

# Community Wildfire Protection Plan

for At-Risk Communities of the  
Apache National Forest in  
Apache Country

**Alpine ♦ Eagar ♦ Greer ♦ Hidden Meadows  
Hideaways ♦ Nutrioso ♦ Springerville ♦ South Fork**

August 2004



Apache County

Greer Fire District

Springerville Municipal  
Fire Department

City of Eagar

Apache-Sitgreaves  
National Forest

Arizona State Land  
Department, Deputy

City of Springerville

Eagar Municipal Fire  
Department

State Forester, Fire  
Management Division

Alpine Fire District

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Apache National Forest in  
Apache County

**August 10, 2004**

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## Acronyms and Abbreviations

ACWPP	Apache Communities' Wildfire Protection Plan
AIGG	Arizona Interagency Coordinating Group
ANF	Apache National Forest
APS	Arizona Public Service Company
ARS	Arizona Revised Statutes
A-S NFs	Apache-Sitgreaves National Forests
BA	basal area
CAG	Community Action Group
CR	County Road
CWPP	Community Wildfire Protection Plan
DPS	Department of Public Safety
EAS	Emergency Alert System
ESA	Endangered Species Act
dbh	diameter at breast height
drc	diameter at root collar
FS	Forest Service
FR	Forest Road
GIS	geographic information system
HFRA	Healthy Forests Restoration Act of 2003
IGA	Intergovernmental Agreement
ISO	Insurance Services Office
NEPA	National Environmental Policy Act
NFP	National Fire Plan
NPC	Northland Pioneer College
NRWG	White Mountains Natural Resource Working Group
PAC	spotted owl protected activity center
PFA	goshawk post-fledgling family area
RAC	Eastern Arizona Counties Resource Advisory Committee
RFA	Rural Fire Assistance
RT	recommended treatment
PP	ponderosa pine
SFA	State Fire Assistance
SR	State Route
US	United States Route
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
VFA	Volunteer Fire Assistance
WMS	White Mountain Stewardship Project
WUI	wildland-urban interface

## I. INTRODUCTION

The Apache Communities' Wildfire Protection Plan (ACWPP) for the “at-risk” communities located in the Apache National Forest (ANF) managed by the US Department of Agriculture (USDA) Apache-Sitgreaves National Forests (A-S NFs) in Apache County was developed in response to the Healthy Forests Restoration Act of 2003 (HFRA). This recent legislation established unprecedented incentives for communities to develop comprehensive wildfire protection plans in a collaborative, inclusive process. Furthermore, this legislation gives direction to the Departments of Interior and Agriculture to address local community priorities in fuel reduction treatments, even on nonfederal lands.

The HFRA represents the legislative component of the Healthy Forests Initiative, introduced by President Bush in January 2003. Congress passed the HFRA in November 2003 and the president signed it into law that December. When certain conditions are met, Title I of the HFRA authorizes the Secretaries of Agriculture and Interior to expedite the development and implementation of hazardous fuel reduction projects on lands managed by the Forest Service or the Bureau of Land Management.

The HFRA emphasizes the need for federal agencies to collaborate with communities in developing hazardous fuel reduction projects and places priority



Fuel reduction treatment, Greer  
Source: ANF

on treatment areas identified by communities themselves through development of a Community Wildfire Protection Plan (CWPP). Priority areas include the wildland-urban interface (WUI), municipal watersheds, areas impacted by windthrow or insect or disease epidemics, and critical wildlife habitat that would be negatively impacted by a catastrophic wildfire.

In compliance with Title 1 of the HFRA, the CWPP requires agreement among local government, local fire departments, and the state agency responsible for forest management (in Arizona, the Arizona State Land Department [State Forester]). The CWPP must also be developed in consultation with interested parties and the applicable federal agency managing the land surrounding the at-risk communities.

The ACWPP is developed to assist local government, fire departments, fire districts, and residents in the identification of lands—including federal lands—at risk from severe wildfire threat and to identify strategies for reducing fuels on wildlands while improving forest health, supporting local industry and local economies, and improving firefighting response capabilities.

Guidance for development of the ACWPP is based on Preparing a *Community Wildfire Protection Plan: A Handbook for Wildland-Urban Interface Communities* (Communities Committee, Society of American Foresters, National Association of Counties, National Association of State Foresters 2004). The ACWPP was collaboratively developed through consultation with the A-S NFs, using *The Healthy Forests Initiative and Healthy Forests Restoration Act Interim Field Guide* (USDA Forest Service and Bureau of Land Management 2004). As additional guidance documents become available, any changes or amendments will be incorporated into the ACWPP.

Encompassed by the ANF, the at-risk communities (Hideaways, Greer, South Fork, Eagar, Springerville, Nutrioso, and Alpine) of the ACWPP are located in the southern portion of Apache County (see Figure 1.1). The following sections detail these communities' background and need for the ACWPP, identify current policies, and provide overviews of the process and goals of the ACWPP.

## A. Background

Recent Arizona snowpacks have been below normal, with the 2002 winter being the fourth year of continued drought in the Southwest. Records from the National Climatic Data Center in Asheville, North Carolina, show that in Arizona and New Mexico, May 2002 was the 2<sup>nd</sup> driest month and 28<sup>th</sup> warmest month on record. Continued extreme weather conditions, dry fuel conditions, and increasing fuel loading on federal and nonfederal lands contribute to the potential for catastrophic wildland fires within the ACWPP communities. Such conditions are prevalent today across the ACWPP. The ACWPP communities have developed this CWPP to increase preparedness, reduce natural fuels, and increase communication with local, county, state and federal emergency response personnel by determining areas of high risk, developing mitigation measures to reduce risk, improving emergency response, and reducing structural ignitability throughout the WUI.



Three Forks Fire, 2004  
Source: ANF

Since the mid-1990s wildfires have occurred in or close to the ACWPP planning area; these include two large grassland fires (1995 and 2002) that threatened the towns of Eagar and Springerville. The Acosta Fire occurred in 2000 north and east of the community of Nutrioso and burned 177 acres of primarily pinyon-juniper vegetation. During June of the 2004 fire season, the Three Forks Fire ignited east of Big Lake and burned to within 12 miles of the town of Eagar.

The Three Forks Fire grew to approximately 8,000 acres, and the community of Nutrioso was placed on evacuation notice. Although, landscape scale fires have not been prevalent in the mixed conifer, pine, or pinyon-juniper habitats in the WUI, with the exception of 2004, several hundred natural and human fire starts occur and are suppressed and contained each year. Because of the region's continued drought and fuel conditions, local fire districts and governments initiated fire preparedness enhancements and land treatment efforts (see Section I.D.3 Local Policies) to recognize and act on those current conditions that result in the accumulation of unacceptable levels and types of natural fuels that significantly threaten the communities with a catastrophic wildfire.

Apache County has long recognized the importance of managing the WUI, as well as developing and implementing landscape treatments in the interior forest, to reduce fuel loads and restore natural forest ecosystems. Apache County along with the Apache-Sitgreaves, Coronado, and Tonto National Forests; the Southwest Regional Director of the US Fish and Wildlife Service; the Arizona Game and Fish Department; Gila, Graham, Greenlee, and Navajo Counties; Governor Jane Hull; and the University of Arizona are signatories to the 1997 Cooperative Agreement formalizing the White Mountains Natural Resource Working Group (NRWG). The mission of the NRWG is "to allow for innovative approaches to achieving vegetative management strategies through the use of prescribed fire and through mechanical treatments while providing for improved water quality and quantity, accelerating riparian restoration, mitigating impacts of catastrophic fire associated with forest and rangeland ecosystem health for biodiversity, and promoting quality effective partnerships" (NRWG Mission Statement 1997).

Shortly after the 2003 fire season, an NRWG subgroup met to review the threat to communities from catastrophic wildfire and to analyze the current condition of the WUI on the A-S NFS and nonfederal lands in the communities. This subgroup was formed through encouragement of the A-S NFs Supervisor and officials from the Bureau of Indian Affairs and the White Mountain Apache Tribe. It was during this time that the U.S. Congress was debating the HFRA. Subsequent to Congressional approval and to take



**Planning Area**



Figure 1.1. Planning area



advantage of the provisions of the HFRA, the subgroup focused on developing a CWPP to secure funding for community wildfire protection. During a series of meetings with community leaders and local government officials and in consultation with the A-S NFs Supervisor and the Arizona State Forester, the decision was made to produce a single CWPP for all at-risk communities in the ANF. This process was to follow the approach used in developing a CWPP for the at-risk communities in the Sitgreaves National Forest, in which Apache County was a principal in funding and agreeing to the Sitgreaves CWPP.



CAG deliberations  
Source: Logan Simpson Design Inc.

To create a single ACWPP that captured local interest and advanced understanding regarding the critical issues, a Community Action Group (CAG) was established to focus on the at-risk communities of Greer, Hideaways, South Fork, Eagar, Springerville, Nutrioso, and Alpine. The CAG included community leaders who asked that those with relevant expertise and individuals representing all community interests participate in the CAG. The intent was to share information on existing wildfire risk conditions, fire history, and current efforts to mitigate high wildfire risk and then to help recommend strategies needed to mitigate risk to communities from catastrophic wildland fire through fuel reduction treatments and enhanced fire response and preparedness.

The local CAG does meet all criteria of the collaborative guidance established by the Wildland Fire Leadership Council and has been the core of the public involvement process for the ACWPP. In its deliberations, the CAG

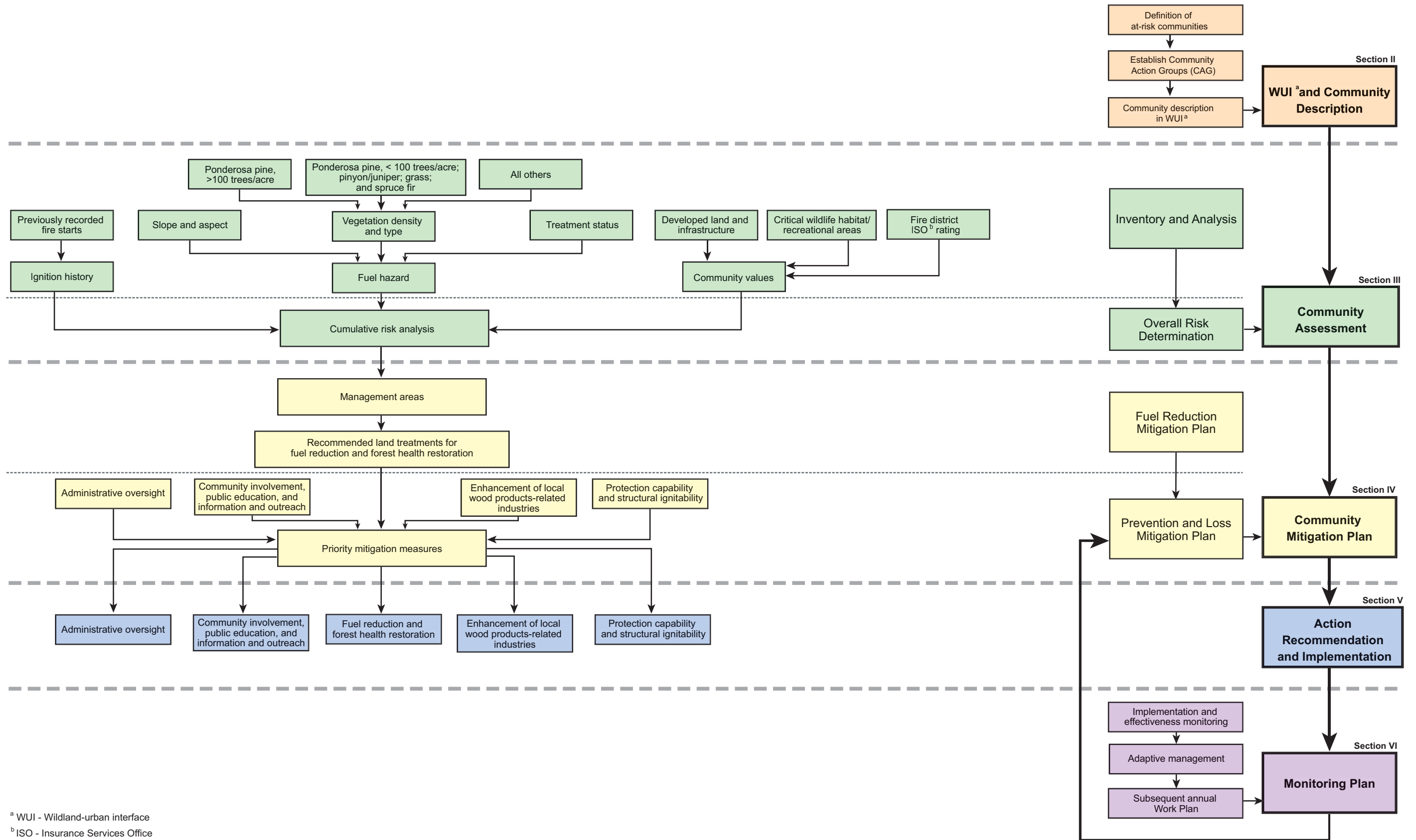
discussed contributions from the CAG technical experts and reviewed many references and guidance documents.

Figure 1.2 summarizes the process that the local CAG followed to produce the ACWPP. At the far right of each tier is the “product” resulting from the activities in that tier. These tiers correspond to the sections in the ACWPP and serve as a road map for the rest of this document

## B. Wildland-Urban Interface

The WUI is commonly described as the zone where structures and other features of human development meet and intermingle with undeveloped wildland or vegetative fuels. Communities within the WUI face substantial risk to life, property, and infrastructure. Wildland fire within the WUI is one of the most dangerous and complicated situations firefighters face. Both the National Fire Plan (NFP), a response to catastrophic wildfires, and *A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment, 10-Year Comprehensive Strategy* (2001), an implementation plan for reducing wildland fire risk, place a priority on working collaboratively with communities in the WUI to reduce their risk from large-scale wildfire. The HFRA builds on existing efforts to restore healthy forest conditions in the WUI by empowering local communities and by authorizing expedited environmental assessment, administrative appeal, and legal review for qualifying projects on federal land.

The majority of lands surrounding these communities, defined in the HFRA as “Federal Land,” are in this ACWPP, managed under the jurisdiction of A-S NFs. Arizona State Trust Land surrounds the communities of Eagar and Springerville primarily on the north and west. The towns of Eagar and Springerville are the only incorporated communities located in the planning area. All other communities are under the jurisdiction of the County. Private ownership of land is mainly restricted to areas within the communities, although there are small private in-holdings throughout the ANF.



<sup>a</sup> WUI - Wildland-urban interface  
<sup>b</sup> ISO - Insurance Services Office

**Figure 1.2.** Schematical process the local CAG used to produce the ACWPP

The WUI described in the ACWPP includes 49,258 acres of private, county, and state lands and 119,048 acres of federal lands: a total of 168,306 acres. Additional information on the process used to delineate the WUI boundaries and a description of those communities involved are in Section II.

## C. Fire Regime and Condition Class

In compliance with the HFRA, federal lands within the WUI were evaluated for Fire Regime and current Condition Class. A natural fire regime is a general classification of the role a fire would play across a landscape in the absence of human intervention. The Forest Service (FS) has created five categories of natural (historic) fire regimes based on the number of years between fires (fire frequency) combined with the severity of fire on dominant overstory vegetation (*Development of Coarse-Scale Spatial Data for Wildland Fire and Fuel Management* [Forest Service 2002]). The majority of the ACWPP's WUI lands are composed of Natural Fire Regime 1, which is described as forested lands where wildland fires have occurred at a 0–35-year frequency, with low severity of burn.

A Condition Class is the Forest Service's classification of the extent of departure from the natural fire regime. For example, a forest in Condition Class 1 is a forest system within its natural fire range and at low risk for losing ecosystems components from wildland fire.



Desired future condition of ponderosa pine forest  
Source: Logan Simpson Design Inc.

A Condition Class 2 forest has moderately departed from its historic fire occurrence range and has a moderate risk of losing habitat components. Condition Class 3 forests have significantly departed from their historic fire regime ranges, and their risk of losing key habitat components is high. The majority of land within the WUI (69 percent) are in Condition Class 3. There are roughly equal acreages of wildland classified as Condition Class 2 (15 percent) and Condition Class 1 (16 percent) distributed across the WUI.

## D. Future Desired Condition and Relevant Fire Policies

The desired future condition of federal land is a return to Condition Class I. Federal lands in this Condition Class can carry wildfire without modifications to forest components. Once in this condition class, natural processes such as fire can be incorporated into long-term management practices to sustain forest health. The desired future condition of nonfederal lands in the WUI is to have private land owners comply with fire-safe standards recommended by local fire departments and local communities. Residential and other structures that comply with these standards significantly reduce the risk of fire igniting in the community and spreading to the surrounding forest. Additionally, structures that comply with fire-safe recommendations are much more likely to survive wildland fires that spread into the community.

Local governments, NRWG, the Arizona Sustainable Forests Partnership, the Upper Little Colorado River Watershed Partnership, the White Mountain Conservation League, The Nature Conservancy, and many others have collaborated with A-S NFs to develop innovative and active forest management initiatives such as the National Forest County Partnership Restoration Program and the White Mountain Stewardship Project. Aggressive public education and private property treatment projects within the communities, coupled with current efforts of local fire department programs, are creating safer, better informed forestland communities that are increasingly willing to comply with the intent and spirit of such programs.

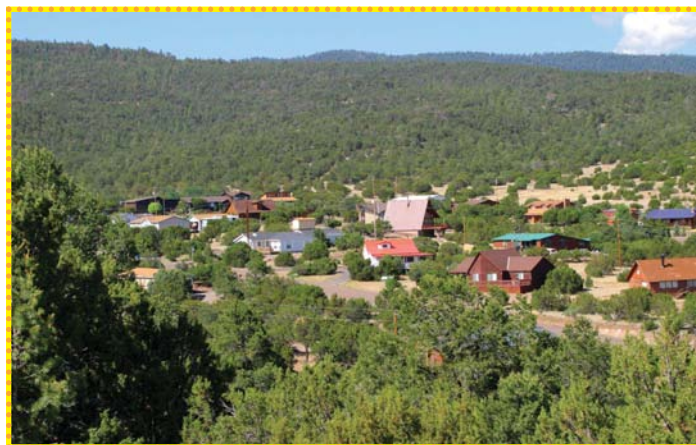
## 1. Federal Policies

Several existing federal wildfire protection policies have been developed within recent years; one of the more significant is the 1995 Federal Wildland Fire Management Policy. The 1995 Report was the first single comprehensive federal policy for the Departments of Interior and Agriculture and for the first time formally recognized the essential role of fire in maintaining natural systems. The 1995 Federal Wildland Fire Management Policy was reviewed and updated by the Interagency Federal Wildland Fire Policy Review Working Group in 2001. The Working Group found the 1995 Policy to be sound and appropriate and subsequently recommended changes and additions to the 1995 Federal Wildland Fire Management Policy to address ecosystem sustainability, science, education, and communication and to provide for adequate program evaluation.

Among the most prominent recent national policies is the NFP. The NFP incorporates *A Collaborative Approach for Reducing Wildland Fire Risk to Communities and the Environment, 10-Year Comprehensive Strategy* (2001), whose primary goals are to:

- ❖ improve prevention and suppression,
- ❖ reduce hazardous fuels,
- ❖ restore fire-adapted ecosystems, and
- ❖ promote community assistance.

Federal wildfire reduction policy is planned and administrated locally through the A-S NFs, which is the governing agency for the federal lands associated in the ACWPP planning area. The Apache-Sitgreaves



Continuous fuels from ANF to Eagar  
Source: Town of Eagar

National Forests Plan (amended in 1996) includes wildfire management guidelines for these federal lands. A-S NFs' fire management activities include wildland fire suppression, prescribed burns, and wildland fire use in six general fire management zones. The majority of the area's WUI is located in Zone I, which includes three primary vegetation types: 1) ponderosa pine/Gamble oak, 2) mixed conifer, and 3) spruce-fir. Some areas in the WUI are designated Zone II, which includes high mountain grassland, pinyon-juniper, and associated grasslands vegetation types. Within these zones, specific management standards and guidelines are analyzed with regard to wildfire suppression.

Firewise™ is a national program that helps communities reduce the risk of wildfires and provides them with information about organizing to protect themselves against catastrophic wildfires and mitigating losses from such fires.

## 2. State Policies

Arizona has been proactive in assessing wildfire risk on a regional level. The Arizona Wildland Urban Interface Assessment (2004) is a statewide strategic report using aerial imagery and geographic information system (GIS) technology to identify and map wildfire risk. Using the categories of topography, wildfire risk, fire hazard, and structural density, the report addresses wildfire risk to residential areas in the WUI. In relation to the ACWPP, the communities of Greer, Eagar, Nutrioso, and Alpine are all rated "high" for potential wildfire impact. The community of Hideaways was listed in the *Federal Register* as "at high risk from wildfire." Although not evaluated in The Arizona Wildland Urban Interface Assessment, Hideaways is considered by the CAG as high risk because of fuel type, fuel load, current Condition Class, proximity to federal lands, and potential for wildfire occurrence. Additionally, *Arizona Firewise Communities* is published by the Arizona Interagency Coordinating Group (AICG, a partnership of federal and state organizations in Arizona), in affiliation with the national Firewise™ Communities/USA program. Although not listed in the *Federal Register*, the town of Springerville was also evaluated in the Arizona Wildland Urban Interface Assessment, and is rated "high" for potential wildfire impact.

Recognizing the significant effects of catastrophic wildfire on the biological, cultural, and economic value of Arizona’s ponderosa pine forests, Governor Janet Napolitano convened the “The Annual Forest Health and Safety Conference: Building on Lessons Learned” in March 2003. This conference resulted in the creation of the science-based Forest Health Advisory Council, which provided recommendations to the governor on actions that can be taken now and in the future for improving the health of Arizona’s forests. The Forest Health Advisory Council developed six major principles for restoring forest health that were adopted by the Arizona Forest Health Oversight Council in November 2003. Apache County has appointed a representative to the Arizona Forest Health Oversight Council on Forest Health, and, therefore, these “Guiding Principles” were thoroughly reviewed by the CAG to ensure that they were embedded in the goals of this ACWPP. The principles focused on issues of integration, sustainable communities and economies, ecological integrity, land use and planning, funding and compliance, and practices that are effective and efficient with low environmental and socioeconomic impact. During the Forty-sixth Legislative Session of 2004, legislation was passed governing the adoption of an “Urban-Wildland Interface Code” (Arizona Revised Statutes [ARS] 9-806 and ARS 11-861) and re-describes the State Forester as a position within the Executive Branch (ARS 37-621, 622). This legislation also created the “Healthy forest enterprise incentives” (ARS 41-1516) and established the “State urban-wildland fire safety committee” (ARS 41-2148). The CAG has reviewed the new legislation and believes this is a significant enhancement to the ability of the State Forester to react to rapidly increasing threats within the WUI and encourage the development of the forest products industry in support of local community values across the state.

### 3. Local Policies

The ACWPP communities are aware that traditional approaches to forest management, wildland fire management, and community growth within the WUI have produced extensive areas of high risk for catastrophic wildfire. These communities aspire to a restored, self-sustaining, biologically diverse forest, that contributes to a quality of life demanded by local citizens and expected by visitors. Current forest



House surrounded by Condition Class 3 lands  
Source: Town of Eagar

conditions and treatment prescriptions that can result in an acceptable mix of managed natural and mechanized processes that will lead to the restoration of natural ecosystems must be developed, accepted by the community, and rigorously implemented. The communities that have developed the ACWPP recognize that “stand-replacing” fires must be converted to “stand-enhancing fires.”

A current effort being led by the Eagar Fire Department will develop a “Coordinated Operational Fire Plan,” which will involve all fire departments and districts within the WUI. This Plan will provide predetermined initial attack coordination among all fire departments and districts and will ensure rapid response and resource distribution to fire occurrence within the WUI.

County policy recognizes the multiple fire issues associated with the WUI and supports cooperative solutions for managing threats to community forest health and the threats posed by catastrophic wildfire. Apache County has a goal of reducing the danger of fire and the threat of catastrophic wildfires for all residents living in a WUI or near the A-S NFs boundary.

Apache County has adopted the *Apache County Emergency Management Operations Plans and Procedures* (2004) that describes emergency response, notification procedure, and needs for mass evacuations because of catastrophic situations within the County. The *Apache County Emergency Management Operations Plans and Procedures* details evacuation plans for communities within the

WUI. Apache County Emergency Management Department developed a brochure, *Apache County Emergency Management Evacuation Procedures*, which has been mailed to all Apache County addresses. The guide provides emergency procedures in case of evacuation, including alert procedures, essential items to take when evacuating, registration/reception centers, transportation planning, home security, family communication, and animal and pet evacuation suggestions.

In addition to the county and towns, the Upper Little Colorado River Watershed Partnership, a multidisciplinary work group whose mission is to enhance the Upper Little Colorado River Watershed Partnership, adopted the “Watershed Based Action and Management Plan” in July 2002. This plan outlines a strategy to “[e]ffectively manage forest resources to reduce impacts to water resources” by “(1) Implementing proper timber management practices. Such projects could include small diameter logging to increase water yield, maintain a continuous supply of wood fiber and reduce erosion, (2) Preventing wildfire through controlled burning practices. This will reduce understory fuel and maintain forest health. (3) Encouraging local industries to utilize timber and cattle resources to stimulate the local economy.”

The appearance and health of the forests within and surrounding the ACWPP communities provide not only an economic base (recreation, forest products harvesting and processing) for the communities, but also provide a quality of life that citizens appreciate and expect. The communities recognize the need to inform and educate local citizens and visitors about needed restoration treatments on private properties and to work with the ANF in determining community-based and accepted land management practices that restore and enhance today’s forest, while providing protection from wildland fire threats and from fire starts from within these communities.

## E. Grants/Current Projects

Financial commitments required to reduce the risk of catastrophic wildfire can be extensive for the National Forests and for the small rural communities surrounded by forests. In 2001, the NFP created a funding process through which Congress provided grant monies to help reduce the vulnerability of WUI communities and to help fire departments improve their fire protection services for wildland fire suppression. According to the Fire Management Division of the Arizona State Land Department, grants awarded for the 2002/03 fiscal year totaled approximately \$10.4 million.

The Arizona State Land Department administers annual grants such as the Volunteer Fire Assistance (VFA) Grant Program, Department of Interior Rural Fire Assistance (RFA) Grant Program, and State Fire Assistance (SFA) Grants. Distribution of those grant monies has been on a competitive basis, with AICG evaluating submitted applications. Table 1.1 displays grants allocated within the ACWPP planning area.

The ACWPP communities have been involved with and supportive of programs designed to stimulate local forest products-related industries and that significantly reduce forest fuels within the WUI. The communities have supported local wood-products operators as they modernize equipment for the harvest of small-diameter trees and for the use of small-diameter trees as biomass. Grants to the wood-products industry have totaled over \$4 million over the last 4 years through the stewardship of the Four Corners Sustainable Forests Partnership.

Another significant program supported by the local communities is the White Mountain Stewardship Project (WMS). Stewardship contracts for forest treatments are not new to the A-S NFs, and have been used in the treatment of 3,000 acres to date. The U.S. Congress recently enacted legislation expanding stewardship contracting authority, allowing for long-term contracts (up to 10 years) for firms participating in programs that meet land management objectives. The WMS contract to treat an estimated 5,000 to 25,000 acres per year for the next 10 years

is currently being offered by A-S NFs. Communities located within the WUI endorse the WMS and support fuel reduction programs that encourage local economic and forest-related industry growth through productive use of the wildland treatment byproducts. The Eastern Arizona Counties Resource Advisory Committee (RAC) administers grants funded under the authority of the Secure Rural Schools and Communities Self-Determination Act of 2000. The Act

authorizes grants to federal agencies, state and local governments, private and nonprofit entities that improve the maintenance of existing infrastructure, improve forest health, and restore and improve land health and water quality. The ANF has used this grant opportunity for fuel reduction treatments in the WUI. Table 1.2 identifies treatment areas in the ANF.

**Table 1.1** Grants allocated for the ACWPP planning area, 2001–2003

Grant recipient	Project/ Treatment	Description
Private contactors within Apache County	thinning/chipping equipment	Three Four Corners Sustainable Forests Partnership grants for chain flail chipper, harvester, and rebuilding of chipper
Private contactors within Apache County	cogeneration processing center	Five Rural Community Assistance Economic Action grants for a cogeneration processing center, chain flail chipper, self loading chipper, and miscellaneous equipment
Fire Departments within Apache County	fire protection planning	Two Rural Community Assistance Planning grants for community fire protection plans
Fire Departments within Apache County	fuel reduction	Six State Fire Assistance grants for hazardous fuels treatments in the WUI
Fire Departments within Apache County	fire department equipment and training	Two Rural Fire Assistance grants for fire department equipment and training
Fire Departments within Apache County	volunteer fire department equipment and training	Twelve Volunteer Fire Assistance grants for fire department equipment and training

*Source:* Fire Management Division of the Arizona State Land Department

**Table 1.2** ANF treatment areas

Project/ Area location	Treatment	Description
Alpine FS District	thinning	RAC grant WUI fuel reduction
Springerville FS District	small tree removal	RAC Grant for removal of small trees invading the Iris spring meadow
	small tree removal	RAC Grant for removal of small trees invading the Mineral Treatment area south of Vernon
	small tree removal	Rocky Mountain Elk Foundation grant for removal of small trees invading open woodlands south of Eagar and northwest of South Fork
White Mountain Stewardship Project (WMS)	thinning	Fuel reduction programs that encourage local economic and local forest-related industry growth

*Source:* A-S NFs



Treated Private residence using fire-safe techniques  
Source: Town of Eagar

## F. Need for the Community Wildfire Protection Plan

As the ACWPP communities continue to expand into the adjacent wildlands, more citizens and property will become at-risk from wildland fire. Apache County planning and zoning records show that southern Apache County, excluding the Vernon and St. Johns area but including an area larger than the WUI (encompassing the entire WUI), contains slightly less than 7,000 lots ranging from 0.5 to 50 acres in size. Apache County, communities within the WUI, and the A-S NFs recognize the WUI is not static; it will continue to grow. Therefore, for community wildfire protection planning and implementation to succeed, the rates of forest resource extraction and production need to reach a balance. There may be exigent or special ecological circumstances that warrant management practices other than projected ecological balance. These special areas and/or circumstances, however, must be individually analyzed and evaluated.

The HFRA provides for community-based decision making and empowers local governments to determine the boundaries of the WUI that surrounds their community(ies). The communities within the ACWPP have been forced to recognize the costs of restoration treatments as weighed against the costs of suppressing catastrophic wildfire, with the accompanying direct property and income losses as compared to the indirect losses from evacuation and other disruptions.

## G. Goals

The CAGs have agreed on six primary goals of the ACWPP:

- ❖ improve fire prevention and suppression
- ❖ reduce hazardous forest fuels
- ❖ restore forest health
- ❖ promote community involvement
- ❖ recommend measures to reduce structural ignitability in the ACWPP area
- ❖ encourage economic development in the community

The ACWPP meets all criteria of the HFRA. It has been collaboratively developed and agreed to by the applicable local governments, fire departments, and state agency responsible for forest management, along with other interested parties and the A-S NFs, the primary, relevant federal entity. The ACWPP establishes a coordinated and collaborative, performance-based framework of recommendations to meet its outlined goals.

## H. Planning Process

Several county and municipal planning documents in addition to several A-S NFs planning documents and studies have incorporated wildfire management guidelines and standards for forests within the ACWPP planning area. The goals, policies, and guidelines outlined in these documents, in addition to the above-mentioned public involvement process were all critical inputs into the development of the ACWPP. The studies, plans, and documents reviewed include:

- ❖ *Apache County Emergency Management Emergency Operations Plans and Procedures. Evacuation (2004)*
- ❖ *Apache County Emergency Management Evacuation Procedures. Public Brochure (2004)*
- ❖ *Greer Phase One Apache County Land Plan and Community Development Ordinance (1989)*
- ❖ *Alpine Community Plan (2002)*
- ❖ *Nutrioso Community Plan (2002)*



- ❖ *Town of Eagar General Plan (2002)*
- ❖ *Apache-Sitgreaves National Forests Land and Resource Management Plan (amended 1996)*
- ❖ *Apache-Sitgreaves National Forests Land and Resource Management Plan, Revised Standards and Guides for Management of Ignited Prescribed Fire/Wildland Fire Use (draft 2004)*
- ❖ *Draft Upper Little Colorado River Watershed Partnership. Watershed Based Action and Management Plan. (2002)*
- ❖ *Northern Arizona Council of Governments Comprehensive Economic and Development Strategy Update (2004)*

These communities' and governments' commitment to the successful implementation of the ACWPP is an assurance that they will cooperate in developing any formal agreements necessary to ensure the plan's timely execution, monitoring, and reporting. It is the intent of Apache County and the Towns of Eagar and Springerville to designate a single organization to be responsible and accountable for the implementation of this ACWPP; i.e., there should be one agent to coordinate with interested parties and industry, accept grants, implement priority projects, and monitor and update the ACWPP as necessary.

Successful implementation of the ACWPP will require a collaborative effort among multiple layers of government and a broad range of special interest groups. The CAG must develop processes and systems that ensure recommended treatments and actions of the ACWPP comply with the HFRA, the National Environmental Policy Act, the Endangered Species Act, the National Historic Preservation Act, and other applicable federal, state, and local environmental regulations.

Upon agreement of this ACWPP by the Towns of Eagar and Springerville, Apache County, and the local fire departments and fire districts, and after concurrence by the A-S NFs Forest Supervisor and the State Forester (Arizona State Land Department, Fire Management Division), it will be forwarded to the State Forester and A-S NFs Supervisor for implementation funding of the priority action recommendations.



Three Forks Fire, 2004  
Source: ANF

## II. WILDLAND-URBAN INTERFACE AND COMMUNITY DESCRIPTION

### A. Wildland-Urban Interface Delineation Process

The ACWPP defines the WUI of the at-risk communities of Hideaways, Greer, South Fork, Eagar, Springerville, Nutrioso, and Alpine (Figure 2.1) located in southern Apache County. These communities are all in the vicinity of federal lands and, using HFRA criteria and guidance published in the *Federal Register*, are considered to be at high risk from wildfire. With the exception of Springerville, these communities are within or adjacent to the ANF. The town of Springerville lies adjacent to the town of Eagar and is surrounded by state and private lands that are in such condition that they are conducive to a large-scale wildland fire, and such a wildfire in their vicinity could threaten human life and property.<sup>1</sup>

The ACWPP process of delineating WUI boundaries involved collaboration with the local fire chiefs and the CAG, which represents the public interest through participating government officials, planners, and natural resource specialists. Additionally, resource specialists from the A-S NFs assisted the CAG in the boundary-delineation process.<sup>2</sup>

Within the planning area, the CAG delineated a single WUI boundary that surrounds the communities of Greer, Eagar, South Fork, Springerville, Nutrioso, and Alpine. This WUI is the minimum area needed to provide protection to the extensive watershed as well as protection to these communities from wildland fire. The watershed in the WUI consists of both federal and nonfederal lands in the riparian corridors of the East Fork, West Fork and South Fork, of the Little

Colorado River; the Little Colorado River; Nutrioso Creek; Water Canyon; and the San Francisco River. The WUI also includes six major reservoirs found on these rivers. Additional interface for wildfire protection was identified for the communities of Hideaways and Hidden Meadows and for an unnamed private parcels in the northwest corner of the Hideaways WUI. The forest surrounding Greens Peak was also identified for special fuel reduction and modification treatment because of the critical communication facilities located on the peak. The CAG developed a WUI that includes 168,306 acres of both private and public lands.



Typical community development around Eagar  
Source: Town of Eagar

Participants in the WUI delineation meetings included representatives from the municipal fire departments of Eagar and Springerville, the Greer and Alpine fire districts, the A-S NFs' Springerville and Alpine Ranger Districts, Springerville and Eagar Police Departments; Apache County Emergency Management and Bioterrorism personnel, Apache County Natural Resource Conservation District, and interested citizens. General elements used in creating the WUI for the communities included:

- ❖ fuel hazards, consideration of local topography, fire history, vegetative fuels, and natural fire breaks
- ❖ historical fire occurrence
- ❖ community development characteristics
- ❖ local fire fighting preparedness
- ❖ municipal watershed protection

<sup>1</sup> The town of Springerville was added to the CWPP because it does not comply with § 101.1.A.ii., B and C of the HFRA and was evaluated as being at high risk from wildland fire in Arizona Wildland Urban Interface Assessment (2004).

<sup>2</sup> For additional guidance on the WUI definition, refer to *Federal Register*, vol. 66, no. 3, p. 753 (January 4, 2001).

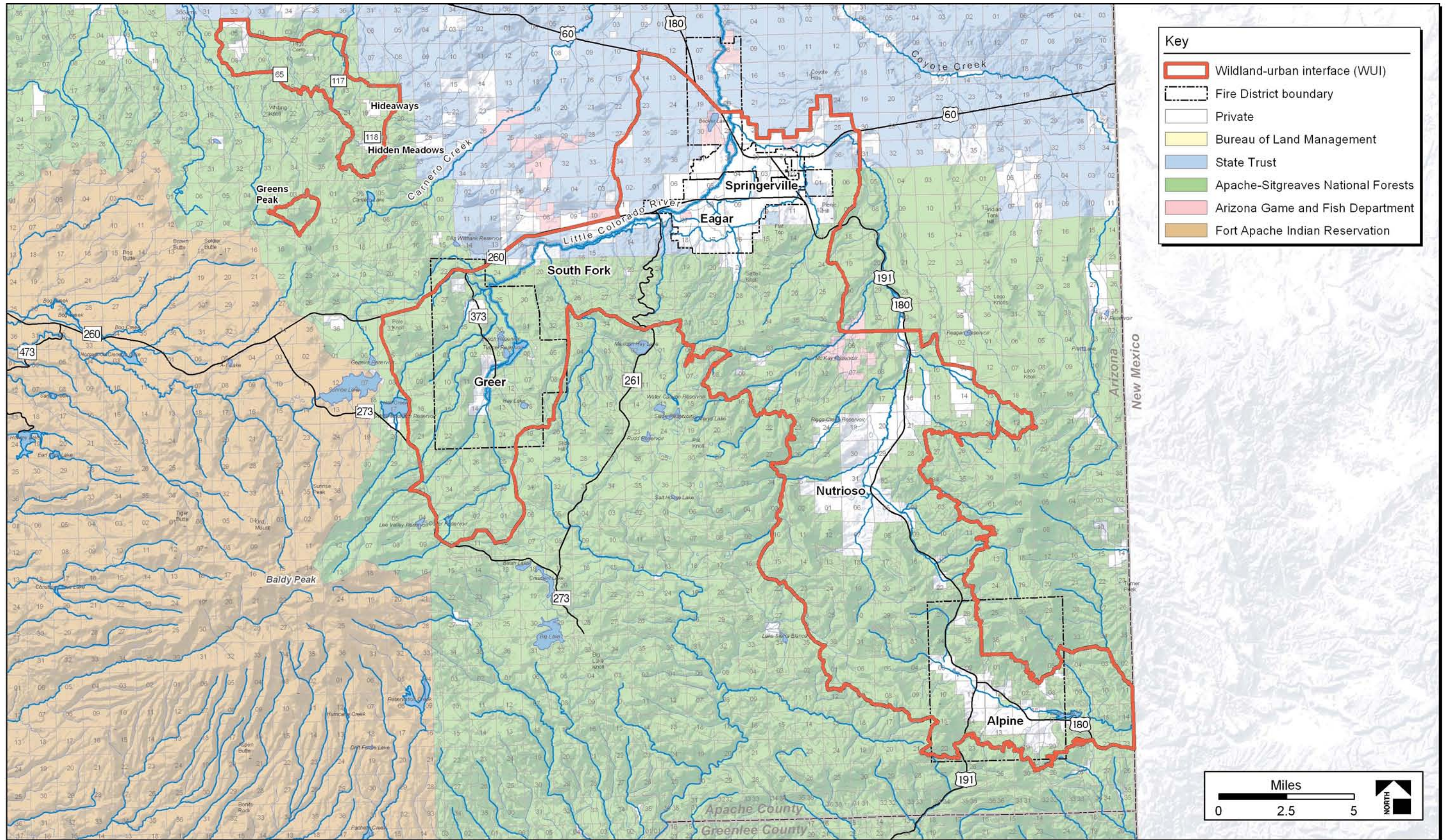


Figure 2.1. Wildland-urban interface (WUI)

## B. Community Description

The rationales for the WUI delineations described below are those of the communities of Hideaways, Greer, South Fork, Eagar, Springerville, Nutrioso, and Alpine. General descriptions of the communities include land ownership, jurisdiction, development trends, population, infrastructure (roads, utilities, schools, hospitals, and community facilities), major reservoirs, and existing emergency services.

The WUI described for these communities includes significant watersheds and riparian corridors that provide irrigation waters to the Round Valley and Lyman Irrigation Districts, habitat for several threatened and endangered and sensitive species, and substantial recreational fishing opportunities, all of great economic importance to the communities. The National Audubon Society has designated the Little Colorado River System with associated tributaries, from above the community of Greer through the Wenima Riparian Corridor, as “The Upper Little Colorado River Important Bird Area.” This designation brings national recognition to the Little Colorado River system and to the private and public land managers whose ownership and stewardship have served to maintain significant wildlife biodiversity. The designation brings no additional government regulation or management stipulations, but does promote outdoor recreation visitation.

Portions of United States Route (US) 191 and US 180 called the “Coronado Trail” pass through the communities of Springerville, Eagar, Nutrioso, and Alpine. The area was explored by Francisco Vasquez de Coronado in 1540, and what is said to be the Spanish explorer’s route is now the Coronado Trail Scenic Road.

### 1. Hideaways

Located in the western portion of the ANF, the Hideaways area of the WUI consists of the subdivision of Hideaways and Hidden Meadows, the unnamed private parcel in the northwest corner of the WUI, and the communication and FS Fire Lookout facilities located on Greens Peak. Hideaways is a prominent subdivision consisting of 130 acres of private land, involving approximately 100 individual landowners.

The subdivision consists of 1-acre lots, with some residents owning up to three lots. The CAG considered the threat of wildfire from the forestlands in delineating this area of the WUI which extends several miles south of the Hideaways community center, into the ANF. To the north, the WUI extends to the northern boundary of the private parcel located in the northwest corner of the WUI. The northern boundary of the WUI has a characteristic change in vegetation type from ponderosa pine to pinyon-juniper.

The majority of land ownership in Hideaways is private, surrounded by ANF land. Current residential development includes approximately 60 constructed homes and approximately 10 mobile homes. The remaining lots are currently undeveloped. The Hideaways Homeowners Association did receive a stewardship grant that allowed for fuel reduction treatments on 25 acres, reducing stand density to 100 basal area (BA). An additional 13 lots have had fuel reduction treatment by the individual residents. The Hideaways Homeowners Association did acquire a 1,000-gallon pumper and two 300-gallon pump trailers for fire response. This area of the WUI includes the Hidden Meadows private development. The build-out plan for this development includes 18 rental cabins with a 9,000-square-foot clubhouse/restaurant, 31 4,500-square-foot partial ownership log homes, and 16 full ownership lots that have 2 4,500-square-foot homes that have been built. The Hidden Meadows development has installed water hydrants at each lot and has removed ground fuels in the cabin rental and restaurant area. There are portions of the development with high fuel loads that are suggested for fuels reduction treatments. This area of the WUI also includes the federal lands surrounding Greens Peak. Greens Peak consists of 16 communication sites under special use permit by ANF. This site is a major communication site for the southwest United States. The site is valued at well over \$500 million. ANF also has a fire lookout tower on the site. The loss of this site would disrupt communications across the West. Agencies that maintain communication facilities on Greens Peak and that would be affected include Apache County Sheriffs, White Mountain Communications, Department of Public Safety (DPS), Civilian Air Patrol, Navapache Electric, Arizona Public Service Company (APS), Northland Pioneer College (NPC), and FS. The community of Hideaways is not

within a fire district. Fire protection in the community is available during the summer months through a community water truck and some additional firefighting equipment. Additional fire protection to this area of the WUI is provided by the Greer, Springerville, and Eagar fire departments as well as by A-S NFs fire response personnel.

## 2. Greer

Located in the central portion of the ANF, the unincorporated community of Greer has the smallest annual population, with the exception of Hideaways, in the ACWPP. The portion of the WUI associated with Greer includes the nonfederal lands from the junction of State Route (SR) 260 and SR 373 south along SR 373 and the confluence of the East and West Forks of the Little Colorado River. The CAG identified the threat of wildfire from the vast forestlands surrounding Greer. The extensive WUI buffer area extends south of the community because the canyons that run north-south are potential expressways for wildfires to reach the populated areas of Greer. The WUI north of Greer is delineated by a buffer around private property following the riparian corridor of the Little Colorado River.

The Greer Lakes (River, Bunch, and Tunnel Reservoirs) store irrigation water for the Round Valley Irrigation District. The lakes provide extensive recreational fishing opportunities, and ANF has developed facilities to support a trout fishery. The associated dams and water delivery (open ditch) system transport water to irrigated fields within Round Valley. These structures also support the agricultural investments of the communities of Springerville and Eagar. The riparian corridors in the Greer area include occupied habitat for endangered or threatened species such as the Southwestern willow flycatcher and Apache trout.

Greer is a mountain village in a scenic natural forest setting. The character of the community is centered on the Little Colorado River, with a mixture of 1-acre residential lots, small commercial enterprises, and resort facilities. The majority of land in the town is privately owned, with a few publicly owned parcels scattered through the community. Recreation/open space and low-density residential development are the primary land uses in the community. The commercial

developments are centered along the SR 373 corridor. In the ANF and north of the developed area is the Greer Lakes Recreation Area, which has four campgrounds with a total of 205 campsites.

Current trends in commercial and residential development are outlined in the 1989 *Greer Phase One Apache County Land Plan and Community Development Ordinance*, which has identified development and public uses within the WUI. Planning for these growth areas includes encouraging open space; controlling high-density uses in proximity to meadow land; enhancing aesthetics; encouraging single-family residences, resort uses, and convenience, personal service, and retail uses to serve residents and visitors; maintaining rural village quality and image; and protecting the public safety by prohibiting development in areas of floodplain, saturated soils, or steep slopes.

With an estimated year-round population of slightly more than 100, Greer experiences a dramatic influx of seasonal population growth associated with the recreational opportunities located in the region. The Greer Lakes as well as other nearby recreation areas establish Greer as a destination community. Local sources estimate that roughly 200,000 people visit the area from July through September (Arizona Department of Commerce, Community Profile 2004). Existing and continuing development of paved roads, utilities, and public buildings adds to the community's infrastructure. Fire protection is provided to the community by the Greer Fire District through the Volunteer Fire Department.

## 3. South Fork Area

The WUI as it extends along the Little Colorado River and associated tributaries in the area from below Greer to the Eagar town limits has been named the South Fork Area by the CAG. This area of the WUI includes significant FS, State Trust, and private lands in proximity to the main stem and South Fork of the Little Colorado River. This area is an interspersed of several habitats, including perennial stream, riparian habitats of willows/cottonwoods, unbroken grasslands, rocky bluffs, and ponderosa pine forest. The area holds nesting records for birds rare to Arizona such as the gray catbird and Swainson's warbler. For this reason the National Audubon Society has designated

the Little Colorado River system, with associated tributaries, from above the community of Greer through the Wenima Riparian Corridor, as “The Upper Little Colorado River Important Bird Area.” Other threatened wildlife species are located in the South Fork area of the WUI such as the Southwestern willow flycatcher, the Little Colorado spinedace, and the Apache trout.

In addition to private residences, assets in the South Fork area include a private museum, guest ranch, and associated infrastructure. The ANF South Fork campground is located in the southern portion of this part of the WUI and supported over 700 visitor days from May 2003 through December 2003. The South Fork area is not in a designated fire district; the Greer, Eagar, and Springerville fire departments respond to fire in this community.

#### **4. Eagar**

The town of Eagar is the sister city to the town of Springerville, in what is collectively known as Round Valley. The ANF abuts Eagar to the south and east and encompasses the municipal watershed. This area of the WUI consists primarily of state and private lands to the west and north. CAG-delineation of the area surrounding Eagar considered potential wildfire threat to the watershed and the community as being primarily from the south and west. Grassland fires from the west are typically large and fast moving. Two such grassland fires have threatened the community in the last 10 years. This area of the WUI is delineated by a 2-mile buffer from private property to the west and also by a characteristic change in vegetation type from ponderosa pine to pinyon-juniper woodland to grassland, moving from the southwest to the northeast. This area of the WUI is contiguous through the riparian corridor and with associated federal and nonfederal lands of the Little Colorado River to the west and Nutrioso Creek to the south.

Eagar has a broad range of community facilities. These include a public museum, an Olympic-sized swimming pool, three public parks, a library, and a golf course. The community has a consolidated school district with the Town of Springerville (Round Valley School District). The Round Valley School District has the nation’s only high school with a domed sports facility, with seating for over 5,000. The

community’s economy is diverse, ranging from ranching and hay production to the growing tourism and recreation-related businesses. Two power plants in the region are important additions to the economy. The community is encouraging timber-related industries, including a biomass cogeneration plant, laminate wood production plant, and other wood product businesses. The estimated year-round population of Eagar is just under 5,000. The community experiences an increase in population in the summer months. The Eagar Municipal Fire Department provides protection for over 5,000 people and the community’s properties. The Fire Department is also the primary responder to wildland and structural fires within the Nutrioso and South Fork areas.

#### **5. Springerville**

The portion of the WUI around Springerville reflects the potential threat of severe wildfire approaching from the south and west. There is a characteristic change in vegetation type from pinyon-juniper woodland to grassland moving from south to north and from west to east through the community. The grassland vegetative type would allow fire to carry rapidly and directly to the community. The northern boundary of this WUI area follows the northern boundary of Springerville (excepting the town limits within the Wenima Corridor). The WUI area extends to the west, providing a 2-mile buffer for Springerville and Eagar.

Watersheds in this area of the WUI include the Little Colorado River and Nutrioso Creek. The confluence of these major streams occurs within the community. Diversions from these streams provide cropland irrigation and recreational fishing opportunities by maintaining Becker Lake.

The majority of land ownership in Springerville is private, with primarily state-owned lands surrounding the community and some federal lands to the east. Projected growth is identified along the major transportation corridors of US 60 and US 180. The estimated year-round population of 2,100 increases dramatically, seasonally with the region’s recreational opportunities. Springerville Airport and the White Mountain Regional Medical Center (a 25-bed hospital) are located in the town. Significant community resources include Casa Malpais archeological site, Becker Lake, and the Wenima Wildlife Area, all located

within the town. The Springerville Municipal Fire Department provides protection for over 2,500 people.

## 6. Nutrioso

Located in the eastern portion of the ACWPP, the WUI area around Nutrioso reflects the potential threat from wildfires from the south following the Nutrioso Creek corridor. The major vegetation types consist of ponderosa pine to the south and east, grassland within the riparian corridor, and a transition from ponderosa pine to pinyon-juniper to the north and west. Current and future trends in the community are outlined in *The Nutrioso Community Plan* (2002). The community vision is of a retirement, seasonal, bedroom community (in relationship to Springerville/Eagar and Show Low). The community envisions the ANF being a well-managed resource that minimizes risk of wildfire yet provides recreational opportunities for visitors and residents. Nutrioso Creek and associated wetlands are an important part of the watershed. Nutrioso Creek is listed by the US Fish and Wildlife Service (USFWS) as critical habitat for the Little Colorado River spinedace, a threatened native fish species.

Community facilities include the current unused schoolhouse built in 1936 and the US Post Office in the center of the community. This unincorporated community, which is surrounded primarily by federally owned lands, has the majority of its land in private ownership. Projected growth is identified along US 191, the major transportation corridor. Planned residential growth, cottage industries, and carefully planned recreational and community facilities are encouraged. The resident population of Nutrioso as determined in the 2000 census is slightly less than 300. The year-round population experiences a seasonal influx associated with the region's recreational opportunities. The community of Nutrioso does not have a recognized fire district; both the Alpine and Eagar fire departments respond to fire in this community.

## 7. Alpine

The community of Alpine is located in the far eastern portion of the planning area, adjacent to the Arizona/New Mexico border. The delineation of the area of the WUI surrounding the community considered wildfire threat from the south and west and from fire moving through the San Francisco River corridor. The major vegetation types include



Grassland and pinyon-juniper type fuels in Alpine  
Source: ANF

mixed-conifer primarily to the south, changing to ponderosa pine and grassland or riparian wetlands in the community, to ponderosa pine to the north, east, and west. The current and projected growth and development trends in the community are outlined in the *Alpine Community Plan* (2002). The year round population of Alpine as estimated by the 2000 census is slightly over 350 residents. Current population estimates from the Alpine Fire District are approximately 500 year-round residents and 2,500 summer residents.

Alpine has shifted from a largely ranching- and agriculture-based economy to a mixed service-based, tourism economy. The major services offered in Alpine are largely centered on outdoor recreation. Commercial development is focused along US 191 and US 180. The community experiences a seasonal population influx associated with the region's recreational opportunities, such as Luna Lake and the associated ANF campground. The ANF recorded 8,300 total visitations for the Luna Lake and Alpine Divide campgrounds for the period of May 2003 through December 2003. Notable community facilities include a library, country club and golf course, winter sports recreation area with maintained cross county ski trails and designated snowmobile and sledding area, Alpine School, and the Alpine District Office of the ANF. Fire protection is provided to the community by the Alpine Fire District through the Volunteer Fire Department.

### III. COMMUNITY ASSESSMENT

The community assessment is an analysis of the risk of catastrophic wildfire to ACWPP communities. This risk analysis incorporates the current Condition Class, wildfire fuel hazards, risk of ignition, fire occurrence, and the at-risk community values. Local preparedness and protection capabilities are also factors that contribute to delineation of areas of concern. The areas of concern for fuel hazards, risk of ignition and wildfire occurrence, and community values are evaluated and mapped, and then each is given relative and qualitative ratings of “high,” “moderate,” or “low.” A composite of these ratings, cumulative risk from wildfires for the communities, was then mapped.

#### A. Fire Regime and Condition Class

Prior to European settlement of North American, fire played a natural (historical) role on the landscape. There are five historical regimes that have been identified during that time period 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 natural regimes include:

##### Natural Fire Regimes

	<u>Frequency</u>	<u>Severity</u>
Class I	0–35 years	low <sup>a</sup>
Class II	0–35 years	high <sup>b</sup>
Class III	35–100 <sup>+</sup> years	low
Class IV	35–100 <sup>+</sup> years	high
Class V	200 <sup>+</sup> years	high

<sup>a</sup> <75% of the dominant overstory vegetation replaced  
<sup>b</sup> >75% of the dominant overstory vegetation replaced (stand replacement)

The majority of the WUI lands consist of natural Fire Regime 1, as described in *Development of Coarse-Scale Spatial Data for Wildland Fire and Fuel Management* (Forest Service 2002). The ponderosa pine forests in the ACWPP have a historic fire cycle of every 3–7 years, consistent with natural Fire Regime 1.

The fire regime Condition Class of wildland habitats describes the degree to which the current fire regime has been altered from its historic range, the risk of losing key ecosystem components, and the vegetative attribute changes from historical conditions. There are three classes based on low (Condition Class 1), moderate (Condition Class 2), and high (Condition Class 3) departures from the natural (historical) regime.

The majority of lands in the WUI are designated as currently being in Condition Class 3, with roughly equal acreages of Condition Class 2 and Condition Class 1 lands (see Table 3.1). Condition Class 3 lands in the WUI includes the Ponderosa Pine Cover Type, with forest density ranging from 67 to 100 percent. Condition Class 2 lands in the WUI also include the Ponderosa Pine Cover Type, but with forest density ranging from 33 to 66 percent. These ratings are developed from Potential Natural Vegetation (such as Ponderosa Pine Cover Type) as the primary natural vegetation type and from the historical fire regime. The following table describes the percentage of each Condition Class in the ACWPP WUI:

The desired future condition of federal land is a return to Condition Class 1 as described in *Fire Regime and Condition Class (FCC) Field Procedures—Standard & Scorecard Methods* (USDA Forest Service 2003):

Open park-like savanna grassland, or mosaic forest, woodland, or shrub structures maintained by frequent surface or mixed severity fires. [S]urface fires typically burn through a forest understory removing fire-intolerant species and small-size classes and

**Table 3.1** Condition class by percentage area covered

<b>ACWPP communities</b>	<b>Condition Class 1 (%)</b>	<b>Condition Class 2 (%)</b>	<b>Condition Class 3 (%)</b>
Hideaways, Greer, South Fork	7	14	79
Eagar, Springerville, Nutrioso, Alpine	20	16	64
<b>Total WUI</b>	16	15	69

Source: *Development of Coarse-Scale Spatial Data for Wildland Fire and Fuel Management* (RMRS-87 2002)



removing <25 percent of the upper layer, thus maintaining an open single-layer overstory of relatively large trees. [M]osaic fires create a mosaic of different-age, postfire savannah forest, woodlands, or open shrub patches by leaving >25 percent of the upper layer (generally <40 hectares [100 acres]). Interval[s] can range up to 50 [years] in systems with high temporal variability.

infrastructure could be threatened. Additionally, the existing topography in an area can create natural fire breaks, that help reduce the fuel hazard in communities.

Evaluation of the vegetative fuels on federal and nonfederal land in the WUI was conducted through a spatial analysis using geographic information system (GIS) technology in a series of overlays that helped the CAG identify high, moderate, and low fuel-hazards risk areas. For each subarea of the WUI, the fuel and vegetation density, type, and distribution as well as slope and aspect analyses were conducted to assist in the categorization of areas of highest risk of fire ignition and spread from wildland fuels in the WUI. Table 3.2 identifies the total amount of land in the untreated areas of the WUI that is considered to be additive in overall wildland risk because of increased fuel hazards.

## B. Fuel Hazards

The arrangement of fuel, relative flammability, and fire potential of vegetation varies greatly in the WUI. Fuel hazards depend on composition, type, arrangement, and/or condition of vegetation such that, if the fuel were ignited, an at-risk community or its community

**Table 3.2** Fuel hazards

ACWPP communities	Total land area (acres)	Treated and untreated lands (acres)	Ponderosa pine <sup>a</sup> >100 trees/acre (untreated acreage)	Slopes ≥ 35% <sup>b</sup> (untreated acreage)	South-, southwest-, or west-facing slopes <sup>b</sup> (untreated acreage)
Hideaways, Greer, South Fork	50,033	treated: 1,011 untreated: 49,022 proposed: 0	22,452	5,799	11,018
Eagar, Springerville, Nutrioso, Alpine	118,446	treated: 7,167 untreated: 110,188 proposed: 1,091	37,021	14,319	29,116
<b>Total WUI</b>	168,480	treated: 8,178 untreated: 159,210 proposed: 1,091	59,473	20,118	40,134

Source: Logan Simpson Design Inc. and A-S NFs database (2004)

<sup>a</sup> Ponderosa pine biotic community

<sup>b</sup> When aspect is south, southwest, or west, or when slope is ≥ 35 percent in areas of pinyon-juniper woodland or grassland, the fuel hazards risk rises to high

Several fuel hazards components, including slope, aspect, vegetation type, vegetation density, ground fuel loads (in relation to vegetation type), and treated areas, were analyzed (Figure 3.1). Table 3.3 identifies the different values given to these various fuel hazards components. The influences the components carry were compiled to create areas of high, moderate, and low fuel hazards (Figure 3.2). Areas with dense ponderosa pine tree growth (greater than 100 trees/acre) are shown on the map as having a high risk from fuel hazards. Areas with 35 percent slopes or greater and in an area of high or moderate ground fuels because of vegetation type and density, create high risk from fuel hazards. Other untreated or unburned areas that fall under the category of moderate ground fuels and do not overlap with areas of steep slopes or with south, southwest, or west aspects are shown as moderate risk from fuel hazards. All other areas have low risk from fuel hazards, including the areas that have been previously treated or burned.

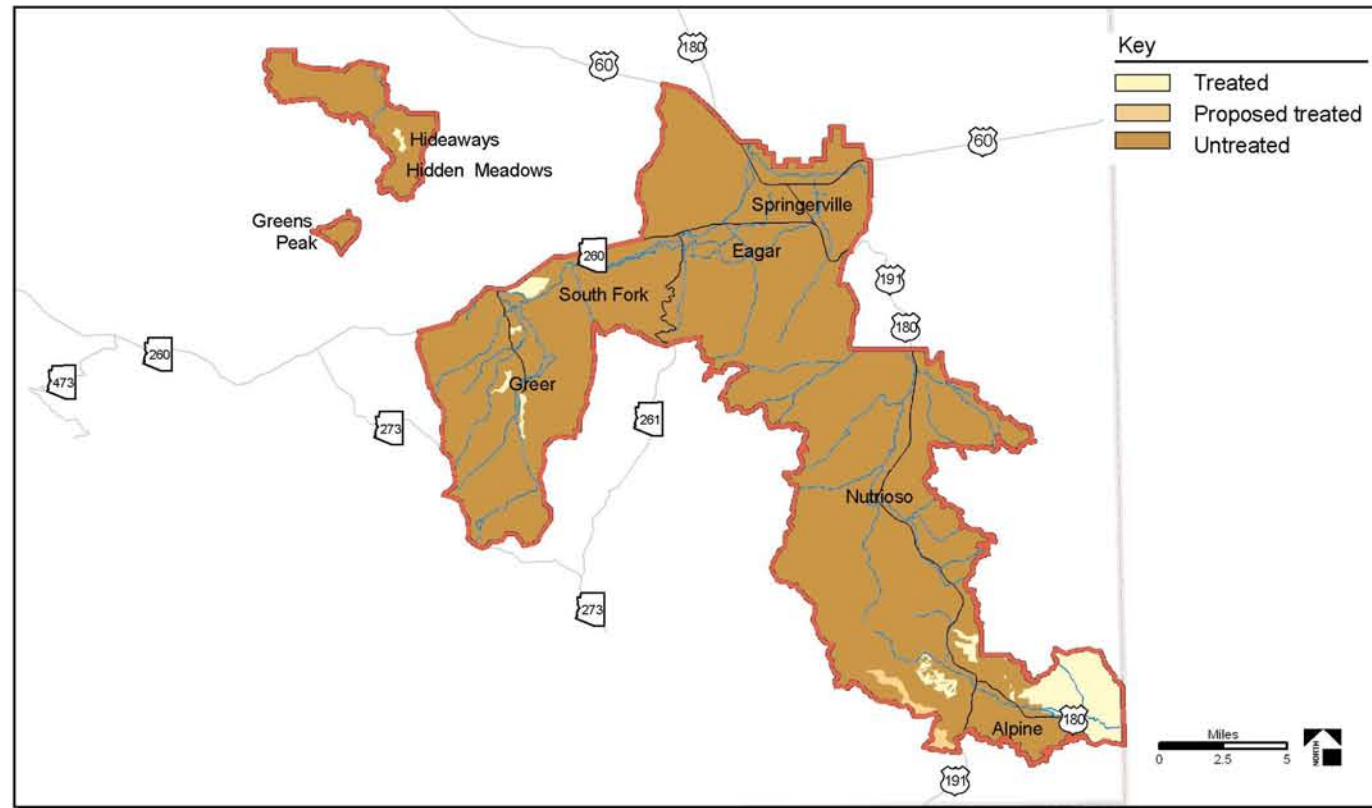
Fuel Hazards Components		Influence <sup>a</sup>
Vegetation type and density	Ponderosa pine, >100/acre	H
	Pinyon-juniper and grass	M
	All other vegetation	L
Burned areas		L
Slopes $\geq$ 35 percent		M
Aspect (south-, southwest-, or west-facing slopes)		M
Treated areas		L

Source: Logan Simpson Design Inc.  
<sup>a</sup> H – High, M – Moderate, L – Low

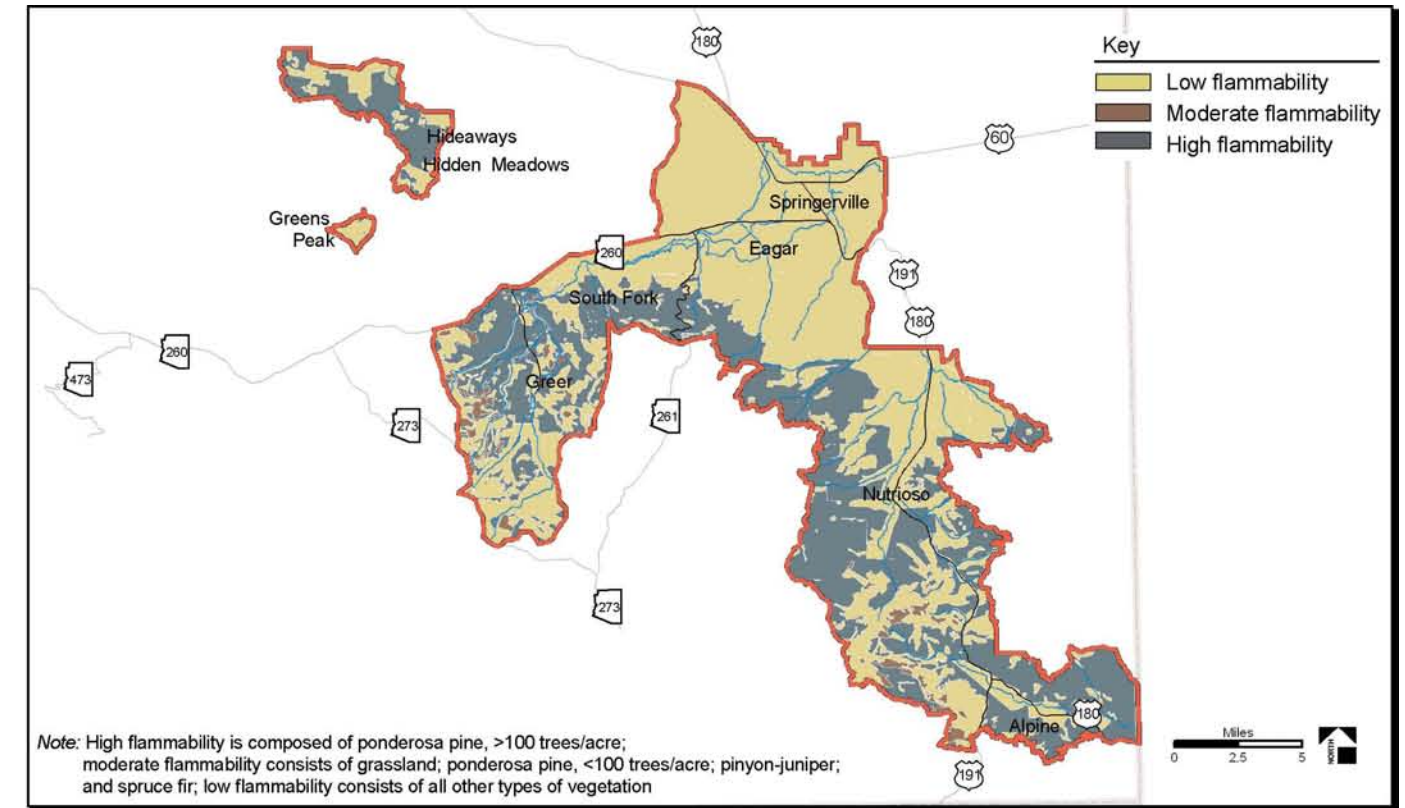
Considerable wildfire suppression efforts, coupled with the uninterrupted growth of small-diameter trees, created forest vegetative components that could not support the natural wildfire regime. Subsequently, wildfires became more frequent and severe than ever before in the region's modern history. Vegetated areas with densities greater than 100 trees/acre create a greater risk for the spread of wildfire because of the potential crown-fire effect and fuel ladder-fire scenario. Areas of ponderosa pine were differentiated from areas of mixed conifer, pinyon-juniper associations, and meadowlands/grasslands because of the greater associated fire intensity with the former and fire spread with the latter.

Wildland fuels have generally been categorized into four groups: grasses, brush, timber, and slash. The differences in fire behavior among these groups are basically related to fuel load and its distribution. The fuel load is a significant factor in determining whether a fire will be ignited, its rate of spread, and its intensity. Grasses and brush are vertically oriented fuels that enhance fire spread, while timber and slash are horizontally oriented fuel that enhance fire intensity. However, the configuration of live/dead fuels, moisture content, fuel load and type, and drought all influence fire danger and the effect of wildland fire (Anderson, 1982). Fuels hazards have been correlated with fuel load by vegetation type for this analysis. Grassland vegetative types were estimated to support a total fuel load of <1 ton/acre of fine fuels and are mostly in Condition Class 1 (historic fire regime), pinyon-juniper woodland is estimated to support a total fuel load of 6 tons/acre, while ponderosa pine with densities of 100 trees/acre was estimated to support a total fuel load of 12 tons/acre. Table 3.3 shows the influence on risk assessment by vegetative types based on the fuel loads supported by each vegetation group.

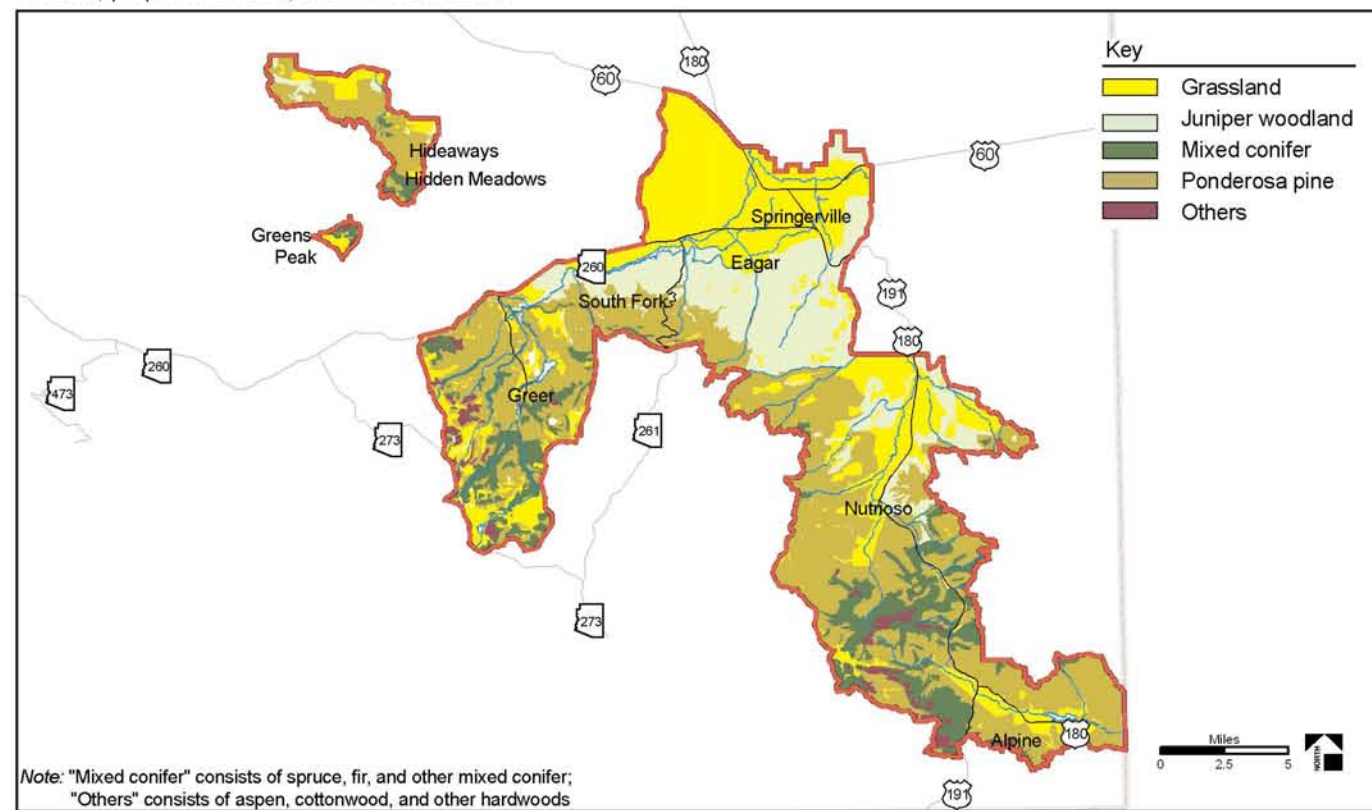
Slopes greater than or equal to 35 percent and areas with south-, southwest-, or west-facing slopes were also identified as having greater risks because of the fuel ladder-fire effect associated with steep terrain and decreased humidity associated with the microclimates created by exposed aspects. Areas of the WUI adjacent to major stream channels are steep and heavily dissected, with many areas having slopes exceeding 35 percent. Areas with none of these fuel hazard characteristics and areas that have been treated or are proposed to be treated are identified as having less risk. See Section III.E for a fuel hazards summary for each community.



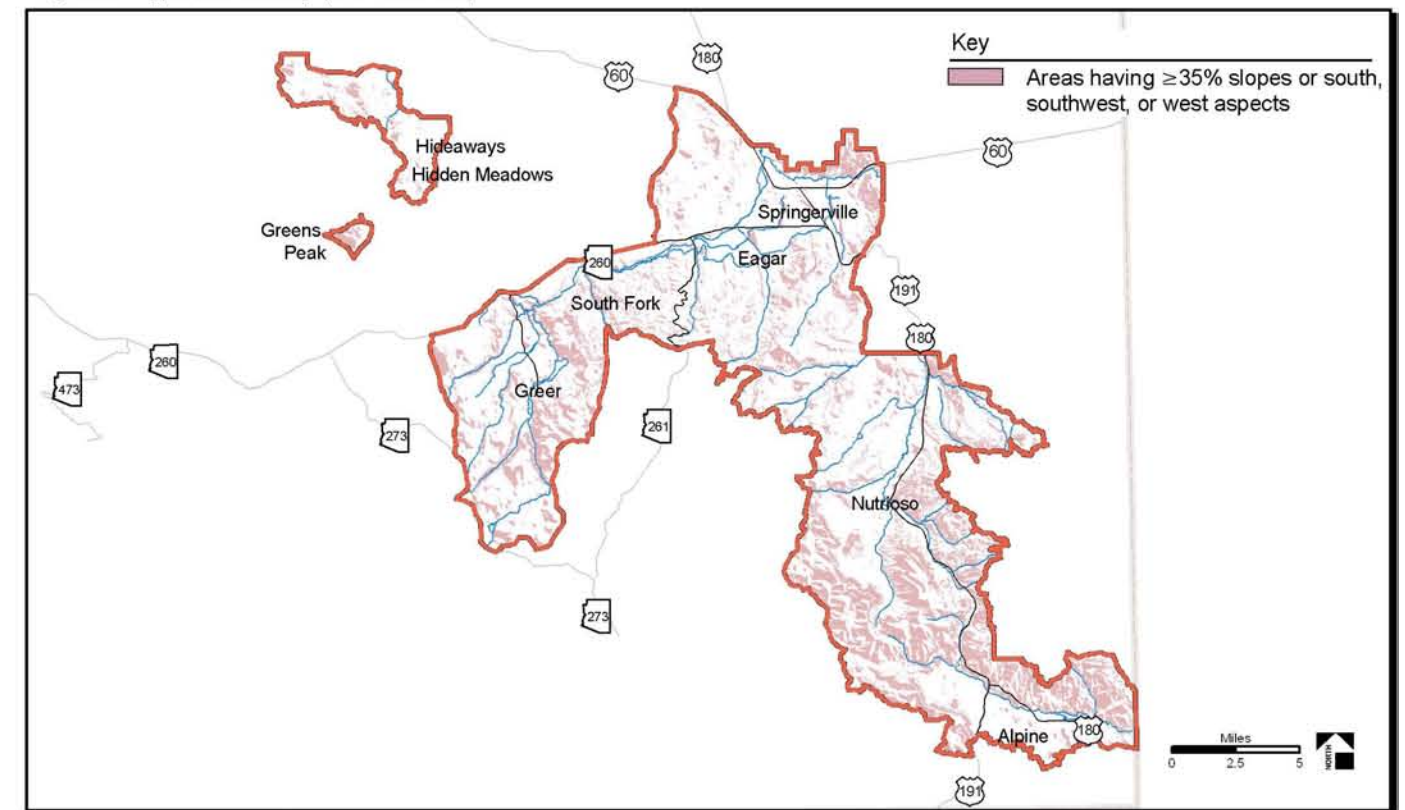
Treated, proposed treated, and untreated areas



Vegetation type and density (see Table 3.3)



Vegetation type



Aspect and slope

Figure 3.1. Fuel hazards components

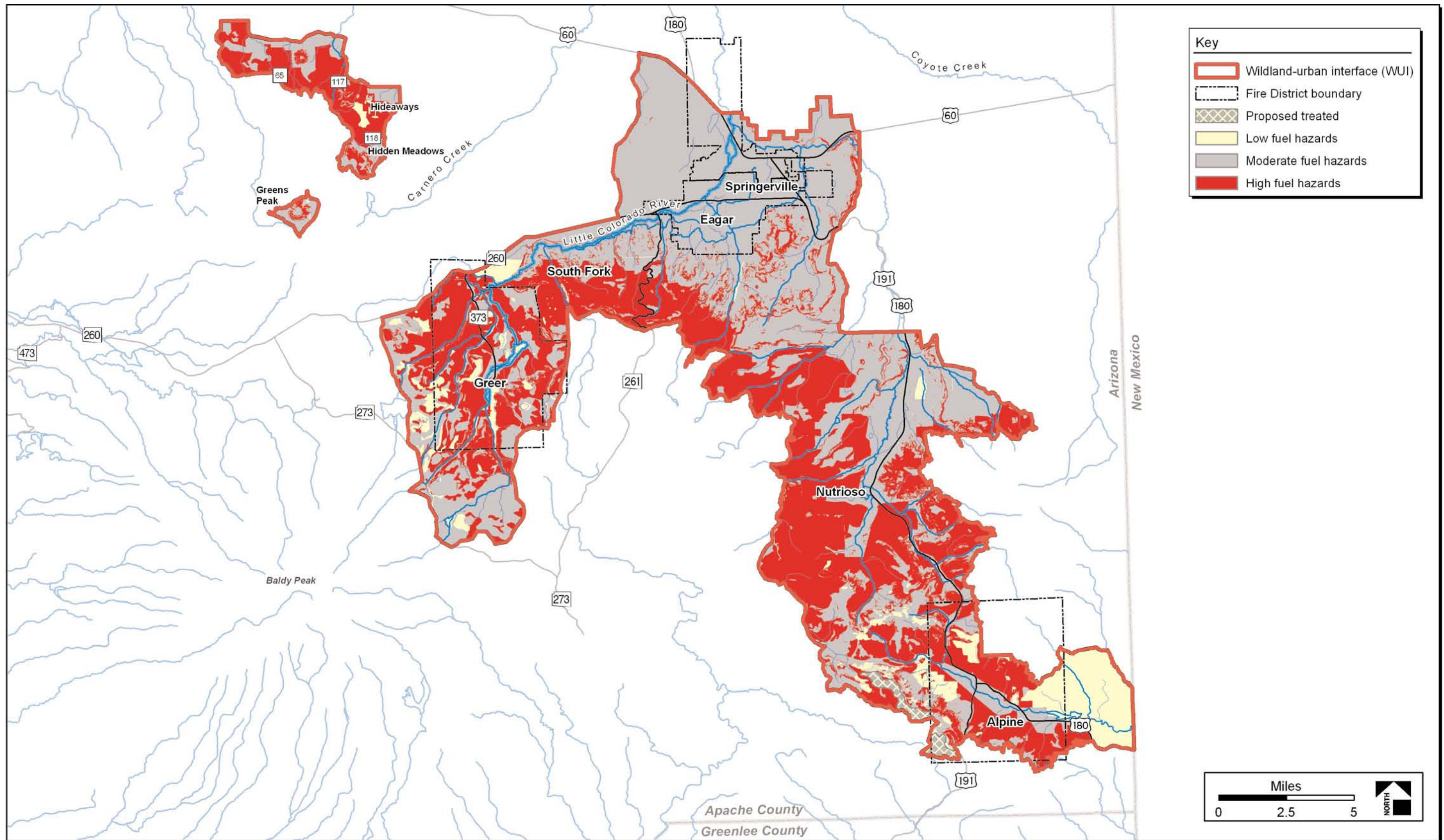


Figure 3.2 Fuel hazards

## C. Risk of Ignition and Wildfire Occurrence

Past regional wildfires are surmounted by the current potential for catastrophic wildfire destruction. Because of the combination of current drought conditions, inability to sufficiently reduce the density of small-diameter trees, and regional history of forest fires, the question is not “if” but “when” there will be a wildfire that threatens the WUI. Fire history for this region has come to the forefront because of the significant wildfires that occurred in or close to the ACWPP area since 1995:

### **1995 Grassland Fire**

- ❖ near Eagar and Springerville
- ❖ summer 1996
- ❖ 3,699 acres burned

### **2000 Acosta Fire**

- ❖ near Nutrioso
- ❖ summer 2000
- ❖ 177 acres burned

### **2002 Grassland Fire**

- ❖ near Eagar and Springerville
- ❖ summer 2002
- ❖ 5,710 acres burned

### **2004 Three Forks Fire**

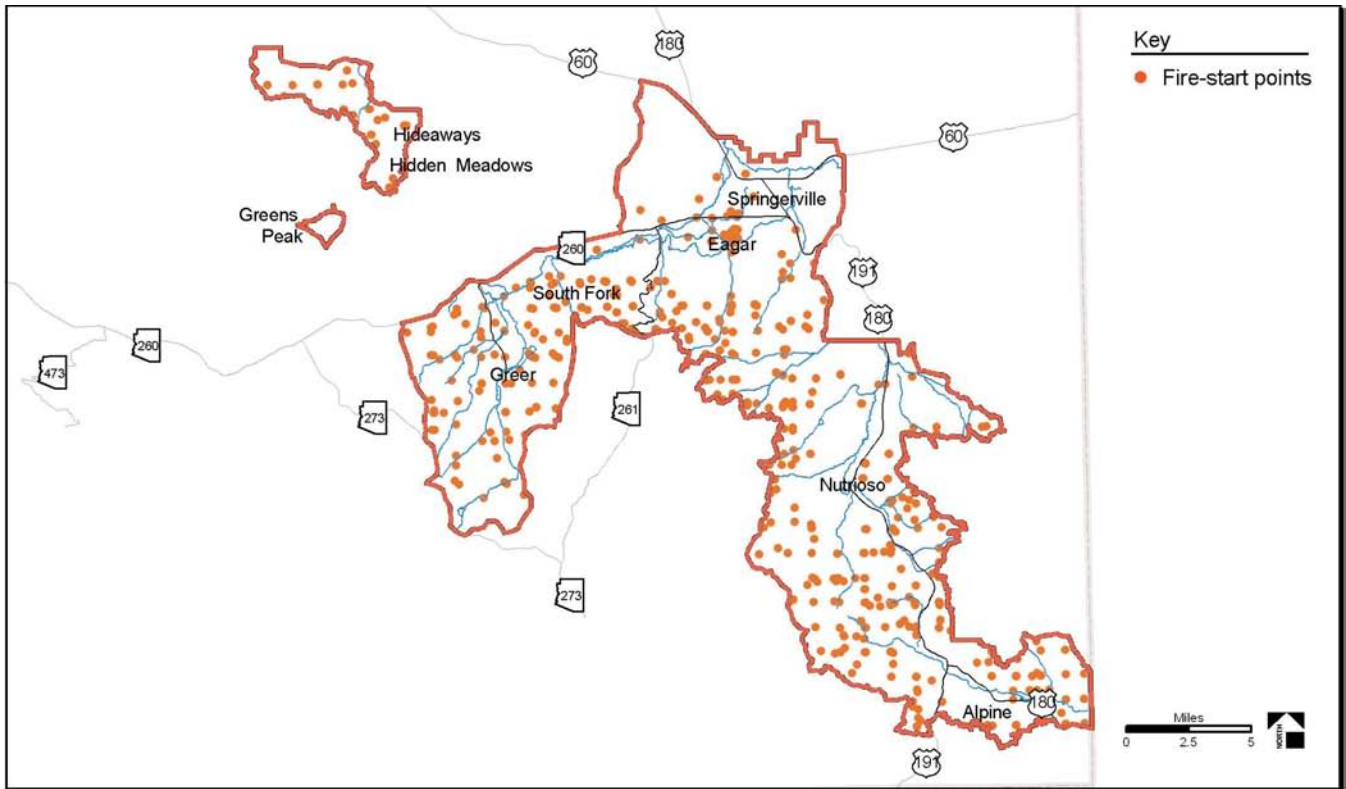
- ❖ near Nutrioso
- ❖ summer 2004
- ❖ 7,905 acres burned

During the 2004 summer fire season, public use restrictions and closures were imposed by the A-S NFs because of severe fire conditions. Still, the Three Forks Fire started in June 2004 and burned 2.5 miles east of Big Lake and 12 miles south of Eagar and Springerville. It burned approximately 8,000 acres, placing the community of Nutrioso on stand-by for emergency evacuation. Both the Grassland Fires and the Three Forks Fire were human-caused. The common denominators for the region include severe fire weather, high tree density, and drought as wildfire facilitators. The lightning-fire season begins for this region in spring and can continue until fall.

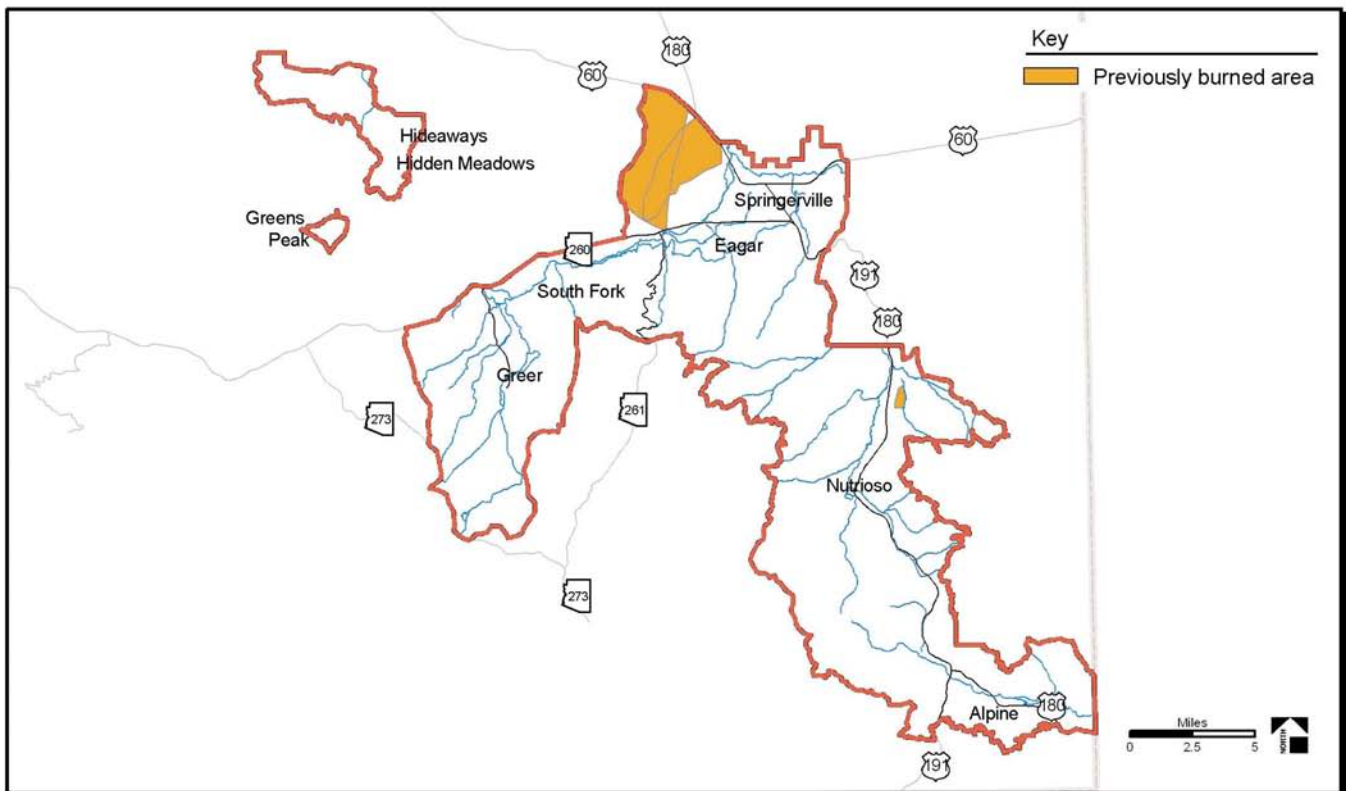
The mid summer monsoon storms typically raise the humidity, reducing the risk of fire ignition.

Over millennia, ponderosa pine forests have adapted to survive frequent low- to moderate-severity surface fires. Mature trees have thick bark, insulated buds, and a high capacity to recover from crown scorch, all of which contribute to the conifers’ resistance to surface fires. These trees are self-pruning, which also protects the crowns from surface fire. Ponderosa pine seedlings become established in burned areas from seeds that survived the heat or are in areas that fire skipped over. Because of past management policies, many of today’s ponderosa pine forests are unnaturally dense, with excessive understory growth and an accumulation of large quantities of forest litter instead of a grassy groundcover. Fire exclusion/suppression has led to the build-up of fuels and to severe crown fires in Southwestern ponderosa pine and mixed conifer forests. These forests contain an understory of young Southwestern ponderosa pine, Rocky Mountain Douglas fir, Southwestern white pine, and Gambel oak—species that are less fire-resistant and more shade-tolerant than Southwestern ponderosa pines. The fire regime has changed from frequent surface fires to large, infrequent, stand-destroying crown fires (Howard 2004).

Figure 3.3 identifies past wildfire occurrence and natural and human ignition incidence in the WUI. The maps in this figure detail fire start locations that have occurred within the past 10 years. Table 3.4 details the high, moderate, and low values assigned to fire start incidents. Figure 3.4 corresponds to this table and shows areas with higher frequencies of ignition points, i.e., areas of greater concern. These include concentrated areas of lightning strikes overlaid with high public-use areas. High-risk areas have the greatest number of fire starts per 1,000 acres. See Section III.E for a summary discussion of ignition risk and wildfire occurrence in each community.



Natural and human fire starts since 1996



Wildfire occurrence history (1993-2003)

**Figure 3.3.** Ignition history and wildfire occurrence components

**Table 3.4** Ignition history and wildfire occurrence

Ignition history and wildfire occurrence components	Value
4–15 Fire starts/1,000 acres	H
2–3 Fire starts/1,000 acres	M
0–1 Fire starts/1,000 acres	L

*Source:* Logan Simpson Design Inc. and A-S NFs database (2004)

**Table 3.5** Community values

Community value components	Value
Housing and businesses structures and infrastructure	H
Recreation areas	M
Wildlife habitat	M
All other areas	L

*Source:* Logan Simpson Design Inc.

## D. Community Values at Risk

Valued, at-risk community resources include community structures (e.g., schools, hospital), economic centers, recreation areas, cultural/historic areas, sensitive wildlife habitat, municipal watersheds, natural resources, and air quality. All can be threatened by wildfire.

Community values identified in Table 3.5 and mapped in Figure 3.5 include housing and businesses structures, essential infrastructure, recreation areas, and wildlife habitat. Local preparedness and protection capabilities from the Insurance Services Office (ISO) rating of each fire department and district, were also mapped. Developed land and infrastructure were given the highest value in the community. Campgrounds, parks and trail systems, and wildlife habitat were given a moderate value. These components were compiled into a single map (Figure 3.6), which identifies high, moderate, and low areas with respect to valued community elements. The following information further describes the community values in the ACWPP. Section III.E summarizes community values for each community.

### 1. Housing, Businesses, and Essential Infrastructure

The participating fire departments, fire districts, local governments personnel, and CAG members have identified high-risk areas including the economic corridors that line SR 260, SR 373, US 60, US 191, and US 180 that have been and continue as the focus of community development. Structures associated with housing and commercial development located in subdivisions and in more dispersed areas of the county are also at high risk.

### 2. Recreation Areas/Wildlife Habitat

Recreational features, including lakes, reservoirs, rivers, designated campgrounds, parks and trail systems—both motorized and nonmotorized—are located on federal, state, municipal, and private lands. These features are environmental, economic, and aesthetic resources for the surrounding communities. These areas are analyzed as a community value because of the benefits that these recreation areas provide to the local citizens and community visitors. A 50-foot buffer area was delineated for the trail system for planning purposes. Fuel mitigation projects associated with trail systems will be evaluated for public use requirements, possibility of increased fire starts attributable to increased public use and suitability of the trail for inclusion in fire protection and response plans.

The WUI includes known and potential habitat areas for several species listed as threatened or endangered under the Endangered Species Act (ESA) and for species designated as sensitive by the Regional Forester in 1999 (Appendix 1). If a proposed fuel treatment might potentially affect an ESA listed species, consultation with the US Fish and Wildlife Service (USFWS) may be required, and, based on the site-specific circumstances, the project may require a more extensive analysis under the National Environmental Policy Act (NEPA). Because not all potential occurrence sites for these species within the WUI are known, an evaluation of project-related effects on these species would need to be conducted at the time of planning site-specific treatments. Generally, habitat areas for these species are identified in this analysis as having moderate risk because of their association with community values. A 328-foot (100-meter) buffer area was delineated along the riparian areas and habitats associated with special

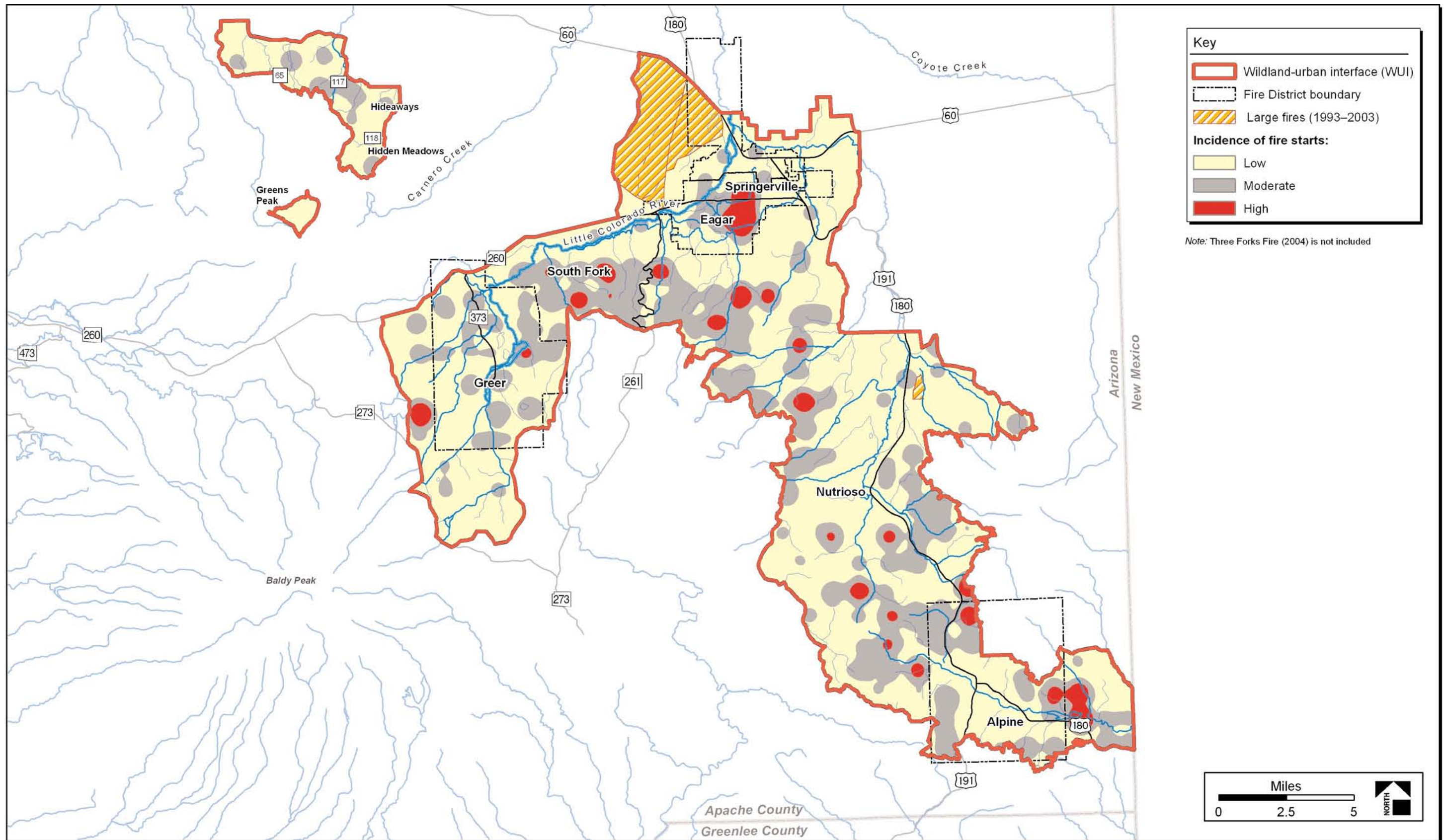
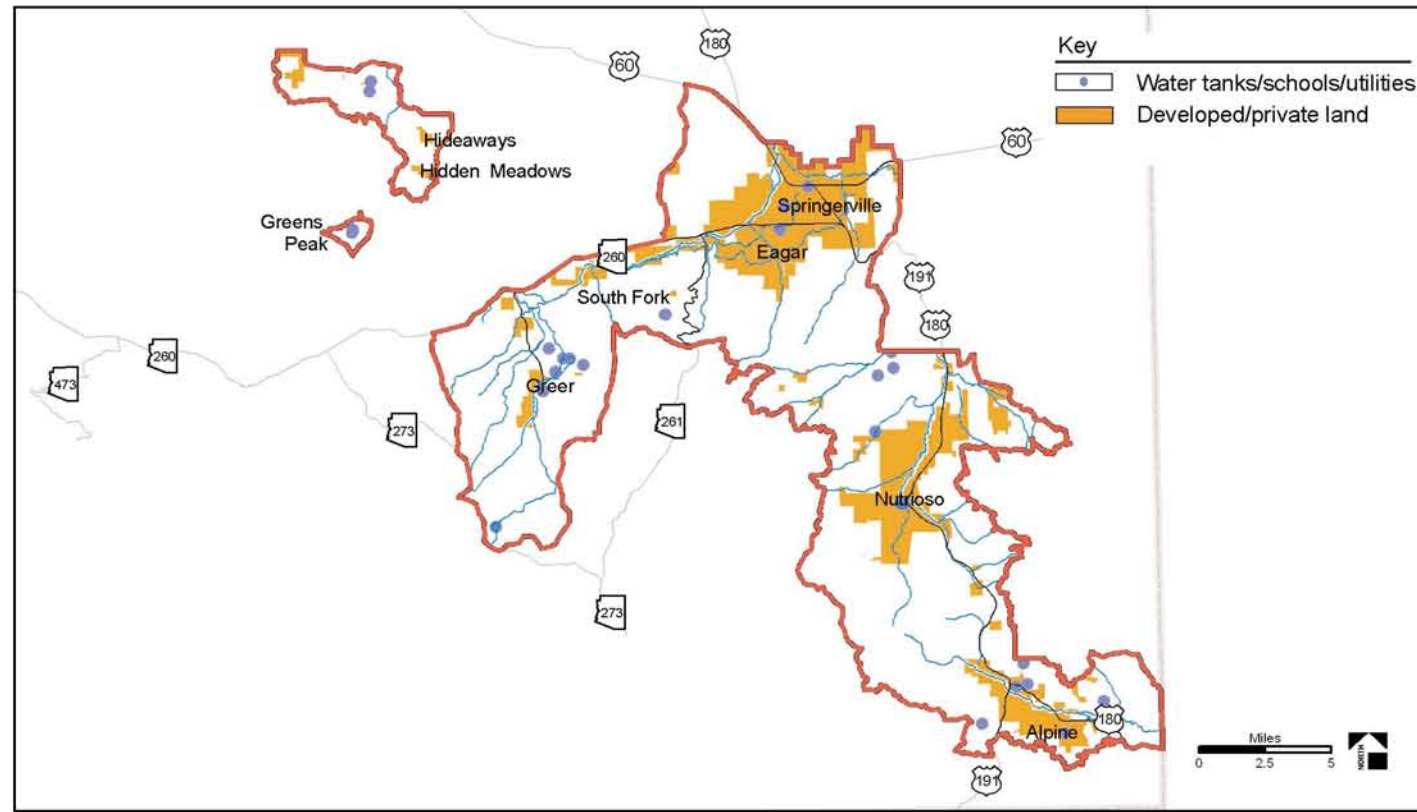
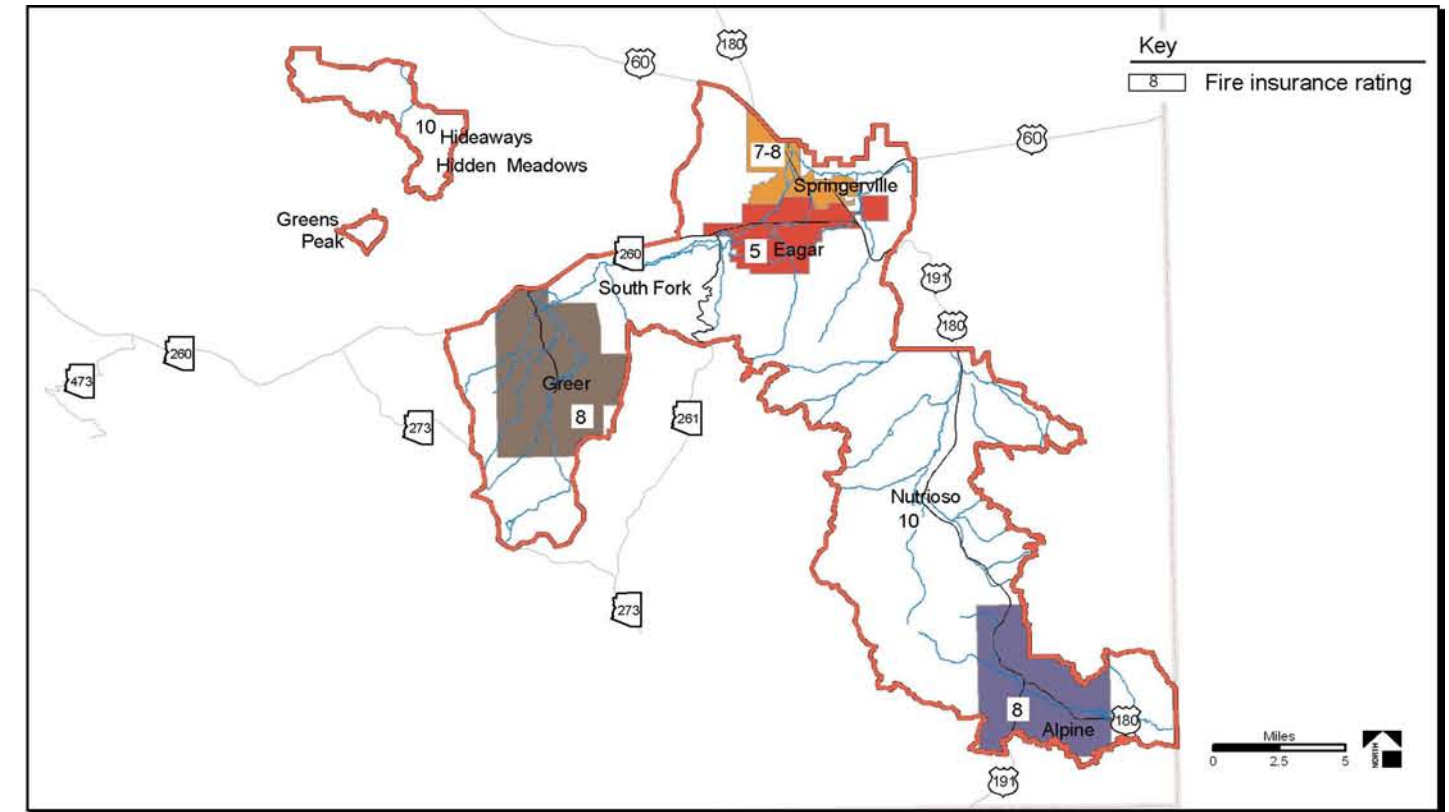


Figure 3.4 Ignition history and wildfire occurrence

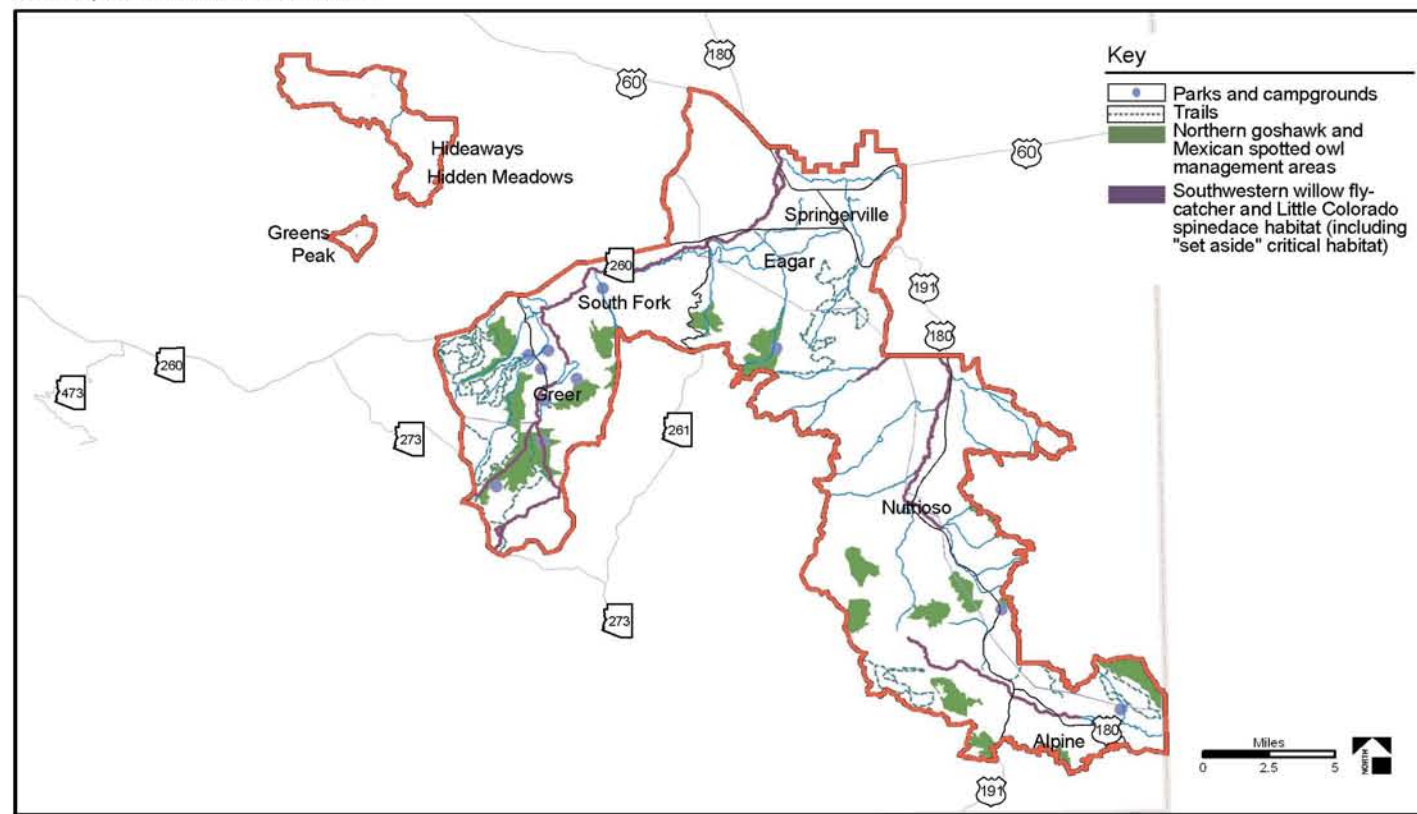




Developed land and infrastructure



Fire insurance ratings



Designated recreational areas and wildlife habitat

Figure 3.5 Community values components

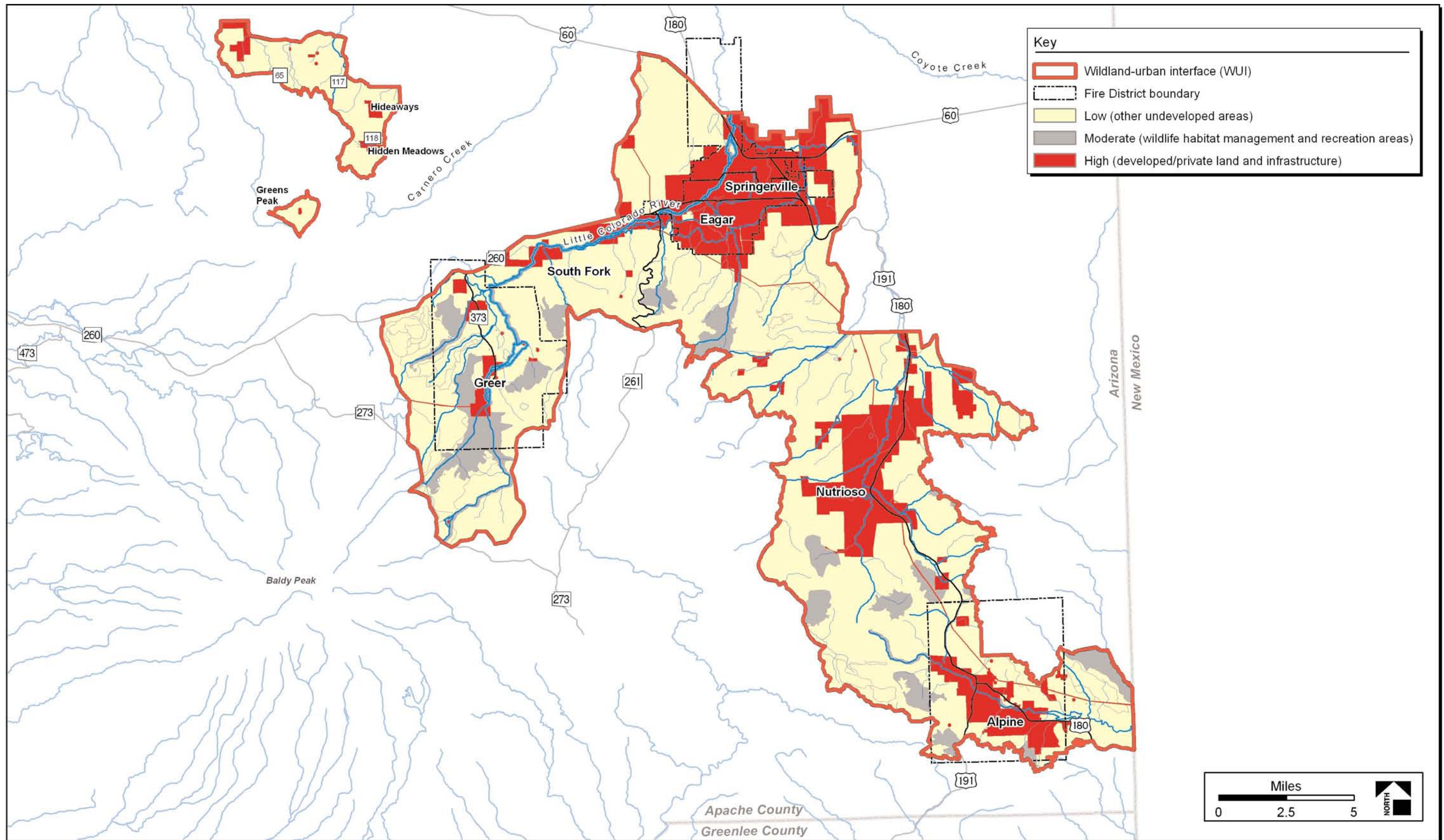


Figure 3.6 Community values

status species for planning purposes. Additionally, any treatments in these species' habitat areas will require further analysis in accordance with the *Apache-Sitgreaves National Forests Plan*. The proposed WUI projects have been consulted on by USFWS under a Regional Programmatic Consultation process completed by FS in 2001. Mandated measures to minimize the effects to listed and proposed species were established. Implementation of these "minimization measures" is required under the programmatic Biological Opinion issued by USFWS for these WUI projects. Additional evaluation and consultation may be required if project boundary or treatments have changed since the 2001 proposals. Following are the species for which adequate information is available for inclusion in landscape-level mapping and analysis:

- ❖ **Northern goshawk** (*Accipiter gentilis*) – The goshawk is a forest generalist. In Arizona, it is found in ponderosa pine, mixed conifer, and spruce-fir forests with high canopy cover along the Mogollon Rim, Kaibab Plateau, and the southeastern mountains above 6,000 feet. The winter range of the Northern goshawk is generally the same as the breeding range, but may include some travel into lower elevations, a trait especially characteristic of immature birds.

Breeding usually begins in late March, and young generally fledge by mid-July. The Northern goshawk generally preys on birds but will often take mammals up to the size of jackrabbits. It prefers stands of intermediate-to-dense canopy cover for nesting, while more open areas are used for foraging. In general, foraging areas around Northern goshawk nests include approximately 5,400 acres. Most forested (ponderosa pine and mixed conifer) habitat atop the Mogollon Rim is considered to be suitable Northern goshawk habitat. Concerns for this species arise from documented declines, probably attributable to widespread cutting of old-growth forest.

The goshawk is designated as a FS sensitive species and is managed under specific guidelines on FS lands; this species does not receive protection under the ESA. Identified goshawk management areas have been mapped by the A-S NFs and have been included in this analysis.

- ❖ **Mexican spotted owl** (*Strix occidentalis*) – Mexican spotted owls are found throughout much of Arizona (except for the arid southwestern portions of the state), primarily in forested mountains and canyons at elevations ranging from 4,500 to 10,000 feet. These owls are typically found in habitat that includes mixed conifer and pine-oak forests, riparian forests, Madrean woodlands, and sandstone canyonlands. Characteristics of suitable habitat include high canopy closure, high basal area, and lands with snags and downed logs. These birds occur where the forests demonstrate complex structure, with uneven-aged, multilayered canopies, and an overstory of old trees.

Mexican spotted owls do not usually breed every year. They do not build nests, but rather occupy preexisting ones, which may include potholes and ledges on cliffs, cavities, debris platforms in trees, or abandoned hawk or raven nests. Eggs are normally laid in April, and the young typically fledge in early to mid-June, but stay with their parents within the territory until late August. Young generally disperse by September and are extremely vulnerable to predation. It is not known whether young birds return to their place of birth for the following breeding season. Mexican spotted owls are active at night, preying on small mammals, birds, reptiles, and insects. In Arizona, their prey includes woodrats (*Neotoma* spp.), pocket gophers (*Thomomys* spp.), rabbits (*Lepus* spp. and *Sylvilagus* spp.), voles (*Microtus* spp.), and white-footed mice (*Peromyscus* spp.). Primary threats to the owl include large-scale catastrophic wildfires and timber harvests.

In 1993, the Mexican spotted owl was listed as threatened under the ESA, and a Recovery Plan was published by USFWS in December 1995. USFWS had designated critical habitat for the owl, though through court action some critical habitat areas have been set aside, and other areas repropoed. Currently most of the federal land within the WUI is proposed for critical habitat designation. Identified Mexican spotted owl management areas have been mapped by the A-S NFs and have been included in this analysis.

- ❖ **Bald Eagle** (*Haliaeetus leucocephalus*) – These large birds are most often found associated with large trees or cliffs near reservoirs, rivers, or streams. Fish are a major component of their diet. Each year in Arizona about 30 pairs of bald eagles establish nests. However, during migration periods and winter, several hundred bald eagles are found throughout the state. Threats to the species include illegal shooting, poisoning, and loss of habitat. Within the WUI, the one known bald eagle nest site is at Luna Lake. During spring and fall (after and before the high-elevation lakes freeze) bald eagles may be seen most anywhere in the WUI.

The bald eagle is classified under the ESA as threatened. A federal rule proposing to delist the bald eagle has been published, but the species still receives full protection of the ESA.

- ❖ **Southwestern Willow Flycatcher** (*Empidonax traillii extimus*) – This small, migratory, insectivorous bird is restricted to dense thickets of streamside vegetation including willow/cottonwood, willow, and tamarisk. It occupies its breeding habitat in the southwest United States from late April to September. Threats include loss or degradation of breeding habitat through grazing by livestock, fire, and water diversions; predation; and parasitism by brown-headed cowbirds.

The Southwestern willow flycatcher is listed as endangered under the ESA. Critical habitat was designated and then “set aside” by the courts, which required a reproposal of critical habitat (expected to be published this year). Within the WUI are the highest-elevation breeding sites known for the bird. Small breeding colonies, each of several pairs, occur in willow thickets in the Greer and Alpine areas. “Set aside” critical habitat includes the Little Colorado River upstream from about South Fork to the Baldy Wilderness. “Set aside” critical habitat has no special protection; however, this identifies areas that may provide appropriate habitat for the bird.

- ❖ **Little Colorado Spinedace** (*Lepidomeda vittata*) – This small, silvery minnow is about 4 inches in length and found in flowing streams only in the

Little Colorado River drainage. It has been documented in stream riffles and pools, with substrates from silt/sand to bedrock, and also in streams of reduced water quality. Predation from trout (primarily nonnative species) appears to be the primary limiting factor in its distribution. The Little Colorado spinedace is listed as a threatened species, with designated critical habitat. However, no critical habitat occurs in the WUI. The fish is found in the WUI in Nutrioso Creek from the community of Nutrioso to the Nelson Reservoir (which has possibly one of the most robust populations known), in the Little Colorado River downstream from the diversion dam located near South Fork, and in Rudd Creek. The Rudd Creek population may have been recently lost during a period of extreme drought.



Vegetation types from Ponderosa Pine to Grasslands  
Source: ANF

### 3. Watersheds

The WUI includes several significant watersheds that supply irrigation water, and provide substantial outdoor recreation opportunities in and adjacent to the communities. The watersheds within the WUI consist of both federal and nonfederal lands and include the East Fork, West Fork, and South Fork of the Little Colorado River; the mainstem of the Little Colorado River; Water Canyon; Nutrioso Creek; and the San Francisco River. These rivers support six major reservoirs that store irrigation waters for the Lyman and Round Valley Irrigation Districts and supply municipal waters to the communities of Springerville and Eagar. In accordance with Section 101.12. and Section 102.a.2. of HFRA,

authorized projects should consider protection to municipal watersheds by implementing hazardous fuel reduction projects on federal lands in proximity to municipal water systems and streams feeding these systems that are at risk from catastrophic wildfire. The majority of watersheds in the WUI are on federal lands, classified as Condition Class 3, and, therefore, at risk from catastrophic wildland fire. Large-scale fire disturbance would have an adverse effect on the riparian corridors that support sensitive wildlife and native fish species, their habitats, and the recreational sport fisheries in the rivers and associated reservoirs through inflows of sediment and ash. Increased erosion and sediment flows would also have significant adverse effects on water quality, distribution systems, and reservoir capacity. The Town of Eagar receives domestic water from a natural spring (Coon Spring) which is fed by ground water recharge from the watershed. Wildland fire that creates increased erosion and percolation abilities of the watershed would significantly affect the water supply to Eagar. Hazardous fuel reduction projects in the WUI will minimize fuels, making the WUI consistent with the Community Mitigation Plan. The fuel reduction treatments recommended in this CWPP are consistent with direction for protection of municipal watersheds by significantly lowering the risk of a catastrophic wildland fire.

#### 4. Local Preparedness and Protection Capability

For many years the ISO has conducted assessments and rated communities on available fire protection. The rating process grades each community's fire protection on a scale of 1–10, (1 being ideal and

10 being poor) based on ISO's Fire Suppression Rating Schedule. There are five factors that make up the ISO fire rating. Water supply, the most important single factor, accounts for 40 percent of the total rating. Type and availability of equipment, personnel, ongoing training, and the community's alarm and paging system account for the remaining 60 percent of the rating.

The major concern of fire departments and districts in the ACWPP is an inadequate distribution of water for firefighting equipment. Hydrants are available only in the communities of Springerville and Eagar. Surface water supplies for drafting or aerial filling of drop buckets are reliably available in all communities with the exception of Hideaways. Additionally, many community subdivisions and areas of denser development in the identified WUI subareas were not designed with adequate ingress/egress or emergency vehicle access. Developments without adequate access and without readily available water supplies increase the risk of greater habitat and structural losses from large wildland fires.

Apache County has developed an evacuation plan that is in place for the majority of the communities in the ACWPP. *Apache County Emergency Management Evacuation Procedures* (2004) details the warning and alert systems used for notifying the public—including local radio and television broadcasters. These systems are enacted by government officials, emergency services, or through the "Emergency Alert System" (EAS). The National Weather Service announces all emergency weather warnings and alerts, and law enforcement or other emergency officers can make announcements by sounding their vehicles' sirens and providing information over public address loud speakers, as well by making door-to-door contacts. Additional information is given in the *Apache County Emergency Management Emergency Operations Plans & Procedures Evacuation* (2004) with regard to evacuation procedures, essential items needed in an emergency, the need to report to designated registration/reception centers, notification of evacuation routes, and transportation needs. Home security and pet/animal care planning are also addressed.

The Springerville and Eagar Municipal Fire Departments and the Greer and Alpine Fire Districts



Town of Eagar municipal water supply at Coon Springs  
Source: Town of Eagar

provide fire protection for the communities in the ACWPP. Both volunteer and professional fire fighters from each department and district are trained and certified. These fire departments and districts provide protection to an estimated 1,713 houses in Eagar, 896 houses in Springerville and an additional 2,309 houses in, or in proximity to, the identified WUI subareas. Figures 3.5 and 3.6 display local preparedness and protection capabilities, identify the fire district boundaries, and the ISO rating for each identified community.

## E. Cumulative Risk Analysis and Summary of Community Assessment

Table 3.6 and Figure 3.7 display the results of the cumulative risk analyses and translate these results into the relative percentages of WUI areas of high, moderate, and low risk. The maps are composites based on inputs from assessments of the fuel hazards, from ignition risks and wildfire occurrence, and from the community values summaries. A summary of the community assessment as it relates to each of the described community's WUI follows below:

### 1. Hideaways

Located in the northwestern-most portion of the WUI, the Hideaways area is mostly composed of Condition Class 3 lands. Some Condition Class 2 lands occur in the northern area of Hideaways, with Condition Class 1 lands occurring on treated private acreage in Hideaways and Hidden Meadows. The fuel hazards rating is high for most of the Hideaways area; however, fuel hazards decrease in the northern portion because of changes in fuel type and density, lowering the fuel hazards rating to an overall medium for the unnamed private parcels in the northwest corner of the WUI. The principal fuel hazards for this portion of

the WUI include thick stands of untreated small-diameter ponderosa pine found on federal lands generally to the south and west of the housing developments and on private land in Hideaways and Hidden Meadows. Private lands fuel modification treatments are expected to increase in Hideaways as landowners continue to treat private parcels to fire-safe conditions. The Hideaways Homeowners Association does intend to apply for additional assistance through various grants to support landowners in fuel modifications. There are no fuel reduction treatments currently planned on federal lands in the vicinity of Hideaways. High fuel loads along with thick forest stands create higher risk of wildfire ignition in high-use areas. Historic lightning and human-caused fire starts in Hideaways have not been significantly frequent; however, fire starts from the south and southwest as well as from within the private parcels pose the greatest risk to the developments because of prevailing winds and extensive fuel loads. Treatments planned by FS for the Greens Peak area include removal of all trees 100–200 feet from structures and from the access to these structures. During the 2004 Nuttall Fire on Mt. Graham, flame lengths of over 100 feet were observed in the mixed conifer vegetation type on north and northeast slopes, and some communication structures were lost. As a result, the US Border Patrol was without radio communications for 24 hours. This treatment will adequately protect the significant communication facilities on Greens Peak.

Access to Hideaways is provided by Forest Road (FR) 118 from the south, FR 117 from the north, and FR 65 to the private parcel in the northwest corner of the WUI. There are no commercial developments in this portion of the WUI. Access to individual private parcels and residences is generally not adequate for simultaneous emergency evacuation and firefighting response. There are no hydrants or available surface water in this portion of the WUI. The closest lake that

**Table 3.6** Cumulative risk levels, by percentage of WUI area

<b>ACWPP communities</b>	<b>High risk (%)</b>	<b>Moderate risk (%)</b>	<b>Low risk (%)</b>
Hideaways, Greer, South Fork	57	12	31
Eagar, Springerville, Nutrioso, Alpine	58	12	30

Source: Logan Simpson Design Inc.

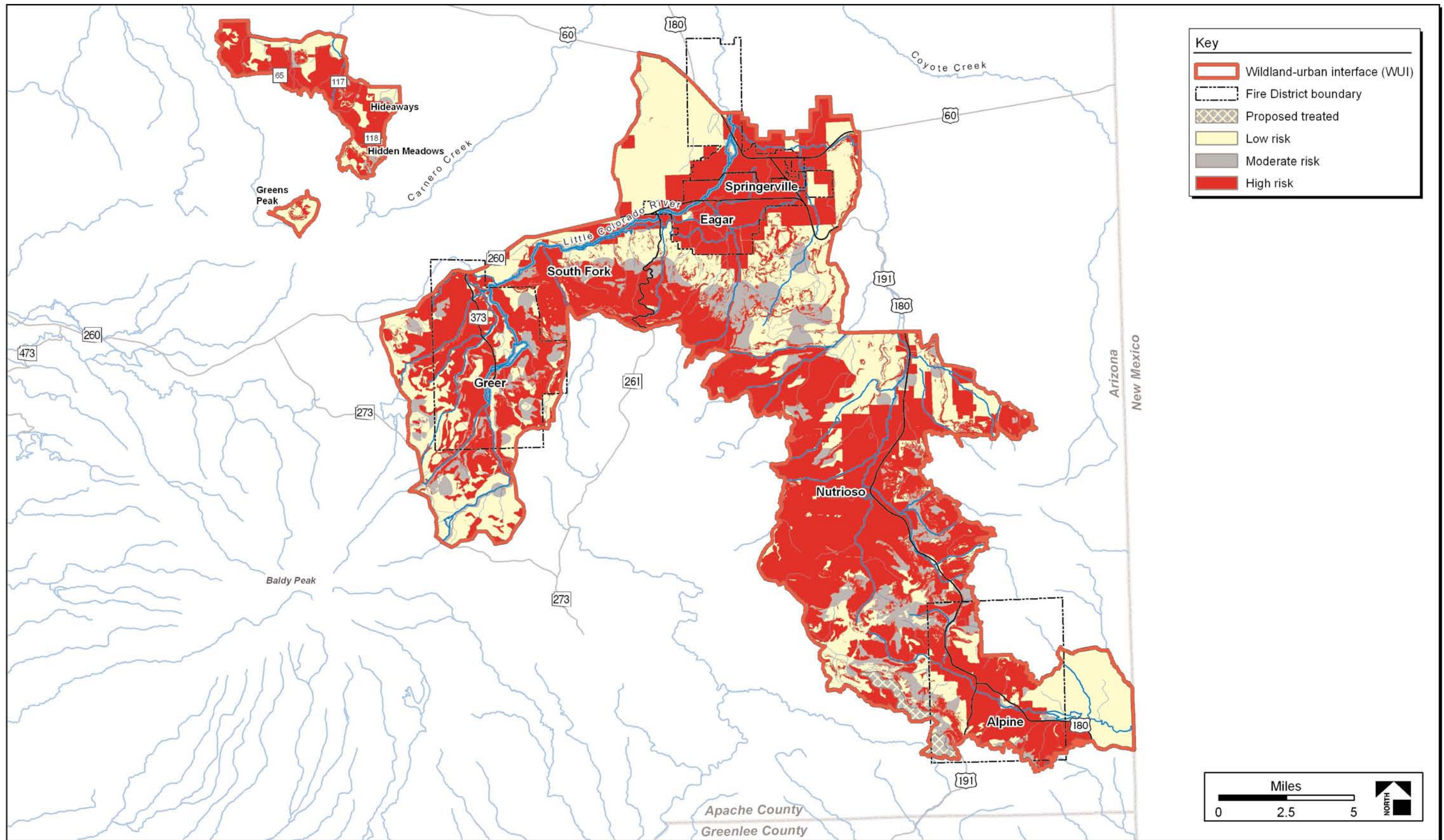


Figure 3.7 Cumulative risk analysis

can provide an area for aerial bucket or ground-vehicle drafting is Carnero Lake, located at the southern fringe of this portion of the WUI. Restricted access and limited water availability add to the threat of habitat and property loss for wildland fire. The Homeowners Association has acquired a 1,000-gallon water pumper truck and two 300-gallon water trailers for initial response to wildfire in the development. In addition to homeowner response, fire protection is provided to Hideaways by FS with additional protection provided by the Greer Fire District and the Springerville and Eagar Municipal Fire Departments. However, since the community is not within a fire district, properties have an ISO fire rating of 10. Residents in this portion of the WUI would follow the Apache County Emergency Management Evacuation Procedures in emergency situations.

## 2. Greer

Located in the southwestern-most portion of the WUI, the community of Greer is mostly composed of Condition Class 3 lands. Some Condition Class 2 lands occur in proximity to Greer, and few Condition Class 1 lands occur on acreage in the community. The FS is analyzing some portions of this area of the WUI for fuel reduction treatments, and has initiated public scoping for future decisions on fuel modifications. However, there are no current federal decisions standing for fuel modification treatments in the Greer area. Private-land fuel modification treatments are expected to increase in Greer as landowners continue to bring private parcels to fire-safe conditions. The principal fuel hazards for this portion of the WUI include thick, untreated small-diameter ponderosa pine stands found on both private lands within the community and on federal lands surrounding the community. Fuel hazards decrease in some southern areas in this portion of the WUI because of vegetation changing to high mountain grasslands, riparian vegetation, and mixed-conifer types. In addition to high fuel loads, large areas of south-southwest aspects and slopes of at least 35 percent are found to the south and east of Greer. Historic lightning and human-caused fire starts in the Greer area occur in the community near high public-use areas (campgrounds, lakes, and trails). Historic fire starts also occur at the highest elevations of this area of the WUI in the vicinity of the White Mountain Reservoir west of the community. Fires starts from the south and

southwest as well as from within the private parcels pose the greatest risk to the community of Greer because of prevailing winds, high steep slopes, and extensive fuel loads. High fuel loads, high public use, terrain consisting of south-southwest aspect, slopes of 35 percent or greater, and areas of high historic fire starts, along with thick forest stands and housing density, create higher risk of wildfire ignition in the Greer area.

Access to Greer from the south is provided by SR 373, the community's major transportation corridor and commercial development center. Community values identified in this portion of the WUI include significant wildlife habitats associated with riparian areas, FS campgrounds and the associated Greer Lake recreation area, and hiking trails in the community and on federal lands adjacent to the community. Community infrastructure includes the post office, municipal water supply, and several retail outlets. SR 373 is the only hard-surfaced road in the Greer area, and access from SR 373 to individual private parcels and residences is generally not adequate for simultaneous emergency evacuation and firefighting response, particularly if the four FS campgrounds, consisting of over 200 campsites, are involved in any emergency evacuation. The US Census Bureau 2000 census profile for the Greer area reported 708 individual housing units, of which 56 are owner-occupied. Seasonal residents and tourists during peak summer months greatly increase the local population. There are no fire hydrants in the community of Greer; however, surface water is immediately available in this portion of the WUI from the Greer Lakes, White Mountain Reservoir, in some portions of the Little Colorado River, and private impoundments that can provide nearby areas for aerial bucket or ground-vehicle drafting. Fire protection is provided to the community by the Greer Fire District with support provided by FS and additional protection provided by the Springerville and Eagar Municipal Fire Departments. Properties within the town have an ISO fire rating of 8. Residents in this portion of the WUI would follow the Apache County Emergency Management Evacuation Procedures in emergency situations.

## 3. South Fork Area

The South Fork area of the WUI consists of private and federal lands principally associated with the Little



Colorado River and the South Fork of the Little Colorado River. Most portions of the WUI associated with South Fork consist of Condition Class 2 and 3 lands. Condition Class 1 lands occur on some private acres within the community, unbroken grasslands, and in the South Fork burn (a historic wildfire area) where fuel loads and fuel types have been reduced. An area of low fuel hazard is located in the western portion of this WUI area because of previous FS fuel reduction treatments. Areas of moderate fuel hazards are located immediately to the south and north of the Little Colorado River corridor because of changing vegetation types, from high fuel loads associated with the ponderosa pine type to more open pinyon-juniper woodland and then moving to unbroken grassland types. FS is analyzing the southern portions of this WUI area for fuel reduction treatments, and has initiated public scoping for future decisions on fuel modifications. However, there are no current federal decisions standing for fuel modification treatments in the South Fork area. The principal fuel hazards for this portion of the WUI include thick, untreated, small-diameter ponderosa pine stands found within FS lands to the south of the community. Fuel hazards decrease in northern areas of this portion of the WUI because of vegetation changing to unbroken grasslands, riparian vegetation, and pinyon juniper types. In addition to high fuel loads to the south, some areas of south-southwest aspects and slopes of 35 percent or greater are found. Historic lightning and human-caused fire starts in the South Fork area are prevalent along the escarpment of the Little Colorado River basin of the southern portion of this WUI area. Fires starts from the south and southwest pose the greatest risk to the residential and commercial developments because of prevailing winds, steep slopes, and extensive fuel loads. High fuel loads, high public use, terrain consisting of south-southwest aspect, slopes of 35 percent or greater, and areas of high historic fire starts along with thick forest stands create higher risk of wildfire ignition in the South Fork area.

Access to South Fork is provided solely by the South Fork Road (County Road [CR] 4124/FR 560) from the south and associated “driveway” access points to private parcels. Community values identified in this area of the WUI include significant wildlife habitats associated with riparian areas, the South Fork campground (FS), a private museum, a guest ranch,

rental cabins, fishing, and hiking trails. The Little Colorado River system, including the South Fork area, has been listed by the National Audubon Society as the “The Upper Little Colorado River Important Bird Area.” Significant wildlife values are associated with the Little Colorado River corridor. CR 4124/FR 560 is the only hard-surfaced road in the area, and access from FR 560 to individual private parcels and residences is generally not adequate for simultaneous emergency evacuation and firefighting response in an emergency evacuation. There are no hydrants in the South Fork area; however, surface water is immediately available in this portion of the WUI from some portions of the Little Colorado River and private impoundments that will provide nearby areas for aerial bucket or ground-vehicle drafting. Fire protection is provided to South Fork by the Springerville and Eagar Municipal Fire Departments and by the Greer Fire District with support provided by FS. The South Fork area is not within a designated fire district and, therefore, properties have an ISO fire rating of 10. Residents in this portion of the WUI would follow the Apache County Emergency Management Evacuation Procedures in emergency situations.

#### **4. Eagar**

Located in the north-central portion of the WUI, the community of Eagar consists of mostly Condition Class 2 and 3 lands. Condition Class 1 lands occur on acreage in the northern half of the community. FS is analyzing some portions of this area of the WUI for fuel reduction treatments and for future decisions on fuel modifications. However, there are no current federal decisions standing for fuel modifications or proposed treatments near the Eagar area. Private land fuel modification treatments are expected to increase in Eagar as landowners continue to bring private parcels to fire-safe conditions. The principal fuel hazards for this portion of the WUI include the grassland vegetation type occurring west of the community in conjunction with high fuel loads from thick, untreated, small-diameter ponderosa pine stands found on federal lands south of the community. Fuel hazards decrease in some northern, western, and eastern areas within the Eagar portion of the WUI because of changing vegetation to pinyon-juniper woodlands and unbroken grasslands. Fuel hazards risk is in part determined by vegetation types indicative

of ground fuel loads. Timber litter, for example, will contain as much as 12 tons/acre of light (1- to 10-hour fuels) and heavy fuels (10-hour and greater fuels), where grassland types may contain 1 ton/acre of light (1-hour) fuels. However, grassland fires can support extreme fire spread rates, placing adjacent habitats and communities at risk because of fire spread rather than fire intensity. Therefore, areas on the western town limits of Eagar and Springerville have a high risk of ignitability that is not depicted on the overall fuel hazards determination (Figure 3.6). In addition to high fuel loads, areas of south-southwest aspects and slopes of 35 percent or greater are found south of Eagar. Historic lightning and human-caused fire starts are prevalent within the community and in the associated FS lands south of Eagar. These include areas of high public use associated with the Water Canyon drainage and eastward to the Murray Canyon area. Fire starts from the south and southwest and in the grasslands to the west, as well as from within the private parcels pose the greatest risk to the developments because of prevailing winds, steep slopes, and extensive fuel loads. High fuel loads, high public use, terrain consisting of south-southwest aspect, slopes of 35 percent or greater, and areas of high historic fire starts, along with thick forest stands and housing density, create higher risk of wildfire ignition in the Eagar area.

Access to Eagar is provided by SR 260, US 180 and US 191, the community's major transportation corridors and commercial development centers. Community values identified in this portion of the WUI include significant municipal and agricultural district water supplies, the FS recreation area associated with the Milligan Valley off-highway vehicle public use area, hiking trails, and a broad range of community facilities, including schools, parks, a public library, a swimming pool, a post office, and a golf course. Access from SR 260 and US 180 and US 191 as well as most Town-maintained roads is adequate for simultaneous emergency evacuation and firefighting response near individual private parcels and residences. There are few hydrants in Eagar, although surface water is immediately available in this portion of the WUI from Becker Lake, Nelson Reservoir, in some portions of the Little Colorado River, and private impoundments that can provide for aerial bucket or ground-vehicle drafting. The US

Census Bureau 2000 census profile for the Eagar area reported 1,104 individual housing units, of which 598 are owner-occupied. Seasonal residents and tourists during peak summer months greatly increase the local population. Fire protection is provided to the community by the Eagar Municipal Fire Department, with support provided by FS and additional protection provided by the Springerville Municipal Fire Department. The Eagar community has an ISO fire rating of 5. Residents in this portion of the WUI would follow the Apache County Emergency Management Evacuation Procedures in emergency situations.

### **5. Springerville**

Also located in the north-central portion of the WUI, the community of Springerville is the sister city to Eagar. The combined communities are known as Round Valley. The two communities have a consolidated school district (Round Valley Schools). Springerville consist of mostly Condition Class 1 and 3 lands. Condition Class 1 lands are on acreage to the south (within the community of Eagar) and to the west of the community. Private land fuel modification treatments are expected to increase in Springerville as landowners continue to bring private parcels to fire-safe conditions. The principal fuel hazards for this portion of the WUI include the grassland vegetation type occurring west of the community in conjunction with private structures catching fire. Fuel hazards are generally moderate in the areas surrounding the community because of vegetation types primarily of open ponderosa pine, pinyon-juniper woodlands, and unbroken grasslands. Similar to the town of Eagar, fuel hazard risks are primarily from grassland fires occurring west of the community that can produce rapid fire spread, which would place adjacent habitats and the community at a greater risk than from fire intensity. Therefore, areas on the western edge of Springerville have a high risk of ignitability that is not depicted in the overall fuel hazards determination (Figure 3.7). Fire starts from the grasslands to the southwest and west, as well as from within the private parcels, pose the greatest risk to development because of prevailing winds, rate of fire spread, and residential fuel loads.

Access to Springerville is provided by SR 260, US 180, US 191, and US 60, the major transportation corridors and commercial development centers for

Springerville. Community values identified in Springerville include significant municipal and agricultural district water supplies and a broad range of community facilities, including the White Mountain Regional Hospital, Casa Malpais archeological site, and Becker Lake. Access from SR 260, US 180, US 191, and US 60, as well as most Town-maintained roads, is adequate for simultaneous emergency evacuation and firefighting response near individual private parcels and residences. There are few hydrants within the town of Springerville, although surface water is immediately available in this portion of the WUI from Becker Lake, Nelson Reservoir, some portions of the Little Colorado River, and private impoundments that would provide for aerial bucket or ground-vehicle drafting. The US Census Bureau 2000 census profile for the Springerville area reported 1,977 individual housing units, of which 1,133 are owner-occupied. Seasonal residents and tourists during peak summer months greatly increase the local population. Fire protection is provided to the community by the Springerville Municipal Fire Department, with support provided by FS and additional protection provided by the Eagar Municipal Fire Department. Springerville has ISO fire ratings of 7 and 8. Residents in this portion of the WUI would follow the Apache County Emergency Management Evacuation Procedures in emergency situations.

## 6. Nutrioso

Located in the south-central portion of the WUI, the community of Nutrioso consists of mostly Condition Class 3 lands. Some Condition Class 2 lands occur along the US 191 corridor on both private and federal lands. Condition Class 1 lands occur north and northeast of the community mainly because of changing vegetation types from ponderosa pine to pinyon-juniper woodlands. Additionally, there are no current federal decisions or proposed fuel modification treatments in the Nutrioso area. Private lands fuel modification treatments are expected to increase in Nutrioso as landowners continue to bring private parcels to fire-safe conditions. The principal fuel hazards for this portion of the WUI include thick, untreated small-diameter ponderosa pine stands found on both private lands in the community and on federal lands to the west and south. Fuel hazards decrease in more southern areas of this portion of the WUI because of vegetative types changing to high mountain

grasslands and mixed conifer types. Fuel hazards also decrease in more northern areas in this portion of the WUI because of vegetation changing to pinyon-juniper woodlands. In addition to high fuel loads, large areas of south-southwest aspects and slopes of 35 percent or greater are found south of Nutrioso. Historic lightning and human caused fire starts in the Nutrioso area are most prevalent south and east of the community and are associated with higher elevations. Fires starts from the south and southwest as well as from within the private parcels pose the greatest risk to the developments because of prevailing winds, steep slopes, and extensive fuel loads. High fuel loads, terrain consisting of south-southwest aspect, slopes of 35 percent or greater, and areas of high incidence of historic fire starts, along with thick forest stands and housing density, create a higher risk of wildfire ignition in the Nutrioso area.

Access to Nutrioso is provided by US 180 and US 191 and the associated frontage road, the two being the major transportation corridor for the community. Community values identified within this portion of the WUI include significant wildlife habitats associated with riparian areas, Hulsey Lake, and the recreation and public use of hiking trails and sight seeing in the Escudilla Wilderness Area. Community infrastructure includes the post office and the currently unused historic school house. US 180 and US 191 is the only hard-surfaced road in the Nutrioso area, and access from US 180 and US 191 to individual private parcels and residences is adequate for simultaneous emergency evacuation and firefighting response only on portions of the highway and on the Auger Canyon Road (FR 88 and FR 81). There are no hydrants in the community of Nutrioso, and no surface water is immediately available in this portion of the WUI other than from limited areas of Nutrioso Creek, seasonally from Nutrioso Reservoir, and from small private impoundments that could seasonally provide for aerial bucket or ground-vehicle drafting. The US Census Bureau 2000 census profile for the Nutrioso area reported 337 individual housing units, of which 83 are owner-occupied. Seasonal residents and tourists during peak summer months greatly increase the local population. The community of Nutrioso is not in a fire district and does not have a volunteer fire department; therefore, its properties have an ISO fire rating of 10. The Eagar Municipal Fire Department

and Alpine Fire District provide fire protection to the community, with additional protection provided by the Springerville Municipal Fire Department and Forest Service. Residents in this portion of the WUI would follow the Apache County Emergency Management Evacuation Procedures in emergency situations.

## 7. Alpine

Located in the southeastern portion of the WUI, the community of Alpine consists of mostly Condition Class 3 lands. Condition Class 1 lands occur near the community where FS fuel modifications treatments have been conducted, with areas of Condition Class 2 lands in the riparian, grassland, and mixed conifer vegetation types. However, there are no additional FS fuel reduction treatments proposed at this time. Private land fuel modification treatments are expected to increase in Alpine as landowners continue to bring private parcels to fire-safe conditions. The principal fuel hazards for this portion of the WUI include thick, untreated, small-diameter-ponderosa pine stands found on both private lands within the community and on federal lands south of the community and east of the Alpine Divide. Fuel hazards decrease in the central portion of the WUI because of vegetation changing to high mountain grasslands and riparian vegetation. Fuel hazards also decrease in more eastern areas in this portion of the WUI because of previous FS fuel reduction treatments completed through the Little Timber sale. Large areas of south-southwest aspects and slopes of 35 percent or greater are found north and east of Alpine. Historic lightning and human-caused fire starts are prevalent mostly to the north and east of the community and are associated with higher elevations. Fires starts from the south and southwest as well as from private parcels within the community pose the greatest risk to the developments because of prevailing winds and extensive fuel loads. High fuel loads associated with thick forest stands and housing density create higher risk of wildfire ignition in the Alpine area.

Access to Alpine is provided by US 180 and US 191, the major transportation and service corridors for the community. Community values identified in this portion of the WUI include significant wildlife habitats associated with riparian areas, Luna Lake campground and recreation area, a library, a golf course, and a country club. Community infrastructure

includes the post office, A-S NFs Alpine Ranger District Office, and a historic school house. US 180 and US 191, the major roads within the Alpine area, and access from these highways to individual private parcels and residences are mostly inadequate for simultaneous emergency evacuation and firefighting response in many subdivisions and developed residential areas. There are no hydrants in the community of Alpine; however, surface water is immediately available in this portion of the WUI from Luna Lake and small private impoundments that can provide for aerial bucket or ground-vehicle drafting. The US Census Bureau 2000 census profile for the Alpine area reported 656 individual housing units, of which 107 are owner-occupied. Seasonal residents and tourists during peak summer months greatly increase the local population. Fire protection is provided to the community by the Alpine Fire District, with support provided by FS and additional protection provided by the Springerville and Eagar Municipal Fire Departments. Alpine properties have an ISO fire rating of 8. Residents in this portion of the WUI would follow the Apache County Emergency Management Evacuation Procedures in emergency situations.



Diseased trees in the Pinyon-juniper fuel type  
Source: Town of Eagar

## IV. COMMUNITY MITIGATION PLAN

Section IV prioritizes the areas that need fuel treatment and recommends the types and methods of treatment and/or management necessary to mitigate the potential for catastrophic wildland fire in the WUI. Also presented in this section are the ACWPP communities' recommendations for enhanced wildland fire protection capabilities; public education, information, and outreach; and support for local wood products industries.

### A. Administrative Oversight

Generally, the most efficient way to manage the urban forest is through a single entity responsible for implementing the action recommendations of the ACWPP. This will allow for enhanced coordination of management actions and reduced inconsistency among local, state, and federal agencies. Implementation of the ACWPP in a manner that ensures timely decision making at all levels of government and that provides for community protection and forest restoration is the highest ACWPP priority. Therefore, the primary recommendation of the ACWPP is for the Towns of Eagar and Springerville and the Apache County government to enter into an “intergovernmental agreement” (IGA) creating a “Forest Management Commission” that will manage the implementation of this ACWPP and encourage commercial and volunteer activities to promote forest health and reduce the risk of catastrophic wildland fire. The Towns of Eagar and Springerville and Apache County may, through this IGA, establish a “Zone Administrator” who will carry out the charter of the “Forest Management Commission.” This IGA will identify the responsibilities for coordinating, implementing, monitoring, and reporting to the signatories the status of the current-year priority recommendations. The IGA would also detail the development of an annual work plan proposing priority action recommendations based on effectiveness monitoring of programs implemented in previous years. The annual report and annual work plans will be submitted to the signatories for review and

approval each year. Once approved by the participating government entities and fire districts, the ACWPP will be presented to the Arizona State Forester and the A-S NFs Forest Supervisor for concurrence, and, subsequently, will be submitted for funding through the HFRA.

### B. Fuel Reduction Priorities

To prioritize treatments, the WUI has been identified, analyzed, and categorized according to potential risk from wildfire. The analyses of community values, fuel hazards, and fire history were compiled into a single map that depicts areas of low, moderate, and high risk (Figure 3.7). The risk areas are further identified and categorized into manageable, site-specific areas in the WUI, with an overall risk value determined for each. Additionally, each site-specific area in the WUI was labeled based on the nearest community (Table 4.1 and Figure 4.1).

Within the ACWPP, 58 site-specific areas were identified and given overall risk values. Additionally, each of these areas was ranked and described along with a recommendation for its preferred treatment type and method. Treatment recommendations are described in Table 4.2 and consider commercial—and other—opportunities for utilizing small-diameter trees and woody material byproducts from treatments. The following map and table identify and describe the site-specific risk areas within the WUI.



Untreated stand of ponderosa pine  
Source: A-S NF

**Table 4.1** Identified treatment management areas

Treatment management area	Map ID	Risk value	Location and description	Recommended treatment(s) <sup>a</sup>	Total acres	Federal acres	Nonfederal acres
Alpine	A1	High	Located northwest of Alpine, private and federal lands have not been identified for treatment	1–3 and 5	6,698	4,978	1,720
Alpine	A2	High	Located northwest of Alpine, these federal land areas have not been identified for treatment	5 and 3	2,086	2,086	0
Alpine	A3	High	Located west of Alpine, these federal land areas have not been identified for treatment	1–3 and 5–6	4,404	1,923	2,480
Alpine	A4	Moderate	Located northwest of Alpine, these federal land areas have not been identified for treatment	5 and 3	1,655	1,655	0
Alpine	A5	Moderate	Located north of Alpine, these federal and private lands have not been identified for treatment	1–3 and 5	777	765	12
Alpine	A6	Low	Located northwest of Alpine, these federal land areas have not been identified for treatment	5	2,429	2,429	0
Alpine	A7	Low	Located northwest of Alpine, these federal and private lands have not been identified for treatment	1–3 and 5	1,678	1,663	15
Alpine	A8	Moderate	Located west of Alpine, these federal land areas have not been identified for treatment	5	909	909	0
Alpine	A9	Low	Located east of Alpine, these federal and private lands have not been identified for treatment	1–3 and 5	5,996	5,804	192
Eagar	E1	High	Located west of Eagar, these private and federal lands are located in pinyon-juniper country	1–4 and 5–6	10,978	1,281	9,697
Eagar	E2	High	Located south of Eagar, this Federal land is located in pinyon-juniper country	3 and 4	4,645	4,645	0
Eagar	E3	Moderate	Located south of Eagar, these private and federal lands are located in pinyon-juniper country	1–4	2,280	2,271	9
Eagar	E4	Moderate	Located south of Eagar, this federal land is located in pinyon-juniper country	3 and 4–5	1,039	1,039	204
Eagar	E5	Low	Located south of Eagar, these private and federal lands are located in pinyon-juniper country	1-5	1,477	1,273	0
Eagar	E6	Low	Located southeast of Eagar, these private and federal lands are located in pinyon-juniper country	1-5	4,700	4,685	15
Eagar	E7	Low	Located south of Eagar, this federal land is located in pinyon-juniper country	3 and 4–5	1,711	1,711	0
Greer	G1	High	Includes federal and private lands northwest of Greer	1–5	6,822	6,368	454
Greer	G2	High	Includes federal and private lands east of Greer	1–5	8,368	7,748	621

*(table continued on next page)*

**Table 4.1** Identified treatment management areas *(continued)*

Treatment management area	Map ID	Risk value	Location and description	Recommended treatment(s) <sup>a</sup>	Total acres	Federal acres	Nonfederal acres
Greer	G3	High	Includes federal and private lands south of Greer	1–5	4,767	4,532	235
Greer	G4	Moderate	Includes federal lands southwest of Greer	5	1,840	1,840	0
Greer	G5	Moderate	Includes federal lands south of Greer	5	626	626	0
Greer	G6	Low	Includes federal lands west of Greer	5	1,464	1,464	0
Greer	G7	Low	Includes federal lands southeast of Greer	5	444	444	0
Greer	G8	Low	Includes federal lands south of Greer	5	1,436	1,436	0
Greer	G9	Low	Includes federal lands south of Greer	5	2,286	2,286	0
Greens Peak	GP1	High	Includes federal lands around the structures on Greens Peak	1-3 and 6	320	320	0
Greens Peak	GP2	Low	Includes federal lands around the structures on Greens Peak	1-3 and 6	506	506	0
Hideaways	HA1	High	Includes private and federal land in the northwest corner of Hideaways WUI area	1–3 and 5	1,274	782	492
Hideaways	HA2	High	Includes private and federal land northwest of Hideaways	1–3 and 5	2,569	2,547	22
Hideaways	HA3	High	Includes private and federal land west Hideaways	1–3 and 5	2,284	1,972	311
Hideaways	HA4	High	Includes federal land in Hideaways	5 and 3	408	408	0
Hideaways	HA5	Low	Includes private and federal land northwest of Hideaways	1–3 and 5	1,460	1,456	5
Hideaways	HA6	Low	Includes federal land north of Hideaways	5 and 3	453	453	0
Hideaways	HA7	Low	Includes federal land west of Hideaways	3	128	128	0
Hideaways	HA8	Low	Includes private and federal land south of Hideaways	1–3 and 5	276	272	4
Hideaways	HA9	Low	Includes federal land south of Hideaways	5 and 3	161	161	0
Nutriosio	N1	High	Located northwest of the community, majority of this area is federal lands	1–4 and 5–6	7,664	6,965	699
Nutriosio	N2	High	Located north of the community, majority of this area is private lands	1–3	646	233	413
Nutriosio	N3	High	Located northeast of the community, majority of this area is federal lands	1–3 and 5	2,419	1,640	779
Nutriosio	N4	High	Located north of the community, majority of this area is private lands	1–3 and 5	4,812	1,447	3,365
Nutriosio	N5	High	Located east of the community, majority of this area is federal lands	1–3 and 5	5,460	3,474	1,986
Nutriosio	N6	High	Located southwest of the community, majority of this area is federal lands	1–3 and 5–6	9,846	8,058	1,789
Nutriosio	N7	High	Located south of the community, majority of this area is federal lands	1–3 and 5	4,506	2,851	1,656
Nutriosio	N8	High	Located southeast of the community, majority of this area is federal lands	1–3 and 5	4,422	4,090	332
Nutriosio	N9	Moderate	Located northwest of the community, majority of this area is federal lands	1–3 and 5	563	556	7
Nutriosio	N10	Moderate	Located southeast of the community, majority of this area is federal lands	1–3 and 5	784	781	2
Nutriosio	N11	Low	Located north of the community, majority	1–5	5,933	5,065	867

Treatment management area	Map ID	Risk value	Location and description	Recommended treatment(s) <sup>a</sup>	Total acres	Federal acres	Nonfederal acres
Nutrioso	N12	Low	Located northeast of the community, majority of this area is federal lands	1–3 and 5	610	603	8
Springerville	S1	High	North of the community, the majority of this area has proposed treatments on state land	1–3	5,857	0	5,857
Springerville	S2	High	East of the community, the majority of this area has proposed treatments on state land	1–3 and 5	911	411	500
Springerville	S3	Low	West of the community, the majority of this area has proposed treatments on state land	1–3	8,640	0	8,640
Springerville	S4	Low	East of the community, the majority of this area has proposed treatments on state land	1–3 and 5	1,532	583	950
South Fork	SF1	High	Includes federal and nonfederal lands south of the community	1–3 and 5–6	6,375	5,491	883
South Fork	SF2	High	Includes nonfederal land north of the community	1–3	1,676	0	1,676
South Fork	SF3	Moderate	Includes federal land southwest of the community	5	643	643	0
South Fork	SF4	Moderate	Includes federal land north of the community	3 and 5	634	634	0
South Fork	SF5	Low	Includes federal land west of the community	1–3 and 5	442	421	21
South Fork	SF6	Low	Includes federal and nonfederal lands northeast of the community	1–5	2,751	236	2,516

<sup>a</sup> See Table 4.2 for descriptions of these six treatment types

### C. Recommendations for Land Treatments in the WUI to Meet Fuel Reduction or Modification Objectives

Table 4.2 Identifies treatment recommendations for lands located in the treatment management areas described in Figure 4.1. These treatments are designed to meet the ACWPP’s fuel reduction/modification objective. Figure 4.2 shows general areas of the recommended treatments within the WUI.

In accordance with Section 102(e) of HFRA, fuel reduction and modification treatments recommended in the ACWPP are designed to “contribute toward the restoration of the structure and composition of old-growth stands ... and retaining the large trees

contributing to old-growth structure.” There are no designated Old-Growth Management Areas located in the WUI. However, the HFRA fuel reduction treatments are designed to enhance old-growth forest conditions and will be compliant with standards and guidelines established in the *Apache-Sitgreaves National Forests Plan*.

Additionally, to ensure compliance with Section 102(f) of HFRA, the ACWPP focuses on treatment and thinning of small-diameter trees to create defensible space, fuel breaks, and acceptable forest Condition Classes for community protection from catastrophic wildland fire. The components of the ACWPP land treatments were designed with consideration of wildlife biodiversity and forest health and restoration as well as watershed and ground water enhancement. Large trees (>16 inches diameter at breast height dbh)



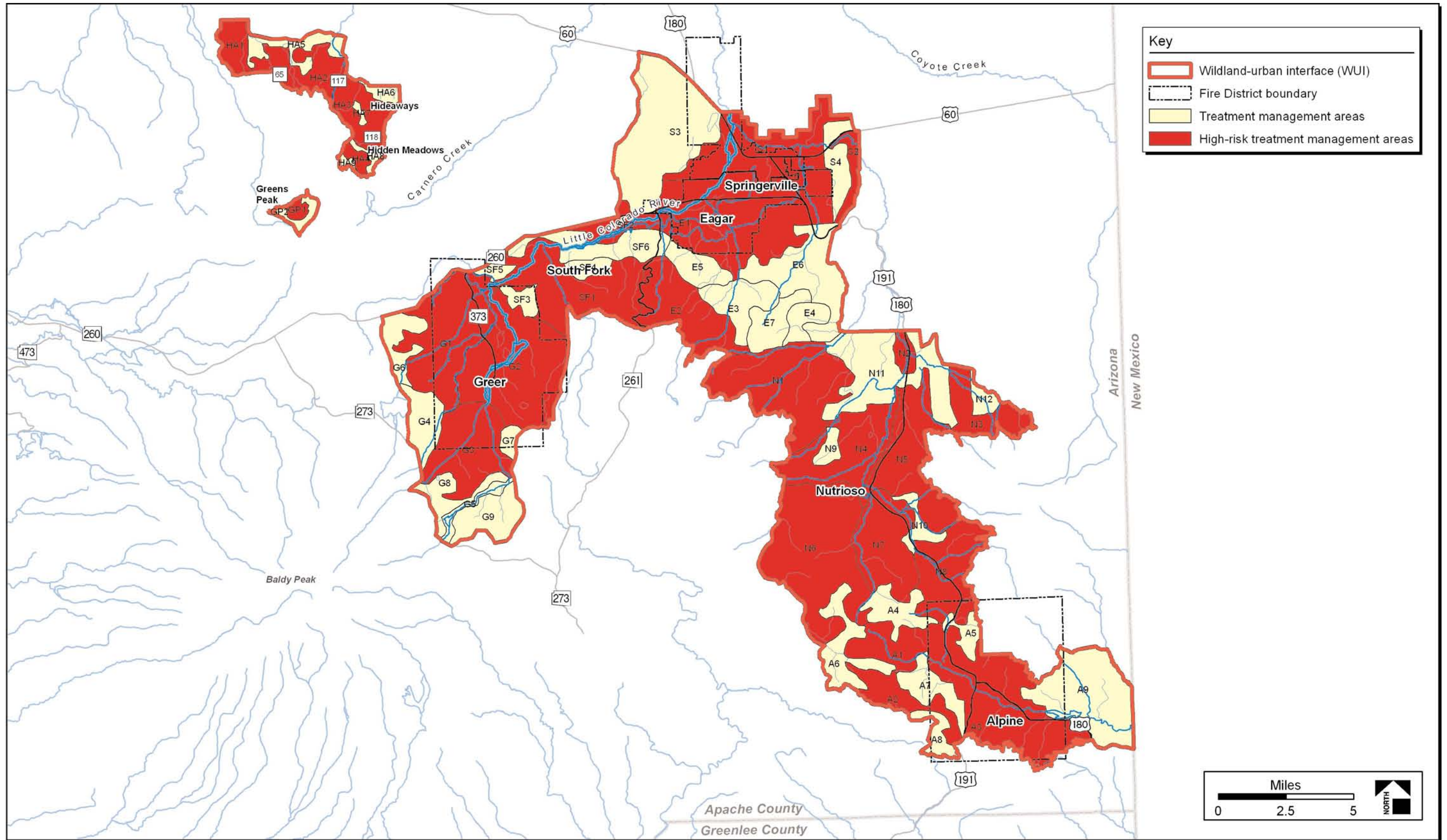


Figure 4.1 Treatment management areas

**Table 4.2** Fuel modification and treatment plans

Treatment number	1 Developed private parcels less than 2 acres			2 Undeveloped private parcels in excess of 2 acres		3 Federal or Arizona State Trust Lands within 0.5 mile of private land		4 Pinyon/juniper woodland within the WUI	5 Federal lands greater than 0.5 mile from private land			6 Restoration of federal lands greater than 0.5 mile from private land
	Treatment category	Zone 1 (0–10 feet from structures)	Zone 2 (10–30 feet from structures)	Zone 3 (30–100 feet from structures)	Slopes <35%	Stream beds, channels and Slopes ≥ 35%	Slopes <35%	Slopes ≥35%	All slopes	Ponderosa pine and mixed conifers on slopes <35%	Ponderosa pine and mixed conifers on slopes ≥35%	PAC <sup>a</sup> or PFA <sup>a</sup> management area
<b>Vegetation</b>	Remove all ladder fuels and reduce flammable vegetation. Remove and destroy all insect-infested, diseased, and dead trees.	Remove all ladder fuels; remove and destroy all insect-infested, diseased, and dead trees. Create separation between trees, tree crowns, and other plants based on fuel type, density, slope, and other topographical features. Reduce continuity of fuels by creating clear space around brush or planting groups.	Remove all ladder fuels; remove and destroy all insect-infested, diseased, and dead trees. Maximum density of trees (whichever is greater: for PP <sup>a</sup> , 60 sq. ft. BA <sup>a</sup> at 80–100 trees/acre or average density of 100 trees/acre)	Remove all ladder fuels; remove and destroy all insect-infested, diseased, and dead trees. Fuel modification plan developed to promote forest health, prevent spread of fire to adjacent property, and create defensible space with considerations for wildlife and groundwater protection.	Remove all dead, diseased, and dying trees. Fell dead trees away from stream channels with defined bed and banks.	Target BA for conifers is 40–60. Conifers greater than 16-inch dbh <sup>b</sup> will not be cut <sup>b</sup> unless needed to promote fire-resilient stands. Conifers 5–16 inches will be thinned. In areas <40 BA, conifers between 1.5 and 4.9 inches dbh will be retained and spaced 15–20 feet from existing trees. Grassland vegetation types will be mechanically treated to remove fuel within a designated fuel brake of not more than one chain.	Same as for slopes <35%.  NA for Grassland Types.	Pinyon-juniper woodlands will be thinned to a spacing of 20 to 35 feet between trees, as needed to promote fire-resilient stands. All trees >12 inches drc <sup>a</sup> will be left unless it is necessary to remove some to achieve the desired spacing. Alligator junipers, when present, will be favored over other juniper species when trees are left in place.	Target BA for conifers is 40–60. Conifers greater than 16 inches dbh will not be cut <sup>b</sup> unless needed to promote fire-resilient stands. Conifers 5–16 inches dbh will be thinned. In areas with < 40 BA, conifers between 1.5 feet tall and 4.9 feet dbh will be retained and spaced 15–20 feet from existing trees. Where feasible 2–4-acre openings will be established in accordance with goshawk guidelines.	Target BA for conifers is 60–80. Conifers greater than 16 inches dbh will not be cut unless needed to promote fire-resilient stands. In areas less than 60 BA, conifers between 1.5 feet tall and 4.9 inches dbh will be retained and spaced 15–20 feet from existing trees. Where feasible, - 1 acre openings will be established in accordance with goshawk guidelines.	Compliance with <i>Apache-Sitgreaves National Forests Plan</i> (Plan) standards and guides.	Restoration is designed to promote and protect presettlement trees, combined with wildlife and watershed improvements. Tree densities will vary from 60–100/acre in goshawk foraging areas to 30–70 BA in habitats of special concern. All presettlement trees will be retained; younger trees within competitive distances will be removed unless needed for replacement. Replacement trees will be identified close to remnant evidence. Average of ~1.5 trees 16 inches dbh or greater or 2–3 trees 16 inches dbh or less are used for replacements. Twenty % of the area may be left untreated, emphasizing drainages, wildlife thermal and hiding cover, travel corridors, water sources, steeper slopes, squirrel nests, and midden areas.
<b>Slash</b>	Remove all dead plant material from ground, prune tree limbs overhanging roof, remove branches within 10 feet of chimney, remove flammable debris from gutters and roof surfaces, and reduce natural flammable material 2–4 feet above ground around improvements.	Control erosion and sedimentation. Remove all pine needle or leaf litter to a depth of 1 inch.	Same as Zone 2.	All slash, snags, and vegetation that may grow into overhead electrical lines; other ground fuels, ladder fuels, and dead trees; and the thinning from live trees must be removed, mechanically treated <sup>c</sup> (chipped, etc.), or piled and burned along with existing fuels.	Clean dead and down debris in channels where debris may be mobilized in floods, creating downstream jams. Some slash and debris can be scattered and retained in small, ephemeral streambeds where slash can help retain runoff and sediment and provide headcut stabilization.	All logs >3.9 inches in diameter from the thinning will be removed from the project area. On open slopes <25%, all slash will be mechanically treated (chipped, etc.), removed or piled, and burned. On slopes of 25–35%, all created slash will be hand-piled along with existing fuels and burned. Slash from grassland treatments will be removed, masticated, or turned (disked).	All created slash <16 inches in diameter will be removed or hand-piled along with existing fuels and burned. As a bark beetle control measure, all created slash >4 inches in diameter will be bucked into 14-inch lengths prior to piling.  NA for Grassland Types.	For wildlife habitat enhancement, leave one slash pile/3 acres or leave lopped, and scatter slash on 30% of the treated area. Slash will be chipped, removed, or piled and burned within 0.25 mile of private lands or within fuel breaks.	All logs >3.9 inches in diameter from the thinning will be removed from the project area. On open slopes <25%, all slash will be mechanically treated (chipped, etc.), or piled and burned. On slopes of 25–40%, all created slash will be hand-piled, along with existing fuels, and burned.	All created slash ≤12 inches in diameter will be hand-piled along with existing fuels and burned. Created slash >12 inches in diameter will be piled or bucked into short lengths. For bark beetle control measures, all created slash from PP >4 inches in diameter will be bucked into 14-inch lengths prior to piling.	Compliance with Plan standards and guides.	Slash will be treated as described for federal land in Treatment 5. All slash treatments will be conducted in compliance with Plan standards and guidelines. Slash treatments will be conducted to promote wildlife and watershed components.

<sup>a</sup> BA = basal area (in square feet)  
 PP = ponderosa pine  
 dbh = diameter breast height;  
 PAC = spotted owl protected activity center  
 PFA = goshawk post fledgling family area  
 drc = diameter root collar

<sup>b</sup> All insect-infested, diseased, and dead trees should be removed and destroyed in excess of A-S NFs' standard for snags.

<sup>c</sup> Maintenance treatments include mechanical removal or burning treatments designed and implemented to diminish understory mass and reduce laddering.

**Table 4.2** Fuel modification and treatment plans

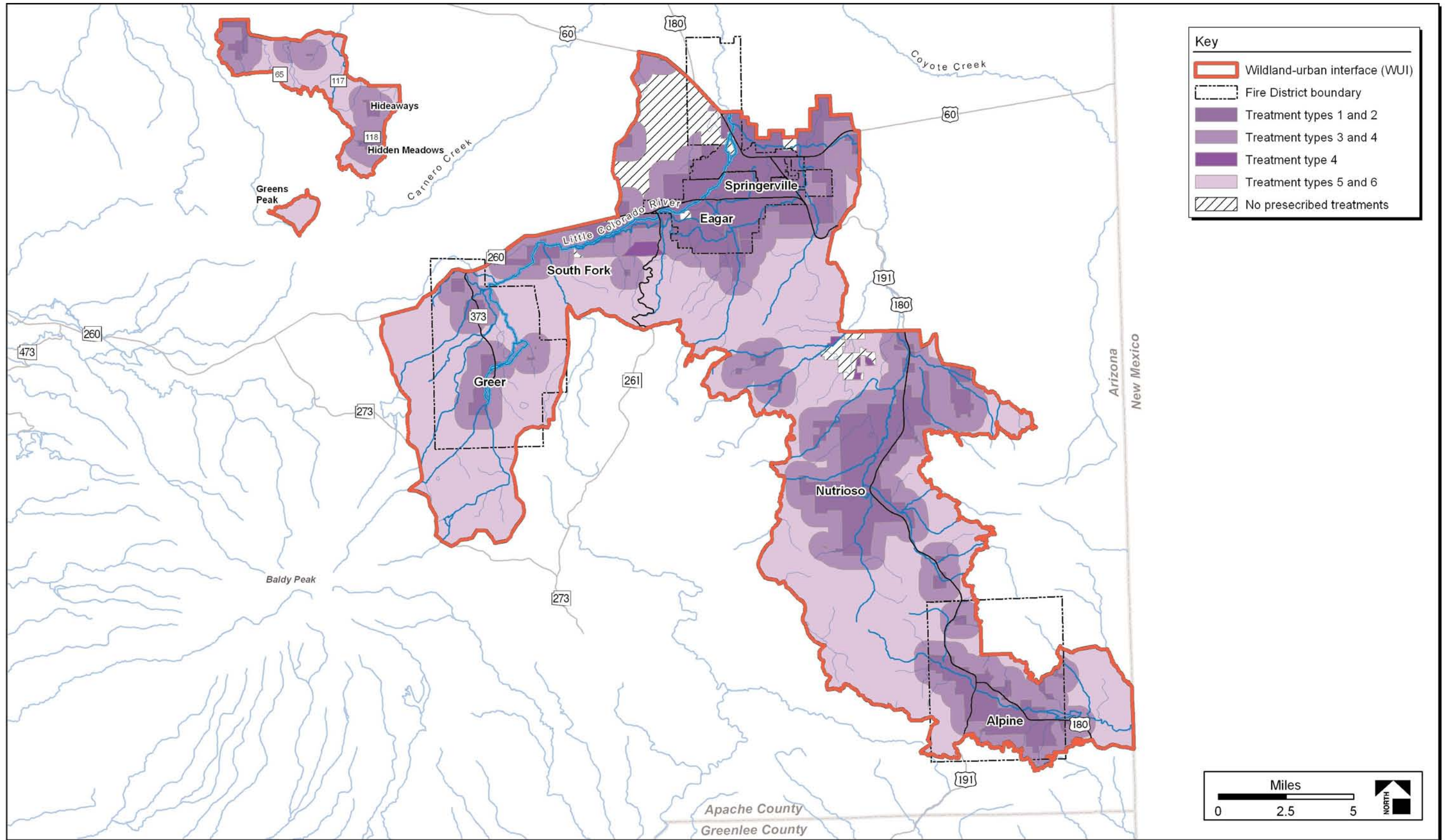


Figure 4.2 Treatment recommendations

are not considered in fuel reduction/modification prescriptions unless they are diseased, dying, or dead trees on private property or diseased, dying, or dead trees on federal land and exceed standards for standing snags delineated in the *Apache-Sitgreaves National Forests Plan*, except within 0.5 mile of private land or within designated fuel breaks. In these areas, all snags may be removed. In addition, some live trees over 16 inches dbh may be removed if necessary to achieve comparably fire-resilient stands, as stated in the HFRA. Downed logs in excess of 16 inches dbh will be removed or piled and burned only in excess of *Apache-Sitgreaves National Forests Plan* standards unless they are within designated fuel break treatment areas, in which case all dead and down material may be removed.

On federal lands, the silvicultural prescriptions and estimated costs per acre used in the ACWPP are

- ❖ precommercial thinning <6 inches dbh
  - thin and chip: \$300/acre
  - thin and pile: \$250/acre
- ❖ commercial thinning 6–12 inches dbh
  - mechanical thin and pile: \$500/acre
  - mechanical thin and hand-pile: \$635/acre
- ❖ commercial thinning 12–16 inches dbh
  - mechanical thin and pile: \$500/acre
  - mechanical thin and hand-pile: \$635/acre
- ❖ hand-pile slash and burn
  - hand-pile, additional \$135/acre
  - burning piles, additional \$50/acre
- ❖ broadcast burn
  - \$50 per acre to conduct the burn
  - \$35 per acre for monitoring the burn

Broadcast prescribed burning may be used as a slash disposal and restoration tool where feasible and practical. Applicable A-S NFs standards and guidelines will be followed.

Recent small-diameter treatments in ponderosa pine stands in the WUI have removed an average of 12 tons/acre. This amount of removed fuel complex is consistent with fuel model 10 as described in *Aids to Determining Fuel Models for Estimating Fire Behavior* (Anderson 1982) for the timber vegetation type. Therefore, an overall estimate of ground fuels to be removed, ranging from litter to understory fuels consisting of 1-hour to 100-hour fuels and live standing



Forest stand prior to commercial thinning  
Source: ANF

fuels, will average 12 tons/acre across the ponderosa pine vegetation type. Commercial value of small-diameter products from these treatments has averaged \$12/ton. If silvicultural prescriptions require precommercial and commercial thinning with follow-up pile burning, total cost/acre treated may exceed \$900 on small federal parcels. Average land treatment costs, considering treatment and handling of slash, are approximately \$635/acre.

Additionally, within most federal land treatment areas, not all acres are involved. Therefore, costs to treat federal land areas are based on average treatment costs/acre, with a footprint covering 80 percent of the landscape.

Private land treatments in the WUI typically occur on small land parcels near power lines, structures, and other obstacles. In recent years, the number of diseased, dying, and dead large trees on private lands has increased. In many cases, cut trees and slash cannot be piled and burned or it is not the preferred slash treatment by the owner of a small residential lot. However, broadcast prescribed burning may be used as a slash disposal and restoration tool where feasible and practical on private lands within or adjacent to the communities where the applicable fire department or district standards are followed. Chipping or removal and transportation of slash to a disposal site increase costs of treatments. Treatments on private land parcels necessary to meet these recommendations have varied from less than \$300/acre to over \$1,900/acre and have averaged

\$1,200/acre. Costs/acre vary greatly for treatment of private parcels, depending on variables and landowner needs. Site analysis shows that land applications will be appropriate for no more than 60 percent of each acre. For example, in residential areas, homesites, streets, and other improvements are included with GIS-mapped estimates, but are areas not requiring treatment. Cost/acre is, therefore, modified at the per-acre cost multiplied by 0.6.

The recovery cost of wood products from private parcels is comparable to that achieved with federal treatments; however, the treatment cost is much higher. Across all landscapes, the commercial value of the product removed will average less than 20 percent of the cost of effective treatment on federal parcels, and less than 15 percent of that with residential land treatments. Cost estimates for treatments in the WUI are based on these estimates for both federal and nonfederal land treatments.

It is recommended that private landowners who wish to adopt fuel modification plans other than those described in Table 4.2 be prepared or certified by a professional forester, a certified arborist, or other qualified individuals. Qualified individuals are provided at no cost to the homeowner through local fire departments, the Arizona State Land Department Fire Management Office, and University of Arizona County Extension Agents. A fuel modification plan must identify the actions necessary to promote forest health and to help prevent the spread of fire to adjacent property by establishing and maintaining defensible space. The plan should include considerations for wildlife and for surface and ground water protection. The action identified by the fuel modification should be completed prior to development of the property.

A fuel modification plan should include at least the following information:

- ❖ A copy of the site plan.
- ❖ Methods and timetables for controlling, changing, or modifying fuels on the property(ies) in a timely and effective manner.
- ❖ Elements of removal of slash, snags, and vegetation that may grow into overhead electrical lines; the removal of other ground fuels, ladder fuels, and diseased, dying, and dead trees; and the thinning of live trees.
- ❖ Methods and timetables for control and elimination of diseased and/or insect-infested vegetation.
- ❖ A plan for the ongoing maintenance of the proposed fuel reduction and of control measures for disease and insect infestations.
- ❖ When a grouping of parcels in multiple ownership is proposed to achieve compliance with this section, the proposed vegetation management plan will need to be accepted by all of the owners of the property covered by the plan.

HFRA was designed to expedite, administrative procedures for conducting hazardous fuels reductions and restoration projects on federal lands. Regardless of priority treatments selected for federal lands, an environmental assessment must be conducted for forest health and fuel reduction projects. Although HFRA creates a streamlined and improved process for reviewing fuel reduction and restoration treatments, it still requires that appropriate environmental assessments be conducted and other collaborations be maintained. To meet conditions established by the Healthy Forest Initiative, the Departments of Agriculture and Interior adopted two new categorical exclusions from the normal review steps of an environmental assessment or of issuance of an environmental impact statement. These exclusions are for hazardous fuels reductions and for rehabilitation of resources and infrastructure damaged by wildfire. For a hazardous fuels reduction project on FS lands to be categorically excluded from documentation of the results of an environmental assessment, the project must meet specific requirements:<sup>1</sup>

- ❖ It must have less than 4,500 acres to be treated, with mechanical slash treatment restricted to no more than 1,000 acres.
- ❖ Its lands must be within current Condition Class 2 or 3.
- ❖ It must not be within a Wilderness or Wilderness Study Area.
- ❖ It must not include use of pesticides, herbicides, or new road or infrastructure construction.
- ❖ It may include sale of vegetative products if the primary purpose is to reduce hazardous fuels.

<sup>1</sup> see the USDA *Forest Service Handbook*; No. 1909.15: Section 30.3

For a project to be categorically excluded, its proposal must be satisfactorily reviewed to determine that no extraordinary circumstances exist. Section 104 of the HFRA describes procedures for federal agencies to employ when they conclude that an environmental assessment must be prepared because of such extraordinary circumstances. Fuel reduction projects in these instances must comply with all land management plan requirements. For project proposals in the WUI, however, A-S NFs is not required to analyze any alternative to the proposed action unless the at-risk community has adopted a CWPP and the proposed action does not implement the CWPP in terms of general location and treatment methods. If the proposed action does not implement a CWPP, the analysis must consider the CWPP proposal as an alternative to the proposed action. Conversely, if the proposed action does implement a CWPP, the action alternative could be the treatments described on the specific federal lands in the WUI of the CWPP.

For these reasons, the communities in the ACWPP have striven to identify treatment areas where no extraordinary environmental circumstances exist and have recommended treatments that comply with the *Apache-Sitgreaves National Forests Plan*. In federal land management areas where an environmental assessment shows no additional documentation is warranted, the priority areas identified for treatment in the ACWPP and treatments recommended to meet fuel reduction or modification objectives should be considered as the action alternative by A-S NFs.

## D. Prevention and Loss Mitigation

The ACWPP is intended to be used as a resource to assist in the coordination of long-term interagency mitigation of catastrophic wildfire events in the at-risk communities of the ANF. The communities in the ACWPP area agreed on six primary objectives for the ACWPP:

- ❖ improve fire prevention and suppression
- ❖ reduce hazardous forest fuels
- ❖ restore forest health
- ❖ promote community involvement

- ❖ recommended measures to reduce structural ignitability in the ACWPP area
- ❖ encourage economic development in the communities

The ACWPP should be periodically reviewed and updated as needed. Successful implementation of this plan will require a collaborative process among multiple layers of government as well as a broad range of special interests. Communities in the ACWPP area have put forward the following action recommendations:

### 1. Improved Protection Capability and Reduction in Structural Ignitability

The risks of wildland fire igniting and spreading in the WUI are taken seriously by the communities. Fire departments and A-S NFs fire response crews' performance can be leveraged through combined responses. In the wake of a large fire or in the case of multiple fires, however, it may not be possible to protect every home and structure in the WUI. Community leaders as well as private landowners must take actions to reduce fire risks and promote effective responses to wildland fires. The following are recommendations to enhance protection capabilities in the ACWPP communities:

- ❖ Provide data to the Towns of Eagar and Springerville and Apache County for use in adoption of an Urban-Wildland Interface Code (ARS 9-906) and/or Fire Prevention Code (ARS 11-861). Such a code or codes would describe specific land standards that apply to trees and describe which conditions are acceptable and which are not. Such a code or codes in the WUI will depend on housing density and community values-at-risk, such as watersheds, archeological resources, recreational resources, wildlife, and grazing and timber resources. Local land use policies could include incentives for private landowners to address defensible space and fuels management on their properties and implement fire-sensitive land use planning and subdivision requirements. In addition, the Towns of Eagar and Springerville and Apache County propose to develop and refine jurisdictional agreements needed for seamless land treatment policies, development of ordinances and codes designed to reduce ignitability for both structural and wildland points of ignition, and application and administration of

grants and programs needed to provide for oversight, management, and implementation of the ACWPP. Decision making will also include development of systems needed for evacuation, specific exigent circumstance mitigation, and firefighting resource distribution.

- ❖ The communities recommend adoption of a consistent preparedness planning model, one that analyzes cost-effective fire protection within all administrative boundaries. In developing this model, county and local protection needs and resources must be considered. The model must produce refined, common reference and coordinated suppression efforts among fire departments, the fire district, and the A-S NFs fire management and response departments.
- ❖ The communities will develop and map specific areas of high risk. These maps will depict resource needs and specific firefighting descriptions that narrowly focus on suppressing fires occurring in the high-risk areas. For example, within a specific neighborhood, there might be residents identified with special needs—a nursing home or a campsite—that, for evacuation, would require notifying specialized personnel, or, there might be a propane distribution center or other defined responses within the high-risk area. Additionally, specific subdivisions that currently have only one-way ingress/egress routes will be evaluated for evacuation and fire response.
- ❖ A-S NFs, the Arizona Department of Environmental Quality, and local fire departments and the fire district will develop a Prescribed Fire Management Plan for the WUI. In addition, fire departments and the district will enhance regulatory and control policies, such as open burning, campfires, smoking restrictions, and other use of fire within their boundaries and will enhance relationships with local law enforcement to ensure compliance with any regulations adopted.
- ❖ Communities will incorporate trails and recreational areas and facilities into fire protection and response plans.

Additional comprehensive and frequent training for fire fighters will be provided. A-S NFs and the local fire departments and the fire district will conduct a common training activity at least once a year prior to entry into the fire season for the purpose of emphasizing

tactics of WUI suppression and interagency coordination. Communities will support NPG's existing training programs such as the Fire Science and Emergency Medical Technology training programs. Continuing wildland/urban interface fire suppression training must be made available to volunteer and regular firefighters in each fire department and the fire district.

## **2. Promote Community Involvement and Improved Public Education, Information, and Outreach**

The communities in the ACWPP will develop and implement public outreach programs to help create an informed citizenry. The goal is to have residents support concepts of fire-safe landscaping and naturally functioning forest systems through restoration management and rapid response to wildland fire. The ACWPP is intended to be a long-term strategic instrument to address hazardous fuels and enhance forest health. To effectively achieve these goals, a grass roots collaborative structure of individual citizens, supported by local governments as full partners, will provide the most effective long-term means to maintain community momentum. The components of such a structure include the following recommendations:

- ❖ Develop a uniform "Urban-Wildland Interface Code" to enhance wildfire management strategies on private land. The IGA signatories should adopt a "tree policy" standard to meet any adopted fire prevention code. It is recommended that a public involvement process that meets public notice requirements of these participating governments be initiated throughout the ACWPP planning area. This public involvement process will derive, through overall community consensus, the seamless land use and structural codes and ordinances necessary to reduce ignitability throughout the ACWPP communities and to comply with new Arizona Revised Statutes.
- ❖ Expand the use of current public information tools for fire-safe residential treatments as an immediate action step. This will be accomplished through information mailers to homeowners, presentations by local fire departments, and development of specific promotional materials. Utilize the resources of the University of Arizona, which is contracted with Region 3 to provide forest health analysis and evaluation for all nonfederal lands in

Arizona. The University is further tasked with forest health outreach throughout the state and has a lead role in the FireWise™ communities outreach program.

- ❖ Continue and enhance the University of Arizona, Navajo County Agricultural Extension Service, and NPG's offering of Defensible Landscaping and Forest Health Workshops, which demonstrates actions that can be used to protect home and property from wildland fire.
- ❖ Develop a video presentation describing treatments a homeowner can undertake to reduce ignitability, through both structural and land treatment improvements.
- ❖ Develop an open-house approach to community education by conducting tours of both residences that are fire-safe and of federal lands in the WUI that have been treated to meet Condition Class 1 standards.
- ❖ The fire departments and the fire district will each schedule a series of three community awareness seminars to inform and educate the citizenry regarding the need for fire-safe treatments of both public and private lands. These seminars will be scheduled annually to best accommodate year-round and part-time residents.
- ❖ Fire department and fire district personnel will act as "goodwill ambassadors" by passing on wildland fire and residential preparedness information at community activities and events. Information will be made available in both printed and oral formats that explain the need for fire awareness and the benefits of preparing private property for potential fire ignition.

wood products resulting from hazardous-fuel reduction activities. Recommendations include:

- ❖ Support and promote contractors who treat private land parcels.
- ❖ Support the establishment of Healthy Forests enterprise businesses and support the new tax credit program for wood products-related industries. (ARS 41-1516)
- ❖ Support the development of markets and industries that extract saleable material from fuel reduction management projects (e.g., biomass, pulpwood, firewood).
- ❖ Support and promote the programs established and conducted by NPC in the Forest Worker Certification Program, which is designed to help loggers develop sound forest practices and diversify their skills. The ACWPP communities support a trained and ready work force for wood products-related industries.

### **3. Enhance Local Wood Products-Related Industries**

The ACWPP communities will continue to support and promote private contractors who perform fire-safe mitigation work. The communities will support new businesses or expansion of existing businesses involved in the fuel reduction market. The communities encourage qualifying businesses (see ARS 41-1516) to apply to the Department of Commerce Healthy Forests Enterprise Incentive Program. The communities are committed to employing all appropriate means to stimulate industries that will utilize all size-classes of



## V. CWPP PRIORITIES: ACTION RECOMMENDATIONS AND IMPLEMENTATION PLAN

The ACWPP communities have developed action recommendations (Section IV) necessary to meet the plan's objectives. A precise set of land management prescriptions has been adopted for fuel reduction treatments and restoration of forest health on both federal and nonfederal lands. A series of recommendations that will reduce structural ignitability and improve fire prevention and suppression has been developed. The ACWPP expresses support from all participating communities for the local wood products industries and local wood products contractors. A unified effort to implement this collaborative plan requires timely decision making at all levels of government. The plan now must be strategically implemented to ensure that 1) action is taken on the highest-priority recommendations and 2) communities can handle the logistical demands of meeting the goals of each recommendation. The ACWPP communities recognize the WUI as a "Forest Management Zone" that must be managed through public acceptance based on the best science to promote quality of life for residents and visitors and reduce the threat of catastrophic wildland fire. Additionally, there must be accountability for measuring and monitoring performance and outcomes of each action recommendation. In response to the Forest Management Commission monitoring the implementation of each action recommendation in the Forest Management Zone and reporting to the ACWPP communities, they will adaptively adjust their annual action recommendations accordingly.

To meet ACWPP objectives for Fiscal Year 2004/05, the CAG developed and prioritized the following action recommendations. At the end of the fiscal year, projects implemented from these action recommendations will be monitored for effectiveness in terms of meeting ACWPP objectives. For the life of the ACWPP, recommendations for additional projects will be made for each coming fiscal year based on project performance in the prior fiscal year.

### A. Administrative Oversight

As stated previously, the communities concur that the most efficient way of implementing the ACWPP action recommendations is through formal agreement to delegate accountability to a single entity. Establishing a unified effort to collaboratively implement the ACWPP embraces adaptive management principles that enhance decision making at all levels of government. Therefore, creation of the Forest Management Commission is the primary action recommendation of the ACWPP communities. Once the IGA signatories have established the Forest Management Commission, they may create a Zone Administrator. The ACWPP communities will establish this position by a request of HFRA grant funds through FS and the Arizona State Forester to provide an annual salary of an estimated \$40,000 and benefits worth 30 percent of that, while covering \$12,000 in mileage and other expenses. The IGA signatories would be willing to consider augmenting the HFRA funding for the Zone Administrator if necessary to meet ACWPP objectives.

### B. Priorities for Reduction of Hazardous Fuels and Forest Health Restoration

Table 5.1 displays the priority treatment areas and projects recommended by the ACWPP communities for Fiscal Year 2004/05. These action recommendations will decrease vegetative fuels and thereby reduce wildfire intensity and potential impact to the communities and the surrounding forests. All projects recommended have "high" valuations for reducing risk. The only exception being the 0.5-mile fuel break adjacent to the western border of the towns of Eagar and Springerville to reduce grassland fuels and provide protection to the communities from rapid fire spread from the grasslands into the communities.

The ACWPP communities support the creation of the state urban-wildland fire safety committee in accordance with ARS 41-2148 and will seek local participation and representation as members of this committee.

**Table 5.1** Action recommendations for reduction of hazardous fuels

Treatment management area	Location and description	RT <sup>a</sup>	Project partners	Estimated treatment costs
Eagar (E2)	Federal land in pinyon-juniper country	3 and 4	Apache County, AZ State Land Dept., and Town of Eagar	federal, 4,645 acres \$471,932 annually
Greer (G3)	Includes federal and private lands west of the community	1–5	Apache County and the community of Greer	federal, 4,532 acres \$460,451 annually nonfederal, 235 acres \$33,840 annually
Alpine (A3)	Includes the community of Alpine, on federal and private lands	1–3 and 5–6	Apache County and the community of Alpine	federal, 1,923 acres \$195,377 annually nonfederal, 2,480 acres \$357,120 annually
South Fork (SF1)	Includes the South Fork area, on both private and federal lands	1–3 and 5–6	Apache County	federal, 5,491 acres \$555,885 annually nonfederal, 883 acres \$127,152 annually
Nutrioso (N6)	Includes private land within the community of Nutrioso and federal lands to the west and south	1–3, and 5–6	Apache County	federal, 8,058 acres \$818,693 annually nonfederal, 1,789 acres \$257,616 annually
Hideaways (H1)	Includes Hideaways and some of the surrounding ANF lands	1–3 and 5	Apache County and Hideaways Homeowners Association	federal, 782 acres \$79,451 annually nonfederal, 492 acres \$70,848 annually
Springerville (S1)	Community of Springerville and State Trust Lands	1–4	Apache County, AZ State Land Dept., and Town of Springerville	nonfederal, 5,857 acres \$843,408 annually
Greens Peak (GP1)	Includes federal lands around the structures on Greens Peak	1–3 and 6	FS Springerville District	federal, 320 acres \$32,512 annually

<sup>a</sup> recommended treatment—see Table 4.2; treatments all begin in Fiscal Year 2004/05 and end in Fiscal Year 2009/10

**Table 5.2** Action recommendations for wildland fire protection and reduced ignitability

Partners	Project	Equipment/expenses	Timeline
Eagar and Springerville	Contract with local small business for creation and maintenance of grassland fuel break through agreement with the Arizona State Land Department	\$2,000 annual contract to local small business	Initiate RFP for contract in 2004/05  Conducted every other year
Greer, Eagar, Springerville, Alpine, and Apache County	Initiate a public involvement program in all ACWPP communities to develop an integrated, consistent, land use code	Public involvement program materials and meeting facilitation: \$120,000 Technical assistance code and ordinance development: \$45,000	Begin, 2004  End, 2006
	Develop and implement a comprehensive emergency response plan	Risk assessment by specific community areas: \$45,000 Technical assistance \$20,000	Begin, 2004 End, 2005

### C. Priorities for Protection Capability and Reducing Structural Ignitability, Fiscal Year 2004/05

The ACWPP communities will evaluate, maintain, and, where necessary, upgrade community wildfire preparation and response facilities, capabilities, and equipment. Table 5.2 lists the priority action recommendations for Fiscal Year 2004/05.

### D. Priorities for Promoting Community Involvement through Education, Information, and Outreach

The ACWPP communities will implement public outreach and education programs for residents and casual forest and community visitors alike to heighten awareness and understanding of the threats and other issues that wildland fire and forest disease pose to the White Mountains. Table 5.3 displays the ACWPP communities’ priority recommendations to promote community involvement. NPC supports public education of wildland fire danger and preparedness in the ACWPP through existing programs such as Fire Science, Defensible Landscaping, and Forest Health

Workshops. Additional programs that could be used or developed to enhance community outreach and education include:

- ❖ Communication liaison to notify NPC of educational opportunities and needs.
- ❖ Liaison with NPC Community Business Services to identify community outreach and education needs.
- ❖ Establish a means for requiring forest workers to attain “best practices” through a formalized education or certification approach.

The University of Arizona is contracted with Region 3 to provide forest health analysis and evaluation for all nonfederal lands in Arizona. The University is further tasked with forest health outreach throughout the state and has a lead role in the FireWise™ communities outreach program.

### E. Priorities for Enhancing Local Wood Products-Related Industries

The ACWPP communities will continue to support and promote private contractors who perform fire-safe mitigation work (e.g., fuel hazards reduction). The communities will also support and seek opportunities for local contractors to start new businesses or to expand existing businesses in the fire prevention/fuels reduction arena. The ACWPP communities encourage

**Table 5.3** Action recommendations for enhanced public education, information, and outreach

Partners	Project	Equipment/expenses	Timeline
Greer, Eagar, Springerville, Alpine, and Apache County	Create and distribute a series of free video tapes for WUI residents to encourage compliance with community tree policies and an Urban-Wildland Interface Code	Script preparation and production costs: \$25,000 Video duplication and distribution costs: \$10,000	Develop for use in 2004/05 Distribute continually
	Initiate open-house tours of treated private and federal lands; complete 12 tours (one per month to ensure that all new property buyers will have opportunity to participate) consisting of 20 participants each	Vehicle rental and technical assistance for tour sponsorship, areas, and outreach; “take-home” materials: costs \$45,000 annually	Begin, 2004  conduct continuously

new and existing qualifying businesses to participate in the State of Arizona, Healthy Forests Enterprise Incentive Program. The development of local businesses to support harvesting, transporting, or processing of forest products is consistent with the goals of the ACWPP.

In cooperation with the IGA signatories, NPC will—beginning with Fiscal Year 2004/05—develop an annual curriculum for its “Forest Worker Certification” program. Estimated expenses:

- ❖ one-time (2004) course preparation and production costs: \$25,000
- ❖ classroom rental and materials costs: \$10,000 annually
- ❖ instructor costs: \$20,000 annually

## F. Requested Funding for Fiscal Year 2004/05

Table 5.4 summarizes the total Fiscal Year 2004/05 costs to launch the ACWPP action recommendations.

The Table 5.4 budget includes the following considerations:

- ❖ An expedited environmental assessment process, according to HFRA stipulations, is used for compliance with FS requirements.

- ❖ Estimates of possible forest product and slash production and of treatment/prescription costs are based on federal and nonfederal land assessments/calculations.
- ❖ The ACWPP communities support development of local forest products industries.
- ❖ Site-specific treatment areas and requirements for implementing “special-circumstance” treatments are identified.
- ❖ Recommended public involvement processes (e.g., adoption of codes and ordinances) have associated costs and time requirements.
- ❖ The Forest Management Commission and Zone Administrator for oversight of the ACWPP are established.

<b>ACWPP objectives</b>	<b>Estimated Costs</b>	
	<b>State Forester</b>	<b>Forest Service</b>
<i>Administrative oversight</i>		
Establishment of a Zone Administrator position	\$32,000	\$32,000
<i>Reduction of fuel hazards</i>		
Eagar (E2)	—	\$471,932
Greer (G3)	\$33,840	\$460,451
Alpine (A3)	\$357,120	\$195,377
South Fork (SF1)	\$127,152	\$555,885
Nutrioso (N6)	\$257,616	\$818,693
Hideaways (H1)	\$70,848	\$79,451
Springerville (S1)	\$843,408	—
Greens Peak (GP1)	—	\$32,512
<i>Wildland fire protection and reduced ignitability</i>		
Public Involvement process for tree policy and structural code development	\$82,500	\$82,500
Emergency Response Plan development	\$65,000	\$1,000
<i>Public education, information, and outreach</i>		
Video description of compliant private lands	\$17,500	\$17,500
Public tours of treated private and federal lands	\$22,500	\$2,500
<i>Enhancement of local wood products industries</i>		
Forest worker curriculum	\$27,500	\$27,500
<b>Total requested FY 2004/05 funds</b>	<b>\$1,936,984</b>	<b>\$2,797,301</b>

## VI. MONITORING PLAN

Monitoring is essential to ensure that ACWPP goals are met. Eagar, Springerville, Apache County, and the fire departments of Greer and Alpine will actively monitor the progress of the ACWPP's action recommendations and base recommendations for future projects on the effectiveness of the ongoing and completed projects in meeting ACWPP objectives.

In accordance with Section 102.g.5. of the HFRA, the ACWPP communities will participate in multiparty monitoring to assess progress toward meeting ACWPP objectives. This authority to participate in the A-S NFs multiparty monitoring program will be vested in the Zone Administrator, a position established as a product of the IGA. The ACWPP communities believe that participation in multiparty monitoring—associated with the pending White Mountain Stewardship Project and with the National Forest County Partnership Restoration Program—will provide effective and meaningful ecological and socioeconomic feedback on landscape and community fuel reduction projects in the ANF.

This section details the performance measures that will be used to assess the effectiveness of ACWPP projects. Monitoring will include assessing and evaluating both the success of individual ACWPP project implementation and of a given project's effectiveness in furthering ACWPP objectives.

### A. Administrative Oversight, Monitoring, and ACWPP Reporting

The Zone Administrator will be responsible for implementing and monitoring the ACWPP action recommendations. At the end of each year's fire season, the Zone Administrator will produce an annual report detailing the success of ACWPP project implementation and overall progress toward meeting ACWPP goals. The Zone Administrator will review and make recommendations to the signatories to update the Community Mitigation Plan and the Prevention and Loss Mitigation Plan portions of the

ACWPP, following adaptive management principles. This information will ensure timely decision making for all levels of government, and provide input necessary for the development of the next year's work plan and for prioritization of project recommendations both annually and for the next 5 years. The Zone Administrator will present the annual work plan to the IGA signatories for their agreement and submission to the State Forester and FS for their concurrence and to have them forward the annual work plan for funding through the HFRA.

### B. Effectiveness Monitoring

Table 6.1 shows the performance measures the Zone Administrator will use to assess ACWPP performance against goals for the first fiscal year.

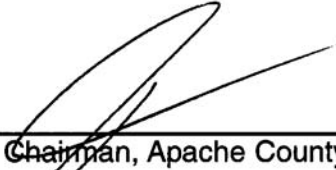
**Table 6.1** Performance measures to assess ACWPP progress

Goal	Performance measure
Improve fire prevention and suppression	<p>Reduced wildland fire occurrence and acres burned (unplanned) within the WUI:</p> <ul style="list-style-type: none"> <li>• ACWPP communities have developed an Urban-Wildland Interface Code consistent in terms of land treatments and structural codes</li> <li>• Effectiveness monitoring of fire prevention and suppression will include:               <ul style="list-style-type: none"> <li>- acres burned, degree of severity of wildland fire</li> <li>- percentage of wildland fire controlled on initial attack</li> <li>- number of homes and structures lost to wildland fire</li> </ul> </li> </ul>
Reduce hazardous forest fuels	<p>High-risk areas effectively treated, by acre:</p> <ul style="list-style-type: none"> <li>• Number of treated acres of nonfederal WUI lands that are in Condition Class 2 or 3, are identified as high-priority by the ACWPP communities, and are moved to Condition Class 1</li> <li>• Number of treated acres of federal WUI lands that are within Condition Class 2 or 3, are identified as high priority by the ACWPP communities, and are moved to Condition Class 1</li> <li>• Total acres treated through any fuel reduction measures, including prescribed fire, that are conducted in the WUI. The change of Condition Class should be determined for the small project and/or treatment area through use of the <i>"Fire Regime Condition Class Guidebook Fire Regime Condition Class Version 1.0.5."</i> (2004)</li> </ul>
Restore forest health	<p>Acres of fuel reduction treatments that meet restoration treatment guidelines for federal lands.</p>
Promote community involvement	<p>Community outreach programs initiated:</p> <ul style="list-style-type: none"> <li>• Percentage of at-risk communities that have initiated a public outreach program and promoted volunteer efforts to reduce hazardous fuels</li> <li>• Number of communities supportive of public involvement process necessary to effect a seamless tree policy among local governments</li> <li>• Number of communities that have developed and implemented evacuation plans for identified high-risk areas</li> <li>• Curriculum enrollment in NPC courses</li> </ul>
Reduce structural ignitability	<p>IGA signatories have developed a consistent Urban-Wildland Interface Code and/or ordinances that effectively address ignitability issues.</p>
Encourage economic development	<p>Wood products industry growth and diversification to utilize all sizes of material removed by fuel reduction treatments:</p> <ul style="list-style-type: none"> <li>• Number of jobs in forest restoration sector retained and number added</li> <li>• Number of value-added wood products developed by local industries</li> <li>• Number of wood products-related industries added to local economy</li> <li>• Number of new jobs created in wood products industries.</li> <li>• Number of new markets for local products created</li> <li>• Number of technical assistance programs initiated to promote commercial uses for all size classes and diameters of wood products materials</li> <li>• Growth in the number of trained and certified forest industry workers employed locally</li> <li>• Requirement of forest workers to achieve "best practices" certification through formalized education</li> </ul>

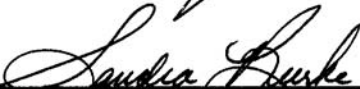
## VII. DECLARATION OF AGREEMENT AND CONCURRENCE

The following partners in the development of this Community Wildfire Protection Plan have reviewed and do mutually agree or concur with its contents:

### Agreement

  
\_\_\_\_\_  
David Brown, Chairman, Apache County Board of Supervisors

9/9/04  
\_\_\_\_\_  
Date

  
\_\_\_\_\_  
Sandra Burke, Mayor, Town of Eagar

9-10-04  
\_\_\_\_\_  
Date

  
\_\_\_\_\_  
Kay Dyson, Mayor, Town of Springerville

9-15-04  
\_\_\_\_\_  
Date

  
\_\_\_\_\_  
Mark Wade, Chief, Greer Fire District

9/9/04  
\_\_\_\_\_  
Date

  
\_\_\_\_\_  
Howard Carlson, Chief, Eagar Municipal Fire Department

9-10-04  
\_\_\_\_\_  
Date

  
\_\_\_\_\_  
Max Sadler, Chief, Springerville Municipal Fire Department

9-15-04  
\_\_\_\_\_  
Date

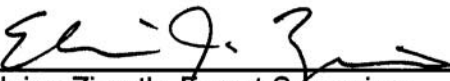
  
\_\_\_\_\_  
Gene Musselmann, Chief, Alpine Fire District

9/9/04  
\_\_\_\_\_  
Date



## Concurrence

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\_\_\_\_\_  
Elaine Zieroth, Forest Supervisor,  
Apache-Sitgreaves National Forests

9/20/04  
Date

  
\_\_\_\_\_  
Kirk Rowdabaugh, Arizona State Land Department, State Forester,  
Forestry Division

9/17/04  
Date

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<b>Appendix 1</b> Threatened, endangered, and sensitive species potentially occurring in the WUI		
<b>Species Name</b>	<b>Status<sup>a</sup></b>	<b>Comment</b>
<b>Plants</b>		
Arizona alum root <i>Heuchera glomerulata</i>	SEN	Shaded rocky slopes near water from 4,000 to 9,000 feet
Arizona willow <i>Salix arizonica</i>	CA, SEN	High-elevation wet meadows and streamsides
Blumer's dock <i>Rumex orthoneurus</i>	SEN	Mid- to high-elevation wetlands
Gila groundsel <i>Senecio quaerens</i>	SEN	Associated with ponderosa pine in damp sites at high elevations
Gooddings onion <i>Allium gooddingii</i>	CA, SEN	Forested drainage bottoms and on moist north-facing slopes of mixed-conifer and spruce fir forests above 7,500 feet
Mogollon paintbrush <i>Castilleja mogollonica</i>	SEN	High-elevation, wet grassy meadows and cienegas
Pinos Altos flame flower <i>Talinum humile</i>	SEN	Mid-elevation dry, gravelly soil terraces, often overlying bedrock
White Mountains clover <i>Trifolium longipes</i> var. <i>neurophyllum</i>	SEN	High-elevation, permanently wet meadows and springs
Wislizeni gentian <i>Gentianella wislizeni</i>	SEN	Mid-elevation open meadows or partially shaded mountain slopes
<b>Invertebrates</b>		
Arizona copper <i>Lycaena ferrisi</i>	SEN	Meadows and cienegas near the foodplant <i>Rumex hymeospalus</i>
California floater <i>Anodonta californiensis</i>	SEN	Shallow areas in unpolluted lakes, reservoirs, and perennial streams
False ameletus mayfly <i>Ameletus falsus</i>	SEN	High-elevation cold, swiftly flowing water
Mountain silverspot butterfly <i>Speyeria nokomis nitocris</i>	SEN	Alpine meadows
Orange giant skipper <i>Agathymus neumoegeni</i>	SEN	Dry mountains with Parry's agave
Scudder's duskywing <i>Erynnis scudderi</i>	SEN	Higher elevation oak woodland
Spotted skipperling <i>Piruna polingi</i>	SEN	Moist woodland openings with lush vegetation, meadows, ravines, and streamsides in the mountains
Three Forks springsnail <i>Pyrgulopsis trivialis</i>	ESA C, SEN	Springs, seeps, marshes, spring pools, outflows, and cienegas from 8,000 to 8,500 feet
White Mountains water penny beetle <i>Psephenus montanus</i>	SEN	Cold, fast-flowing high-elevation streams
<b>Fishes</b>		
Apache (Arizona) trout <i>Onchorynchus apache</i>	ESA LT, SEN	Mid- to high-elevation, cold, clear mountain streams
Gila chub <i>Gila intermedia</i>	ESA PE, SEN	Mid-elevation headwater streams, cienegas, and springs or marshes
Gila trout <i>Oncorhynchus gilae</i>	ESA LE, SEN	Narrow, shallow, mountain headwater streams
Little Colorado spinedace <i>Lepidomeda vittata</i>	ESA LT, SEN	Mid-elevation slow-to-moderate moving waters of the Little Colorado River and its north-flowing tributaries
Little Colorado sucker <i>Catostomus</i> sp.	SEN	Predominantly found in pools with abundant cover in creeks, small- to medium-sized rivers, and impoundments

(table continued on next page)

**Appendix 1** Threatened, endangered, and sensitive species potentially occurring in the WUI (*continued*)

<b>Fishes</b> continued		
Loach minnow <i>Tiaroga cobitis</i>	ESA LT, SEN	Upper Gila River Basin in turbulent, rocky riffles of mainstream rivers and their tributaries below 8,000 feet
Roundtail chub <i>Gila robusta</i>	SEN	Cool to warm water, mid-elevation streams and rivers
Spikedace <i>Meda fulgida</i>	ESA LT, SEN	Mid-water habitats of runs, pools, and swirling eddies
<b>Reptiles</b>		
Mexican garter snake <i>Thamnophis eques megalops</i>	SEN	Densely vegetated habitat surrounding cienegas, cienega-streams, and stock tanks
Narrow-headed garter snake <i>Thamnophis rufipunctatus</i>	SEN	In permanently flowing streams, sometimes sheltered by broadleaf deciduous trees
<b>Amphibians</b>		
Chiricahua leopard frog <i>Rana chiricahuensis</i>	ESA LT, SEN	Mid-elevation natural and man-made aquatic habitats
Northern leopard frog <i>Rana pipiens</i>	SEN	Permanent waters with rooted aquatic vegetation from low to high elevations
Southwestern toad <i>Bufo microscaphus microscaphus</i>	SEN	Low- to mid-elevation rocky streams and canyons in the pine-oak belt and in lower deserts
<b>Birds</b>		
American peregrine falcon <i>Falco peregrinus anatum</i>	SEN	Steep, sheer cliffs overlooking woodlands, riparian areas, or other habitats supporting avian prey species in abundance
Bald eagle <i>Haliaeetus leucocephalus</i>	ESA LT, SEN	Large trees or cliffs near large bodies of water statewide at various elevations; wintering birds use various habitats
California brown pelican <i>Pelecanus occidentalis californicus</i>	ESA LE, SEN	Transient to lower Colorado River and other large bodies of water statewide at various elevations
Common black-hawk <i>Buteogallus anthracinus</i>	SEN	Forests, woodland edges, and canyons, usually near water
Mexican spotted owl <i>Strix occidentalis lucida</i>	ESA LT, SEN	Statewide in old-growth, mixed conifer forests, canyonlands, or pine-oak forests on steep slopes from 4,500 to 10,000 feet
Mountain plover <i>Charadrius montanus</i>	SEN	Short-grass plains and agricultural areas with flat, plowed, or fallow fields at various elevations
Northern goshawk <i>Accipiter gentilis</i>	SEN	Large tracts of mid- to high-elevation deciduous, coniferous, or mixed forests
Southwestern willow flycatcher <i>Empidonax traillii extimus</i>	ESA LE, SEN	Dense riparian vegetation near a permanent or nearly permanent source of water or saturated soil below 8,500 feet
Yellow-billed cuckoo <i>Coccyzus americanus</i>	ESA C, SEN	Large blocks of riparian habitat below 6,500 feet
<b>Mammals</b>		
Black-footed ferret <i>Mustela nigripes</i>	ESA LE	Arid grassland plains north of Mogollon Rim below 10,500 feet, typically associated with prairie dog towns
Jaguar <i>Panthera onca</i>	ESA LE, SEN	Sonoran desertscrub up through subalpine conifer forest
Mexican gray wolf <i>Canis lupus baileyi</i>	ESA LE XN	Chapparal, woodland, and forested areas from 4,000 to 12,000 feet.
New Mexican jumping mouse <i>Zapus hudsonius luteus</i>	SEN	Mid- to high-elevation streamsides with dense herbaceous vegetation

**Appendix 1** Threatened, endangered, and sensitive species potentially occurring in the WUI (*continued*)

Southwestern river otter <i>Lontra canadensis sonora</i>	SEN	Rivers and streams
Springerville pocket mouse <i>Perognathus flavus goodpasteri</i>	SEN	Mid-elevation sandy, gravelly, or rocky grassland with generally sparse vegetation

<sup>a</sup>Status Definitions: ESA=Endangered Species Act, SEN=Sensitive, CA=Conservation Agreement, C=Candidate, LT=Listed Threatened, PE=Proposed Endangered, LE=Listed Endangered, XN=Experimental Nonessential population.



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