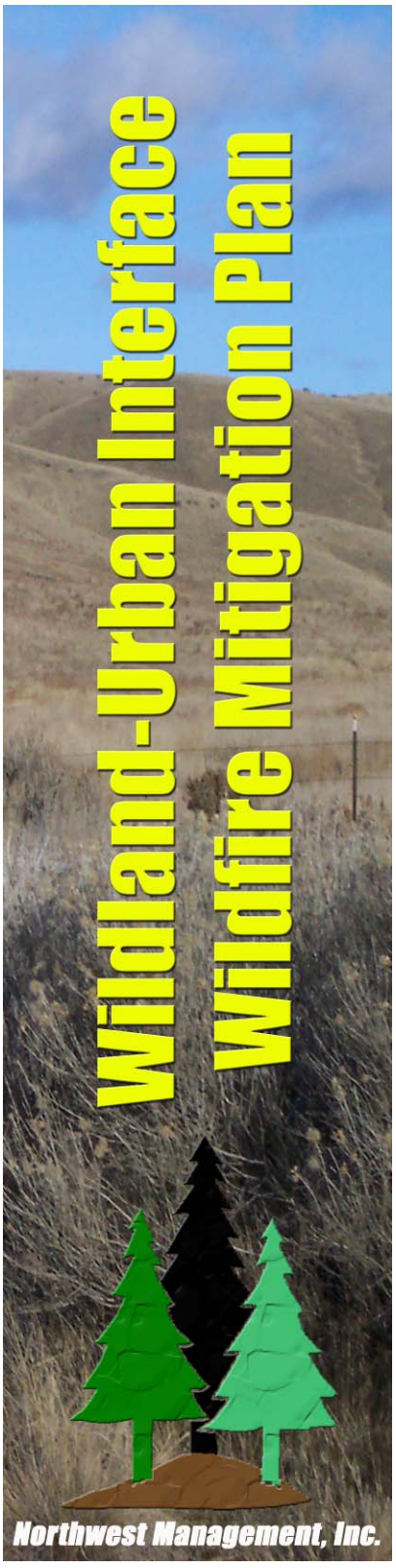

Ada County, Idaho
Wildland-Urban Interface
Wildfire Mitigation Plan

June 14, 2006 Update

Volume II

Ada County All Hazards Mitigation Plan

Including the City Municipalities of Boise, Meridian, Eagle, Kuna, Garden City & Star

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

This plan was developed by the Ada County Wildland-Urban Interface Wildfire Mitigation Plan Committee and All Hazard Mitigation Plan Committee in cooperation with Northwest Management, Inc., 233 E. Palouse River Dr. P.O. Box 9748, Moscow, Idaho 83843, Phone: (208) 883-4488, Fax: (208) 883-1098, 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.

Ada County Commissioners and the employees of Ada County

USDI Bureau of Land Management

Southwest Idaho Resource Conservation and Development Council, Inc.

Ada City-County Emergency Management

Idaho Transportation Department

USDI Bureau of Reclamation

Idaho Department of Lands

Federal Emergency Management Agency

Idaho Bureau of Homeland Security

Idaho Fish and Game

U.S. Department of Veteran Affairs

USDA Forest Service

Ada County Parks & Waterways

City of Boise

City of Meridian

City of Eagle

North Ada County Fire and Rescue

Boise Fire Department

City of Kuna

City of Garden City

City of Star

St. Luke's Regional Medical Center

Saint Alphonsus Regional Medical Center

Boise Police Department

Boise Airport

Central District Health Department

Star Joint Fire Protection District
Meridian Fire Department
Eagle Fire District
Kuna Fire District
Local Businesses and Citizens of Ada County

To obtain copies of this plan contact:

Ada County Commissioners Office
Ada County Courthouse
200 West Front Street
Boise, ID 83702
Phone: (208)287-7000
Fax: (208)287-7009

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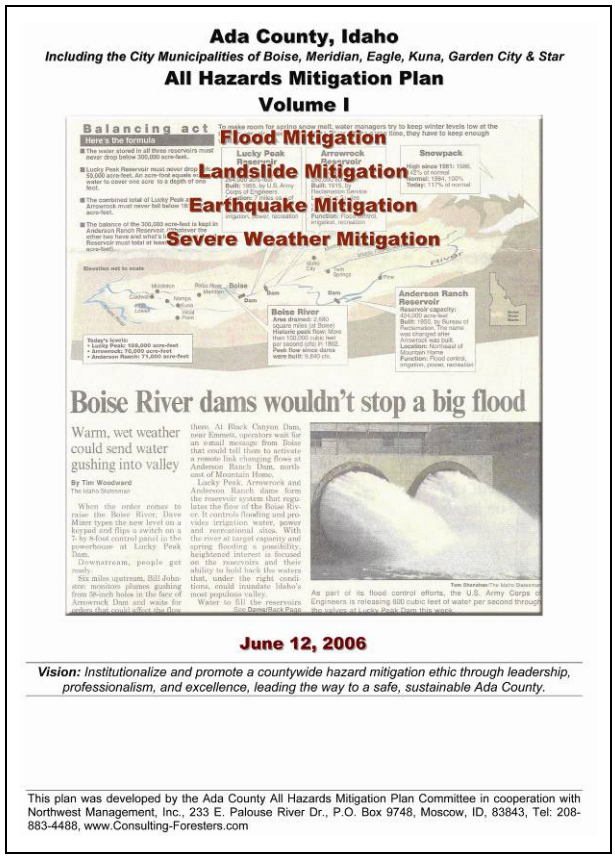
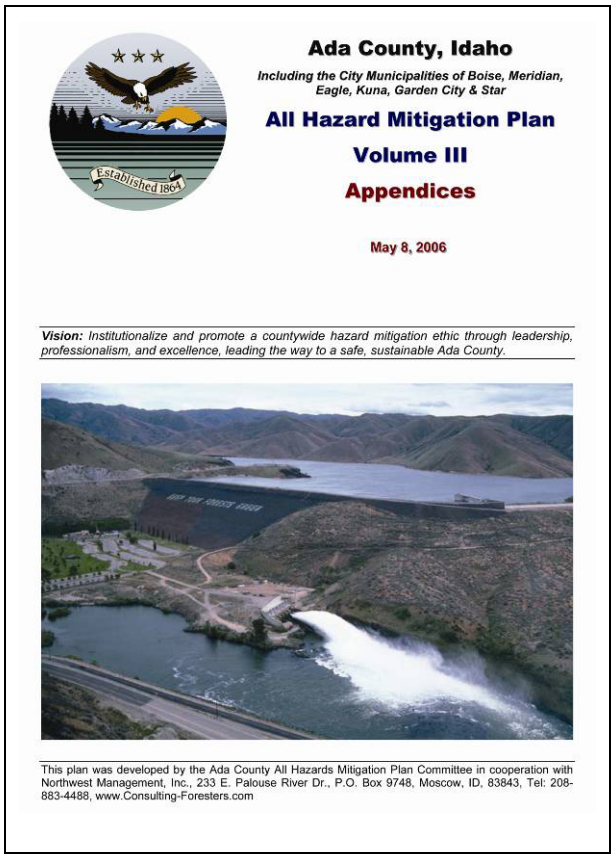
Foreword

The **Ada County All Hazards Mitigation Plan** was developed during 2005-06 by the Ada County Hazard Mitigation Planning Committee in cooperation with Northwest Management, Inc., of Moscow, Idaho. Three bound documents have been produced as part of this planning effort. They include:

- Volume I: All Hazards Mitigation Plan including chapters of:
  - Flood Mitigation Plan
  - Landslide Mitigation Plan
  - Earthquake Mitigation Plan
  - Severe Weather Mitigation Plan
- Volume II: Wildland-Urban Interface Wildfire Mitigation Plan
- Volume III: All Hazard Mitigation Plan Appendices

The Ada County Wildland-Urban Interface Wildfire Mitigation Plan, in addition to being compatible with FEMA requirements is also compatible with the National Fire Plan, the Healthy Forests Restoration Act, and the Idaho Implementation Strategy for the National Fire Plan. Although it is being published as a separate document, it should be considered one chapter of the All Hazards Mitigation Plan and is hereby incorporated into this plan's contents.





Chapter I: Overview of this Plan and its Development

1 Introduction

This Wildland-Urban Interface Wildland Fire Mitigation Plan for Ada 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 Ada County, Idaho. The planning team responsible for implementing this project was led by the Ada County Commissioners. Agencies and organizations that participated in the planning process included:

- Ada City-County Emergency Management (ACCEM)
- Ada County Assessors Office & GIS Analyst
- Ada County Commissioners
- Ada County Communications
- Ada County Emergency Medical Services
- Ada County Engineer
- Ada County Highway Districts
- Ada County Sheriff
- Boise Airport
- Boise City Fire Department
- Boise City Public Works
- Boise Planning
- Boise Police Department
- Bureau of Land Management
- City of Eagle
- City of Garden City
- City of Kuna
- City of Meridian
- City of Star
- Central District Health Department
- Department of Veteran's Affairs, VA Medical Center
- Eagle Fire District
- Garden City Police Department
- Idaho Department of Lands
- Idaho Fish and Game
- Kuna Fire District
- Kuna Planning and Zoning
- Melba Fire Department
- Meridian Fire Department
- Meridian Wastewater Treatment Plant
- North Ada County Fire and Rescue
- Northwest Management, Inc.
- Saint Alphonsus Regional Medical Center
- Southwest Idaho Resource Conservation and Development Council
- Star Joint Fire Protection District
- St. Luke's Regional Medical Center

The Southwest Idaho Resource Conservation and Development Council, Inc., on behalf of the Ada County Commissioners, solicited competitive bids from companies to provide the service of leading the assessment and the writing of the **Ada County Wildland-Urban Interface Wildland Fire Mitigation Plan**. The SW Idaho RC&D contracted with Northwest Management, Inc., to provide this service to Elmore, Ada and Canyon Counties. 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 resource manager 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 and 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 cover 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 Department of Homeland Security
4040 Guard Street, Bldg 600
Boise, ID 83705

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 United States Government Accounting Office

1.1.2.1 Technology Assessment - April 2005 – "Protecting Structures and Improving Communications during Wildland Fires"

1.1.2.1.1 Why GAO Did This Study

Since 1984, wildland fires have burned an average of more than 850 homes each year in the United States and, because more people are moving into fire-prone areas bordering wildlands, the number of homes at risk is likely to grow. The primary responsibility for ensuring that preventative steps are taken to protect homes lies with homeowners and state and local governments, not the federal government. Although losses from wildland fires made up only 2 percent of all insured catastrophic losses from 1983 to 2002, fires can result in billions of dollars in damages.

Once a wildland fire starts, various parties can be mobilized to fight it, including federal, state, local, and tribal firefighting agencies and, in some cases, the military. The ability to communicate among all parties - known as interoperability - is essential but, as GAO reported previously, is hampered because different public safety agencies operate on different radio frequencies or use incompatible communications equipment.

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

1.1.2.1.2 What GAO Found

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

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

Existing technologies, such as audio switches, can help link incompatible communication systems, and new technologies, such as software-defined radios, are being developed following common standards or with enhanced capabilities to overcome incompatibility barriers. Technology alone, however, cannot solve communications problems for those responding to wildland fires. Rather, planning and coordination among federal, state, and local public safety

agencies is needed to resolve issues such as which technologies to adopt, cost sharing, operating procedures, training , and maintenance. The Department of Homeland Security is leading federal efforts to improve communications interoperability across all levels of government. In addition to federal efforts, several states and local jurisdictions are pursuing initiatives to improve communications interoperability.

The GAO study specifically noted the actions taken by Ada County in the Boise foothills in it "Examples of Laws Requiring Protective Measures Adopted by Jurisdiction in Five States GAO Visited" (GAO-05-380 Wildland Fire Technologies Table 1 pg 53. The report states:

> "The county has identified lands at high risk of wildland fire and, since 1997, has required homeowners in this area to maintain at least 50 feet of defensible space around new structures. New construction in the high-risk area must comply with additional requirements, including at least class B roofing materials; screened vents' enclosed eaves; nonflammable gutters; and fire-resistant exterior walls, windows and decks."

1.1.3 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 (2004)
- 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 Ada County while facilitating new opportunities for pre-disaster mitigation funding and cooperation.

1.1.3.1 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:

- Maintaining firefighter and public safety as the highest priority during any fire event.
- A sustained, long-term and cost-effective investment of resources by all public and private parties, recognizing overall budget parameters affecting Federal, State, 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 factoring findings into future decision making activities.
- 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 entities with good working knowledge and interest in local resources. Participants in this planning process include 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 under estimated, as their input and contribution to all phases of risk assessments, mitigation activities, and project implementation is greatly facilitated by their involvement.

1.1.3.2 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.

1.1.3.2.1 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.

1.1.3.3 National Association of State Foresters

1.1.3.3.1 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)).

1.1.3.3.2 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.

1.1.3.4 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 Ada 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 Ada County that incorporate public involvement and the input from a wide spectrum of fire and emergency services providers in the region.

1.1.4 Local Guidelines and Integration with Other Efforts

1.1.4.1 Ada County Comprehensive Growth and Development Plan

The Ada County Comprehensive Growth and Development Plan (1997) is a guide that establishes goals and objectives to help the County grow and develop. The Ada County Comprehensive Plan includes a forecast of conditions that are anticipated to occur within the next twenty-five-year period, 2000 to 2025. The Plan addresses and includes all 14 comprehensive planning components of the "Idaho Local Planning Act of 1975" as supplemented and amended.

Planning is an ongoing process. Conditions and priorities change; consequently the plan will be reviewed regularly and revised when necessary. The 13 planning components included in the Ada County Comprehensive Growth and Development Plan include:

1. Private Property Rights
2. Population and Growth
3. Economic Development
4. School Facilities and Transportation
5. Land Use
6. Natural Resources
7. Hazardous Areas
8. Public Services, Facilities, and Utilities

9. Transportation Recreation and Tourism
10. Special Areas or Sites
11. Housing
12. Community Design
13. Implementation

Within each chapter of the comprehensive plan are goals and objectives, which help establish development guidelines and public policy. Goals are defined as statements, which indicate a general aim or purpose to be achieved. Goals reflect countywide values. Objectives are defined as guidelines, which establish a definite course to guide present and future decisions. The Ada County Comprehensive Plan is directed toward all land within the County including Federal, State, Public and Private lands.

This Wildland-Urban Interface Wildfire Mitigation Plan will "dove-tail" with the County's Comprehensive Plan during its development and implementation to insure that the goals and objectives of each are integrated together. In many sections of this document, direct reference will be made to specific recommendations that are amplified or enhanced in this document. This planning effort fully adopts the goals and objectives of the County's Comprehensive Plan.

1.1.4.2 Ada County Wildfire Mitigation Planning Effort and Philosophy

The goal of this planning process is to integrate components 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.

1.1.4.2.1 Mission Statement

To make Ada 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.

1.1.4.2.2 Vision Statement

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

1.1.4.2.3 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 Ada County
- Strategically locate and plan fuel reduction projects
- Provide recommendations for alternative treatment methods, such as herbicide treatments, fuel reduction techniques, and disposal or removal of treated slash and brush
- Meet or exceed the requirements of the National Fire Plan and FEMA for a County level Fire Mitigation Plan

Chapter 2: Documenting the Planning Process

2 Initiation

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 Ada 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 Ada County. This included an area encompassing Ada, Boise, Canyon, Elmore, Owyhee, and Gem Counties to insure a robust dataset for making inferences about fires in Ada 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). Project Leader, Mr. Toby R. Brown, holds a B.S. degree in natural 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.

2.1.2 Multi-Jurisdictional Participation

CFR requirement §201.6(a)(3) calls for multi-jurisdictional planning in the development of Wildfire Mitigation Plans which impact multiple jurisdictions. This Wildfire Mitigation Plan is applicable to the following Jurisdictions:

- Ada County, Idaho
- City of Boise
- City of Kuna
- City of Eagle
- City of Meridian
- City of Star
- City of Garden City

All of these jurisdictions were represented on the planning committee, in public meetings, and participated in the development of hazard profiles, risk assessments, and mitigation measures. The planning committee meetings were the primary venue for authenticating the planning record. However, additional input was gathered from each jurisdiction in a combination of the following ways:

- Planning committee leadership visits to scheduled municipality public meeting (e.g., County Commission meetings, City Hall meetings) where planning updates were provided and information was exchanged.
- One-on-one visits between the planning committee leadership and the representatives of the municipality (e.g., meetings with County Commissioners, or City Councils in chambers).
- Special meetings at each jurisdiction by the planning committee leadership requested by the municipality involving elected officials (mayors and County Commissioners), appointed officials (e.g., County Assessor, Sheriff, City Police), municipality employees, local volunteers (e.g., fire district volunteers), business community representatives, and local citizenry.
- Written correspondence was provided between the planning committee leadership and each municipality updating the cooperators in the planning process, making requests for information, and facilitating feedback.

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 Ada County Wildland-Urban Interface Wildfire Mitigation Planning Committee, news releases were submitted to area newspapers.

2.2.1.1 Newspaper Articles

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

Hot Topic: Ada & Canyon Counties Plan to Mitigate Wildfire Risk

The Ada & Canyon County Commissioners, working with the Southwest Idaho RC&D, have created a Wildfire Mitigation Plan Committee to complete a Wildfire Mitigation Plan for Ada & Canyon Counties as part of the National Fire Plan authorized by Congress and the Whitehouse. The Ada & Canyon Counties Wildfire Mitigation Plans will include risk analysis at the community level with predictive models for where fires are likely to ignite and where they are likely to spread rapidly once ignited. Northwest Management, Inc. has been retained by Ada & Canyon Counties to provide wildfire risk assessments, mapping, field inspections, and 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 making recommendations for potential treatments. Specific activities for homes, structures, infrastructure, and resource capabilities will be proposed as part of the analysis.

One of the most important steps in gathering information about fire risk in Ada & Canyon Counties is to conduct a homeowner's survey. Northwest Management, Inc., in cooperation with local fire officials, have mailed a brief survey to randomly selected homeowners in the county seeking details about home construction materials, proximity to water sources, and other risk factors surrounding homes. This survey is very important to the success of the plan. Those homes that receive a survey are asked to please take the time to complete it, thereby benefiting the community overall.

The planning team will be conducting Public Meetings to discuss preliminary findings and to seek public involvement in the planning process in August. A notice on the date and location of these meetings will be posted in local newspapers.

For more information on the Fire Mitigation Plan projects in Ada & Canyon Counties contact your County Commissioner, the Southwest Idaho RC&D office, John McGee, the Ada & canyon County local coordinator, at 208-573-0155 or William Schlosser at the Northwest Management, Inc. office in Moscow, Idaho at 208-883-4488.

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 Ada County, a mail survey was conducted. Using a state and county database of landowners in Ada 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 Ada County, as well as a mailing address in Ada County. This database created a list of 65,478 unique names to which were affixed a random

number that contributed to the probability of being selected for the public mail survey. A total of 237 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 IV.

The first in the series of mailing was sent June 25, 2004, and included a cover letter, a survey, and an offer of receiving a custom GIS map of the area of their selection in Ada 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 July 9, 2004, encouraging their response. A final mailing, with a revised cover letter pleading with them to participate, was sent to non-respondents on July 16, 2004.

Surveys were returned during the months of July, August, September, October and November. A total of 66 residents responded to the survey. No surveys were returned as undeliverable. The effective response rate for this survey was 28%. Statistically, this response rate allows the interpretation of all of the response variables significantly at the 90% 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 to the survey have a home in Ada County, and 92% consider this their primary residence. About 34% of the respondents were from the Eagle area, 34% were from the Meridian area, 13% were from the Boise area, 11% from Star, and 8% from Garden City.

All of the respondents correctly identified that they have emergency telephone 911 services in their area. Their ability to correctly identify if they are covered by a fire district was 69%. Respondents were asked to identify if their home is protected by a fire district. Nearly all of the county's residents in the populated areas have a fire protection district. Of the respondents, 31% responded they do not have a fire district covering their home, when in fact they do. None of the respondents indicated that they were inside of a fire protection district when in reality they are outside of a protection district.

Respondents were asked to indicate the type of roofing material covering the main structure of their home. Approximately 86% of respondents indicated their homes were covered with a composite material (asphalt shingles). About 5% indicated their homes were covered with a metal (e.g., aluminum, tin) roofing material. Roughly 3% of the respondents indicated they have a wooden roofing material such as shakes or shingles. The additional 3% of respondents had a variety of combustible and non-combustible materials indicated.

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	3%	6%
Less than 10	41%	59%
Between 10 and 25	32%	27%
More than 25	24%	8%

Approximately 97% of those returning the survey indicated they have a lawn surrounding their home. Of these individual home sites, 100% indicated they keep this lawn green through the fire season.

The average driveway length of the respondents was approximately 105 feet long, from their main road to their parking area. Only one of the respondents had a driveway over ¼ miles long. Approximately 74% of all homeowners indicated they have an alternative escape route, with the remaining 26% indicating only one-way-in and one-way-out.

Respondents were asked to indicate any tools they had at or near their home that could be used in fighting a wildland fire. Table 2.2 summarizes the results.

Table 2.2 Tool Availability At or Near Homes.

Hand Tools	89%
Portable Water Tank	8%
Stationary Water Tank	6%
Pond, Lake, or Stream Water Supply	23%
Water Pump and Fire Hose	9%
Equipment Suitable for Constructing Fire Breaks	6%

Roughly 14% of the respondents in Ada County indicated they have someone in their household trained in wildland fire fighting. Approximately 12% indicated someone in the household had been trained in structural fire fighting. 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. Respondents were asked if they conducted any type of periodic fuels reduction program near their home site such as grass or brush burning, 25% indicated they did. 14% also indicated that they graze livestock around their homes.

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	65%
	Medium size fuels (brush, large shrubs, small trees)	2	31%
	Heavy, large fuels (woodlands, timber, heavy brush)	3	5%
Slope Hazard	Mild slopes (0-5%)	1	89%
	Moderate slope (6-20%)	2	7%
	Steep Slopes (21-40%)	3	2%
	Extreme slopes (41% and greater)	4	3%
Structure Hazard	Noncombustible roof and noncombustible siding materials	1	50%
	Noncombustible roof and combustible siding material	3	0%
	Combustible roof and noncombustible siding material	7	50%
	Combustible roof and combustible siding materials	10	0%
Additional Factors	Rough topography that contains several steep canyons or ridges	+2	Average -2.4 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, local fire districts, dozers)	-3	

Calculating your risk

Values below are the average response value to each question.

Fuel hazard __1.4___ x Slope Hazard ____1.2___ = ____1.7____		
Structural hazard	+	____3.5__
Additional factors	(+ or -)	___-2.4__
Total Hazard Points	=	____2.8_

Table 2.4. Percent of respondents in each risk category as determined by the survey respondents.
00% – Extreme Risk = 26 + points
00% – High Risk = 16–25 points
15% – Moderate Risk = 6–15 points
85% – Low Risk = 6 or less points

Maximum household rating form score was 15 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 only slightly lower than the risk rating assigned by the “professionals”. Anecdotal evidence would indicate that Ada County

landowners involved in this survey have a more realistic view of wildfire risk than the landowners in other Idaho counties where these questions have been asked.

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?" 42% of the respondents 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	12%	46%	42%
Community Defensibility Projects	40%	50%	10%
Infrastructure Projects Roads, Bridges, Power Lines, Etc.	74%	18%	9%

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 Ada County Wildland-Urban Interface Wildfire Mitigation Plan's preparation.

- Bart Hamilton .....Ada County Sheriffs Office
- Bill Baker .....Ada County EMS
- Bill Moore .....Southwest Idaho RC&D
- Bruce Eggleston .....Boise Planning Department
- Bruce Rankin.....Boise Fire
- Dave Hanneman .....Boise Fire
- Doug Hardman .....Ada County Emergency Management
- Doug Rosin .....Kuna Fire District
- George Webb .....Boise Fire Department
- Greg Borak .....Idaho Fish and Game
- Jerry Scholten .....Idaho Fish and Game
- John Barclay .....Ada County Communications
- John McGee .....Northwest Management, Inc.
- Jonathan Perry .....Idaho Bureau of Homeland Security
- Kenny W. Bowers.....Meridian Fire Department
- Kevin Ron.....Boise City Fire Department
- Martin Knoelk .....North Ada County Fire and Rescue
- Melodie Holstead .....City of Kuna
- Ray Carino .....Ada County Emergency Management
- Ron Amendus .....North Ada County Fire and Rescue
- Steve Hamilton .....Boise Fire Department
- Toby Brown .....Northwest Management, Inc.

- Tracy Raymon .....Boise Fire Department
- William Schlosser.....Northwest Management, Inc.

Committee Meetings were scheduled and held on the following dates:

2.2.3.1 June 1, 2004

Miscellaneous Business –

Send out electronic copies of assessments to e-mail list. Not very many people have seen them. Wayne Forrey should have detailed list of participants. NMI needs to obtain this list to insure that everyone is receiving materials.

Sheldon Bluestein is contact for obtaining repeater locations and County GIS materials.

The next Fire Chiefs Association meetings are 3rd Wed. of each month. NMI needs to attend one of these meetings to get fire depts. to participate and share info.

Committee would like city council involved in adoption process. We need to get on agenda ASAP.

Need to include narration of foothills situation in final document.

Old Business –

Resources and Capability surveys have been circulated to most departments; however, Meridian Fire is the only one that has returned the completed form to NMI. We also need to make sure that everyone has received a copy. Doug Hardman made copies and gave them to some, but many departments have not the survey because they were not at the last meeting.

NMI has obtained cadastral data; however, Doug Hardman wants to make sure that we are using the most recent and accurate data. He would be a good contact person to make sure we have this information.

Discussion –

Resource & Capability Enhancements: (Boise Fire was only dept. in attendance)

- Need more brush fire apparatus and tenders
- Most dept. are not volunteer so they are usually well staffed and they have adequate access to training
- Roads – many one ways and cul-de-sacs in subdivisions – need more off road access points or constructed loop roads
- Some depts. contract with BLM, which may take some resources out of the county during the wildfire season
- Foothills Levy – 800 acres purchased by city in foothills (will exacerbate the problem)
- Do not have more stations planned in foothills at this time. 1000's of new homes will be added in near future.
- The area south of town towards Kuna experiences 3x more fires than northern foothills area. City is working on annexing some of this area to alleviate dead spot problem.
- Planning and Zoning is a very touchy subject in Ada County, but some feel that they need to come up with some type of formal ranking system to prioritize higher risk or more valuable resource areas
- Communication – have aligned radio frequencies with BLM, which was a major improvement, but personnel needs more training on use of proper frequencies. Also,

areas on the very eastern edge of the county cannot communicate with dispatch in town. May need to install an additional repeater or sub-repeater in Stage Stop area.
- Building Codes – so far no one has been successful with curbing high risk housing designs (shake roofs, siding, etc.) or mandating defensible space. FIREWISE program was unsuccessful. Fireworks are a big problem, but so far there has been little success in enforcing city ordinances restricting their use. Education tactics have been the most successful in getting homeowners to create defensible spaces, fire resistant landscaping, etc.
- Boise City Foothills Policy Plan – may be an avenue to getting new wildfire related ordinances in place
- Recreation – Greenbelt Reservoir experiences a lot of small fires. Officials hire people during the fire season to patrol the area on 4-wheelers with water tanks. This quick response tactic works pretty well plus it's a good way to educate people in the area about preventing wildfires. Fuel reduction projects would also be beneficial in this area.

Potential Mitigation Projects:

- Roads – need more thru roads and off road access to rear of homes (may be environmental issues associated)
- Water Resources – city limits area has plenty of water access. Departments have established dip sites and have port-a-tank set up locations. Whitney District is short on water due to a lack of hydrants. The city stations a tender in this area to aid this dept.
- Fire Districts – West side of county is covered; however, there is no fire district covering the far eastern edges of the county. Ada County has good mutual aid agreements with the BLM. There is a study regarding wildfire in the Orchard/Mayfield area that needs to be incorporated into document.

Next Meeting: July 13 (Tues) @ 1:30 in same room unless Doug Hardman cannot reserve

2.2.3.2 July 13, 2004

Meeting Kick-off

Synopsis of Wildland Fire Mitigation Planning by John McGee and Ken Homik from NMI.

- What is it, what is the history behind these planning efforts
- Where have we been and where are we going- continued review of community assessments, development of resources and capabilities, stepping stone for funding sources.

Update on public participation, including mailing of surveys and press releases regarding the plans.

Resources and Capabilities: Surveys are trickling in, continued emphasis on getting surveys returned and the importance of identifying "holes" is capabilities for funding opportunities.

Review of Infrastructure, protection, and WUI maps.

- Include Chevron and NW pipeline gas lines
- Include repeater sites
- Identify station locations.
- Map LPG plant in Star, although outside of Ada County
    - Contact Eric Wing, GIS-Mapping coordinator for digital data. 384-3936

- WUI Map- There is a pre-existing "Official Zoning Map" for Ada County. (For info, Ada County Development Services, 464-2277. www.adaweb.net. Look for county codes link.
- WUI maps- need to make legend explanation more clear as to what is actually depicted in the concentric circles. This needs to be even more clear so as any member of the public could read and understand exactly what is portrayed.

Repeaters- back-up power supply for repeaters should be identified as a need.

Communications will continue to be issue- discussed in depth at last meeting.

Discussion of July 12th fire in Boise foothills. It was started by workman grinding on a metal fence. Mutual aids worked incredible well, testament to work all departments have been putting forth in training for such incidents. Fire contained at 80 acres, although the potential was much greater.

Discussion involving police and sheriff into the planning effort, since they are frequently utilized for road closure and traffic control.

Review of time line for Fire Plan- Next committee meeting to be scheduled by McGee. The meeting will be prior to one of the three public meetings, which are scheduled for August 10, 11 and 12, in Eagle, Meridian and Boise. Exact times and locations are to be determined.

Other information:

Foothills Environmental Learning Center, located in Hulls Gulch of the Boise Foothills, will offer an educational center sponsored by BLM, The Nature Conservancy, Boise Cascade, Idaho Power and others. It will serve as an educational opportunity for fire-related issues

BLM does literature drop in cooperation with Boise City fire in foothills area on defensible space issues.

Resources and Capabilities: Have information for nearly all districts. Doug Hardman from Boise City has forwarded updated list of contacts from Ada Co. Wildfire Response Plan.

KH spent time with Holly LeFevre from BLM discussing treatments in Ada, Canyon and Owyhee Counties. She is on a short detail and is not sure of all treatments that are scheduled in the counties. She will get with the fuels person from the district to gather pertinent information.

KH visited areas within Ada County that were identified by Idaho Fish and Game, Boise River Management Area that were not specifically addressed in the plan. Since Fish and Game manages a large chunk of the foothills, their concerns should be addressed. These will be integrated during the community assessments update.

Access throughout the county is an issue and should be brought highlighted as a recommendation for Z&P changes.

2.2.3.3 March 30 2005

Ada County WUI-WMP Committee Meeting
March 30, 2005
Committee Review Meeting

Attendees: Tera Duman, NMI
Toby Brown, NMI
Doyle McPherson, Kuna Fire
Anne Kawalec, Ada County Assessor-GIS
Irene Saphra, BLM

Carrie Bilbao, Boise District-BLM
Bill Moore, RC&D
Mike Winkle, Eagle Fire Department
Doug Hardman, Ada City-County Emergency Management
Ray Carino, ACCEM
Chris Head, Star Fire District

Toby Brown began the formal meeting my giving everyone an update on the status of the project and a quick review of the planning process from this point to completion. Introductions were made around the table. This meeting was intended to present the DRAFT Wildfire Mitigation Plan to the planning committee and discuss the details of the plan. The following are comments and corrections offered by members of the committee:

- Carrie Bilbao has more names and corrections from the BLM for the fire ignition database
- Ada County does not have any "rural" fire districts, refer to them as "local" or just "districts"
- BLM database does not include information from the State Fire Marshall – ask if they can provide this information in the same way they did for Payette County
- # of acres burned throughout the county is decreasing; however, the damage caused is increasing due to large homes in the WUI
- More accurate population statistics are available from the community planning association
- Use # classification on FRCC maps instead of departure classification
- All primary access route thoroughfares should be included in WUI
- There is a new subdivision going in along Hwy 55 to County line (8-10,000 structures)
- The county is seeing a 25% increase in parcels
- Delete obsolete cities from maps (i.e. Olson City, Barber, Ustick, etc.)
- Section 3.9.3 change southeast to south
- BLM partners with the community on some projects. We need to get list of proposed projects
- Missing I-84 corridor project from all discussions (see Elmore County)
- 4.4.3.8 Mitigation Action: change Orchard to Pleasant Valley-Owyhee
- BLM Resources and Capabilities – change to Boise District
- 4.6.2.3 needs period
- Kuna Station #2 – address is 10600
- Melba Fire Resources and Capabilities are listed twice and Star Fire is missing
- 4.7.2 Ada County has major addressing problems, they need to re-address the entire county
- Change Emergency Services to Emergency Management

- Most fire districts need mobile repeaters, wildfire PPEs, and staffing for existing equipment
- Annual Prioritization – Wildfire Steering Committee is probably responsible for making recommendations for the County
- Fix Table lettering
- 5.1.d – Add BLM
- Add volunteer dispatch personnel to needs list
- 5.2.a – Wildfire Steering Committee should continue . . .; Responsible organization should say RC&D, Emergency Management, City, dispatch, federal agencies, and fire districts
- 5.4.k – Add dispatch, BLM, and Wildfire Steering Committee
- 5.2.c – Home site evaluations are really hard. They have been tried by the RC&D. Boise Front area might not be worth it, possibly just do education campaign in this area
- Add mobile support unit with extra supplies for rural districts
- Acquire GIS mobile units for onsite mapping, etc.
- 5.3.f – Add Wildfire Steering Committee and Dispatch
- Add new Star Station on Hwy 16, helipad, and development of accessible water resources for Star District

2.2.3.4 May 9th, 2005

Ada County Wildfire Mitigation Plan Committee review meeting. Meridian Fire Station.

The committee met to discuss comments additions and updates to the fire plan. There were a limited number of comments and additions.

The county is beginning on its All Hazard Mitigation Plan. The wildfire mitigation Plan will become one chapter in the AHMP making it eligible for a wider range of federal funding. The overall AHMP process is similar to the Wildfire Planning process. The committee will have a wider base including more municipalities' public works, health, and county and city disaster preparedness coordinators.

It was discussed that this planning process dovetail into the AHMP process and that the draft copies of both plans go out together for one joint Public Review period in October or November when the AHMP is ready for Public review.

There were only a few committee members present at this meeting, but it was felt that delaying the public draft of this wildfire mitigation plan and incorporating the release with the AHMP was the best option.

2.2.3.5 August 25, 2005

Ada County Wildfire Mitigation Plan Update Meeting

Attendees: Shawn Rayne Ada County Emergency Medical Services
Kurt Houston, IDL
Paul Woods, Ada County Foothills & Open Space Manager
Bruce Rankin, Boise City Fire

Bob Narus, BLM
Doug Hardman, Ada County Emergency Services
David Monson, Ada County Sheriff
Toby Brown, Northwest Management, Inc.
Tera King, Northwest Management, Inc.

A meeting of the Wildfire Mitigation Plan committee was called to discuss the current status of the Fire Plan. At the last meeting it was decided that instead of going through the entire approval process for the stand alone Fire Plan, the committee would wait and roll it in with the Ada County All Hazard Mitigation Plan. This would allow the committee to send them both on to FEMA at the same time and go through only one formal adoption process for both plans. This and other funding issues was explained in great detail in order to make sure the entire committee understood what was delaying the completion of the plan and why it was beneficial to take this action.

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 Ada County Commissioners to integrate the public's input to the development of the fire mitigation plan.

Formal public meetings were scheduled on September 7, 2004, at Eagle, Idaho, September 8, 2004, at Meridian, and on September 9, 2004, at Boise, Idaho. Due to low turnout at these meetings, two more meetings where scheduled and held at Star Senior Center on October 29 and at Meridian Senior Center on November 4. The purpose of these meetings was to share information on the planning process with a broadly representative cross section of Ada County landowners. Both meetings 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 Project Leader, Toby R. Brown. During his presentations, comments from committee members, fire chiefs, and others were encouraged in an effort to engage the audience in a discussion.

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.

2.2.4.1 Meeting Notices

Public notices of this meeting were printed in the **Idaho Statesman** and the **Idaho Press** the week of August 27, 2004. Public service announcements also ran on KBOI, KTIK, KZMG, KKGL, KQFC, and KIZN.

Hot Topic: Ada & Canyon Counties Plan to Mitigate Wildfire Risk

The Ada & Canyon County Commissioners, working with the Southwest Idaho RC&D, have created a Wildfire Mitigation Plan Committee to complete a Wildfire Mitigation Plan for Ada & Canyon Counties as part of the National Fire Plan authorized by Congress and the White House. The Ada & Canyon Counties Wildfire Mitigation Plans will include risk analysis at the community level with predictive models for where fires are likely to ignite and where they are likely to spread rapidly once ignited. Northwest Management, Inc. has been retained by Ada & Canyon Counties to provide wildfire risk assessments, mapping, field inspections, and 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 making recommendations for potential treatments. Specific activities for homes, structures, infrastructure, and resource capabilities will be proposed as part of the analysis.

One of the most important steps in gathering information about fire risk in Ada & Canyon Counties is to conduct a homeowner's survey. Northwest Management, Inc., in cooperation with local fire officials, have mailed a brief survey to randomly selected homeowners in the county seeking details about home construction materials, proximity to water sources, and other risk factors surrounding homes. This survey is very important to the success of the plan. Those homes that receive a survey are asked to please take the time to complete it, thereby benefiting the community overall.

The planning team will be conducting Public Meetings to discuss preliminary findings and to seek public involvement in the planning process in September. For more information on the Fire Mitigation Plan projects in Ada & Canyon Counties contact your County Commissioners, the Southwest Idaho RC&D office, John McGee, the Ada & Canyon County local coordinator, at 208-459-8404 or William Schlosser at the Northwest Management, Inc. office in Moscow, Idaho at 208-883-4488.

Meeting notices were posted around the county and on Internet web site of the County advertising the meetings. Figure 2.1 is an example of the flyer used in this effort to advertise the public meetings.

Figure 2.1. Advertisement for Ada County Public Meetings.

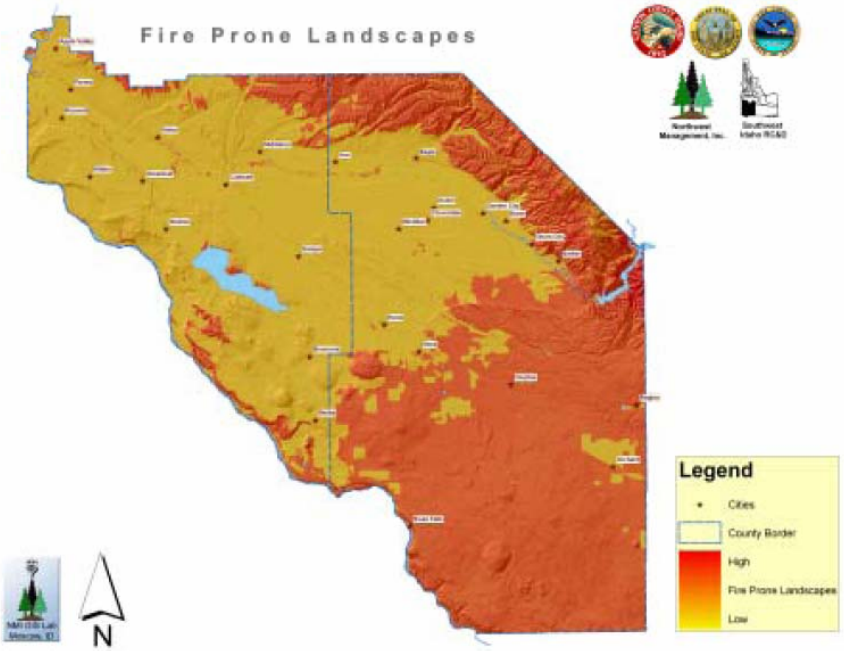
Ada County, Idaho Wildland-Urban Interface Wildfire Mitigation Plan

Southwest Idaho RC&D

Public Meetings!

- **Meridian -** Thursday 1:00 PM, November 4, Meridian Senior Center, 133 W. Broadway Ave
- **Star -** Friday 11:00 AM, November 5 — ***free lunch!!***, Star Senior Center, 102 S. Main

Public meetings are scheduled in Meridian and Star, November 4 & 5, to address Wildfire risks around our communities. These meetings are open to the public and will include presentations from wildfire mitigation specialists working on the Ada County Wildfire Mitigation Plan. Public input is being sought in order to better frame the County's efforts of fuels treatments, fire fighting resource enhancements, and public land management.



Learn about the assessments of risk (Fire Prone Landscapes - above) and the Wildland-Urban Interface of Ada County. Discuss YOUR priorities for how Ada County can best mitigate wildland fire risks around your community. ***JOIN US!***

Each meeting will last for approximately 1.5 hours and include refreshments, a slideshow, information on the planning process, and schedules for completion.

For more information on Wildfire Mitigation Plan projects in Ada County, contact your County Commissioners, Bill Moore with the Southwest Idaho RC&D office at 208-888-1890 ext. 4, or Dr. William Schlosser at the Northwest Management, Inc. office in Moscow, Idaho at 208-883-4488.

2.2.4.2 Meridian Public Meeting

November 4, 2004- Meridian Senior Center- 1 PM

Meeting attendance included a total of seven individuals. The group discussed a number of issues that had been previously identified by the committee as posing significant challenges for fire suppression in Ada County. The fact that these issues have been identified by both the committee and the public reaffirm the need for these factors to be addressed. Five specific issues were discussed:

- Expansion of fire districts to provide better coverage in eastern portions of the county as well as south toward Kuna.
- Issues associated with smoke from agricultural burning and the impacts within the Boise Airshed.
- The need for additional fire stations and equipment to provide better fire protection county-wide.
- The need to restrict building practices and construction materials within the Boise Foothills in order to reduce flammability of structures.
- The need to widen pre-existing roads in subdivisions in order to provide adequate access for emergency vehicles.

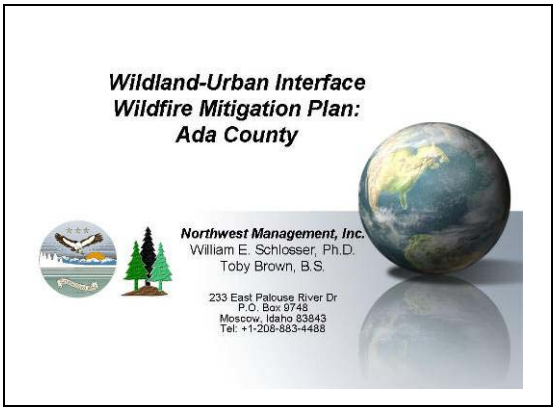
2.2.4.3 Star Public Meeting

November 5, 2004- Star Senior Center- 12 PM

This luncheon public meeting included at total of 31 individuals. Issues discussed include the following:

- The need for enforcement of planning and zoning regulations in the Boise Foothills.
- Potential building restrictions for certain high risk areas of the foothills
- Better smoke management for allowed burning in the valley
- Better public notification when roads are closed due to fires (or other hazards)

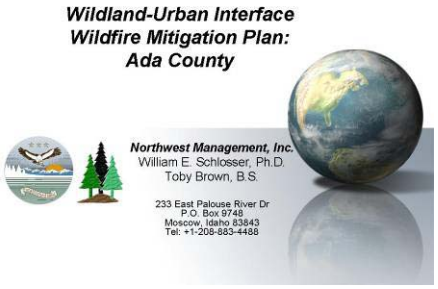
Figure 2.2. Public meeting slideshow overview.



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

Table 2.6. Public meeting slide show.

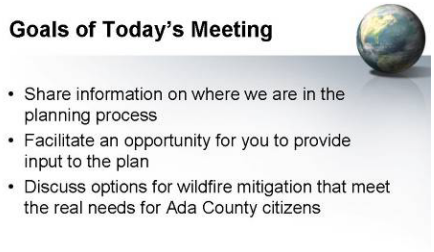
Slide 1



Slide 2

Slide 3

Slide 4



Slide 5

Slide 6

Slide 7

Slide 8

Table 2.6. Public meeting slide show.

Slide 9

Wildfire Mitigation: 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 (eg., *FireWise*)**
  - Protection of People and Structures
  - Protection of Infrastructure
  - Protection of Economy
  - Protection of Ecosystems

Slide 10

Hazard Mitigation: Strategy for Planning

- **Define Policies and Parameters to include:**
  - National Fire Plan
  - Statewide Implementation Strategy
  - Healthy Forests Restoration Act
  - Federal Emergency Management Act
  - The Counties' Goals, Vision, Objectives
- **Description of Ada County**
- **Assessment of Each Factor of Risk**
- **Develop Mitigation Strategies to Reduce the Risk or Mitigate the Loss**

Slide 11

Recommendations

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

- *We will come back to this list at the end of the presentation…*

Slide 12

Slide 13

Treatments we are Considering

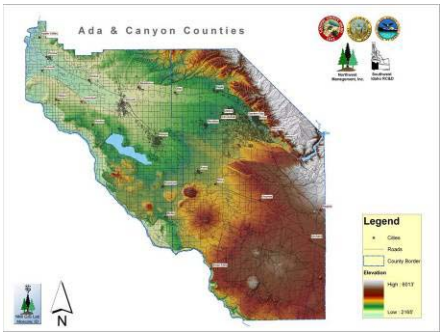
- Homeowner and landowner education
- Building code changes for structures in the WUI
- Home site defensible zone through fuels modification
- Community defensible zone fuels alteration
- Access improvements
- Access creation
- Emergency response enhancements (training, equipment, locating new fire stations,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

Slide 14

Hazard Mitigation: Treatment Categories

- **People and Structures**
  - Policy at the County Level
  - Reducing Risk to People and Structures
  - Planning and Zoning Changes
- **Infrastructure Protection**
  - Power Lines
  - Roads & Bridges
  - Gas and Water Lines
  - Watersheds
- **Resources and Capabilities**
  - Emergency Services Ability to Respond
- **Federal, State, and Local Land Management Recommendations**

Slide 15



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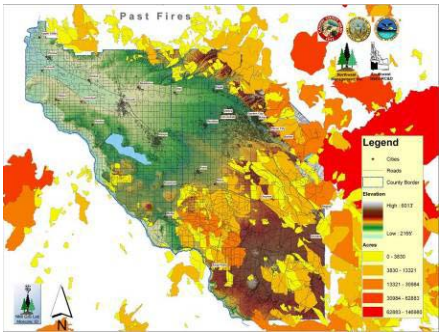
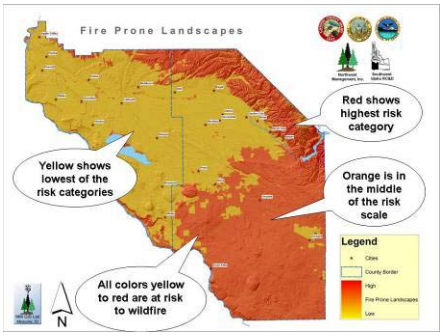


Table 2.6. Public meeting slide show.

Slide 17



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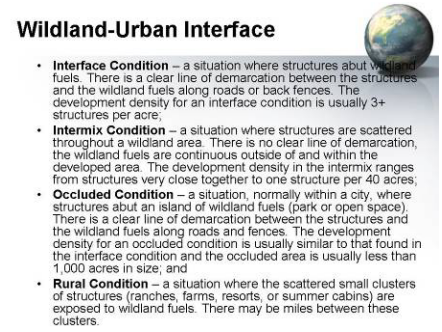

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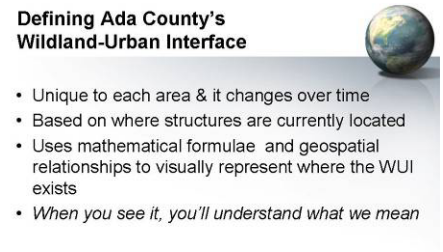

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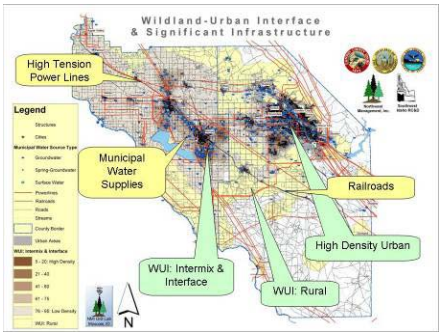

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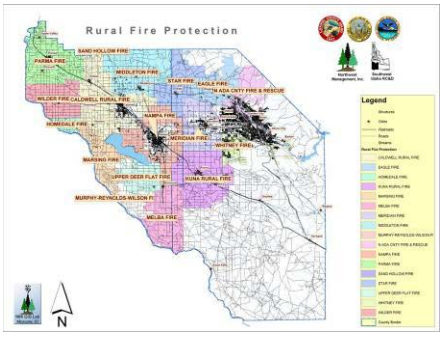

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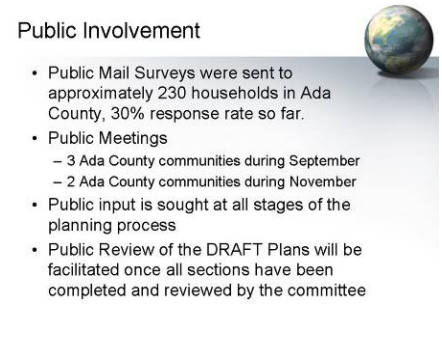


Table 2.6. Public meeting slide show.

Slide 25

Slide 26

2.3 Review of the WUI Wildfire Mitigation Plan

Review of sections of this document was conducted by the planning committee during the planning process as maps, summaries, and written assessments were completed. These individuals included fire mitigation specialists, firefighters, 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 planning process was temporarily delayed because of the poor attendance during the first round of public meetings. A second round of public meetings was held in early 2005, where better attendance was witnessed. A DRAFT for Committee Review was delivered on March 30, 2005. The Committee review process remained open until April 19, 2005. With the beginning of the Ada County All Hazard Mitigation Plan process in August, this Wildfire Mitigation Plan has been wrapped into the public review period for the entire All Hazard Mitigation Plan, of which this plan is one chapter.

2.4 Continued Public Involvement

Ada County is dedicated to involving the public directly in review and updates of the Hazard Mitigation Plan. The Ada 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 Ada 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

Ada County experienced a total population increase from 205,775 in 1990 to 300,904 in 2000 with approximately 118,516 housing units. Ada County has six incorporated communities, Boise (pop. 208,219), Eagle (pop. 18,428), Garden City (pop. 11,914), Meridian (pop. 56,108), Star (pop. 3,028), and Kuna (pop. 10,587). The population in Ada County is growing extremely rapidly. The total land area of the county is roughly 1,060.33 square miles (678,611.2 acres). Due to the rapid growth of the county, the 2000 Census Bureau data does not accurately represent the county's current demographic or socioeconomic status; nevertheless, it does give a general picture as to the nature of Ada County.

Population growth in the county has increased significantly since the 2000 census. Although the census data may still be useful for break down by percentage information, the population numbers are dated. Table 3.1 is an up to date estimate of current population in the county and by certain cities.

Table 3.0. Relevant population growth for Ada County.

Table 3.1. Population growth in Ada County from Ada County Emergency Management 2005.

Jurisdiction	4/1/2004 Population	4/1/2005 Population
Ada County	346,212	361,484
Boise City	200,062	208,219
Eagle City	16,418	18,428
Garden City	11,675	11,914
Kuna City	9,696	10,587
Meridian City	47,690	56,108
Star City	2,552	3,028

Table 3.2. Selected demographic statistics for Ada County, Idaho, from Census 2000.

Subject	Number	Percent
Total population	**300,904**	**100.0**
SEX AND AGE		
Male	150,685	50.1
Female	150,219	49.9
Under 5 years	23,002	7.6
5 to 9 years	22,514	7.5
10 to 14 years	22,709	7.5
15 to 19 years	21,781	7.2
20 to 24 years	22,236	7.4

Table 3.2. Selected demographic statistics for Ada County, Idaho, from Census 2000.

Subject	Number	Percent
25 to 34 years	47,796	15.9
35 to 44 years	50,884	16.9
45 to 54 years	40,969	13.6
55 to 59 years	12,897	4.3
60 to 64 years	8,751	2.9
65 to 74 years	13,660	4.5
75 to 84 years	10,149	3.4
85 years and over	3,556	1.2
Median age (years)	32.9	(X)
18 years and over	219,171	72.8
Male	108,888	36.2
Female	110,283	36.7
21 years and over	206,703	68.7
62 years and over	32,311	10.7
65 years and over	27,365	9.1
Male	11,295	3.8
Female	16,070	5.3
RELATIONSHIP		
Population	**300,904**	**100.0**
In households	293,786	97.6
Householder	113,577	37.7
Spouse	64,230	21.3
Child	90,890	30.2
Own child under 18 years	77,210	25.7
Other relatives	8,804	2.9
Under 18 years	2,939	1.0
Nonrelatives	16,285	5.4
Unmarried partner	6,055	2.0
In group quarters	7,118	2.4
Institutionalized population	5,311	1.8
Noninstitutionalized population	1,807	0.6
HOUSEHOLDS BY TYPE		
Households	**113,577**	**100.0**
Family households (families)	78,150	68.8
With own children under 18 years	41,876	36.9
Married-couple family	63,669	56.1
With own children under 18 years	32,302	28.4
Female householder, no husband present	10,300	9.1
With own children under 18 years	6,936	6.1
Nonfamily households	35,427	31.2

Table 3.2. Selected demographic statistics for Ada County, Idaho, from Census 2000.

Subject	Number	Percent
Householder living alone	26,909	23.7
Householder 65 years and over	7,977	7.0
Households with individuals under 18 years	44,017	38.8
Households with individuals 65 years and over	25,904	22.8
Average household size	2.59	(X)
Average family size	3.10	(X)
HOUSING TENURE		
Occupied housing units	**113,408**	**100.0**
Owner-occupied housing units	80,133	70.7
Renter-occupied housing units	33,275	29.3
Average household size of owner-occupied unit	2.72	(X)
Average household size of renter-occupied unit	2.28	(X)

3.2 Socioeconomics

Ada County had a total of 118,516 housing units and a population density of 50.5 persons per square mile reported in the 2000 Census. Ethnicity in Ada County is distributed: white 92.9%, black or African American 0.6%, American Indian or Alaskan Native 0.7%, Asian 1.7%, and Hispanic or Latino 4.5%.

Specific economic data for individual communities is collected by the US Census; in Ada County this includes Boise, Eagle, Garden City, Meridian, Star, and Kuna. Boise households earn a median income of $42,432 annually, Eagle has a median income of $65,313, Garden City earns $38,858, Meridian earns $53, 276, Star earns $42,337, and Kuna reported a median income of $40,617, all of which compares to the Ada County median income during the same period of $46,140. Table 3.3 shows the dispersal of households in various income categories in Ada County.

Table 3.3. Income in 1999.	Ada County	
	Number	Percent
Households	113,577	100.0
Less than $10,000	6,535	5.8
$10,000 to $14,999	5,555	4.9
$15,000 to $24,999	14,308	12.6
$25,000 to $34,999	14,679	12.9
$35,000 to $49,999	20,387	17.9
$50,000 to $74,999	25,071	22.1
$75,000 to $99,999	13,438	11.8
$100,000 to $149,999	8,897	7.8
$150,000 to $199,999	2,313	2.0
$200,000 or more	2,394	2.1
Median household income (dollars)	46,140	(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 Ada County, 5.4%, of families are at or below the poverty level (Table 3.4).

Table 3.4. Poverty status in 1999 (below poverty level).	**Ada County**	
	Number	**Percent**
Families	4,229	(X)
Percent below poverty level	(X)	5.4
With related children under 18 years	3,441	(X)
Percent below poverty level	(X)	7.9
With related children under 5 years	1,706	(X)
Percent below poverty level	(X)	9.7
Families with female householder, no husband present	2,055	(X)
Percent below poverty level	(X)	20.0
With related children under 18 years	1,961	(X)
Percent below poverty level	(X)	26.1
With related children under 5 years	884	(X)
Percent below poverty level	(X)	39.8
Individuals	22,471	(X)
Percent below poverty level	(X)	7.7
18 years and over	14,815	(X)
Percent below poverty level	(X)	7.0
65 years and over	1,484	(X)
Percent below poverty level	(X)	5.7
Related children under 18 years	7,366	(X)
Percent below poverty level	(X)	9.2
Related children 5 to 17 years	4,922	(X)
Percent below poverty level	(X)	8.5
Unrelated individuals 15 years and over	8,477	(X)
Percent below poverty level	(X)	16.4

(Census 2000)

The unemployment rate was 3.8% in Ada County in 1999, compared to 4.4% nationally during the same period. Approximately 38.2 of the Ada County employed population worked in professional positions, a result of the high-tech boom that has resulted in significant growth throughout the area. Table 3.5 (Census 2000).

Table 3.5. Employment & Industry.	**Ada County**	
	Number	**Percent**
Employed civilian population 16 years and over	156,634	100.0
OCCUPATION		
Management, professional, and related occupations	59,822	38.2
Service occupations	22,188	14.2
Sales and office occupations	44,133	28.2

Table 3.5. Employment & Industry.	Ada County	
	Number	Percent
Farming, fishing, and forestry occupations	732	0.5
Construction, extraction, and maintenance occupations	13,776	8.8
Production, transportation, and material moving occupations	15,983	10.2
INDUSTRY		
Agriculture, forestry, fishing and hunting, and mining	1,696	1.1
Construction	11,839	7.6
Manufacturing	22,467	14.3
Wholesale trade	6,505	4.2
Retail trade	19,948	12.7
Transportation and warehousing, and utilities	6,462	4.1
Information	4,853	3.1
Finance, insurance, real estate, and rental and leasing	11,208	7.2
Professional, scientific, management, administrative, and waste management services	14,913	9.5
Educational, health and social services	27,227	17.4
Arts, entertainment, recreation, accommodation and food services	12,602	8.0
Other services (except public administration)	7,068	4.5
Public administration	9,846	6.3

Approximately 77.7% of Ada County's employed persons are private wage and salary workers, while around 14.7% are government workers (Table 3.6).

Table 3.6. Class of Workers.	Ada County	
	Number	Percent
Private wage and salary workers	121,638	77.7
Government workers	22,953	14.7
Self-employed workers in own not incorporated business	11,707	7.5
Unpaid family workers	336	0.2

(Census 2000)

3.2.1 European Settlement of Ada County

Summarized from the Soil Survey report of Ada County Area, Idaho issued May 1980.

British fur trappers were the first explorers on record to enter the Boise Valley. In 1834, the British established Old Fort Boise at the mouth of the Boise River, but, in 1854, they abandoned it. In 1862, gold was discovered in the Boise Basin, and gold rush towns sprang up quickly as word of the discovery spread. In 1863, the U. S. Army built Fort Boise on what is now the northeast part of the Boise townsite.

In 1869, the territorial prison was built and the U.S. Assay Office was constructed. In 1884, the Old Oregon Short Line Railroad reached Boise, and the pace of development increased. In 1886, the territorial capital was built.

In 1890, Idaho became a state, and Ada County was formed from the southern part of Boise County. Boise was named the county seat and the State capital. Boise grew rapidly as a supply

center for the mines. Its early growth can be attributed, in part, to its location. It was at the crossroads of the Old Oregon Trail and the road from the Boise Basin to the mines in Owyhee County.

In April 1977 the population of Boise was 99,771, and the total population of Ada County was 139,400. The county population was increasing at a rate of 3 percent per year. Boise is the headquarters for several large business enterprises, which have a significant effect on the growth rate of the area. Meridian, Kuna, Eagle, Star, and Garden City also are principal towns in Ada County.

3.3 Description of Ada County

Ada County lies in south central Idaho in what is known as the Treasure Valley of Idaho. It is bounded on the north by Gem and Boise Counties, on the west by Canyon County, on the south by Owyhee County, and on the east by Elmore County. Ada County covers approximately 678,111 acres. Of this, 288,359 acres, 42% is federally owned, 47,386 acres is state land, and 339,032 belong to local government, or are in private ownership.

Ada County has altitudes ranging from 2,450 feet along the broad southern floodplain to 5,900 feet in the northern mountains. The topography in the Treasure Valley is relatively flat with the Boise Foothills rising along the northern border.

The fertile soils and abundant water in Ada County support a variety of agricultural crops, including onions, sugar beets, small grains, sweet corn, field corn, dry beans, alfalfa, and the famous Idaho Potato. Numerous canals and ditches dissect the valley bottom, providing a readily available water source for crop irrigation. Areas that are not actively farmed are used as pastureland for grazing of domestic livestock.

In contrast to the flat, fertile lands of the valley bottom are the dry, arid sage and grass uplands of the Boise Foothills along the northern border and the Snake River Birds of Prey National Conservation Area in the south half of the county. The land ownership pattern is a mix of private, state (IDL and Fish and Game), federal (BLM and Forest Service), and city owned parcels. These lands are utilized primarily as a recreation area for city residents, wildlife habitat, and as a backdrop for Boise as well as for their forage value in support of the local livestock industry.

Table 3.7. Landownership in Ada County.

Landowner	Acres	Percent of Ada County
BLM	283,687	41.8%
U.S. Forest Service	3,453	0.5%
U.S. Military	1,220	0.2%
Open Water	3,335	0.5%
Private Lands	339,031.5	50.0%
State of Idaho	47,385.9	7.0%
Total	**678,112.3**	

3.3.1 Highways

The main highways weaving through the county are Interstate 84, U.S. Highways 30, 20, and 26, and State Highways 44, 55, 69, and 16. Interstate 84 enters Ada County from Canyon County and exits near Orchard into Elmore County. This is the main travel and transport route through southern Idaho and neighboring states. U.S. 20 and 26 parallel the path of Interstate 84

before joining the route in downtown Boise. The State Highways serve to connect the more rural areas to these main transportation routes and the urban communities. State Highway 55 is the sole paved route connecting Ada County to popular recreation areas in Boise and Valley Counties. Heavy recreational and large truck traffic is particularly intense during the summer and fall and during the harvest season.

3.3.2 Rivers

The Boise River and the Snake River are the primary river drainage in the County. Both waterways have been and continue to be important to Ada County, providing many recreational and economic resources. Other important bodies of water in the county are Lucky Peak Lake, Blacks Creek Reservoir, and numerous canals and ditches, all of which provide irrigational resources.

3.3.3 Climate

Ada County winters, though cold, are generally not too severe. In summer, days are hot and nights are fairly cool. Precipitation, except in mountainous areas, is low in summer, but in a few places it is adequate for non-irrigated small grains. The snow pack at high elevations supplies much of the water for irrigated cropland. In winter the average temperature is 33 degrees F, and the average daily minimum temperature is 25 degrees. The lowest temperature on record, which occurred at Boise on December 10, 1972, is -23 degrees. In summer the average temperature is 71 degrees, and the average daily maximum temperature is 86 degrees. The highest recorded temperature, which occurred on July 19, 1960, is 111 degrees. The average annual precipitation in the area ranges from about 24 inches at the higher elevations of the Boise Front to slightly less than 8 inches in a strip adjacent to the Snake River. The average in most of the central part of the area is between 10 and 12 inches. The weather station at the Boise Municipal Airport records an average of 11.5 inches. Of this total, 4 inches, or 33 percent, usually falls in April through September, which includes the growing season for most crops. In 2 years out of 10, the rainfall in April through September is less than 3 inches. The heaviest 1-day rainfall during the period of record was 1.91 inches at Boise on June 12, 1958. There are about 15 thunderstorms each year; 12 occur in summer.

Average seasonal snowfall is 23 inches. The greatest snow depth at any one time during the period of record was 7 inches. On the average, 11 days have at least 1 inch of snow on the ground, but the number of such days varies greatly from year to year. The average relative humidity in midafternoon in spring is less than 40 percent; during the rest of the year, it is about 45 percent. Humidity is higher at night, and the average at dawn is about 65 percent. The percentage of possible sunshine is 83 in summer and 44 in winter.

Over most of the area, northwesterly winds prevail, and intermittent southeasterly winds occur in winter and spring. At the Boise Municipal Airport, southeasterly winds prevail because cold, heavy air masses drain down the Boise Front into the Boise River Canyon during cool periods.

3.3.4 Recreation

Ada County has many outstanding tourism and recreational facilities. The contrasting land features-the flood plains, foothills, and canyons-and the mild climate attract hikers, horseback riders, hunters, rock hounds, photographers, campers, and cyclists. The upland game birds and big game attract hunters. Tubing, canoeing, kayaking, or rafting on the Boise River are popular summer sports. Lucky Peak Reservoir is a popular site for water sports and for hunting migratory waterfowl.

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.

3.3.4.1 Public Lands

Much of the southern portion of the County is part of the Birds of Prey National Conservation Area or Bureau of Land Management administered lands. These areas are open to the public year round. Although there are no developed sites, residents of Ada County use these lands to hunt, four-wheel, mountain bike, and drive off-road vehicles among many other things.

Much of the land along the northern mountains is highly valued for recreational uses. Much of the land ownership along the Boise front is a mix of public ownership, including federal, state and local government. These public lands help define the high quality of life Boise residents enjoy.

3.3.4.2 Boating

Rafting and kayaking are popular activities on the Boise River and at Lucky Peak Lake. There are several boat ramps or put-in areas; however, some of these sites present difficult or hazardous conditions. Tight corners, swift water, and lack of immediately accessible tie-up locations could lead to a potentially unsafe situation.

3.3.4.3 Camping

Camping is another popular activity enjoyed by the residents of Ada County. There are several well-maintained RV camping facilities within or near the urban center. There are also a few developed sites around Lucky Peak Lake as well as tent camping or undeveloped sites.

3.3.4.4 Fishing and Hunting

Fishing and hunting is important to Ada County both from a recreational standpoint and as an economic resource. There are several sportsman access sites along the Boise River and at Lucky Peak Lake that allow for fishing, hunting, and wildlife viewing access. Wild birds, such as pheasant, quail, partridge, chukar, grouse, wild duck, geese, and doves, are found in abundance. Fishing on both the Boise River and at Lucky Peak Lake has become a very popular pastime for residents and tourists alike.

3.3.5 Resource Dependency

Over the past century, employment through agricultural farming and livestock ranching has been significant in the region. Agricultural production and livestock ranching has been and continues to be an important component of the economy of Ada County. Livestock grazing and agriculture in Ada and surrounding Counties has provided stable employment while serving to keep rangelands maintained at a lower wildfire risk than if they had not been present and managed.

The communities of Ada 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 results (Harris *et al.* 2000):

- Boise .....Travel and Tourism Only
- Eagle .....Travel and Tourism Only
- Garden City .....Agriculture Only
- Kuna .....Agriculture 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 Ada County are summarized in Table 3.8.

Table 3.8. Levels of direct employment by industrial sector.

Community	Economic Diversity Index	Agriculture	Timber	Travel and Tourism	State / Local Gov.	Federal Gov.	Mining and Minerals
Boise	High	Low	Low	Med. High	Med. High	Low	Med. Low
Eagle	High	Med. Low	Low	Med. High	Med. Low	Low	Low
Garden City	Low	High	Low	Low	Low	Low	Low
Meridian	High	Low	Low	Med. Low	Med. Low	Low	Med. Low
Kuna	High	Med. High	Low	Med. 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 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 brush thinning and prescribed fire.

3.4.1 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 3.9.

Table 3.9. National Register of Historic Places in Ada County, Idaho.					
Item Number	**Resource Name**	**Address**	**City**	**Listed**	**Architect, Builder, or Engineer**
1	Abbs, Walter, House	915 Fort St.	Boise	1982	Tourtellotte,John & Company
2	Ada Odd Fellows Temple	109-115 1/2 N. 9th St.	Boise	1982	Tourtellotte,John E. & Company
3	Ada Theater	700 Main St.	Boise	1974	Tourtellotte & Hummel, Hummel, Frederick C.
4	Aiken's Hotel	99 E. State St.	Eagle	1982	
5	Alexander House	304 State St.	Boise	1972	
6	Alexanders	9th and Main Sts	Boise	1978	
7	Allsup, Marion, House	1601 N. 10th	Boise	1982	Tourtellotte,John E. & Company
8	Anduiza Hotel	619 Grove St	Boise	2003	Nisbet, Benjamin, Paradice, Frank H.
9	Artesian Water Co. Pumphouse and Wells	Off ID 21	Boise	1979	
10	Assay Office	210 Main St	Boise	1966	Mullett, Alfred B., McBride, John R.
11	Barber Dam and Lumber Mill	E of Boise	Boise	1978	
12	Beaver River Power Station	621 S. Seventeenth St	Boise	1982	Tourtellotte & Hummel
13	Beck, Albert, House	1101 Fort St.	Boise	1982	Tourtellotte,John E. & Company
14	Biddle and Songer Buildings	Idaho and E. First Sts	Meridian	1982	
15	Boise Capitol Area District	6th and Bannock, N. 8th, 8th, State, 5th Ana Jefferson Sts.	Boise	1976	Tourtellotte & Hummel, Et al
16	Boise City National Bank	8th and Idaho Sts.	Boise	1978	King, James, Tourtellotte & Co.
17	Boise City-Silver City Road--Fick Property Segment	3232 W. Kuna-Mora Rd.,	Kuna	1999	
18	Boise High School Campus	Washington St. between 9th and 11th Sts	Boise	1982	Tourtellotte,John E. & Company, Tourtellotte & Hummel
19	Boise Historic District	5th and 6th Sts., both sides of Idaho and Main Sts.	Boise	1977	Tourtellotte & Hummel, Campbell & Wayland
20	Boise Junior College Administration Building	Boise State University campus	Boise	1982	Tourtellotte & Hummel, Jordon. O.
21	Boise Junior High School	1105 N. 13th St.	Boise	1982	Tourtellotte & Hummel, Jordan. O. & Son
22	Boulevard Mo-tel	1121 S. Capitol Blvd	Boise	1998	

Table 3.9. National Register of Historic Places in Ada County, Idaho.					
Item Number	Resource Name	Address	City	Listed	Architect, Builder, or Engineer
23	Bown, Joseph, House	2020 E. Victory Rd.	Boise	1979	
24	Broadbent Building	112--24 N. Ninth St.	Boise	1982	Tourtellotte & Hummel, Marsh, Charles
25	Brunzell House	916 Franklin St.	Boise	1982	Tourtellotte,John E. & Company
26	Bryant, H. H., Garage	11th and Front Sts	Boise	1982	Tourtellotte & Hummel
27	Bunting Tractor Company Building	318 Capitol Blvd	Boise	1982	Tourtellotte & Hummel, Donald, William
28	Burnett, H. C., House	124 W. Bannock St	Boise	1982	Tourtellotte & Hummel, Jordan. O.
29	Capitol Boulevard Memorial Bridge	Capitol Blvd. over the Boise R.	Boise	1990	Kyle, Charles A., Morrison Knudsen Co.
30	Carnegie Public Library	815 Washington St.	Boise	1974	Tourtellotte, J.E.
31	Cavanah, C. C., House	107 E. Idaho St	Boise	1982	Toutellotte,John E. & Company
32	Chinese Odd Fellows Building	610-612 Front St.	Boise	1982	Tourtellotte & Hummel, Clifton & Corbridge
33	Christ Chapel	Broadway at Campus Dr.	Boise	1974	
34	Christian Church	9th and Franklin Sts.	Boise	1978	Allen, I.J., Storey, Charles
35	Coffin, Henry, House	1403 Franklin St	Boise	1982	Tourtellotte,John E. & Company
36	Cole School and Gymnasium	7145 Fairview Ave	Boise	1982	Campbell & Wayland, Tourtellotte & Hummel
37	Collister School	4426 Catalpa Dr	Boise	1982	Tourtellotte & Hummel
38	Congregation Beth Israel Synagogue	1102 State St	Boise	1972	
39	Daly, John, House	1015 W. Hays St	Boise	1982	Tourtellotte & Hummel
40	Davies, Dr. James, House	1107 W. Washington St	Boise	1982	Tourtellotte,John E. & Company
41	Davis, R. K., House	1016 Franklin St	Boise	1982	Tourtellotte,John E. & Company
42	Diversion Dam and Deer Flat Embankments	SE of Boise on Boise River	Boise	1976	US Reclamation Service
43	Dry Creek Rockshelter		Boise	1991	
44	Dunbar, William, House	1500 W. Hays St	Boise	1982	Tourtellotte & Hummel, Jordan. O.
45	Dunton, Minnie Preist, House	906 Hays St.	Boise	1982	Tourtellotte,John E. & Company, Tourtellotte & Hummel-Peterson
46	Eagle Adventist Schoolhouse	NW of Eagle	Eagle	1980	

Table 3.9. National Register of Historic Places in Ada County, Idaho.					
Item Number	Resource Name	Address	City	Listed	Architect, Builder, or Engineer
47	Eagle Flour Mill	Near Eagle	Eagle	1978	
48	Echevarria, Pedro, House	5605 State St	Boise	1982	Tourtellotte & Hummel
49	Eichelberger Apartments	612-24 N. 9th St	Boise	1982	Tourtellotte & Hummel
50	Elks Temple	310 Jefferson St	Boise	1978	Tourtellotte & Hummel

(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.

3.5 Transportation

Primary access to and from Ada County is provided by Interstate 84, a four-lane highway which passes through the county from the Canyon - Ada County border west of Boise to the Ada-Elmore County line near the Indian Creek Reservoir. State Route 44 and U.S. Highway 20/26 provide access from the west, merging with Interstate 84 in and to the east of Boise. County Route 69 or the Meridian-Kuna Road provides access to Kuna. , State Highways 16, 55 and 21 provide access to Ada County from the north. All major roadways in Ada County are relatively level and well-maintained with good width and access and exit points. Many of these routes also serve as ignition corridors where the roads pass through dry grass and brush fuels. Each year, dozens of fires starts are associated with travel routes, primarily along Interstate 84.

Smaller roads maintained by the County and the BLM or private entities provide access to the adjoining areas within the county, including recreational areas and rural agricultural hubs. A variety of unimproved roads are found throughout the publicly owned BLM lands.

Almost all of the roads in the county were originally built to facilitate farming and ranching activities. As such, these roads can support harvesting equipment, 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 facilitate firefighting equipment as they adhere to County Building Codes. County building codes for new developments should be adhered to closely to insure this tendency continues.

The Idaho Land Use Planning Act requires Idaho Counties to address transportation in the individual Comprehensive Plans. It requires an analysis, prepared in coordination with the local jurisdiction(s) having authority over the public highways and streets, showing the general locations and traffic ways, and of streets and the recommended treatment thereof. This component may also make recommendations on building line setbacks, control or access, street

naming and numbering, and a proposes system of public and other transit lines and related facilities including rights-of-ways, terminals, future corridors, viaducts and grade separations.

Ada County has three jurisdictions responsible for roadways. They are the Ada County Highway District, Highway District Number 1, and the Idaho Transportation Department. Highway District Number 1 is an independent district operated by a board elected by the patrons of the district. Ada County Highway District is operated under the direction of the Ada County Board of County Commissioners and the Department of Transportation is directed by the State of Idaho in Boise.

3.6 Vegetation & Climate

Vegetation in Ada 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 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 Shrub/Steppe Annual Grass-Forb type at approximately 22% of the County's total area. The next most common vegetation cover type represented is Basin and Wyoming Big Sagebrush at 16% of the total area. Perennial Grasslands are the third most common plant cover type at 15% of the total area (Table 3.10). Agricultural lands cover approximately 14% of Ada County.

Table 3.10. Cover Types in Ada County

	Acres	Percent of County's Total Area
Shrub/Steppe Annual Grass-Forb	147,964	22%
Basin & Wyoming Big Sagebrush	107,020	16%
Perennial Grassland	104,778	15%
Agricultural Land	97,791	14%
High Intensity Urban	82,651	12%
Salt-desert Shrub	40,423	6%
Rabbitbrush	36,474	5%
Bitterbrush	15,325	2%
Perennial Grass Slope	14,074	2%
Low Intensity Urban	6,189	1%
Low Sagebrush	4,634	1%
Mountain Big Sagebrush	3,825	1%
Warm Mesic Shrubs	3,679	1%
Water	3,436	1%
Shrub Dominated Riparian	1,936	0%
Herbaceous Burn	1,874	0%
Ponderosa Pine	1,741	0%
Broadleaf Dominated Riparian	1,253	0%
Mixed Xeric Forest	1,175	0%
Douglas-fir	830	0%
Disturbed, High	288	0%
Shallow Marsh	284	0%
Foothills Grassland	103	0%
Montane Parklands and Subalpine Meadow	86	0%
Douglas-fir/Grand Fir	50	0%

Table 3.10. Cover Types in Ada County	Acres	Percent of County's Total Area
Deep Marsh	46	0%
Mixed Subalpine Forest	42	0%
Exposed Rock	41	0%
Needleleaf Dominated Riparian	36	0%
Disturbed, Low	32	0%
Lodgepole Pine	11	0%
Total	**678,090**	

Vegetative communities within the county follow the strong moisture and temperature gradient related to the major river drainages. Limited precipitation and soil conditions result in a relatively arid environment.

3.6.1 Monthly Climate Summaries In Ada County

3.6.1.1 Boise, Idaho

Period of Record Monthly Climate Summary
Period of Record : 5/ 1/1973 to 6/30/2004

Table 3.11. Climate records for Boise, Idaho.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	35.9	41.9	50.6	58.6	67.6	78.0	87.8	86.6	76.0	62.2	45.8	36.9	60.7
Average Min. Temperature (F)	22.4	26.0	31.8	36.3	42.1	49.0	56.5	56.7	49.2	39.8	29.8	22.8	38.5
Average Total Precipitation (in.)	2.15	1.90	2.21	2.01	1.98	1.03	0.49	0.44	1.00	1.18	2.20	2.29	18.89
Average Total Snowfall (in.)	13.2	10.0	7.0	3.2	0.4	0.0	0.0	0.0	0.0	0.3	8.5	13.8	56.4
Average Snow Depth (in.)	4	3	1	0	0	0	0	0	0	0	1	2	1

Percent of possible observations for period of record.
Max. Temp.: 100% Min. Temp.: 99.9% Precipitation: 100% Snowfall: 100% Snow Depth: 100%.

3.6.1.2 Kuna, Idaho

Period of Record Monthly Climate Summary
Period of Record : 8/ 1/1948 to 12/31/1996

Table 3.12. Climate Records for Kuna, Idaho.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	36.7	45.1	55.0	64.2	72.4	80.4	88.3	86.8	77.2	65.9	49.3	38.9	63.3
Average Min. Temperature (F)	20.2	25.1	29.2	34.1	41.5	48.0	52.4	50.9	43.2	35.3	28.1	22.5	35.9
Average Total Precipitation (in.)	1.11	0.77	0.91	0.97	1.16	0.82	0.22	0.33	0.52	0.64	1.25	1.12	9.83
Average Total Snowfall (in.)	4.3	1.7	0.7	0.3	0.0	0.0	0.0	0.0	0.0	0.0	1.5	3.4	11.9

Average Snow Depth (in.)	1	0	0	0	0	0	0	0	0	0	0	1	0

Percent of possible observations for period of record.
Max. Temp.: 100% Min. Temp.: 99.9% Precipitation: 100% Snowfall: 100% Snow Depth: 100%.

3.6.1.3 Boise Airport, Idaho

Period of Record Monthly Climate Summary
Period of Record : 1/ 1/1940 to 6/30/2004

Table 3.13. Climate Records for Boise Airport, Idaho.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	36.8	44.2	53.0	61.7	71.0	79.9	90.4	88.4	77.8	64.9	48.4	38.6	62.9
Average Min. Temperature (F)	22.1	27.3	31.9	37.3	44.5	51.7	58.3	57.2	48.9	39.4	30.5	24.0	39.4
Average Total Precipitation (in.)	1.43	1.13	1.22	1.20	1.26	0.85	0.26	0.29	0.59	0.78	1.34	1.37	11.72
Average Total Snowfall (in.)	6.5	3.4	1.6	0.6	0.1	0.0	0.0	0.0	0.0	0.1	2.0	5.7	19.9
Average Snow Depth (in.)	1	0	0	0	0	0	0	0	0	0	0	1	0

Percent of possible observations for period of record.
Max. Temp.: 100% Min. Temp.: 99.9% Precipitation: 100% Snowfall: 100% Snow Depth: 100%.

3.6.1.4 Lucky Peak Dam

Period of Record Monthly Climate Summary
Period of Record : 1/12/1951 to 6/30/2004

Table 3.14. Climate Records fir Boise Lucky Peak Dam, Idaho.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	36.9	44.9	53.4	62.4	72.3	81.7	91.5	90.2	79.6	67.0	49.7	39.3	64.1
Average Min. Temperature (F)	20.8	27.4	31.3	36.9	44.1	51.0	57.6	57.1	49.3	40.5	31.5	23.6	39.3
Average Total Precipitation (in.)	1.76	1.20	1.43	1.39	1.40	0.98	0.30	0.40	0.68	0.77	1.74	1.54	13.59
Average Total Snowfall (in.)	2.5	0.8	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	1.2	5.1
Average Snow Depth (in.)	0	0	0	0	0	0	0	0	0	0	0	0	0

Percent of possible observations for period of record.
Max. Temp.: 100% Min. Temp.: 99.9% Precipitation: 100% Snowfall: 100% Snow Depth: 100%.

3.6.1.5 Swan Falls Power House, Idaho

Period of Record Monthly Climate Summary
Period of Record : 8/ 1/1948 to 6/30/2004

Table 3.15. Swan Falls Power House, Idaho.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	40.7	48.8	58.5	67.6	77.1	86.3	96.0	94.3	84.0	70.1	53.0	41.7	68.2
Average Min. Temperature (F)	24.9	29.3	34.6	40.7	48.7	56.2	63.2	61.1	51.9	41.9	33.0	26.0	42.6
Average Total Precipitation (in.)	0.84	0.54	0.76	0.88	1.06	0.74	0.21	0.28	0.44	0.47	0.83	0.74	7.78
Average Total Snowfall (in.)	2.1	0.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.1	4.0
Average Snow Depth (in.)	0	0	0	0	0	0	0	0	0	0	0	0	0

Percent of possible observations for period of record.
Max. Temp.: 100% Min. Temp.: 99.9% Precipitation: 100% Snowfall: 100% Snow Depth: 100%.

3.7 Wildfire Hazard Profiles

3.7.1 Wildfire Ignition & Extent 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 with a varied return interval, however, much of the county burned through a stand replacing fire that occurred on a moderate return interval of 20-80 years.

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 USDI Bureau of Land Management. Using this data on past fire extents and fire ignition data, the occurrence of wildland fires in the region of Ada County has been evaluated. The following (Table 3.16) is a summary of fire ignitions within Ada County for the period 1957-2002.

Table 3.16. Past Fires in Ada County reported by the BLM.

Year	Fire Name	LATITUDE	LONGITUDE	Acres
1957	SWAN FALLS	0.00000000	0.00000000	23
1957	KUNA ROAD	0.00000000	0.00000000	47
1957	ORCHARD	0.00000000	0.00000000	86
1957	HULK GULCH	0.00000000	0.00000000	90
1957	RAILROAD	0.00000000	0.00000000	230
1957	BADGER	0.00000000	0.00000000	242
1957	EIGHT MILE	0.00000000	0.00000000	358

Table 3.16. Past Fires in Ada County reported by the BLM.

Year	Fire Name	LATITUDE	LONGITUDE	Acres
1957	CEMETERY	0.00000000	0.00000000	490
1957	TEN MILE	0.00000000	0.00000000	500
1957	DESERT LODGE	0.00000000	0.00000000	522
1957	HANSEN	0.00000000	0.00000000	720
1957	RAILROAD	0.00000000	0.00000000	1,563
1957	OVERPASS	0.00000000	0.00000000	1,681
1957	ROCKY CANYON	0.00000000	0.00000000	1,984
1957	KUNA BUTTE	0.00000000	0.00000000	3,086
1957	WHIRL WIND	0.00000000	0.00000000	5,319
1957	GERMAN FIRE	0.00000000	0.00000000	5,654
1957	ROCK CHUCK	0.00000000	0.00000000	5,954
1957	MORA	0.00000000	0.00000000	8,329
1957	KUNA ROAD	0.00000000	0.00000000	12,225
1957	BEACON INN	0.00000000	0.00000000	22,623
1957	GEISLER	0.00000000	0.00000000	25,287
1958	TOLLGATE	0.00000000	0.00000000	475
1958	SMITH	0.00000000	0.00000000	828
1958	JENSON	0.00000000	0.00000000	1,194
1958	LITTLE	0.00000000	0.00000000	2,517
1958	BUCK BRUSH	0.00000000	0.00000000	2,958
1958	BADGER	0.00000000	0.00000000	4,714
1958	SQUAW CREEK	0.00000000	0.00000000	7,360
1958	KUNA ROAD	0.00000000	0.00000000	7,603
1959	OLD HIGHWAY	0.00000000	0.00000000	278
1959	NEW YORK	0.00000000	0.00000000	668
1959	ORCHARD	0.00000000	0.00000000	720
1959	JUNCTION CLUB	0.00000000	0.00000000	3,555
1959	CINDER CONE	0.00000000	0.00000000	7,523
1959	JEANS	0.00000000	0.00000000	7,637
1959	OBERBILLIG	0.00000000	0.00000000	9,032
1960	HIGHLANDS	0.00000000	0.00000000	225
1960	CURLEW GULCH	0.00000000	0.00000000	259
1960	TEN MILE	0.00000000	0.00000000	1,541
1960	RESERVOIR	0.00000000	0.00000000	1,981
1961	GOOSENECK	0.00000000	0.00000000	116
1961	GRAVEL PIT	0.00000000	0.00000000	180
1962	SAND CREEK	0.00000000	0.00000000	584
1963	WY 16 & PIPELINE	0.00000000	0.00000000	1,459
1969	BLACKS CREEK	0.00000000	0.00000000	1,923
1971	HICKEY POINT	0.00000000	0.00000000	171
1971	WELDER	0.00000000	0.00000000	508
1971	PIERCE PARK	0.00000000	0.00000000	565
1971	SOUTH FORK WILLOW CREEK	0.00000000	0.00000000	4,486
1972	TEN MILE CREEK	0.00000000	0.00000000	218

Table 3.16. Past Fires in Ada County reported by the BLM.

Year	Fire Name	LATITUDE	LONGITUDE	Acres
1972	PLEASANT VALLEY	0.00000000	0.00000000	908
1973	MELBA DUMP	0.00000000	0.00000000	182
1974	SWAN FALLS	0.00000000	0.00000000	178
1974	POWER PLANT	0.00000000	0.00000000	200
1974	WOODS GULCH	0.00000000	0.00000000	338
1975	CURSTONE	0.00000000	0.00000000	115
1975	NORTH WILLOW	0.00000000	0.00000000	258
1975	MELBA DUMP	0.00000000	0.00000000	376
1975	BIG FOOTE BUTTE	0.00000000	0.00000000	1,006
1976	ORCHARD	0.00000000	0.00000000	282
1976	HALVERSON	0.00000000	0.00000000	414
1977	SPRING SHORES	0.00000000	0.00000000	271
1978	NORHT FORK	0.00000000	0.00000000	340
1978	WEST BEACON	0.00000000	0.00000000	471
1978	BIG GULCH	0.00000000	0.00000000	767
1979	LYDLE GULCH	0.00000000	0.00000000	456
1979	ORCHARD	0.00000000	0.00000000	830
1979	CHAPARREL	0.00000000	0.00000000	2,299
1980		0.00000000	0.00000000	259
1980		0.00000000	0.00000000	364
1980		0.00000000	0.00000000	433
1980		0.00000000	0.00000000	1,484
1980		0.00000000	0.00000000	8,158
1981		0.00000000	0.00000000	89
1981		0.00000000	0.00000000	91
1981		0.00000000	0.00000000	147
1981	BOISE COMP	0.00000000	0.00000000	191
1981		0.00000000	0.00000000	196
1981		0.00000000	0.00000000	253
1981		0.00000000	0.00000000	256
1981		0.00000000	0.00000000	295
1981		0.00000000	0.00000000	413
1981		0.00000000	0.00000000	536
1981		0.00000000	0.00000000	634
1981	CHARCOAL CREEK	0.00000000	0.00000000	1,581
1981		0.00000000	0.00000000	3,099
1981		0.00000000	0.00000000	3,258
1981		0.00000000	0.00000000	4,185
1981		0.00000000	0.00000000	4,281
1981		0.00000000	0.00000000	4,998
1981		0.00000000	0.00000000	11,004
1981		0.00000000	0.00000000	13,223
1982		0.00000000	0.00000000	117
1982		0.00000000	0.00000000	930

Table 3.16. Past Fires in Ada County reported by the BLM.

Year	Fire Name	LATITUDE	LONGITUDE	Acres
1982		0.00000000	0.00000000	1,328
1982		0.00000000	0.00000000	1,488
1982		0.00000000	0.00000000	2,450
1983		0.00000000	0.00000000	135
1983		0.00000000	0.00000000	263
1983		0.00000000	0.00000000	517
1983		0.00000000	0.00000000	637
1983		0.00000000	0.00000000	1,014
1983		0.00000000	0.00000000	1,029
1983		0.00000000	0.00000000	1,033
1983		0.00000000	0.00000000	1,338
1983		0.00000000	0.00000000	1,922
1983		0.00000000	0.00000000	2,448
1983		0.00000000	0.00000000	5,314
1983		0.00000000	0.00000000	15,127
1983		0.00000000	0.00000000	16,935
1984		0.00000000	0.00000000	104
1984		0.00000000	0.00000000	143
1984		0.00000000	0.00000000	144
1984		0.00000000	0.00000000	155
1984		0.00000000	0.00000000	167
1984		0.00000000	0.00000000	212
1984		0.00000000	0.00000000	542
1984		0.00000000	0.00000000	561
1984		0.00000000	0.00000000	640
1984		0.00000000	0.00000000	2,086
1984		0.00000000	0.00000000	3,888
1985		0.00000000	0.00000000	107
1985		0.00000000	0.00000000	121
1985		0.00000000	0.00000000	164
1985		0.00000000	0.00000000	164
1985	HUBBARD	0.00000000	0.00000000	171
1985	DEDICATION	0.00000000	0.00000000	212
1985		0.00000000	0.00000000	377
1985		0.00000000	0.00000000	460
1985		0.00000000	0.00000000	910
1985		0.00000000	0.00000000	937
1985		0.00000000	0.00000000	1,504
1985		0.00000000	0.00000000	5,041
1985		0.00000000	0.00000000	13,834
1985		0.00000000	0.00000000	18,609
1986		0.00000000	0.00000000	88
1986		0.00000000	0.00000000	111
1986		0.00000000	0.00000000	592

Table 3.16. Past Fires in Ada County reported by the BLM.

Year	Fire Name	LATITUDE	LONGITUDE	Acres
1986		0.00000000	0.00000000	600
1986	PLEASANT	0.00000000	0.00000000	3,127
1986		0.00000000	0.00000000	4,533
1986		0.00000000	0.00000000	4,849
1986		0.00000000	0.00000000	7,665
1986		0.00000000	0.00000000	10,509
1986		0.00000000	0.00000000	18,350
1987		0.00000000	0.00000000	56
1987		0.00000000	0.00000000	127
1987		0.00000000	0.00000000	151
1987		0.00000000	0.00000000	294
1987		0.00000000	0.00000000	301
1987		0.00000000	0.00000000	412
1987	CHARCOAL	0.00000000	0.00000000	540
1987	CINDER CONE	0.00000000	0.00000000	643
1987	SIMCO	0.00000000	0.00000000	691
1987		0.00000000	0.00000000	821
1987	PICKET PIN	0.00000000	0.00000000	1,247
1987		0.00000000	0.00000000	1,310
1987		0.00000000	0.00000000	1,372
1987		0.00000000	0.00000000	2,253
1987		0.00000000	0.00000000	2,371
1987		0.00000000	0.00000000	7,899
1988		0.00000000	0.00000000	42
1988		0.00000000	0.00000000	53
1988	PICKET PIN	0.00000000	0.00000000	55
1988		0.00000000	0.00000000	67
1988		0.00000000	0.00000000	75
1988		0.00000000	0.00000000	251
1988		0.00000000	0.00000000	501
1988		0.00000000	0.00000000	893
1988		0.00000000	0.00000000	921
1988		0.00000000	0.00000000	2,461
1989		0.00000000	0.00000000	96
1989		0.00000000	0.00000000	286
1989		0.00000000	0.00000000	290
1989		0.00000000	0.00000000	312
1989		0.00000000	0.00000000	322
1989		0.00000000	0.00000000	524
1989		0.00000000	0.00000000	657
1989		0.00000000	0.00000000	1,611
1990		0.00000000	0.00000000	102
1990		0.00000000	0.00000000	127
1990		0.00000000	0.00000000	178

Table 3.16. Past Fires in Ada County reported by the BLM.

Year	Fire Name	LATITUDE	LONGITUDE	Acres
1990		0.00000000	0.00000000	577
1991		0.00000000	0.00000000	110
1991		0.00000000	0.00000000	174
1991		0.00000000	0.00000000	217
1991		0.00000000	0.00000000	267
1991		0.00000000	0.00000000	1,444
1991		0.00000000	0.00000000	2,938
1992		0.00000000	0.00000000	67
1992		0.00000000	0.00000000	81
1992		0.00000000	0.00000000	144
1992		0.00000000	0.00000000	202
1992		0.00000000	0.00000000	416
1992	FOOTHILLS	0.00000000	0.00000000	127,943
1993		0.00000000	0.00000000	41
1993		0.00000000	0.00000000	82
1993		0.00000000	0.00000000	267
1994		0.00000000	0.00000000	1
1994		0.00000000	0.00000000	21
1994		0.00000000	0.00000000	25
1994		0.00000000	0.00000000	33
1994		0.00000000	0.00000000	98
1994		0.00000000	0.00000000	115
1994		0.00000000	0.00000000	117
1994		0.00000000	0.00000000	162
1994		0.00000000	0.00000000	265
1994		0.00000000	0.00000000	270
1994		0.00000000	0.00000000	333
1994		0.00000000	0.00000000	401
1994		0.00000000	0.00000000	603
1994		0.00000000	0.00000000	620
1994		0.00000000	0.00000000	842
1994		0.00000000	0.00000000	1,095
1994		0.00000000	0.00000000	1,660
1994		0.00000000	0.00000000	5,111
1995		0.00000000	0.00000000	23
1995		0.00000000	0.00000000	38
1995		0.00000000	0.00000000	58
1995		0.00000000	0.00000000	63
1995		0.00000000	0.00000000	71
1995		0.00000000	0.00000000	85
1995		0.00000000	0.00000000	109
1995		0.00000000	0.00000000	109
1995		0.00000000	0.00000000	121
1995		0.00000000	0.00000000	126

Table 3.16. Past Fires in Ada County reported by the BLM.

Year	Fire Name	LATITUDE	LONGITUDE	Acres
1995		0.00000000	0.00000000	180
1995		0.00000000	0.00000000	226
1995		0.00000000	0.00000000	273
1995		0.00000000	0.00000000	326
1995		0.00000000	0.00000000	370
1995		0.00000000	0.00000000	409
1995		0.00000000	0.00000000	513
1995		0.00000000	0.00000000	777
1995		0.00000000	0.00000000	5,513
1995		0.00000000	0.00000000	10,731
1996		0.00000000	0.00000000	40
1996		0.00000000	0.00000000	44
1996		0.00000000	0.00000000	48
1996		0.00000000	0.00000000	55
1996		0.00000000	0.00000000	56
1996		0.00000000	0.00000000	60
1996		0.00000000	0.00000000	147
1996		0.00000000	0.00000000	184
1996		0.00000000	0.00000000	235
1996		0.00000000	0.00000000	462
1996		0.00000000	0.00000000	491
1996		0.00000000	0.00000000	1,620
1996		0.00000000	0.00000000	1,730
1996		0.00000000	0.00000000	2,380
1996		0.00000000	0.00000000	2,928
1996		0.00000000	0.00000000	5,169
1996		0.00000000	0.00000000	5,865
1996		0.00000000	0.00000000	8,200
1996		0.00000000	0.00000000	13,085
1996		0.00000000	0.00000000	16,176
1996		0.00000000	0.00000000	17,275
1996		0.00000000	0.00000000	22,845
1997		0.00000000	0.00000000	11
1997		0.00000000	0.00000000	14
1997		0.00000000	0.00000000	14
1997		0.00000000	0.00000000	18
1997		0.00000000	0.00000000	21
1997		0.00000000	0.00000000	22
1997		0.00000000	0.00000000	30
1997		0.00000000	0.00000000	34
1997		0.00000000	0.00000000	41
1997		0.00000000	0.00000000	46
1997		0.00000000	0.00000000	54
1997		0.00000000	0.00000000	55

Table 3.16. Past Fires in Ada County reported by the BLM.

Year	Fire Name	LATITUDE	LONGITUDE	Acres
1997		0.00000000	0.00000000	57
1997		0.00000000	0.00000000	59
1997		0.00000000	0.00000000	59
1997		0.00000000	0.00000000	66
1997		0.00000000	0.00000000	77
1997		0.00000000	0.00000000	81
1997		0.00000000	0.00000000	118
1997		0.00000000	0.00000000	153
1997		0.00000000	0.00000000	182
1997		0.00000000	0.00000000	225
1997		0.00000000	0.00000000	243
1997		0.00000000	0.00000000	356
1997		0.00000000	0.00000000	9,206
1998	WARRENSPUR	0.00000000	0.00000000	11
1998	RR MP#441	0.00000000	0.00000000	98
1998	I-84 MP#67	0.00000000	0.00000000	151
1998	COYOTE	0.00000000	0.00000000	192
1999		0.00000000	0.00000000	0
1999		0.00000000	0.00000000	1
1999		0.00000000	0.00000000	4
1999		0.00000000	0.00000000	7
1999		0.00000000	0.00000000	14
1999		0.00000000	0.00000000	15
1999		0.00000000	0.00000000	16
1999		0.00000000	0.00000000	20
1999		0.00000000	0.00000000	21
1999		0.00000000	0.00000000	24
1999		0.00000000	0.00000000	25
1999		0.00000000	0.00000000	31
1999		0.00000000	0.00000000	32
1999		0.00000000	0.00000000	33
1999		0.00000000	0.00000000	41
1999		0.00000000	0.00000000	43
1999		0.00000000	0.00000000	59
1999		0.00000000	0.00000000	67
1999		0.00000000	0.00000000	108
1999		0.00000000	0.00000000	126
1999		0.00000000	0.00000000	218
1999		0.00000000	0.00000000	263
1999		0.00000000	0.00000000	631
1999		0.00000000	0.00000000	1,284
2000	FIREBIRD	43.76020000	116.47080000	13
2000	ADAMORE	43.20700000	115.97110000	44
2000	LAPIDIUM	43.51690000	116.18140000	72

Table 3.16. Past Fires in Ada County reported by the BLM.

Year	Fire Name	LATITUDE	LONGITUDE	Acres
2000	Cliff	43.27830000	116.40250000	112
2000	HILLTOP	0.00000000	0.00000000	121
2000	BRYANS RUN	43.45540000	116.11010000	236
2000	SPRING SHO	43.55230000	115.99630000	309
2000	MORAINDIAN	43.44630000	116.21330000	808
2000	MP63I84	43.46910000	116.06650000	1,562
2000	HILLTOP	43.56730000	116.04650000	2,552
2001		0.00000000	0.00000000	0
2001		0.00000000	0.00000000	0
2001		0.00000000	0.00000000	2
2001		0.00000000	0.00000000	3
2001		0.00000000	0.00000000	4
2001		0.00000000	0.00000000	9
2001		0.00000000	0.00000000	10
2001	Con Shea	43.27890000	116.50080000	13
2001		0.00000000	0.00000000	14
2001	County Line	43.61080000	115.96710000	18
2001	CHAPS	43.81560000	116.42770000	23
2001	ricochet	43.47080000	116.07610000	31
2001		0.00000000	0.00000000	35
2001	Cloe Poe	43.40600000	116.33840000	38
2001	Old Ferry	43.23750000	116.37290000	50
2001		0.00000000	0.00000000	60
2001		0.00000000	0.00000000	80
2001	TenBirds	43.50650000	116.28720000	103
2001		0.00000000	0.00000000	104
2001		0.00000000	0.00000000	114
2001		0.00000000	0.00000000	145
2001	NORTHSTAGE	43.38780000	115.99170000	210
2001		0.00000000	0.00000000	220
2001		0.00000000	0.00000000	388
2001	HumpnBump	43.49600000	116.12950000	437
2001	SOUTH SPRN	43.80750000	116.37100000	1,366
2001		0.00000000	0.00000000	1,564
2001	CHAPPEDWILLOW	43.81470000	116.44550000	2,466
2001	N SLATER	43.47830000	116.03970000	4,282
2002	CAVEMAN	43.43210000	116.43380000	33
2002	DEEP CANYON	43.75180000	116.46330000	37
2002	TEN MILE	43.48850000	116.29220000	82
2002	MP 75 I-84	43.34130000	115.95410000	145
2002	CINDERCO	43.24990000	115.96500000	313
2002	VICTORY	43.34950000	116.49740000	527
2002	MP 62 I-84	43.50930000	116.12590000	566
2002	GUFF	43.27890000	116.52060000	1,345

Table 3.16. Past Fires in Ada County reported by the BLM.

Year	Fire Name	LATITUDE	LONGITUDE	Acres
2002	CHIP	43.50880000	116.13780000	3,629

Approximately 360 wildfires have burned in the region of Ada County (Table 3.14 & 3.15). Figure 3.1 summarizes wildfire ignitions and acres burned each year from 1957 through 2002. The highest number of total ignitions occurring in the 1990's, with 132 wildfires, Table 3.15. However, based on the 48 ignitions which occurred between 2000 and 2002, this current decade is poised to hit approximately 160 ignitions (based on the observed rate of ignitions per year since 2000). The most acres burned in any one decade were in the 1950's however this is based to a large degree on extrapolated data from 1950-1956 (Figure 3.1). Both the 1980s and the 1990s witnessed approximately a quarter million acres burned by wildfires during each decade.

Due to the extreme increase in development along the wildland-urban interface, many acres of highly flammable wildland fuels have been converted to green, well-groomed lawns and home sites. Nevertheless, as the amount of high fire risk acres decreases, the value lost when homes are threatened or destroyed by wildfires has skyrocketed. Many high value homes abut unmanaged, native rangeland fuels in Ada County causing a very significant increase in the value lost even as the number of high risk acres decreases.

Unfortunately, detailed records on fire cause have not been maintained for wildfires in Ada County. In other counties of Idaho, wildfire occurrence is recorded by a variety of sources, including the Idaho Department of Lands. It is strongly recommended that the BLM and Ada County cooperate on collecting additional data on ignition cause as well as current extent mapping as time goes on. Past fires occurring in Ada County have been mapped and are shown in Appendix I.

Figure 3.1. Ada County Wildfire Extent Profile.

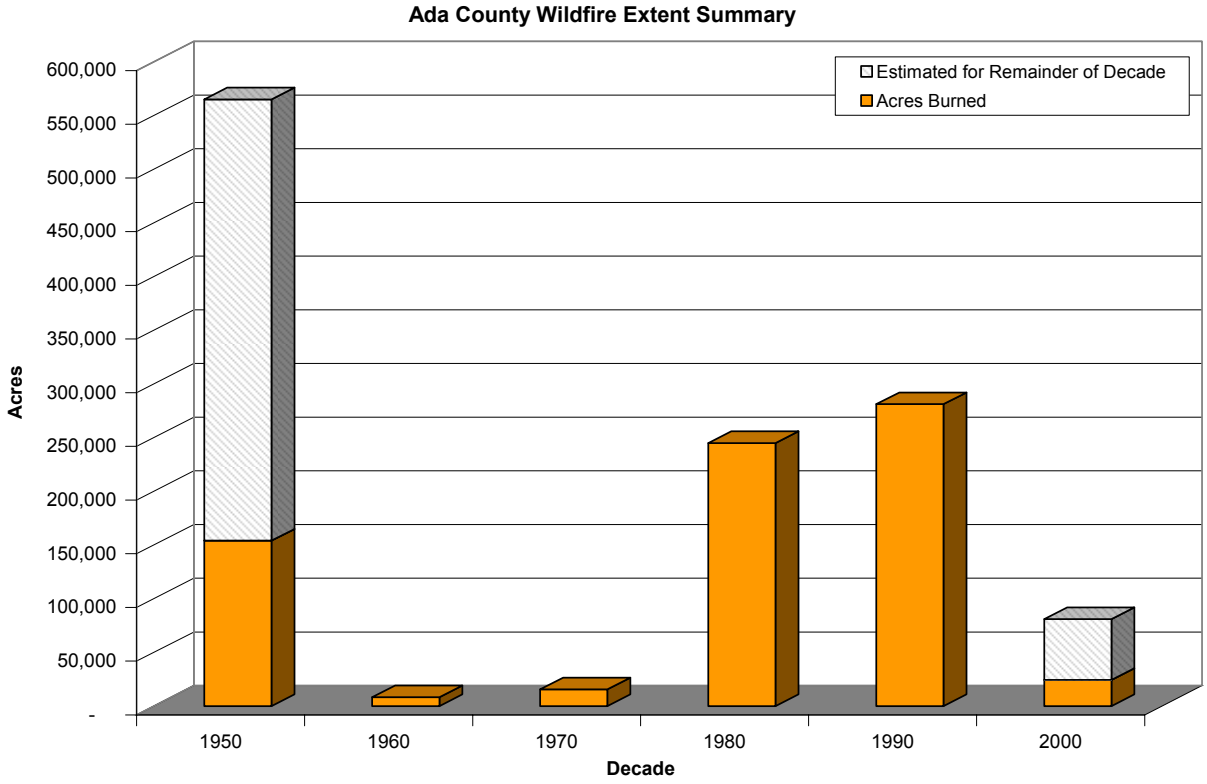


Table 3.17. Wildfire Ignition Profile for Ada County 1957-2002.

Decade	Acres Burned	Estimated for Remainder of Decade	Number of Ignitions*
1950	154,072	410,859	37
1960	8,269		9
1970	15,640		23
1980	245,034		111
1990	281,142		132
2000	24,294	56,685	48

* based on 1957-2002 data, no extrapolation for the missing periods

3.7.2 Regional and National Wildfire Profile

Across the west, wildfires have been increasing in extent and cost of control. The National Interagency Fire Center (2003) reports nearly 88,500 wildfires in 2002 burned a total of nearly 7 million acres and cost $1.6 billion (Table 3.18). By most informed accounts, the 2003 totals will be significantly higher in terms of acres burned and cost.

Table 3.18. 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 3.19 and 3.20 summarize some of the relevant wildfire 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 Ada County.

Table 3.19. Total Fires and Acres 1960 - 2002 Nationally.

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
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)		

Table 3.20. 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 the region, 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 local fire districts cooperate in controlling these blazes.

3.8 Analysis Tools and Techniques to Assess Fire Risk

Ada County and the adjacent counties of Adams, Washington, Gem, and Valley 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 and rangeland health issues and treatment options.

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

3.8.1 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, Clearwater, Elmore, Gem, Idaho, Jerome, Latah, Lewis, Minidoka, Nez Perce, Owyhee, Payette, Shoshone, Twin Falls, Washington, and Valley Counties in Idaho.

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.

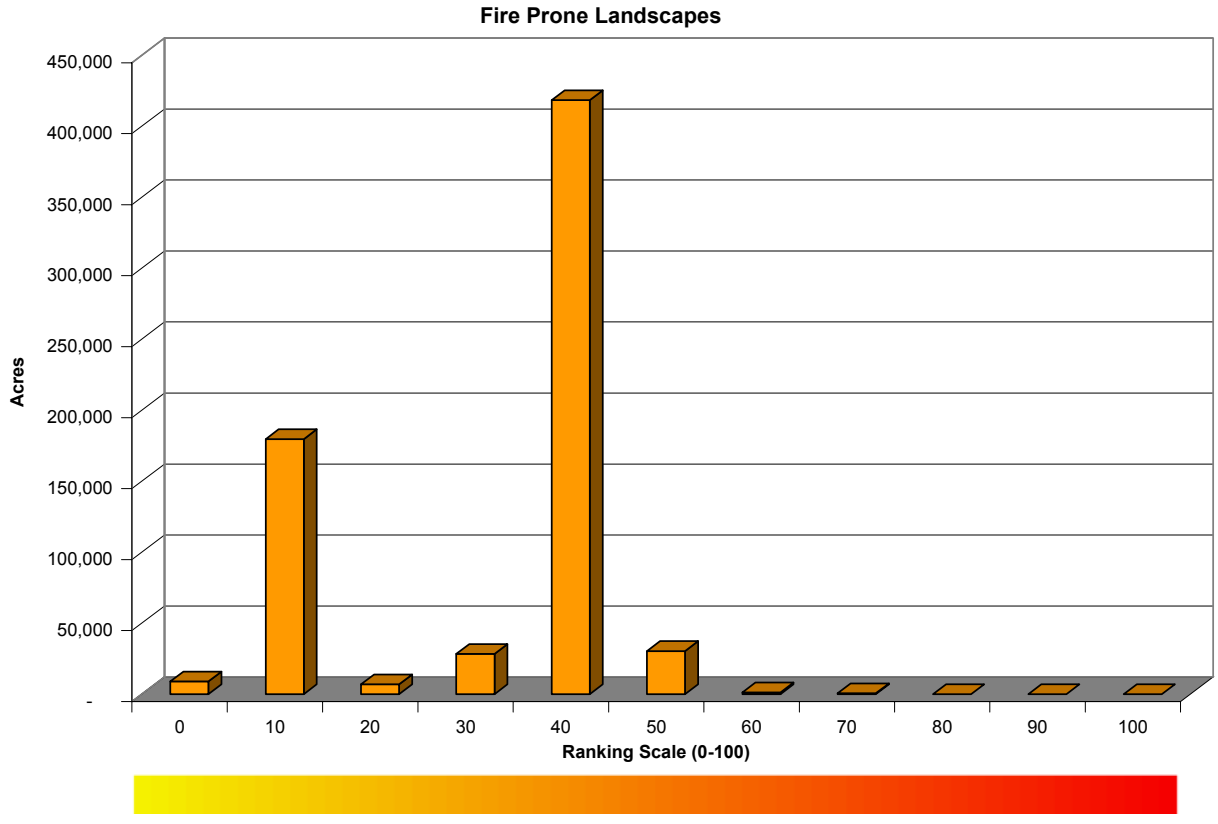
Fire Prone Landscapes: Using the methodology developed by Schlosser *et al.* (2002), and refined for this project, the factors detailed above were used to assess the potential for the landscape to burn during the fire season in the case of fire ignition. Specifically, the entire region was evaluated 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 Ada County was 72 with a low of 4.

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 3.21). While large maps (12 square feet) have been provided as part of this analysis, smaller size maps are presented in Appendix I.

Table 3.21. Fire Prone Landscape rankings and associated acres in each category for Ada County.

Color Code	Value	Total	Percent of Total Area
	0	8,973	1%
	10	179,576	27%
	20	6,996	1%
	30	28,412	4%
	40	418,344	62%
	50	30,449	5%
	60	1,233	0%
	70	699	0%
	80	-	0%
	90	-	0%
	100	-	0%

Figure 3.2: 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.

3.8.2 Historic Fire Regime

The US Forest Service has provided their assessment of Historic Fire Regimes for Ada 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 constrain 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 Wyoming. 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.

3.8.2.1 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 3.22. Natural Historic Fire Regimes in , Idaho.

Natural Historic Fire Regime	Acres	Percent of Area
Non-lethal Fires	2,672	0%
Mixed severity, short return interval	2,416	0%
Mixed severity, long return interval	2,084	0%
Non-forest stand replacing, short return interval	51,662	8%
Non-forest mixed severity, moderate return interval	2,900	0%
Non-forest stand replacing, moderate return interval	425,911	63%
Non-forest stand replacing, long return interval	14,878	2%
Agriculture	114,277	17%
Rock / barren	1,369	0%
Urban	57,653	9%
Water	2,292	0%

3.8.3 Fire Regime Condition Class

The US Forest Service has provided their assessment of Fire Regime Condition Class for the areas of Ada County to this WUI Fire Mitigation Plan analysis. These measures of forest and range 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 reduce 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 3.23. Maps depicting Fire Regime and Condition Class are presented in Appendix I.

Table 3.23. 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 composition; fire frequency, severity and pattern; and other associated disturbances.	Fire behavior, effects, and other associated disturbances are highly departed (more or less severe). 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 Ada County shows that approximately 3% of the County is in Condition Class 1 (low departure), just about 71% is in Condition Class 2 (moderate departure), while only a small proportion of the area is in Condition Class 3 (Table 3.24).

Table 3.24. FRCC by area in Ada County.

	Condition Class	Acres	Percent of Area
1	Low departure	21,341	3%
2	Moderate departure	478,874	71%
3	High departure	2,308	0%
4	Agriculture	114,277	17%
5	Rock/barren	1,369	0%
7	Urban	57,653	9%
8	Water	2,292	0%

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

3.8.4 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).

3.8.4.1 Purpose

Fire is a dominant disturbance process in the Great Basin. 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 livestock grazing has affected vegetation patterns, fuels, and fire behavior. 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).

3.8.4.2 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 3.25. Predicted Fire Severity by area in Ada County.

	Predicted Fire Severity	Acres	Percent of Area
nl	Non-lethal	1,843	0%
ms1	Mixed severity, short return interval	434	0%
ms2	Mixed severity, long return interval	4,079	1%
sr	Stand replacement fires	815	0%
ii	Non-forest stand replacement, short return interval	210,453	31%
iii	Non-forest mixed severity, moderate return interval	2,900	0%
iv	Non-forest stand replacement, moderate return interval	267,672	39%
v	Non-forest stand replacement, long stand replacement	14,325	2%
Agriculture	Agriculture	114,277	17%
Rock / barren	Rock / barren	1,369	0%
Urban	Urban	57,653	9%
Water	Water	2,292	0%

See Appendix I for a map of Predicted Fire Severity.

3.8.5 On-Site Evaluations

County fire suppression personnel and specialists from NMI evaluated the communities of Ada 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.

3.8.6 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 Ada 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.

3.8.6.1 Grass Group

3.8.6.1.1 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

3.8.6.1.2 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, contributes 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

3.8.6.1.3 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

3.8.6.2 Shrub Group

3.8.6.2.1 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

3.8.6.2.2 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

3.8.6.2.3 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

3.8.6.2.4 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

3.8.6.3 Timber Group

3.8.6.3.1 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

3.8.6.3.2 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

3.8.6.3.3 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 3.26. 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.

3.8.6.4 Logging Slash Group

3.8.6.4.1 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

3.8.6.4.2 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

3.8.6.4.3 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 3.27.

Table 3.27. 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

3.9 Wildland-Urban Interface

3.9.1 People and Structures

The wildland-urban interface refers to areas where wildland vegetation meets urban developments, or where rangeland 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 that lead directly to a risk to urban developments be it from wildfire, landslides, or floods. Reducing the 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 danger by creating defensible areas around them and taking other measures to minimize the risks to their structures (USFS 2001). With treatment, a wildland-urban interface can provide firefighters a defensible area from which to suppress wildland fires or defend communities against other hazard risks. (Norton 2002).

By reducing hazardous fuel loads, brush densities and fine fuels and creating or maintaining 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 range or agricultural 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 spotfires 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 locations of structures in Ada 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).

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. 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.

3.9.2 Infrastructure

There are numerous energy transmission infrastructure that pass through Ada County that are critical to the safety and prosperity of county residents and residents throughout the western United States. High Tension Power Lines and Gas/Petroleum Power Lines within the county have been mapped and are presented in Appendix I. The power and gas pipelines generally run from the northwest to the southeast through the county.

Multiple main grid transmission lines operated by Idaho Power and associated substations and numerous primary, secondary, and feeder power lines cross the county. Those at greatest risk to direct impact from fire are those that are supported by wooden poles that can easily catch fire in the event of a fire. In many cases, the wooden telephone or power poles can be extinguished before the integrity of the pole is significantly compromised. However, damage to transformers and other power components may result. During large wildfire incidents when hundreds or thousands of poles may catch fire, significant numbers of poles may fail, leading to downed lines and significant safety risks. Repair times would be proportional to the scale of the event. Likewise power outages are proportional as well.

Chevron and Northwest Natural Gas both maintain pipelines that pass through the county. The Chevron line passes through the much of the Boise urban complex, while the Northwest Natural Gas Pipeline passes south of Boise and north of Kuna. These pipelines supply natural gas and petroleum throughout the northwest. The lines link the oil and gas fields in Wyoming to refineries and markets in Salt Lake City, Spokane, Portland and numerous other high-demand markets throughout the region.

Multiple travel routes have been identified as primary and secondary escape routes through the course of the planning process. These include Interstate 80, Highway 55, Highway 21, and a

number of state and county routes that have been identifies as critical as emergency evacuation routes. Primary and secondary roads are generally not at risk of damage by wildland fire. However, fires frequently disrupt travel and commerce due to impaired visibility and suppression activities. Large fires can cause prolonged road closures with a notable impact to inter-county and interstate travel.

Smoke from any type of fire, wildland or agricultural, can pose significant risks public safety. Obscured vision can lead to collisions that can result in accidents with significant economic cost and a possible loss of life.

The ability to quickly locate a physical address is critical in providing services in any type of emergency response. Minutes can make the difference in home survival during fire events or life and death during medical emergencies. Accurate road signage and rural addressing is fundamental to assure the safety and security of Ada County residents. Currently, there are numerous areas throughout the county that are lacking road signs, rural addresses or both. Signing and addressing throughout the county needs to be brought up to NFPA code in order to assure visibility and quick location.

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 Ada County but of surrounding counties. The protection of these lines allows for community sustainability, support of the economic viability of Ada 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 high tension 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.

3.9.3 Ecosystems

Ada County contains diverse ecosystems with a complex array of vegetation, wildlife, and fisheries. The most notable areas of concern in regard to habitat conservation include the Foothills and the Boise River Wildlife Management Area toward the northern portion of the county as well as the Snake River Birds of Prey Management Area in the southern part of the county.

3.9.3.1 Boise Foothills and the Boise River Wildlife Management Area

The 33,540 acre Boise River Wildlife Management Area (WMA) managed by the Idaho Department of Fish and Game provides much of the backdrop to the city of Boise. The WMA provides critical wintering area for mule deer, elk, and antelope. The WMA also provides critical migration corridors for migrating birds and provides habitat for many sagebrush dependant species. Since 1992, wildfires have burned approximately an astounding 20,004 acres or 60% of the WMA. Development and habitat alteration activities are limiting the amount of quality habitat left for wildlife. Protections of those areas that have not burned recently are a high priority.

Numerous sensitive plant species locations and wildlife habitat areas have been mapped in the Boise City Foothills Policy Plan of 1997. The plan seeks to conserve sensitive wildlife and plant habitat areas. Foothills areas outside the Boise City Policy Plan analysis area also provide

critical habitat for a variety of wildlife species and sensitive plant species. These habitats may either be degraded or enhanced through burning. In cases where habitat values are enhanced by burning, maximum benefit is generally realized through controlled, managed ignitions rather than by large-scale, severe wildland fire events.

In addition, the Boise Front segment of the WMA is also utilized for forage value as pasture land for roughly 325 cattle and 1000 ewe/lamb pairs. Fire events in the designated pasture areas require at least one year of rest in order to allow for rehabilitation of the burned area. This adds an economic burden to the livestock operators who utilize the pasture.

The WMA is at significant risk to wildland fire. Continuous dry fuels typically extend from homes and subdivisions upslope to the area managed as the WMA. Increasing development, vehicle traffic and recreational use both within and outside the WMA will pose an ever growing fire threat to this biologically important area.

There are a number of activities that can help to reduce the wildland fire threat to the Boise Foothills.

- Create a buffer along major roadways and along interface streets throughout the foothills. Many fires that have burned in the WMA have been started along roads. Reducing the ignition potential along the periphery would help to reduce the risk of fire spreading into the WMA. This may be accomplished via mowing or planting of more fire-resistant species along a buffer adjacent to roadways. Each segment will need to be evaluated in order to determine which course of action is most appropriate for site-specific conditions.
- Control invasive, non-native grasses and forbs throughout the foothills to reduce fine fuel load and fuel continuity.
- Restrict camping and campfires within the Foothills area.
- Enforce fireworks ban on public lands.

3.9.3.2 Snake River Birds of Prey Conservation Area

Wildland fire poses one of the most serious threats to the health and future of the Snake River Birds of Prey NCA. Summer lightning storms and heavy public use make the area particularly susceptible to wildfire. More than 65 percent (over 300,000 acres) of the NCA has been lost to wildfires since the late 1970s. Replacing the shrubs and perennial grasses proves extremely difficult due to the dry desert climate. Cheatgrass has overtaken more than half of the Conservation Area following these fires, reducing the birds of prey food base. Because of its flammability, Cheatgrass greatly increases fire hazard on a site, reducing recurrence intervals. The increase in fire frequency can eliminate important plant and shrub species, reducing wildlife habitat value. Without this valuable habitat where small mammals thrive, raptors will find less prey upon which to feed.

3.10 Soils and Geology

Summarized from the Soil Survey report of Ada County Area, Idaho issued May 1980.

The survey area lies in two major geomorphic provinces. The northeastern part of the survey area is in the Idaho Batholith subdivision of the Northern Rocky Mountain province. The rest is in the Malheur-Boise Basin section of the High Lava Plains subprovince of the Columbia Intermontane province. The topography is diverse. It includes the deep canyon of the Snake River; an extensive lava plain with scattered basalt domes and cinder cones; the valley of the Boise River with its low to moderate gradient and three major alluvial terraces (fig. 1), and the

hills and mountains of the Boise Front. Local relief ranges from nearly level on the plain and in the river valley to very steep in the canyon and mountain areas.

The soils at the higher elevations in the northeastern part of the county are sloping to very steep. These soils are moderately deep and very deep, and they are well drained. They are used mainly as rangeland and wildlife habitat and for recreation. Slope, inaccessibility, and depth to rock are the main limitations to engineering uses.

Soils on lacustrine foothills above the Boise River are nearly level to very steep and well drained to excessively well drained. The hazards of erosion and sedimentation are limitations to the use of the soils in this map unit because of the fragile vegetative cover and the highly erosive nature of the soils. Flash flooding is a hazard in the major drainageways during summer cloudbursts. This increases the potential for debris flows following summer storms following burns.

The soils in the central and southern parts of the survey area are on alluvial terraces, basalt plains, and alluvial fans. The natural vegetation is dominantly sagebrush and bunchgrass. These soils are shallow to very deep; and they are somewhat poorly drained, well drained, and somewhat excessively drained. They are used mainly for farming and as rangeland and wildlife habitat. A significant acreage is used for urban development. The gentle slopes in these areas generally do have significant erosion potential, even when vegetation is removed. Where excessively well drained soils exist on sloped areas, erosion potential is somewhat higher. However, this combination is only found occasionally in the southern portion of the county.

3.10.1 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 Ada 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.

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.

3.11 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 Ada County Comprehensive Plan addresses Streams, Rivers, and Wetland pollution issues specifically. The following is an excerpt from that planning process:

> "As an essential and limited natural resource, preserve and protect groundwater and surface waters. Recognizing that land use and changes in land use in Ada County affect surface and groundwater quality and availability, Ada County will work with other jurisdictions, government agencies, water suppliers and interested parties to develop a comprehensive water management plan."

3.11.1 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 and enhancement, protection, and maintenance of old growth and riparian areas. 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, high intensity 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. Prescribed burning is not designed to consume all vegetation within project areas.

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. 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.

3.12 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 Ada County 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 Ada County, winds are predominantly from the northwest up the Snake River drainage during the summer, and shift to the southeast during the winter. Boise frequently experiences north winds as cool air flows down the mountains into the Boise Valley.

Air quality in the area and surrounding airshed is generally good during the spring and summer months. However, the Treasure Valley has had a history of air quality problems. The local terrain and meteorology can trap air pollution for long periods of time during stagnation events, particularly in the fall and winter. During these events, air quality levels raise to unhealthful levels throughout the region. Also, 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.

Smoke management in Ada County is managed by the Idaho/Montana Airshed Group. Much of the county is in Airshed Units 14 and 22. The Boise Impact Zone is relatively large, covering all of Ada County and a large portion of the Treasure Valley (Levinson 2002). 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, Idaho Fish and Game, 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 should 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 Hell's Canyon Class I area is 69 miles north of Ada County and the Sawtooth Class I area is 71 miles to the east.

All of the communities within Ada County could be affected by smoke or regional haze from burning activities in the region. Idaho Department of Environmental Quality maintains Air Pollution Monitoring Site in Boise as well as in Caldwell and Nampa. 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, and local governments) through national standards and strategies to control pollutant emissions from automobiles, factories, and other sources (Louks 2001).

3.12.1 Treasure the Valley's Air

Treasure the Valley's Air is a coalition of local partners working together to implement community-based projects to improve and protect air quality in the Treasure Valley. Partnerships are voluntary and dynamic, and can include any mix of businesses, government agencies, organizations and individuals. Under the *Treasure the Valley's Air* concept, partners join together to share expertise and leverage resources to design, carry out and promote air quality improvement projects.

3.12.2 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.

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 wildland fires (Quigley and Arbelbide 1997).

Chapter 4: Summaries of Risk and Preparedness

4 Overview

4.1 Wildfire 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. The combination of light fuels and dry sites lead to fires that typically display the highest 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. 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. 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 affect small changes in any single component has 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, the some of the principles that govern fire behavior have been identified and are recognized.

4.1.4 Firefighter Accidents

The United States currently depends on approximately 1.2 million firefighters (municipal and wildland) to protect its citizens and property from losses caused by fire. Of these firefighters, approximately 210,000 are career/paid and approximately 1 million are volunteers. The National Fire Protection Association (NFPA) and the U.S. Fire Administration estimate that on average, 105 firefighters die in the line of duty each year (NIFC 2005).

Due to the growing number of homes in the wildland/urban interface, it is almost inevitable that wildland and structural firefighters will find themselves in dangerous role reversals for which they may not be adequately trained or equipped. For example, wildland firefighters may be called on to protect threatened homes, and structural firefighters may be called on to help battle the surrounding blazes in the wildlands.

In addition to the obvious difference of size, wildland fires and structure fires differ in that wildland fires require:

- more personnel, some of whom may have little or no fire fighting experience
- more resources spread out over a larger area.

Because of these factors, wildland fires present personal safety concerns to three areas:

- the firefighter
- the area immediately surrounding the firefighter
- the overall environment of the fire itself.

The most direct way to improve the safety of both structural and wildland firefighters is cross-training of all firefighters and improved equipment. While cross-training is being done in some

regions throughout the country, it is still not standard practice everywhere. Until cross-training programs become universal, awareness may be the tool that saves lives.

Of the 1,046 firefighters who died while on duty from 1987 through 1996, 163 (15.6%) died while fighting wildland fires. The number of deaths was generally between 12 and 22 per year, with the exception of seven deaths in 1993 and 1996, and 33 deaths in 1994. Over the period, 23.6% of all fire ground deaths occurred at wildland fires (Firewise 2005).

This analysis includes members of municipal fire departments who responded to grass, brush and forest fires within their jurisdictions as well as career, seasonal and contract employees of state and federal wildland agencies who were involved in assigned firefighting activities at the time there were fatally injured (Firewise 2005). The federal wildland agencies include the U.S. Forest Service, the Bureau of Indian Affairs, the Bureau of Land Management, the Fish and Wildlife Service, the National Park Service and the military.

The 163 victims (1987-1996) ranged in age from 15 to 83, with a median age of 34. Fourteen of the victims were women. Approximately 70% of all wildland fire deaths (114) occurred during fire suppression activities. Another 49 deaths occurred when firefighters were responding to or returning from such fires.

4.1.4.1 Deaths on the Fire Ground

The largest proportion of deaths during fire suppression activities resulted from being caught or trapped by fire progress. Twenty-five of these 38 firefighters died of smoke inhalation; the other 13 died as a result of burns. Fourteen of these 38 deaths occurred in a single incident in 1994.

Wildland fire deaths by nature of fatal injury, more commonly referred to as the medical cause of death, is important to understanding this issue. State and federal wildland officials believe that their rigorous fitness requirements lower the risk of heart attack death among firefighters under their jurisdiction. For this analysis, then, the fire ground deaths were broken down by type of department municipal (career or volunteer) or wildland agencies. A profile of the 114 fire ground victims shows that 50 were members of municipal fire departments (44 were volunteer firefighters and six were career firefighters). The other 64 firefighters were career, seasonal or contract employees of state and federal wildland agencies, or military personnel.

4.1.4.2 Municipal Firefighters

As shown in Table 3.6, heart attacks accounted for over half of the deaths of municipal firefighters during fire ground operations, while most of the deaths of state and federal employees were due to internal trauma, asphyxiation and burns.

Of the 17 municipal heart attack victims for whom medical documentation was available, nine had had prior heart attacks or bypass surgery, three had severe arteriosclerotic heart disease, three had hypertension and one was diabetic. The municipal volunteer firefighters who suffered fatal heart attacks ranged in age from 27 to 83, with a median age of 58. The one wildland agency firefighter who died of a heart attack was 38 years old and had severe arteriosclerotic heart disease.

The lower proportion of heart attacks among wildland agency firefighters may be a result of stricter fitness requirements, but it could also be a function of age. Older firefighters are more likely to suffer heart attacks and if the wildland agencies employ a significantly lower percentage of old firefighters, their experience would reflect this. Looking at all fire ground deaths, municipal vs. wildland agencies, the ages of wildland firefighters who died ranged from 18 to 64, with a median age of 32 years, while volunteer municipal firefighters ranged in age from 18 to 83, with

a median age of 50. The six career municipal firefighters ranged in age from 20 to 49, with a median age of 29. Other factors besides age and fitness requirements that may impact the incidence of heart attack deaths at wildland fires include the equipment provided. In many of the incidents handled by municipal firefighters, those involved in fighting the fire did so in full protective clothing designed for structural firefighting, while wildland firefighters wear clothing, helmets and boots more appropriate to outdoor work (Firewise 2005).

Table 4.1. Wildland firefighter deaths on the fire ground by nature of Fatal Injury 1987-1996.

Fatality Cause	Federal and State Wildland Agencies	Municipal		Total
		Volunteer	Career	
Heart attack	1	27	0	28
Internal trauma	24	3	1	28
Asphyxiation	23	2	0	25
Burns	9	4	3	16
Crushing	4	4	0	8
Electric shock	1	2	0	3
Heat stroke	0	1	2	3
Stroke	2	0	0	2
Bleeding	0	1	0	1
Total	64	44	6	114

As far as the other types of injuries suffered on the fire ground are concerned, increased use of fire shelters could result in a reduction in fatal burns and smoke inhalation deaths and safer handling of aircraft could reduce the number of deaths due to aircraft crashes during suppression activities.

4.1.4.3 Deaths While Responding to or Return from Alarms

Of the 163 wildland-related deaths that occurred between 1987 and 1996, 49 occurred when firefighters were responding to or returning from such fires. Thirty four of the 49 deaths were the result of vehicle crashes, 12 were heart attacks, one firefighter was crushed when a tree fell on the crew area of a moving truck, one firefighter was crushed between two pieces of apparatus while he attempted to start the rear-mounted pump in preparation for response to an incident and one firefighter drowned at a base camp after returning from the fire line.

The 34 deaths in crashes occurred in 25 separate incidents. Ten contractors and four federal employees were killed in six aircraft crashes. Eleven firefighters were killed in 10 crashes involving tankers, and five firefighters were killed when their personal vehicles crashed. The remaining four deaths resulted from crashes involving an engine, a brush unit, a supply vehicle and a military vehicle.

The 12 heart attack victims included eight municipal firefighters, three forestry employees and one contractor. Five of the 12 firefighters had had prior heart attacks or bypass surgery, one had severe arteriosclerotic heart disease and one was diabetic. No medical information was available for the other five heart attack victims.

4.1.4.4 Idaho State Fatalities

Within Idaho State, wildland fire injuries have been documented by the National Interagency Fire Center (2005) and are summarized in Table 4.2. From 1932-2003, there have been 122 fatalities during 43 incidents involving significant injuries. Burn over and entrapments are common themes in the listed fatalities. In order to reduce the risks to firefighters responding to wildland fire events, these issues must be addressed and eliminated.

Table 4.2. Wildfire accidents reported in Idaho, 1910-2003.

Year	Place	Type of Accident	Organization	Fatalities
1910	Coeur d'Alene	Burnover	Federal	72
1910	Pend Oreille NF	Burnover	Federal	2
1934	Pierce	Snag	Federal	2
1934	Sand Point	Burnover	Federal	1
1935	Clearwater NF	Snag	Federal	1
1939	Emida	Burnover	Federal	1
1939	Priest River	Burnover	Federal	1
1939	Priest River	Snag	Federal	1
1939	Riggins	Burnover	Federal	1
1940	Boise	Burnover	Federal	1
1940	Priest River	Burnover	Federal	1
1940	Salmon	Burnover	Federal	1
1943	Rogers	Burnover	Unknown	2
1944	McCall	Heart Attack	Federal	1
1946	Council	Snag	Federal	1
1949	McCall	Burnover	Federal	1
1949	McCall	Burns	Federal	1
1961	Clearwater NF	Snag	Federal	1
1961	Nez Perce NF	Burnover	Federal	2
1965	McCall	Smokejumper Aircraft	Federal	2
1972	Harris Ridge	Suffocation	Other	2
1974	Boise	Aircraft Collision on Runway	Contractor/Federal	1
1978	Shoshone	Engine Rollover	Federal	1
1979	Salmon NF	Burnover	Federal	1
1981	Paul	Aircraft	Federal	3
1986	Boise NF	Vehicle	Federal	4
1988	Bellevue	Vehicle Rollover	Private	1
1989	Nez Perce NF	Drowning	Federal	1
1992	Cascade	Snag	Federal	1
1994	Boise NF	Vehicle	Federal	1
1994	Payette NF	Helicopter	Military	1
1995	Kuna	Engine Burnover	Volunteer	2
1998	Cascade	Vehicle	Contractor/Federal	2
1998	Not Reported	Burns	Federal	0
2000	Salmon	Engine Entrapment	Federal	0
2001	Lewis County	Single Engine Airtanker	Contractor	1
2002	Deary	Engine Rollover	State	0

Table 4.2. Wildfire accidents reported in Idaho, 1910-2003.

Year	Place	Type of Accident	Organization	Fatalities
2002	Deary	Work Capacity Test	Contractor	1
2002	Moscow	Dozer Rollover	Private	1
2003	Grangeville	Heart Attack	State	1
2003	Inkom	Vehicle Rollover	Volunteer	1
2003	Salmon	Entrapment	Federal	2

(National Interagency Fire Center 2005)

4.2 Ada County Conditions

Ada County encompasses 1,060 square miles of land in the heart of Idaho and is subject to range fires every year that destroy forage and ground cover. Most fires are confined to an area of less than 500 acres. Approximately half of these fires are caused by dry lightning storms, with the other half being human actions or undetermined causes.

In 1992, five lightning fires combined to blacken 257,000 acres of rangeland in and around Ada County. Vulnerability is steadily increasing as more dwellings are constructed in the foothills adjacent to range lands. In July of 1995, a range fire with wind gust of over 40 miles an hour took the lives of two Kuna firefighters. On August 26, 1996 a human caused wildfire was ignited in the Boise foothills. The temperature was 104 degrees and the winds reached 30 mph. On September 2, the fire was contained after burning 15,300 acres of land.

The diversity in landscape provides habitat for a number of rangeland and forest plant species, as well as providing opportunities for agricultural crop production.

Land ownership throughout the County is a mix of private, state, BLM and U.S. Forest Service. Ada County is home to the largest concentration of people in the state in the city of Boise and surrounding communities. However, there is a clear demarcation between urban areas and rural areas, which may be at risk to wildfire. Much of the rural land in Ada County is managed in support of the ranching and agricultural economy of the area. Domestic livestock graze many of the areas that are not actively cultivated for hay or cash crops.

4.2.1 Vegetative Associations

Ada County lies in the vegetative ecosystem known as the sagebrush steppe community. The Sagebrush Steppe Ecosystem is widespread over much of southern Idaho, eastern Oregon and Washington, and portions of northern Nevada, California and Utah. The southern Idaho portion of this ecosystem occurs over a variety of land forms and vegetation types. Native vegetative communities range from vast expanses of annual grasslands resulting from recent fires, to old-growth sagebrush communities.

The steppe is characterized by a persistently warm and arid environment that limits noncultivated vegetative communities to grass and brush rangelands. Xeric vegetation and hot, dry and windy conditions have resulted in a rich fire history, with relatively frequent fires. The last decade has seen the proliferation of Cheatgrass (*Bromus tectorum* L.), an exotic grass species that is able to out-compete native bunchgrasses. Cheatgrass responds well to soil disturbance and is found in abundance along roadsides, driveways, new construction areas, and in recently burned areas. Over time, vegetative species composition in unmanaged or non-irrigated land has shifted toward fire prone species, particularly in high use areas where disturbance is common.

Fuels

Wildland fuels vary throughout the Ada County. Fuel composition and distribution is dependent on aspect, elevation, management practices and time since last burned. Perennial bunch grasses and cheatgrass dominate areas that have been disturbed by recent fires, while heavy sage, bitterbrush and rabbitbrush are present on north and east aspects that have not burned in the last decades. Areas dominated primarily by grass with scattered sage can be described as Fuel Models 1 or 2 (FM1 and FM2). Fires in these fuel types tend to spread very rapidly, especially when pushed by wind. Sage-dominated fuel complexes can be described as FM5 (for a complete discussion of fuel models, turn to 3.9.5). Fires in all fuel types found throughout the county can spread rapidly, especially when driven by the wind or when burning in areas with steep slopes. Thousands of acres can burn after only a single hour in grass and brush fuels. In heavy brush fires can travel at over eight miles and hour with flame lengths in excess of 50 feet. Fires of this intensity are nearly impossible to control with suppression resources, requiring a change in weather in order to allow crews and support equipment to gain the upper hand.

Agricultural areas in grain crops can be described as either FM 1, 2 or 3, depending on stage in agricultural production. During the period while grain crops are cured prior to harvest, the mature crops are similar to tall grass (FM 3, greater than 2.5 feet in height). Fires in this fuel type tend to spread very rapidly with large flame lengths. Post harvest fuels are more typical of FM1, as residual harvest stubble is typically less than 1 foot in height. Flame lengths are rates of spread are reduced in the post-harvest condition. However, fires in these fuels can still spread quite rapidly and generate moderate flame lengths. Fuels between 1 foot and 2.5 feet can be described as FM2. However, the large flame lengths and high intensities these fires generate can be very threatening to homes and safety. Fires prior to harvest can also result in significant economic loss.

Fire behavior and fire regimes have been altered due to the proliferation of cheatgrass throughout Ada County and the entirety of the Great Basin. The fine structure and its ability to completely dominate disturbed sites provide a dry, consistent fuel bed for fire. Where the exotic has encroached in sagebrush stands, it now provides a consistent bed of fine fuels that actively carry fire without the effects of wind. Because of these characteristics, cheatgrass will support fire under conditions which native vegetation would not sustain wildland fire.

Cheatgrass has taken over more than 50% of the Snake River Birds of Prey National Conservation Area in the southern portion of the county, with detrimental effects to native flora and wildlife. Cheatgrass can reduce the fire recurrence interval in sagebrush grasslands dramatically, from 20 to 100 years for a natural cycle, to three to five years on cheatgrass-dominated sites. Continued natural and human-caused disturbances county-wide will favor cheatgrass, shifting species composition away from native species toward this highly flammable exotic. As a consequence, the landscape throughout Ada County will become increasingly fire prone over time unless management actions are taken.

4.2.1.1 Ignition Profile

The dry climate, xeric vegetation, and prevalence of hot and windy conditions in Ada County create environmental and vegetative conditions that will sustain fire spread for many months of the year. This increases the probability that ignition sources from both natural (lightning) causes and human causes will find a receptive fuel bed. Natural ignitions are most likely to occur during summer lightning storms over the high ridges and undeveloped areas throughout the County. Lightning strikes in light fuels are frequently quickly extinguished if precipitation accompanies the storm. However, during dry lightning events, storm cells can ignite dozens of fires throughout the County.

Human ignitions can stem from numerous activities, including debris burning, fireworks,

cigarettes, and campfires, particularly around the reservoirs and recreational trails where recreation use is concentrated. Included in human ignition sources are fires sparked by vehicles, welding construction practices, hot catalytic converters, and arson. By some accounts, arson is responsible for over half of the wildland fires experienced in Ada County (Ada Co. Wildfire Response Plan). There is a strong correlation between human habitation and fire occurrence. The high population density in the area dramatically augments the human ignition potential.

Further contributing to ignition sources are the numerous high tension and residential power lines that crisscross the county. Downed lines, malfunctioning transformers or even electrocuted birds can spark fires anywhere in the county. All these potential ignition sources and the dry nature of vegetation in Ada County increase the potential for fire occurrence.

4.3 Ada 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 4.3. Ada County Communities

Community Name	Planning Description	Vegetative Community	National Register Community At Risk?[1]
Boise	City	Rangeland	Yes
Star	Community	Rangeland	Yes
Garden City	City	Rangeland	Yes
Kuna	Community	Rangeland	Yes
Mora	Community	Rangeland	No
Meridian	City	Rangeland	Yes
Eagle	City	Rangeland	Yes
Swan Falls	Community	Rangeland	No
Orchard	Remnant	Rangeland	No

[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

A critical factor in determining whether a home, ranch or outbuilding will survive a wildland fire is the type, amount and maintenance of vegetation around the house. Vegetative management practices designed to reduce the wildland fire threat to homes are commonly referred to as "Creation of Defensible Space." Educating the homeowners in techniques for protecting their homes is critical in these hot, dry environments.

Defensible space refers to the area between a house and an oncoming wildfire where the vegetation has been modified to reduce the wildfire threat and to provide an opportunity for firefighters to effectively defend the home. The vegetation surrounding a home, whether it be

native plants, ornamental shrubs, or dry grass and weeds, is potential wildfire fuel. If properly managed, landscaping features around a home can greatly reduce the probability of a range fire transitioning to a structural fire. Increasing moisture content of vegetation, decreasing the amount of flammable vegetation, reducing plant height, and altering plant arrangement are all effective techniques used in creation of defensible space. In many cases, maintaining a green, well-irrigated lawn around the home is a very effective means of reducing the risk of fire spreading to the home.

The size of the defensible space is expressed as the distance extending outward from the outside walls of the home. This distance varies by the types of vegetation growing near the home and the steepness of the terrain. Generally speaking, most wildland fuels in the vicinity of homes in Ada County are grass fuels with widely scattered shrubs. In such fuels, a defensible space of at least 100 feet is recommended. In areas of dense shrubs with steep slopes, this distance may be 200 feet or greater. Exact distances will depend on specific site attributes of individual properties.

Creating defensible space not only keeps wildland fires from spreading to the home, but prevents fires originating within the home or outbuildings from spreading to pasture, crop and rangelands. Sparks from welding and other machine work can easily ignite dry grasses and spread to wildlands.

Debris burning can also serve as an ignition source, especially during the windy conditions typical in the Ada County region. Ensure the presence of an adequate non-flammable firebreak around burn barrels or bone yards. Account for potential spread of firebrands under the influence of strong winds.

In addition to creating defensible space, there are a number of other home attributes that will influence its survivability in the event of a wildland fire. The following recommendations will further enhance home defensibility and the probability of home survival.

Roof:

- Remove dead branches overhanging the roof. Remove dead leaves and needles from the roof and gutters. Install a fire resistant roof of composite or metal materials.

Construction:

- Build away from ridge tops and canyons, and saddles along ridgelines.
- Use fire resistant building materials.
- Enclose undersides of balconies and decks with fire resistant materials.

Yard:

- Stack woodpiles at least 30 feet away from all structures and clear flammable vegetation at least 10 feet away from woodpiles.
- Locate LPG tanks at least 30 feet from any structure and surround them with 10 feet of non-combustible fire break.
- Clear around burn barrels at least 10 feet. Cover the open top with non-flammable screen no larger than ¼ inch mesh.

Emergency Water Supply:

- Maintain an emergency water supply that meets fire department standards through an emergency storage supply of at least 2,500 gallons.
- Clearly mark all emergency water sources and notify local fire department of their existence.
- Assure emergency water supplies are easily accessed by firefighters.

Access:

- Construct roads and driveways that allow for two-way traffic.
- Design road width, grade, and curves to allow access for large emergency vehicles.
- Design bridges to carry heavy emergency vehicles.
- Post clear road signs to show traffic restrictions such as dead-end roads, and weight and height restrictions.
- Make sure dead-end roads and driveways have turnaround areas wide enough for emergency vehicles,
- Create defensible space along roads and driveways in order to allow ingress and egress.
- Post house address at the beginning of the driveway or on the house if easily visible from the road.

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 Ada County. In areas with high concentrations of resource values along these corridors, roadside management techniques may be considered in order to provide a fire break in the event of a roadside ignition. In areas where cultivated cereal crops or other fire-prone agricultural crops abut roadways, disk or plow lines parallel to the roadway provide bare mineral soil fire breaks that help keep roadway ignitions from transitioning into fires that destroy crops, threaten homes, and move into the wildlands.

Alternatively, permanent fuel breaks can be established in order to reduce the potential for ignitions originating from the highway to spread into the surrounding lands. Application of a cheatgrass-specific herbicide such as Plateau followed by replanting with fire-resistant grass species such as Crested Wheatgrass provides a longer-term firebreak.

Many foothills fires have historically originated from roadside ignitions along busy travel routes. These fires have degraded habitat quality in many areas managed by the Idaho Department of Fish and Game. These fires also threaten a number of other resource values as well as firefighter and public safety. Roadside treatments along the foothills could help to reduce the occurrence of fires in the area.

In combination with these efforts, or in place of these efforts, concentrated livestock grazing within a corridor paralleling these travel routes is suggested; especially along Interstate 84. This effort will require cooperation between landowners, land managers, the Ada County Cattlemen's Association, and individual ranchers to accomplish. In practice, this recommendation will necessitate the construction of temporary or permanent fencing outside of the right-of-way adjacent to the highway, parallel to the existing fence line which parallels the interstate, approximately 500 feet to 1,000 feet away (or more). By segmenting the corridor into smaller units (½ mile to 1 mile long), intensive cattle grazing of the fine fuels in this area during the late spring and summer may reduce the probability of human created ignitions (and lightning ignited fires) from spreading rapidly to the rangeland where cities, towns, and communities (people) are located. This option will require ranchers to supplement feed, to truck water and to manage water-troughs intensively by moving them as the browse (fine fuels) is removed.

This latter option is not without potential negative impacts. Some have suggested that cattle may introduce or increase the spread of noxious weeds, have negative impacts on riparian areas, or negatively impact certain threatened or endangered species. Obviously, these concerns need to be addressed during the implementation of this type of fuels mitigation

treatment. Also, it is important to note that this type of treatment has not specifically been researched as a fire mitigation tool. That fact, however, does not negate the empirical observations of many land managers who have observed (and fought) wildfires in rangelands where livestock graze and a decrease in intensity and even the rate of fire spread is seen. We urge willing land owners and willing ranchers to cooperate in this effort to ascertain if this wildland fire mitigation treatment is a feasible treatment option or not.

4.3.1.3 Power Line and Pipeline Corridor Fire Breaks

The treatment opportunities specified for travel corridor fire breaks apply equally for power line and pipeline 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.

4.3.1.4 Prevention and Education

The safest, easiest, and most economical way to mitigate unwanted fires is to stop them before they start. Generally, prevention actions attempt to thwart 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 citizens of the dangers involving careless use of fireworks, burning when windy, and leaving campfires unattended can be quite effective.

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. When fire conditions become high, brief public service messages could warn of the hazards of misuse of fire or any other incendiary device. Such a campaign would require coordination and cooperation with local media outlets. However, the task is likely to be worth the effort, given the high costs and risks associated with fighting unwanted fires.

Local fire districts, the BLM, Forest Service, IDL, Idaho Fish and Game and other entities have been active in fire prevention outreach campaigns throughout the county. Boise City Fire, North Ada County Fire and Rescue and the BLM have been active in public outreach campaigns in the Boise foothills. As of yet, the campaigns have been moderately successful in initiating change in landscaping techniques or building design throughout the area. However, the efforts do raise public awareness of the interface issue facing residents in fire prone areas. Raising awareness is the first step in adopting a Firewise home site. The construction of the new Foothills Environmental Learning Center at Hulls Gulch will provide another excellent venue for public education regarding fire safety and home defensibility as well as foothills ecology and recreational activities.

4.3.1.5 Building Codes

The most effective, albeit contentious solution to some fire problems is the adoption and enforcement of building codes in order to assure emergency vehicle access, water availability and Firewise home construction. Ada County has active in establishing codes that require vegetation management, access requirements and water availability standards in areas within the wildland-urban interface overlay district. However, codes are ineffective unless they are

actively enforced by the responsible officials. County building inspectors should look to the fire departments in order to assure adequate minimum standards are being followed in areas of new development. Adoption of the National Fire Protection Association (NFPA) Code 1144, Standard for Protection of Life and Property from Wildfire, outline standards that are favorable for fire suppression activities in wildland areas. These standards should be adopted and enforced county-wide.

Ada county has adopted building codes for the highest fire risk area in the county, the Boise foothills. These codes have been recognized in federal GAO reports (GAO-05-380) as examples of a county taking a proactive stance to reduce the impacts of wildland fire.

4.3.1.5.1 Current Ada County Wildfire related Building Codes

Title: Ada County, ID - Zoning Overlay District

Type: Regulatory

Jurisdiction: County

State: Idaho

Program Description: Ada County, Idaho has adopted into its Zoning and Building Codes wildfire prevention provisions. Ada County has mapped its High Hazard Area and delineated it as a Wildland-Urban Fire Interface Overlay District with specific requirements for building construction and defensible space. The building requirements, are listed in section 419.3 – 419.12.3 of the Uniform Building Code of 1997 adopted by Ada County.

Vegetation Management Requirements

The Zoning Code regulations apply to the area within the Overlay District. Any new construction, alteration, moving, or change of use of a habitable structure is required to establish and maintain a minimum 50-foot defensible space around its perimeter. Within this defensible space buffer zone there can be only single specimens of trees or ornamental vegetation, and cultivated ground cover or grasses up to a maximum height of four inches. All deadwood must be removed from trees, and clusters of trees must be thinned so that the crowns do not overlap. Trees must be pruned up to six feet. Areas adjacent to private roads and driveways must be cleared of vegetation. Areas within five feet on either side of driveways must be cleared, and the entire width of the easement of private roads must be cleared. Other regulations in the code address the location of liquefied petroleum gas, firewood, and other combustible materials near structures, road access to subdivisions, length of cul-de-sacs and water supply needs for fire flow.

4.3.1.6 Readiness - Fire Suppression in Ada County

Rapid and aggressive initial attack is the key to keeping economic loss to a minimum. BLM, IDL, US Forest Service and all fire districts throughout Ada County maintain mutual aid agreements with one another. Fire departments, state police, Idaho Transportation Department, Idaho EMS Communications Center as well as a number of other local, state and federal agencies all operate under the Ada County Wildfire Response Plan, facilitating operations during mutual aid events. Departments work closely and train together on an annual basis. Through this training many operational details have been ironed out, increasing safety and effectiveness on mutual aid responses. The scattering of rural resources throughout the county allows for rapid initial attack of most wildland fires regardless of land ownership or fire protection jurisdiction. Quick response by rural forces allows for initial size-up and engagement while BLM forces respond

from districts or staging areas. Many BLM fires are initially attacked by local fire districts. If fires grow beyond the capabilities of the rural initial attack ground forces, BLM aerial resources including helicopters and retardant tankers are utilized in containment efforts. The close working relationship between the BLM and the local fire departments is mutually beneficial and essential for reducing wildfire losses.

Recognizing the beneficial relationship between the federal land management and the local fire departments, the BLM has been very pro-active in assisting local fire departments in purchasing of equipment and training material through the Rural Fire Assistance program. The BLM administers funding appropriated through The Department of the Interior to enhance the fire protection capabilities of local and volunteer fire departments. This occurs through training, equipment purchases, and fire prevention work on a cost-shared basis. The DOI assistance program targets local and volunteer fire departments that routinely help fight fire on or near BLM lands. Grants range from a thousand dollars to a maximum of $20,000 on a 10% cost share payable through in kind services. Fire departments that have entered into mutual aid agreements with the BLM are eligible for the program. Nearly all departments within the BLM Boise District have mutual aid agreements with the BLM, making them eligible for Rural Assistance funding.

4.4 Communities in Ada County

4.4.1 Individual Community Assessments

The objective of the community assessments is to determine the extent to which wildland fire threatens the safety of people, homes, infrastructure, and other important resources throughout Ada County. Assessing fire risk can be a challenging, as there are numerous individual factors that individually or cumulatively define the overall risk to a community or area. Fuel characteristics, ignition sources, topography, proximity of fire protection resources, emergency vehicle access and egress, home construction, presence or absence of defensible space, and water availability are just some of the factors that determine risk.

The community assessments summarize the factors that have been identified as contributing to risk in a given area. Assessments are based on field observation as well as on discussion with local fire department representatives. By necessity, generalizations need to be made in efforts to assess risk. Each and every home site is unique, as are the characteristics of the home that contribute to its vulnerability to wildland fire. Thus the assessments attempt to capture the “average” condition, while noting attributes that significantly increase wildland fire risk in specific areas.

The assessments are followed by specific recommendations to address high hazard areas. The recommendations outlined in the Community Assessments generally focus on home site or community defensible space. Recommendations targeted at addressing county level policy or increasing fire resource capabilities will be addressed in Chapter 5- Mitigation Recommendations.

Elimination of all risk is not possible, nor is it desirable. Attempts at eliminating all risk would compromise the quality of life that Ada County residents enjoy. Open space, native vegetation, recreation, and biological diversity would be adversely impacted if complete elimination of fire risk were to be the ultimate objective. The mitigation recommendations attempt to reduce risk to people, firefighters, homes and economically important assets at an acceptable level while not compromising the qualities that help define Ada County.

4.4.2 Overall Community Assessments

Homes and structures within and surrounding these communities are at varying degrees of risk. The vast majority of homes and structures are located in urbanized areas where the wildland fire threat is negligible. Homes on the periphery in the wildland-urban interface are at varying degrees of risk. In most cases, the factor determining risk is whether adequate defensible space surrounds the home. Defensible space is the single most important factor in determining whether a home survives a wildland fire event. Where defensible space is absent, the risk to homes escalates dramatically. Home Construction practices further increase this risk. Exposed wood, cedar-shake roofing material and other combustible home attributes dramatically increase ignition probability.

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 typical 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 an approaching grass and range fire.

4.4.3 Individual Community Assessments

4.4.3.1 Boise Foothills

The Boise Foothills describe the transitional lands between the arid sagebrush steppe community along the valley floor and the coniferous peaks of the Boise Ridge. Native vegetation is dominated by xeric bunch grasses and sagebrush, broken by narrow stingers of riparian vegetation confined in drainages. Originally used as a target area by the military in the early 1800's, the foothills are now highly valued for a number of open space values, including habitat for rare and endangered plants, habitat and wintering ground for a variety of wildlife, and a critical link to the Rivers to Ridges trail system. The numerous trails that traverse the foothills area provide recreational opportunities for Boise residents, adding to the high quality of life citizens enjoy.

The foothills area is fragmented among various ownerships. Private, federal (including the BLM and Forest Service), and state ownership are interspersed throughout the area. Forty-one thousand acres of the 75,000 acres of land within the Boise Front are within private ownership. Over thirty-three thousand acres of the Boise Front is managed by the Idaho Department of Fish and Game as the Boise River Wildlife Management Area.

Boise's swelling population has increased development pressure along the Front. Boise City and Ada County have experienced unprecedented population growth, with an increase of over 30 percent in the last 15 years. In December, 2000, Boise was experiencing the fourth-fastest growth rate in the nation, adjusted per capita. The rapid growth has fueled a building boom that has pushed residential development further into the canyons and onto the steep slopes along the foothills.

Property in the foothills is highly valued because of its close proximity to both the city center and open space, as well as for the outstanding views foothills residents enjoy. The juxtaposition of open space and residential development elevate the wildfire risk to the area. The potential for home loss due to rapidly spreading fires increases as more and more homes are constructed on steep slopes among dry grass and rangeland fuels.

The wildland fuels throughout the majority of the foothills region is typical of that found throughout Ada County, ranging from light grass fuels to heavy brush concentrations. Fires in all fuel types common in the foothills can spread rapidly, especially when driven by the wind or

when burning in areas with steep slopes. Suppression efforts in the foothills area are complicated by lack of access to the wildland areas as well as to homes and subdivisions. Road access is generally quite limited in the area. Aerial resources such as helicopters and tanker planes are frequently the only means by which to catch a wildland fire.

The greatest fire risk in the Boise Foothills comes from the abundance of potential ignition sources along the periphery of the public lands that provide the backdrop to the city. The xeric nature of the surrounding vegetation and abundance of hot, dry and windy weather greatly increase the probability of an ignition source finding a receptive fuel bed, resulting in fast moving, rangeland fires. The recent fire of July 12, 2004, demonstrates the myriad ignition sources in the foothills area. The 80 acre fire was ignited by a workman grinding a steel gate in dry fuels during hot weather. Rapid initial attack by the Boise City Fire Department and the BLM was successful in containing the fire spread, despite poor access.

The Eighth Street Fire of 1996 demonstrated that human-caused fires originating in publicly managed open space have the potential to rapidly spread throughout the foothills. The Eighth Street Fire began August 26, 1996, in Military Reserve Park north of Boise. The fire quickly spread to several thousand acres pushed by strong southerly winds and record-breaking heat. The fire raced through brush and grassland on steep slopes, eventually burning into timberlands along the Boise Ridge. It was contained on August 30 and controlled on September 2. By then, 15,300 acres adjacent to the city of Boise had been burned.

The Boise Foothills Community Assessment includes all residential development to the north and west of the State Highway 55 and Hill Road junction, along the northern perimeter of the city, staying north of Warm Springs Road, to the junction of State Highway 21. Development patterns vary throughout the foothills area. Most typical are subdivisions and high-density housing developments. Generally speaking, the majority of homes in these settings are at little risk to loss from wildfire, due in large part to residential landscaping and road construction, isolating existing native fuels in small islands. However, where homes on the periphery of these developments abut expanses of dry grass and rangeland fuels, the risk of loss to wildland fire is significantly greater. Areas of unplanned residential development tend to be at a higher risk to loss because of the lack of protection afforded by neighboring green lawns and lower road densities. In some areas, single-family homes are located on steep slopes with continuous native fuels below. Without adequate defensible space, such homes are at significant risk from wildfire.

4.4.3.1.1 North Pierce Park Road

The homes that have been built on the steep hills and ridges of North Pierce Park Road are among the highest risk homes along the Boise Foothills. Multiple homes have been built high on hills, with continuous dry native vegetation below. An ignition at the base of these slopes during the fire season would result in upslope fire runs that would pose a significant threat to these structures.

Most homes have been built with flame-resistant roofing material with some fire-wise landscaping, however exposed wood is common, either as a siding or used in the construction of decks. No hydrant system or dependable water source is readily available in the area.

Access to these homes is poor, with long, single-lane dead-end drives. Turn outs and turn arounds sufficient for large emergency vehicles are absent in most areas. Because of access issues, it is unlikely that some of the homes in this area would be defendable in the event of a wildland fire. Egress from Pierce Park Road is possible via the Cartwright Canyon Road. However, because of the access issues associated with the homes and the abundance of dry,

native vegetation and steep slopes throughout the area, suppression resources would likely need to disengage from structure protection activities well in advance of a fire.

Urban interface issues in this area will continue to escalate as new subdivisions are planned and developed. Without enforcement of building codes designed to address emergency access and water supply the interface issue will mushroom in the future as development reaches further into the foothills.

4.4.3.1.2 Quail Run

The Quail Run Subdivision is accessed via the Collister Road, off Hill Road. Subdividing has occurred over a number of years, with recent development extending further upslope. Many homes have been built on the crest of high ridges, leaving some patches of grass and brush downslope. This exposes some homes along the periphery of development to the potential for uphill fire runs, particularly those with porches extending over the steep slopes.

Human use associated with the housing development along North Bitterbrush Drive, below Quail Run increase the potential for human-caused ignitions in the dry fuels, creating up-hill runs toward the subdivision. Similarly, Quail Heights and Quail Terrace could be at risk from upslope fire runs from ignitions originating from the North Ginzel Street area.

A number of homes in the subdivision have been constructed with cedar shake roofs. Wafting of firebrands onto combustible roofs account for the majority of homes burned during wildfires. Not only does this present a risk to the individual structure, but also to other structures. Firebrands generated from the burning roof can be lofted blocks away, and land in other receptive fuel beds, such as other combustible roofs. Thus, not only are homes immediately adjacent to wildland fuels at risk, but so are other cedar shake homes within the subdivision.

All new homes and recent construction have been utilizing fire-resistant composite roofing material. The majority of these also have adequate defensible space surrounding the home. These homes and the homes with fire-resistant roofing material in the interior of the subdivision are at very little risk, due to green lawns, roads and driveways.

All the homes in the subdivision are accessed via wide, paved roads with cul-de-sacs of adequate turning radius to accommodate emergency vehicles. However, the entire subdivision is accessed at a single point of entrance from Collister Drive. The lack of alternate access and egress routes is of primary concern during a wildland event. Furthermore, the road grade is quite steep, slowing movement of emergency vehicles.

4.4.3.1.3 North Ginzel Street

The homes at the head end of North Ginzel Street are at a high risk to wildland fire. The homes are accessed via a steep, winding, dead-end road without adequate turn-outs or turn arounds. The steepness of the roads would pose a challenge to water-laden emergency vehicles. The lack of alternate escape routes would also preclude suppression efforts in the event of a range fire. The homes are constructed of fire-resistant materials, and fuels tend to be relatively light in the area, somewhat mitigating the risk. Nonetheless, the poor access renders these homes indefensible from fire under most conditions.

As mentioned, fires in this area pose a threat to homes in the Quail Run Subdivision upslope. Steep slopes covered in grass and brush lead from Ginzel Drive upslope to the homes above. Because of the access issues associated with Ginzel Drive, fires starting in this area would have a high probability of escaping initial attack and spreading toward the homes upslope.

4.4.3.1.4 Hillway Drive-North Mountain Road

The Hillway Drive-North Mountain Road area is to the north of Hill Drive. There are a few homes on the periphery of Hillway Drive and North Mountain Road that are abutting grass and rangeland fuels. Often times these fuels are located on relatively steep slopes. As in most areas around the foothills, only the homes on the periphery of the developments are at any risk to loss. Generally, homes are made of fire resistant materials, although some homes in the interior of developments are constructed with shake roofs. Road access is adequate for emergency vehicles, and hydrants are present throughout the area.

4.4.3.1.5 Cartwright Canyon

Cartwright Canyon Subdivision is a new subdivision off Cartwright Canyon Road. The development is within a quarter of a mile of Boise City Station #2. The vast majority of home within the subdivision are at negligible risk to fire, due to choice of construction materials, good access, and proximity of the city fire department. However, there are a few homes above the subdivision with porches extending over steep slopes covered in dry fuels. Although the slopes are relatively short, an ignition during the dry portion of the year would quickly spread to the upslope homes. The large porches overhanging the slopes would likely become involved quite rapidly, possibly resulting in property loss.

4.4.3.1.6 Shaw Mountain-North Ridge

The Shaw Mountain area includes the homes accessed by the Shaw Mountain and Table Rock Roads. The north potion of this area borders Old Fort Boise Military Reserve Natural Park and Cottonwood Creek. These natural areas abound with native vegetation and are a haven for a variety of wildlife species. However, this vegetation would also serve as fuel in the event of fire. The concentrated use of this recreation area increases the potential for human ignitions.

The North Ridge Subdivision off Table Rock Road contains a number of large homes that overlook Cottonwood Creek. Many of these homes have large porches that extend out over the heavy shrub fuels, with little or no break between wildland fuels and the home. An ignition in the heavy brush fuels below would spread rapidly upslope toward the porches. Once involved, the porches would likely transition to the home. Many of these homes also have large picture windows facing the downhill slopes where radiant heating could cause the glass to break, providing an entrance route for firebrands into the home.

An additional risk factor involves the large numbers of homes that have been constructed with flammable cedar shake roofs. This further increases the threat of home ignitions, especially when considering the potential for firebrand generation from the heavy brush fuels below. Wafting of firebrands onto combustible roofs account for the majority of homes burned during wildfires. Not only does this present a risk to the individual structure, but also to other structures. Firebrands generated from the burning roof can be lofted blocks away, and land in other receptive fuel beds, such as other combustible roofs. Thus not only are homes immediately adjacent to wildland fuels at risk, but so are other cedar shake homes within the subdivision.

4.4.3.1.7 Warm Springs Mesa

Warm Springs Mesa is a relatively large subdivision to the north of Warm Springs Avenue. The development is accessed via Starcrest Drive or Starview Drive. The access roads are quite steep for emergency vehicle access. The two points of access do not provide adequate access or egress for the hundreds of homes in the area. Dry grasslands surround the majority of the

subdivision. However, most homes have green grass adequate defensible space around the perimeter, reducing the risk of loss. There are a few homes on the periphery of the subdivision that are lacking adequate defensible space.

4.4.3.1.8 Harris Ranch

The Harris Ranch subdivision is located along East Warm Springs Avenue in the southeast corner of Boise. Many homes along the periphery of development abut high risk rangeland fuels typical of the Boise Foothills. The Maynard Canal and Penitentiary Canal flow along the south and west sides of the subdivision. Riparian fuels along these waterways contribute to the continuous fuel bed surrounding Harris Ranch. As in most areas around the foothills, only the homes on the periphery of the developments are at any risk to loss due to watered lawns, streets, and other fuel breaks within the development. Road access is adequate for emergency vehicles, and hydrants are present throughout the area.

4.4.3.1.9 Hidden Springs and Dry Creek Area

The community of Hidden Springs is a new planned community to the north of Boise. There are multiple access points to Hidden Springs, including Dry Creek of Highway 55, Seaman's Gulch Road, Pierce Park Road, and Cartwright Canyon Road. The community is set in the bottom of Dry Creek, surrounded by the Boise foothills. Home construction has been limited to the gentler, flatter ground in the valley bottom. All homes are accessible by wide roads of adequate size to accommodate emergency vehicles.

Dry rangeland fuels surround the community. However, there are distinct breaks between the urban environment and the wildlands, with adequate defensible space surrounding all the homes. All homes have also been constructed and landscaped using fire-safe methods. A North Ada County Fire and Rescue Station has been established in the community in order to provide emergency services to the community. The community at large is at very little risk to wildland fire.

Future development in the area will increase the exposure of homes and people to wildland fire risk. District fire personnel have concerns regarding water availability in subdivisions planned in the area. Expansion of the hydrant infrastructure is not planned for some areas of development. The inability to tap into a static water supply will reduce fire fighting effectiveness in these new areas of development.

4.4.3.1.10 Mitigation Activities

There are numerous individual homes that are at significant risk to wildland fire loss throughout the foothills area. Many of the factors that contribute to risk are throughout the overall area. These factors generally have to due with the use of **highly ignitable materials in home construction, or lack of defensible space** surrounding the home. Overhanging wooden porches, cedar shake roofing material and exposed wood construction are very common. Frequently, these highly ignitable home attributes are in very close proximity to native or landscaped shrubs and grasses that are very receptive to fire. Large plate-glass windows that would be exposed to significant radiant heat are common as well, increasing home ignition potential. Considering the high spread rates and long flame lengths typical 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 brush fire.

Also contributing to risk in the greater foothills area is the lack of **adequate infrastructure** for fire suppression. Inadequate **road access** for large emergency vehicles significantly elevates

risk in many areas. Many developed areas are accessible from a single point, with **no alternate ingress or egress route**. This could lead to considerable traffic congestion during critical times, impeding both access to and evacuation from these areas. More recently, the city and county have been cooperating with fire departments in order to assure road access is adequate. However, if roads are built prior to fire department inspection, there is generally little enforcement by the county.

Water availability is becoming an issue in many developing areas within the county. The county has not been requiring installation of hydrant systems in new developments. This will continue to compromise fire suppression capabilities as development continues.

There are a number of mitigation recommendations that are applicable to all at-risk homes in the Foothills area:

- Public education will continue to be a cornerstone of mitigation programs throughout the district and county. Individual home site evaluations can increase homeowners' awareness and provide the impetus to take measures to improve the survivability of structures in the event of a fire. "Living with Fire, A Guide for the Homeowner" or other literature distributed through the national Firewise program is an excellent tool for educating homeowners as to the steps to take in order to create an effective defensible space.
- Individual home site evaluations can increase homeowners' awareness and provide the impetus to improve the survivability of structures in the event of a wildfire. Maintaining a lean, clean, green zone within 100 feet of structures is the most effective means of protection against a wildland fire in these fuel types. In cases where cedar shakes have been used in home construction, there are no easy solutions to reducing the vulnerability to fire. In these cases, risk mitigation may require re-roofing with fire resistant roofing materials.
- Where individual or groups of homes are accessed via a single access point, alternate ingress/egress routes should be considered. Furthermore, where existing roads and streets are inadequate for large emergency vehicles, road reconstruction projects that provide for adequate turn-outs and turn-arounds would also help to reduce risk to life and property.
- Increase static water availability through expansion of the existing hydrant system or installation of dry hydrants and draft sites where possible.
- Establishment of green sections around the entire perimeter of developed areas is an excellent means of reducing risk. When constructed in a pedestrian-friendly manner and landscaped in an aesthetically pleasing manner, greenbelts can also increase the desirability of properties by providing recreational opportunities for casual walkers and bike riders while increasing the safety of the entire community.
- At the County level, officials should consider strict regulations on fire use, use of fireworks, and a summer-time ban on all incendiary devices within publicly owned open space. Reducing the number of potential ignition sources will decrease the probability of wildland fire.

4.4.3.2 Eagle

The community of Eagle is located west of Boise along State Highway 44 near Eagle Island State Park. This area is part of the Boise urban complex. Current residential development in the foothills north of the community abuts the wildland-urban interface. There are also still a few

agricultural lots remaining on the north side of the community; however, urban development is continuing in this direction. There is very little risk of wildfire threatening the urban community of Eagle; however, homes located near the WUI are at much higher risk. Additionally, recreational activities on property maintained by the Bureau of Land Management north of the community increases the risk of ignition. Fire mitigation is unnecessary within the vicinity of the urban Eagle area. However, mitigation activities are necessary in areas to the north of Eagle, along the foothills. The recommendations made above for the Boise Foothills are applicable throughout the periphery of Eagle as well.

4.4.3.3 Garden City

Garden City is located on the western end of the Boise metropolitan area. The city center is just north of the Boise River and U.S. Route 20 and 26 and north of the community of Ustick. All of the land in the surrounding area has become part of the Boise urban complex. There are very few, if any, small patches of undeveloped property that may contain remnants of native vegetation (occluded WUI condition). This area is completely urbanized; thus, residents are not at risk of experiencing an uncontrolled wildland fire and mitigation is unnecessary.

4.4.3.4 Kuna-Mora

Kuna is located approximately 9 miles south of Meridian. The primary access into Kuna is on State Highway 69 from Interstate 84. Mora can easily be accessed by taking the Kuna-Mora Road from Kuna, which is also a paved two lane highway. There are several other paved roads, such as Eagle Road and Bennett Road that access these communities from several directions. Almost all of the roads leading into this area are bordered by either homes or agricultural and pastureland making them suitable escape routes.

The small community of Mora is approximately 3 miles southeast of Kuna. Much of this area has been converted to small cereal grains and pastureland. During the growing season these crops remain green and will not support fire spread. However, once cured these crops contribute to the fuel continuity across the landscape. Wide expanses of rangeland extend for many miles south and east of Kuna, with little break in fuel continuity. These large expanses of rangeland fuels present a considerable threat to homes and ranches on the periphery of these communities. Wind driven fires originating in BLM rangelands can easily spread through cured agricultural fields once cured, threatening homes, safety and economic loss to the agricultural community.

The Kuna area experiences a considerable number of wildland fires each year. Fire starts are frequently human caused, although natural ignitions are common as well. A number of large fires have threatened Kuna and the surrounding area, including the Point Fire of 1995. The combination of frequent fire starts and large expanses of rangeland fuel pose a significant wildland fire threat to the Kuna-Mora area.

Water availability is an issue that complicates fire suppression in the Kuna area. Without ready access to a steady supply of water, suppression effectiveness is reduced. Enhancement of water resources is an important step in improving fire suppression in the area.

Mitigation Activities:

There are a number of mitigation activities that can help reduce the wildland fire threat in the Kuna-Mora area. Mitigation activities in addition to these can be found in Chapter 5- Treatment Recommendations.

- Public education will continue to be a cornerstone of mitigation programs throughout the district and county. Individual home site evaluations can increase homeowners' awareness and provide the impetus to take measures to improve the survivability of structures in the event of a fire. "Living with Fire, A Guide for the Homeowner" or other literature distributed through the national Firewise program is an excellent tool for educating homeowners as to the steps to take in order to create an effective defensible space.
- Individual home site evaluations can increase homeowners' awareness and provide the impetus to improve the survivability of structures in the event of a wildfire. Maintaining a lean, clean, green zone within 100 feet of structures is the most effective means of protection against a wildland fire in these fuel types.
- Vegetation treatment along access roads throughout the area. Currently, dry, cured vegetation and large sage brush is immediately adjacent to the roads within the area. Reducing vegetation through removing brush adjacent to the roadway and mowing of grass and weeds along the road right of way can help reduce the potential for roadway ignitions.
- Augment all season, emergency water supplies through installation of dry hydrants and other means throughout the district. These water sources should be identified and conveyed to all suppression resources in the area.

4.4.3.5 Meridian

The community of Meridian is located between U.S. Route 20 and Interstate 84 just east of State Highway 55. This area is part of the Boise urban complex. There are still a few agricultural lots remaining on the south side of the community; however, urban development is continuing in this direction. There is very little, if any, undeveloped property in the surrounding area that may contain remnants of native vegetation. Due to the lack of wildland fuels, Meridian has very little possibility of residents becoming threatened by wildfire. This area is not part of the wildland-urban interface and fire mitigation activities are unnecessary.

4.4.3.6 Orchard

Orchard is located approximately 5 miles south west of Interstate 84 where it crosses the border between Ada and Elmore County. The Union Pacific Railroad travels directly through what used to be the community center. There are presently only a few homes still remaining in the remnant community of Orchard. A few landowners have cultivated portions of their property and most keep livestock near their homes; nevertheless, the greater part of the area is primarily covered with grasses including non-natives such as cheatgrass and intermittent patches of sagebrush. This area represents fuel models 1 & 2, which tend to support fast-moving, surface fires. Although the Indian Creek Reservoir is located relatively close to the community, it is often dry during the summer months.

The primary access into Orchard is by taking the Orchard Road exit off Interstate 84. This is a paved two lane road that turns to gravel at the railroad tracks and continues southwest to the Ada County National Guard Maneuver Area. A secondary road also travels south along the railroad back to the interstate.

The risk of wildfire threatening Orchard is considerable due to the consistent expanses of grass and range around the community. The possibility of a grass fire occurring due to an ignition as a result of exercises conducted at the nearby Ada County National Guard Maneuver Area is

considerable. The use of the railroad near town and the presence of high tension power lines in the area could also potentially serve as ignition sources. Lack of structural fire protection services and reduced water resources also increase the fire risk to residents.

Mitigation Activities

Because of the elevated risk of wildland fire due to the lack of local fire protection, residents of Orchard should take extra precautions in safeguarding themselves from wildland fire.

- Public education will continue to be a cornerstone of mitigation programs throughout the district and county. Individual home site evaluations can increase homeowners' awareness and provide the impetus to take measures to improve the survivability of structures in the event of a fire. "Living with Fire, A Guide for the Homeowner" or other literature distributed through the national Firewise program is an excellent tool for educating homeowners as to the steps to take in order to create an effective defensible space.
- Individual home site evaluations can increase homeowners' awareness and provide the impetus to improve the survivability of structures in the event of a wildfire. Maintaining a lean, clean, green zone within 100 feet of structures is the most effective means of protection against a wildland fire in these fuel types.
- Augment all season, emergency water supplies through installation of dry hydrants and other means throughout the district. These water sources should be identified and conveyed to all suppression resources in the area.

4.4.3.7 Pleasant Valley-Owyhee

Pleasant Valley is a cluster of homes and farms south of Boise near Black Creek Reservoir. Owyhee is a remnant community along the Union Pacific Railroad near Pleasant Valley. Presently there are no structures remaining in the Owyhee area. Most of the region surrounding these communities has been utilized for agricultural fields and pastureland, but a few small patches of native sagebrush and grasses still exist. Ten Mile Creek and North Indian Creek provide seasonal water resources for irrigation. Pleasant Valley and the Owyhee area are mainly fuel model 1 with patches of fuel model 2, both of which generally support fast moving surface fires.

The primary access into the Pleasant Valley-Owyhee area is by either the Pleasant Valley Road or the Kuna-Mora Road from Interstate 84. Both of these routes are paved two-lane roads. These roads (and several others traveling into the area) are primarily bordered by agricultural fields or pasture, which significantly reduces their risk of being threatened by uncontrolled wildfire.

The risk of wildfire threatening Pleasant Valley and Owyhee is considerable due to the large expanses of rangeland fuels surrounding these communities. Wind-driven fires originating far away from Pleasant Valley could threaten the community. Furthermore, there is no structural fire protection for residents in the area and water availability is limited in the area.

Mitigation Activities

Because of the elevated risk of wildland fire due to the lack of local fire protection, residents of Pleasant Valley and Owyhee should take extra precautions in safeguarding themselves from wildland fire.

- Public education will continue to be a cornerstone of mitigation programs throughout the district and county. Individual home site evaluations can increase homeowners'

awareness and provide the impetus to take measures to improve the survivability of structures in the event of a fire. “Living with Fire, A Guide for the Homeowner” or other literature distributed through the national Firewise program is an excellent tool for educating homeowners as to the steps to take in order to create an effective defensible space.

- Individual home site evaluations can increase homeowners’ awareness and provide the impetus to improve the survivability of structures in the event of a wildfire. Maintaining a lean, clean, green zone within 100 feet of structures is the most effective means of protection against a wildland fire in these fuel types.
- Augment all season, emergency water supplies through installation of dry hydrants and other means throughout the district. These water sources should be identified and conveyed to all suppression resources in the area.

4.4.3.8 Star- North Star-Eagle Foothills

The community of Star is located west of Eagle along State Highway 44 near the Ada and Canyon county border. This area is rapidly becoming a part of the Boise urban complex. Star is a fairly small community almost completely surrounded by agricultural development and pastureland. The Boise River and several seasonal canals provide water resources for irrigation. Current residential development in the foothills north of the community abuts the wildland-urban interface. There is very little risk of wildfire threatening the urban community of Star; however, homes located near the WUI are at much higher risk.

The North Star-Eagle Foothills describes the area north of West Beacon Light Road to the Ada and Gem county line and west of State Highway 55 to the Ada and Canyon county line. There is currently a large amount of residential development occurring in this wildland-urban interface. Homes in these subdivisions are generally on very large lots. Horse paddocks and small riding arenas are popular in the area. Many of the homes on the perimeter of these clusters are directly abutting or, in some cases, intermixing with wildland fuels. Low growing sagebrush and various arid climate grass species are native in this environment. Cheatgrass is beginning to out-compete native grasses in some areas around developments due to the soil disturbance. These fuels constitute a fuel model 2, which tends to support fast-moving wildfires, especially when pushed by the wind. The topography of the area is characterized by gently rolling hills that are generally south-facing. Several shallow draws, some of which contain intermittent streams including Big Gulch Creek and Little Gulch Creek run through the area. The Bureau of Land Management maintains some acreage in the lower foothills abutting a few of the newer subdivisions on their northern border. There is also a section of land owned by the state of Idaho near recent developments on the east side of Willow Creek Road.

The primary fire risks to subdivisions in this area are those homes built on the perimeter of the communities directly abutting wildland fuels. Many of these homes are located on the upper slopes with sagebrush and cured grasses mingling between structures. It is possible that a wildfire could spread to these interface communities from fuels to the north; however, it is more probable that a fire would be started within a community and rapidly spread through the dry fuels to homes upslope. Recreational activities on the BLM or state land near subdivisions increase potential ignition sources. Due to unfinished construction, many current residences are located on dead end or cul-de-sac roads. Even though fuels along roadways are generally minimal, one-way in, one-way out access roads are not only dangerous for firefighters, they also increase the likelihood of residents becoming trapped.

The primary access into the area is from West Beacon Road, a paved two-lane route that extends from State Highway 55 to State Highway 16. There are several additional roads accessing the foothills that could serve as potential escape routes. Most of these roads are located in areas with little risk due to the agricultural or pasture land use and urban development.

Road names and house numbers are generally present throughout the area, yet many of the bridges crossing the numerous canals and small streams lack adequate signing and weight ratings. Most residences of the newer developments access water and power through personal wells or city water hook ups and buried power lines; however, a few of the older homes or more distant sites have above ground power. These subdivisions and surrounding areas are protected by the Eagle Fire and the Star Fire Districts.

Assessments for individual developments in the North Star- Eagle Foothills area have been completed to highlight specific attributes that elevate fire risk.

4.4.3.8.1 Triple Ridge Estates and Buckhorn Estates

Both Triple Ridge and the Buckhorn Estates are located on the north side of W. Beacon Light Road. Homes in the Buckhorn Estates are bordered by North Croft Way, Ballentine Road, and Homer Road. There are a few patches of wildland fuels north of this subdivision along Homer Road. The roads accessing Triple Ridge Estates and the interior of Buckhorn Estates are generally cul-de-sacs. Homes in these subdivisions are generally on very large lots with either green, well-manicured lawns or small pastures surrounding structures. There are a few homes on the northern perimeter of the Triple Ridge subdivision that abut wildland fuels.

4.4.3.8.2 Stillwell Estates

The Stillwell Estates is a fairly large, recently developed subdivision located on Willow Creek Road. Many homes in this area border Bureau of Land Management or state of Idaho property, which is predominantly vegetated with sagebrush and cured grasses. Willow Creek Road is the main access route into the area; however, Stillwell Road, Quarter Road, and a few others also provide access. Some of these roads are bordered by native grasses, but most loop back to the main access route making them adequate escape routes. Homes in this area are generally situated on very large lots with either green, landscaped lawns or pasture surrounding structures. Recreational activities on adjacent public lands increase potential sources of ignition. Additionally, wildland fuels still remaining on undeveloped lots within the subdivision put some of these homes at moderate risk of fire.

4.4.3.8.3 Montebello Ridge Estates and Talon Ridge Estates

Montebello Ridge Estates and Talon Ridge Estates are located adjacent to each other north of Homer Road. Montebello Ridge is accessed by Curlew Place Road and Talon Ridge is on Skyline Drive, both of which are dead end roads. These are recently developed, and so far fairly small, subdivisions. There are patches of wildland fuels on vacant lots within the community, and due to the close proximity of Bureau of Land Management property, many residences abut sagebrush and native grass fuels. However, homes in these areas are generally located on big lots with large green lawns surrounding structures. Since both Montebello Ridge and Talon Ridge are accessed by one-way in, one-way out roads, surface fuels along these routes increase the potential fire hazard.

4.4.3.8.4 Chaporral Road

Chaporral Road extends to the east and west of State Highway 16 for approximately 2 miles in both directions before crossing county borders. There are several residences along this route, many of which board livestock on smaller ranchettes. Wildland fuels, including sagebrush and various grass species, commonly abut developed property on the gently rolling hills to the north. Cured grasses and agricultural fields are more common on the south side of the road. Willow Creek flows parallel to Chaporral Road. Several short spur roads accessing homes lack signage and weight rating information on bridges crossing this seasonal water source. In addition, most of these roads cul-de-sac at homes or private drives. Recreational activity on Bureau of Land Management property south of the road increases potential ignition sources. Furthermore, heavy traffic at Firebird Raceway, which is on the west side of Highway 16 just south of Chaporral Road, could also contribute to potential ignition sources and increase the fire hazard to these homes.

4.4.3.8.5 Hillsdale Estates and Chukar Point

The Hillsdale Estates are a newer subdivision covering a large area from Highway 16 to the Ada and Gem county boundary. Chukar Point Estates are located on the southwest border (near the county line) adjacent to Hillsdale Estates. Deep Canyon Road is the primary access route; however, several other roads such as Lanktree Gulch Road and Can-Ada Road, lead into the area. Homes in this subdivision are generally very well kept with large green lawns. A green strip of lawn approximately 20 feet wide is also maintained along portions of the main access routes. There are a few agricultural fields to the south, but most of the area surrounding these subdivisions is covered with sagebrush and cured grasses. There is currently construction occurring on the northern perimeter, which will further extend the development into the wildland-urban interface. The Bureau of Land Management maintains property nearby; thus, recreational activities on these lands could increase potential ignition sources.

4.4.3.8.6 Mitigation Activities

Many of the homes in the Star-North Star-Eagle Foothills are at low risk to wildland fire due to the urban and suburban character of surrounding lands. Green lawns, grazed pastures, city streets and canals isolate dry fuels in small patches. However, as in the Boise Foothills, there are many homes at significant risk to wildland fire loss throughout on the periphery of the communities along the foothills. Factors contributing to overall risk generally have to due with the use of **highly ignitable materials in home construction, or lack of defensible space** surrounding the home. Overhanging wooden porches, cedar shake roofing material and exposed wood construction are very common. Frequently, these highly ignitable home attributes are in very close proximity to native or landscaped shrubs and grasses that are very receptive to fire.

Also contributing to risk in the greater foothills area is the lack of **adequate infrastructure** for fire suppression. Inadequate **road access** for large emergency vehicles significantly elevates risk in many areas. Many developed areas are accessible from a single point, with **no alternate ingress or egress route**. This could lead to considerable traffic congestion during critical times, impeding both access to and evacuation from these areas. More recently, the city and county have been cooperating with fire departments in order to assure road access is adequate. However, if roads are built prior to fire department inspection, there is generally little enforcement by the county.

Water availability is an issue in many areas along the foothills. The county has not been requiring installation of hydrant systems in new developments. This will continue to compromise fire suppression capabilities as development continues.

There are a number of mitigation recommendations that are applicable to all at-risk homes in the Star-North Star-Eagle Foothills area:

- Public education will continue to be a cornerstone of mitigation programs throughout the district and county. Individual home site evaluations can increase homeowners' awareness and provide the impetus to take measures to improve the survivability of structures in the event of a fire. "Living with Fire, A Guide for the Homeowner" or other literature distributed through the national Firewise program is an excellent tool for educating homeowners as to the steps to take in order to create an effective defensible space.
- Individual home site evaluations can increase homeowners' awareness and provide the impetus to improve the survivability of structures in the event of a wildfire. Maintaining a lean, clean, green zone within 100 feet of structures is the most effective means of protection against a wildland fire in these fuel types. In cases where cedar shakes have been used in home construction, there are no easy solutions to reducing the vulnerability to fire. In these cases, risk mitigation may require re-roofing with fire resistant roofing materials.
- Where individual or groups of homes are accessed via a single access point, alternate ingress/egress routes should be considered. Furthermore, where existing roads and streets are inadequate for large emergency vehicles, road reconstruction projects that provide for adequate turn-outs and turn-arounds would also help to reduce risk to life and property.
- Increase static water availability through expansion of the existing hydrant system or installation of dry hydrants and draft sites where possible.
- Establishment of green sections around the entire perimeter of developed areas is an excellent means of reducing risk. When constructed in a pedestrian-friendly manner and landscaped in an aesthetically pleasing manner, greenbelts can also increase the desirability of properties by providing recreational opportunities for casual walkers and bike riders while increasing the safety of the entire community.
- At the County level, officials should consider strict regulations on fire use, use of fireworks, and a summer-time ban on all incendiary devices within publicly owned open space. Reducing the number of potential ignition sources will decrease the probability of wildland fire.

4.4.3.9 Swan Falls

Swan Falls is a hydroelectric dam (Project #503) licensed by the Federal Energy Regulatory Commission and operated by Idaho Power. This small community is located on the east shore of the Snake River, which serves as the border between Ada and Owyhee counties. There are five government funded residences approximately ¼ mile up river of the dam. A day-use only park with bathroom facilities, picnic area, and interpretive information has been constructed between the dam site and the residence buildings. This area is green and well groomed. There is also a boat launch and trailhead at the base of the dam.

The canyon walls, which are primarily exposed rock, rise vertically from both sides of the Snake River leaving only a thin strip of flatter shoreline for residences and roadways at the base. The

immediate areas surrounding residences and the park are kept green; however, there are a few small patches of cured grass and sagebrush on the lower slopes of the canyon and along a small wash-out area downstream of the dam. The very flat plateau extending from the canyon rim is dominated by low-growing sagebrush and grasses. This constitutes a fuel model 2, which tends to support fast-moving, low intensity surface fires. The entire area for several miles to the north and east of Swan Falls is part of the Snake River Birds of Prey National Conservation Area; therefore, there are no other structures nearby.

Swan Falls Road from Kuna is the primary access into the dam site. This is a paved two lane road that ends after descending the steep canyon wall into the community. There are two secondary roads leading out of the canyon from Swan Falls that provide additional escape routes for residents in the event of a fire. There is also a multitude of small dirt roads that travel in all directions across the Snake River Birds of Prey National Conservation Area. All of these roads are bordered by sagebrush and grasses. Although these fuels burn rapidly, there is only a minor threat to escape routes due to their varying locations in the canyon. Additionally, there are few mitigation activities that would have a positive and measurable impact.

Residents presently maintain good defensible spaces around their homes, the dam, and the visitor's facilities. Keeping these areas clean and green and making sure that all of the access routes are kept open will significantly decrease resident's risk of loss by wildfire. There are no campfire rings in the park area; however, some signage of the wildfire risks associated with campfires near the trailhead would remind users to be cautious in this dry environment.

4.5 Current Planning Efforts in Ada County

Ada County has been proactive in efforts to reduce wildland fire risk by developing both regulatory and guidelines that emphasize fire-safe building practices, as well as development of interagency county-wide response plans to safely and aggressively attack wildland fires when they do occur. The Boise City Foothills Policy Plan and the Ada County Wildfire Response Plan has been developed in an effort to address the wildland fire risk in Ada County.

4.5.1 Boise City Foothills Policy Plan and Wildland-Urban Interface Overlay District

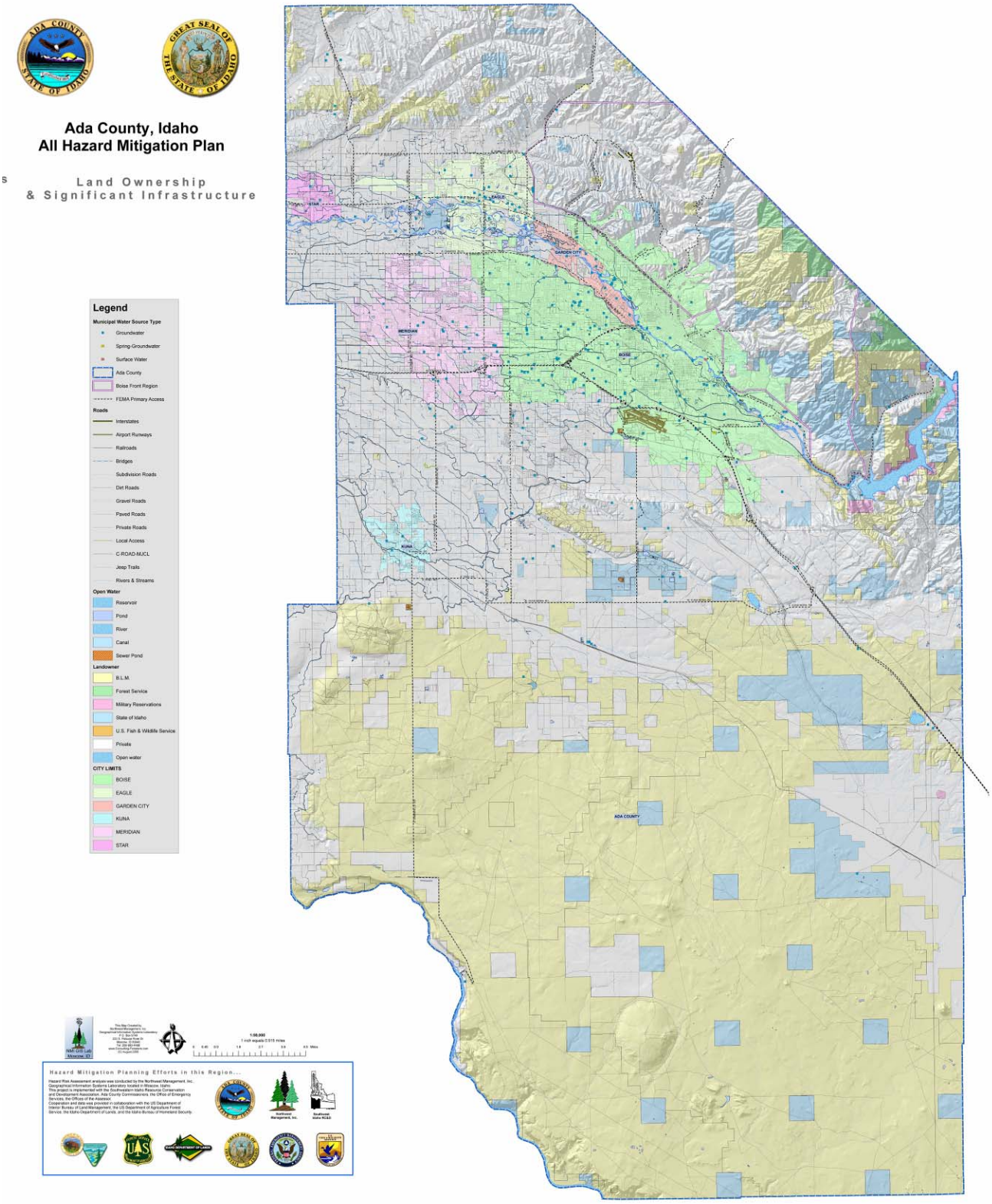
The purpose of the Boise City Foothills Plan of 1997 is to protect and preserve multiple qualities and values of the Foothills while allowing for controlled development. The plan recognizes the constrained to Foothills development, including the wildfire hazard and the need for appropriate subdivision design, street layout, building materials and design, and landscaping. As an amendment of the Boise City Comprehensive Plan, the Foothills Plan has adopted Zoning and Building Codes with specific wildfire prevention provisions.

Ada County has also mapped its High Hazard Area and delineated it as a Wildland-Urban Fire Interface Overlay District with specific requirements for building construction and defensible space. The building requirements, are listed in section 419.3 – 419.12.3 of the Uniform Building Code of 1997 adopted by Ada County. The Zoning Code regulations apply to the area within the Overlay District. Any new construction, alteration, moving, or change of use of a habitable structure is required to establish and maintain a minimum 50-foot defensible space around its perimeter. Within this defensible space buffer zone there can be only single specimens of trees or ornamental vegetation, and cultivated ground cover or grasses up to a maximum height of four inches. All deadwood must be removed from trees, and clusters of trees must be thinned so that the crowns do not overlap. Trees must be pruned up to six feet. Areas adjacent to private roads and driveways must be cleared of vegetation. Areas within five feet on either side of

driveways must be cleared, and the entire width of the easement of private roads must be cleared. Other regulations in the code address the location of liquefied petroleum gas, firewood, and other combustible materials near structures, road access to subdivisions, length of cul-de-sacs and water supply needs for fire flow.

Many of the building requirements that have been designed to increase safety in the wildland urban interface have not been well enforced. Enforcement of these codes in critical in reducing the risk of wildland fire county-wide.

Figure 4.1. Land Ownership in Ada County.



4.5.2 Ada County Wildfire Response Plan

The Ada County Wildfire Response Plan has been developed in order to establish basic procedures for wildfire operations in Ada County in order to protect emergency response workers and the populace in affected areas. The plan has been developed with the recognition that wildfire incidents within Ada County often involve multiple fire suppression departments and agencies. Response to wildfire incidents requires a high degree of interagency cooperation and communication in order to assure the most efficient use of suppression resources. This has led to the development of the Ada County Wildfire Mutual Aid Agreement. The Response Plan has been designed to coordinate and expedite fire control activities and actions between all mutual aid members. This coordinated effort will lead to reduced damage to valued resources due to wildfire incidents.

The plan outlines how interagency responses will be managed, including dispatching procedure, an interagency communications plan, the incident command system, procedures for establishment of unified command as well as a number of other planning components associated with mutual aid responses. The plan also contains a number of safety checklists that help facilitate engagement while assuring safety of responding personnel. The Wildfire Response Plan is a critical tool in addressing the complexities associated with responding to wildland fire events in Ada County.

4.6 Firefighting Resources and Capabilities

The Firefighting Resources and Capabilities information provided in this section (4.5) is a summary of information provided by local 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.

4.6.1 Wildland Fire Districts

4.6.1.1 Bureau of Land Management, Boise District

- Boise BLM Fire Office, 3948 Development Ave., Boise, 83705; 208-394-3400
- Hammett Guard Station, north of Exit 112 on Interstate 84, 208-366-7722
- Bruneau Guard Station, Hot Creek Road, Bruneau, 208-845-2011
- Wild West Guard Station, Exit 13 off I-84, 208-454-0613

The Department of Interior, BLM, provided funding for this Wildland-Urban Interface Wildfire Mitigation Plan. The Boise District BLM has been involved in Ada County through assistance to local fire districts and national fire prevention programs.

The Boise District BLM encompasses approximately 3.9 million acres of BLM-managed land in southwest Idaho. Through agreements with the Idaho Department of Land and the National Forest Service, the BLM also provides support on IDL and FS lands in some areas within the district boundary. The border of the district extends north from the Nevada border following the Bruneau River fairly closely before heading east along the Saylor Creek Air Force Range boundary to the Elmore County line. Then, it heads north to the confluence of the Snake River. The border follows the Snake River east to the community of King Hill before turning north again following the King Hill Creek drainage to the Township 1S, Range 10E line, where it heads due north to the southwest corner of Section 6. The border, then, stair steps in a northeasterly direction just past the Elmore County line to the Township 2N, Range 12E line; then heads five

miles due west to the Elmore County line. The eastern boundary follows the Elmore County line to where it meets the Blaine County line. The District boundary, then, follows the foothills west and north across the Boise Front; up Highway 55 and includes some scattered areas into the Crouch area; then jogs in a northwesterly direction to the Oregon border west of New Meadows.

Special features within the district include the 485,000-acre Snake River Birds of Prey National Conservation Area; the Owyhee Canyonlands; portions of the north and south fork Payette River corridors; the Owyhee Mountains, including the historic Silver City area; the Bruneau River canyon; and several popular recreation areas and wildland-urban interface areas.

The district's primary station is located in Boise, where 2 crews, with 2 engines per crew are based, along with both helicopter and fixed-wing aircraft resources. One of the two Boise crews is typically stationed during the day at Boise Fire Station #2 at the base of the foothills. Additional day-use stations are available in Kuna, Hidden Springs, and Eagle.

Additionally, the district has out stations at Bruneau, Hammett, and Wild West (at Exit 13 on Interstate 84). Each facility is staffed by one crew, with two to three engines (depending on fire activity and yearly budget), on a 8-hour day, 5-day per week basis (on call 24/7) from mid June to mid September. Bruneau and Hammett will have different days off to provide 7 day coverage between the two guard stations. A dozer has historically been based at Hammett and will be based there when funding is available.

Wild West Guard Station is going to be demolished this spring with plans to build a new station. In the meantime, Wild West will be stationed at the Middleton Station #1 Fire Department in downtown Middleton.

BLM crews are neither trained nor equipped for structure suppression. Primary protection responsibilities are on public land throughout southwest Idaho and the BLM responds to fires originating on public lands and those on private land that threaten public land. Additionally, through mutual aid agreements with local fire departments, the BLM will provide assistance when requested on wildland fires.

The BLM does not provide formal EMT services. The crews are trained in first-aid, and some staff members have EMT and first-responder training, but this is not a service the BLM provides as part of their organization.

Personnel: The fire program staff totals 110-135 individuals, including 20 permanent employees, 40 career-seasonal employees who work up to nine months each year, and 75 seasonal employees on staff from roughly June to September. These are all paid staff members trained in wildland fire, but not in structure protection.

Mutual Aid Agreements: The BLM has an interagency working relationship with the US Forest Service (Boise National Forest and Payette National Forest) and the Idaho Department of Lands and the crews are dispatched on a closest-forces concept to public lands. Additionally, the BLM has mutual aid agreements with 37 community fire departments.

Top Resource Priorities:

- **Training:** Increasing the amount and level of training for and with partner community fire departments .
- **Communications:** Using the Rural Fire Assistance Program to allow departments to purchase radios to facilitate communication, coordination, and safety at the fire scene.

The district encompasses a broad spectrum of resources at risk, including recreation sites, power lines, wildlife habitat, wilderness study areas, wild horse management areas, historic

districts, cultural and archaeological sites, and a range of vegetation types, from rare plant species to sagebrush and timber resources.

Table 4.4. Boise District Equipment List for Wildland Fire Protection.

Assigned Station	Make/ Model	Capacity (gallons)	Pump capacity (GPM)	Type
Boise	Internat'l	Heavy 800 – 1,000	120 GPM	Wildland
Boise	Internat'l	Heavy 800 – 1,000	120 GPM	Wildland
Boise	Internat'l	Heavy 800 – 1,000	120 GPM	Wildland
Boise	Internat'l	Heavy 800 – 1,000	120 GPM	Wildland
Boise	Internat'l	Heavy 800 – 1,000	120 GPM	Wildland
Boise	Internat'l	Heavy 800 – 1,000	120 GPM	Wildland
Boise	Internat'l	Heavy 800 – 1,000	120 GPM	Wildland
Boise	Internat'l	Heavy 800 – 1,000	120 GPM	Wildland
Boise	Internat'l	Heavy 800 – 1,000	120 GPM	Wildland
Hammett	Internat'l	Heavy 800 – 1,000	120 GPM	Wildland
Hammett	Internat'l	Heavy 800 – 1,000	120 GPM	Wildland
Hammett	Internat'l	Heavy 800 – 1,000	120 GPM	Wildland
Bruneau	Internat'l	Heavy 800 – 1,000	120 GPM	Wildland
Bruneau	Internat'l	Heavy 800 – 1,000	120 GPM	Wildland
Bruneau	Internat'l	Heavy 800 – 1,000	120 GPM	Wildland
Wild West (exit 13, I-84)	Internat'l	Heavy 800 – 1,000	120 GPM	Wildland
Wild West (exit 13, I-84)	Internat'l	Heavy 800 – 1,000	120 GPM	Wildland
Wild West (exit 13, I-84)	Internat'l	Heavy 800 – 1,000	120 GPM	Wildland
Boise	Internat'l	Heavy 800 – 1,000	120 GPM	Wildland
Boise	Internat'l	Heavy 800 – 1,000	120 GPM	Wildland
Boise	Internat'l	Heavy 800 – 1,000	120 GPM	Wildland
Boise	Ford	Light 300	120 GPM	Wildland

- The Boise District has 3 dozers, one of which is stationed in Hammett (may change in 2005); and two in Boise
- The Boise District also has 3, 3,500 gallon water tenders.
- There are 4 Fire Lookouts, one on Squaw Butte, north of Emmett; one on South Mountain, southeast of Jordan Valley; one on Danskin Peak, north of Mountain Home; and one on Bennett Mountain, northeast of Mountain Home.

Additionally, suppression resources include:

- **Helicopter:** The district has an new compact for 2005 helicopter on contract from June to October and an 11 member helitack crew. U.S. Forest Service helitack crews stationed at Lucky Peak and Garden Valley are available for assistance if needed and if they are not assigned elsewhere. Additionally, there are other helicopter resources equipped for fire missions that are available on a call-when-needed (CWN) basis.
- **Fixed-Wing:** The district has a contract AeroCommander 500S fixed-wing aircraft, staffed by a pilot and the air attack supervisor. The air attack supervisor coordinates aerial firefighting resources and serves as an observation and communications platform for firefighters on the ground.
- **Air Tankers:** There are typically two air tankers (fire retardant planes) on contract in Boise during the fire season. However, these aircraft are considered national resources and are assigned where they're needed at any particular time. These tankers have recently been grounded and may or may not be available for use in the future. Other,

nearby, air tankers are located in McCall and various locations in Nevada and Oregon. There are also contract single-engine air tankers (SEATS) located in Oregon and Twin Falls, Idaho.

The primary operational challenges facing the district include:

- Continued development of wildland-urban interface areas across the district.
- Communications and coordination with current, new, and developing community fire departments and working with them to stay abreast of communication and technological developments so that we can continue and improve working together effectively at the fire scene.
- Internally, an operational challenge is to have sufficient and appropriate staff available throughout the year to foster partnerships with local departments and facilitate continued and improved coordination, training, communications, and other joint efforts with our partners across the district.
- Our effectiveness in addressing these challenges will largely hinge on funding available for the fire program and its various elements.

4.6.2 Local Fire Districts

4.6.2.1 Boise City Fire Department

Table 4.5. Boise City Fire Department Resources.

Structural Engines	14	Type 1	In-service	3 Personnel	E1, E2, E3, E4, E5, E6, E7, E8, E9, E10, E11, E12, E21, E22
Structural Engines	5	Type 1	Reserve	Not Staffed	R1, R2, etc.
Structural Engines	2	Type 1	Training	Not Staffed	
Aerial Platform	2		In-Service	4 Personnel	T1, T6
Aerial Ladder (Tiller)	1		Reserve	Not Staffed	
Quint	1		Reserve	Not Staffed	
Command	3	Suburban	In-Service	1 Person	Batt 1, Batt 2, Batt 3
Wildland Engines	3	Type 4	In-Service	Seasonal	Brush 9, Brush 21, Brush 22
Wildland Squads	2	Type 6	In-Service	Seasonal	Brush 1, Brush 8
Dip Tank Pick-ups	4		In-Service	Per Incident	Dip 2, Dip 7, Dip 9, Dip 12
Water Tender	1	3000 gal	In-Service	1 Person	WT21
Haz Mat	1	Hackney	In-Service	Per Incident	HazMat 12
Haz Com	1	30' trailer	In-Service	Per Incident	HazCom 12
Rescue Trailer	1	Trailer	In-Service	Per Incident	Rescue 7
Rescue Squad	1	Suburban	In-service	Per Incident	Rescue Squad 7

Table 4.5. Boise City Fire Department Resources.

Dive Van & Boat	1		In-Service	Per Incident	Dive 1
ARFF Command	1	Crew p/u	In-Service	1 Person	Smokey 7
ARFF	1	1500 gal	In-Service	1 Person	Smokey 9
ARFF	1	3000 gal	In-Service	1 Person	Smokey 10
ARFF	1	1500 gal	Reserve	Not Staffed	Smokey 8
Foam Flatbed	1	1160 gal	In-Service	Per Incident	Foam 7
Air Trailer	1	SCBA	In-Service	Per Incident	Air
Power/Light Trailer	1	5 kW	In-Service	Per Incident	Power
Rehab	1	Van	In-Service	Per Incident	Rehab

4.6.2.2 Eagle Fire District

Dan Friend, Chief
dfriend@eaglefire.org
Station #4
966 Iron Eagle Dr.
Eagle, ID 83616
208-939-6463

401	Station 4	Type 1 structural engine
402	Station 4	Type 1 structural engine
406	Station 4	Type 1 structural engine
471	Station 4	Heavy Rescue
441	Station 4	Wildland Engine
442	Station 4	Wildland Engine
402	Station 4	Tender
452	Station 4	Suburban- Quick Response Unit
461	Station 4	4x4 Command
462	Station 4	Command
Dive 4	Station 4	Water Rescue

403	Station 8	Type 1 structural engine
440	Station 8	Wildland engine
451	Station 8	Suburban

4.6.2.3 Kuna Fire Protection District

Doug Rosin, Chief
rosind@cableone.net

Station 1
PO Box 607

150 West Boise Ave
Kuna ID 83634
208-922-1144
208-922-1135 fax

Station 2
10600 West Kuna Road
Kuna ID 83634

District Description: Kuna Fire Protection District is responsible for structural and wildland fire protection throughout the district. The abundance of dry, light, flashy fuels requires rapid initial attack before fires develop into large wildland incidents. The department frequently utilizes mutual aid in suppression efforts.

Kuna is staffed 24/7/365 by one person throughout the year. Staffing increases during the summer the day shift to three to four people in order to assure rapid initial attack response during the fire season. The department also utilizes a force of 30 volunteers, who staff apparatus housed at Station 2.

Equipment:

601	Station 1	Structural Class A Pumper	
602	Station 1	Structural Class A Pumper	
611	Station 2	Structural Class A Pumper	
625	Station 1	2,000 gallon Tender	
626	Station 2	3,000 gallon pumper/tanker/tender	
641	Station 2	Chevrolet	125 gallon Type 6
642	Station 1	Ford	250 gallon Type 6
645	Station 1	Ford	250 gallon Type 6

Mutual Aid: Kuna RFPD is a member of the Intermountain Regional Mutual Aid Agreement. Kuna is frequently involved with mutual aid incidents with the BLM- Boise District during wildland fire events, as well as with other neighboring RFPD's.

Effective Mitigation Strategies: Rapid initial attack and keeping fires small is the most effective means of mitigating resource loss. Increases in both firefighting equipment and water availability are priorities for the district.

Greatest Resource Needs:

- *Procurement of a wildland engine*, preferably Type 3 or 4 with four-wheel drive would help in wildfire responses.
- *Identification and development of water sources* would reduce turn-around time for refilling. Reliable, deep wells need to be identified and developed to allow for drafting or filling in order to eliminate the need to rely on static water sources that are typically far from wildland events.
- *Increases in communication abilities,* particularly in command vehicles during mutual aid responses. Do to the number and differences of frequencies used during mutual aid responses, it is imperative that communication channels remain open between all cooperators. This requires monitoring of multiple channels simultaneously, which can only be accomplished with multiple mobile radios.

- *Increased inter-district training* in order to identify problems such as communication and radio frequencies before an incident.

4.6.2.4 Melba Fire Protection District

Richard Farner, Fire Chief
PO Box 183
Melba, Idaho 83641
Rf21kma@aol.com

District Summary: Melba Fire Protection District is responsible for the structure and wildland fire protection for the southern part of Canyon County as well as the Southwest corner of Ada County.

Priority Areas: The last several years we are experiencing residential growth in the area around Melba

Communications: Communication capabilities in our district are fairly adequate. There are some areas that are difficult to communicate with our dispatch, which is located at the Canyon County Courthouse, Caldwell, Idaho.

Fire Fighting Vehicles: Due to our budget, one of our biggest concerns is replacing some of our aging vehicles such as our tender that runs not only on our fires but is used a lot for mutual aid with other departments.

Burn Permit Regulations: Burn ban periods need to be addressed.
Effective Mitigation Strategies: Future plans are looking into building a 2nd substation in the northern part of our district as well as updating our present tanker.

Education and Training: The Melba Fire Department each year participates in fire safety week with the schools. We also give smoke detectors and install to those that need them. We do training through the state and we have certified wildland trainers in our department.

Cooperative Agreements: Melba Fire Protection has mutual aid agreements with Canyon, Ada and Owyhee Counties as well as with the BLM and IDL.

Current Resources:

1962 American LaFrance	Pumper Engine	1000 gal	750 gmp
2000 Freightliner	Pumper Engine	1000 gal	1250 gpm
1987 GMC	Tanker	3000 gal	350 gpm
1976 Dodge	Brush Truck	300 gal	150 gpm
1986 GMC	Brush Truck	300 gal	150 gpm
1989 GMC	Brush Truck	300 gal	200 gpm with foam
2004 GMC	Brush Truck	300 gal	200 gpm with foam
1993 GMC	Pickup		
1987 GMC	Command Vehicle		

Future Considerations: Updating our tanker to a pumper-tanker combo. Do to the volunteer nature of the department, we need to consider looking into putting full time staff on when budgets will allow.

Needs: More volunteers that can respond to daytime calls. Times have changed over the years and we due need more help in some kind of funding. The public expects more and more and it's extremely hard for volunteer fire departments to keep up with the pace.

4.6.2.5 Meridian Fire Department

Chief Kenny Bowers
bowersk@meridiancity.org

Station 1
540 E. Franklin Rd.
Meridian, ID 83642
208-888-1234

District Summary: The Meridian Fire District is responsible for structural and wildland protection in western Ada County. The District covers approximately 58 square miles. Meridian itself does not have a significant wildland area, however the district does offer mutual aid to many districts with a heavy wildland fire load.

The district has experienced a 200% population increase in the last ten years. This trend is likely to continue into the future.

Communications here in our area are adequate but could be improved.

The department is looking to upgrade one of our grass squads in the near future.

Burn permits are required and we follow the DEQ requirements for materials and allowable burning.

Cooperative Aid: Meridian is involved in several automatic and mutual aid agreements in the valley and also in the intermountain regional mutual assistance plan.

Station 1 Resources:
2002 Pierce Structural Engine. 1000 gal, 1500 gpm.
1983 Pierce Structural Enfine. 750 gal. 1500 gpm.
2000 International Tender. 3200 gal. 200 gpm

Station 2 Resources:
2000 Pierce Structural Engine. 1000 gal, 1500 gpm.
1996 Dodge Brush Engine. 300 gal, 200 gpm
1984 Pierce Structural Engine. 1000 gal, 1000 gpm.

Station 3 Resources:
1994 Pierce Structural Engine. 1000 gal, 1500 gpm.
1984 Ford Tender. 1500 gal, 200 gpm.

Greatest Resource Needs:

- Update brush engine at Station 1.
- Construction of new stations in next few years.

4.6.2.6 North Ada County Fire and Rescue

Chief Martin Knoelk
Nacfr.martink@execu.net

208-375-0906

Station 1
5800 Glenwood
Garden City, ID 83714

1993 Pierce Dash Structural Engine 750 gal, 1500 gpm.
2002 Pierce International Tender 2500 gal, 1000 gpm
1985 GMC 1-ton Brush Engine 250 gal, 50 gpm.
1994 BME International 4800 Rescue.

Station 2
3890 Chinden
Garden City, ID 83714

1995 Pierce Arrow Structural Engine 750 gal, 1500 gpm.
1980 American LaFrance Aerial Structure 500 gal, 1200 gpm.
1983 International 4800 Brush Engine 600 gal, 250 gpm.

Station 3
5871 Hidden Springs
Hidden Springs, ID 83714

1983 Pierce Arrow Structural Engine 750 gal, 1500 gpm.
1995 Chevrolet Suburban EMS/QRU

18 full-time, 10 volunteer

Could use ATV for fires along Boise River corridor. Shake roofs along river
Communications in future
No way to enforce codes
Increasing interface with no requirement for water from county
Been improvements in road construction.
City needs to enforce building codes
Cost of keeping up with new technology

4.6.2.7 Star Fire

Star Joint Fire Protection District
Kevin Courtney, Chief
Star-chief@cableone.net
208-286-7772
10831 W. State St.
Star, ID 83669

District Description:

Star Joint Fire Protection District is responsible for structural and wildland fire protection throughout the district. The District has a large amount of urban interface to the north and west of Star. The interface is made up of light flashy fuels that through most of the summer are dry and in a burnable state. Therefore a rapid initial attack is required to stop the fire from growing into a large fire incident. Star Fire utilizes its mutual aid agreements on these large scale

incidents. The District is protected twenty four hours a day seven days a week by both paid and volunteer personnel.

Star Joint Fire Protection District utilizes their mutual aid agreements with BLM - Lower Snake River District and our neighboring departments. Also in return we frequently responded to resource request to assist the BLM - Lower Snake River District with protection of the Boise front.

Equipment:

501	Structural Pumper Tender	2000 gal.
503	Structural Pumper	1000 gal.
541	Type 6 brush squad Hummer	260 gal.
542	Type 4 Heavy brush squad	750 gal.
543	Type 6 brush squad	400 gal.
521	Tender	1200 gal.
551	Rescue squad	
561	Command Expedition 1997	
562	Command Suburban 1995	

Greatest Resource needs:

1. Procurement of a dual fire station in conjunction with the BLM and Star Fire on Highway 16 just south of Firebird Raceway. The station would give us increased response times plus allow BLM to house engine crews through out the summer so that they are staged in more critical areas. To accompany this station, a helipad would be placed near by so that helicopters used for fire fighting efforts would be able to land and coordinate with ground crews to plan their attack.
2. Also the procurement of two water tenders of 3000 gallons would compliment the station and increase the response of water to the scene.
3. An increase in communication abilities so that all crews working on the incident would have the contact with those who are directing the fire fighting efforts.

4.7 Issues Facing Ada County Fire Protection

There are dozens, if not hundreds of issues that contribute to fire occurrence, strain department resources, and otherwise complicate fire suppression throughout Ada County. Very short lists of some issues are presented here.

4.7.1 Recruitment and Retention, Funding, Equipment Needs, Etc.

There are a number of pervasive issues that challenge volunteer districts within Ada County. A short list of such issues include recruitment and retention of volunteers, lack of funding for equipment needs, keeping pace increases in training requirements, as well as numerous other factors that test district's abilities. The members of all fire protection districts should be recognized for the dedication they have shown and the excellent level of protection they provide for residents throughout the county. Volunteers take time out of their lives every day in order to assure the safety of the community.

The demands on volunteer departments are considerable. Keeping pace with ever-increasing training requirements can lead to burn-out of volunteers who are scantly compensated for their time and efforts. Keeping pace with the growing needs of the communities the districts serve is a constant challenge as well. Although there are many potential funding sources available for local districts to acquire equipment and other needs, grant writing and chasing of funding

sources takes considerable time and effort. Recommendations that can help to reduce these challenges will be presented in the Chapter 5: Mitigation Recommendations to follow.

4.7.2 Road Signage and Rural Addressing

The ability to quickly locate a physical address is critical in providing services in any type of emergency response. Minutes can make the difference in home survival during fire events or life and death during medical emergencies. Accurate road signage and rural addressing is fundamental to assure the safety and security Ada County residents. Currently, there are numerous areas throughout the county that are lacking road signs, rural addresses or both. Signing and addressing throughout the county needs to be brought up to NFPA code in order to assure visibility and quick location.

4.7.3 Inadequate Access to Homes and Subdivisions

Fire departments have frequently cited the lack of adequate access to homes and subdivisions as a significant issue in fire suppression efforts countywide. This is particularly true in rapidly developing areas along the foothills. Developers should plan developments with multiple ingress/egress points in order to assure adequate access for fire suppression personnel.

4.7.4 Augmentation of Emergency Water Supplies

Residential growth will likely accelerate in the coming years in all areas of Ada County. Growth will continue to stress rural and wildland fire suppression abilities into the future. It is prudent to address development practices before they become significant issues. Of primary concern to fire departments will be water availability and access. Current county policies do not address these issues adequately, particularly in regard to water availability. Current county codes only require installation of static, pressurized hydrant systems if the water is readily “available” in the area. “Available” has been defined quite loosely and ambiguously up to this point. New subdivisions within ¼ mile of existing water lines have not been installing hydrant systems because the water source is not considered “readily available.” Clearly, county zoning and planning officials need to address this issue in order to assure that new development is built following specifications that will result in a safe and prosperous community.

In many rural areas of Ada County, there are no readily accessible, year-round water resources available for use by local fire districts. Thus, it is necessary for firefighters to keep large amounts of water loaded on trucks at all times. In the event of a larger fire situation, additional water supplies must be transported to the site. The Ada County fire districts feel that establishing permanent augmentations to emergency water supplies is necessary throughout the County. This includes establishment of pressurized water delivery systems in subdivisions as well as establishment dry hydrants and drafting sites where immediate access to water is limited. Retrofitting dependable, year-round irrigation water sources with necessary fittings for use by emergency response equipment would also be highly beneficial. Once developed, these water sources need to be mapped and use agreements need to be made between landowner local fire departments, and the Bureau of Land Management.

4.7.5 Outgrowth of Current Fire Districts

A comprehensive emergency resource plan should be drafted in order to assure development does not out-pace emergency response capabilities. Individual fire district population benchmarks should be established for addition of resources, expansion of staffing levels and building of new stations. Thousands of new homes are expected to be built in the foothills area

and throughout the county. This population increase will likely outpace current district capabilities in the near future.

4.8 Idaho State Fire Plan Working Group 2004 Annual Report

Over the past five years, Ada County and its communities have continued to make strides toward becoming more resilient to wildland fire. The following tables summarized many of the grant monies spent in Ada County from 2001 – 2004.

Figure 4.2. State of Idaho Assistance Summary for 2001 - 2004.

County	Grant Recipient	Granting Agency	2001-2003	2004	Project Description
Ada	Boise City	BLM CAR		$40,000.00	FIREWISE Landscape Funding for Foothills Environmental Learning Center
Ada	Boise City	BLM CAR		$3,500.00	Boise Foothills Pamphlet Drop
Ada	North Ada County F&R	FEMA	$154,534.00		Fire Operations & Firefighter Safety
Ada	Boise City FD	FEMA	$196,000.00		Firefighting Vehicles
Ada	Boise City FD	FEMA	$111,755.00		Fire Operations & Firefighter Safety
Ada	Boise City FD	IFCA FFLPF	$6,500.00	$3,000.00	2004 Safety Symposium
Ada	Eagle FPD	FEMA	$27,111.00		Wellness & Fitness
Ada	Eagle FPD	FEMA	$159,921.00		Fire Operations & Firefighter Safety
Ada	Kuna	IDOCL/FS EA	$50,000.00		Equipment
Ada	Meridian FD	FEMA	$29,421.00		Fire Prevention
Ada	Orchard FD	BLM CAR	$9,000.00		2001 Assessment
Ada	Southwest Idaho RC&D	BLM CAR	$35,000.00		Wildfire Mitigation Plan
Ada	Southwest Idaho RC&D	BHS		$43,314.00	All-Hazards Mitigation Plan
Ada	Star Joint FPD	BLM RFA		$6,288.00	Training/Equipment
Ada	Star Joint FPD	IFCA FFLPF		$2,000.00	Update Video Delivery (Laptop & Projector)
Ada	Star Joint FPD	BLM RFA	$10,139.70		Training/Equipment
Ada	Star Joint FPD	BLM RFA	$1,802.00		Training/Prevention
Ada	Star Joint FPD	BLM RFA	$3,843.44		Equipment

Chapter 5: Treatment Recommendations

5 Administration & Implementation Strategy

Critical to the implementation of this Wildfire Mitigation Plan, as a component of the All Hazard 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 Ada County and the region. Since there are many management agencies and thousands of private landowners in Ada 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.

Ada 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 Ada County, specifically 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 Ada County.

All risk assessments were made based on the conditions existing during 2005-06, 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 Ada County in relation to this planning document, the entire **All Hazard Mitigation Plan** should be reviewed annually at a special meeting of the Ada 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 All Hazards 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 Ada County Emergency Management Director.

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. The Ada County Wildfire Steering Committee will take the lead in collecting information on proposed projects and amendments to the plan. This will be done in collaboration with interested parties on an annual basis. This information will be provided to the County Commissioners through the Ada City-County Emergency Management.

When federal or state funding is available for hazard mitigation, there are usually requirements that establish a rigorous benefit-cost analysis as a guiding criterion 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 Management Director to include the County Commissioner's Office, City Mayors and Councils, Fire District Chiefs and Commissioners, agency representatives (BLM, Idaho Department of 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.

5.1.1.9 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.

5.1.1.10 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.

5.1.1.11 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 Ada 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 amendments and enforcement of existing codes 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)
- 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. Net gains to the public benefit will be an important component of decisions.

5.3 WUI Safety & Policy Actions

Wildfire mitigation efforts must be supported by county policies and regulations that maintain a solid foundation for safety and consistency. Wildland-urban interface Safety and Policy recommendations are policy related in nature. Because these items are regulatory, they will not necessarily be accompanied by cost estimates. It is likely that debate and formulation of alternatives will serve to make these recommendations suitable and appropriate for Ada County.

Prioritization of activities recommended in this plan should be made by the Ada County Commissioners. During the annual review of this plan, reprioritization can be justified in response to changing conditions and funding opportunities.

5.3.1 Existing Practices That Should Continue

Ada 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.

- The dedication of fire district volunteers and professionals has contributes tremendously to the safety and well-being of residents of Ada County. All individuals involved in fire suppression in Ada County should be commended and recognized for the sacrifices they make in order to provide the excellent level of community protection afforded to county residents.
- The aggressive Fire Prevention campaign by local fire departments, the Boise National Forest and the Boise District of the BLM has contributed to a reduction in the number of human caused fires over time in Ada County. The prevention program should receive necessary support over the long term.
- The BLM Rural Fire Assistance has made significant contributions to the capabilities of the local fire districts throughout Ada County.
- Existing rural addressing efforts have aided emergency responses well. However, with the rapidly expanding population, rural addressing revisions will be an on-going process.
- The development and implementation of the county's wildland-urban fire interface overlay district and the vegetation management requirements within the district is a model for counties nation wide. Future enforcement of these requirements will be necessary for the benefits of this plan to be realized.
- Development of the valley-wide mutual aid agreement and the Ada County Wildfire Response Plan help to facilitate response procedure during mutual aid responses throughout Ada County.

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: Enforce existing building codes and vegetation management requirements as detailed in the Ada County Uniform Building Code.	**Protection of people and structures** by enforcement of existing standards to insure new homes can be protected while minimizing risks to firefighters.	**County Commissioners** in cooperation with Planning and Zoning, Building Department, Boise Fire Department, Meridian Fire Department, North Ada County Fire and Rescue, Eagle Fire District, Kuna Fire District, and Star Joint Fire Protection District.	• Devise strategy between involved parties as to how to efficiently and effectively enforce building codes.
5.1.b: Adopt and enforce applicable components of NFPA Code 1144 that address the unique needs of Ada County. Ensure policy addresses the specific needs of fire suppression resources, building materials and applies to subdivisions as well as new single home construction.	**Protection of people and structures** by applying a standard of road widths, access, water supply, and building regulations suitable to insure new homes can be protected while minimizing risks to firefighters.	**County Commissioners** in cooperation with Planning and Zoning, Building Department, Boise Fire Department, Meridian Fire Department, North Ada County Fire and Rescue, Eagle Fire District, Kuna Fire District, and Star Joint Fire Protection District.	• 2006 Debate and adopt revised code. • Adopt recommended codes. • Ensure enforcement of codes by building department. • Integrate into County Comprehensive Plan
5.1.c: Amend existing building codes to apply equally to new single housing construction as it does to subdivisions. 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 Planning and Zoning, Boise Fire Department, Meridian Fire Department, North Ada County Fire and Rescue, Eagle Fire District, Kuna Fire District, and Star Joint Fire Protection District, and the Cities of Boise, Meridian, Eagle, Kuna, Garden City, Star.	• 2006 Debate and adopt revised code. • Review adequacy of changes annually, make changes as needed.
5.1.d: Enact and enforce fireworks ban on public lands along Boise Front.	**Protection of people, structures and unique ecosystems** by reducing the probability of fire occurrence through the use of fireworks	County Commissioners, Sheriff's Office, Boise Parks and Recreation, and BLM	2006 Pass ordinance and post necessary signs.

5.4 Home and Business Protection Measures

Many of the recommendations in this category involve education and increasing awareness of the residents of Ada County. Continuing public education is essential to increase the awareness of the factors that contribute to the wildland fire hazard in Ada County. Although prevention campaigns and public education efforts have been quite successful in many areas, there is still much that residents can do to protection themselves and their property from wildland fire.

The 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:

- 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 (42%) 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 Ada 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 Ada 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 Ada 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 Ada County. Domestic livestock not only eat these grasses, forbs, and shrubs, but also trample certain fuels to the ground where decomposition rates may increase. Responsible 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.
- **Agriculture** is a significant component of Ada County's economy. Much of the northern region of the county is occupied with the production of agricultural crops. The original conversion of these lands to agriculture from rangeland, 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 Ada County is integral to the continued management of wildfire risk in the county.

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: Continue Wildfire Steering committee comprised of representatives from all fire and emergency service entities to coordinate and develop strategies to advance fire mitigation activities countywide.	**Protection of people and structures, infrastructure, public and firefighter safety and ecosystems** by coordinating efforts and improving communication avenues between all parties to make informed decisions about wildfire issues.	County Commissioners, Boise Fire Department, Meridian Fire Department, North Ada County Fire and Rescue, Eagle Fire District, Kuna Fire District, Star Joint Fire Protection District, Southwest Idaho RC&D, Emergency Management, BLM, Forest Service, Idaho Fish Wildlife, and Ada County dispatch, Cities of Boise, Garden City, Eagle, Meridian, Kuna, and Star.	Continue to fund and support the efforts of the current Wildfire Steering Committee program.
5.2.b: Continued public education campaigns through targeted media campaigns, brochure and leaflet distribution, mailings, billboards, door-to-door visits, Firewise presentations to homeowners and other interest groups, educational programs at the Foothills Learning Center, and any other means by which to communicate the need for fire safety throughout Ada County.	**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: Boise District BLM, Treasure Valley Fire Prevention Cooperative, Idaho Department of Lands, Boise National Forest, City of Boise, City of Garden City, City of Eagle, City of Meridian, City of Star, and City of Kuna, Boise Fire Department, Meridian Fire Department, North Ada County Fire and Rescue, Eagle Fire District, Kuna Fire District, Star Joint Fire Protection District, and local school districts.	2006 Work together to form a countywide public education working group to strategize on methods and tactics to maximize outreach effectiveness. Determine needs for educational material and advertising budgets. Ongoing: Identify and coordinate mitigation opportunities and work as a single cohesive unit to see projects through.

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.c: 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.	**County Commissioners Office** in cooperation with Boise Fire Department, Meridian Fire Department, North Ada County Fire and Rescue, Eagle Fire District, Kuna Fire District, Star Joint Fire Protection District, and local homeowners. Actual work may be completed by Wildfire Mitigation Consultants or trained volunteers.	**Cost:** Approximately $100 per home site for inspection, written report, and discussions with the homeowners. There are approximately 300,904 housing units in Ada County, roughly 6,018 (2%) of these structures would benefit from a home site inspection and budget determination for a total cost estimate of $601,800. **Action Item:** Secure funding and contract to complete the inspections during years 1 & 2 (2006-07). Home site inspection reports and estimated budget for each home site's treatments will be a requirement to receive funding for treatments through grants.
5.2.d: Home site WUI Treatments	**Protect people, structures, and increase firefighter safety** by reducing the risk factors surrounding homes in the WUI of Ada County	**County Commissioners Office** in cooperation with Boise Fire Department, Meridian Fire Department, North Ada County Fire and Rescue, Eagle Fire District, Kuna Fire District, Star Joint Fire Protection District, and local homeowners. Actual work may be completed by Wildfire Mitigation Consultants or trained volunteers.	Actual funding level will be based on the outcomes of the home site assessments and cost estimates **Estimate** that treatments will cost approximately $850 per home site for a defensible space of roughly 150'. There are approximately 6,018 homes in this category for an estimated cost of $5,115,300. Home site treatments can begin after the securing of funding for the treatments and immediate implementation in 2006 and will continue from year 1 through 5 (2011).

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.e: Community Defensible Zone WUI Treatments	**Protect people, structures, and increase firefighter safety** by reducing the risk factors surrounding high risk communities in the WUI of Ada County	**County Commissioners Office** in cooperation with Boise Fire Department, Meridian Fire Department, North Ada County Fire and Rescue, Eagle Fire District, Kuna Fire District, Star Joint Fire Protection District, and local homeowners. Actual work may be completed by Wildfire Mitigation Consultants or trained volunteers.	Actual funding level will be based on the outcomes of the home site assessments and cost estimates. Years 2-5 (2007-11) 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. Approximate average cost on a per structure basis is $650-$800 depending on extent of home defensibility site treatments, for a cost estimate of $ 4,363,050.
5.2.f: Maintenance of Home site WUI Treatments	**Protect people, structures, and increase firefighter safety** by reducing the risk factors surrounding homes in the WUI of Ada County	**County Commissioners Office** in cooperation with Boise Fire Department, Meridian Fire Department, North Ada County Fire and Rescue, Eagle Fire District, Kuna Fire District, Star Joint Fire Protection District, and local homeowners. Actual work may be completed by Wildfire Mitigation Consultants or trained volunteers.	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 ($300,900) Follow-up inspection reports with treatments as recommended years 5 through 10.

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: Re-entry of Home site WUI Treatments	**Protect people, structures, and increase firefighter safety** by reducing the risk factors surrounding homes in the WUI of Ada County	**County Commissioners Office** in cooperation with Boise Fire Department, Meridian Fire Department, North Ada County Fire and Rescue, Eagle Fire District, Kuna Fire District, Star Joint Fire Protection District, and local homeowners. Actual work may be completed by Wildfire Mitigation Consultants or trained volunteers.	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.
5.2.h: Initiate fuels reduction project along Boise Greenbelt to reduce the potential for fire development along recreation corridor	**Protect people, structures and recreation values** by reducing the probability of fires within the Boise Greenbelt.	**City of Boise Parks and Recreation** in cooperation with Boise Fire Department, Meridian Fire Department, North Ada County Fire and Rescue, Eagle Fire District, Kuna Fire District, and Star Joint Fire Protection District.	2006 Determine project areas and develop treatment schedule.
5.2.i: Evacuation Planning and Education to inform public of evacuation routes and evacuation procedure.	**Protection of people and structures** by providing residents and visitors with the information they need for an orderly and safe evacuation.	**County Commissioners** in cooperation with Ada County Highway District, law enforcement, Boise Fire Department, Meridian Fire Department, North Ada County Fire and Rescue, Eagle Fire District, Kuna Fire District, and Star Joint Fire Protection District.	2006 Start immediately using existing educational program materials and staffing. 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.
5.2.j: Hire or appoint Technical Assistance Coordinator/Special Project Leader to aid in grant writing, coordination of training and equipment needs, and administration of funds countywide.	**Protection of people and structures** by coordinating county needs and by facilitating writing of district and county grants for fire and other special projects.	Boise Fire Department, Meridian Fire Department, North Ada County Fire and Rescue, Eagle Fire District, Kuna Fire District, and Star Joint Fire Protection District in cooperation with Emergency Services and County Commissioners.	2006 Seek funding for position. Post job listing for potential candidates.
5.2.k: Expansion of the Treasure Valley Fire Prevention Cooperative to enhance large scale prevention efforts in the Treasure Valley metropolitan area, to include Canyon County.	**Protection of people, structures, and ecosystems by** increasing awareness of the consequences of unwanted human-caused wildland fire and providing information on how to avoid unwanted human-caused fires.	Boise Fire Department, Meridian Fire Department, North Ada County Fire and Rescue, Eagle Fire District, Kuna Fire District, Star Joint Fire Protection District, Bureau of Land Management, Fish and Wildlife Service, Forest Service, Idaho Department of Lands and any other interested stakeholders.	2006 Develop bylaws and invite new members. Ongoing: Continue current events, explore possible new events, and seek grant funding to pursue events, educational initiatives, and media campaigns.

5.5 Infrastructure Hardening

Significant infrastructure refers to the communications, transportation (road and rail networks), energy transport supply systems (gas and power lines), and water supply that service the county. Protection of these elements is critical in protecting the health, safety and economy of Ada County.

Infrastructure hardening is a term used here to signify the process of making critical infrastructure components more resistant to likely hazards to be faced based on their location, characteristics, and exposure.

Communication Infrastructure: Generally, there is little that needs to be done to safeguard communication infrastructure within Ada County from wildland fire. The large communication site on Table Rock is relatively safe from damage by wildland fire. However, there are some improvements that could be made in order to better serve emergency communications needs during mutual aid responses.

Transportation Infrastructure (road and rail networks): Wildland fire poses little direct threat to roadways. However, ignitions along highways and roadways contribute significantly to fire load across the county and should be address as part of the implementation of this plan. Various alternatives from herbicides to intensive livestock grazing coupled with mechanical treatments have been suggested. A variety of approaches will be appropriate depending on the landowner, fuels present, and other factors.

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 some roads. This is particularly true in the Boise Foothills. Roads that have these characteristics and access homes and businesses are the priority for improvements in the county. Furthermore, alternate access routes into populated areas are absent. Access improvements should be made where possible.

There are a number of active railways that pass through Ada County. The routes generally traverse relatively level rangelands with few curves, grades, or sidings; however, the potential for an ignition due to sparks, hot stack carbon, or blown brake shoes emitted by a train is significant. Care should be taken to keep the railroad corridor clear of wildland fuels by mowing, grazing, harvesting, or other means.

Energy Transport Supply Systems (gas and power lines): A number of power and gas lines pass through Ada County. Many of these pass through undeveloped, rangeland areas that are subject to wildland fire events. The potential for wildland fire causing catastrophic damage due to pipeline explosions is very real. All possible steps should be taken to secure this infrastructure. In cases where non-flammable steel support structures are used for power transmission lines, there is little direct threat of power supply damage. However, where wooden power poles have been used, there is some risk of failure. Since retrofitting of these infrastructure components is not practical, no such recommendations will be made. It is the recommendation of this Wildfire Mitigation Plan that this situation be evaluated annually and monitored.

Water Supply: In some areas of Ada County, irrigation water is derived from surface flows that feed larger irrigation network that sustain the county's agricultural economy. High intensity wildfires threaten quality of these surface water sources by removing the organic material and vegetation that keeps sediments from entering streams. Protection of watersheds is important in maintaining high quality surface water for Ada County.

Emergency water supply is limiting in many areas. Many areas of Ada County are not serviced by any type of emergency water supply. Where this condition exists, municipalities should consider extending the hydrant system, or requiring the installation of dry hydrants to provide emergency water supply.

5.5.1 Proposed Activities

Table 5.3. Infrastructure Enhancements.

Action Item	Goals and Objectives	Responsible Organization	Action Items & Planning Horizon
5.3.a: Identify and 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 Ada County Highway Districts, Boise Fire Department, Meridian Fire Department, North Ada County Fire and Rescue, Eagle Fire District, Kuna Fire District, and Star Joint Fire Protection District.	2006 Purchase of signs. Post 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 Ada County Highway Districts, Boise Fire Department, Meridian Fire Department, North Ada County Fire and Rescue, Eagle Fire District, Kuna Fire District, and Star Joint Fire Protection District.	2006 Full assessment of road defensibility and ownership participation. Implementation of projects
5.3.c: Improve road access to homes through construction of off-road access points and loop roads in subdivisions and other populated areas.	**Protection of people, structures, infrastructure, and economy** by improving access for residents and fire fighting personnel in the event of a wildfire.	**County Commissioners** in cooperation with Ada County Highway Districts, Planning and Zoning, Boise Fire Department, Meridian Fire Department, North Ada County Fire and Rescue, Eagle Fire District, Kuna Fire District, and Star Joint Fire Protection District.	2006 Determine subdivisions and areas in greatest need of access improvements countywide and prioritize access improvement projects.
5.3.d: Update and improve road signing and rural addressing compliant with NFPA standards for visibility throughout Ada County.	**Protection of people and structures** by reducing emergency response time.	**County Commissioners** in cooperation with Planning and Zoning and local landowners.	2006 Update rural addressing and assure that 911 Dispatch, the Boise Interagency Logistics Center, rural fire departments, sheriff, and all emergency services are aware of new addresses. Ongoing: New subdivisions should be signed with names as well as county grid addresses to assure consistency in addressing throughout the county.

Table 5.3. Infrastructure Enhancements.

Action Item	Goals and Objectives	Responsible Organization	Action Items & Planning Horizon
5.3.e: Roadside vegetation treatments to reduce flammability of fuels immediately adjacent to roads at high risk of ignitions.	**Protection of people and structures and unique ecosystems** by reducing probability of ignitions along travel corridors.	Ada County Highway Districts, Idaho Fish and Game, BLM, Forest Service, and other affected agencies.	Treatments may include mowing, spring application herbicide treatments or other treatments to reduce flammability. Treatment along Boise Front and along I-84 may be set as priority treatment areas. This item is applicable to the I-84 corridor as well as all county and state roads not specifically identified by fire districts.
5.3.f: Identification of resource staging areas throughout the county for coordination during major incidents.	**Protection of people and structures** by improving tactical planning efficiency.	Wildfire Steering Committee and Ada County Dispatch	2006 Identify areas throughout the county and share information between all entities. 2006 Post staging area signing at appropriate locations.
5.3.g: Augment emergency water supply through establishment of dry hydrants and cisterns at designated locations	**Protection of people and structures** by improving water accessibility.	**County Commissioners**, Emergency Management, Boise Fire Department, Meridian Fire Department, North Ada County Fire and Rescue, Eagle Fire District, Kuna Fire District, Star Joint Fire Protection District, and BLM.	2006 Areas in need of water source development include should be identified and incorporated into this plan.

Table 5.3. Infrastructure Enhancements.

Action Item	Goals and Objectives	Responsible Organization	Action Items & Planning Horizon
5.3.h: Access improvements of bridges, cattle guards, and limiting road surfaces	**Protection of people, structures, infrastructure, and economy** by improving access for residents and firefighting 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.	**Ada County Highway Districts** in cooperation with US Forest Service, BLM, State of Idaho (Lands and Transportation), and forestland or rangeland owners.	2006 Update existing assessment of travel surfaces, bridges, and cattle guards in Ada County as to location. Secure funding for implementation of this project (grants) 2007 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. 2007 Post weight restriction signs on all crossings, copy information to local fire districts and wildland fire protection agencies in affected areas. Estimate cost at roughly $25-$30,000 for signs and posting. 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

5.6 Resource and Capability Enhancements

There are a number of resource and capability enhancements identified by the local and wildland firefighting districts in Ada 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:

- More water tenders for local fire districts with drafting capabilities at unimproved sites
- Improved radio capabilities within each district and for mutual aid operations
- Retention and recruitment of volunteers
- Training and development of local firefighters in structure and wildland fire

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 Southwest Idaho RC&D may be an organization uniquely suited to work with all of the districts in Ada 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.

5.6.1 Proposed Activities

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: Develop comprehensive fire district growth plans that address issues associated with growing populations and integrate into county Comprehensive Plan.	**Protection of people and structures** by incorporating new developments and structures into fire protection districts.	**Wildfire Steering Committee** in cooperation with Boise Fire Department, Meridian Fire Department, North Ada County Fire and Rescue, Eagle Fire District, Kuna Fire District, and Star Joint Fire Protection District .	2006 Establish community growth benchmarks for the expansion of district resources. Expand fire districts' planning horizon beyond five-years. Ongoing Activity: Evaluate need to expand district resources as set benchmarks are reached. Integrate plan into County Comprehensive Plan

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: Establishment or extension of fire protection to far east edges of County.	**Protection of People and Structures** by providing fire protection in areas of county are currently without structural fire protection.	**Local residents** in cooperation with the Wildfire Steering Committee, Boise Fire Department, Meridian Fire Department, North Ada County Fire and Rescue, Eagle Fire District, Kuna Fire District, Star Joint Fire Protection District, and wildland fire districts.	2006 Engage community members as soon as possible to determine interest among community members. 2006-08 Provide materials, resources and assistance for those community members interested in chartering new districts.
5.4.c: Extension of Boise City Fire south of current boundary to address issues of fires in area between Boise and Kuna.	**Protection of People and Structures** by providing fire protection in areas of county are currently without adequate fire protection.	**Local residents** in cooperation with the Wildfire Steering Committee, Emergency Management, and Boise Fire Department.	2006 Engage community members to determine interest among community members. 2006-07 Determine operational needs and develop plan for district expansion.
5.4.d: Acquisition of additional brush apparatus and large capacity water tender for Boise Fire Department.	**Protection of people and structures** by direct firefighting capability enhancements.	**Boise City Fire**	2006 Determine equipment needs and secure funding.
5.4.e: Acquisition of six-wheeled ATV with tank and pump for North Ada County Fire and Rescue to respond to wildland fire incidents within the Boise Greenbelt.	**Protection of people and structures** by direct firefighting capability enhancements.	**North Ada County Fire and Rescue and City of Boise Parks and Recreation.**	2006 Secure funding source and purchase necessary equipment.
5.4.f: Acquisition of new brush engine for Meridian Fire Department.	**Protection of people and structures** by direct firefighting capability enhancements.	**Meridian Fire Department**	2006 Determine possibilities through BLM Rural Fire Assistance Program. 2007 Secure funding source and purchase necessary equipment.
5.4.g: Construction of new fire station in Meridian Fire District to keep up with demands of a growing population.	**Protection of people and structures** by direct firefighting capability enhancements.	**Meridian Fire Department, Southwest Idaho RC&D, and Emergency Services.**	2006 Develop expansion plan and determine station location. 2007 Develop cost estimates and secure funding. 2008 Complete construction and outfit station as necessary.

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.h: Acquisition of Type 3 or 4, four-wheel drive engine for Kuna Fire District.	**Protection of people and structures** by direct firefighting capability enhancements.	**Kuna Fire District**	2006 Determine possibilities through BLM Rural Fire Assistance Program. 2007 Secure funding source and purchase necessary equipment.
5.4.i: Acquisition of large capacity pumper-tanker for Melba Fire Department.	**Protection of people and structures** by direct firefighting capability enhancements.	**Melba Fire Department**	2006 Determine possibilities through BLM Rural Fire Assistance Program. 2007 Secure funding source and purchase necessary equipment.
5.4.j: Construction of new fire station in Melba Fire District to keep up with demands of a growing population.	**Protection of people and structures** by direct firefighting capability enhancements.	**Melba Fire Department,** Southwest Idaho RC&D and Emergency Services	2006 Develop expansion plan and determine station location. 2007 Develop cost estimates and secure funding. 2008 Complete construction and outfit station as necessary.
5.4.k: 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 firefighting capability enhancements.	**Ada County Dispatch, Wildfire Steering Committee** in cooperation with Statewide Interoperability Commission	2006 Summarize existing two-way radio capabilities and limitations. Identify costs to upgrade existing equipment and locate funding opportunities. 2007 Acquire and install upgrades as needed. 2007-08 Identify opportunities for radio repeater towers located in the region for multi-county benefits.
5.4.l: Addition of repeater in Stage Stop area in order to improve communications between far eastern edge of the county and dispatch.	**Protection of people and structures** by direct firefighting capability enhancements.	**Southwest Idaho RC&D** in cooperation with County Commissioners Boise Fire Department, Meridian Fire Department, North Ada County Fire and Rescue, Eagle Fire District, Kuna Fire District, Star Joint Fire Protection District, and wildland fire districts.	2006 Summarize existing capabilities and limitations. Identify cost for equipment and installation and locate funding opportunities. 2007 Acquire and install needed equipment.

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.m: Retention of volunteer firefighters and dispatch.	**Protection of people and structures** by direct firefighting capability enhancements.	**Wildfire Steering Committee**, Boise Fire Department, Meridian Fire Department, North Ada County Fire and Rescue, Eagle Fire District, Kuna Fire District, Star Joint Fire Protection District, BLM, IDL, and USFS working with broad base of county citizenry.	2006 Develop an incentives program and implement it. Target an increased recruitment (+10%) and retention (+20% longevity) of volunteers
5.4.n: Increased training and capabilities of firefighters.	**Protection of people and structures** by direct firefighting capability enhancements.	Boise Fire Department, Meridian Fire Department, North Ada County Fire and Rescue, Eagle Fire District, Kuna Fire District, and Star Joint Fire Protection District working with the BLM, IDL, and USFS for wildland training opportunities and with the State Fire Marshall's Office for structural firefighting training.	2006 Develop a multi-county training schedule that extends 2 or 3 years in advance (continuously). 2006 Identify funding and resources needed to carry out training opportunities and sources to acquire. 2006 Begin implementing training opportunities for volunteers.

5.7 Regional Land Management Recommendations

Wildfires are a fact of life in Ada County. Wildland fires will continue to occur despite continuing efforts of all city, county, state and federal agencies within the county. However, active land management that modifies fuels, promotes healthy grassland and range conditions, and promotes the use of these natural resources (consumptive and non-consumptive) will insure that these lands will continue to provide value to residents of Ada County.

Of particular concern in Ada County is the spread of non-native vegetative species that alter natural ecological systems and degrade resource values for both wildlife, range and recreational use. The proliferation of cheatgrass and other exotic species threatens the biological integrity of the Foothills Region as well as the Snake River Birds of Prey Conservation Area. Efforts by local, state and federal agencies responsible for management of these lands should be encouraged.

5.7.1 Interstate 84 Corridor

Similar to the issues faced in the railroad right-of-way, the Interstate 84 corridor from Boise to Mountain Home, and to a lesser degree from Mountain Home to Glenns Ferry, has historically experienced significant numbers of wildfire ignitions and rapid fire spread. This corridor also contains light, flashy fuels that become tinder dry during the summer months and it has a high volume of traffic.

Ignitions often occur from such vehicle-related causes as pulling off the road into the grass for mechanical or other reasons, overheating, tire blow-outs, overheated or lost bearings, axle or electrical problems, and more. The portion of this corridor near the community of Tipanuk, northwest of Mountain Home, was identified in mitigation planning during 2001 as needing some form of fire break.

BLM fire and fuels managers, in cooperation with the Idaho Transportation Department, are currently exploring methods and means to treat the right-of-way fuels and create a firebreak on both sides of, and in the median, of the Interstate from near Boise to Glenns Ferry. ITD currently contracts for mowing rights-of-way in a larger geographic area and the timing and frequency of mowing in the Boise-to-Glenns Ferry strip has not been sufficient to minimize fire hazards and ignitions.

Treatment options being explored range from the BLM, through the National Fire Plan, funding more frequent and time-focused mowing, to a complex, multi-year project involving mowing, herbicide applications, and seeding of more fire-resistant vegetation.

The completion of an area-wide environmental assessment, and field-testing and approval of an herbicide product focused on cheat grass control, both of which may be accomplished within the next year, may allow a comprehensive fuels management project to proceed through the I-84 corridor within the next few years. This treatment is also being considered for several other access and major roadways throughout the area.

In the short term, the BLM and ITD are exploring potential fuels treatments to reduce hazards in more localized projects focused on freeway interchanges and specific access roads.

Throughout the short- and long-term vision for fuels treatment in the I-84 corridor, consideration is being given for compliance with NEPA (National Environmental Protection Act) requirements, protection of existing stands of big sage, and other valued resources through the right-of-way.

5.7.2 Proposed Activities

Table 5.5. Action Items for Regional Land Management Recommendations.

Action Item	Goals and Objectives	Responsible Organization	Action Items & Planning Horizon
5.5.a: Continue or initiate aggressive cheatgrass abatement program on rangeland ecosystems throughout Ada County.	**Regional Land Management Recommendations** in order to ensure integrity of grassland and rangeland ecosystems through the control of exotic vegetation.	BLM, Idaho Fish and Game, City of Boise, City of Garden City, City of Eagle, City of Meridian, City of Star, City of Kuna, IDL, USFS, Boise Parks and Recreation, Ada County Weed and Pest Control in cooperation with other entities including the County Commissioners.	2006 Continue with weed control and abatement programs where they already exist. Develop and implement comprehensive weed control program on targeted areas. Subsequent Years: Continue monitoring and control efforts through the long term.
5.5.b: Create a buffer along major roadways and along interface streets throughout the Boise Foothills to reduce the probability of roadside ignitions.	**Regional Land Management Recommendations** in order to ensure integrity of grassland and rangeland ecosystems through the reducing potential for wildland fire events originating along roadways.	Idaho Fish and Game, City of Boise Parks and Recreation, IDL, BLM, USFS, and private landowners in the foothills region.	2006 Determine best means by which to control roadside vegetation and implement control program immediately. Subsequent Years: Continue monitoring and control efforts through the long term.

Table 5.5. Action Items for Regional Land Management Recommendations.

Action Item	Goals and Objectives	Responsible Organization	Action Items & Planning Horizon
5.5.c Fire awareness and prevention signage in high use areas	**Regional Land Management Recommendation** in order to make the public aware of fire related issues when recreating on public lands in the county	BLM, Idaho Fish and Game, City of Boise, City of Garden City, City of Eagle, City of Meridian, City of Star, City of Kuna, IDL, USFS, Boise Parks and Recreation, Ada County Weed and Pest Control in cooperation with other entities including the County Commissioners.	2006 Determine best signage location and verbiage. 2007 Secure funding and install signs.
5.5.d: Foothills East Project.	**Improve public safety and ecosystem health** by implementing projects in the eastern Ada County Foothills. Objectives: 1) Lower the FRCC to a 1, 2) Eliminate or reduce noxious weeds, 3) Eliminate or reduce invasive annual grass, 4) Enhance and/or restore watershed health, and 5) Improve wildlife habitat. These actions will increase public safety and save tax dollars by returning fire to its natural role in the environment.	Bureau of Land Management, Southwest Idaho RC&D, City of Boise, and other willing participants.	Seek out additional willing partners and work on overall project strategy and goas. 2007 Begin the NEPA process for the project. Ongoing: Establish a demonstration site near the Foothills Learning Center, continue NEPA process, and upon completion of NEPA process begin to implement projects.
5.5.e: Kuna Fuel Break Project.	**Protection of private property and sensitive species plant habitat** (*Lepidium papilliferum*) in the wildland urban interface.	Bureau of Land Management.	2006 Begin planning phase. 2007 Once planning phase is complete, begin implementation of proposed projects.
5.5.f*: Lepidium papilliferum* (slickspot peppergrass) fuel breaks.	**Protection of sensitive species plant habitat** (*Lepidium papilliferum*, slickspot peppergrass).	Bureau of Land Management and any other willing partners.	Ongoing: Begin planning, secure funding, and start implementation phase.
5.5.g: Fenceline burning.	**Remove the hazardous fuels that collect along fencelines** such as tumbleweeds to improve firefighter safety during times of high fire danger.	Bureau of Land Management and any other willing partners.	Implement project annually or as needed. 2007 Update environmental documentation.

Table 5.5. Action Items for Regional Land Management Recommendations.

Action Item	Goals and Objectives	Responsible Organization	Action Items & Planning Horizon
5.5.h: Establish a cooperative weed management area to manage weeds on all jurisdictions in Ada County in order to develop a strong weed control program consisting of education, public outreach, prevention, detection, eradication, integrated control methods, and monitoring.	Maintain weed-free status in areas that are weed free and stop or control the spread of established weeds.	Ada County Weed Control, Idaho Fish and Game, Idaho Department of Agriculture, U.S. Forest Service, Bureau of Land Management, City of Boise, USDA Natural Resource Conservation Service, Idaho Department of Lands, Army Corps of Engineers, and interested corporations and non-profit groups.	2006 Establish a Memorandum of Understanding with all participants. Ongoing: Seek funding and implement projects in the areas of education, control, eradication, monitoring, detection, and mapping.

Chapter 6: Supporting Information

6

6.1 List of Tables

6.2 Table 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
Tera R. King, B.S.	Northwest Management, Inc.	Natural Resource Manager, Fire Control Technician
Toby R. Brown, B.S. (*posthumously*)	Northwest Management, Inc.	Natural Resource Manager, Project Co-Manager, Hazard Mitigation Specialist
Vincent P. Corrao, B.S.	Northwest Management, Inc.	Resource Management Specialist, Deputy Project Manager
John A. Erixson, M.S.	Northwest Management, Inc.	Range Management, Fire Specialist
Dennis S. Thomas	Northwest Management, Inc.	Fire & Fuels Specialist, Prescribed Burning Manager
Ken Homik, M.S.	Northwest Management, Inc.	Fire Use & Air Quality Specialist
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 **Ada 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 Ada County Government

6.4.2 Representatives of City Government in Ada County

6.4.2.1 Representatives from the City of Boise.

6.4.2.2 Representative of the City of Garden City

6.4.2.3 Representatives of the City of Eagle

6.4.2.4 Representative of the City of Meridian

6.4.2.5 Representatives of the City of Star

6.4.2.6 Representatives of the City of Kuna

6.4.3 Representatives of City and Rural Fire Districts in Ada County

This All Hazards Mitigation Plan and all of its components were developed in close cooperation with the participating fire districts listed herein.

By: Renn Ross, Chief Boise Fire Department	Date
By: Ron Anderson, Chief Meridian Fire Department	Date
By: Dan Friend, Chief Eagle Fire District	Date
By: Doug Rosin, Chief Kuna Fire District	Date
By: Kevin Courtney, Chief Star Joint Fire Protection District	Date
By: Martin Knoelk, Chief North Ada County Fire and Rescue	Date
By: Richard Farner, Chief Melba Fire Department	Date

6.4.4 Representatives of Organizations and Federal and State Agencies

This All Hazards Mitigation Plan was developed in cooperation and collaboration with the additionally listed agencies and organizations. These entities listed below are not eligible to "formally adopt" this plan, but will strive to implement its recommendations.

By: Idaho Department of Lands	Date
By: USDI Bureau of Reclamation	Date
By: USDI Bureau of Land Management	Date
By: USDA Forest Service	Date
By: , Chairman Southwest Idaho Resource Conservation & Development Council	Date
By: Idaho Transportation Department	Date
By: Idaho Fish and Game	Date
By: William E. Schlosser, Ph.D. Project Manager-All Hazard Mitigation Plan Northwest Management, Inc.	Date

6.5 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, and 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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