is located northeast of Orofino along and extending from Wells Bench Road. Many of the homes in this area are small ranchettes with several associated outbuildings. This is a relatively xeric south aspect site with fuels ranging from grasses and brush at the lower elevations to a Douglas fir and ponderosa pine forest type at higher elevations. The continuity of these fuels is repeatedly broken by cleared farm or grazed pasture ground. These more defendable, less hazardous areas may serve as potential safety zones for both residents and fire fighters.

The Wells Bench area and surrounding ranchettes and rural homes has a good primary road system that can handle large emergency vehicles. Like most of the rural interface areas in Clearwater County, the private roads and driveways are narrow and typically one way in, one way out with hazardous fuels either adjacent to or overhanging the roadway.

The Wells Bench area has many large ponds that would serve well as helicopter ponds as well as engine refill sites. The Twin Ridge Rural Fire District has established a refill site next to their fire hall witch contains approximately two million gallons of water.

The Wells Bench area is within the boundaries of the Twin Ridge Rural Fire District and the Orofino Rural Fire District has protection responsibilities for part of the lower portion of Wells Bench. The Clearwater-Potlatch Timber Protective Association provides wildland fire protection. Rural addressing is poor, but is currently in the process of being updated.

The fire history for the Wells Bench area has been, for the most part, small fires that were easy to contain with initial attack crews from both the Clearwater-Potlatch Timber Protective Association and the rural fire districts of Orofino and Twin Ridge. Many homeowners currently maintain an adequate defensible space in the form of managed farm or pasture fields; however, there are some homes that are at high fire risk due to their abutment to hazardous fuels or storage of flammable materials such as wood piles or propane tanks near the home. There

needs to be an ongoing public education program to help the land owners become more involved in doing more to make their homes as fire resistant as possible. Fuel mitigation projects targeted on access routes and defensible space around homes would also be beneficial.

4.4.3.15 Weippe

4.4.3.15.1 Fuels Assessment

Weippe is a small community on the Weippe Prairie near the Clearwater National Forest and located approximately 17 miles east of Greer along Highway 11. There are many residences located near the community center; however, many homes, farms, and ranches are scattered throughout the area for several miles. Many of these are larger landowners are located in the flatter regions known as Weippe Prairie. Somewhat isolated islands of forest land separate these areas. Ponderosa pine, Douglas-fir, grand fir, lodgepole pine and other conifers are dominant on the slopes. Some landowners have built homes on the lower slopes abutting or mingling with these wildland fuels. Although the very small drainages of Ford Creek, Grasshopper Creek, and Winter Creek provide some water resources, the closest large water body is Clearwater River approximately 17 miles to the east. Weippe is characterized as an interface condition by the wildland urban interface classification system.

The topography of Weippe is relatively flat. The topography changes drastically though in all directions to very steep canyons and gorges. The majority of the regions fuel types are a mixture of agricultural, pasture land, and mixed conifer forests. Fires tend to support varying degrees of intensity, which under normal weather conditions tend to support higher intensity ground and surface fires due to greater quantities of dead and down fuels. Occasional “jackpot” burning, crowning, spotting, and torching of individual trees also makes suppression efforts difficult and dangerous for firefighters. The rate of fire spread in fuel model 1 tends to be governed by the amount of continuous herbaceous fuels that have cured or are nearly cured. These fires are generally fast-moving surface fires. Mixtures of various logging operations over the forested area for many years have left a variety of fuel types depending on the treatment of slash and the amount of volume left standing. Fires in the dense timber types are rapidly spreading, high intensity surface and ground fires that are generally sustained until a fuel break or change in vegetation occurs. Other fuel types tend to support much less intense surface fires due to lighter fuel loading and a lack of volatile material. Developed agriculture and livestock grazing in the flat, grassy valleys creates the conditions for another fuel type, which tend to support low intensity, fast-moving surface fires. This lower risk area provides not only a fuel break, but also a safety zone for firefighters and residents of Weippe.

4.4.3.15.2 Community Risk Assessment

Although the flatter areas provide buffers for many residents against uncontrolled wildfire, the conditions for potentially severe, high intensity fires such as heavy continuous fuels, steep slopes, and up slope winds are all present near the Weippe Prairie. Furthermore, numerous logging operations, annual field burning, and recreational activities in the area increase potential ignition sources.

Many homes in Weippe and surrounding areas have been built using wood siding, roofing, and decking, which is unfavorable for protection against wildfire. Also, some homeowners stack firewood under decks or against other structures. Homes built within the grassy valley bottoms generally have an adequate defensible space; however, those in more mountainous areas are

commonly adjacent to or within heavier fuels. Additionally, many residences are located on long, one-way in, one-way out roads or private drives.

The primary access into the area is on Highway 11 which is a paved two lane road. Three Mile Road, Musselshell Road, and various other roads offer additional escape routes traveling in all directions away from the community. Most of these roads are located in areas at low risk of wildland fire due to agricultural development.

Road names are generally present throughout the area, yet bridges on many access roads lack adequate signing and weight ratings. Also, house numbers in some areas seem to be missing or difficult to see. Most residences access water or city water hook ups and power through personal wells and above ground power lines. The Weippe Rural Fire Department provides structural protection and Clearwater-Potlatch Timber Protective Association and the USDA Forest Service provide wildland fire protection in the surrounding area.

4.4.3.15.3 Mitigation Activities

The community of Weippe is at moderate risk of wildland fire due primarily to homes and other structures in outlying areas abutting wildland fuels and the high concentration of logging and recreational use in the area. Furthermore, the town of Weippe is located on a plateau which lies above the steep canyons of the Clearwater River and other steep canyons. Most of the roads accessing the Weippe area are located in moderate fire risk areas; however, State Highway 11 from Weippe to Pierce is at somewhat higher risk due to wildland fuels on the hillside adjacent to the roadway.

Individual home site evaluations can increase homeowners' awareness and improve the survivability of structures in the event of a wildfire. Home assessments can address the issue of escape routes and home defensibility characteristics. Creating a defensible around structures can significantly reduce the potential loss of life and property. This can be accomplished by individual residents by removing or pruning trees nearby or overhanging the home, keeping the area clear of surface fuels, and locating wood piles, propane tanks, and other flammable objects away from the home. Further efforts to thin fuels around the community would help lessen the probability of a wildland fire reaching the town site. Creating and widening turnouts and thinning fuels along access routes would reduce the risk of residents becoming trapped and increase the responsiveness and safety of suppression vehicles and personnel. Educating homeowners in techniques for protecting their homes is critical in areas where heavy fuels are present.

In general communities in this area should focus on small projects that will increase the safety of citizens and property in the event of a wildfire emergency. These projects could include providing signage and weight rating information at all bridge crossings, identifying dead end roads, signing escape routes, and pruning trees around power lines. Setting up a community wide program to keep vegetation around structures and along roadways green and clear of hazardous surface fuels would reduce the potential loss of life and property in the event of a wildfire. Thinning and grazing on public lands near the wildland urban interface can significantly reduce fuel build ups; thus decreasing the likelihood of a wildfire reaching the community. It is also important that people recognize and follow rules concerning campfires and trail restrictions in designated recreation areas.

4.5 Fire Fighting Resources and Capabilities

The Fire Fighting Resources and Capabilities information provided in this section (3.4) is a summary of information provided by the Rural Fire Chiefs or Representatives of the Wildland Fire Fighting Agencies listed. Each organization completed a survey with written responses.

Their answers to a variety of questions are summarized here. ***In an effort to correctly portray their observations, little editing to their responses has occurred.*** These summaries indicate their perceptions and information summaries.

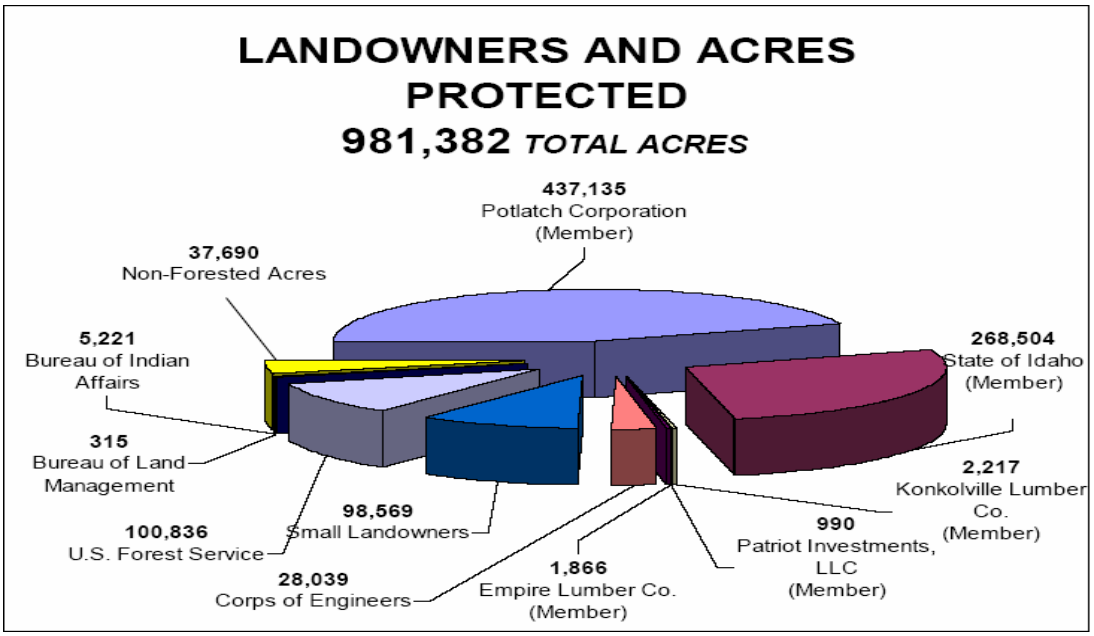
4.5.1 Wildland Fire Districts

4.5.1.1 Clearwater-Potlatch Timber Protective Association

The Clearwater Timber Protective Association and the Potlatch Timber Association were separately organized in the early 1900's. In 1966, these two entities merged to form the Clearwater-Potlatch Timber Protective Association, a non-corporate entity. Subsequently, on July 16, 1982, the Association completed filings for incorporation under the Idaho Nonprofit Corporation Act and became the Clearwater-Potlatch Timber Protective Association, Inc.

The Association is controlled by forest landowners belonging to its membership and subject to the provisions of the Idaho Forestry Act. The Association is primarily responsible for the conservation and protection of the forests and forestland within the State of Idaho; specifically, the Palouse, Potlatch, and North Fork of the Clearwater River drainages.

Figure 4.1 C-PTPA Landowners and Acres Protected in 2003.



A cooperative agreement continues to this date between the Association and the State Board of Land Commissioners through the Director of the Idaho Department of Lands. The purpose of this agreement is to clarify the forest protection relationship between the Association and the Idaho Department of Lands. It defines the reimbursable expenditures and emergency fire suppression expenditures that may be incurred by the State and Association. In addition, the agreement addresses the following: (1) fire protection plans, (2) fire management, (3) reports and records, (4) budgets, (5) administrative matters, (6) payments, (7) duration, and (8) limited obligation by the State.

The protection agreement with the Corps of Engineers to provide additional protection services around Dworshak Reservoir was continued during the 2003 fire season. This agreement

provides for boat patrols, aerial patrols, fire prevention, prescribed fire, and maintenance efforts in the campsites. An additional contract was negotiated in 1993 with the C-PTPA accepting the responsibility of preparing the fire lines in over 100 campsites along the 53-mile reservoir.

Figure 4.2. Number and Suppression Costs for the C-PTPA in 2003.

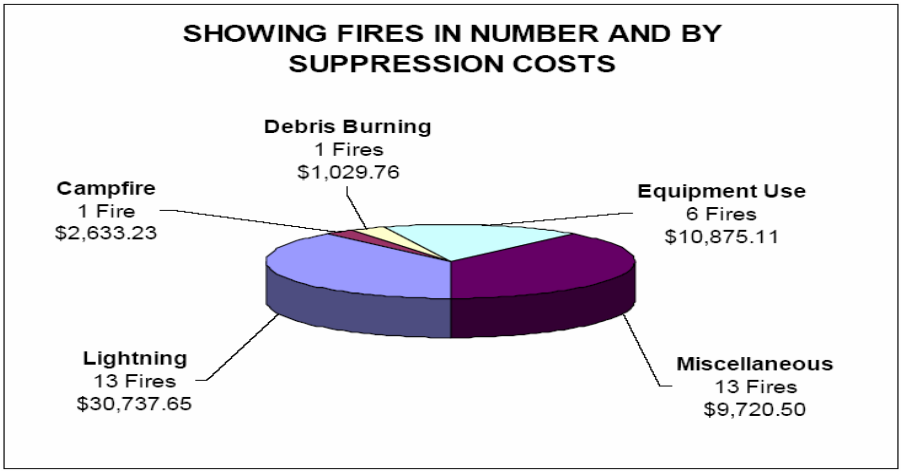
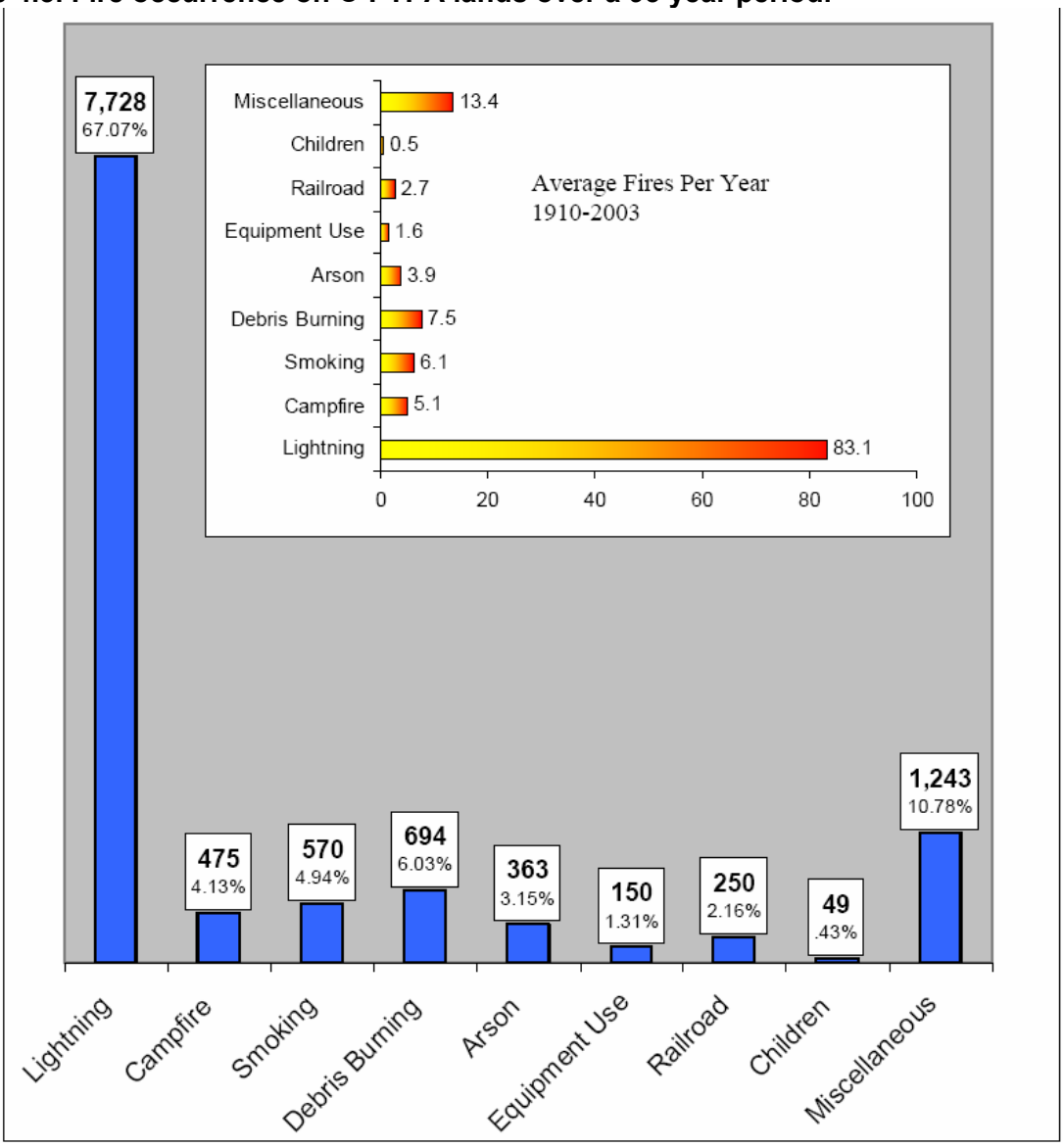


Figure 4.3. Fire occurrence on C-PTPA lands over a 93 year period.



4.5.1.1.1 Clearwater-Potlatch Timber Protective Association – Boehls Cabin Area

Table 4.2 Clearwater-Potlatch Timber Protective Association - Boehls Cabin Area

Howard Weeks, Fire Warden, Phone: (208) 476-5612

	Item	Description	Existing	Details
Protective Equipment	Shirts	Nomex	22	
	Pants	Nomex	16	
	Headlamps		48	
	Fire Shelters		12	
Hand Tools	Shovels		107	
	Pulaski's		98	

Table 4.2 Clearwater-Potlatch Timber Protective Association - Boehls Cabin Area

Howard Weeks, Fire Warden, Phone: (208) 476-5612

	McLeod's		21	
	Combination		13	
	Fire Shovel	D-handle	7	
	Chainsaw	Stihl 066	2	
	Chainsaw	Stihl 064	3	
Communications	Mobile Radios		5	
	Base Station	Phoenix	1	Cook house
	Base Station	Phoenix	1	Office
	Base Station	G.E.	1	Warden's quarters
	Hand-held Radios	Vertex	2	
	Portable Radios	King	8	
Vehicles	Wildland Engine	1970 Consolidated Type 6	2	
	Wildland Engine	1966 Studabaker	3	
	Wildland Engine	1986-2003 Pick-up type	4	
	Dozer	1963 Cat D-6	1	
	4X4 Pick-up		5	
	ATV	1998 Polaris	1	
	ATV	2003 Yamaha	1	
Other Equipment	Drip Torch		5	
	Propane Burners		2	
	Portable Pump	Mark III	2	
	Portable Pump	1 1/2" Homelite	3	
	Portable Pumps	3" Homelite	1	
	Portable Pumps	3/4" Homelite	1	

4.5.1.1.2 Clearwater-Potlatch Timber Protective Association – Headquarters Area

Table 4.3 Clearwater-Potlatch Timber Protective Association-Headquarters Area

Howard Weeks, Fire Warden, Phone: (208) 476-5612

	Item	Description	Existing	Details
Protective Equipment	Shirts	Nomex	10	
	Pants	Nomex	10	
	Hard Hats	Wildland	3	
	Goggles	Wildland	4	
	Headlamps		50	

Table 4.3 Clearwater-Potlatch Timber Protective Association-Headquarters Area

Howard Weeks, Fire Warden, Phone: (208) 476-5612

	Fire Shelters		12
Hand Tools	Shovels		190
	Pulaski's		250
	McLeod's		5
	Combination		10
	Chainsaw	Stihl 066	6
	Chainsaw	Stihl 064	3
Communications	Mobile Radios	King	3
	Mobile Radios	Phoenix	2
	Mobile Radios	Uniden	3
	Portable Radios	King	7
	Portable Radios	Vertex	1
	Base Station	Phoenix	4
Vehicles	Wildland Engine	1970 6X6, Type 4	6
	Wildland Engine	1971 Gamma Goat,	3
	Wildland Engine	3/4 ton, Type 7	6
	Water Tender	Western Star	1
	Backhoes	Case	1
	4X4 Pick-up	1976 Dodge M880	1
	Truck	1972 6X6 2 1/2 ton flatbed	1
	Truck	1973 6X6 2 1/2 ton flatbed	1
Other Equipment	Drip Torch		6
	Propane Torch		6
	Portable Pump	Mark III	2
	Portable Pump	1 ½" Homelite	10
	Portable Pumps	3" Homelite filler	2
	Portable Pumps	1" Homelite	3

4.5.1.1.3 Clearwater-Potlatch Timber Protective Association – Elk River Area

Table 4.4 Clearwater-Potlatch Timber Protective Association-Elk River Area

Howard Weeks, Fire Warden, Phone: (208) 476-5612

	Item	Description	Existing	Details
Protective Equipment	Shirts	Nomex	53	
	Pants	Nomex	46	
	Hard Hats	Wildland	10	

Table 4.4 Clearwater-Potlatch Timber Protective Association-Elk River Area

Howard Weeks, Fire Warden, Phone: (208) 476-5612

	Goggles	Wildland	5
	Headlamps		50
	Fire Shelters		16
Hand Tools	Shovels		96
	Pulaski's		78
	McLeod's		22
	Combination		10
	Chainsaw	Stihl 046	2
	Chainsaw	Stihl 064	5
Communications	Mobile Radios	King	4
	Mobile Radios	Phoenix	2
	Mobile Radios	Uniden	2
	Portable Radios	King	10
	Portable Radios	King	8
	Base Station	King	4
	Repeaters		2
Vehicles	Wildland Engine	6X6, Type 4	4
	Wildland Engine	1971 Gamma Goat,	3
	Wildland Engine	3/4 ton, Type 7	4
	Dozer	1963 Cat D-6	1
	Backhoe	Case	1
	ATV	Yamaha	2
Other Equipment	Drip Torch		5
	Propane Torch		6
	Portable Pump	Mark III	2
	Portable Pump	1 ½" Homelite	6
	Portable Pumps	1" Homelite	2
	Portable Pumps	BB4	2
	Portable Pumps	3" Homelite	3

4.5.1.1.4 Clearwater-Potlatch Timber Protective Association – Orofino Area

Table 4.5. Clearwater-Potlatch Timber Protective Association-Orofino Area

Howard Weeks, Fire Warden, Phone: (208) 476-5612

	Item	Description	Existing	Details
Protective Equipment	Shirts	Nomex	25	
	Pants	Nomex	25	
	Hard Hats	Wildland	25	
	Goggles	Wildland	15	
	Headlamps		200	
	Fire Shelters		35	
Hand Tools	Shovels		385	
	Pulaski's		475	
	McLeod's		68	
	Combination		10	
	Fire Shovel	D-handle	7	
	Chainsaw	Stihl 032	2	
	Chainsaw	Stihl 046	2	
	Chainsaw	Stihl 064	4	
Communications	Mobile Radios	King	7	
	Mobile Radios	Phoenix	3	
	Mobile Radios	Uniden	2	
	Portable Radios	King	10	
	Portable Radios	King, Fire Cache	30	
	Base Station	King	5	
Vehicles	Wildland Engine	1970 6X6, Type 4	1	
	Wildland Engine	1969 6X6, Type 4	1	
	Wildland Engine	1972 6X6, Type 4	1	
	Wildland Engine	1970 Gamma Goat,	1	
	Wildland Engine	1986 1 ton Chevrolet, Type 6	1	
	Wildland Engine	3/4 ton, Type 7	3	
	Water Tender	1991 Western Star 4,000 gal.	1	
	Water Tender	1998 Kenworth 3,500 gal	1	
	Water Tender	1976 Autocar 4,000	1	

Table 4.5. Clearwater-Potlatch Timber Protective Association-Orofino Area

Howard Weeks, Fire Warden, Phone: (208) 476-5612

		gal.	
	Water Tender	1980 Mack, 4,000 gal	1
	Dozer	1988 Cat D-5	1
	Dozer	1962 Cat D-6	1
	Dozer	1973 John Deere 450	1
	4X4 Pick-up	1976 Dodge M880	1
	Truck	1987 International Flatbed	1
	Truck	1976 GMC Flatbed	1
	Transports	1995 Western Star Lowboy	1
	ATV	Yamaha	2
	Fuel Trucks	1970 Jeep 6X6, 1200 gal	1
	Shop Trucks	1987 Jeep 4X4	1
Air Craft	Airplane	1974 Cessna 185	1
	Airplane	1958 Super Cub	1
Other Equipment	Drip Torch		3
	Heli-torch		1
	Propane Burners		8
	Portable Pump	Mark III	4
	Portable Pump	1 ½" Homelite	4
	Portable Pumps	2" Homelite	2
	Portable Pumps	Mark 26	3

4.5.1.2 Idaho Department of Lands – Maggie Creek Area

Table 4.6. Idaho Department of Lands - Maggie Creek Area

David Summers, Fire Warden Phone: (208) 935-2141

	Item	Description	Existing	Details
Protective Equipment	Shirts	Nomex	60	
	Pants	Nomex	52	
	Boots	Wildland Leather	0	
	Gloves	Leather	36	
	Hard Hats	Wildland	18	
	Goggles	Wildland	20	
	Headlamps		50	

Table 4.6. Idaho Department of Lands - Maggie Creek Area

David Summers, Fire Warden Phone: (208) 935-2141

	Fire Shelters		18	
	Breathing Apparatus		0	
Hand Tools	Shovels		45	
	Pulaski's		40	
	McLeod's		10	
	Combination		10	
	Green Grubber		3	
	Chainsaw		10	
Communications	Hand-held Radios	King	16	
	Mobile	Midland, Motorola	12	
	Base Station	Motorola	1	
	Repeaters		3	Wood rat, Teaken, Cottonwood Butte
	Dispatch		1	24 hours/day, 7 days/week
Vehicles	Wildland Engine	2001 Ford F450 4x4 Type 6, 300 gal	1	
	Wildland Engine	1995 Chevrolet 3500 4X4 Type 6, 250 gal	1	
	Wildland Engine	1988 GMC 7000 Type 4, 700 gal	1	
	Utility Vehicle	1993 GMC Crew cab	1	
	Utility Vehicle	1999 Chevrolet Tahoe	1	
	4X4 Pickup	1991-2002 1/2 ton	8	
	Truck	1950's 2 1/2 ton flatbed	1	
	ATV	Honda 4 wheel drive	3	
	ATV	Yamaha 2 wheel drive	1	
Other Equipment	Volume Pump	Honda	1	
	Pump	Mark III	2	
	Pump	Mark 26	1	
	Tank	2500 gal port-a-tank	1	
	Tank	1500 gal port-a-tank	1	
	Portable Pumps		2	
	Blower	Portable Gas	2	
	Drip Torches		8	
	Torches	Propane	6	
	Foam Equipment		1	Unit on Type 4 engine

4.5.1.3 USDA Forest Service

Table 4.7. US Forest Service - Clearwater Forest

Jim Grey, Clear/Nez Forest Fire Management Officer

	Item	Description	Existing	Details
Protective Equipment	Shirts	Nomex	1,000	
	Pants	Nomex	1,000	
	Boots	Wildland Leather	0	
	Gloves	Leather	1,000	
	Hard Hats	Wildland	100	
	Goggles	Wildland	100	
	Headlamps		100	
	Fire Shelters		100	
	Breathing Apparatus		0	
Communications	Radios	King	200	
	Dispatch	Clearwater/Nez Perce Dispatch Center	1	24 hours/day, 7 days/week 208-983-4060
Vehicles	Wildland Engine	Type 4	4	
	Wildland Engine	Type 5	4	
	Wildland Engine	Type 6	4	
	Water Truck		2	
	Utility Vehicle		2	
	4X2 Pickup		20	
	4X4 Pickup		20	
	Passenger Vans		2	
	ATV		10	
	Shop Truck		2	
Aircraft	Passenger Airplane	Twin Otter	1	Seasonally
	Observer Airplane	Cessna	3	
	Air Traffic Control	Light Twin	1	
	Helicopter	Bell 206 L-3	2	
Other Equipment	Drip Torch		75	
	Terra Torches		1	
	Sphere (machine)		3	
	Gel Torch (Heli)		1	
	Portable Pumps		10	
	Chainsaws		75	

4.5.2 Rural Fire Districts

The Clearwater County Local Fire Service Mutual Aid Plan has been adopted by the rural fire districts within the County. The purpose of the Plan is:

1. To provide for rapid systematic mobilization, organization, and operation of necessary fire and rescue resources in mitigating the effects of extraordinary events. Local officials will maintain their fire and rescue resources consistent with anticipated needs.
2. To provide an annually-updated fire and rescue inventory of all personnel, apparatus, and equipment.
3. To promote annual training and/or exercises between plan participants.

4.5.2.1 Elk River Volunteer Fire Department

Table 4.8. Elk River Volunteer Fire Department

Rick Roe, Chief, Elk River, ID Phone: (208) 826-3351 01/09/03

Elk River Volunteer Fire Department is a city based volunteer organization housed in a 2 bay building, and is managed by the City Council and Mayor. Elk River responds to structural and limited wildland and rural areas. Currently the incident capacity is one single-family dwelling and recovery requirement is approximately five minutes.

	Item	Description	Existing	Needed	Details
Personnel	Basic Member	State fire training for structural fires	8		
Training	Basic Wildland Training				Provided by CPTPA
	Basic Structural Training				70% of members need "Essentials of Fire Fighting" course
	Haz-Mat Training				
	Basic Safety				
	Advanced Safety				
	First Aid				
	SCBA training				
Protective Equipment	Shirts	Nomex	0	15	
	Pants	Nomex	15	15	
	Gloves	Leather	12	12	
	Hard Hats	Wildland	15	10	
	Goggles	Wildland	0	15	
	Headlamps		0	15	
	Fire Shelters		0	15	
	Coats		15	15	
	Breathing Apparatus	SCBA	2	2	
Hand Tools	Shovels		1	15	
	Pulaski's		0	15	
	McLeod's		0	15	
	Chainsaw		0	1	

Table 4.8. Elk River Volunteer Fire Department

Rick Roe, Chief, Elk River, ID Phone: (208) 826-3351 01/09/03

	Axe		1	15	
Communications	Portable Radios	Motorola	2	2	
	Mobile Radios	Tactical	0	1	
	Repeaters		1		Elk Butte
	Dispatch	Latah County	1		24 hours/day, 7 days/week
Vehicles	Structural Engine	1975 American La France	1		Do not have enough man power to operate more
	Ambulance	2000 Chevrolet 1 ton 4X4 diesel	1		County owned
Other Equipment	Drip Torch			4	
	Portable Pump			1	With filler and discharge hoses

4.5.2.2 Evergreen Rural Fire District

Table 4.9. Evergreen Rural Fire District.

Howard Weeks, Chief, Orofino, ID Phone: (208) 476-5362 12/04/02

Evergreen Fire District is a county-based volunteer organization housed in a 3 bay building, and is managed by elected fire district commissioners who choose a fire chief. Evergreen responds to structural and wildland fires. Currently the incident capacity is one single family incident or one class C wildland fire, and the recovery time is one hour for a structural incident and eight hours for a wildland incident.

	Item	Description	Existing	Needed	Details
Personnel	Basic Member	Meets minimum qualifications and training, with limited experience	Approximately 15	4	Need more members that are wildland and structural fire certified
	Intermediate Member	Meets minimum qualifications and training, with moderate experience	2	4	Need members qualified to act as a captain
	Advanced Member	Extensive training, qualifications and experience	2	4	Need engineers and training officers, as well as command trained members
Training	Basic Wildland Training				Provided by CPTPA
	Basic Structural Training	"Essentials of Fire Fighting" Course and Rural Fire Operations			Provided by Fire Service Training
	Defibulator Refresher	Refresher Course			
	First Aid Training	Refresher Course			
Protective Equipment	Shirts	Nomex	20	20	
	Pants	Nomex	20	30	

Table 4.9. Evergreen Rural Fire District.

Howard Weeks, Chief, Orofino, ID Phone: (208) 476-5362 12/04/02

	Coats	Turnout	22	20	
	Pants	Turnout	22	20	
	Boots	Wildland Leather	20	10	
	Boots (Structural)		25	12	
	Gloves	Leather	25	30	
	Gloves (Structural)		30	20	
	Hard Hats		25	20	
	Hard Hats (Structural)		22	12	
	Goggles	Wildland	20	20	
	Headlamps		14	10	
	Fire Shelters		20	20	
	Breathing Apparatus	MSA 2001 Firehawk MMR	10	0	
Hand Tools	Shovels		6	12	
	Pulaski's		6	12	
	McLeod's		2	6	
	Chainsaw	Stihl 032	3	1	Newer Saws
Communications	Mobile Radios	Uniden VHF	3		10 Channel
	Mobile Radios	Vertex VHF	1		1995 256 Channel 2004
	Portable Radios	Vertex VHF	25	10	16 Channel
	Base Station	VHF Vertex	1		1982 256 Channel 2004
	Base Station	Phoenix VHF	1		16 Channel
	Dispatch	Clearwater Sheriff Dept.	1		24 hours/day, 7 days/week
Vehicles	Structural Engine	1972 Ward La France 500 gpm, 500 gal pumper, 250 psi	1	1	With foam induction and 40 gallon foam tank
	Wildland Engine	1968 Dodge 300 4X4 250 gal Type 6	1		
	Water Tender	1992 Western Star 4000 gal., 750 gpm	1		In service 2004
	Water Tender	1970 Dodge 1000, 4000gal tank, 750 gpm @ 250 psi	1		
Other Equipment	Porta-Tank	Year 2000, 2500 gal	1	1	

Table 4.9. Evergreen Rural Fire District.

Howard Weeks, Chief, Orofino, ID Phone: (208) 476-5362 12/04/02

		tank			
	Porta-Tank	2004 1500 gal	1		
	Ventilation Fan		1	1	
	Generator	2 KW	0	1	
	Floating Pump		0	1	
	Potable Pump	2002 Honda 3" 260 gpm	2	0	Fill-volume pumps 2004

4.5.2.3 Grangemont Rural Fire District

Table 4.10. Grangemont Rural Fire District.

Jon Walton, Chief, Grangemont, ID Phone: (208) 476-7709 12/15/02

Grangemont Fire District is a county-based volunteer organization currently housed in private buildings (a fire station is being built) and is managed by three elected fire district commissioners who choose a fire chief. Grangemont responds to structural fires. Currently the incident capacity is one single-family dwelling and the recovery time is approximately two hours.

	Item	Description	Existing	Needed	Details
Personnel	Member		15		7 members meet the National Standards for structural fires
Training	Advanced Structural Training			X	Provided by the state and other local districts
Protective Equipment	Shirts	Nomex		10	
	Pants	Nomex		10	
	Gloves	Leather	4	10	
	Hard Hats		6	10	
	Goggles			20	
	Headlamps		10	10	
	Fire Shelters		0	20	
	Breathing Apparatus			5	
Hand Tools	Shovels		4	10	
	Pulaski's		2	10	
	Chainsaw	Husquvarna	1		
Communications	Radios	Vertex	7	11	
	Base Station			1	
	Dispatch	Clearwater County Sheriff Department	1		24 hours/day, 7 days/week
Vehicles	Structural Engine	1960 Military 6X^ 500 gallon	1		
	Structural Engine	1973 American General 6X6 1,100 gallon	1		

Table 4.10. Grangemont Rural Fire District.			
Jon Walton, Chief, Grangemont, ID Phone: (208) 476-7709 12/15/02			
	Wildland Engine	1975 Dodge 1 ton, 200 gallon	1
Other Equipment	Portable Pump	2002 Yamaha 350 gpm	1

4.5.2.4 Greer Fire District

Table 4.11. Greer Fire District.

Contact Orofino Rural Fire District
Mike Lee, Chief, Orofino, ID Phone: 208-476-9036

Greer Fire District is a county-based volunteer organization housed in two private buildings, and is managed by three fire district commissioners. Greer no longer provides protection; however, they have contracted with Orofino Rural Fire District and Weippe Rural Fire Department as of 2004.

	Item	Description	Existing	Needed	Details
Personnel	Member	Completed "Essentials of Fire Fighting" course, has also completed other training to include wildfire	17		Three members are qualified for structural, wildland, and agricultural National standards, one other member is qualified in Structural and wildland
Training	Basic Wildland Training				Provided by CPTPA, on-going
	Basic Structural Training				Provided by local fire department
	Basic Agricultural Training				Provided by CPTPA, on-going
	Haz Mat Training				Provided by Regional HAZMAT team - two members are already trained in this field
	Basic Safety				Provided by local fire department, on-going
	Advanced Safety				
	First Aid Training	Refresher Course			Provided by Clearwater County EMT training
Protective Equipment	Shirts	Nomex	0	20	
	Pants	Nomex	0	20	
	Boots	Wildland Leather	0	20	
	Gloves	Leather	0	20	Currently members are using their own boots
	Hard Hats		0	20	

Table 4.11. Greer Fire District.

Contact Orofino Rural Fire District
Mike Lee, Chief, Orofino, ID Phone: 208-476-9036

	Goggles	Wildland	0	20	
	Headlamps	D-cell	0	20	
	Fire Shelters		0	20	
	Breathing Apparatus	Scott Airpak	5	5	
	Turnouts	Nomex	17	20	15 of the current turnouts are unusable
Hand Tools	Shovels		4	15	
	Pulaski's		7	15	
	Axes		4	15	
	Chainsaw	Stihl 66M 28" bar	0	5	
Communications	Radios		8	12	
	Radios		2	1	
	Base Station				
	Dispatch		911		Upgraded to accord with 911 by Sheriff
Vehicles	Water Tender	1963 2 1/2 ton Army truck	1	1	Need newer
	Dozer	CAT D-4	1		
	Dozer	450 B Case	1		
	Agricultural Tractors	1990 John Deere	2	2	Several others privately owned close by
Other Equipment	Ladder	20' ladder	1	3	
	Portable Pump	Gasoline operated, 8-10 hp	0	3	To fill truck from area ponds
	Foam Inductor	For main engine	0	2	

4.5.2.5 Orofino Rural Fire District

Table 4.12. Orofino Rural Fire District.

Mike Lee, Chief, Orofino, ID Phone: (208) 476-9036 12/12/02

Orofino Rural Fire District is a city based volunteer organization housed in two 2 bay buildings, and is managed by three elected fire district commissioners and an elected fire chief. Orofino responds to structural, wildland, and performs rescue extrication for Clearwater County. Currently the incident capacity is two single-family dwellings and the recovery requirements are at least one hour.

	Item	Description	Existing	Needed	Details
Personnel	Basic Member	Training in process, Standards not yet met	2		
	Intermediate Member	Meets National Standards (for at least structural)	6	6	

Table 4.12. Orofino Rural Fire District.

Mike Lee, Chief, Orofino, ID Phone: (208) 476-9036 12/12/02

	Advanced Member	Member has additional training in various National Standards	14		
Training	Basic Wildland Training			4 Members	Provided by State of Idaho Certified Instructor
	Basic Structural Training	"Essentials of Fire Fighting" Course and Fire Fighting II complete		5 Members	Provided by State of Idaho Certified Instructor
	Haz-Mat Training	First Responder Training	6	15 Members	Provided by regional Haz-Mat team
	Basic Safety Training	Refresher Course			On-going in house training is provided
	Safety Officer Training			20 Members	Provided by regionally available qualified instructor
	First Aid Training	Refresher Course			Need on-going first aid class
	Extrication Training				Need in house training
Protective Equipment	Shirts	Nomex	25	15	
	Pants	Nomex	10	30	
	Coats	Turnout	40	0	Current Turnouts are not NFPA compliant
	Pants	Turnout	40	0	
	Boots		40	0	
	Boots	Wildland Leather	0	0	
	Gloves	Leather	24	16	
	Gloves	Turnout	30	10	
	Hard Hats	Wildland	35	5	
	Hard Hats		30	10	
	Goggles	Wildland	20	20	
	Goggles	Wildland	20	10	
	Headlamps		50	0	
	Fire Shelters		0	30	
	Breathing Apparatus		40	0	
	Hoods	Nomex	30	10	
	Helmet Neck Shrouds		0	40	
Hand Tools	Shovels		20	10	
	Pulaski's		15	10	
	McLeod's		15	10	
	Fire Swatters		2	10	
	Chainsaw	Husquvarna 36 20" bar	1		

Table 4.12. Orofino Rural Fire District.

Mike Lee, Chief, Orofino, ID Phone: (208) 476-9036 12/12/02

	Chainsaw	Husquvarna 51 20" bar	1	2	
	Chainsaw	Husquvarna Rancher 20" bar	1		
	Chainsaw	Stihl 48 24" bar	1		
	Chainsaw	Homelite XL12 16" bar	1		
Communications	Mobile Radios		9	3	
	Portable Radios		32	10	
	Base Station	Kenwood/VHF	1		
	Dispatch	Clearwater Sheriff	1		24 hours/day, 7 days/week
Vehicles	Structural Engine	1981 Dodge Mini-pumper	1		
	Structural Engine	1997 I.H.C. Class A	1		
	Structural Engine	1976 American La France Class A	1		
	Structural Engine	New Class A		1	
	Wildland Engine	1984 Ford 1 ton, Type 6	1	1	Need newer
	Rescue	1987 GMC 1 ton	1		Used for light rescue
	Water Tender	1985 Ford 3,500 gal	1		
	Water Tender	1965 6X6 1,200 gal	1		
	Water Tender	1989 Ford 2,600 gal	1		
	Sport Utility Vehicle	1990 Chevrolet Blazer	1		Used for command
Other Equipment	Floating Pump	2001 Waterous	1	1	
	Volume Pump	1990 Pacer 2"	2	2	
	Volume Pump	1965 Homelite 2"	1		
	Pump	1992 Homelite 1"	1		
	Foam Inductors	1996 Pro-pac	1		
	Foam Inductors	1999 Pro-pac	1		
	Foam Inductors	2001 Pro-pac	1	1	

4.5.2.6 Pierce Volunteer Fire Department

Table 4.13. Pierce Volunteer Fire Department.

Craig Shantie, Chief, Pierce, ID Phone: (208) 464-2837 01/11/03

Pierce Volunteer Fire Department is a city based volunteer organization housed in a two bay building and is managed by fire department officers which reports to the City Council and Mayor. Pierce responds to structural fires and has a mutual aide agreement for wildland fires. Currently the incident capacity is two incidents, and the recovery requirement is approximately two hours.

Table 4.13. Pierce Volunteer Fire Department.

Craig Shantie, Chief, Pierce, ID Phone: (208) 464-2837 01/11/03

	Item	Description	Existing	Needed	Details
Personnel	Basic Member	Limited training in fire behavior, equipment use, use of PPE and SCBA	8		Need more volunteers, and training for those who are already members
	Intermediate Member	Moderate level of training in fire behavior, safety and equipment operation	3		
	Advanced Member	Training officers; high level of training in fire behavior, safety, awareness, equipment operation, first aid/CPR and AED	3		
Training	Basic Wildland Training				Provided by CPTPA
	Basic Structural Training				70% of members need "Essentials of Fire Fighting" course
	Haz Mat Training				Entire department
Protective Equipment	Shirts	Nomex	10	10	
	Pants	Nomex	10	10	
	Boots	Wildland Leather	0	20	
	Gloves	Leather	20 Pair	20 Pair	
	Hard Hats	Wildland	10	10	
	Goggles	Wildland	10	10	
	Headlamps		0	20	
	Fire Shelters		10	10	
	Turnouts	Complete	20	20	
	Breathing Apparatus	SCBA	8	12	
Hand Tools	Shovels		10	10	
	Pulaski's		10	10	
	McLeod's		4	16	
	Hoe		4	16	
	Chainsaw	Stihl 054 28" bar	1	2	
	Chainsaw	Stihl 047 20" bar	0	4	
Communications	Hand-held Radios	Motorola	0	10	
	Portable Radios	Motorola	10		
	Mobile Radios	Motorola	4		

Table 4.13. Pierce Volunteer Fire Department.

Craig Shantie, Chief, Pierce, ID Phone: (208) 464-2837 01/11/03

	Repeaters		Approx. 10		Estimate - repeaters are provided by county, forest service, CPTPA, local logging companies, and state
	Dispatch	Clearwater Sheriff	1		24 hours/day, 7 days/week
Vehicles	Structural Engine	1974 Chevrolet 750 gpm, 500 gal	1		
	Structural Engine	1971 Ford 750 gpm, 500 gal	1		
	Wildland Engine			4	Need one for each area community within proposed fire district
	Water Tender			3	
	4X4 Pickup			2	For transportation of equipment and crew
Other Equipment	Monitor trailers			2	
	Dry Hydrant			10	
	Firing Equipment			10	
	Portable Pump			6	Capable of stand pipe or draft connection
	Foam Equipment			6	Capable of wildland and structural use

4.5.2.7 Sunnyside Fire District

Table 4.14. Sunnyside Fire District.

John Willard, Chief, Orofino, ID Phone: (208) 476-7062 (03/01/05)

Sunnyside Fire District is a county based volunteer organization housed in a 3 1/2 bay metal building founded on a concrete slab, and is managed by elected fire district commissioners who choose a fire chief. Sunnyside responds to structural, wildland, agricultural, and vehicle fires. Currently the incident capacity is one single-family incident, and the recovery requirements are to replenish water supplies on engines and tenders. Sunnyside Fire District has Mutual Aide Agreements with: Nez Perce Sheriff's Office, Idaho Department of Lands, Nez Perce Tribe, Clearwater-Potlatch Timber Protective Association, Evergreen Rural Fire Department, Twin Ridge Rural Fire Department.

	Item	Description	Existing	Needed	Details
Personnel	Basic Member	Member has not completed "Essentials of Fire Fighting Course"	3		
	Intermediate Member	"Essentials of Fire Fighting" Course and Fire Fighting II complete	17		
	Advanced Member	Meets all national Standards (NFPA)	5	1	Need volunteer Fire Captain - must have fire command experience

Table 4.14. Sunnyside Fire District.

John Willard, Chief, Orofino, ID Phone: (208) 476-7062 (03/01/05)

Training	Basic Wildland Training			14 members	Provided by CPTPA, IDL, USFS, or North Idaho Fire Academy
	Basic Structural Training	"Essentials of Fire Fighting" Course and Fire Fighting II complete		8 Members	Provided by North Idaho Fire Academy
	Basic Agricultural Training			8 Members	
	Haz Mat Training	Refresher Course		27 members	Provided by Regional Haz-mat team
	First Aid Training	Refresher Course		27 members	Provided by Clearwater County EMT training
Protective Equipment	Shirts	Nomex	5	20	
	Pants	Nomex	5	30	
	Boots	Wildland Leather		30	
	Gloves	Leather	8	20	
	Hard Hats		4	6	
	Goggles	Wildland	8	6	
	Headlamps	D-cell	8	12	
	Fire Shelters	New NFPA	0	30	
	Breathing Apparatus	MSA	24		
	Turnout Coats	Nomex	20		
	Turnout Pants	Nomex	20		
Hand Tools	Shovels			8	
	Pulaski's			8	
	McLeod's			2	
	Chainsaw	Homelite Super XL 24"	1		
	Chainsaw	McCullough 12"	1		
	Circular Saw	Stihl TS400	1		
Communications	Mobile Radios	Kenwood TK760	4		Multi-Frequency
	Hand-held Radios	Assorted	24		Multi-Frequency
	Base Station	Kenwood TK705	3		Multi-Frequency
	Base Station	Phoenix	1		
	Dispatch	Motorola CC50	1		
Vehicles	Sport Utility Vehicle		2		For command and initial attack
	4X4 Pickup	Wildland E-91		1	Type 6, 1 ton, 250 gallon

Table 4.14. Sunnyside Fire District.

John Willard, Chief, Orofino, ID Phone: (208) 476-7062 (03/01/05)

	Water Tender	1967 Ford F-700, 24,000 GVWR, baffled spreader bar, 1200 Gal. Cap., 500 GPM Pump, Deck Gun 600/6" Off-Load Capacity, 5 Min. refill time/drafting capacity	1	1	Need Newer
	Water Tender	1982 Ford LTL 9000, 56,000 GVWR, Baffled Spreader Bar, 2800 Gal. Cap., 300 GPM Pump, 1000/10" Off-Load Capacity, 10 Min. refill time/drafting capacity	1	1	Need Newer
	Wildland Engine	Type-6, Ford F250 4x4, 10,000 GVWR, 250 Gal. Cap., 500@100 PSI Pump Cap., 1 1/2" X 800' Hose	1		
	Structural Engine	Type-2 Ford F5000 4x4, 1000 gal tank, 1250 GPM pump, Deck Gun, 1 1/2" X 1000' Hose, 2 1/2" X 1000' Hose, 24' Extension Ladder, 12' Roof Ladder, 10' Attic Ladder	1		
	Structural Engine	Type-2, Ford FA 800, 27,500 GVWR, 750 Gal. Cap., 750@150 PSI, 1 1/2" X 1000' Hose, 2 1/2" X 1000' Hose, 24' Extension Ladder, 12' Roof Ladder, 10' Attic Ladder	1		
Other Equipment	Portable Pump	Teel 3" 300 GPM	1		
	Portable Pump	Gorman Rupp 10HP, 125 GPM	1		
	Portable Pump	Waterous Floating, 125 GPM	1		
	Foam Equipment	Siphon 1 ½"	1		
	Foam Equipment	CAFS		1	

4.5.2.8 Twin Ridge Rural Fire District

Table 4.15. Twin Ridge Rural Fire District.

Deryl Ketchum, Chief, Orofino, ID Phone: (208) 476-9012 12/12/02

Twin Ridge Fire District is a county based volunteer organization housed in a 4 bay building, and is managed by three elected fire district commissioners who choose a fire chief. Twin Ridge responds to structural and wildland fires. Currently the incident capacity is two small incidents, and the recovery time is approximately one hour.

	Item	Description	Existing	Needed	Details
Personnel	Basic Member	Physically able	12	3	
	Intermediate Member	"Essentials of Fire Fighting" Course and Experience	6		
	Advanced Member	Additional Experience	6		
Training	Basic Wildland Training		7		Provided by CPTPA
	Basic Structural Training	"Essentials of Fire Fighting" Course and Rural Fire Operations	5		Provided by Fire Service Training
	First Aid Training	Refresher Course	18		
Protective Equipment	Shirts	Nomex	20	0	
	Pants	Nomex	20	0	
	Coats	Turnout	20	0	
	Pants	Turnout	20	0	
	Boots	Rubber	20	0	
	Gloves	Leather	20	0	
	Hard Hats		0	20	
	Goggles		20	0	
	Headlamps		20	0	
	Fire Shelters		0	20	
	Breathing Apparatus	SCBA	6	0	
Hand Tools	Shovels		20	0	
	Pulaski's		20	0	
	Chainsaw	Stihl 026 18" bar	1	0	
	Chainsaw	Stihl 048 24" bar	1	0	
Communications	Handheld Radios	Bendix/King	5		
	Handheld Radios	Vertex Standard	15		
	Handheld Radios	Motorola	3		
	Mobile Radios	Vertex	5		

Table 4.15. Twin Ridge Rural Fire District.

Deryl Ketchum, Chief, Orofino, ID Phone: (208) 476-9012 12/12/02

	Base Station	Bendix/King	1		
	Dispatch				911 through sheriff
Vehicles	Structural Engine	1969 Ford 8000	1	1	Need newer
	Structural Engine	1971 Military 6X6	1		
	Wildland Engine	1968 Dodge 1 Ton	1		
	Water Tender	1973 Military 6X6 2000 gallon	1		
	Water Tender	1966 Military 6X6 1000 gallon	1		
Other Equipment	Smoke Ejector	2002 13,000 CFM	1		
	Generator	2001 5000 watt	1		
	Air Packs	MSA	10		
	Porta-Tank	1,500 gallon	1		
	Porta-Tank	2,500 gallon	1		
	Potable Pump	3" Trask	2		

4.5.2.9 Weippe Volunteer Fire Department

Table 4.16. Weippe Rural Fire Department.

James Cahala, Chief, Wieppe, ID Phone: (208) 476-0136 01/13/03

Weippe Volunteer Fire Department is a city based volunteer organization housed in a 3 bay building and is managed by a board of directors. Weippe responds to structural and wildland fires. Currently the incident capacity is two single-family dwellings and the recovery requirement is at least one hour.

	Item	Description	Existing	Needed	Details
Personnel	Basic Member	No training	2		
	Intermediate Member	CPTPA and urban interface training	6		Need volunteers with at least intermediate level training
	Advanced Member	CPTPA, urban interface, haz-mat, and extrication training	5		
Training	Basic Wildland Training	Red Card course,			Provided by CPTPA
	Basic Structural Training				
	Basic Agricultural Training	Training for grain bin fires			
	Haz Mat Training				

Table 4.16. Weippe Rural Fire Department.

James Cahala, Chief, Wieppe, ID Phone: (208) 476-0136 01/13/03

	Basic Safety Training	Refresher Course			
	First Aid Training	Refresher Course			
	Advanced Safety Training				
Protective Equipment	Shirts	Nomex	12	12	
	Pants	Nomex	12	12	
	Boots	Wildland Leather	0	12	
	Gloves	Leather	0	12	
	Hard Hats	Wildland	4	12	
	Goggles	Wildland	1	12	
	Headlamps		0	12	
	Fire Shelters		0	12	
	Breathing Apparatus		7	4	
Hand Tools	Shovels		12	12	
	Pulaski's		12	12	
	McLeod's		5	5	
	Combine		5	5-10	
	Chainsaw	Stihl 036 28" bar	1	1	
	Chainsaw	Stihl 440 28" bar	1	1	
Communications	Mobile Radios	Kenwood/King	8		
	Portable Radios	Motorola/VHF	15		
	Portable Radios	Kenwood/VHF	6		
	Base Station	VHF	1		
	Dispatch	Clearwater Sheriff	1		24 hours/day, 7 days/week
Vehicles	Structural Engine	1978 American La France 500 gal, 1250 gpm pump	1	1	New engine would be a 2000 gpm which could also be used for wildland fire.
	Structural Engine	1974 Ford Pumper 500 gal	1		Would replace the 1974 with the 1978 LaFrance. Motor gone in 1974.
	Structural Engine	1976 American La France Class A	1		
	Wildland Engine	1978 AMG 6X6 Type 6 1000 gal	1		
	Wildland Engine	1985 Ford Mini-pumper Type 6, 300 gal	1		
	Water Tender	International	1		

Table 4.16. Weippe Rural Fire Department.

James Cahala, Chief, Wieppe, ID Phone: (208) 476-0136 01/13/03

		4000 gal			
Other Equipment	Drop Tank	2002 1500 gallon Fold-a –tank	1		
	Flares			2 cases	
	Portable Pump	Briggs 8hp, 350 gpm	1		
	Portable Pump	Hale 450 gpm		1	
	Foam Equipment	Pro-pac	2	2	Need truck mounted

4.5.2.10 Upper Fords Creek Fire Department

Table 4.17. Upper Fords Creek Fire Department.

Rob Smith, Chief, Orofino, ID 03/09/05

Upper Fords Creek Fire Department covers approximately 90 residential properties with dwellings. There are three Commissioners, a Fire Chief, an Assistant Fire Chief, and a Secretary/Treasurer. They have the capacity to respond to one structure fire or a small wildland fire in their district.

	Item	Description	Existing	Needed	Details
Personnel	Basic Member	Volunteer	14		
Training	Basic Wildland Training	All need training		14	CPTPA 130-190
	Basic Structural Training	All have 40 hours		14	Bill Maison
	Basic Agricultural Training			14	
	Haz Mat Training			14	
	Basic Safety Training			14	
	First Aid Training	Most need training		14	
	EMT Training		2		
Protective Equipment	Shirts		20		
	Pants		20		
	Gloves		18		
	Hard Hats		25		
	Goggles			18	
	Headlamps		18		
	Fire Shelters		0		
	Breathing Apparatus		6	2	
Hand Tools	Shovels		8	6	

Table 4.17. Upper Fords Creek Fire Department.
Rob Smith, Chief, Orofino, ID 03/09/05

	Pulaski's		8	6
	Backpack pumps		5	
Communications	Mobile Radios	Icom 30+ channels	2	
	Handheld Radios	Vertex 16 channel	14	6
	Mobile Radios	Phonix	2	
	Base Station	30 channel		1
	Dispatch	CCSO Orofino	1	
Vehicles	Structural Engine	1978 Ford C-800, 500 gal., 750 gpm pump	1	
	Structural Engine	1977 ¾ ton, 200 gal.	1	
	Structural Engine	1 ton, 300-400 gal.		1
	Water Tender	3,000 to 4,000 gal.		1
	Water Tender	1968 Am GM 1300 gal.	1	

4.6 Issues Facing Clearwater County Fire Protection

4.6.1 Canal Creek Watershed

The community of Pierce is primarily dependent on surface runoff from the Canal Creek Watershed for their water resources. Water is collected near the mouth of the drainage, treated, and then piped to homes and businesses. A severe wildfire in this watershed could cause serious injury to this resource by removing vegetation, creating ash and sediments, and impairing soil properties. Fire mitigation treatments prior to a fire event are a high priority and are imperative to conserving the functionality of the watershed following a wildland fire.

4.6.2 Accessibility

Fire Chiefs throughout the County have identified home accessibility issues as a primary concern in Clearwater County. It appears as through many homes and driveways have been constructed without regard to access requirements of large emergency vehicles. Lack of accessibility precludes engagement by suppression resources. Many homes within fire protection districts in Clearwater County effectively have no fire protection simply because access is not possible or is potentially dangerous. Enforcement of Building Codes, including road and driveway construction standards for fire apparatus established by the International Fire Code would prevent accessibility issues in new developments.

4.6.3 Harmony Heights, Lower Fords Creek, and Gilbert Grade

The Harmony Heights, Lower Fords Creek, and Gilbert Grade areas currently lack structural fire protection. These higher risk areas should either be annexed into the nearest appropriate rural fire district or provided the framework to develop a new protection district in order to be covered

by a structural fire protection facility. Gaps between rural fire districts' coverage is a serious issue in Clearwater County, particularly in the greater Orofino area. Annexation of these gaps into existing protection districts or creating new districts for these areas would significantly decrease the fire risk for residents in unprotected areas.

4.6.4 Expansion of Pierce Fire Department

Homes in the area locally known as Judgetown on the south side of the Pierce community are currently outside of the city fire protection district. Due to the concentration of homes, the Pierce Fire Department believes that formally annexing Judgetown into the city's protection would not only better protect residents and structures in Judgetown, but would also relieve the fire department's liability issues with traveling outside of their jurisdiction to provide structural protection for these homes. This expansion would require a more centrally located station and additional equipment and volunteers.

4.6.5 Creation of Dent Fire District

Currently, the community of Dent Acres and homes in the surrounding area are unprotected by any formal structural fire protection district. The Clearwater-Potlatch Timber Protective Association provides wildland fire protection; however, response time for emergency personnel from Elk River or Orofino would be relatively slow. Due to the combination of timber and rangelands, a wildfire could potentially spread to residential areas before suppression resources arrived. Communities and private landowners need to take action to create a new fire district in order to provide fire protection resources and personnel to the citizens of Dent and the surrounding area.

4.7 Current Wildfire Mitigation Activities and Priorities in Clearwater County

4.7.1 Project Impact

Through Clearwater County's Project Impact and other grant programs, local fire districts are working to make the county more disaster resistant in relation to the threat of wildfires. A number of projects are underway including training for local volunteer wildland fire fighters, increased signage for prevention/mitigation of fires, mapping for better location of property in emergencies and increased public awareness.

4.7.2 USDA Forest Service

4.7.2.1 Elk River

The US Forest Service, Palouse Ranger District has developed a conceptual municipal watershed protection project for the Elk River area. This area includes the majority of the Fire Regime Condition Class 2 and 3 lands, managed by the USDA Forest Service, that is also within the WUI of Clearwater County. As such it is the highest priority US Forest Service project in the county. The authors of this document strongly encourage the implementation of this project and other projects in the Elk River area that reduce wildfire risks.

4.7.2.2 Deception Saddle

The North Fork Ranger District is going to undertake a forest fuels inventory in the Deception Saddle/Independence Creek area during the summer of 2005. The general location is 46

47.8786 115 5.8862. This project is designed to inventory forest fuels in the vicinity of private in-holdings within the National Forest land base on the North Fork Ranger District. In turn they are also planning on meeting with the land owners to help them assess their property for fuels and defensible space issues. See Appendix I for a map of the general treatment area.

Chapter 5: Treatment Recommendations

5 Administration & Implementation Strategy

Critical to the implementation of this Wildfire Mitigation Plan will be the identification of, and implementation of, an integrated schedule of treatments targeted at achieving an elimination of the lives lost, and reduction in structures destroyed, infrastructure compromised, and unique ecosystems damaged that serve to sustain the way-of-life and economy of Clearwater County and the region. Since there are many land management agencies and thousands of private landowners in Clearwater County, it is reasonable to expect that differing schedules of adoption will be made and varying degrees of compliance will be observed across all ownerships.

Clearwater County encourages the philosophy of instilling 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.

The federal land management agencies in Clearwater County, specifically the USDA Forest Service and the Bureau of Land Management, are participants in this planning process and have contributed to its development. Where available, their schedule of land treatments have been considered in this planning process to better facilitate a correlation between their identified planning efforts and the efforts of Clearwater County.

All risk assessments were made based on the conditions existing during 2004-05, thus, 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 annually to adjust for changes in the components of risk, population density changes, infrastructure modifications, and other factors.

As part of the Policy of Clearwater County in relation to this planning document, this entire **Wildfire Mitigation Plan** should be reviewed annually at a special meeting of the Clearwater County Commissioners, open to the public and involving all municipalities/jurisdictions, where action items, priorities, budgets, and modifications can be made or confirmed. A written review of the plan should be prepared (or arranged) by the Chairman of the County Commissioners, detailing plans for the year's activities, and made available to the general public ahead of the meeting (in accord with the Idaho Open Public Meeting Laws). Amendments to the plan should be detailed at this meeting, documented, and attached to the formal plan as an amendment to the Wildfire Mitigation Plan. Re-evaluation of this plan should be made on the 5th anniversary of its acceptance, and every 5-year period following.

5.1 Prioritization of Mitigation Activities

The prioritization process will include a special emphasis on cost-benefit analysis review. The process will reflect that a key component in funding decision is a determination that the project will provide an equivalent or more in benefits over the life of the project when compared with the costs. Projects will be administered by local jurisdictions with overall coordination provided by the County Disaster Services Coordinator.

County Commissioners and the elected officials of all jurisdictions will evaluate opportunities and establish their own unique priorities to accomplish mitigation activities where existing funds and resources are available and there is community interest in implementing mitigation measures. If no federal funding is used in these situations, the prioritization process may be less formal. Often the types of projects that the County can afford to do on their own are in relation

to improved codes and standards, department planning and preparedness, and education. These types of projects may not meet the traditional project model, selection criteria, and benefit-cost model. The County will consider all pre-disaster mitigation proposals brought before the County Commissioners by department heads, city officials, fire districts and local civic groups.

When federal or state funding is available for hazard mitigation, there are usually requirements that establish a rigorous benefit-cost analysis as a guiding criteria in establishing project priorities. The county will understand the basic federal grant program criteria which will drive the identification, selection, and funding of the most competitive and worthy mitigation projects. FEMA's three grant programs (the post-disaster Hazard Mitigation Grant Program, the pre-disaster Flood Mitigation Assistance and Pre-Disaster Mitigation grant programs) that offer federal mitigation funding to state and local governments all include the benefit-cost and repetitive loss selection criteria.

The prioritization of projects will occur annually and be facilitated by the County Emergency Services Coordinator to include the County Commissioner's Office, City Mayors and Councils, Fire District Chiefs and Commissioners, agency representatives (USFS, State Lands, etc.). The prioritization of projects will be based on the selection of projects which create a balanced approach to pre-disaster mitigation which recognizes the hierarchy of treating in order (highest first):

- People and Structures
- Infrastructure
- Local and Regional Economy
- Traditional Way of Life
- Ecosystems

5.1.1 Prioritization Scheme

A numerical scoring system is used to prioritize projects. This prioritization serves as a guide for the county when developing mitigation activities. This project prioritization scheme has been designed to rank projects on a case by case basis. In many cases, a very good project in a lower priority category could outrank a mediocre project in a higher priority. The county mitigation program does not want to restrict funding to only those projects that meet the high priorities 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 reasons and criteria is a necessity for a functional mitigation program at the County and community level.

To implement this case by case concept, a more detailed process for evaluating and prioritizing projects has been developed. Any type of project, whether county or site specific, will be prioritized in this more formal manner.

To prioritize projects, a general scoring system has been developed. This prioritization scheme has been used in statewide all hazard mitigations plans. These factors range from cost-benefit ratios, to details on the hazard being mitigated, to environmental impacts.

Since planning projects are somewhat different than non-planning projects when it comes to reviewing them, different criteria will be considered, depending on the type of project.

The factors for the non-planning projects include:

- Cost/Benefit
- Population Benefit

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

The factors for the planning projects include:

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

Since some factors are considered more critical than others, two ranking scales have been developed. A scale of 1-10, 10 being the best, has been used for cost, population benefit, property benefit, economic benefit, and vulnerability of the community. Project feasibility, hazard magnitude/frequency, potential for repetitive loss reduction, potential to mitigate hazards to future development, and potential project effectiveness and sustainability are all rated on a 1-5 scale, with 5 being the best. The highest possible score for a non-planning project is 65 and for a planning project is 30.

The guidelines for each category are as follows:

5.1.1.1 Benefit / Cost

The analysis process will include summaries as appropriate for each project, but will include benefit / cost analysis results, Projects with a negative benefit / cost analysis result will be ranked as a 0. Projects with a positive Benefit / Cost analysis will receive a score equal to the projects Benefit / Cost Analysis results divided by 10. Therefore a project with a BC ratio of 50:1 would receive 5 points, a project with a BC ratio of 100:1 (or higher) would receive the maximum points of 10.

5.1.1.2 Population Benefit

Population Benefit relates to the ability of the project to prevent the loss of life or injuries. A ranking of 10 has the potential to impact over 3,000 people. A ranking of 5 has the potential to impact 100 people, and a ranking of 1 will not impact the population. In some cases, a project may not directly provide population benefits, but may lead to actions that do, such as in the case of a study. Those projects will not receive as high of a rating as one that directly effects the population, but should not be considered to have no population benefit.

5.1.1.3 Property Benefit

Property Benefit relates to the prevention of physical losses to structures, infrastructure, and personal property. These losses can be attributed to potential dollar losses. Similar to cost, a ranking of 10 has the potential to save over $1,000,000 in losses, a ranking of 5 has the potential to save roughly $100,000 in losses, and a ranking of 1 only has the potential to save

less than $100 in losses. In some cases, a project may not directly provide property benefits, but may lead to actions that do, such as in the case of a study. Those projects will not receive as high of a rating as one that directly effects property, but should not be considered to have no property benefit.

5.1.1.4 Economic Benefit

Economic Benefit is related to the savings from mitigation to the economy. This benefit includes reduction of losses in revenues, jobs, and facility shut downs. Since this benefit can be difficult to evaluate, a ranking of 10 would prevent a total economic collapse, a ranking of 5 could prevent losses to about half the economy, and a ranking of 1 would not prevent any economic losses. In some cases, a project may not directly provide economic benefits, but may lead to actions that do, such as in the case of a study. Those projects will not receive as high of a rating as one that directly affects the economy, but should not be considered to have no economic benefit.

5.1.1.5 Vulnerability of the Community

For planning projects, the vulnerability of the community is considered. A community that has a high vulnerability with respect to other jurisdictions to the hazard or hazards being studied or planned for will receive a higher score. To promote planning participation by the smaller or less vulnerable communities in the state, the score will be based on the other communities being considered for planning grants. A community that is the most vulnerable will receive a score of 10, and one that is the least, a score of 1.

5.1.1.6 Project Feasibility (Environmentally, Politically & Socially)

Project Feasibility relates to the likelihood that such a project could be completed. Projects with low feasibility would include projects with significant environmental concerns or public opposition. A project with high feasibility has public and political support without environmental concerns. Those projects with very high feasibility would receive a ranking of 5 and those with very low would receive a ranking of 1.

5.1.1.7 Hazard Magnitude/Frequency

The Hazard Magnitude/Frequency rating is a combination of the recurrence period and magnitude of a hazard. The severity of the hazard being mitigated and the frequency of that event must both be considered. For example, a project mitigating a 10-year event that causes significant damage would receive a higher rating than one that mitigates a 500-year event that causes minimal damage. For a ranking of 5, the project mitigates a high frequency, high magnitude event. A 1 ranking is for a low frequency, low magnitude event. Note that only the damages being mitigated should be considered here, not the entire losses from that event.

5.1.1.8 Potential for repetitive loss reduction

Those projects that mitigate repetitive losses receive priority consideration here. Common sense dictates that losses that occur frequently will continue to do so until the hazard is mitigated. Projects that will reduce losses that have occurred more than three times receive a rating of 5. Those that do not address repetitive losses receive a rating of 1. Potential to mitigate hazards to future development Proposed actions that can have a direct impact on the vulnerability of future development are given additional consideration. If hazards can be

mitigated on the onset of the development, the county will be less vulnerable in the future. Projects that will have a significant effect on all future development receive a rating of 5. Those that do not affect development should receive a rating of 1.

5.1.1.9 Potential project effectiveness and sustainability

Two important aspects of all projects are effectiveness and sustainability. For a project to be worthwhile, it needs to be effective and actually mitigate the hazard. A project that is questionable in its effectiveness will score lower in this category. Sustainability is the ability for the project to be maintained. Can the project sustain itself after grant funding is spent? Is maintenance required? If so, are or will the resources be in place to maintain the project. An action that is highly effective and sustainable will receive a ranking of 5. A project with effectiveness that is highly questionable and not easily sustained should receive a ranking of 1.

5.1.1.10 Final ranking

Upon ranking a project in each of these categories, a total score can be derived by adding together each of the scores. The project can then be ranking high, medium, or low based on the non-planning project thresholds of:

Project Ranking Priority Score

- High 40-65
- Medium 25-39
- Low 9-25

5.2 Possible Fire Mitigation Activities

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

- Homeowner and landowner education
- Building code changes for structures and infrastructure in the WUI
- Home site defensible zone through fuels modification
- Community defensible zone fuels alteration
- Access improvements
- Access creation
- Emergency response enhancements (training, equipment, locating new fire stations, new fire districts, merging existing districts)
- Regional land management recommendations for private, state, and federal landowners

Maintaining private property rights will continue to be one of the guiding principles of this plan's implementation. 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 decisions.

5.3 WUI Safety & Policy

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 in nature and therefore are recommendations to the appropriate elected officials; debate and formulation of alternatives will serve to make these recommendations suitable and appropriate.

5.3.1 Existing Practices That Should Continue

Clearwater County currently is implementing many projects and activities that, in their absence, could lead to increased wildland fire loss potential. By enumerating some of them here, it is the desire of the authors to point out successful activities.

- Clearwater County is currently in the process of updating their rural addressing.
- Project Impact
- Current mutual aid agreements between the Clearwater-Potlatch Timber Protective Association and all of the local fire departments.
- County road departments removes vegetation and other hazardous fuels away from road right of ways

5.3.2 Proposed Activities

Table 5.1. WUI Action Items in Safety and Policy.

Action Item	Goals and Objectives	Responsible Organization	Action Items & Planning Horizon
5.1.a: Amend existing building codes to apply equally to new single housing construction as it does to sub-divisions. Make sure existing policy is comprehensive to wildland fire risks.	**Protection of people and structures** by applying a standard of road widths, access, and building regulations suitable to insure new homes can be protected while minimizing risks to firefighters. (defensible space, roads and access management, water systems, building codes, signage, and maintenance of private forest and range lands)	**County Commissioners** in cooperation with Rural Fire Districts and Planning and Zoning.	• Year 1 debate and adoption of revised code (2005). • Review adequacy of changes annually, make changes as needed.
5.1.b: Develop County policy concerning building materials used in high-risk WUI areas on existing structures and new construction	**Protection of people and structures** by improving the ability of emergency response personnel to respond to threatened homes in high-risk areas.	**County Commissioners Office** in cooperation with Rural Fire Departments	**Year 1 (2005) activity:** Consider and develop policy to address construction materials for homes and businesses located in high wildfire risk areas. Specifically, a County policy concerning wooden roofing materials and flammable siding, especially where juxtaposed near heavy wildland fuels.
5.1.c: Develop a formal WUI Advisory Committee to advise County Commissioners on WUI Issues and Treatments	**Protection of people and structures** by improving the ability of decision makers to make informed decisions about wildfire issues.	**County Commissioners Office**	**Year 1 (2005) activity:** Formalize a committee, its membership and service decided on by the County Commissioners, to collaborate on WUI issues within Clearwater County. Members potentially to include land management organizations and companies, private landowners, and fire protection personnel.
5.1.d: Adoption of International Fire Code and creation of a County Fire Warden position that would inspect sites for compliance to the International Fire Code as well as enforce the mandates of the Code.	**Protection of people and structures** by improving the ability of emergency services personnel to safely and effectively respond to homes.	**Planning and Zoning** with County Commissioners Office and Rural Fire Departments.	**Year 1 (2005) activity:** Consider and develop policy to enforce the International Fire Code regulations already adopted by the State of Idaho and seek funding to create a County Fire Warden position.
5.1.e: Develop a County Commissioner's Office policy to support the applications for grant monies for projects	**Protection of people and structures** by improving the ability of residents and organizations to implement sometimes costly projects.	**County Commissioners Office**	**Ongoing activity:** Support grant applications as requested in a manner consistent with applications from residents

Table 5.1. WUI Action Items in Safety and Policy.

Action Item	Goals and Objectives	Responsible Organization	Action Items & Planning Horizon
resulting from recommendations in this plan.			and organizations in Clearwater County.

5.4 People and Structures

The protection of people and structures will be tied together closely as 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. The other incident is a fire fighter who suffers the loss of life during the combating of a 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 awareness of the residents of Clearwater County. These recommendations stem from a variety of factors including items that became obvious during the analysis of the public surveys, discussions during public meetings, and observations about choices made by residents living in the Wildland-Urban Interface. Over and over, a common theme was present that pointed to a situation of landowners not recognizing risk factors:

- Homeowners in the public mail survey ranked their home site wildfire risk factors significantly lower than a random sample of home rankings completed by fire mitigation specialists.
- Fire District personnel pointed to numerous examples of inadequate access to homes of people who believe they have adequate ingress.
- Discussions with the general public indicated an awareness of wildland fire risk, but they could not specifically identify risk factors.
- Over half of the respondents to the public mail survey indicated (60%) that they want to participate in educational opportunities focused on the WUI and what they can do to increase their home's chances of surviving a wildfire.

In addition to those items enumerated in Table 5.1, residents and policy makers of Clearwater County should recognize certain factors that exist today, that in their absence would lead to an increase in the risk factors associated with wildland fires in the WUI of Clearwater County. These items listed below should be encouraged, acknowledged, and recognized for their contributions to the reduction of wildland fire risks:

- **Livestock Grazing** in and around the communities of Clearwater County has led to a reduction of many of the fine fuels that would have been found in and around the communities and in the wildlands of Clearwater County. Domestic livestock not only eat these grasses, forbs, and shrubs, but also trample certain fuels to the ground where decomposition rates may increase. Livestock ranchers tend their stock, placing resource professionals into the forests and rangelands of the area where they may observe ignitions, or potentially risky activities. There are ample opportunities throughout the county to increase grazing. This could contribute to the economic output of the county as well as reduce the fuel loading. Livestock grazing in this region should be encouraged into the future as a low cost, positive tool of wildfire mitigation in the Wildland-Urban Interface and in the wildlands.

- **Forest Management** in Clearwater County has been affected greatly by the reduction of operating sawmills in the region. However, the active forest management program of the Idaho Department of Lands and the Potlatch Corporation and many of the private and other industrial forestland owners in the region has led to a significant reduction of wildland fuels where they are closest to homes and infrastructure. In addition, forest resource professionals managing these lands and the lands of the private owners and federal agencies are generally trained in wildfire protection and recognize risk factors when they occur. One of the reasons that Clearwater County forestlands have not been impacted by wildland fires to a greater degree historically, is the presence and activities related to active forest management.
- **Agriculture** is a significant component of Clearwater County's economy. Much of the northwestern portion of the county is intermixed with agricultural crops. The original conversion of these lands to agriculture from rangeland and forestland, was targeted at the most productive soils and juxtaposition to infrastructure. Many of these productive ecosystems were consequently also 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 rangeland 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 Clearwater County is integral to the continued management of wildfire risk in this region.

Table 5.2. WUI Action Items for People and Structures.

Action Item	Goals and Objectives	Responsible Organization	Action Items, Planning Horizon and Estimated Costs
5.2.a: Youth and Adult Wildfire Educational Programs	**Protect people and structures** by increasing awareness of WUI risks, how to recognize risk factors, and how to modify those factors to reduce risk	Cooperative effort including: • University of Idaho Cooperative Extension • Idaho Department of Lands • USFS Clearwater National Forest, Coeur d'Alene Tribal, and State and Private Forestry Offices • Bureau of Land Management • Local School Districts	Evaluate effectiveness of currently funded County education programs. If possible, use existing educational program materials and staffing. These programs may need reformatted. Formal needs assessment should be responsibility of University of Idaho Cooperative Extension faculty and include the development of an integrated WUI educational series by year 3 (2006). Costs initially to be funded through existing budgets for these activities to be followed with grant monies to continue the programs as identified in the formal needs assessment. Detailed information regarding home defensible space requirements is contained on the FireWise CD, which can be purchased and personalized by the County. The CD costs $2,500.
5.2.b: Wildfire risk assessments of homes in identified communities	**Protect people and structures** by increasing awareness of specific risk factors of individual home sites in the at-risk landscapes. Only after these are completed can home site treatments follow.	To be implemented by **County Commissioners Office** in cooperation with the **Rural Fire Departments**. Actual work may be completed by Wildfire Mitigation Consultants or trained volunteers, and listed cities (below).	• **Cost:** Approximately $100 per home site for inspection, written report, and discussions with the homeowners. • There are approximately 3,444 housing units in Clearwater Many of these structures would benefit from a home site inspection and budget determination. The number in each community are detailed below. • **Action Item:** Secure funding and contract to complete the inspections during years 1 & 2 (2005-06) • Home site inspection reports and estimated budget for each home site's treatments will be a requirement to receive funding for treatments through grants.
	• Ahsahka – 446 homes, 90% need Home defensibility inspections, cost estimate of $40,140 • Cardiff – 46 homes, 90% need Home defensibility inspections, cost estimate of $4,140 • Cavendish – 120 homes, 25% need Home defensibility inspections, cost estimate of $3,000 • Dent – 69 homes, 85% need Home defensibility inspections, cost estimate of $5,800 • Elk River – 197 homes, 90% need Home defensibility inspections, cost estimate of $17,730 • Grangemont – 81 homes, 100% need Home defensibility inspections, cost estimate of $8,100 • Greer – 45 homes, 75% need Home defensibility inspections, cost estimate of $3,300 • Headquarters – 42 homes, 90% need Home defensibility inspections, cost estimate of $3,800 • Jaype – 20 homes, 90% need Home defensibility inspections, cost estimate of $1,800 • Lakeview Estates – 27 homes, 75% need Home defensibility inspections, cost estimate of $2,000		

Table 5.2. WUI Action Items for People and Structures.

Action Item	Goals and Objectives	Responsible Organization	Action Items, Planning Horizon and Estimated Costs
	• Orofino – 670 homes, 50% need Home defensibility inspections, cost estimate of $33,500 • Pierce – 366 homes, 85% need Home defensibility inspections, cost estimate of $31,100 • Sunnyside Area & New Hope – 118 homes, 35% need Home defensibility inspections, cost estimate of $4,100 • Teaken – 28 homes, 25% need Home defensibility inspections, cost estimate of $700 • Weippe – 500 homes, 50% need Home defensibility inspections, cost estimate of $25,000 • Other Rural Areas not identified above – 3,175 homes, 75% need Home defensibility inspections, cost estimate $238,125 • **Total All Items above: $422,335**		
5.2.c: Home Site WUI Treatments	**Protect people, structures, and increase fire fighter safety** by reducing the risk factors surrounding homes in the WUI of Clearwater County	**County Commissioners** in cooperation with Fire Mitigation Consulting company and Rural Fire Districts, and listed cities (below). *Complete concurrently with 5.4.b.*	• Actual funding level will be based on the outcomes of the home site assessments and cost estimates • **Estimate** that treatments will cost approximately $800 per home site for a defensible space of roughly 150'. • Home site treatments can begin after the securing of funding for the treatments and immediate implementation in 2005 and will continue from year 1 through 5 (2009).
	• Ahsahka – 446 homes, 90% need Home defensibility inspections, cost estimate of $321,120 • Cardiff – 46 homes, 90% need Home defensibility inspections, cost estimate of $33,120 • Cavendish – 120 homes, 25% need Home defensibility inspections, cost estimate of $24,000 • Dent – 69 homes, 85% need Home defensibility inspections, cost estimate of $46,920 • Elk River – 197 homes, 90% need Home defensibility inspections, cost estimate of $141,840 • Grangemont – 81 homes, 100% need Home defensibility inspections, cost estimate of $64,800 • Greer – 45 homes, 75% need Home defensibility inspections, cost estimate of $27,000 • Headquarters – 42 homes, 90% need Home defensibility inspections, cost estimate of $30,240 • Jaype – 20 homes, 90% need Home defensibility inspections, cost estimate of $14,400 • Lakeview Estates – 27 homes, 75% need Home defensibility inspections, cost estimate of $16,200 • Orofino – 670 homes, 50% need Home defensibility inspections, cost estimate of $268,000 • Pierce – 366 homes, 85% need Home defensibility inspections, cost estimate of $248,880 • Sunnyside Area & New Hope – 118 homes, 35% need Home defensibility inspections, cost estimate of $33,040 • Teaken – 28 homes, 25% need Home defensibility inspections, cost estimate of $5,600 • Weippe – 500 homes, 50% need Home defensibility inspections, cost estimate of $200,000 • Other Areas not identified above – 3,175 homes, 75% need Home defensibility inspections, cost estimate $1,905,000 • **Total All Items above: $3,380,160**		

Table 5.2. WUI Action Items for People and Structures.

Action Item	Goals and Objectives	Responsible Organization	Action Items, Planning Horizon and Estimated Costs
5.2.d: Community Defensible Zone WUI Treatments	**Protect people, structures, and increase fire fighter safety** by reducing the risk factors surrounding high risk communities in the WUI of Clearwater County	**County Commissioners** in cooperation with Fire Mitigation Consultants and Rural Fire Districts	• Actual funding level will be based on the outcomes of the home site assessments and cost estimates. • **Years 2-5 (2005-09):** Treat high risk wildland fuels from home site defensible space treatments (5.4.c) to an area extending 400 feet to 750 feet beyond home defensible spaces, where steep slopes and high accumulations of risky fuels exist. Should link together home treatment areas. Treatments target high risk concentrations of fuels and not 100% of the area identified. To be completed only after or during the creation of home defensible spaces have been implemented. • **Communities and areas to target:** Greer, Pierce, Headquarters, Cardiff, Orofino, Freeman Creek, Ahsahka, Dent, and Elk River. • Approximate average cost on a per structure basis is $750-$1,500 depending on extent of home defensibility site treatments, for a cost estimate of $1.75 million.
5.2.e: Maintenance of Home Site WUI Treatments	**Protect people, structures, and increase fire fighter safety** by reducing the risk factors surrounding homes in the WUI of Clearwater County	**County Commissioners Office** in cooperation with Rural Fire Departments and local home owners	• Home site defensibility treatments must be maintained periodically to sustain benefits of the initial treatments. • Each site should be assessed 5 years following initial treatment • Estimated re-inspection cost will be $50 per home site on all sites initially treated or recommended for future inspections • Follow-up inspection reports with treatments as recommended years 5 through 10.
5.2.f: Re-entry of Home Site WUI Treatments	**Protect people, structures, and increase fire fighter safety** by reducing the risk factors surrounding homes in the WUI of Clearwater County	**County Commissioners Office** in cooperation with Rural Fire Departments and local home owners	• Re-entry treatments will be needed periodically to maintain the benefits of the initial WUI home treatments. Each re-entry schedule should be based on the initial inspection report recommendations, observations, and changes in local conditions. Generally occurs every 5-10 years.

Table 5.2. WUI Action Items for People and Structures.

Action Item	Goals and Objectives	Responsible Organization	Action Items, Planning Horizon and Estimated Costs
5.2.g: Access Improvements of bridges, cattle guards, and limiting road surfaces. [Wells Bench Cutoff, Upper Fords Creek Road, Lower Fords Creek Road, Old Ahsahka Grade, Old Peck Grade, Crockett Bench, Deer Creek, and Huckleberry Bench Road]	**Protection of people, structures, infrastructure, and economy** by improving access for residents and fire fighting personnel in the event of a wildfire. Reduces the risk of a road failure that leads to the isolation of people or the limitation of emergency vehicle and personnel access during an emergency.	**County Roads and Bridges Department** in cooperation with US Forest Service, BLM, State of Idaho (Lands and Transportation), and forestland or rangeland owners.	• **Year 1 (2005):** Update existing assessment of travel surfaces, bridges, and cattle guards in Clearwater County as to location. Secure funding for implementation of this project (grants) • **Year 2 (2006):** Conduct engineering assessment of limiting weight restrictions for all surfaces (e.g., bridge weight load maximums). Estimate cost of $150,000 which might be shared between County, USFS, BLM, State, and private based on landownership associated with road locations. • **Year 2 (2007):** Post weight restriction signs on all crossings, copy information to rural fire districts and wildland fire protection agencies in affected areas. Estimate cost at roughly $25-$30,000 for signs and posting. • **Year 3 (2008):** Identify limiting road surfaces in need of improvements to support wildland fire fighting vehicles and other emergency equipment. Develop plan for improving limiting surfaces including budgets, timing, and resources to be protected for prioritization of projects (benefit/cost ratio analysis). Create budget based on full assessment.
5.2.h: Access Improvements for communities of Greer, Freeman Creek, Dent, Elk River, Pierce, Weippe, Grangemont, Jaype, Cardiff, and Headquarters.	**Protection of people, structures, infrastructure, and economy** by improving access for residents and fire fighting personnel in the event of a wildfire. Allows for alternative escape route when the primary access is compromised.	**County Roads and Bridges Department** in cooperation with US Forest Service, BLM, State of Idaho (Lands and Transportation), industrial forestland owners.	• **Year 1 (2005):** Update existing assessment of State Route 11, Freeman Creek Road, Elk River Road, Wells Bench Road, State Route 8, and Grangemont Road as to limiting areas of road and bridges. Secure funding for implementation of this project based on ownership and use. • **Year 2 (2006):** Secure funding and implement projects to improve limiting access along this road to facilitate broader range of vehicles using this route as an emergency route. No estimate of costs until priorities are set and options identified.

Table 5.2. WUI Action Items for People and Structures.

Action Item	Goals and Objectives	Responsible Organization	Action Items, Planning Horizon and Estimated Costs
5.2.i: Access Improvements through road-side fuels management. [Upper Fords Creek Road, Lower Fords Creek Road, Deer Creek Road, State Highway 11, Freeman Creek Road, Elk River Road, State Highway 8, Grangemont Road, and Huckleberry Bench Road]	**Protection of people, structures, infrastructure, and economy** by improving access for residents and fire fighting personnel in the event of a wildfire. Allows for a road based defensible area that can be linked to a terrain based defensible areas.	**County Roads and Bridges Department** in cooperation with US Forest Service, BLM, State of Idaho (Lands and Transportation), and forestland or rangeland owners.	• **Year 1 (2005):** Update existing assessment of roads in Clearwater County as to location. Secure funding for implementation of this project (grants). • **Year 2 (2006):** Specifically address access issues listed in column one, plus recreation areas, and others identified in assessment. Target 100' on downhill side of roads and 75' on uphill side for estimated cost of $15,000 per mile of road treated. If 350 miles of roadway are prioritized for treatment (est.) the cost would amount to $ 5,250,000. **B/C Ratio of 31:1 is achieved**, but is highly variable. Further, the total value of structures in the county is not "protected" by this type of treatment. • **Year 3 (2007):** Secure funding and implement projects to treat road-side fuels.

5.5 Infrastructure

Significant 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 Clearwater County. 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 on-the-ground activities.

Communication Infrastructure: This component of the WUI seems to be diversified across the county with multiple source and destination points, and a spread-out support network. Although site specific treatments will impact local networks directly, little needs done to insure the system's viability.

Transportation Infrastructure (road and rail networks): This component of the WUI has some potential limitations in Clearwater County. The hub of Clearwater County's transportation network is located in Orofino (as is the County Seat and largest population center). Specific infrastructure components have been discussed in this plan.

Potential treatments in reference to the rail lines crossing Clearwater County will be discussed in a subsequent section.

Ignitions along highways are significant and should be addressed as part of the implementation of this plan. Various alternatives from herbicides to intensive livestock grazing coupled with mechanical treatments, have been suggested. As part of the multi-agency WUI team proposed in the previous section, these corridors should be further evaluated with alternatives implemented. A variety of approaches will be appropriate depending on the landowner, fuels present, and other factors. These ignitions are substantial and the potential risk of lives to residents in the area is significant.

Many roads in the county have limiting characteristics, such as steep grades, narrow travel surfaces, sharp turning radii, low load limit bridges and cattle guards, and heavy accumulations of fuels adjacent to, and overtopping some roads. Some of these road surfaces access remote forestland and rangeland areas. While their improvements will facilitate access in the case of a wildfire, they are not necessarily the priority for treatments in the county.

Roads that have these inferior characteristics and access homes and businesses are the priority for improvements in the county. Specific recommendations for these roads are enumerated in Table 5.2.

Energy Transport Supply Systems (gas and power lines): (Clearwater County - Appendix I) A number of power lines crisscross Clearwater County. Unfortunately, many of these power lines cross over forestland ecosystems. When fires ignite in these vegetation types, the fires tend to be slower moving and burn at relatively high intensities. Additionally, there is a potential for high temperatures and low humidity with high winds to produce enough heat and smoke to threaten power line stability. Most power line corridors have been cleared of vegetation both near the wires and from the ground below. Observations across the county of these high tension power lines lead to the conclusion that current conditions coupled with urban developments have mitigated this potential substantially. It is the recommendation of this Wildfire Mitigation Plan that this situation be evaluated annually and monitored but that treatments not be specifically targeted at this time. The use of these areas as "fire breaks" should be evaluated

further, especially in light of the treatments enumerated in this plan (eg., intensive livestock grazing, mechanical treatments, and herbicide treatments).

Water Supply: In many of Idaho's communities, water is derived from surface flow that is treated and piped to homes and businesses. When wildfires burn a region, they threaten these watersheds by the removal of vegetation, creation of ash and sediment. As such, watersheds should be afforded the highest level of protection from catastrophic wildfire impacts. In Clearwater County, water is supplied to many homes by single home or multiple home wells; however, the community of Pierce depends on the Canal Creek Watershed as its primary water source.

As a priority recommendation of this plan, it is strongly suggested that Watershed Management Plans for the Canal Creek Watershed be developed to plan for and implement a management program that specifically mitigates wildfire potential while managing the watershed for sustained water flow that is clean and timed according to the needs of the community.

5.5.1 Proposed Activities

Table 5.3. Infrastructure Enhancements.

Action Item	Goals and Objectives	Responsible Organization	Action Items & Planning Horizon
5.3.a: Post FEMA "Emergency Evacuation Route" signs along the identified Primary and secondary access routes in the county.	**Protection of people and structures** by informing residents and visitors of **significant infrastructure** in the county that will be maintained in the case of an emergency.	**County Commissioners** in cooperation with Rural Fire Districts and Roads Department.	• Purchase of signs (2004). • Posting roads and make information available to residents of the importance of Emergency Routes
5.3.b: Fuels mitigation of the FEMA "Emergency Evacuation Routes" in the county to insure these routes can be maintained in the case of an emergency.	**Protection of people and structures** by providing residents and visitors with ingress and egress that can be maintained during an emergency.	**County Commissioners** in cooperation with Rural Fire Districts and Roads Department.	• Full assessment of road defensibility and ownership participation (2005). • Implementation of projects (linked to item 5.2.g, 5.2.h, and 5.2.i.
5.3.c Construction of Deyo Reservoir near Fraser.	**Sustainability of Communities** by increasing the probability that communities will have reliable and safe drinking water.	**County Commissioners** in cooperation with Weippe city government and local residents	• Identify landowners and seek funding to implement the planning process and project area analysis (2005). • Implementation of project based on results of watershed analysis and engineering specifications (2006-07).
5.3.d Supply community water systems with an alternative power source.	**Sustainability of Communities** by increasing the probability that communities will have safe drinking water following a wildfire that burns in the community watershed.	**Water Departments and City Governments.**	• **Year 1 (2004):** Summarize existing power sources at sites. Identify costs to obtain additional equipment and locate funding opportunities. • **Year 2 (2005):** Acquire and install backup power sources as needed.

Table 5.3. Infrastructure Enhancements.

Action Item	Goals and Objectives	Responsible Organization	Action Items & Planning Horizon
5.3.e. Watershed Management Plan Development for the Canal Creek Watershed.	**Sustainability of Communities** by increasing the probability that communities will have safe drinking water following a wildfire that burns in the community watershed.	**Water Departments and City Governments.**	• Identify landowners and seek funding to implement the planning process (2005). • Implementation of projects based on results of watershed management plans.

5.6 Resource and Capability Enhancements

There are a number of resource and capability enhancements identified by the rural and wildland fire fighting districts in Clearwater County. All of the needs identified by the districts are in line with increasing the ability to respond to emergencies in the WUI and are fully supported by the planning committee.

Specific reoccurring themes of needed resources and capabilities include:

- Retention and recruitment of volunteers
- Training and development of rural firefighters in structure and wildland fire
- Incorporation of communities into current fire districts or the formation of a new district specifically for these residents.

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

Table 5.4. WUI Action Items in Fire Fighting Resources and Capabilities.

Action Item	Goals and Objectives	Responsible Organization	Action Items & Planning Horizon
5.4.a: Enhance radio availability in each district, link into existing dispatch, and improve range within the region, update to new digital, narrow band frequency adopted by feds and state.	**Protection of people and structures** by direct fire fighting capability enhancements.	**Idaho Department of Lands** in cooperation with rural and wildland fire districts and County Commissioners	• **Year 1 (2005):** Summarize existing two-way radio capabilities and limitations. Identify costs to upgrade existing equipment and locate funding opportunities. • **Year 2 (2006):** Acquire and install upgrades as needed. • **Year 2-3 (2006-07):** Identify opportunities for radio repeater towers located in the region for multi-county benefits.

Table 5.4. WUI Action Items in Fire Fighting Resources and Capabilities.

Action Item	Goals and Objectives	Responsible Organization	Action Items & Planning Horizon
5.4.b: Retention of Volunteer Fire Fighters	**Protection of people and structures** by direct fire fighting capability enhancements.	**Rural and Wildland Fire Districts** working with broad base of county citizenry to identify options, determine plan of action, and implement it.	• 5 Year Planning Horizon, extended planning time frame • Target an increased recruitment (+10%) and retention (+20% longevity) of volunteers • **Year 1 (2005):** Develop incentives program and implement it.
5.4.c: GPS and map water resources available for fire suppression throughout the county and make this information available to fire agencies.	**Protection of people and structures** by direct fire fighting capability enhancements.	**County GIS Department,** Rural Fire Departments, Clearwater-Potlatch Timber Protective Association, and other wildland fire districts.	• **Year 1 (2005):** Secure funding for data collection and mapping. • **Year 2 (2006):** Complete project and data analysis and provide information to emergency services personnel throughout the county.
5.4.d: Identify areas lacking a sufficient water supply and develop fill sites for use by fire agencies.	**Protection of people and structures** by direct fire fighting capability enhancements.	**County Commissioners and** rural and wildland fire districts.	• Identify populated areas lacking sufficient water supplies and develop project plans to develop fill or helicopter dipping sites. • Implement project plans.
5.4.e: Obtain additional personal protective equipment for city and rural fire departments.	**Protection of people and structures** by direct fire fighting capability enhancements.	**Fire Departments** and County Commissioners.	• Identify needs of each department and secure funding for additional equipment.
5.4.f: Annex currently unprotected lands between rural fire districts to provide structural protection in hazardous areas.	**Protection of people and structures** by direct fire fighting capability enhancements.	**Rural Fire Departments, local residents, and County Commissioners.**	• Estimate of costs ○ $250,000 • 2 year planning horizon
5.4.g: Expand Pierce City Fire Department to cover Judgetown area.	**Protection of people and structures** by direct fire fighting capability enhancements.	**Pierce City Fire Department and local residents.**	• Estimate of costs ○ $500,000 • 2 year planning horizon
5.4.h: Develop dry hydrants on Orofino Creek through Pierce to supplement city water supply during a fire emergency.	**Protection of people and structures** by direct fire fighting capability enhancements.	**Pierce City Fire Department and Pierce City Council.**	• Develop project plan and analysis of project area and secure funding. • Implement project plans.
5.4.i: Increased training and capabilities of fire fighters	**Protection of people and structures** by direct fire fighting capability enhancements.	**Rural and Wildland Fire Districts** working with the **BLM, IDL, and USFS** for wildland training opportunities and with the **State Fire Marshall's**	• **Year 1 (2004):** Develop a multi-county training schedule that extends 2 or 3 years in advance (continuously). • Identify funding and

Table 5.4. WUI Action Items in Fire Fighting Resources and Capabilities.

Action Item	Goals and Objectives	Responsible Organization	Action Items & Planning Horizon
		Office for structural fire fighting training.	resources needed to carry out training opportunities and sources to acquire. • Year 1 (2005): Begin implementing training opportunities for volunteers.

5.7 Regional Land Management Recommendations

In section 5.4 of this plan, reference was given to the role that forestry, grazing and agriculture have in promoting wildfire mitigation services through active management. Clearwater County is dominated by wide expanses of forest and rangelands intermixed with communities and rural houses.

Wildfires will continue to ignite and burn fuels and homes depending on the weather conditions and other factors enumerated earlier. However, active land management that modifies fuels, promotes healthy range and forestland conditions, and promotes the use of these natural resources (consumptive and non-consumptive) will insure that these lands have value to society and the local region. We encourage the US Forest Service, the Bureau of Land Management, the Idaho Department of Lands, the Nez Perce Tribe, Industrial land owners, private land owners, and all other landowners in the region to actively administer their Wildland-Urban Interface lands in a manner consistent with the management of reducing fuels and risks in this zone.

5.7.1 Railroad Right-of-Way

There is currently only one active railroad in Clearwater County. The First Subdivision of the Camas Prairie Railroad makes a weekly trip down the Clearwater River hauling primarily logs from Kamiah to the Potlatch Corporation mill in Lewiston. There are a number of curves and sidings where a train may be prone to create sparks, eject hot stack carbon, or blow hot brake shoes, any one of which can easily ignite the light fuels along the railroad corridor. Although there is some potential, this right-of-way has not been a significant source of fire ignitions and is therefore not a priority for fire mitigation treatment in Clearwater County.

5.7.2 Dworshak Dam and Reservoir; Corps of Engineers

5.7.2.1 Historical Mitigation

The Gold Creek Fire of 1974 was started at an unattended campfire at mini-camp 36.3 on the Dworshak Reservoir. This fire demonstrated the vulnerability of property that is adjacent to land managed by the Corps of Engineers (COE) to wildfire. The COE owns and manages about 30,000 acres of forestland directly adjacent to Dworshak Reservoir. This amounts to, in most areas, only 300 vertical feet up from the ordinary high water mark of the reservoir. This “bathtub ring” is fairly steep and allows for very little chance to stop a large fire before it crosses on to other ownerships.

In 1975, following the Gold Creek Fire, the State of Idaho (State) and COE entered into a Reciprocal Fire Protection Agreement (agreement) as a way to help protect COE managed land

as well as any of the adjacent landowners. Each year since, these agencies have produced annual operating plans to ensure the continuation of this agreement to the present day. Although the agreement is between the COE and the State, it is the Clearwater-Potlatch Timber Protective Association (CPTPA) that administers the agreement on behalf of the State.

The objectives of the agreement are:

a. Maintain a fire protection system for lands owned by the COE at Dworshak Project.

b. Provide prevention, detection, pre-suppression, and suppression capability resulting in no closures of COE property.

c. Limit all wildfires to no more than two (2) acres in size in fuel model “C” and no more than one (1) acre in size in fuel model “G”.

d. Maintain available trained fire suppression personnel.

e. Maintain fire suppression equipment to initiate first attack capability.

f. Maintain accurate continuous fire weather data.

In order to annually initiate and effect restrictions the agencies have also agreed to the following around the mini-camps on the reservoir:

Minimum requirements at each mini-camp site will be reviewed by the COE on an annual basis. At a minimum, to diminish wildfire risks, the State provides personnel and equipment to satisfactorily clean and remove organic materials around fire grills, tent pads, fire trails, and tables in mini-camp sites. Maintenance of all the mini-camps is performed on by CPTPA personnel prior to Memorial Day weekend an annual basis.

a. Mini-camps not meeting the minimum requirements of maintenance may be closed during periods in the high burning index and a COE and State inspection of the site.

b. No recreational fires will be permitted on COE lands during the fire season except in established and approved campgrounds or picnic areas and contained in established fire grills.

c. At least one (1) Ax, one (1) Shovel, and one (1) Bucket for carrying water are recommended on CPTPA and COE boats and vehicles on COE lands during the fire season.

d. After the Burning Index reaches the high level at the Pierce Weather Station for three consecutive days, no open fires will be allowed in campgrounds between the hours of 10 a.m. and 6 p.m. The State will maintain COE Burning Index signs at boat launch ramps, changing levels as necessary. The State will post fire prevention signs at kiosks and at boat ramps giving the fire prevention message. The COE Fire Control Officer and State representative on the reservoir will meet during periods of high or above burning indices to discuss potential problems and necessary closures.

e. Posting of restrictions will be maintained by the State.

The COE at Dworshak project has developed and maintained a Fire Cache of pumps, hoses, and other fire suppression related equipment for the past 30 years. This cache supported Dworshak employees and CPTPA in wildland fire suppression activities on, and adjacent to, project lands. The Dworshak Natural Resource Management (NRM) Team has chosen not to provide trained personnel, but to logistically support CPTPA in fire suppression activities. Due to this development the COE will allow CPTPA to have exclusive use of and provide maintenance to all fire cache equipment as per the inventory.

As agreed CPTPA will:

- Maintain all fire cache equipment in ready to use condition.
- Provide maintenance for two COE managed pumps (Mark 3 and BB-4).
- Conduct bi-annual (spring and fall) inventories with COE representative.
- Remove unserviceable cache items and coordinate inventory adjustments with COE representatives.
- Provide locks and keys for fire cache.

COE will:

- Provide secure location for fire cache at Dworshak maintenance compound.
- Provide COE representative to assist in inventory process.
- Provide logistical support per available resources.
- COE personnel do not perform wildland fire suppression activities, but are available for insipient response and to assist in logistical support to CPTPA for fires on or are threatening COE property.

This agreement also allows for daily and periodic fire patrols of COE managed property. On a daily basis, the State provides a boat patrol that travels the entire length of the reservoir. Boat patrols are defined as consisting of a minimum of a one-man crew in a boat equipped with fire suppression equipment and an identifiable number visible by air. Boats will have radio contact capability with the State and CB channel 9 for emergencies. Boat patrols will perform routine duties, including observations to detect smoke and presenting the fire prevention message to campers and visitors to the project. Patrols operate during high, very high, and extreme burning indices. The agencies have approved a maximum of 77 patrol days between July 1 and September 15 of each year with the option of an additional 15 patrol days should the fire season be prolonged enough to warrant the need.

In addition to the boat patrols the agencies have approved aerial patrols for a maximum of 45 patrol days between July 1 and September 15 of each year with the option of an additional 15 patrol days should the fire season be prolonged enough to warrant the need. These patrol flights will be used during high visitation periods and very high or extreme fire conditions.

Because of the remoteness of Dworshak and the current draw down situation during the fire season, accessibility to much of the COE land base is greatly limited. The use of helicopters for protection, pre-suppression and suppression activities is critical to increase the ability and timeliness for initial attack. The State makes available a helicopter with water bucket during the period July 1 through September 15 of each year. Standby time is also included during this period when conditions warrant increased protection. The agencies have approved a maximum of 34 flight hours with the option of an additional 10 hours should the fire season be prolonged enough to warrant the need.

The State also provides labor and materials to prescribe burn wildlife browse, logging slash piles, and reservoir debris for the COE. Detailed burn plans are developed to meet the objectives for each planned burn while outlining the specific fire parameters to perform the burn in a safe manner with minimized risk of fire escapement. Burn plans are mutually agreed upon before ignition. For all prescribed burning on COE managed land the State will provide all labor and materials necessary for burn plan development, fire ignition and control for a period of 24 hours following ignition. Fire control includes: monitoring, maintaining firebreaks and extinguishing any fires outside of the burn unit boundary. To provide additional fire protection associated with the COE prescribed burning program the State will continue to actively monitor each prescribed burn unit for 3 days after ignition. If fire behavior or weather conditions warrant, additional monitoring time can be requested by the state or the COE.

5.7.2.2 Future Mitigation

COE and CPTPA personnel have a very good working relationship and current plans are to continue to renew the Annual Operating Plan each year just as they have for the past 30 years. Certain language within the agreement will change as fire situations and conditions continue to change, but there will always be an annual need to maintain fire and fuel breaks around the min-camps and a need for the basic fire patrols around Dworshak Reservoir.

Stewardship projects are timber sales designed for a variety of purposes. One of the underlying benefits of such projects is fire fuel mitigation. Harvesting is done to thin the trees in the understory of the stands, thus reducing the ground and ladder fuel loading on site. The harvest units are then prescribed burned further reducing the fuel load. Historically, these forest stands saw relatively low intensive wildfires on a high frequency basis. In this type of fire regime, wildfires can be more easily suppressed before they achieve proportions that could be considered catastrophic. Over the past 75 years the fire regime has been moving ever faster towards lower frequency fires of high intensity. Wildfires of this magnitude are difficult to control and cause damage on a much larger scale.

COE currently has three such stewardship projects planned. The Little Bay project on the east side of the reservoir lies between Canyon Creek and Cold Springs Group Camp. Harvesting on the Little Bay project began in early summer of 2004 and will continue until September of 2005. Although no infrastructure exists adjacent to this project, a few homes do and would be threatened if a wildfire were to start within the harvest area. The thinning and subsequent prescribed burning that is being accomplished and planned should greatly reduce the risk to these homes.

Second is the Elk Creek Meadows Stewardship project that is scheduled to begin harvesting late in the summer of 2005 or 2006. This project is on the west side of the reservoir between Three Meadows Group Camp and mini-camp E2.5 up Elk Creek. As with Little Bay a few homes could be threatened along with several private parcels of land if a wildfire started under the current fuel conditions. The thinning and subsequent prescribed burning that is planned will greatly increase the suppression abilities of fire fighters and the survivability of these homes.

The third such timber sale is the Ahsahka Stewardship Project. This project is in the earliest of planning stages with harvesting not planned till at least the summer of 2008. It currently begins on the east side of the reservoir near mini-camp 5.8 near Indian Creek and proceeds south towards Merrys Bay and wraps around the Ahsahka hillside and across the North Fork of the Clearwater River up the northwest side to Big Eddy Recreation area. This location borders many houses including Lakewood estates on Eureka Ridge, the main city of Orofino and the town of Ahsahka. Many infrastructure sites are also located near the harvest boundary. Steep slopes and overstocked stands of trees that are at a very high risk of stand replacing wildfire characterize this area. This type of terrain makes it very difficult to control and contain fires as well. Fire protection for the residences and other structures in the area will play a major role in the planning process, design and execution of the Ahsahka Stewardship Project.

5.7.3 USDA Forest Service Projects

The Forest Service guiding documents used to determine land use are the National Fire Plan (NFP), Healthy Forest Restoration Act (HFRA), and the goal statements of the Agency to implement ecosystem restoration, protect communities from wildland fires, and to utilize prescribed fire as a tool in the restoration of the forest and to reduce the effects of wildfire leading to catastrophic loss. During the development of this project acres managed by the Agency that are in Fire Regime Condition Class II and III were analyzed, as defined by the

Forest Service and managed by the Agency within the Wildland Urban Interface (WUI), and the vegetation types that are present on these lands. The acres within the WUI in each County have been mapped and these areas have been identified by the Forest Service as high priority areas to be treated under the NFP and the HFRA.

Within Clearwater County, there are approximately 451,916 acres of Wildland-Urban Interface, of this land the US Forest Service manages approximately 30,286 acres of it. These acres were analyzed for their Current Fire Regime Condition Class. Approximately 3,507 acres of the USDA Forest Service managed lands in Clearwater County are within the WUI and are also currently rated in Fire Regime Condition Class 2 or 3. These are the priority acres in Clearwater County for the USDA Forest Service to treat. Appendix I has a map of these areas specifically identified. Most of the high risk lands are in the area adjacent to Elk River and would be addressed by the Municipal Watershed Management Plan identified in this document. These projects are a very high priority in terms of the protection of life and resources through targeted fuels management.

Chapter 6: Supporting Information

6

6.1 List of Tables

6.2 List of Figures

6.3 List of Preparers

The following personnel participated in the formulation, compilation, editing, and analysis of alternatives for this assessment.

Table 6.1. List of Preparers

Name	Affiliation	Role
William E. Schlosser, Ph.D.	Northwest Management, Inc.	**Lead Author,** Project Manager, GIS Analyst, Natural Resource Economist, Hazard Mitigation Specialist
Tom Richards, B.S.	Northwest Management, Inc.	Project Co-Manager, Fire Mitigation, Silviculture Systems
Vincent P. Corrao, B.S.	Northwest Management, Inc.	Resource Management Specialist, Deputy Project Manager
Tera Duman, B.S.	Northwest Management, Inc.	Natural Resource Manager, Fire Control Technician
John A. Erixson, M.S.	Northwest Management, Inc.	Range Management, Fire Specialist
Dennis S. Thomas	Northwest Management, Inc.	Fire & Fuels Specialist, Prescribed Burning
Vaiden E. Bloch, M.S.	Northwest Management, Inc.	GIS Analyst
Greg Bassler, M.S.	Northwest Management, Inc.	Roads Engineer, Timber Sale Layout & Harvest Manager

6.4 Signature Pages

This **Clearwater County Wildland Urban Interface Wildfire Mitigation Plan** has been developed in cooperation and collaboration with the representatives of the following organizations, agencies, and individuals.

6.4.1 Representatives of Clearwater County Government

This Wildfire Mitigation Plan and all of its components identified herein were adopted formally through a resolution of the Board of County Commissioners as of **April 4, 2005, resolution number 05-04-07**, recorded in the official record of the Clearwater County Commissioners.

Don Ebert — 4/4/05

By: Don Ebert, Chairman
Clearwater County Commissioner — Date

Stan Leach — 4/4/05

By: Stan Leach
Clearwater County Commissioner — Date

J. P. Curfman — 4-25-05

By: Joseph "Pete" Curfman
Clearwater County Commissioner — Date

Michael Caughran — 4/4/05

By: Michael Caughran
Emergency Management Coordinator — Date

R. Simon — 4-4-05

By: Rob Simon, Supervisor
Clearwater County Highway District — Date

Alan K. Hengen — 4/25/05

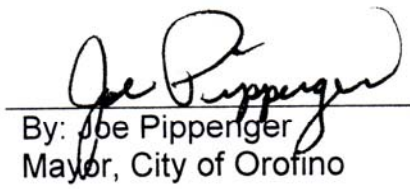
By: Alan Hengen
Clearwater County Sheriff — Date

Melissa Stewart — 5-16-05

By: Melissa Stewart
Clearwater County Assessor — Date

6.4.2 Representatives of City Government in Clearwater County

This Wildland Urban Interface Wildfire Mitigation Plan and all of its components identified herein were done in cooperation and coordination with the cities listed.



By: Joe Pipperiger
Mayor, City of Orofino

Date

By:
Mayor, City of Pierce

Date

By:
Mayor, City of Weippe

Date

By: John Greenway
Mayor, City of Elk River

Date

6.4.3 Representatives of City and Rural Fire Districts in Clearwater County

This Wildland Urban Interface Wildfire Mitigation Plan and all of its components identified herein were developed in close cooperation and participation with the participating fire districts listed herein.

Howard Weeks — 4/4/05

By: Howard Weeks, Chief
Evergreen Fire Protection District — Date

4/5/05

By: Jon Walton, Chief
Grangemont Volunteer Fire Department — Date

Mike Lee — 4/5/05

By: Mike Lee, Chief
Orofino Rural Fire Department — Date

4-15-05

By: Deryl Ketchum, Chief
Twin Ridge Fire Department — Date

By: Rick Roe, Chief
Elk River City Fire Department — Date

Mike Lee — 6-15-05

By: Mike Lee, Chief
Orofino City Fire Department — Date

Craig Shantie — 4/6/05

By: Craig Shantie, Chief
Pierce Fire Department — Date

James Cabuela — 4/7/05

By:
Weippe City Fire Department — Date

By: Rob Smith, Chief Upper Fords Creek Rural Fire Department	Date
By: James Cahala, Chief Weippe Rural Fire Department	5-16-05 Date
By: John Willard, Chief Sunnyside Rural Fire Department	4/6/05 Date

6.4.4 Representatives of Community Organizations, Federal, and State Agencies

This Wildland Urban Interface Wildfire Mitigation Plan was developed in cooperation and collaboration with the additionally listed agencies and organizations. These entities listed below are not elligable to “formally adopt” this plan, but will strive to implement its recommendations.

4-4-05

By: Dave Summers, Fire Warden
Idaho Department of Lands — Date

By: John DeGroot, Forest Manager
Nez Perce Tribe — Date

5/5/05

By: Greg Yuncevich
USDI, Bureau of Land Management — Date

4/29/2005

By: Larry Dawson
Forest Supervisor, Clearwater National Forest — Date

4/4/05

By: Howard Weeks
Clearwater-Potlatch Timber Protective Association — Date

4/21/05

By: Jim Malbry
Clearwater Area Manager, Potlatch Corporation — Date

4/12/05

By: Greg Parker
Project Manager, Corps of Engineers — Date

11/30/05

By: Charles E. Doty, President
Clearwater Resources Conservation and
Development Council, Inc.

Date

4 April 2005

By: William E. Schlosser, Ph.D.
Project Manager-Clearwater County Wildfire
Mitigation Plan, Lead Author, Northwest
Management, Inc

Date

6.5 Resolutions of Adoption

The following resolutions have been adopted by the listed municipalities in Clearwater County.

6.5.1 Resolution of the Commissioners of Clearwater County, Idaho

RESOLUTION 05-04-07
BOARD OF COUNTY COMMISSIONERS
CLEARWATER COUNTY, IDAHO

A RESOLUTION of the County Commissioners of Clearwater County declaring County support and adoption of the Wildland-Urban Interface Wildfire Mitigation Plan;

WHEREAS, the Board of County Commissioners supports the Wildland-Urban Interface Wildfire Mitigation Plan (cited below) to use for purposes associated with mitigating wildfire risks in Clearwater County. This document will serve as the guiding planning document for purposes related to FEMA, the National Fire Plan, the Healthy Forests Restoration Act, and other purposes as may be appropriate as deemed by the Board of County Commissioners.

NOW, THEREFORE BE IT RESOLVED, that Clearwater County adopts the Wildland-Urban Interface Wildfire Mitigation Plan.

Passed and Approved this 4th day of April, 2005

Board of County Commissioners
Clearwater County, Idaho

Don Ebert, Chairman

Stan Leach, Commissioner

absent
J.P. "Pete" Curfman, Commissioner

ATTEST:

CLEARWATER COUNTY DISTRICT COURT SECOND JUDICIAL DISTRICT STATE OF IDAHO

Robin Christensen, Clerk

Glossary of Terms

Anadromous - Fish species that hatch in fresh water, migrate to the ocean, mature there, and return to fresh water to reproduce (Salmon & Steelhead).

Appropriate Management Response - Specific actions taken in response to a wildland fire to implement protection and fire use objectives.

Biological Assessment - Information document prepared by or under the direction of the Federal agency in compliance with U.S. Fish and Wildlife standards. The document analyzes potential effects of the proposed action on listed and proposed threatened and endangered species and proposed critical habitat that may be present in the action area.

Backfiring - When attack is indirect, intentionally setting fire to fuels inside the control line to contain a rapidly spreading fire. Backfiring provides a wide defense perimeter, and may be further employed to change the force of the convection column.

Blackline - Denotes a condition where the fireline has been established by removal of vegetation by burning.

Burning Out - When attack is direct, intentionally setting fire to fuels inside the control line to strengthen the line. Burning out is almost always done by the crew boss as a part of line construction; the control line is considered incomplete unless there is no fuel between the fire and the line.

Canyon Grassland - Ecological community in which the prevailing or characteristic plants are grasses and similar plants extending from the canyon rim to the rivers edge.

Confine - Confinement is the strategy employed in appropriate management responses where a fire perimeter is managed by a combination of direct and indirect actions and use of natural topographic features, fuel, and weather factors.

Contingency Plans: Provides for the timely recognition of approaching critical fire situations and for timely decisions establishing priorities to resolve those situations.

Control Line - An inclusive term for all constructed or natural fire barriers and treated fire edge used to control a fire.

Crew - An organized group of firefighters under the leadership of a crew boss or other designated official.

Crown Fire - A fire that advances from top to top of trees or shrubs more or less independently of the surface fire. Sometimes crown fires are classed as either running or dependent, to distinguish the degree of independence from the surface fire.

Disturbance - An event which affects the successional development of a plant community (examples: fire, insects, windthrow, timber harvest).

Disturbed Grassland - Grassland dominated by noxious weeds and other exotic species. Greater than 30% exotic cover.

Diversity - The relative distribution and abundance of different plant and animal communities and species within an area.

Drainage Order - Systematic ordering of the net work of stream branches, (e.g., each non-branching channel segment is designated a first order stream, streams which only receive first order segments are termed second order streams).

Duff - The partially decomposed organic material of the forest floor beneath the litter of freshly fallen twigs, needles, and leaves.

Ecosystem - An interacting system of interdependent organisms and the physical set of conditions upon which they are dependent and by which they are influenced.

Ecosystem Stability - The ability of the ecosystem to maintain or return to its steady state after an external interference.

Ecotone - The area influenced by the transition between plant communities or between successional stages or vegetative conditions within a plant community.

Energy Release Component - The Energy Release Component is defined as the potential available energy per square foot of flaming fire at the head of the fire and is expressed in units of BTUs per square foot.

Equivalent Clearcut Area (ECA) - An indicator of watershed condition, which is calculated from the total amount of crown removal that has occurred from harvesting, road building, and other activities based on the current state of vegetative recovery.

Exotic Plant Species - Plant species that are introduced and not native to the area.

Fire Adapted Ecosystem - An arrangement of populations that have made long-term genetic changes in response to the presence of fire in the environment.

Fire Behavior - The manner in which a fire reacts to the influences of fuel, weather, and topography.

Fire Behavior Forecast - Fire behavior predictions prepared for each shift by a fire behavior analysis to meet planning needs of fire overhead organization. The forecast interprets fire calculations made, describes expected fire behavior by areas of the fire, with special emphasis on personnel safety, and identifies hazards due to fire for ground and aircraft activities.

Fire Behavior Prediction Model - A set of mathematical equations that can be used to predict certain aspects of fire behavior when provided with an assessment of fuel and environmental conditions.

Fire Danger - A general term used to express an assessment of fixed and variable factors such as fire risk, fuels, weather, and topography which influence whether fires will start, spread, and do damage; also the degree of control difficulty to be expected.

Fire Ecology - The scientific study of fire's effects on the environment, the interrelationships of plants, and the animals that live in such habitats.

Fire Exclusion - The disruption of a characteristic pattern of fire intensity and occurrence (primarily through fire suppression).

Fire Intensity Level - The rate of heat release (BTU/second) per unit of fire front. Four foot flame lengths or less are generally associated with low intensity burns and four to six foot flame lengths generally correspond to "moderate" intensity fire effects. High intensity flame lengths are usually greater than eight feet and pose multiple control problems.

Fire Prone Landscapes – The expression of an area's propensity to burn in a wildfire based on common denominators such as plant cover type, canopy closure, aspect, slope, road density, stream density, wind patterns, position on the hillside, and other factors.

Fireline - A loose term for any cleared strip used in control of a fire. That portion of a control line from which flammable materials have been removed by scraping or digging down to the mineral soil.

Fire Management - The integration of fire protection, prescribed fire and fire ecology into land use planning, administration, decision making, and other land management activities.

Fire Management Plan (FMP) - A strategic plan that defines a program to manage wildland and prescribed fires and documents the fire management program in the approved land use plan. This plan is supplemented by operational procedures such as preparedness, preplanned dispatch, burn plans, and prevention. The fire implementation schedule that documents the fire management program in the approved forest plan alternative.

Fire Management Unit (FMU) - Any land management area definable by objectives, topographic features, access, values-to-be-protected, political boundaries, fuel types, or major fire regimes, etc., that set it apart from management characteristics of an adjacent unit. FMU's are delineated in FMP's. These units may have dominant management objectives and preselected strategies assigned to accomplish these objectives.

Fire Occurrence - The number of wildland fires started in a given area over a given period of time. (Usually expressed as number per million acres.)

Fire Prevention - An active program in conjunction with other agencies to protect human life, prevent modification, of the ecosystem by human-caused wildfires, and prevent damage to cultural resources or physical facilities. Activities directed at reducing fire occurrence, including public education, law enforcement, personal contact, and reduction of fire risks and hazards.

Fire Regime - The fire pattern across the landscape, characterized by occurrence interval and relative intensity. Fire regimes result from a unique combination of climate and vegetation. Fire regimes exist on a continuum from short-interval, low-intensity (stand maintenance) fires to long-interval, high-intensity (stand replacement) fires.

Fire Retardant - Any substance that by chemical or physical action reduces flareability of combustibles.

Fire Return Interval - The number of years between two successive fires documented in a designated area.

Fire Risk - The potential that a wildfire will start and spread rapidly as determined by the presence and activities of causative agents.

Fire Severity - The effects of fire on resources displayed in terms of benefit or loss.

Foothills Grassland - Grass and forb co-dominated dry meadows and ridges. Principle habitat type series: bluebunch wheatgrass and Idaho fescue.

Fuel - The materials which are burned in a fire; duff, litter, grass, dead branchwood, snags, logs, etc.

Fuel Break - A natural or manmade change in fuel characteristics which affects fire behavior so that fires burning into them can be more readily controlled.

Fuel Loading - Amount of dead fuel present on a particular site at a given time; the percentage of it available for combustion changes with the season.

Fuel Model - Characterization of the different types of wildland fuels (trees, brush, grass, etc.) and their arrangement, used to predict fire behavior.

Fuel Type - An identifiable association of fuel elements of distinctive species; form, size, arrangement, or other characteristics, that will cause a predictable rate of fire spread or difficulty of control, under specified weather conditions.

Fuels Management - Manipulation or reduction of fuels to meet protection and management objectives, while preserving and enhancing environmental quality.

Gap Analysis Program (GAP) - Regional assessments of the conservation status of native vertebrate species and natural land cover types and to facilitate the application of this information to land management activities. This is accomplished through the following five objectives:

1. Map the land cover of the United States
2. Map predicted distributions of vertebrate species for the U.S.
3. Document the representation of vertebrate species and land cover types in areas managed for the long-term maintenance of biodiversity
4. Provide this information to the public and those entities charged with land use research, policy, planning, and management
5. Build institutional cooperation in the application of this information to state and regional management activities

Habitat - A place that provides seasonal or year-round food, water, shelter, and other environmental conditions for an organism, community, or population of plants or animals.

Heavy Fuels - Fuels of a large diameter, such as snags, logs, and large limbwood, which ignite and are consumed more slowly than flash fuels.

Hydrologic Unit Code - A coding system developed by the U. S. Geological Service to identify geographic boundaries of watersheds of various sizes.

Hydrophobic - Resistance to wetting exhibited by some soils, also called water repellency. The phenomena may occur naturally or may be fire-induced. It may be determined by water drop penetration time, equilibrium liquid-contact angles, solid-air surface tension indices, or the characterization of dynamic wetting angles during infiltration.

Human-Caused Fires - Refers to fires ignited accidentally (from campfires or smoking) and by arsonists; does not include fires ignited intentionally by fire management personnel to fulfill approved, documented management objectives (prescribed fires).

Intensity - The rate of heat energy released during combustion per unit length of fire edge.

Inversion - Atmospheric condition in which temperature increases with altitude.

Ladder Fuels - Fuels which provide vertical continuity between strata, thereby allowing fire to carry from surface fuels into the crowns of trees or shrubs with relative ease. They help initiate and assure the continuation of crowning.

Landsat Imagery - Land remote sensing, the collection of data which can be processed into imagery of surface features of the Earth from an unclassified satellite or satellites.

Landscape - All the natural features such as grasslands, hills, forest, and water, which distinguish one part of the earth's surface from another part; usually that portion of land which the eye can comprehend in a single view, including all its natural characteristics.

Lethal - Relating to or causing death; extremely harmful.

Lethal Fires - A descriptor of fire response and effect in forested ecosystems of high-severity or severe fire that burns through the overstory and understory. These fires typically consume large woody surface fuels and may consume the entire duff layer, essentially destroying the stand.

Litter - The top layer of the forest floor composed of loose debris, including dead sticks, branches, twigs, and recently fallen leaves or needles, little altered in structure by decomposition.

Maximum Manageable Area - The boundary beyond which fire spread is completely unacceptable.

Metavolcanic - Volcanic rock that has undergone changes due to pressure and temperature.

Minimum Impact Suppression Strategy (MIST) - "Light on the Land." Use of minimum amount of forces necessary to effectively achieve the fire management protection objectives consistent with land and resource management objectives. It implies a greater sensitivity to the impacts of suppression tactics and their long-term effects when determining how to implement an appropriate suppression response.

Mitigation - Actions to avoid, minimize, reduce, eliminate, replace, or rectify the impact of a management practice.

Monitoring Team - Two or more individuals sent to a fire to observe, measure, and report its behavior, its effect on resources, and its adherence to or deviation from its prescription.

National Environmental Policy Act (NEPA) - This act declared a national policy to encourage productive and enjoyable harmony between humans and their environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and will stimulate the health and welfare of humankind; to enrich the understanding of important ecological systems and natural resources; and to establish a Council on Environmental Quality.

National Fire Management Analysis System (NFMAS) - The fire management analysis process, which provides input to forest planning and forest and regional fire program development and budgeting.

Native - Indigenous; living naturally within a given area.

Natural Ignition - A wildland fire ignited by a natural event such as lightning or volcanoes.

Noncommercial Thinning - Thinning by fire or mechanical methods of precommercial or commercial size timber, without recovering value, to meet MFP standards relating to the protection/enhancement of adjacent forest or other resource values.

Notice of Availability - A notice of Availability published in the Federal Register stating that an EIS has been prepared and is available for review and comment (for draft) and identifying where copies are available.

Notice of Intent - A notice of Intent published in the Federal Register stating that an EIS will be prepared and considered. This notice will describe the proposed action and possible alternatives, the proposed scoping process, and the name and address of whom to contact concerning questions about the proposed action and EIS.

Noxious Weeds - Rapidly spreading plants that have been designated "noxious" by law which can cause a variety of major ecological impacts to both agricultural and wild lands.

Planned Ignition - A wildland fire ignited by management actions to meet specific objectives.

Prescribed Fire - Any fire ignited by management actions to meet specific objectives. A written, approved prescribed fire plan must exist, and NEPA requirements must be met, prior to ignition.

Prescription - A set of measurable criteria that guides the selection of appropriate management strategies and actions. Prescription criteria may include safety, economic, public health, environmental, geographic, administrative, social, or legal considerations.

Programmatic Biological Assessment - Assesses the effects of the fire management programs on Federally listed species, not the individual projects that are implemented under these programs. A determination of effect on listed species is made for the programs, which is a valid assessment of the potential effects of the projects completed under these programs, if the projects are consistent with the design criteria and monitoring and reporting requirement contained in the project description and summaries.

Reburn - Subsequent burning of an area in which fire has previously burned but has left flareable light that ignites when burning conditions are more favorable.

Riparian Habitat Conservation Areas (RHCA) - Portions of watersheds where riparian-dependent resources receive primary emphasis, and management activities are subject to specific standards and guidelines. RHCAs include traditional riparian corridors, wetlands, intermittent headwater streams, and other areas where proper ecological functioning is crucial to maintenance of the stream's water, sediment, woody debris, and nutrient delivery systems.

Riparian Management Objectives (RMO) - Quantifiable measures of stream and streamside conditions that define good fish habitat and serve as indicators against which attainment or progress toward attainment of goals will be measured.

Road Density - The volume of roads in a given area (mile/square mile).

Scoping - Identifying at an early stage the significant environmental issues deserving of study and de-emphasizing insignificant issues, narrowing the scope of the environmental analysis accordingly.

Seral - Refers to the stages that plant communities go through during succession. Developmental stages have characteristic structure and plant species composition.

Serotinous - Storage of coniferous seeds in closed cones in the canopy of the tree. Serotinous cones of lodgepole pine do not open until subjected to temperatures of 113 to 122 degrees Fahrenheit causing the melting of the resin bond that seals the cone scales.

Stand Replacing Fire - A fire that kills most or all of a stand.

Sub-basin - A drainage area of approximately 800,000 to 1,000,000 acres, equivalent to a 4th - field Hydrologic Unit Code.

Surface Fire - Fire which moves through duff, litter, woody dead and down, and standing shrubs, as opposed to a crown fire.

Watershed - The region draining into a river, river system, or body of water.

Wetline - Denotes a condition where the fireline has been established by wetting down the vegetation.

Wildland Fire - Any nonstructure fire, other than prescribed fire, that occurs in the wildland.

Wildland Fire Implementation Plan (WFIP) - A progressively developed assessment and operational management plan that documents the analysis and selection of strategies and describes the appropriate management response for a wildland fire being managed for resource benefits. A full WFIP consists of three stages. Different levels of completion may occur for differing management strategies (i.e., fires managed for resource benefits will have two-three stages of the WFIP completed while some fires that receive a suppression response may only have a portion of Stage I completed).

Wildland Fire Situation Analysis (WFSA) - A decision making process that evaluates alternative management strategies against selected safety, environmental, social, economic, political, and resource management objectives.

Wildland Fire Use - The management of naturally ignited wildland fires to accomplish specific prestated resource management objectives in predefined geographic areas outlined in FMP's. Operational management is described in the WFIP. Wildland fire use is not to be confused with "fire use", which is a broader term encompassing more than just wildland fires.

Wildland Fire Use for Resource Benefit (WFURB) - A wildland fire ignited by a natural process (lightning), under specific conditions, relating to an acceptable range of fire behavior and managed to achieve specific resource objectives.

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Northwest Management, Inc.
233 East Palouse River Drive
PO Box 9748
Moscow ID 83843
208-883-4488 Telephone
208-883-1098 Fax
NWManage@consulting-foresters.com e-Mail
http://www.Consulting-Foresters.com/ Internet

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