# Southern Gila County Community Wildfire Protection Plan

Globe • Miami • Claypool • Tonto Basin/Roosevelt

Hayden • Top of the World • Dripping Springs • Winkelman

Haigler Canyon • Nail Ranch • Pleasant Valley/Young

Rose Creek/YMCA • El Capitan

November 2010

Arizona State Forestry Division

Gila County Board of Supervisors

City of Globe

City of Miami

City of Winkelman

City of Hayden

Bureau of Land Management

Tonto National Forest

Tonto National Monument

Globe Fire Department

Canyon Fire Department

Tri-City Fire Department

Miami Fire Department

Hayden Fire Department

Winkelman Fire Department

Tonto Basin Fire Department

Pleasant Valley Fire Department

Arizona Public Service Company

Salt River Project

# Southern Gila County
# Community Wildfire Protection Plan

**November 2010**

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## ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| APS | Arizona Public Service |
| ASLD | Arizona State Land Department |
| ASFD | Arizona State Forestry Division |
| BA | basal area |
| BLM | Bureau of Land Management |
| CWPP | community wildfire protection plan |
| drc | diameter at root collar |
| FRCC | fire regime condition class |
| GCDEM | Gila County Department of Emergency Management and Public Health Preparedness |
| GIS | geographic information system |
| GPS | Global Positioning System |
| HFRA | Healthy Forests Restoration Act of 2003 |
| IGA | intergovernmental agreement |
| IMS | Federal Wildland Fire Occurrence Internet Mapping Service |
| ISO | Insurance Services Office |
| NPS | National Park Service |
| PPE | personal protective equipment |
| SR | state route |
| SRP | Salt River Project |
| SWReGAP | Southwest Regional Gap Analysis Project |
| TES | Threatened, endangered, and sensitive species |
| TNF | Tonto National Forest |
| USDA | US Department of Agriculture |
| USDI | US Department of the Interior |
| USFS | US Forest Service |
| WUI | wildland-urban interface |

# EXECUTIVE SUMMARY: SOUTHERN GILA COUNTY COMMUNITY WILDFIRE PROTECTION PLAN

The Southern Gila County Community Wildfire Protection Plan (CWPP) was developed in response to the Healthy Forests Restoration Act of 2003 (HFRA) for the at-risk communities and unincorporated areas in southern Gila County, Arizona, located south of the Rim Country CWPP area and the San Carlos Apache Indian Reservation. Public lands within the CWPP analysis area are administered by the US Department of the Interior Bureau of Land Management (BLM) Gila District Office, Tucson Field Office; the Tonto National Forest (TNF); and the National Park Service (NPS) Tonto National Monument. A CWPP developed in accordance with HFRA is the most effective way to acquire federal funding for fire preparedness and planning. Gila County, partner agencies, and participating communities wish to adopt a CWPP to better protect southern Gila County communities from wildfire risk, to better prepare citizens, and to become eligible to apply for and receive federal and other grant monies to implement wildfire mitigation projects and programs.

## Section I. Introduction

A primary objective of a CWPP is to help local governments, fire departments, fire districts, and residents identify at-risk public and private lands and to protect those lands from severe wildfire threat. Additional functions of a CWPP are to improve fire prevention and suppression activities, identify funding needs and opportunities, reduce the risk of wildfire, and enhance public and firefighter safety. Identifying at-risk areas and improving fire protection capabilities helps the communities prioritize high-risk projects and expedites overall project planning. Southern Gila County's CWPP was created to meet these objectives at a local level while integrating overall federal- and state-level fire planning.

To ensure that all residents of southern Gila County were represented in this planning process, a team, referred to as the "Core Team," was formed to implement the agency and public collaboration necessary to develop a CWPP compliant with HFRA. The Core Team represented the communities of Globe, Miami, Claypool, Haigler Canyon, Pleasant Valley, Rose Creek/YMCA, Tonto Basin, Roosevelt, Winkelman, Hayden, Nail Ranch, El Capitan, and Dripping Springs and the local fire departments and districts of Globe, Miami, Tri-City, Canyon, Tonto Basin, Hayden, Winkelman, and Pleasant Valley. The Core Team identified 13 communities and analyzed 330,272 acres for potential risk from catastrophic wildfire within southern Gila County.

## Section II. Community Assessment

Section II covers the methods used in community wildfire risk assessments; the identification of the wildland-urban interface (WUI); and the identification of communities with high, moderate, and low wildfire risk within the WUI. Environmental elements used by the Core Team to identify the WUI include wildland vegetative fuel hazards, consideration of aspect and local topography, historical fire occurrence, and wildfire ignition history. These environmental factors were coupled with community-based characteristics and values, such as local fire resource preparedness, infrastructure, and population and structure density. An external element, the Fire Insurance Services Office ratings, was also used in determining wildfire risk to communities within the WUI. These elements were all identified and combined using spatial analysis

within a geographic information system (GIS). As a result of the GIS analysis, a WUI and sub-WUI boundary map and a wildfire risk rating map were created. Sub-WUIs were divided into treatment management areas, according to high, moderate, and low fuel hazard. Several components, including slope, aspect, vegetation type, vegetation density, ground-fuel loads, and treated areas were used to make fuel-hazard determinations. The Southern Gila County CWPP analysis area comprises 330,272 acres of federal, state, and private lands. Cumulative risk levels across this analysis area include 23,602 acres (8%) of high wildfire risk, 213,223 acres (64%) of moderate risk, and 93,447 acres (28%) of low risk.

### Section III. Community Mitigation Plan

Section III prioritizes the areas in need of wildland fuel mitigation and recommends methods of treatment and management to mitigate the potential for catastrophic wildfire in the WUI. This section also presents the Southern Gila County CWPP communities' recommendations for enhanced wildfire protection capabilities; public education, information, and outreach; and support for local wood product, woody biomass, and wildland vegetative fuel management businesses and industries.

As part of the Community Mitigation Plan, the Core Team identified the Southern Gila County CWPP administrating agencies, which include the fire chiefs of southern Gila County communities, the Gila County Division of Emergency Management and Public Health Preparedness (GCDEM), TNF, the Arizona State Forestry Division (ASFD), and BLM. These agencies will be mutually responsible for implementing and monitoring the Southern Gila County CWPP action recommendations in coordination with a countywide community CWPP Working Group.

To prioritize treatments, the Core Team identified 28 wildland fuel treatment areas within 14 sub-WUI designations. These treatment areas were analyzed and categorized according to potential risk for wildfire. Each area was also ranked and described and a recommendation for the preferred treatment type and method was provided. Preferred treatments were recommended for treatment management areas identified as high risk. These treatments are designed to meet the fuel reduction and modification objectives of the Southern Gila County CWPP.

### Section IV. Southern Gila County CWPP Priorities: Action Recommendations and Implementation

During the development of the Southern Gila County CWPP, the Core Team identified action recommendations necessary to achieve the goals outlined in the plan. The first action recommendation is to identify priority treatment areas for fuel reduction projects. The objective of a fuel reduction project is to create an acceptable vegetation condition class for community and infrastructure protection and public and firefighter safety. Priority treatment management areas were designated in areas identified as high risk. Table 4.1 in Section IV lists the priority action recommendations for the reduction of hazardous fuels within the Southern Gila County CWPP area. The second action recommendation is to reduce structural ignitability. Reduction of structural ignitability is achieved through evaluation; maintenance; and, at times, upgrades to community response facilities, capabilities, and equipment. The third action recommendation is to promote community involvement; action items include community education, information, and outreach.

### Section V. Monitoring Plan

The monitoring plan, outlined in Section V, describes the implementation and monitoring of the Southern Gila County CWPP. The Core Team recommends establishing a CWPP Working Group composed of the fire chiefs from southern Gila County, ASFD, GCDEM, TNF, NPS, and BLM that would be responsible for implementation and monitoring. Implementation begins by securing grants and other funding necessary to execute the action items.

The CWPP Working Group will compile and provide reports of successful grant awards and projects implemented as a result of those awards. The CWPP Working Group will also update work plans based on projects completed in the previous years.

### Acknowledgments

The following communities and agencies were involved in the preparation of the Southern Gila County CWPP:

Gila County Division of Emergency Management and Public Health Preparedness

Municipal fire departments and local fire districts

Municipalities of Globe, Miami, Winkelman, and Hayden

Arizona State Forestry Division

US Department of the Interior, Bureau of Land Management

US Forest Service, Tonto National Forest

National Park Service, Tonto National Monument

Arizona Public Service Company

Salt River Project

# I. INTRODUCTION

The Southern Gila County Community Wildfire Protection Plan (CWPP) was developed in response to the Healthy Forests Restoration Act of 2003 (HFRA) for the at-risk cities and unincorporated areas in southern Gila County, Arizona (see Figure 1.1), located around public lands administered by the following agencies: the Bureau of Land Management (BLM) Gila District Office; the Tonto National Forest (TNF) Globe, Pleasant Valley, and Tonto Basin Ranger Districts; and the National Park Service (NPS) Tonto National Monument. HFRA established unprecedented incentives for communities to develop comprehensive wildfire protection plans in a collaborative, inclusive process. Furthermore, this legislation directs the US Forest Service (USFS) and BLM to address local community priorities in fuel reduction treatments, even on nonfederal lands.

HFRA requires federal agencies to collaborate with communities in developing hazardous fuel reduction projects and places priority on treatment areas identified by communities through the development of a CWPP. Priority areas include the wildland-urban interface (WUI), municipal watersheds, areas affected by windthrow or by insect or disease epidemics, and critical wildlife habitat that would be negatively affected by a catastrophic wildfire.

In compliance with Title 1 of HFRA, the CWPP requires agreement among local governments, local fire departments and districts, and the state agency responsible for forest management. For the Southern Gila County CWPP, this agency is the Arizona State Forestry Division (ASFD). The CWPP must also be developed in consultation with interested parties and the applicable federal agency managing the public lands surrounding the at-risk communities. The majority of lands surrounding the at-risk communities and unincorporated intermixed community zones within southern Gila County are “public lands” and “lands of the National Forest System” as defined in Sections 3.1.A and B of HFRA; Indian tribal lands, as defined in Section 3.2 of HFRA; and Arizona State Trust lands.

The Southern Gila County CWPP has been developed to assist local governments, fire departments and districts, and residents to identify lands—including federal lands—at risk from severe wildfire threat and to identify strategies for reducing hazardous vegetative fuels within the WUI while improving watershed and rangeland health, supporting local industry and local economies, and improving public and firefighter safety and response capabilities. The Southern Gila County CWPP is based on the *Approved Arizona Statewide Land Use Plan Amendment for Fire, Fuels, and Air Quality Management and Decision Record* (BLM 2004a); the *Tonto National Forest Land and Resource Management Plan* (USFS 2005); *Amendment 25 to the Tonto National Forest Land and Resource Management Plan* (USFS 2006); and the *Tonto National Monument Wildland Fire Management Plan* (NPS 2003). It is also based on guidance from *Preparing a Community Wildfire Protection Plan: A Handbook for Wildland-Urban Interface Communities* (Communities Committee et al. 2004), the *Southwest Community Wildfire Protection Plan Guide* (Southwest Strategy 2009) and the *Statewide Strategy for Restoring Arizona’s Forests* (Governor’s Forest Health Councils 2007).


**Figure 1.1**. Analysis Area

The ASFD (2009) identified 40 at-risk communities in Gila County: 32 of these communities are included in the 2004 Rim Country CWPP, 1 community is included in the Graham County CWPP (2004), and 2 tribal communities are included in the San Carlos Apache Tribe Prevention Plan (2004); however, 5 communities are not included in any CWPP (ASFD 2009). The Southern Gila County CWPP was developed to ensure that all at-risk communities within Gila County are included within a compliant CWPP.

To ensure that all residents of southern Gila County were represented in this planning process, a team, referred to as the "Core Team," was formed to implement the agency and public collaboration necessary to develop a CWPP compliant with HFRA. The Core Team represented the communities of Globe, Miami, Claypool, Haigler Canyon, Pleasant Valley, Rose Creek/YMCA, Tonto Basin, Roosevelt, Winkelman, Hayden, Nail Ranch, El Capitan, and Dripping Springs and the local fire departments and districts of Globe, Miami, Tri-City, Canyon, Tonto Basin, Hayden, Winkelman, and Pleasant Valley. The Core Team agreed to and established the development process for the Southern Gila County CWPP. The Core Team identified 13 communities and analyzed 330,272 acres for potential risk from catastrophic wildland fire within southern Gila County.

The following sections detail the background and process used to develop the Southern Gila County CWPP and define the associated WUI. In addition, the desired future condition of lands covered by the Southern Gila County CWPP is described; current fire policies and programs are identified; and future needs are discussed and the goals of the Southern Gila County CWPP are presented.

## A. Background

The process for developing this CWPP consisted of evaluating southern Gila County to identify communities, infrastructure, and remote private lands at risk from catastrophic wildland fire. During this analysis the Gila County Division of Emergency Management and Public Health Preparedness (GCDEM) requested that local governments, fire departments and districts, BLM, TNF, NPS, ASFD, and interested individuals throughout southern Gila County to participate in the Core Team to develop the Southern Gila County CWPP. The Core Team was created to define and locate interface and intermix communities in which significant community values and infrastructure are at risk because of the potential of wildland fire.[1] Gila County is the local government authority for the unincorporated communities identified as at risk, while the city or town councils of the cities of Globe, Miami, Hayden, and Winkleman are the appropriate municipal government authorities for cooperating fire departments in developing and agreeing to the Southern Gila County CWPP. To ensure information dissemination and an open public process, with the goal of representing all community interests during the development of the CWPP, Gila County and the Core Team requested that a 30-day public review period for the CWPP be provided before submission to the Gila County Board of Supervisors for approval. The Core Team, in association with planned public involvement, meets all collaborative guidance criteria established by the Wildland Fire Leadership Council (2002).

[1] *Interface communities* exist where structures directly abut wildland fuels; *intermix communities* exist where structures are scattered throughout a wildland area (USDA and USDI 2001a).

The Core Team and collaborators developed this CWPP to increase preparedness, to reduce hazardous wildland fuels, to reduce impacts from catastrophic wildfire, and to prepare recommendations for reducing structural ignitability. In addition, the Core Team developed this CWPP to increase communication with local, county, state, and federal emergency response personnel by determining areas of high risk from unwanted wildland fire; by developing mitigation measures to reduce hazardous wildland fuels; by improving emergency response to unplanned wildfire; by preventing wildfire ignitions from state and public lands from spreading into the WUI; and by preventing wildfire ignitions within the WUI from spreading to adjacent state and public lands.

During initial analyses for the proposed wildland fuel mitigation recommendations, as well as the development of the Southern Gila County CWPP, the Core Team reviewed the following documents:

- "Urban Wildland Interface Communities within the Vicinity of Federal Lands That Are at High Risk from Wildfire," *Federal Register* Vol. 66, Nos. 3 and 160 (US Department of Agriculture [USDA] and US Department of the Interior [USDI] 2001a and 2001b)
- *Field Guidance: Identifying and Prioritizing Communities at Risk* (National Association of State Foresters 2003)
- *Arizona Wildland Urban Interface Assessment* (ASFD 2004)
- *Identifying Arizona's Wildland/Urban Interface Communities at Risk: A Guide for State and Federal Land Managers* (ASFD 2007)
- *Arizona-Identified Communities at Risk* (ASFD 2009)
- *Statewide Strategy for Restoring Arizona's Forests* (Governor's Forest Health Councils 2007)
- *2006 Status Report and Recommendations* (Governor's Arizona Forest Health Oversight Council 2006)
- *A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment: 10-Year Comprehensive Strategy Implementation Plan* (USFS and BLM 2002)
- *Approved Arizona Statewide Land Use Plan Amendment for Fire, Fuels, and Air Quality Management and Decision Record* (BLM 2004a)
- "Chapter 5140.5 Definitions. Wildland Urban Interface (WUI)," in *Forest Service Manual (FSM) Southwest Region*, FSM 5100-Fire Management(2010)
- *National Fire Plan* (USFS and BLM 2004b)
- *Healthy Forests: An Initiative for Wildfire Prevention and Stronger Communities* (Presidential Policy 2002)
- HFRA
- *The Healthy Forests Initiative and Healthy Forests Restoration Act: Interim Field Guide* (USFS and BLM 2004a)
- *Preparing a Community Wildfire Protection Plan: A Handbook for Wildland-Urban Interface Communities* (Communities Committee et al. 2004)
- *Tonto National Forest Land and Resource Management Plan* (USFS 2005)

- *Wildland Fire Suppression (Including Wildland Fire Use) and Rehabilitation in Riparian and Aquatic Habitats (RA)* (BLM 2004b)
- *Guidance for Implementation of Federal Wildland Fire Management Policy* (USFS and BLM 2009)
- *Tonto National Monument Wildland Fire Management Plan* (NPS 2003)

Since 1980, over 630 wildfire ignitions have been recorded within the Southern Gila County CWPP analysis area. Large wildfires have become increasingly common in the desert vegetation zones due to the presence of nonnative annual grasses and other herbaceous and invasive grasses. Since 2000, a total of 14 large wildfires have burned 114,178 acres within the analysis area, including 10,294 acres within the southern Gila County WUI. County fire departments and districts have responded to and suppressed numerous wildland fires within the WUI during the past several years. Many of these wildland fire ignitions have occurred adjacent to roadways within woodland vegetation associations and higher-elevation chaparral and woodland vegetation associations that threaten the at-risk communities of southern Gila County with the potential for catastrophic wildland fire. Continued extreme weather conditions, dry fuels, increased nonnative invasive vegetation, and increased fuel loading on federal and nonfederal lands contribute to the potential for catastrophic wildland fires within southern Gila County. Therefore, the fire departments and districts and governmental agencies have initiated fire preparedness and land-treatment planning efforts to deal with the types and densities of wildland fuels that significantly threaten communities with potential catastrophic wildfire. For example, forest service land and structures on top of the Pinal Mountains is considered a high-priority WUI by the TNF (USFS 2010). Because of the high values at risk in this area, the Globe Ranger District has treated 400 acres at the top of the Pinal Mountains to protect the cabins, recreation sites, and communication sites from wildfire. However, TNF, BLM and NPS, through existing land management direction, have limited opportunities to describe and implement fuels modification treatments in desert scrub/shrub habitats where wildfire ignitions occur. Vegetative prescriptions within Sonoran Desert vegetative communities consist mainly of managing invasive grasses and invasive winter annual vegetation to reduce potential effects of unwanted wildfire.

In 2003, Governor Janet Napolitano created the Forest Health Advisory Council and the Forest Health Oversight Council in response to the increasing number, frequency, and intensity of unwanted wildfires threatening Arizona communities and forests (Executive Order 2003-16). The councils were directed to develop scientific information and policy recommendations to advise the Governor's administration on matters of forest health, unnaturally severe forest fires, and community protection. In 2005, the councils established a subcommittee to begin work on a 20-year strategy to restore forest health, protect communities from fire, and encourage forest-based economic activity. Governor Napolitano approved and signed the *Statewide Strategy for Restoring Arizona's Forests* in June 2007. Governor Janice Brewer issued Executive Order 2007-17 on July 9, 2009, which reestablished the Forest Health Council. The Core Team has reviewed the strategy—specifically, the Sky Islands landscape—to ensure that the recommendations adopted by the Core Team and presented within the Southern Gila County CWPP comply with, and complement, the *Statewide Strategy for Restoring Arizona's Forests*. Using the information gathered from these supporting documents, the Core Team and collaborators agreed that the southern Gila County communities listed in the *Arizona-Identified Communities at Risk* (ASFD 2009), as

well as other developed areas identified as at risk within the Southern Gila County CWPP WUI, constitute interface or intermix communities (see USDA and USDI 2001a; ASFD 2007) at risk from wildland fire.

### B. WUI and Delineation Process

In 2009, five Gila County communities, none of which were included in any existing CWPP, were added to the *Arizona-Identified Communities at Risk* (ASFD 2009) and were given a WUI risk rating for catastrophic wildland fire. The Core Team and collaborators concur with this 2009 listing of at-risk communities, as maintained by the Arizona State Forester. The Core Team and collaborators recommend maintaining the listing of those five communities and, given the Southern Gila County CWPP wildland fire analysis, further recommend including 8 -additional southern Gila County communities, along with their associated WUI risk ratings as identified by the Core Team, in the *Arizona-Identified Communities at Risk* list (see Table 1.1).

The Southern Gila County CWPP analyzes risk and makes recommendations to reduce the potential for unwanted wildland fire to the 13 at-risk communities in southern Gila County. There are additional private lands within the analysis area that are included within the WUI and not within a fire district and not specifically listed in this table that are at risk from wildland fire. See Section 2, E for additional community detail descriptions. The Southern Gila County CWPP analysis further refines components of wildland fire risk and prioritizes community recommendations for reducing wildland fire potential through vegetative fuel management and public outreach/education and for reducing structural ignitability. According to HFRA (Secs. 101.1.A.i–ii, 101.1.B, and 101.1.C), an "(1) At-risk community . . . means an area – (A) that is comprised of – (i) an interface community . . . or (ii) a group of homes and other structures with basic infrastructure and services . . . within or adjacent to Federal land; (B) in which conditions are conducive to a large-scale wildland fire disturbance event; and (C) for which a significant threat to human life or property exists as a result of a wildland fire disturbance event".

**Table 1.1.** Southern Gila County CWPP recommended at-risk communities

| Community[a] | WUI Risk | Fire department/ district | Community[a] | WUI Risk | Fire department/ district |
|---|---|---|---|---|---|
| Globe[a] | Moderate | Globe Fire Department | Winkelman | Moderate | Winkelman Fire Department |
| Miami | Moderate | Miami Fire Department | Haigler Canyon[a] | High | None |
| Claypool | Moderate | Tri-City Fire Department | Nail Ranch[a] | High | None |
| Tonto Basin/ Roosevelt | Moderate | Tonto Basin Fire Department | Pleasant Valley[a]/ Young | Moderate | Pleasant Valley Fire Department |
| Hayden | Low | Hayden Fire Department | Rose Creek/ YMCA[a] | High | None |
| Top of the World[b] | High | None | El Capitan | High | None |
| Dripping Springs | Low | None | | | |

[a] These communities are listed as moderate on the 2009 *Arizona Communities at Risk Matrix* (www.azsf.az.gov).

[b] As listed in the 2009 Pinal County CWPP.

The at-risk communities within southern Gila County are adjacent to federal lands, including public lands administered by BLM, NPS, and TNF, and are consistent with the Arizona State Forester's definition of an *intermix* or *interface community* (ASFD 2007:1):

> The Intermix Community exists where structures are scattered throughout a wildland area. There is no clear line of demarcation; wildland fuels are continuous outside of and within the developed area. The developed density in the intermix community, ranges from structures very close together to one structure per forty acres. Local fire departments and/or districts normally provide life and property fire protection and may also have wildland fire protection responsibilities.
>
> The Interface Community exists where structures directly abut wildland fuels. There is a clear line of demarcation between wildland fuels and residential, business, and public structures. Wildland fuels do not generally continue into the developed area. The development density for an interface community is usually three or more structures per acre, with shared municipal services. Fire protection is generally provided by a local fire department with the responsibility to protect the structure from both an interior fire and an advancing wildland fire.

In addition to a community's listing status, the current condition of the wildland fuels within and adjacent to at-risk communities significantly contributes to the possibility of a catastrophic wildfire capable of damaging or destroying community values, such as houses, infrastructure, recreational sites, businesses, and wildlife habitats. Establishing a CWPP to enhance the protection of community values and to minimize the potential loss of property, while ensuring public and firefighter safety, during a catastrophic wildfire remains the overriding priority recommendation of the Southern Gila County CWPP.

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. USFS (2010) defines WUIs as

> . . . those areas of resident populations at imminent risk from wildfire, and human developments having special significance. These areas may include critical communications sites, municipal watersheds, high voltage transmission lines, observatories, church camps, scout camps, research facilities, and other structures that if destroyed by fire, would result in hardship to communities. These areas encompass not only the sites themselves, but also the continuous slopes and fuels that lead directly to the sites, regardless of the distance involved.

The Southern Gila County CWPP process of delineating WUI boundaries for at-risk communities involved collaboration among local, state, and federal government representatives, as well as interested individuals within the communities. The Core Team reviewed Sec.101.1.16 of HFRA for the definition of a WUI. After review of HFRA and discussion with federal and state wildland fire and resource specialists, the Core Team determined the WUI boundary for at-risk communities in the CWPP analysis area to include the following: private lands within a defined community boundary with a 1.5-mile buffer; private lands not located within a defined community boundary, described primarily as "occluded" communities (ASFD 2007), with a 0.5-mile buffer; and significant federal lands included as USFS WUI. The Core Team believes that the Southern Gila County CWPP WUI is the minimum area needed to provide protection to each community and its surrounding community values. The identified WUI includes a total of

330,272 acres composed of a mix of private, county, state, and federal lands. The WUI lands surrounding the communities are or could be, under extraordinary rainfall years, in a condition conducive to large-scale wildland fire, and such a wildfire could threaten human life and properties (see Photo.1.1).

**Photo 1.1.** 2005 wildfire in southern Gila County
(courtesy of TNF Tonto Basin District)

General elements used in creating the WUI for southern Gila County at-risk communities include the following:

- Fuel hazards, local topography, vegetative fuels, and natural firebreaks
- Historical fire occurrence
- Community development characteristics
- Firefighting preparedness and response capabilities
- Infrastructure
- Recreational values

### C. Desired Future Condition and Wildfire Mitigation in the WUI

The desired future condition of Southern Gila County CWPP lands includes the maintenance of, or return to, wildland fire resiliency status and the maintenance of, or return to, the historical vegetation community and historical fire regime as appropriate for the vegetative community and protection of community values within southern Gila County. This historical potential plant community is composed of desert shrub-scrub, shrublands (mesquite uplands), deciduous southwest riparian corridors, grasslands, and woodlands, including chaparral, pinyon-juniper, and ponderosa pine woodlands. All of these plant communities have an associated understory of grasses and shrubs, and some are also composed of invasive grasses and woody species (NatureServe 2004; Gori and Enquist 2003). In lower-elevation desert scrub-shrubland

associations' wildland fire played a very limited role in the development and maintenance of these vegetative communities. In these habitats wildfire has a high return interval, and unplanned ignitions could have negative effects on the ecosystem unless some form of mitigation is instituted. In these vegetative associations, mitigation practices could include biological (grazing), chemical, or mechanical means to manage invasive grasses and herbaceous and woody vegetation invasions in order to meet resource objectives and minimize effects of unwanted wildland fire.

The Southern Gila County CWPP also includes portions of the Madrean Archipelago Sky Islands landscape, which is a complex of forested mountain ranges in southeastern Arizona dominated by woodland vegetation associations of both tropical and temperate origins that typically support a high level of biodiversity (Governor's Forest Health Councils 2007). The Core Team intends the Southern Gila County CWPP to complement BLM, TNF, and NPS objectives; the *Statewide Strategy for Restoring Arizona's Forests* (Governor's Forest Health Councils 2007); the *Approved Arizona Statewide Land Use Plan Amendment for Fire, Fuels, and Air Quality Management and Decision Record* (BLM 2004a); *Amendment 25 to the Tonto National Forest Land and Resource Management Plan* (USFS 2006); and the *Tonto National Monument Wildland Fire Management Plan* (NPS 2003). Federal wildfire reduction policy on public lands is planned and administered primarily by tribal governments and by BLM, TNF, and NPS, which are the federal governing agencies for the public lands associated with the Southern Gila County CWPP planning area. BLM and TNF manage wildland fire to help reduce unnaturally high wildland fuel loads that contribute to catastrophic wildland fire and also to help encourage the return of fire to a more natural role in fire-adapted ecosystems, to achieve ecosystem benefits, to reduce economic impacts from wildland fire, and to enhance public and firefighter safety. The NPS manages wildland fire for the safety of visitors and the protection of facilities and cultural and natural resources and to restore and perpetuate natural and cultural landscapes through aggressive suppression with minimum damages to resources (NPS 2003).

The desired future condition of federal lands includes improving public and firefighter safety from wildland fire, using wildland fire as a management tool to achieve resource objectives, managing hazardous wildland fuels within and adjacent to the WUI, providing adaptive wildland fire response and suppression, and returning public lands to historic vegetative conditions where possible and practicable to do so. Once this condition is achieved, natural processes such as fire can be incorporated into long-term management practices to sustain habitat health. Current federal fire guidelines state that "initial action on human-caused wildfire will be to suppress the fire at the lowest costs with the fewest negative consequences with respect to firefighter and public safety" (USFS and BLM 2009). However, "A wildland fire may be concurrently managed for one or more objectives and objectives can change as the fire spreads across the landscape. Objectives are affected by changes in fuels, weather, topography, varying social understanding and tolerance; and involvement of other government jurisdictions having different missions and objectives" (USFS and BLM 2009). The BLM and TNF adhere to federal policy when managing all unplanned wildfire ignitions on public lands within the WUI. Federal policy for reducing wildfires on public lands (that is, BLM and USFS lands) is planned and administered locally through the BLM's field offices and the TNF's Globe, Tonto Basin, and Pleasant Valley Ranger Districts.

The desired future condition of private lands in the WUI is for landowners to comply with the National Firewise Communities program (www.Firewise.org) or to meet home-ignition-zone landscaping or fire-safe landscaping recommended by the Southern Gila County CWPP fire departments and districts in compliance with local ordinances. Firewise is a national program that helps communities reduce wildfire risks and provides them with information about protecting themselves against catastrophic wildfires and mitigating losses from such fires. Within Arizona, the State Forester administers the Firewise certification program. Fire departments and districts and local governments in southern Gila County would like to make this information available to their citizens and to encourage its application. Residential and other structures that comply with Firewise standards significantly reduce fire-ignition risks in a community, as well as the potential for fires to spread to surrounding habitats. Additionally, structures that comply with Firewise recommendations are more likely to survive wildland fires that do spread into a community (Cohen 2008).

The Core Team is aware that wildland fuel accumulations primarily associated with the invasion of woody species and nonnative grasses, together with community growth in the WUI, have produced areas at high risk from catastrophic wildfire. The Core Team aspires to achieve restored, self-sustaining, biologically diverse habitats of mixed open space and developed areas that contribute to a quality of life demanded by southern Gila County citizens. The Core Team recognizes that protection from catastrophic wildland fire requires collaboration and implementation through all levels of government and through an informed and motivated public. The Core Team considered ecosystem restoration or maintenance of historical plant communities, community protection, and public and firefighter safety while developing this CWPP (see Photo 1.1).

Financial commitments required to reduce the risk of catastrophic wildfire can be extensive for municipal, county, state, and federal governments; for fire districts; and for the small rural communities surrounded by public lands (Ingalsbee 2010). Gila County, TNF, NPS, and BLM have implemented wildland fuel mitigation projects within or near the Southern Gila County CWPP WUI. Fire departments and districts have improved wildland fire suppression response and continue public education and outreach programs concerning wildland fire threat and home-ignition-zone recommendations. Southern Gila County fire departments and districts have standing mutual-aid agreements to enhance initial and sustained wildland response**.** Additionally, the fire departments and districts have taken proactive measures to encourage willing property owners to reduce fire risk on private property (HFRA, Sec. 103.d.2.B). The Core Team, BLM, NPS, and TNF collaborators are proposing additional wildland fuel treatments and wildland fire suppression enhancements and have been proactive in pursuing funding for wildland fire public outreach programs and fire-suppression training and equipment.

### D. Goals for the Southern Gila County CWPP

To reduce the risks to life and property from catastrophic wildland fire, the Core Team agreed on the following primary goals of the Southern Gila County CWPP:

- Improve fire prevention and suppression, emphasizing firefighter and public safety
- Reduce hazardous fuels, emphasizing public and private property protection
- Restore forest, rangeland, and riparian health

- Promote community involvement and provide for community protection
- Recommend measures to reduce structural ignitability in the WUI
- Encourage economic development in the communities from vegetative treatments
- Encourage communities, subdivisions, and developments that are not within a fire district to either be annexed by an existing fire district or create their own district for enhanced wildland fire protection
- Use the CWPP in conjunction with surrounding community and agency fire management plans

Action recommendations for at-risk areas within the Southern Gila County CWPP WUI boundaries have been developed as part of this planning process. Treatments for wildland vegetative fuels and additional wildland fire mitigation measures are recommended to be implemented in specific time frames and with associated monitoring to determine and document measurable outcomes. Successful implementation of the Southern Gila County CWPP will require collaboration between fire departments and districts, governments, resource-management agencies, and the private sector. The cooperating agencies must develop processes and systems that ensure recommended actions of the Southern Gila County CWPP comply with applicable local, state, and federal environmental regulations. The dedication of the Core Team and collaborators in implementing the Southern Gila County CWPP assures that all agencies, groups, and individuals involved will develop any additional formal agreements necessary to ensure the Southern Gila County CWPP's timely implementation, monitoring, and reporting. The Core Team was formed not only to meet collaborative requirements of HFRA but also to represent all southern Gila County communities and their interests, with all parties being involved and being committed to the development and implementation of the Southern Gila County CWPP.

# II. SOUTHERN GILA COUNTY CWPP COMMUNITY ASSESSMENT AND ANALYSIS

The community risk assessment is an analysis of the potential for catastrophic wildland fire to southern Gila County communities and lands within the WUI identified by the Core Team. This risk analysis incorporates the current fire regime condition class, wildfire fuel hazards, risk of ignition, local preparedness and protection capabilities, and at-risk community values. The Core Team has reviewed the Arizona State Forester's *Identifying Arizona's Wildland/Urban Interface Communities at Risk: A Guide for State and Federal Land Managers* (ASFD 2007) to ensure that the Southern Gila County CWPP is compatible with and complementary to statewide CWPP planning efforts. The Core Team has included all risk factors required by the Arizona State Forester in the analysis of this CWPP. The areas of concern for wildland fuel hazards, risk of ignition and wildfire occurrence, local preparedness and protection capabilities, and loss of community values are evaluated to determine areas of highest wildland fire risk.

The Southern Gila County CWPP planning area includes all of southern Gila County south of the Rim Country CWPP analysis area, excluding tribal trust lands (Figure 2.1). The Southern Gila County CWPP comprises 330,272 acres of land within the WUI (Table 2.1).

Table 2.1. Land management within the WUI

| Ownership type | Total acres | % of total* |
|---|---|---|
| BLM | 38,917 | 12 |
| Private | 70,972 | 21 |
| State Trust | 20,693 | 6 |
| TNF | 198,583 | 60 |
| NPS, Tonto National Monument | 1,107 | <1 |
| **Total** | 330,272 | 100 |

*Note*: BLM = Bureau of Land Management; NPS = National Park Service; TNF = Tonto National Forest.

*Actual total may not add to 100% because of rounding.

Primary landownership in the Southern Gila County CWPP planning area is a mosaic of privately owned lands and public lands administered by BLM, TNF, NPS, and ASLD (Table 2.1 and Figure 2.1). Of the publicly owned lands within the WUI, TNF manages the most land—198,583 acres, or 60 percent— within the WUI.

State Trust lands were established in 1912 under the terms of the Arizona Enabling Act. With statehood, Arizona was granted ownership of four sections per township. ASLD manages State Trust lands to produce revenue for the Arizona State Trust beneficiaries, including the state's school system. Within the Southern Gila County CWPP WUI, 20,693 acres (6 percent) of State Trust lands are managed primarily for recreation, natural resource protection, and livestock grazing.

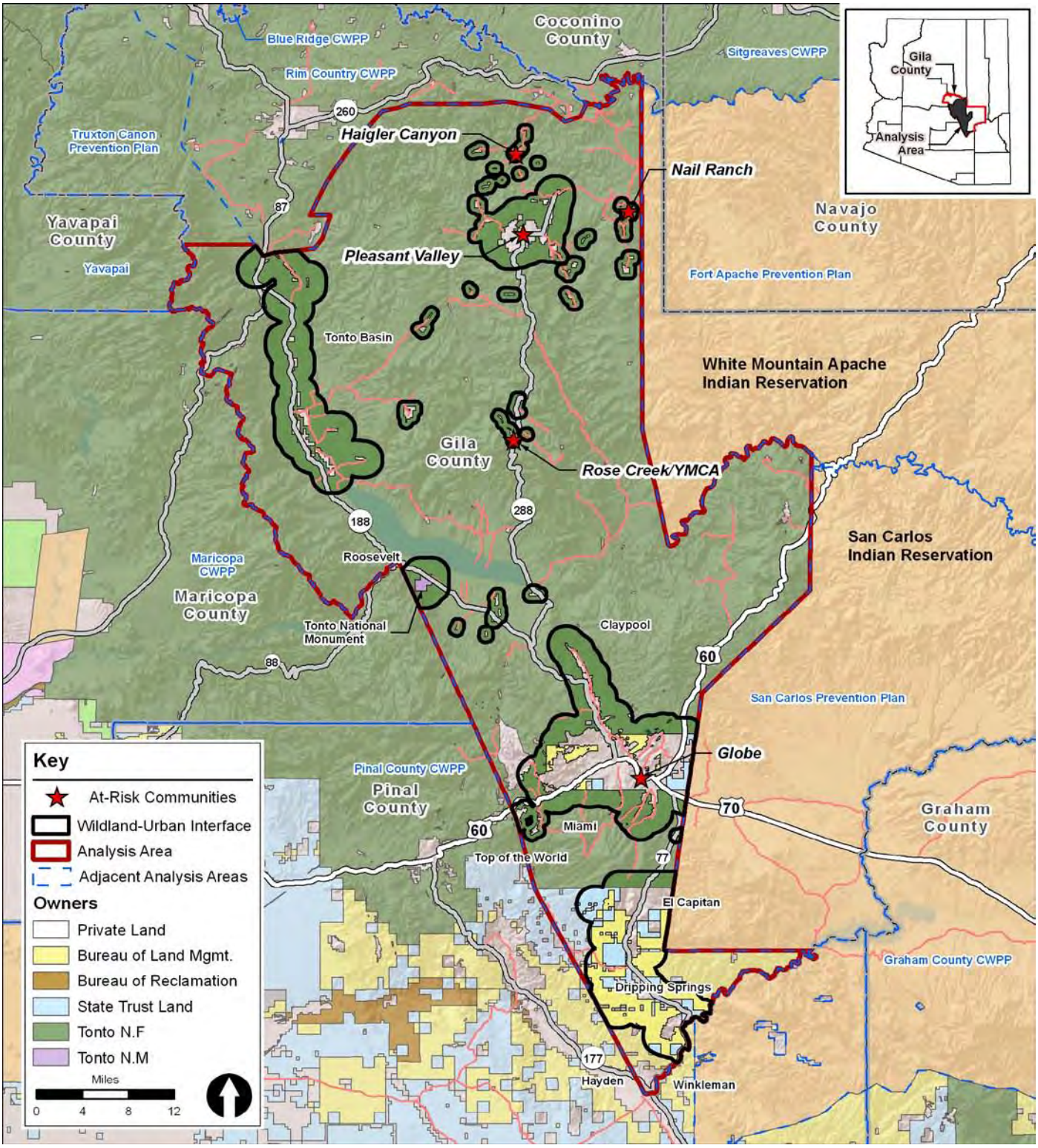


**Figure 2.1.** Southern Gila County CWPP WUI area

Of the remaining publicly owned lands within the WUI, BLM manages approximately 38,917 acres (12 percent), and NPS manages approximately 1,107 acres (<1 percent). These federal lands provide extensive and popular hiking, hunting, and recreational areas within or adjacent to the WUI. The potential for escaped campfires or the need to evacuate camping areas in the event of a wildfire warrants including these lands in the Southern Gila County CWPP area.

Private land within the WUI composes 70,972 acres, or roughly 21 percent, of the WUI. Private lands are mostly clustered near the communities, with some scattered private inholdings located throughout the WUI. The municipalities/unincorporated communities of Globe, Winkelman, Miami, Claypool, Tonto Basin, Haigler Canyon, Nail Ranch, Pleasant Valley, Hayden, and Top of the World contain the majority of private land acreage within the WUI. Commercial structures are clustered along state and federal highways and community centers, and they are assumed to remain as the principal commercial corridors within the southern Gila County at-risk communities.

Much of the land within the Southern Gila County CWPP planning area is rural with minimal development, with the exception of urban development in proximity to the Globe, Miami, and Claypool community complex.

The diverse climate of southern Gila County produces a varied landscape—from semiarid desert shrub-scrub to riparian corridors to oak and pinyon-juniper and ponderosa pine woodlands(NRCS 2010).

The major riparian corridors in the analysis area include the Gila River, Salt River, and Tonto Creek. Tonto Creek is a direct tributary of the Salt River. The confluence of the Salt River and Tonto Creek form Theodore Roosevelt Lake.

Theodore Roosevelt Lake is a popular recreation destination within the TNF and is the oldest of six reservoirs constructed and operated along the Salt River by the Salt River Project (SRP). It also has the largest storage capacity of the SRP lakes, with the ability to store 1,653,043 acre-feet of water at full capacity. Theodore Roosevelt Lake occupies about 10 miles of the original Salt River riverbed and also extends for about 8 miles up Tonto Creek, a significant Salt River tributary with its headwaters along the Mogollon Rim. Tonto Creek is also a popular fishing destination within the TNF. Theodore Roosevelt Lake covers much of the southern portion of the Tonto Basin, a low-lying area between the Sierra Ancha Mountains, Mazatzal Mountains (including Four Peaks), and the Superstition Mountains. State Route (SR) 188 parallels the western shore of the lake.

The Salt River, which begins in eastern Gila County at the confluence of the White and Black Rivers, is a direct tributary of the Gila River. It flows northwest through the Salt River Canyon, then southwest and west through the TNF. It passes between the Mazatzal Mountains and Superstition Mountains and supplies several consecutive reservoirs, including Theodore Roosevelt Lake, Apache Lake, Canyon Lake, and Saguaro Lake. Near Fountain Hills the Salt River is joined by the Verde River. About 5 miles downstream, the Granite Reef Diversion Dam diverts all remaining water into the Arizona and South Canals, which deliver drinking and irrigation water to much of the Phoenix metropolitan area. The Salt River joins the Gila River on the southwestern edge of Phoenix approximately 15 miles from the center of the city. The Gila River begins in western New Mexico. It flows into Arizona, past the town of Safford, and along the southern slope of the Gila Mountains in Graham County. The Gila River forms the southern boundary of Gila County

adjacent to the communities of Hayden and Winkelman. The Gila River continues mostly westward to the town of Florence and emerges southeast of Phoenix, where it crosses the Tohono O'odham Nation San Lucy District as an intermittent stream due to large irrigation diversions. West of Phoenix, the river bends sharply southward along the Gila Bend Mountains and then turns sharply westward near the town of Gila Bend. It then flows southwestward through the Gila Mountains in Yuma County, ending in the Colorado River at Yuma.

### A. Fire Regime and Condition Class

Before European settlement of North America, fire played a natural (historical) role in many of the southern Gila County vegetated landscapes. Five historical fire regimes have been identified; these regimes are based on the average number of years between fires (fire frequency) combined with the severity (amount of overstory replacement) of fire on the dominant overstory vegetation (Table 2.2).

**Table 2.2.** Fire regime information

| | Frequency | Severity[a] |
|---|---|---|
| Regime I | 0–35 years | Low |
| Regime II | 0–35 years | High |
| Regime III | 35–100 years | Low |
| Regime IV | 35–100 years | High |
| Regime V | 200+ years | High |

*Source*: Schmidt et al. 2002.

[a]Low = less than 75% of the dominant overstory vegetation replaced. High = greater than 75% of the dominant overstory vegetation replaced (stand replacement).

The condition class of wildland habitats describes the degree to which the current fire regime has been altered from its historical range, the risk of losing key ecosystem components, and the vegetative attribute changes from historical conditions. The following descriptions of condition classes are provided by the Arizona State Forester (ASFD 2007:3):

> Condition Class 1:
>
> Fire regimes are within a historical range, and the risk of losing key ecosystem components is low. Vegetation attributes (species composition and structure) are intact and functioning within the historical range.
>
> Condition Class 2:
>
> Fire regimes have been moderately altered from their historical range. The risk of losing key ecosystem components is moderate. Fire frequencies have departed from historical frequencies by one or more return intervals (either increased or decreased). This results in moderate changes to one or more of the following: fire size, intensity and severity, and landscape patterns. Vegetation attributes have been moderately altered from their historical range.

Condition Class 3:

Fire regimes have been significantly altered from their historical range. The risk of losing key ecosystem components is high. Fire frequencies have departed from historical frequencies by multiple return intervals. This results in dramatic changes to one or more of the following: fire size, intensity, severity, and landscape patterns. Vegetation attributes have been significantly altered from their historical range.

The southern Gila County WUI includes 16,820 acres of land classified as urban, water, and sparsely vegetated and barren landscapes (5 percent of WUI acres) and 821 acres of agricultural land (<0.1 percent of WUI acres). The WUI also includes 165,623 acres (50 percent of WUI acres) of Fire Regime Condition Class (FRCC) I lands; 146,110 acres (44 percent of WUI acres) of FRCC II lands; and 898 acres (<1 percent of WUI acres) of FRCC III lands (Schmidt et al. 2002; FRCC Interagency Working Group 2005a, 2005b).

### B. Fuel Hazards

The existing arrangement and flammability of vegetation associations largely determine wildland fire behavior. The Core Team and collaborators identified areas at risk from wildland fire by evaluating fire behavior models based on vegetative fuels and the arrangement of those fuels by slope and aspect as they occur on federal and nonfederal land in the WUI. The wildland fire risk assessment was conducted through spatial analysis using geographic information system (GIS) technology in a series of overlays. For the WUI, the vegetation type, density, and distribution were analyzed to help categorize areas at highest risk for fire intensity and spread from wildland fuels.

The arrangement of vegetative fuel, relative flammability, and potential of vegetation to support wildland fire varies throughout the WUI. Wildland fuel hazards depend on a specific composition, type, arrangement, or condition of vegetation such that if the fuel were ignited, an at-risk community or its infrastructure would be threatened. Historically, fire played an important role in keeping woody species in check and light ground fuels low (BLM 2004b:3–8; Gori and Enquist 2003) in woodland vegetative communities. However, with the suppression of natural wildfires within the last century, fire return intervals have increased, and invasions of semi-desert grasslands by woody shrub (such as mesquite and juniper species) and nonnative perennial and winter annual grass invasions of desert and upland shrub associations (such as buffelgrass, red brome, and Mediterranean grass) have altered native vegetated landscapes. The Core Team reviewed vegetation associations within the WUI that were identified and mapped using Southwest Regional Gap Analysis Project (SWReGAP) data (USGS 2005; NatureServe 2004) (Figure 2.2). These datasets provide the level of landscape description and vegetative landcover detail necessary for aligning wildland fuel flammability with existing vegetation.

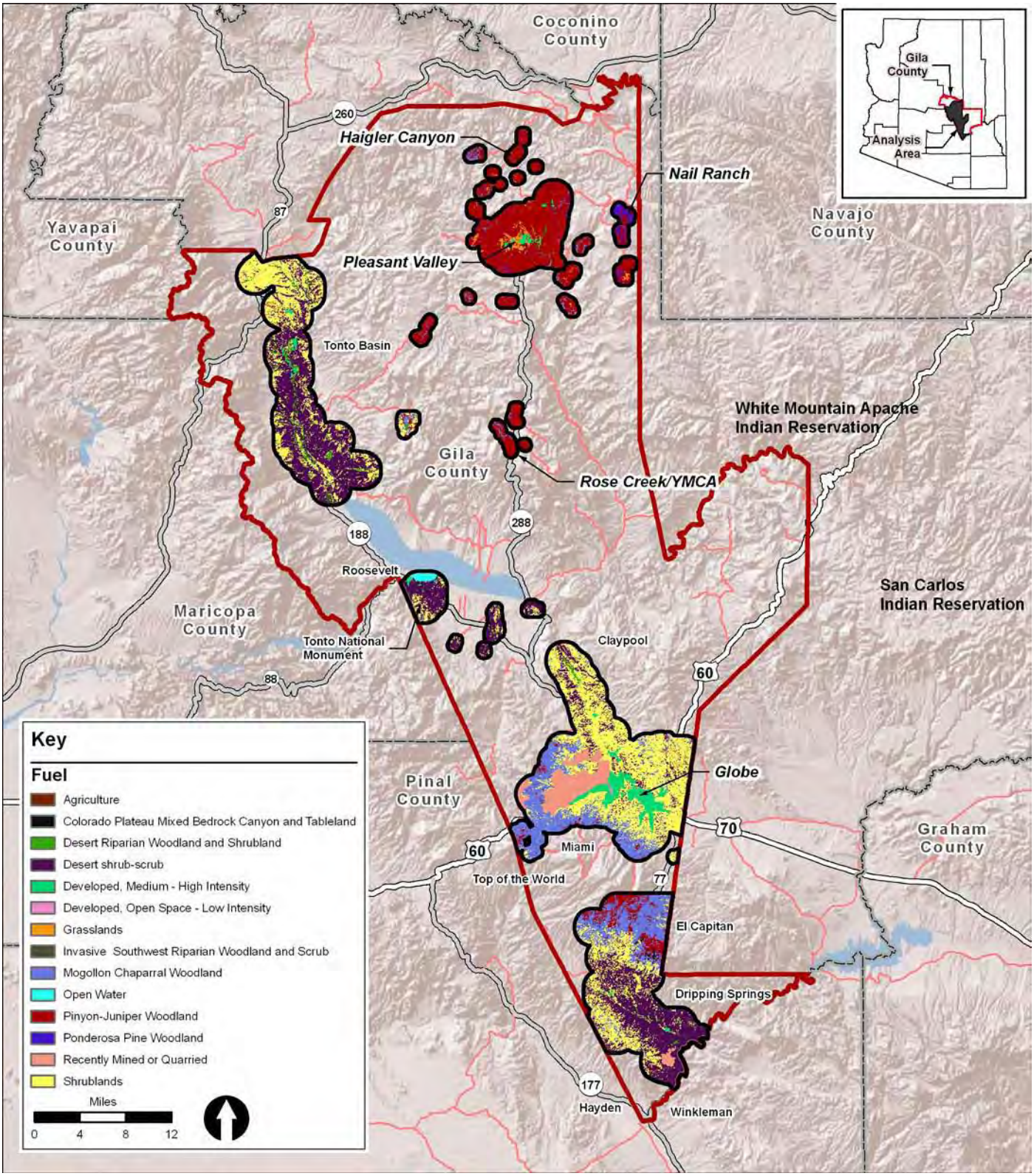


**Figure 2.2.** Southern Gila County CWPP vegetation associations

Vegetative data for predicting wildfire behavior was quantified by developing descriptions of associated fuel properties that are described as fuel models. The fuel model (as described by Anderson 1982; Scott and Burgan 2005) and vegetative-fuel fire risk rating within the Southern Gila County CWPP WUI are shown in Table 2.3. The Arizona State Forester has established the following guidelines for evaluating risk (ASFD 2007:1):

> **Evaluate Risk to Communities:** Not all structures and/or communities that reside in an "interface" area are at significant risk from wildland fire. It is a combination of factors, including the composition and density of vegetative fuels, extreme weather conditions, topography, density of structures, and response capability that determines the relative risk to an interface community. The criteria listed below are intended to assist interagency teams at the state level in identifying the communities within their jurisdiction that are at significant risk from wildland fire. The application of these risk factors should allow for greater nationwide consistency in determining the need and priorities for Federal projects and funding.

The Core Team reviewed the fire behavior potential in the WUI and determined that the risk classification is consistent with Situations 1, 2, and 3 as described by the Arizona State Forester (ASFD 2007:1–2):

> Risk Factor 1: Fire Behavior Potential
>
> Situation 1: In these communities, continuous fuels are in close proximity to structures. The composition of surrounding fuels is conducive to crown fires or high intensity surface fires. Likely conditions include steep slopes, predominantly south aspects, dense fuels, heavy duff, prevailing wind exposure and/or ladder fuels that reduce fire fighting effectiveness. There is a history of large fire and/or high fire occurrence.
>
> Situation 2: In these communities, intermittent fuels are in proximity to structures. Likely conditions include moderate slopes and/or rolling terrain, broken moderate fuels, and some ladder fuels. The composition of surrounding fuels is conducive to torching, spotting, and/or moderate intensity surface fires. These conditions may lead to moderate fire fighting effectiveness. There is a history of some large fires and/or moderate fire occurrence.
>
> Situation 3: In these communities, fine and/or sparse fuels surround structures. There is infrequent wind exposure and flat terrain to gently rolling terrain. The composition of surrounding fuels is conducive to low intensity surface fires. Fire fighting generally is highly effective. There is no large fire history and/or low fire occurrence.

Southern Gila County is composed of four major ecological range sites (NRCS 2009). Slope varies dramatically across the WUI: on valley floors, 0 to 3 percent and 1 to 8 percent; in foothill and mountain habitats, 5 to 45 percent and 5 to 60 percent.

Vegetative production ranges from over 4,000 pounds per acre in highest-elevation sites in the greater-than-12-inch precipitation zone during favorable precipitation years to over 50 pounds per acre in lower desert scrub–mudstone hills range sites in the less-than-7-inch precipitation zone during unfavorable precipitation years. Precipitation ranges from 7 to 14 inches annually, with a winter-summer rainfall ratio of 60:40. Warm-season rains (July–September) originate in the Gulf of Mexico and are usually brief and

intense. Cool-season rains (December–March) originate in the Pacific Ocean and are generally frontal, widespread, long, and less intense. May and June are the driest months of the year, with many natural fire ignitions occurring before the monsoon rains. Humidity is generally low, with mostly mild winters and hot summers in lower elevations to mild summers and cold winters in higher elevations. During May and June temperatures can exceed 100 degrees Fahrenheit. Cool-season vegetation growth begins in early spring and matures in early summer. Warm-season vegetation initiates growth after the summer rains and may remain green throughout the year in lower elevations (NRCS 2009, 2010).

The WUI includes five major vegetative fuel types composed of nine major vegetation associations (including agricultural lands), three mostly nonvegetation associations, and two open-space residential developed land covers (NatureServe 2004). Each vegetative community is assigned to a specific fuel model that predicts the rate of spread, flame length, and fire intensity levels possible for each vegetation association during an average fire season under average weather conditions. Additionally, the Core Team also assigned a series of fuel models to each vegetation association that could be anticipated during extraordinary weather conditions consisting of above-normal winter through spring rainfall followed by above-average daily summer temperatures (Table 2.3). Assigning a fuel model to each vegetation association within the WUI will help predict wildfire behavior and thus proper suppression response (for detailed fuel model descriptions, see Anderson 1982; Scott and Burgan 2005).

The average historical fire return interval is highly variable among vegetation associations across the WUI. Habitat-replacement wildfires or wildfires resulting in a major loss of habitat components, in conjunction with drought, will be reduced in frequency and intensity in lower desert habitats. However, moist periods may increase fire frequency and intensity in desert habitats because of increased production of annual grasses and forbs and increased annual growth of perennial grasses and shrubs (FRCC Interagency Working Group 2005a) in synergy with increased production of invasive grasses and forbs (Arizona Wildlands Invasive Plant Working Group 2005; Hauser 2008; Buffelgrass Working Group 2008).

During a normal fire season, low-risk vegetation associations would be elevated to a moderate risk level by the influencing effects of slope and aspect; in a similar manner, moderate-risk vegetation associations would be elevated to high risk from these same influencing factors. Other untreated or unburned areas that fall under the category of moderate ground fuels and that do not overlap areas with steep slopes or with south, southwest, or west aspects are considered a moderate risk from fuel hazards. All other areas have a low risk from fuel hazards, including the areas that have been treated or burned within the last decade. The wildland fuel hazard components influence was compiled to depict areas of high, moderate, and low wildland fire potential based on vegetation type, density, and arrangement on the landscape. This analysis depicts areas with higher wildfire risk, which are of greater concern to the Core Team during years of extraordinary rainfall because of the abundance of winter annuals and perennial invasive and native vegetation that can, when cured, enhance fire conditions and thus create extreme fire behavior, particularly in lower-elevation vegetation associations. Table 2.4 identifies these various fuel hazard components and their assigned influencing values on the fuel hazards assessment. Figure 2.3 visually depicts these fuel hazard components during extreme fire seasons.

**Table 2.3.** Fuel model, fire-danger ratings, and intensity levels on vegetation associations in the WUI

| Fuel type | Vegetation association | Wildfire risk rating[a] | Anderson fuel model | Fire-danger rating model[b] | Flame length (ft) | Fire intensity level | Rate of spread ft/hr (ch/hr) | Fire behavior fuel model | Flame length (ft)—low dead fuel moisture | Fire intensity level | Rate of spread ft/hr (ch/hr)—low dead fuel moisture | Acres (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Desert shrub-scrub** | Sonoran Paloverde-Mixed Cacti Desert Scrub | M | 1,3 | L and T | 4–6 | 3 | 2310–5150 (35–78) | GR1 or GR2 | GR1, 0.5–1.7<br>GR2, 1.0–8.0 | GR1, 1<br>GR2, 1–4 | GR1, 0–990 (0–15)<br>GR2, 0–7920 (0–120) | 86,777 (26) |
| **Shrublands** | Mesquite Upland Scrub | M | 1,3 | B and T | 4–12 | 6 | 5150–6860 (78–104) | GR1, GS1, SH1, SH2, or SH5 | GR1, 0.5–1.7<br>GS1, 1.0– 6.0<br>SH1, 0.2–0.7<br>SH2, 1.0–4.5<br>SH5, 4.0–25.0+ | GR1, 1<br>GS1, 1–3<br>SH1, 1<br>SH2, 1–3<br>SH5, 2–6 | GR1, 0–990 (0–15)<br>GS1, 0–3960 (0–60)<br>SH1, 6.6–112.2 (0.1–1.7)<br>SH2, 0–1188 (0–18)<br>SH5, 0–16,500 (0–250+) | 102,236 (31) |
| **Grasslands** | Semi-Desert Grassland and Steppe | L | 1,2 | F and T | 4–6 | 3 | 2310–5150 (35–78) | GS1, GR1, or GR2 | GS1, 1.0–6.0<br>GR1, 0.5–1.7<br>GR2, 1.0–8.0 | GS1, 1–3<br>GR1, 1<br>GR2, 1–4 | GS1, 0–3960 (0–60)<br>GR1, 0–990 (0–15)<br>GR2, 0–7920 (0–120) | 3,150 (1) |
| **Woodlands** | Chaparral | H | 4, 6 | B and T | 6–19 | 4–6 | 2110–4950 (32–75) | SH2 or SH5 | SH2, 1.0–4.5<br>SH5, 4.0–25.0+ | SH2, 1–3<br>SH5, 2–6 | SH2, 0–1188 (0–18)<br>SH5, 0–16,500 (0–250+) | 44,282 (13) |

*Continued*

**Table 2.3.** Fuel model, fire-danger ratings, and intensity levels on vegetation associations in the WUI

| Fuel type | Vegetation association | Wildfire risk rating[a] | Anderson fuel model | Fire-danger rating model[b] | Flame length (ft) | Fire intensity level | Rate of spread ft/hr (ch/hr) | Fire behavior fuel model | Flame length (ft)—low dead fuel moisture | Fire intensity level | Rate of spread ft/hr (ch/hr)—low dead fuel moisture | Acres (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pinyon-juniper Woodland | H | 2,3 | F | 6-19 | 4-6 | 2110-4950 (32-75) | GR1, SH2, SH5, SH6, TU3 | GR1, 0.5–1.7<br>SH2, 1.0–4.5<br>SH5, 4-25+<br>SH6, 3-15<br>TU3, 2-16 | GR1-1<br>SH2, 1–3<br>SH5, 2-6<br>SH6, 5-6<br>TU3, 2-6 | GR1, 0–990 (0–15)<br>SH2, 0–1188 (0–18)<br>SH5, 0–16500 (0–250+)<br>SH6, 0-7260 (0-110)<br>TU3, 0-10560 (0-160) | 62,551 (19) |
| | Ponderosa Pine Woodland | H | 2,9 | E and T | 2.6->8 | 4-5 | 495-2310 (7.5-35) | TU5, TL8 | TU5, 2-14<br>TL8, 1-8 | TU5, 6<br>TL8, 4 | TU5, 0-2,772 (0-42)<br>TK8, 0-2,640 (0-40) | 2,987 (1) |
| **Deciduous Southwest Riparian** | Invasive Southwest Riparian Woodland and Shrub | H | 4 | G and T | 19 | 6 | 4950 (75) | SH2,SH5 | SH2, 1.0-4.5<br>SH5, 4.5-25+ | SH2, 1-3<br>SH5, 2-6 | SH2, 0-1188 (0-18)<br>SH5, 0-16,500 (0-250) | 650 (<1) |
| | Riparian Woodland and Shrubland | H | 8 and 9 | E and T | 2.6-6 | 4-6 | 495-2110 (7.5-32) | SH2, SH4 | SH2, 1.0-4.5<br>SH4, 1.0-16 | SH2, 1-3<br>SH4, 2-6 | SH2, 0-1188 (0-18)<br>SH4, 0-11,550 (0-175) | 4,523 (1) |

*Continued*

**Table 2.3.** Fuel model, fire-danger ratings, and intensity levels on vegetation associations in the WUI

| Fuel type | Vegetation association | Wildfire risk rating[a] | Anderson fuel model | Fire-danger rating model[b] | Flame length (ft) | Fire intensity level | Rate of spread ft/hr (ch/hr) | Fire behavior fuel model | Flame length (ft)—low dead fuel moisture | Fire intensity level | Rate of spread ft/hr (ch/hr)—low dead fuel moisture | Acres (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Other** | Agriculture | L | NA | NA | NA | NA | NA | NB3 | NA | NA | NA | 151 (0) |
| | Developed, Open Space–Low Intensity | L | NA | NA | NA | NA | NA | NB1 | NA | NA | NA | 95 (0) |
| | Developed, Medium–High Intensity | L | NA | NA | NA | NA | NA | NB1 | NA | NA | NA | 8,807 (3) |
| | Colorado Plateau Mixed Bedrock Canyon and Tableland | L | NA | NA | NA | NA | NA | NB9 | NA | NA | NA | 543 (0) |
| | Recently Mined or Quarried | L | NA | NA | NA | NA | NA | NB9 | NA | NA | NA | 12,157 (3) |
| | Open water | L | NA | NA | NA | NA | NA | NB9 | NA | NA | NA | 1,363 (1) |
| **Total** | | | | | | | | | | | | 330,272 (100) |

*Source:* National Fire Danger Rating System (USFS 1978; Burgan 1988).

[a] L = low; M = moderate; H = high; NA = not applicable.

[b] See Appendix B for the National Fire Danger Rating System definitions.

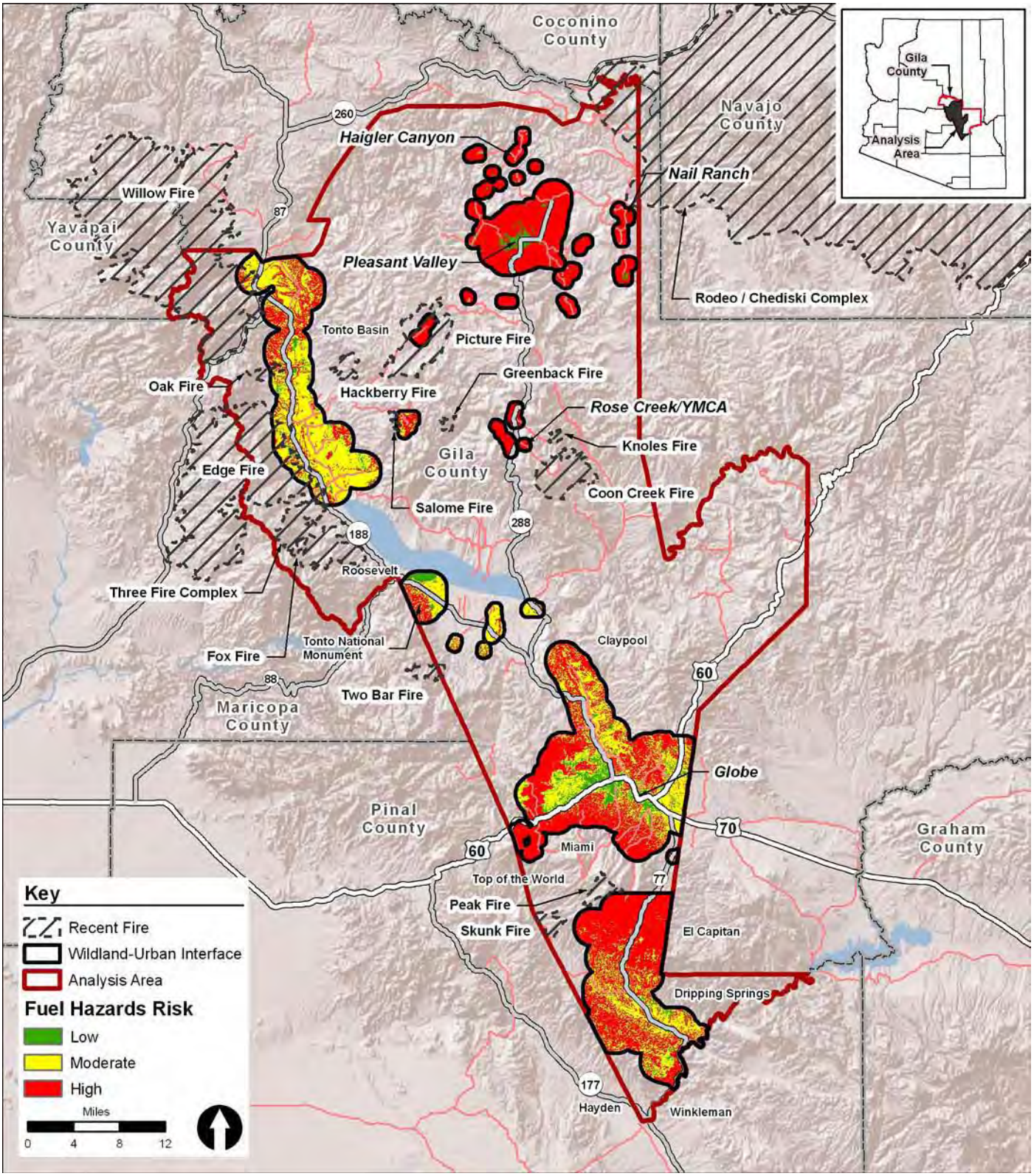


**Figure 2.3.** Southern Gila County CWPP wildland fuel hazards during extraordinary rainfall years

**Table 2.4.** Fuel hazard components

| Component | Influence[a] |
|---|---|
| Vegetation type and density | |
| • Woodlands in Fuel Models 2,3,4,6, and 9; Deciduous Riparian >100 stems/acre; or moderate fuel types in slopes ≥20% | H |
| • Upland Shrubland associations in Fuel Models 1 and 3 and desert shrublands | M |
| • Desert Scrub associations, grasslands 1,2, barren land types, and agriculture and developed areas | L |
| Burned areas | L |
| Slopes ≥20% | H |
| Aspect (south-, southwest-, or west-facing slopes) | M |

*Source*: Logan Simpson Design Inc.

[a] H = high, M = moderate, L = low

### C. Conditions of Ignition and Past Fire Occurrence

Past regional wildfire events are important for determining the potential occurrence of unwanted wildland fire in any area of the WUI. Because of the combination of current drought conditions and a regional history of fires, there will be wildland fire ignitions within the WUI that must be suppressed. The fire history of the planning area, including recent large wildfires that have occurred within or adjacent to the WUI, has been included in this analysis to determine the most likely areas for either natural or human-caused wildland fire ignition (

Figure **2.4**). Table 2.5 details the high, moderate, and low positive-influence values assigned to fire-start incidents. These include concentrated areas of lightning strikes and human-caused ignitions with high-potential areas having the greatest number of fire starts per 1,000 acres. Wildland fire ignition data were obtained from the Federal Wildland Fire Occurrence Internet Mapping Service (IMS) Web site and database (http://wildfire.cr.usgs.gov/firehistory/) and from the Arizona State Forester's Office. The Federal Fire Occurrence IMS is an interactive GIS Web site for use in the wildland fire and GIS community. The datasets used in this GIS Web site are based on official fire occurrence data collected from five federal and state agencies that have been merged into one fire history point layer. According to these data, over 630 wildfire ignitions have been reported within the WUI since 1980.

**Table 2.5.** Ignition history and wildfire occurrence

| Wildfire occurrence | Value |
|---|---|
| 0–2 fire starts/1,000 acres | L |
| 2–4 fire starts/1,000 acres | M |
| >4 fire starts/1,000 acres | H |

The Core Team determined that the majority of wildfire starts within the county have occurred within the Pinal Mountains south of Globe. Additional high-ignition areas include forested areas near Nail Ranch; lands adjacent to SR 188, including the Tonto National Monument; and lands along US 60 adjacent to and immediately east of Top of the World. Many of these wildland fire ignitions have occurred adjacent to

roadways within woodland and higher-elevation chaparral and woodland vegetation associations that threaten the at-risk communities of southern Gila County with the potential for catastrophic wildland fire.

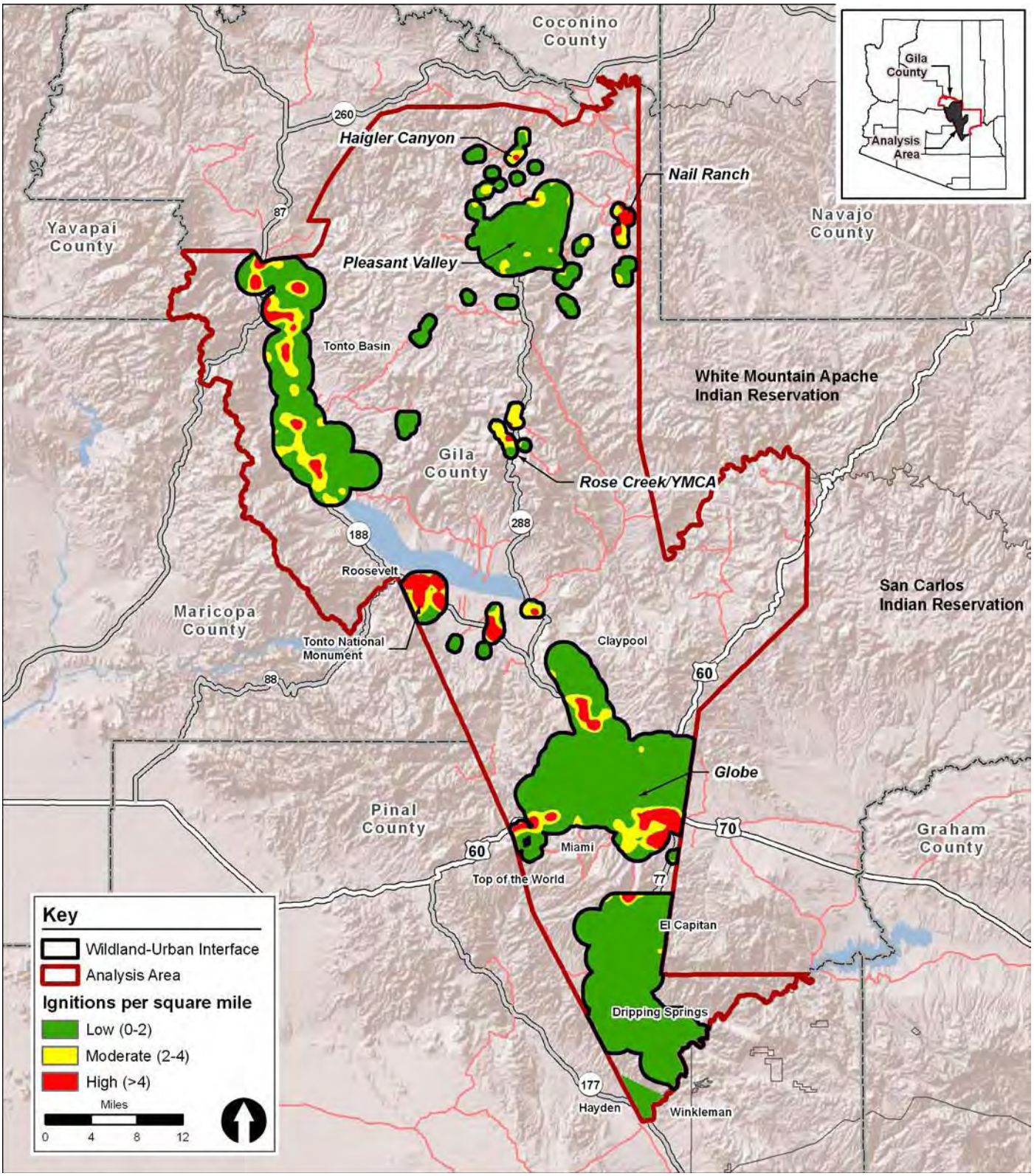

**Figure 2.4.** Southern Gila County CWPP WUI ignition history

## D. Community Values at Risk

Valued at-risk community resources include private and community structures, communication facilities, local recreation areas, cultural and historic areas, sensitive wildlife habitat, watersheds, and natural resources. As agreed to by the Core Team, developed land and other infrastructures within the area of highest flammability were given the highest priority for protection. In areas where community values occur within or adjacent to areas of high risk due to the fuel hazards of vegetation associations, and within areas of high wildland fire ignitions, a cumulative risk from catastrophic wildland fire was created.

These areas of cumulative risk are of greatest concern to the community. In accordance with Risk Factor 2, Risk to Social, Cultural and Community Resources, identified by the Arizona State Forester (ASFD 2007:2), the Core Team has determined that the southern Gila County WUI does include areas consistent with Risk Factor 2, Situations 1, 2, and 3, as follows:

> Risk Factor 2: Risk to Social, Cultural and Community Resources
>
> Situation 1: This situation most closely represents a community in an urban interface setting. The setting contains a high density of homes, businesses, and other facilities that continue across the interface. There is a lack of defensible space where personnel can safely work to provide protection. The community watershed for municipal water is at high risk of being burned to other watersheds within the geographic region. There is a high potential for economic loss to the community and likely loss of housing units and/or businesses. There are unique cultural, historical or natural heritage values at risk.
>
> Situation 2: This situation represents an intermix or occluded setting, with scattered areas of high-density homes, summer homes, youth camps, or campgrounds that are less than a mile apart. Efforts to create defensible space or otherwise improve the fire-resistance of a landscape are intermittent. This situation would cover the presence of lands at risk that are described under state designations such as impaired watersheds or scenic byways. There is a risk of erosion or flooding in the community of vegetation burns.
>
> Situation 3: This situation represents a generally occluded setting characterized by dispersed single homes and other structures that are more than a mile apart. This situation may also include areas where efforts to create a more fire-resistant landscape have been implemented on a large scale throughout a community or surrounding watershed.

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

The Core Team identified high-risk areas—including the major community cores and portions of US 60, US 70, and SR 77—as the focus of commercial development. Residential community development is occurring throughout the WUI in a mix of high-density, single-family, and multi-acre parcels. The Core Team reviewed the most current census block data available for southern Gila County (US Census Bureau

2008) to determine population distribution within private lands in areas of low, moderate, and high population and structural density within the WUI. These data were then portioned into risk categories according to the level of development and presence of natural landcover types. This includes areas of highly developed lands that lack significant open space or natural land covers; moderately developed private lands where an intermingling of public and private lands occur and the major portion of the landscape is composed of natural landcover types; and lightly developed private lands where the majority of land cover is composed of natural land cover. Areas of highest development and areas lacking development are considered at low risk for wildfire, areas of moderate development are considered at high risk for wildfire, and areas of light development are considered areas at moderate risk for wildfire. Therefore, structures associated with housing and commercial development located in isolated subdivisions and in more dispersed areas of the WUI with higher Insurance Services Office (ISO) ratings are considered at highest risk.

### 2. Recreation Areas/Wildlife Habitat

Recreational features within and adjacent to the WUI—including camping and recreation areas associated with several regional parks; Tonto National Monument; designated camping and recreation areas in the TNF and on BLM-managed public lands; and major USFS trailheads—are located throughout southern Gila County. These parks and recreational areas provide camping and scenic vistas of deep canyons, dry washes, sheer cliffs, distant mountain ranges, colorful soils and rock formations, and a mosaic of vegetation; they also provide access to Theodor Roosevelt Lake and other popular recreational destinations.

The WUI also includes known and potential habitat areas for several threatened, endangered, and sensitive (TES) species. The land management agencies use conservation strategies to mitigate risk to these species by implementing programs that meet goals and objectives of natural-resource management. Wildland fuel and vegetative restoration treatments within TES species' habitat may require additional site-specific analysis because of the extraordinary circumstances created by the presence of TES species or their habitats. Before any vegetation treatment by TNF, NPS, or BLM, a biological assessment and evaluation will be conducted by the appropriate agency to determine the extent of impacts the proposed treatments will have on TES species and habitats. The Core Team reviewed Section 102.a.5.B of HFRA and understands that site-specific evaluations of individual recommended projects will determine whether TES species and habitats would benefit from wildland fire mitigation treatments that would reduce wildland fuels, and thereby lessen the threat of catastrophic wildland fire, while protecting the natural-resource and recreational values local residents and visitors associate with the community.

### 3. Local Preparedness and Protection Capability

For many years, the ISO has conducted assessments and rated communities on the basis of available fire protection. The rating process grades each community's fire protection on a scale from 1 to 10 (1 is ideal and 10 is poor) based on the ISO's Fire Suppression Rating Schedule. Five factors make up the ISO fire rating: water supply—the most important factor—accounts for 40 percent of the total rating, while 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. Some areas within the southern Gila County WUI are

not within a fire district; the ISO rating for these areas is 10. Other communities and municipalities within the WUI are within a fire department or district and have ISO ratings ranging from 4 to 9; these areas are included in the overall risk analysis as reducing the potential of catastrophic wildland fire. ISO ratings will vary within fire departments and districts depending on housing densities and the distance of structures that are isolated (usually 3 to 5 miles) from a fire station. The Core Team assigns increased risk to structures, infrastructures, subdivisions, and communities that are without fire protection by not being under the jurisdiction of a fire department or district.

The wildland and structural fire response within the WUI is provided by local fire departments and districts. BLM, TNF, ASFD, and local fire departments and districts provide support for initial wildland fire attack for areas within and adjacent to the southern Gila County WUI. Structural protection for the USFS "involves the use of standard wildland fire suppression tactics and control methods; including the use of standard equipment, fire control lines, and the extinguishing of spot fires near or on the structure when safe and practical" (USFS 2009). Initial-attack response from local fire departments and districts can occur under the authority of mutual-aid agreements between individual departments or under the intergovernmental agreements (IGAs) that individual fire departments and districts have with the Arizona State Forester.

Land use in the planning area consists primarily of residences; mining; livestock production; community businesses; and community services, such as hospitals, schools, and organized-sports facilities. Surrounding areas are dominated by state lands, BLM and TNF lands, and private properties. Land uses within or close to the WUI include fuelwood cutting, hunting, and other recreational activities (for example, hiking, boating, bird watching, nature study, photography, and off-road-vehicle use). Section II.E of this CWPP provides more detailed community assessments. However, the Core Team realizes that local populations within the southern Gila County sub-WUIs will determine the extent of initial attack; sustained responses; structural protection; and public safety protection, including potential evacuation of a community. Therefore, the Core Team used the most current population estimates for each sub-WUI to provide the influence factor for the community values risk assessment.

Table 2.6 identifies the different influencing factor weightings given to these community value components; these components were also mapped and are depicted in Figure 2.5.

**Table 2.6.** Community values

| Component | Value[a] |
|---|---|
| Population in the WUI ≥10 and ≤100 per square mile | H |
| Population in the WUI <100 per square mile | M |
| Population in the WUI <10 per square mile | L |

Source: Logan Simpson Design Inc.

[a] H= high; M = moderate; L = low

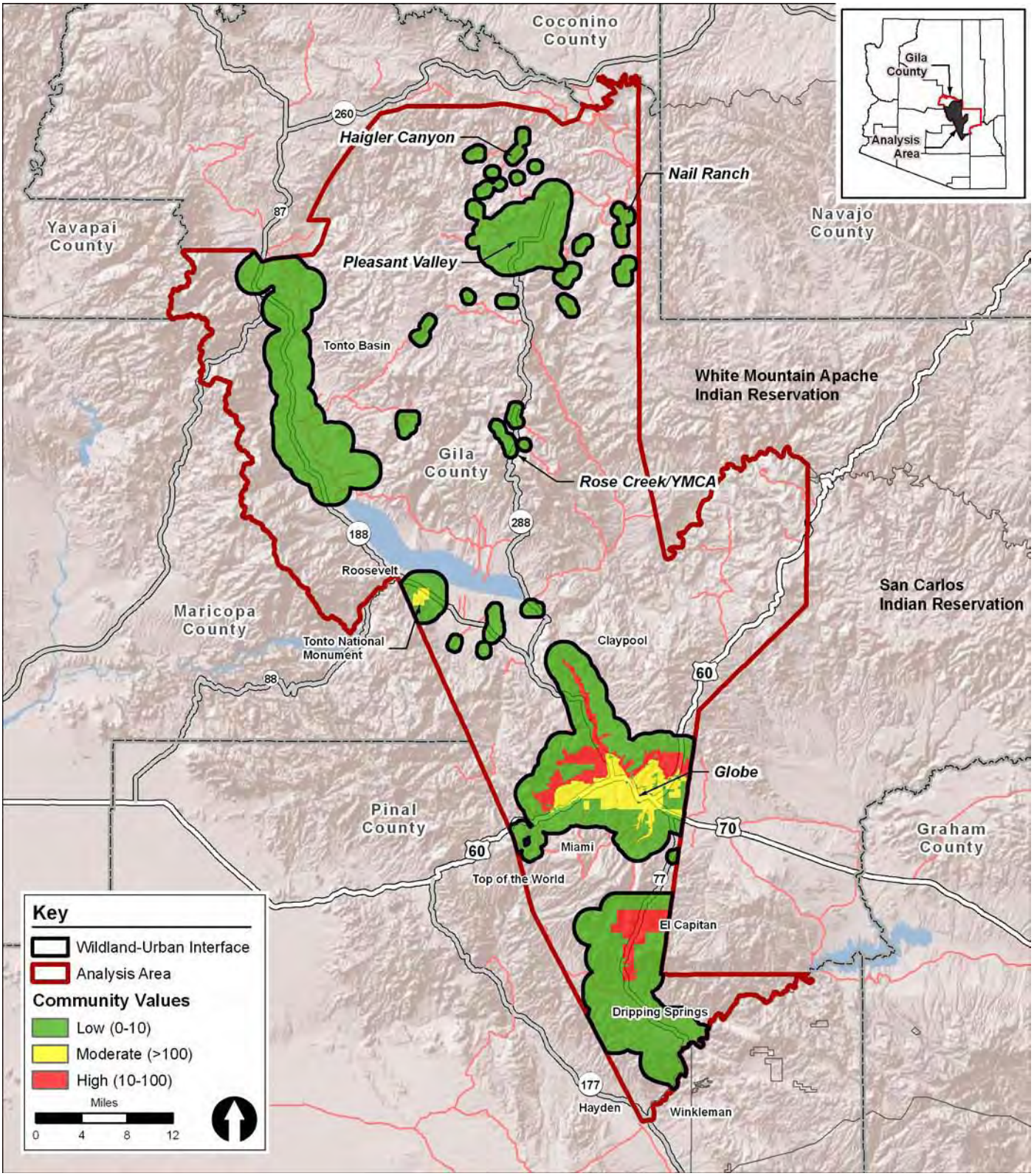


**Figure 2.5.** Southern Gila County CWPP community values assessment

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

The major concerns identified by the Core Team during the development of the Southern Gila County CWPP include (1) delayed response time by available mutual-aid fire departments; (2) obtainment of additional firefighting equipment and training; (3) insufficient dispatch and communication capabilities on initial response units; and (4) structures, subdivisions, and communities that do not have fire protection because they are not within the jurisdiction of a fire department or district. Additionally, many residences in the identified WUIs were not designed with adequate general or emergency vehicle access. Private structures without adequate access and readily available water supplies increase the risk of greater habitat and structural losses from large wildland fires. The Core Team recommends that communities not serviced by a fire department or district take necessary actions to become annexed by an existing department or district or to create their own fire department or district capable of providing viable fire protection services. The Core Team also recognizes that NPS lands on top of the Pinal Mountains are considered a high-priority WUI and that the TNF Globe Ranger District has treated 400 acres in this area to protect the cabins, recreation sites, and communication sites from wildfire. The Core Team recommends that the TNF continue to conduct wildland fuel treatments on such high-value community areas. Recommendations to landowners for wildfire risk mitigation are included in Section III of this CWPP. Additional recommendations for remote private lands include identifying properties by placing names or addresses on identification placards, road signs, and wells or surface water sources that could be used to replenish water supplies for fire response equipment—both ground-based drafting and aerial bucketing. The Core Team recommends researching the possibility of an emergency contact autophone redial system for emergency alert notifications within portions of the WUI where this service has not been instituted.

The communities within each WUI are described below in more detail. The community descriptions include data on population and housing units, major transportation routes, major vegetation associations, and a summary of where in the WUI the highest risk of wildland fire occurs. Population and housing data was obtained from the US Census Bureau 2000 data unless noted otherwise. Population data for 2008 was obtained from the Arizona Department of Commerce community profiles, and the US Census Bureau updated data.

### 1. Sub-WUI Communities

*Globe Sub-WUI*

The city of Globe, located in the foothills just north of the Pinal Mountains, was founded in 1876 as a camp near the Black Jack Newman Mine and was incorporated in 1907. Globe is the county seat for Gila County and has been an important mining center for more than a century. Silver mining started the population boom in Globe in the late 1870s, but the copper industry has sustained community growth. Globe provides the major residential areas and the local businesses needed to support the mining industry, with more than 20 percent of the employment in the area related to mining and production of copper (Arizona Department of Commerce 2009a). The Globe sub-WUI includes the rural areas surrounding the city of Globe, including Central Heights, Copper Canyon, and Midland City. Major transportation and business districts are near US 60; other major transportation routes include SR 77, US 70, and the Southern Pacific Railroad. Globe's historic downtown district includes many historic buildings such as the Cobre Valley Center for the Arts and

the Besh-Ba-Gowah historic site. The Globe Historic District and the prehistoric cultural sites are among the most popular visitor attractions in the community. The city of Globe's population has consistently grown from 6,062 in 1990 to 7,486 in 2000 to 8,032 in 2008 (Arizona Department of Commerce 2009b). In 2008, the population for the city of Globe was reported as 8,032. A total of 3,172 housing units were reported in 2000; of these units, 88 percent (2,814) were classified as occupied. Landownership within the WUI is primarily USFS lands to north and south of the community. The San Carlos Indian Reservation borders Globe to the east, and private lands in the communities of Miami and Claypool border Globe to the west.

The areas at highest risk for wildland fires within the WUI are along the northern face of the Pinal Mountains; along the south face of the Globe hills; and along riparian drainages within the WUI, such as Pinal Creek. Mesquite upland scrub, with associated patches of chaparral, presents the highest fire danger in this sub-WUI. Analysis of fire-start data for the last 30 years (since 1980) indicates that the highest incidences (greater than 4 per 1,000 acres) of fires are along the northern front of the Pinal Mountains and the SR 77 and US 70 corridors. Wildland fire protection is provided by the Globe and Canyon Fire Departments. The Canyon Fire Department is a volunteer fire department that provides primary residential fire protection to the southern area of the Globe sub-WUI and has an ISO rating of 8b. The Globe Fire Department has an ISO rating of 3/9. The City of Globe recognizes potential wildfire issues with slope and vegetation and with some xeroriparian areas that have heavy vegetative growth. The Globe and Canyon Fire Departments maintain a program of public information and education. The Globe and Canyon Fire Departments are also members of the Arizona Mutual Aid Compact and have IGAs with ASLD.

Given a primarily moderate wildfire risk, a low ignition history, and a low to moderate density of community values, the overall wildland fire risk rating for the Globe sub-WUI is moderate.

*Miami Sub-WUI*

The Miami sub-WUI includes the rural areas surrounding the community of Miami, including Lower Miami. Miami has experienced a small but consistent population decline from 2,018 residents in 1990 to 1,936 in 2000 to 1,891 in 2008. A total of 930 housing units were reported 2000; of these units, 81 percent (754) were classified as owner occupied. The major transportation route to Miami is US 60From Superior to Miami, US 60 is one of the most scenic highways in Arizona. The highway winds through incredible rock formations, overlooks the BHP Pinto Valley Operations, and passes the Phelps Dodge Oxhide and Bluebird leach dumps to the Bullion Plaza Museum and Cultural Center and into the town of Miami (Arizona Department of Commerce 2009a, 2009b). Landownership within the WUI is primarily USFS lands west, north, and south of the community. Private lands within the city of Globe and the community of Claypool are located to the east. Most of the private lands within and adjacent to Miami are owned by or affiliated with mining businesses.

The areas at highest risk for wildland fires within the WUI occur along the northern face of the Pinal Mountains. Mesquite upland scrub, with associated patches of chaparral, presents the highest fire danger in this sub-WUI. Analysis of fire-start data for the last 30 years (since 1980) indicates that highest incidences (greater than 4 per 1,000 acres) of fires are along the northern front of the Pinal Mountains and along the US 60 corridor east of the community in the vicinity of Top of the World.

The Maim Fire Department provides wildland fire protection. The Miami Volunteer Fire Department provides primary fire and emergency medical services to the town of Miami; the volunteer staff is not compensated. The Miami Fire Department has responded to wildland fires and maintains a program of public information and firefighter education.

Given a primarily moderate wildfire risk, a low ignition history, and a low to moderate density of community values, the overall wildland fire risk rating for the Miami sub-WUI is moderate.

*Claypool Sub-WUI*

The Claypool sub-WUI consists of unincorporated private lands between the cities of Globe and Miami. The Claypool sub-WUI includes a total of 1.21 square miles of rural lands surrounding the community, including the Little Acres and Miami Gardens subdivisions and the communities of Central Heights, Claypool, and Wheatfields. In 2000, the population for the community of Claypool was reported as 1,794. A total of 786 housing units were reported in the 2000 census; 87 percent (683) of these units were classified as occupied.

The areas at highest risk for wildland fires are along the northern face of the Pinal Mountains. Mesquite upland scrub, with associated patches of chaparral, presents the highest fire danger in the sub-WUI. Analysis of fire-start data for the last 30 years (since 1980) indicates that highest incidences (greater than 4 per 1,000 acres) of fires are along the northern front of the Pinal Mountains.

The Tri-City Fire Department provides fire protection and emergency medical services to this sub-WUI and to over 8,000 people living in an 18-square-mile area including the communities of Central Heights, Claypool, and Wheatfields. The Tri-City Fire Department has responded to wildland fires and maintains a program of public information and firefighter education.

Given a primarily moderate wildfire risk, a low ignition history, and a low to moderate density of community values, the overall wildland fire risk rating for the Claypool sub-WUI is moderate.

*Tonto National Monument Sub-WUI*

Tonto National Monument is a very popular recreation destination within Tonto Basin. The monument was established to protect numerous prehistoric archaeological sites, including two Gila-phase cliff dwellings of the Salado culture. The primary sites are the Upper and Lower Cliff Dwellings. Rock shelters overlooking Tonto Basin have protected the nearly 700-year-old masonry cliff dwellings. The monument contains some of the best-preserved examples of prehistoric cliff dwellings and their associated artifacts. Developed facilities include a visitor center with a museum, an administrative building and maintenance facility, a well house, a picnic area, and four residential units. The monument has limited access routes and confined developed areas. A 1-mile entrance road ends at the visitor center. In 2004, NPS approved the Tonto National Monument Wildland Fire Management Plan. This plan outlines aggressive suppression operations to achieve effective control for the protection of human life and property with the least amount of damage to the park's natural and cultural resources (NPS 2004). Initial wildfire response is provided by park staff trained in wildland fire response. The park maintains agreements with surrounding fire agencies for extended suppression response.

Given a moderate and high wildfire risk, a high ignition history, and high recreational values, the overall wildland fire risk rating for the Tonto National Monument sub-WUI is high.

*Haigler Canyon Sub-WUI*

The Haigler Canyon sub-WUI is an old homestead subdivided into residential homes. The subdivision runs southwest to northeast following the Haigler Creek corridor. Vegetative fuels in the area are a mix of juniper grassland with chaparral. These fuels are continuous across the sub-WUI and the TNF, and the subdivision is aligned with the prevailing southwesterly winds. The community has no formal fire protection. The TNF responds to wildland ignitions within this sub-WUI.

Given these factors, the overall wildland fire risk rating for all portions of the Haigler Canyon sub-WUI is high.

*Pleasant Valley Sub-WUI*

The Pleasant Valley sub-WUI includes the rural areas surrounding the community of Young. Young, also known as Pleasant Valley, is a picturesque valley, nestled in the northeast portion of the TNF, halfway between the Mogollon Rim and Roosevelt Lake. The town began as a cattle ranching community in the 1880s. The community of Young now primarily serves as a retirement and second-home community. The town maintains a community council that sponsors gymkhanas (equestrian games), ropings, stampedes, and other events in the local arena, as well as other functions in an approximate 7,000-square-foot community center building. Of the approximately 5,000-acre community, half consists of 2- to 5-acre land parcels and the other half is undeveloped land. In 2000, the population for the community of Young was reported as 561. A total of 446 housing units were also reported in 2000; of these units, 56 percent (250) were classified as occupied.

The east boundary of the Pleasant Valley sub-WUI that follows the north-south Cherry Creek drainage is at greatest risk from wildfire because of the alignment of slope and prevailing winds and the condition of vegetative fuels. Forest fuels within and surrounding this portion consist of heavy oak and juniper woodland with a chaparral component. The state of the fuels and alignment of slope and predominate wind put the east side of Young at high risk. The southern and western portions of the sub-WUI near the Potato Butte and Walnut Creek subdivision are also at high risk because of the combination of fuel type (mixed grass with juniper), slope, and prevailing winds.

The Pleasant Valley Volunteer Fire Department provides fire protection to over 500 people living in the community and has an ISO rating of 6-8b. The Pleasant Valley Fire Department has responded to wildland fires and maintains a program of public information and firefighter education.

Given a primarily high wildfire risk, a moderate ignition history, and a high to moderate density of community values, the overall wildland fire risk rating for the Pleasant Valley sub-WUI is high.

*Rose Creek/YMCA (or Sierra Ancha) Sub-WUI*

The Rose Creek/YMCA sub-WUI includes the Sierra Ancha subdivisions, which are a mix of homesteads and ranches that have become residences and campgrounds. Private lands in this area lie at the base of and within the Sierra Ancha Mountains. Vegetation is predominantly ponderosa pine and mixed conifer with

oak, juniper, and chaparral. The fuels are in Condition Class III and are continuous across the sub-WUI and the TNF. All portions of this subdivision have a very high risk for WUI fire because of fuels, mountain slopes, and a history of fire occurrence. High recreational use occurs in the TNF surrounding this sub-WUI and along SR 288, which runs north-south through the WUI. The community has no formal fire protection. The TNF responds to wildland ignitions within this sub-WUI.

Given these factors, the overall wildland fire risk rating for all portions of the Rose Creek/YMCA sub-WUI is high risk.

*Tonto Basin Sub-WUI*

The Tonto Basin sub-WUI consists of the Tonto Basin North and the Tonto Basin South sub-WUIs. Tonto Basin North includes the communities of Deer Creek, Jakes Corner, Punkin Center, Lower Greenback Village, and Tonto Basin. Tonto Basin South primarily includes the rural areas within the Tonto Basin surrounding the community of Roosevelt adjacent to the recreation areas associated with Theodore Roosevelt Lake. Tonto Basin is a low-lying area between the Sierra Ancha Mountains, Mazatzal Mountains (including Four Peaks), and the Superstition Mountains.

The areas at highest risk for wildland fires within the WUI occur along the eastern face of the Mazatzal Mountains, along the western face of the Sierra Ancha Mountains, and along Tonto Creek and associated riparian drainages. Sonoran palo verde–mixed cacti desert scrub, with associated patches of chaparral, presents the highest fire danger in this sub-WUI. Analysis of fire-start data for the last 30 years (since 1980) indicates that highest incidences (greater than 4 per 1,000 acres) of fires are along the east front of the Mazatzal Mountains and along SR 188 along the Tonto Creek corridor.

The Tonto Basin Fire District provides fire protection to this sub-WUI, with the exception of Deer Creek. The Deer Creek community is not within the Tonto Basin Fire District Boundary and therefore has no primary fire protection services. The district encompasses 85 square miles from Jakes Corner on SR 188 south to the community of Roosevelt. It includes the communities of Tonto Basin, Roosevelt, Punkin Center, and Jakes Corner. Established in 1989, the district provides emergency services to over 4,000 residents. There are two manned stations, Station No. 1 in Punkin Center and Station No. 6 in Roosevelt, and two unmanned stations, Station No. 2 on the east side of Tonto Creek and Station No. 5 in Jake's Corner. The district employs nine full-time firefighters and numerous reserve and volunteer firefighters; all are qualified emergency medical technicians, and eight are paramedics. The Tonto Basin Fire district has an ISO rating of 7/9. The district is a member of the Arizona Mutual Aid Compact and has an IGA with ASLD and.

Given a primarily moderate wildfire risk associated with the slopes of the Mazatzal and Sierra Ancha Mountains, a moderate to high risk of wildfire ignitions, and a low density of community values, the overall wildland fire risk rating for the Tonto Basin sub-WUI is moderate.

*Winkelman Sub-WUI*

The Winkelman sub-WUI includes the rural areas surrounding the town of Winkelman, located near the confluence of the San Pedro and Gila Rivers. Winkelman was founded in 1877 as an agricultural community. The post office was established in 1903 near the ranch of Peter Winkelman and was

incorporated in 1949. The community serves primarily as a service center and residential area for those working in the local mining industry. The town of Winkelman offers a range of community facilities such as public parks, a library (Hayden Library), a lighted baseball field and basketball courts, and an RV park. The Gila River Arena accommodates team-roping, bull-riding, rodeos, and live concert events. In 2008, the population for the town of Winkelman was reported as 427. A total of 194 housing units were reported in 2000; of these units, 82 percent (160) were classified as occupied. The Winkelman Volunteer Fire Department provides fire protection to this sub-WUI.

The areas at highest risk for wildland fires within the WUI occur along the southern face of the Dripping Springs Mountains and adjacent to, and at the confluence of, the San Pedro and Gila Rivers and associated riparian drainages. Sonoran palo verde–mixed cacti desert scrub, with associated patches of upland mesquite, presents the highest fire danger in the sub-WUI. Analysis of fire-start data for the last 30 years (since 1980) indicates that incidences of wildland fire ignitions are low.

Given a primarily moderate wildfire risk associated with the confluence of the Gila and San Pedro riparian corridors, a low risk of wildfire ignitions, and a low to moderate density of community values, the overall wildland fire risk rating of the sub-WUI is moderate.

*Hayden Sub-WUI*

The Hayden sub-WUI includes the rural areas surrounding the town of Hayden. Hayden offers many community facilities, including a library, a community center, three parks, a golf course, and a swimming pool. In 2008, the population for the town of Hayden was reported as 839. A total of 334 housing units were reported in 2000; of the units, 86 percent (288) were classified as occupied. The Hayden Volunteer Fire Department provides fire protection to this sub-WUI.

The areas at highest risk for wildland fires within the WUI occur along the southern face of the Dripping Springs Mountains and adjacent to the Gila River and associated riparian drainages. Sonoran palo verde–mixed cacti desert scrub, with associated patches of upland mesquite, presents the highest fire danger in this sub-WUI. Analysis of fire-start data for the last 30 years (since 1980) indicates that incidences of wildland fire ignitions are low.

Given a primarily low to moderate wildfire risk associated with the Gila and San Pedro riparian corridors, a low risk of wildfire ignitions, and a low to moderate density of community values, the overall wildland fire risk rating for the Hayden sub-WUI is low.

*Top of the World Sub-WUI*

The Top of the World sub-WUI includes the unincorporated community of Top of the World and the Oak Flats area. Top of the World is a rural community located along US 60 near the Pinal County line. The community of Top of the World is listed as moderate risk within the *Arizona-Identified Communities at Risk* (ASFD 2007). US 60 is the only transportation route for this community. In 2000, the population of the community of Top of the World was reported as 330. A total of 196 housing units were also reported in 2000: 47 were classified as owner-occupied units, 61 as detached single-family units, and 135 as mobile homes. Top of the World is not within a fire district and therefore has an ISO rating of 10.

The Top of the World sub-WUI is composed, almost exclusively, of areas at high wildland fire risk. The combination of volatile vegetation associations and southerly exposures of increasing steep slopes creates the highest risk for wildland fires within this sub-WUI. These areas can create extreme risk during both normal and extraordinary years of rainfall. Analysis of fire-start data for the last 30 years (since 1980) indicates that the highest incidences of ignition occur within or adjacent to the sub-WUI either within or near TNF lands along the northern and eastern portions of the sub-WUI.

The majority (97%) of the Top of the World sub-WUI has a high wildfire risk, with an elevated risk from ignition history in areas of high-risk wildland fuels. Therefore, the overall wildland fire risk rating for the Top of the World sub-WUI is high.

*Nail Ranch/Frog Pond Sub-WUI*

Nail Ranch is a homestead that has been divided into a small subdivision. It is located on Forest Road 100, south of Forest Road 512. There is a high fire occurrence (lightning caused) in the surrounding valley and hills, including Gentry, Shell, and Crouch Mountains. The surrounding vegetative fuel type is ponderosa pine in Condition Class III. Heavy vegetative fuel loads are continuous across private and TNF lands, and all areas of the subdivision are at risk. The community has no formal fire protection. The TNF responds to wildland ignitions within this sub-WUI.

Given these factors, the overall wildland fire risk rating for all portions of the Nail Ranch/Frog Pond sub-WUI is high.

*El Capitan Sub-WUI*

El Capitan sub-WUI consists of private lands adjacent to SR 77 north of the communities of Winkelman and Hayden and immediately north of the Dripping Springs/Christmas sub-WUI in the vicinity of El Capitan Canyon along the western and northern foothills of the Mescal Mountains. The El Capitan sub-WUI is composed, almost exclusively, of areas at high wildland fire risk. Highest risk for wildland fires within the El Capitan sub-WUI is a result of the combination of volatile chaparral woodland associations occurring in conjunction with steep slopes. Analysis of fire-start data for the last 30 years (since 1980) indicates that incidences of wildland fire ignitions are low, occurring primarily adjacent to SR 77. This sub-WUI has no formal fire protection.

Given a primarily high wildfire risk associated with the Mescal Mountains, a low risk of wildfire ignitions, and a high density of community values, the overall wildland fire risk rating for El Capitan sub-WUI is high.

*Dripping Springs/Christmas Sub WUI*

This area, which was named after a nearby spring, originally consisted of a cattle ranch and stagecoach station. A post office operated in Dripping Springs from 1886 to 1890. The Christmas post office was in service from June 17, 1905, to March 30, 1935.Two mining claims discovered in the Copper Springs Mountains in 1878 and 1882 gave rise to the town of Christmas. The claims were originally within the boundaries of the San Carlos Apache Indian Reservation and were thought to be duds. However, when the reservation boundaries were resurveyed, and the mines were no longer inside the boundaries and were

thus reopened. The area of Drippings/Christmas is primarily composed of private residences supporting the local ranching, farming, and mining industries.

The areas at highest risk for wildland fires within this sub-WUI occur along the southern face of the Dripping Springs Mountains and associated xeroriparian drainages. Sonoran palo verde–mixed cacti desert scrub, with associated patches of upland mesquite, presents the highest fire danger in the sub-WUI. Analysis of fire-start data for the last 30 years (since 1980) indicates that incidences of wildland fire ignitions are low, occurring mostly in the foothills of the Dripping Springs Mountains and adjacent to SR 77. This sub-WUI has a moderate to high community-values rating and has no formal fire protection.

Given a primarily moderate to high wildfire risk associated with the Dripping Springs Mountains, a low risk of wildfire ignitions, and a low density of community values, the overall wildland fire risk rating for the Dripping Springs/Christmas sub-WUI is low.

### 2. Cumulative Risk Analysis

The cumulative risk analysis synthesizes the risk associated with fuel hazards, wildfire ignitions, wildfire occurrence, and community values. These different components were analyzed spatially, and an overall cumulative risk for the WUI was calculated. Table 2.7 and Figure 2.6 display the results of the cumulative risk analyses, identifying the areas and relative percentages of WUI areas of high, moderate, and low risk.

**Table 2.7.** Cumulative risk levels, by percentage of the WUI area

| Southern Gila County CWPP sub-WUI | High risk (%) | Acres | Moderate risk (%) | Acres | Low risk (%) | Acres | Total acres |
|---|---|---|---|---|---|---|---|
| Globe | 9 | 3,743 | 67 | 30,584 | 24 | 10,992 | 45,319 |
| Miami | 6 | 1,380 | 74 | 15,629 | 20 | 4,278 | 21,287 |
| Claypool | 9 | 3,038 | 62 | 20,327 | 29 | 9,617 | 32,982 |
| Haigler Canyon | 3 | 133 | 96 | 8,049 | 2 | 192 | 8,374 |
| Pleasant Valley/Young | 0 | 54 | 93 | 37,342 | 7 | 2,767 | 40,163 |
| Rose Creek/YMCA | 7 | 363 | 93 | 4,711 | 0 | 9 | 5,083 |
| Tonto Basin/North | 3 | 1,793 | 46 | 34,818 | 51 | 38,419 | 75,030 |
| Tonto Basin/South | 3 | 253 | 62 | 4,074 | 35 | 2,286 | 6,613 |
| Tonto National Monument | 16 | 1,450 | 71 | 6,228 | 13 | 1,106 | 8,784 |
| Winkelman | 4 | 56 | 77 | 1,160 | 19 | 290 | 1,506 |

**Table 2.7.** Cumulative risk levels, by percentage of the WUI area

| Southern Gila County CWPP sub-WUI | High risk (%) | Acres | Moderate risk (%) | Acres | Low risk (%) | Acres | Total acres |
|---|---|---|---|---|---|---|---|
| Top of the World | 13 | 618 | 86 | 4,023 | 1 | 41 | 4,682 |
| Hayden | 2 | 68 | 82 | 2,511 | 16 | 475 | 3,054 |
| Nail Ranch | 29 | 1,659 | 68 | 3,967 | 3 | 160 | 5,786 |
| El Capitan | 26 | 8,994 | 62 | 21,627 | 12 | 4,235 | 34,856 |
| Dripping Springs | 0 | 0 | 49 | 18,173 | 51 | 18,580 | 36,753 |
| **Total** | 8 | 23,602 | 64 | 213,223 | 28 | 93,447 | 330,272 |

*Source*: Logan Simpson Design Inc.

1

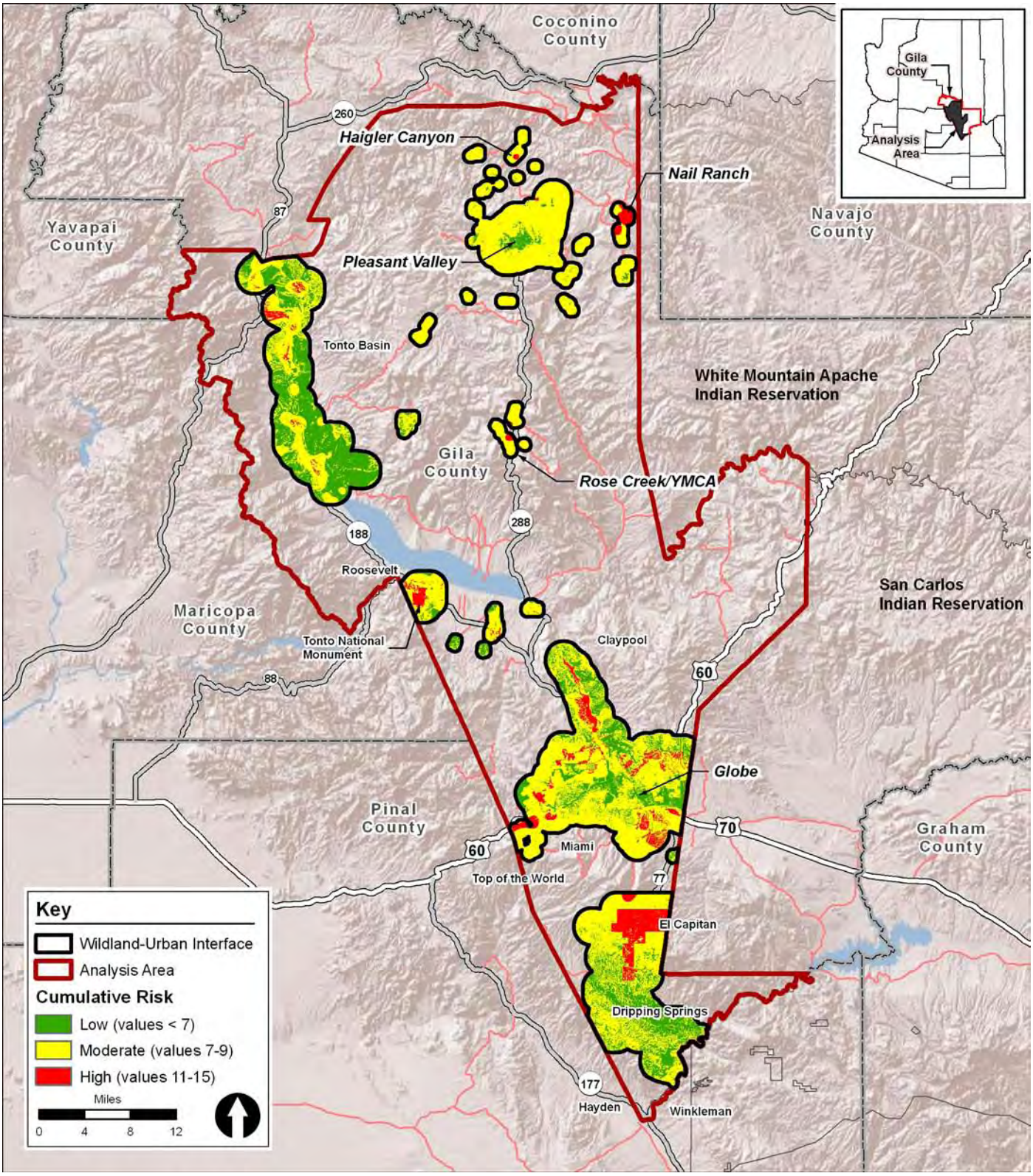


**Figure 2.6.** Southern Gila County CWPP cumulative risk analysis

# III. COMMUNITY MITIGATION PLAN

This section outlines Southern Gila County CWPP priorities for wildland fuels treatments, as well as the recommended methods of treatment and management strategies for mitigating the potential spread of catastrophic wildland fire throughout the WUI. This section also presents recommendations for enhanced wildland fire protection capabilities and public education, information, and outreach.

## A. Fuel Reduction Priorities

After determining the areas at greatest risk for wildland fire (Section II of this CWPP), the Core Team developed a series of proposed actions, including residential treatments, a series of firebreaks appropriate for the wildland fuel types, and fuel mitigation treatments for undeveloped landscapes (Table 3.1). The Core Team has proposed wildland fire mitigation projects for at-risk public, and private lands. These proposed actions are recommended to prevent wildfire spread from public lands onto private land and, conversely, to reduce the risk of fires spreading from private land onto public lands by reducing wildland fuels and creating a defensible space for wildland firefighters. A primary goal of the Southern Gila County CWPP is for proposed treatments to be continuous across property boundaries, allowing for the most effective protection from wildfires.

Hazardous fuels reduction recommendations on public lands vary by constituting either a single firebreak in appropriate width and length within the WUI or broader land treatment applications of wildland fuel reduction within the WUI. Additional firebreaks or hazardous fuels reduction projects may be developed over time and will conform to the types of treatment recommendations developed by the Core Team. The GCDEM, ASFD, TNF, NPS, BLM, local fire departments and districts, and the Core Team's participating resource specialists developed wildland fuel reduction recommendations by vegetative fuel types. These recommendations are based on firebrand movement during the peak fire season under normal seasonal weather conditions in relation to slope and fuel type. The recommended land treatments and fuelbreaks will enhance public and firefighter safety, provide for community value protection, enhance restoration of native vegetation, and provide for wildlife habitat needs. Several designated wilderness areas are within or adjacent to the Southern Gila County CWPP WUI: Sierra Ancha, Needles Eye, Salt River Canyon, and Salome Wilderness areas. Wildland fuel mitigation treatments within wilderness areas will be conducted by BLM and TNF under appropriate wilderness regulations. The Core Team may recommend fuelbreaks along specific identified private in-holdings adjacent to wilderness boundaries to allow BLM and TNF to use appropriate management response (USFS and BLM 2009).

The wildland vegetative fuel and firebreak recommended treatments meet the Southern Gila County CWPP goals of enhancing firefighter and public safety, reducing hazardous wildland fuels on public and private lands, improving fire prevention and suppression, restoring riparian and forest and rangeland health, involving the community, and expediting project implementation. To prioritize wildland fuel mitigation projects, the Core Team analyzed wildland fuel hazards, fire history, and community values. This combined risk assessment was compiled in a single community base map depicting areas of low-, moderate-, and high-risk evaluations (see Figure 2.4). These risk areas were further identified and categorized into a total of 28 management site-specific areas (treatment management units) of the WUI, with an overall risk value determined for each management unit (Figure 3.1).

**Table 3.1.** Fuel modification and treatment plans

| Treatment No. | 1 Developed private parcels <2 acres | | | | 2 Undeveloped private parcels or single-structure parcels >2 acres | | 3 Grassland firebreaks | | 4 Oak/pinyon/juniper and shrublands within the WUI | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Treatment category** | **Zone 1 (0–10 feet from structures)** | **Zone 2 (10–30 feet from structures)** | **Zone 3 (30–100 feet from structures)** | **Zone 4 (100–600 feet around home)** | **Slopes <20%** | **Streambeds, channels, and slopes ≥20%** | **Slopes <20%** | **Slopes ≥20%** | **Landscape treatment outside fuel breaks** | **Fuel breaks** |
| **Vegetation** | Remove ladder fuels by pruning the lower third of trees or shrubs up to a maximum of 10 feet to reduce flammable vegetation.<br>Remove and destroy insect-infested, diseased, and dead trees and shrubs.<br>Grasses and forbs may be cut with a mower to a 4-inch stubble.<br>Remove dead plant material from ground; prune tree limbs overhanging roofs; remove branches within 10 feet of chimneys; remove flammable debris from gutters and roof surfaces. | Remove ladder fuels by pruning the lower third of trees or shrubs up to a maximum of 10 feet; remove and destroy insect-infested, diseased, and dead trees.<br>Create separation between trees, tree crowns, and other plants according to fuel type, density, slope, and other topographical features.<br>Reduce continuity of fuels by creating a clear space around brush or planting groups.<br>Grasses and forbs may be cut with a mower to a 4-inch stubble.<br>All snags and vegetation that may grow into overhead electrical lines, other ground fuels, ladder fuels, dead trees, and thinning from live trees must be removed. | Remove ladder fuels by pruning the lower third of trees or shrubs up to a maximum of 10 feet; remove and destroy insect-infested, diseased, and dead trees.<br>Maximum density of trees (whichever is greater: 60 BA at 80–100 trees/acre *or* average density of 100 trees/acre).<br>Grasses and forbs may be cut with a mower to a 4-inch stubble. | For natural areas, thin selectively and remove highly flammable vegetation.<br>Carefully space trees; choose Firewise plants.[1a] | Remove ladder fuels by pruning the lower third of trees or shrubs up to a maximum of 8 feet; remove and destroy insect-infested, diseased, and dead trees.<br>Maximum density of trees (whichever is greater: 60 BA at 80–100 trees/acre *or* average density of 100 trees/acre)<br>See fuel modification plan (this section) developed to promote riparian health, to prevent spread of fire to adjacent property, and to create defensible space with considerations for wildlife and groundwater protection.<br>Single structure or structures on parcels exceeding 2 acres should include Treatment 1 in proximity to structures and Treatment 2 for remaining acres. | Remove dead, diseased, and dying trees. Fell dead trees away from stream channels with defined bed and banks.<br>Areas should be hand-thinned and hand-piled; inaccessible areas may be treated with periodic prescribed fire.<br>Develop fuel modification plan (this section) for treatments. | Grassland types may be mechanically treated, including mowing, chopping, or mastication, to reduce or remove vegetation or may be grazed to a suitable stubble height. Ensure that removal of vegetation within a designed firebreak of >1 chain (66 feet) in width and length is sufficient to protect federal, state, or private land values.<br>Fuel reduction treatments within grassland vegetation types may include multiple-entry burns to maintain stand structure and reduce fine fuels. Trees and shrubs >8 inches drc should be thinned to a variable distance of 15–35 feet between trees. Trees and shrubs <8 inches drc should be removed.<br>Mechanical/chemical or grazing treatment may be used to maintain firebreaks on private lands.<br>See the fuel modification plan (this section) developed to prevent spread of fire to adjacent property and to create defensible space with considerations for wildlife and groundwater protection. | Same as for slopes <20%. Fuel treatments may require hand-thinning and hand-piling or grazing in steep slopes. Prescribed fire may be used to reduce high fire potential (see Treatment 5). Designated firebreaks may be increased to no more than 2 chains in steep slopes where herbaceous (fine fuels) and subshrub species fuel loads increase to pretreatment levels within 3 years.<br>See fuel modification plan (this section) developed to promote forest health, to prevent spread of fire to adjacent property, and to create defensible space with considerations for wildlife and groundwater protection. | Spacing may be variable with a 20- to 35-foot minimum to promote (1) wildlife habitat while breaking horizontal fuel loading, which allows for patches of closely spaced trees for adequate cover, and (2) other habitat components while incorporating openings to increase herbaceous forage production, to maximize edge effect, and to promote fire-resilient stands.<br>Mechanical thinning and prescribed fire (see Treatment 5) can be used to reduce vegetative fuels and move stands toward potential natural vegetation groups as described in the *FRCC Interagency Handbook* (FRCC Interagency Working Group 2005b) or grazed to like conditions. All trees >10 inches drc will be targeted as “leave trees” unless removal is necessary to achieve the desired spacing. | Woodland and shrub trees <8 inches drc will be thinned to a spacing of 15 feet between trees, or prescribed fire will be applied to achieve like conditions. Shrub and tree trunks will be severed <4 inches from the ground.<br>Mechanical treatments, such as crushing, chipping, mastication, and prescribed fire, may be used to create open stands that produce flame lengths of ≤4 feet to minimize crown-fire potential and to produce vegetative fuel conditions conducive to suppression action.<br>Herbaceous and subshrub understory may be mechanically treated, including mowing, chopping, and masticating, or grazed to limit fine-fuel loading while protecting soil integrity from rainfall runoff. |
| **Slash** | Remove or reduce natural flammable material 2–4 feet above the ground around improvements.<br>Remove vegetation that may grow into overhead electrical lines, ladder fuels, and dead trees; thinning from live trees must be removed (chipped, etc.).<br>Remove all leaf litter to a depth of 1 inch. | Control soil erosion from small waterflow channels by using rock or noncombustible velocity-reducing structures.<br>Remove all leaf litter to a depth of 1 inch. | Same as Zones 1 and 2. | Slash may be burned, piled and burned, or chipped and removed. Slash from grassland treatments may be burned, removed, masticated, turned, or grazed for like treatment. | All slash, snags, and vegetation that may grow into overhead electrical lines; other ground fuels; ladder fuels; dead trees; and thinning from live trees must be removed, mechanically treated (chipped, etc.), or piled and burned along with existing fuels. | Clean dead and down debris in channels where debris may be mobilized in floods and thus create downstream jams.<br>Some slash and debris can be scattered and retained in small, ephemeral streambeds in which slash can help retain runoff and sediment and provide headcut stabilization. | Slash from grassland treatments may be burned, removed, masticated, or turned (disked). | Same as for slopes <20%; however, slash may be hand-piled and ignited with prescribed fire as the primary slash reduction treatment. | Slash may be burned, piled and burned, or chipped and removed. Slash from grassland treatments may be burned, removed, masticated, or turned. | Slash may be burned, piled and burned, or chipped and removed. Slash from grassland treatments may be burned, removed, masticated, or turned. |

*Continued*

[1] http://www.firewise.org/usa/fw_plantlists.htm

**Table 3.1.** Fuel modification and treatment plans

| Treatment No. | 5 | 6 | | 7 | 8 | 9 | |
|---|---|---|---|---|---|---|---|
| | **Prescribed fire** | **Riparian areas (federal, nonfederal, and private lands)** | | **Conditional suppression areas (federal and nonfederal lands)** | **Saltcedar removal for restoration purposes (federal and nonfederal lands)** | **Forest types (federal and nonfederal lands)** | |
| **Treatment category** | **Federal, state, or private lands** | **Federal or state lands** | **Firebreaks on private lands** | **Federal, state, or private lands** | **Federal, state, or private lands** | **Thinning** | **Shaded fuelbreaks** |
| **Vegetation** | Prescribed fire will be used as a tool to accomplish specific resource management objectives in accordance with standards and guidelines from ASLD, ASFD, NPS, TNF, BLM, or all of the above.<br>Prescribed fire on federal land is authorized if part of an approved prescribed-fire burn plan. As additional areas within the WUI are identified, prescribed fire may be used as a treatment tool provided that a wildland fire implementation plan is in effect and that all conditions set forth have been met.<br>Prescribed fire can occur at low, moderate, and high intensity. High-intensity fire will be used to create openings by removing all aboveground vegetation. | Riparian treatments will be limited in scope. The majority of riparian areas that fall within the WUI boundary will be avoided unless deemed a fuel hazard.<br>Clearing or cutting of any material by mechanized equipment within 10 feet of any stream on federal land may be prohibited to prevent the risk of accelerating erosion.<br>Treatments may include some overstory removal of deciduous riparian trees and shrubs in areas where encroachment has increased heavy woody fuels (emphasizing removal and control of saltcedar and other invasive trees).<br>Treatments will emphasize nonnative species. Snags >8 inches may be retained. All presettlement trees, including snags, will be targeted for retention.<br>Restricting the removal of the vegetative overstory in the riparian areas to October 15–March 31 will prevent the disturbance of any nesting by neotropical migrant bird species, including the southwestern willow flycatcher. Fuels reduction should occur October 15–March 31 in riparian areas, as long as fire danger is not extreme.<br>Emphasis will be placed on removing nonnative and invasive plant species. | Private land treatment should use hand tools, chain saws, or mowers. Dead vegetation and slash should be removed. Ladder fuels, including limbs and branches, should be removed up to a maximum of 8 feet aboveground.<br>All mechanized equipment must meet state and local fire-department/district standards. Perform treatments October–March annually. Chemical treatment of annuals may be best when annuals are green. | This prescription includes lands with desert shrub/scrub vegetative types in which no fuel modification treatments have been identified as necessary to provide protection from wildland fire. The threat from catastrophic wildland fire is low or nonexistent. This includes areas in which fire never played a historical role in developing and maintaining ecosystems. Historically, in these areas, fire return intervals were very long. These are areas in the WUI in which fire could have negative effects unless fuel modifications take place. These include areas in which the use of fire may have ecological, social, or political constraints and areas in which mitigation and suppression are required to prevent direct threats to life or property.<br>Wildland fire growth within these areas will be monitored for private-property, ecological, and cultural threats before initiating suppression. Agency and fire-department/district policy provisions will determine suppression response. | Areas of monotypic saltcedar or in mix with mesquite or other riparian tree species may be treated mechanically or chemically or by controlled burning and reburning to reduce stem density, canopy, and excessive fuel loading.<br>Mechanical removal for saltcedar by cutting below the root collar during November–January is preferred. Mechanical whole-tree extraction has achieved as high as 90% mortality on initial treatments and may be considered a preferred treatment.<br>Low-volume oil-based herbicide applications in late spring through early fall would be considered for controlling small plants (<2 inches drc). Low-volume cut-stump herbicide applications will be considered in combination with mechanical treatment.<br>Preferred phenological stage for burning is peak summer months and postavian breeding months. Black lines and appropriate headfires should be initiated depending on site-specific vegetative and burning conditions (Zouhar 2003). Maintenance, revegetation, restoration, and monitoring should follow as needed for each treatment area. | Lands may be thinned from below to reduce understory vegetation: ponderosa pine, white fir, Douglas fir up to 18 inches dbh; dead ponderosa pine, white fir and Douglas fir trees up to 18 inches dbh.<br>Residual stocking levels for sites with predominantly ponderosa pine, white fir, and Douglas fir overstory would be reduced to 50–80 trees per acre (not below 60 square feet of basal area/acre)<br>All trees larger than the diameter limits stated would not be cut even if the desired stocking level is not being met. In those cases, all tress smaller may be cut, but with some vegetation retained to provide a mosaic pattern. | Shaded fuelbreaks would only be planned around residential areas.<br>A shaded fuelbreak is a type of fuelbreak within forested lands in which a band of larger mature trees (that are more fire resistant) are left in place with a relatively open understory. Enough mature trees are left to provide shade to keep the understory from redeveloping. The fuelbreak is designed to significantly slow the speed of a wildfire, All dead standing trees, of any size, would be cut down. A shaded fuelbreak width is approximately 330 feet. |
| **Slash** | Slash, piles of small diameter dead trees or tree limbss (jack piles), and down logs may be burned as appropriate in consideration of local conditions and distance from private property. Pile or prescribed fire can be used to remove fuel from private land as designated. Snags and down woody material may be retained in areas where fire resilience is not compromised. | After removal of heavy woody fuels, fine fuels may be maintained by cool-season low-intensity prescribed fire that moves slowly downslope or into prevailing winds to midslope. Large down woody material and snags (≥12 inches) may be retained in riparian areas. | Fuel treatments and woody material removal will occur on existing roads. Cool-season low-intensity prescribed fire may be used for maintenance of fine fuels. Pile burning or burning stands of small diameter trees (jackpot burning) will not occur in ephemeral, intermittent, or perennial stream channels. | Response will be full suppression when firefighter and public safety, property, improvements, or natural resources are threatened. | Created slash will be made available for woody biomass use. If not used for wood-related products, slash will be piled with preexisting fuels and burned, or otherwise used for soil stabilization. Disturbed areas should be immediately revegetated with a native plant community that contains no invasive species and meets other land use objectives, such as wildlife habitat enhancements or recreational-use benefits. | Slash may be lopped and scattered to a thickness of no more than 2 feet deep and be treated later as part of a broadcast burn. Slash may also be piled by hand or machine, and later burned. | Slash would be piled and burned. |

*Note*: ASLD = Arizona State Land Department; ASFD = Arizona State Forestry Division; BA = basal area; BLM = Bureau of Land Management; drc = diameter at root collar; NPS = National Park Service; TNF = Tonto National Forest; WUI = wildland-urban interface.

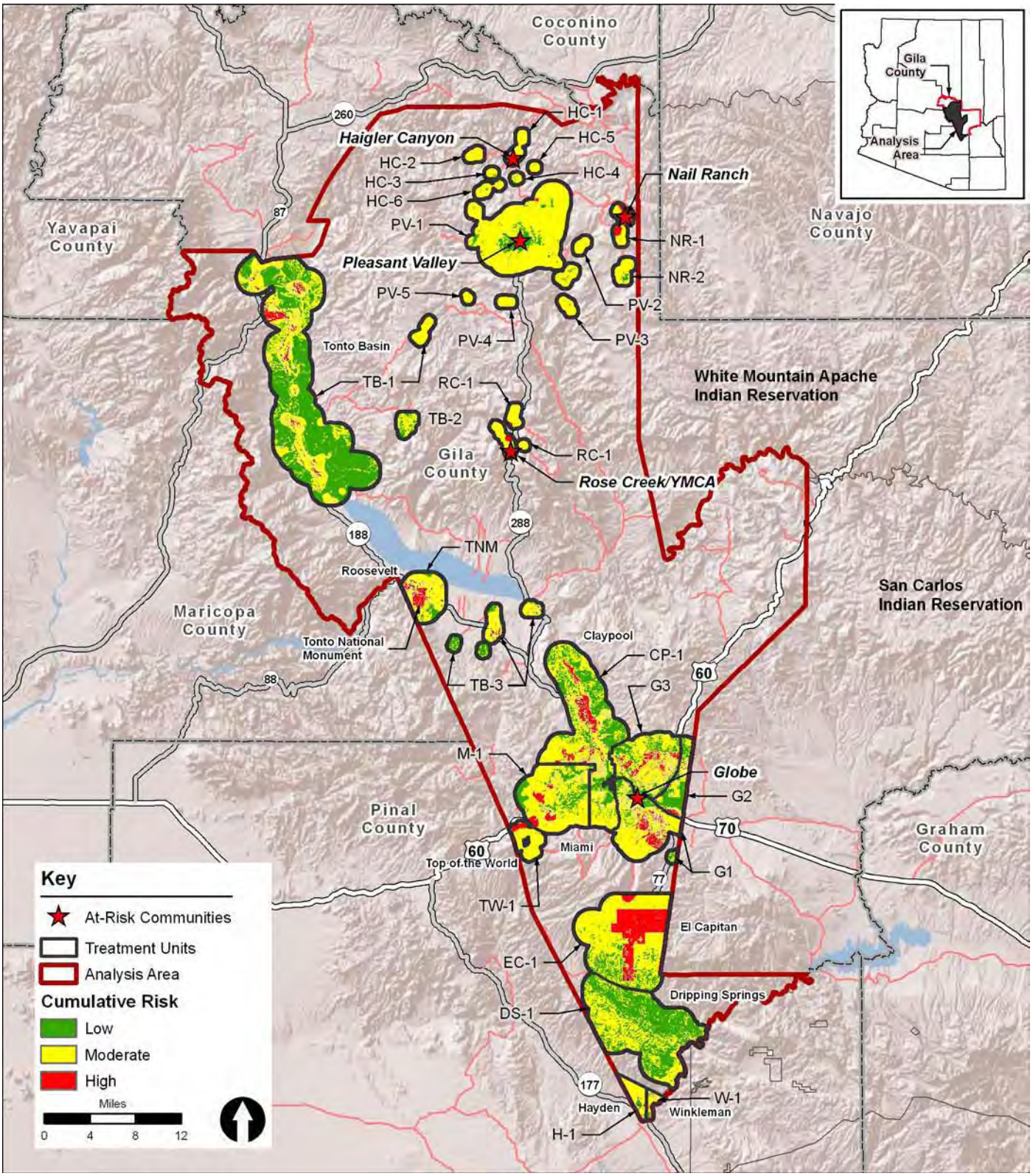


**Figure 3.1.** Gila County CWPP treatment management units

The Core Team described the location of each treatment management unit in the WUI and then assigned recommended treatments for each unit (Table 3.2). The management units listed in Table 3.2 do not always coincide with fire department or district boundaries. Some managmnet units are not located within a fire department or district and therefore have no strutcural fire protection. For example, the Pleasant Valley community sub-WUI is much larger than the fire district bounday, and the El Capitan community is not within a fire department or district.

Private land treatments in the WUI typically occur on small land parcels near power lines, structures, and other obstacles. In many cases, cut trees and slash cannot be piled and burned on small private land parcels, or it is not the preferred slash treatment by the owner of a small residential lot or by the local fire departments. Therefore, the Core Team recommends that slash from wildland fuel reduction treatments on small residential parcels be removed, whole or chipped, and transported to a disposal site. The Core Team does not oppose alternative vegetative treatments, such as an experimental grazing program using primary grazers within the WUI, to achieve wildland fuel mitigation objectives adjacent to state or federal lands. The Core Team also recommends that fallow agricultural lands be restored through the planting of native vegetation species in accordance with Code 550 (Range Planting) of the *National Conservation Practice Standards* (NRCS 2002). The Core Team also recommends that firebreaks constructed on public and private lands to restrict wildland fire movement be maintained in accordance with the above-mentioned mitigation measures and stipulations on a rotating 2- or 3-year interval, or as deemed necessary, to ensure the integrity of the firebreak through removal of fine and light vegetative fuels.

Treatment of wildland fuels within the WUI is expected to generate considerable slash and vegetative waste material. Private individual use of wood products from fuel reduction treatments within the WUI is primarily for fuelwood. Commercial use of the woody material from fuel reduction treatments is also primarily limited to fuelwood, and any commercial value of treatment by-products will not significantly affect land treatment costs. Recent costs of fuels mitigation treatment on BLM lands within the WUI include $100.00 per acre for mowing and $500.00 per acre for mastication. If wildland fuel modification prescriptions require follow-up pile burning or herbicide application after vegetation treatment, the total cost per acre treated could be as high as $500.00 to $1,000.00 per acre on small land parcels consisting mostly of treatments within riparian corridor treatments and as high as $3,500.00 per acre for small acreage treatments in heavy chaparral/timber (USFS and New Mexico Energy, Minerals and Natural Resources Department, Forestry Division 2005; San Juan County Watershed Group 2005; Ken Shaver, BLM, pers. comm. 2009).

The Core Team recommends that when available, wildland fuel modification projects be contracted to ASFD to ensure that treatments are conducted in a timely fashion and at a reasonable cost. The estimates of daily costs, which include a 20-person inmate labor crew and a chipper for a 100-mile roundtrip to the project site by an ASFD crew carrier, are as follows:

- 8-hour day—$750.00
- 10-hour day—$830.00
- 12-hour day—$910.00

**Table 3.2.** Identified treatment management units

| Treatment management unit | Map ID | Risk value | Location and description | Recommended treatment[a] | Total acres | Federal acres | State Trust acres | Nonfederal acres |
|---|---|---|---|---|---|---|---|---|
| **Globe** | G1 | M | City of Globe south of US 60 and west of SR 77 | 1,2,3,4,5,7,9 | 17,407 | 11,668 | 37 | 5,702 |
| | G2 | M | City of Globe north of US 70, east of US 60, including portions of the Globe Hills | 1,2,3,5,8 | 6,769 | 1,141 | 2,650 | 2,979 |
| | G3 | M | City of Globe north of US 60 and west of US 60, including portions of the Globe Hills | 1,2,3,5,8,7,9 | 16,882 | 7,384 | 0 | 9,497 |
| **Pleasant Valley** | PV1 | M | Communities of Pleasant Valley and Young | 1,2,3,4,5,9 | 34,031 | 26,859 | 0 | 7,172 |
| | PV2 | M | Private lands east of Pleasant Valley and west of SR 288 | 1,2,3,4,5,9 | 1,434 | 1,318 | 0 | 116 |
| | PV3 | M | Private lands southeast of Young | 1,2,3,4,5,9 | 1,681 | 1,518 | 0 | 164 |
| | PV4 | M | Private lands south of Young adjacent to SR 288 | 1,2,3,4,5,9 | 1,308 | 1,203 | 0 | 105 |
| | PV5 | M | Private lands southwest of Young | 1,2,3,4,5,9 | 826 | 801 | 0 | 24 |
| **Miami** | M1 | M | City of Miami | 1,2,3,8 | 21,318 | 12,520 | 30 | 8,768 |
| **Claypool** | CP1 | M | Community of Claypool and Tri-City Fire Department boundary with buffer | 1,2,3,8,7,9 | 37,462 | 25,690 | 601 | 1,117 |
| **Tonto National Monument** | TNM | H | Tonto National Monument boundary with buffer | 1,2,3,7 | 8,794 | 8,794 | 0 | 0 |
| **Haigler Canyon** | H1 | H | Private lands near the community of Haigler Canyon | 1,2,3,4,5,6,9 | 2,525 | 2,282 | 0 | 243 |
| | H2 | H | Private lands west of Haigler Canyon | 1,2,3,4,5,6,9 | 1,477 | 1,312 | 0 | 164 |
| | H3 | H | Private lands immediately southwest of Haigler Canyon | 1,2,3,4,5,6,9 | 812 | 789 | 0 | 23 |
| | H4 | H | Private lands southwest of Haigler Canyon | 1,2,3,4,5,6,9 | 775 | 752 | 0 | 23 |
| | H5 | H | Private lands southeast of Haigler Canyon | 1,2,3,4,5,6,9 | 789 | 764 | 0 | 25 |
| | H6 | H | Private lands south and west of Haigler Canyon | 1,2,3,4,5,6,9 | 2,017 | 1,894 | 0 | 123 |
| **Rose Creek/YMCA** | RC1 | H | Private lands near Rose Creek | 1,2,3,6,7,8 | 5,096 | 4,725 | 0 | 371 |

*Continued*

**Table 3.2.** Identified treatment management units

| Treatment management unit | Map ID | Risk value | Location and description | Recommended treatment[a] | Total acres | Federal acres | State Trust acres | Nonfederal acres |
|---|---|---|---|---|---|---|---|---|
| **Tonto Basin** | TB1 | M | Private lands adjacent to SR 188 and SR 87, south on SR 188 to north of Tonto National Monument | 1,2,3,4,5,6,7,8 | 72,088 | 66,636 | 0 | 5,452 |
| | TB2 | M | Private and TNF lands east of SR 188 near Lower Greenback Village | 1,2,3,4,5,6,7,8 | 2,529 | 1,979 | 0 | 550 |
| | TB3 | | Private lands adjacent to SR 188 near the community of Roosevelt | 1,2,3,4,5,6,7,8 | 6,626 | 5,900 | 0 | 726 |
| **Winkelman** | W1 | M | City of Winkelman boundary with buffer | 1,2,3,6,7,8 | 1,508 | 313 | 0 | 1,195 |
| **Hayden** | H1 | L | Incorporated lands of Hayden with buffer | 1,2,3,6,7,8 | 3,056 | 1,024 | 0 | 2,032 |
| **Top of the World[b]** | TW1 | H | Lands west of the Gila County border on US 60 east to Management Unit M1 | 1,2,4,5,9 | 4,678 | 3,820 | 0 | 858 |
| **Nail Ranch** | NR1 | H | Private lands near Nail Ranch with buffer | 1,2,3,6,7,8 | 3,320 | 2,989 | 0 | 331 |
| | NR2 | H | Private lands south of the Nail Ranch development with buffer | 1,2,3,6,7,8 | 2,477 | 2,180 | 0 | 297 |
| **El Capitan** | EC1 | M | Private lands near El Capitan Canyon adjacent to SR 77, north of Dripping Springs and south of Globe, with buffer | 1,2,3,4,7 | 35,820 | 16,197 | 9,108 | 10,514 |
| **Dripping Springs** | DS1 | M | Private lands near Christmas and Dripping Springs adjacent to SR 77, north of Winkelman and south of El Capitan, with buffer | 1,2,3,4,7 | 36,770 | 22,929 | 8,266 | 5,574 |
| **Total acres** | | | | | 330,272 | 235,381 | 20,693 | 74,199 |

*Note*: L = low; M = moderate; H = high; SR = state route; US = US highway.

[a]See Table 3.1 for recommended treatments.

[b]Top of the World west of Gila County is included in the 2009 Pinal County CWPP.

Cost estimates for treatments in the WUI are based on the estimates provided by the ASFD for the Fire and Fuels Crew costs for both federal and nonfederal land treatments (see Table 3.3). The ASFD Fire and Fuels Crews do not remove hazard trees or provide “climbers” for pruning or segmented tree removal sometimes required on private lands. The Core Team supports and encourages local business development that will complement wildland fuel mitigation needs on federal and nonfederal lands in the WUI. Vegetative fuel mitigation costs for this CWPP are estimated to be $700.00 per acre, which is based

on the estimated cost of the ASFD Fire and Fuels Crews to conduct fuel mitigation projects on private and adjacent federal lands.

**Table 3.3.** Acres of wildland fuels mitigation treatment conducted by ASFD Fire and Fuels Crews during an 8-hour on-site workday

| Vegetation association | Average acres per day treated |
|---|---|
| Ponderosa pine/mixed conifer | 0.5 to 1 acre per day |
| Pinyon/juniper | 1 to 2 acres per day |
| Mesquite woodland | 3 to 4 acres per day |
| Oak woodland | 3 to 4 acres per day |
| Riparian | 1 to 2 acres per day (depending on fuel loading) |
| Grassland | 2 to 4 acres per day (depending on grass type and fuel loading) |

The Core Team recommends that private landowners who wish to adopt fuel modification plans other than those described in Table 3.1 have the plan prepared or certified by a professional forester, by a certified arborist, by other qualified individuals, or in conjunction with recommendations from local fire departments or fire districts that reference Firewise or fire-safe guidelines. Fuel modification plans for federal and state lands within 0.5 mile of private lands may be prepared for wildlife and watershed benefits—including the retention of large snags or vegetative patches of high wildlife value in areas more than 600 feet from private lands in which fire resiliency is not impaired and will not compromise public or firefighter safety. A fuel modification plan should identify the actions necessary to promote rangeland, wildlife, or watershed health and to help prevent the spread of fire to adjacent properties by establishing and maintaining defensible space. The action identified by the fuel modification plan should be completed before development of the property or identified during project initiation on federal and state lands.

*Alternate Federal, State, or Private Land Wildland Fuel Modification Plan*

A fuel modification plan for federal and state lands will follow agency procedures, standards, and guidelines. Fuel modification treatment plans for private land parcels should at least include the following information:

- A copy of the site plan
- Methods and timetables for controlling, changing, or modifying fuels on the properties in a timely and effective manner
- Elements for removal of slash, snags, and vegetation that may grow into overhead electrical lines; removal of other ground fuels, ladder fuels, and diseased, dying, and dead trees; and thinning of live trees
- Methods and timetables for controlling and eliminating diseased or insect-infested vegetation
- A plan for the ongoing maintenance of the proposed fuel reduction and control measures for

disease and insect infestations

- A proposed vegetation management plan for groupings of parcels under multiple ownership that has been accepted by all individual owners (subject to compliance with this section)

HFRA was designed to expedite administrative procedures for conducting hazardous wildland fuel reduction and restoration projects on federal lands. Regardless of priority treatments selected for federal lands, an environmental assessment must be conducted for 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 that collaboration be maintained (USFS and BLM 2004a).

The recommended treatments within the Southern Gila County CWPP have been developed to be consistent with federal land-management action alternatives and are intended to comply with and facilitate efficient planning and decision making concerning fuels mitigation treatments or habitat rehabilitation of public and private lands in order to reduce risks to communities caused by severe fires and to restore fire-adapted ecosystems (USFS 2000).

### B. Prevention and Loss Mitigation

The Southern Gila County CWPP will be used as a resource to help coordinate long-term interagency mitigation of potential catastrophic wildfire events in at-risk communities within southern Gila County. The Southern Gila County CWPP Core Team established specific goals for wildland fire prevention and loss mitigation as follows:

- Improve fire prevention and suppression for firefighter and public safety and to protect private property
- Promote community collaboration, involvement, and education
- Recommend measures to reduce structural ignitability in the Southern Gila County CWPP WUI
- Preserve the aesthetics and wildlife values within riparian areas
- Identify funding needs and opportunities
- Expedite project planning through partnerships with ASFD, BLM, and other private and public entities in managing wildfire risk within the WUI

The Southern Gila County CWPP will be reviewed and updated as needed. Successful implementation of this CWPP will require collaboration among numerous government entities and community interests. To maintain acceptable wildland fuel conditions within existing utility corridor rights-of-way and easements adjacent to private lands within the WUI that are at high risk from wildland fire, cooperation from SRP and Arizona Public Service (APS) will be needed. GCDEM, the Core Team, APS, and SRP all recognize the importance and benefits of this collaboration. The Core Team acknowledges existing agreements between SRP, APS, land-management agencies, and private landowners for vegetative treatments within rights-of-way and easements, and agrees that the Southern Gila County CWPP does not bind or obligate SRP and APS to maintain vegetative fuels outside their rights-of-way or easements and beyond their existing

agreements. The Core Team believes that these agreements and future resultant vegetative treatments complement the objectives of the Southern Gila County CWPP. Therefore, at the request of the GCDEM and the Core Team, APS and SRP have agreed to be included as signatories to the Southern Gila County CWPP and to become partners in implementing action recommendations.

The Core Team and collaborators have made the following action recommendations to meet the goals of the Southern Gila County CWPP.

### 1. Administer and Implement the Southern Gila County CWPP

- Establish a Southern Gila County CWPP Working Group—composed of Southern Gila County fire chiefs, GCDEM, ASFD, BLM, NPS, TNF, community members, concurring agencies, and members of the Core Team—to coordinate individual agency implementation of the recommendations for fuel modification, public outreach, protection capability, and structural ignitability within the Southern Gila County CWPP WUI, including fuel hazards removal on private lands within the WUI.

### 2. Improve Protection Capability and Reduction in Structural Ignitability

The Southern Gila County CWPP Core Team considers the risks of wildland fire igniting and spreading throughout the WUI a serious threat. The Core Team and collaborators believe that actions to reduce risk and promote effective responses to wildland fires must be undertaken. The following are recommendations to enhance protection capabilities for at-risk communities within southern Gila County:

- Obtain a medium-size water tender for local use by fire departments and districts; strategically locate additional water-storage tanks, wells, or other water sources for tender filling throughout the fire departments and districts; maintain helicopter landing sites; and update mapping capabilities of local fire departments and districts.
- Encourage fire departments and districts to participate in annual multiagency wildfire safety training before the fire season.
- Encourage subdivisions and communities that are not within a fire department or district to take actions necessary to be annexed by an existing fire district or to establish their own fire department to provide viable fire protection services.
- Obtain a chipper/shredder, tub grinder, air curtain destructor, and other equipment necessary for treatment and processing of vegetative slash for use by local fire departments and districts for wildland fuel mitigation projects.
- Obtain one multipurpose utility vehicle with attachments for chipping, brush cutting, and mini-water tending, such as the Bobcat Toolcat.
- Acquire GIS and GPS (Global Positioning System) software and laptops to update mapping capabilities of local fire departments and districts.
- Arrange for the acquisition, operation, and maintenance of a green-waste disposal site within reasonable proximity to the southern Gila County communities and encourage the use of the

disposal site for all vegetative material removed during wildland fuel treatments on private lands within the WUI.

- Provide enhanced and coordinated firefighting training and equipment, such as personal protective equipment (PPE) and second-generation fire shelters, for newly certified wildland firefighters and volunteer firefighters.
- Develop and maintain mutual-aid agreements with neighboring fire departments or districts for wildland and structural fire response support and other emergency response.
- Meet annually with representatives from APS and SRP to mutually identify locations of needed vegetative treatments within rights-of-way in high-risk areas of the WUI and support the Core Team in obtaining grants and agreements necessary to implement vegetative fuel reduction projects adjacent to rights-of-way.
- Develop a pre-suppression plan with BLM, NPS, and USFS along the boundary of the WUI.
- Develop additional wildland fire preplans for all high-hazard locations across southern Gila County where they have not been adopted.
- Meet annually, immediately before the fire season, to coordinate early suppression deployment and to determine training and equipment needs.

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

GCDEM, BLM, NPS, TNF, ASFD, local fire departments and districts, and the Core Team will continue developing and implementing public outreach programs to help create an informed citizenry. The goal is to have residents support concepts of Firewise or fire-safe landscaping and naturally functioning wildland systems through restoration management and rapid response to wildland fire. The Southern Gila County CWPP is intended to be a long-term strategic instrument containing prescriptive recommendations to address hazardous fuels. A grassroots collaborative structure of individual citizens, supported by local governments as full partners, will provide the most effective long-term means to achieve these goals and to maintain community momentum. The components of such a structure include the following recommendations:

- Assist in implementing a Firewise Communities/USA Recognition program in communities where the program is supported by the local fire departments and districts. The Firewise Communities approach emphasizes community and individual responsibility for safer home construction and design, landscaping, and maintenance. The Core Team will also help identify high-priority communities that would most benefit from a Firewise Communities program.
- 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 districts, and the development of specific promotional materials by the Core Team.
- Place fire-danger information signs on major access roads throughout the WUI. Community bulletins and other public service announcements concerning wildfire threat and preparedness

should be developed with assistance from ASFD, BLM, NPS, TNF, and southern Gila County fire departments.

- Place and maintain bilingual wildfire caution signs within camping areas and access routes in some areas of the WUI.
- Complete wildfire home assessments through the use of Redzone software, or an equivalent software system, and submit wildfire hazard mitigation strategies to landowners for each private property assessed within highest-risk communities.
- Replace and maintain fencing adjacent to high-use and illegal off-road-vehicle use areas within or adjacent to the WUI.

### 4. Encourage Use of Woody Material from WUI Fuel Mitigation Programs

The Core Team and their collaborators will continue to support and promote private contractors who perform Firewise or fire-safe mitigation work. The County will continue to support and promote new businesses involved in the wildland fuel reduction market. GCDEM, NPS, TNF, BLM, and local fire departments and districts are committed to encouraging, as appropriate, the use of vegetative by-products from the WUI fuel management program for use by commercial entities or community service organizations. Possible by-product uses encouraged by the Core Team include the following:

- Bagged mesquite wood for sale to visitors and larger community markets as “campfire cooking” for commercial or personal culinary uses
- Firewood marketed to local residents, visitors, and adjacent communities
- Mesquite, pinyon, and juniper wood marketed for artwork, furniture, and other specialty wood products

# IV. SOUTHERN GILA COUNTY CWPP PRIORITIES: ACTION RECOMMENDATIONS AND IMPLEMENTATION

The Core Team has developed action recommendations (see Section III of this CWPP) necessary to meet Southern Gila County CWPP objectives. A series of recommendations that will reduce structural ignitability, improve fire prevention and suppression, and enhance public outreach have also been developed by the Core Team.

To meet Southern Gila County CWPP objectives, the Core Team developed the following action recommendations. At the end of each year, projects implemented from these action recommendations will be monitored for effectiveness of meeting Southern Gila County CWPP objectives. For the life of the Southern Gila County CWPP, recommendations for additional projects will be made for each future year on the basis of project performance from previous implemented projects.

## A. Administrative Oversight

Generally, the most efficient way to manage the mitigation of wildland fire threat in the WUI is through identifying, delegating, implementing, and monitoring the action recommendations of the Southern Gila County CWPP. Establishing a unified effort to collaboratively implement the Southern Gila County CWPP embraces adaptive management principles that enhance decision making and reduces inconsistency at all levels of government.

The Core Team recommends the establishment of a Southern Gila County Community CWPP Working Group to work with the Core Team and concurring agencies to accomplish the recommendations for outreach and structural ignitability within the southern Gila County CWPP WUI area, which include fuel hazards removal on private lands within the WUI. The CWPP Working Group should consist of representatives from local fire departments and districts and, as needed, representatives from GCDEM, ASFD, ASLD, TNF, NPS, BLM, and other concurring agencies. The Core Team may solicit communities that are not serviced by a fire department or district, as well as other interested individuals or agencies, to participate in the CWPP Working Group. GCDEM will be the lead agency responsible for coordinating the CWPP Working Group and producing monitoring reports and any updates to the CWPP.

The CWPP Working Group will prioritize wildland fuel modification, structural ignitability, protection capability, and public outreach projects listed in the approved Southern Gila County CWPP, and will review these priority recommendations for possible reprioritization. Fuel modification and community planning and outreach will be prioritized by the CWPP Working Group as a whole; other projects involving firefighter training, equipment, communications, facilities, and apparatus will be recommended by the fire chiefs from southern Gila County or their representatives in the CWPP Working Group.

The CWPP Working Group is expected to be an advocate for and provide support to fire departments and districts or other agencies in the submittal of grant applications and the solicitation of other funding opportunities to implement wildland fuel modification, structural ignitability, protection capability, and public outreach projects established as priorities by the CWPP Working Group. Additionally, individual agencies and fire departments and districts will be able to seek letters of support from the CWPP Working Group or

partner agencies in applying for funding to implement projects identified as priorities by the CWPP Working Group.

The CWPP Working Group will also compile monitoring and reporting documents from cooperating agencies to provide information on additional measures necessary to meet Southern Gila County CWPP goals, including additional future recommendations from fire departments and districts and other agencies for inclusion in the priorities list. The CWPP Working Group may also act as an advisory group to the Gila County Planning and Zoning Department and to developers in outlying areas to ensure adequate public safety access and to provide vegetation mitigation and landscaping recommendations, water supplies for emergency services, and recommendations for establishing and funding fire services and equipment in residential and commercial developments.

The following general criteria will be used for prioritizing proposed projects and action items:

1. Geographic/fuel-load/residential density:
    a. In any given year, the CWPP Working Group will evaluate countywide weather, vegetation, and fuel-load conditions and projections, as well as current residential and commercial densities, to determine short-term priority adjustments for projects in all WUI areas of the county for that year.
    b. In any given year, the CWPP Working Group will evaluate the progress of new developments and increasing residential and commercial densities to determine potential needs and priorities within the WUI for the next 3 years following that given year.
2. Categorical/functional criteria—priorities will generally be established as listed below; these priorities are subject to review and change by the CWPP Working Group on an ongoing basis:
    a. Fuel modification projects (projects in the WUIs listed in Table 4.1 that are within the jurisdictions of fire departments and districts, TNF, BLM, NPS, or ASFD will have first priority)
    b. Enhanced wildland firefighter training and acquisition of personal protection equipment (PPE)
    c. Wildland-fire suppression equipment and tools, including brush engines and tenders
    d. Water-storage sites and supply facilities
    e. Community planning and outreach activities, including warning signs/systems and identification and improvement of evacuation routes
    f. Helicopter landing pads for firefighter deployment or evacuation
    g. Fire stations in areas with sufficiently high threat and population densities as determined annually by the CWPP Working Group
    h. Annexation of communities with no fire protection services by an existing fire district
    i. Other communications projects

The agencies involved in the formation of this plan support local community efforts and will work with the communities as needed to accomplish action items. BLM, TNF, NPS, ASFD, GCDEM, and fire departments and districts will coordinate fuel mitigation projects on state, public, and forest lands, and also within SRP and APS utility corridors adjacent to private lands, within the WUI in cooperation with the future-established CWPP Working Group. The Core Team and the proposed CWPP Working Group will be responsible for submitting grants and soliciting other opportunities to implement wildland fuel mitigation

projects on private lands and to support public information, education, and outreach within the WUI. Successful award of grant funds will be used to implement the action recommendations for private land treatments, mitigation features for reduced structural ignitability, firefighting response, and public outreach. BLM, TNF, NPS, ASFD, GCDEM, fire departments and districts, and the Core Team will pursue funding to construct and maintain firebreaks as well as broader applications of wildland fuel mitigation projects within the WUI. Monitoring and reporting compiled by the CWPP Working Group will provide information on additional measures necessary to meet Southern Gila County CWPP goals.

### B. Priorities for Mitigation of Hazardous Wildland Fuels

Table 4.1 displays the priority for constructing firebreaks and landscape wildland fuel treatments within the WUI as recommended by the Core Team. These action recommendations will reduce wildfire potential to the communities and have high valuations for reducing wildland fire risk. The Core Team recognizes that not all acres within a high-risk landscape can be treated. Site-specific analysis will determine treatment acres and methods that produce a fire-resilient vegetative stand appropriate for the habitat.

### C. Identified Action Items for Protection Capability and Reduced Structural Ignitability

The Core Team and collaborators will evaluate; maintain; and, where necessary, upgrade community wildfire preparation and response facilities, capabilities, and equipment. Table 4.2 lists the identified action items proposed by the Core Team for consideration by individual fire departments and districts for reduced structural ignitability and public outreach within their respective jurisdictions. Table 4.3 lists the future recommendations for wildland fire protection and reduced ignitability.

After the ASFD's final approval of the Southern Gila County CWPP, the CWPP Working Group will meet to prioritize projects for the upcoming year and, thereafter, at least annually to reevaluate projects and reallocate priorities as needed. Such countywide prioritization will not impinge on or interfere with the fire departments' and districts' rights to independently seek funding for projects within their jurisdictions without CWPP Working Group support.

**Table 4.1.** Action recommendations for wildland fuel modification

| Management area | Location and description | Project partner | Estimated treatment cost[a] |
|---|---|---|---|
| NR1 | Private lands in the vicinity of Nail Ranch with buffer | GCDEM and TNF | 1,659 high-risk acres, 30% of lands to be treated over 3 years estimated to be 553 acres/year in FY 2012–15 = $387,0.00/year<br>Cost estimated to average $700.00/acre on federal, ASLD, and private lands |
| TW1 | Lands along US 60 to the south of the community of Top of the World | GCDEM, ASFD, and TNF | 618 high-risk acres, 30% of lands to be treated over 3 years estimated to be 206 acres/year in FY 2012–15 = $144,200.00/year<br>Cost estimated to average $700.00/acre on federal, ASLD, and private lands |

| | | | |
|---|---|---|---|
| G1 | City of Globe south of US 60 and west of SR 77, including the area of Pinal Peak | GCDEM, TNF, Globe Fire Department, and Canyon Fire District | 1,904 high-risk acres, 30% of lands to be treated over 3 years estimated to be 635 acres/year in FY 2012–15 = $444,270.00/year<br>Cost estimated to average $700.00/acre on federal, ASLD, and private lands |
| TB1 | Area east of SR 188 east of the community of Tonto Basin/Roosevelt | GCDEM, TNF, and Tonto Basin Fire District | 1,793 high-risk acres, 30% of lands to be treated (riparian acres) over 3 years estimated to be 538 acres/year in FY 2011–14 =$376,600.00/year<br>Cost estimated to average $700.00/acre on tribal lands |
| EC1 | Private lands in the vicinity of El Capitan Canyon adjacent to SR 77 north of Dripping Springs and south of Globe with buffer | GCDEM, ASFD, and BLM | 8,994 high-risk acres, 30% of lands to be treated (riparian acres) over 3 years estimated to be 3,000 acres/year in FY 2011–14 = $209,860.00/year<br>Cost estimated to average $700.00/acre on private lands |
| CP1 | Community of Claypool and Tri-City Fire Department boundary, especially adjacent to SR 88 north of Claypool and south of Salt River Peak with buffer | GCDEM, Tri-City Fire Department, and TNF | 3,038 high-risk acres, 30% of lands to be treated (riparian acres) over 3 years estimated to be 1,012 acres/year in FY 2011–14 = $708,890,000.00/year<br>Cost estimated to average $700.00/acre on private lands |
| Firebreak maintenance | 1- to 2-year rotating maintenance of fine and light fuels in Firebreaks NR1, TW1, G1, TB1, EC1, and CP1 | ASLD, ASFD, TNF, GCDEM, and participating fire departments and districts | 500 acres/year of light understory fuel treatments in excess of 4 acres treated/10-hour day at $830.00/day = $415,000.00/year |

*Note*: ASFD = Arizona State Forestry Division; ASLD = Arizona State Land Department; CP = Claypool; EC = El Capitan; FY = fiscal year; G = Globe; GCDEM = Gila County Department of Emergency Management and Public Health Preparedness; NR = Nail Ranch; SR = state route; TB = Tonto Basin; TNF = Tonto National Forest; TW = Top of the World; US = US highway.

[a] Total acres to be treated during the life of the plan; one-third of acres estimated to be treated based on site-specific analysis, which will determine actual acres available for treatment in each area.

**Table 4.2.** Action recommendations for structural ignitability and public outreach

| Project partner | Project[a] | Specific recommendation | Estimated cost | Timeline |
|---|---|---|---|---|
| GCDEM and southern Gila County fire departments and districts | **E1**—Wildland Fire Protection and Reduced Ignitability | Purchase one Type 3 fire engine | New acquisition with standard equipment: $320,000.00 | Begin grant applications in 2012; purchase in 2015 |
| GCDEM and southern Gila County fire departments and districts | **E1**—Wildland Fire Protection and Reduced Ignitability | Purchase one Type 6 fire engine | New acquisition with standard equipment: $131,000.00 | Begin grant applications in 2012/2013; purchase in 2014/2015 |
| GCDEM, TNF, NPS, ASFD, ASLD, and associated fire departments and districts | **A1**—Wildland Fire Protection and Reduced Ignitability | Construct a series of 5,000-gallon water-storage facilities located strategically throughout residential areas | Install water-storage facilities/year: $5,000.00/facility | Locate and install one water-storage facility in 2014 |
| GCDEM and associated fire departments and districts | **A2**—Enhanced Public Education, Information, and Outreach | Wildfire public education brochures | Produce and publish community-specific wildfire informational brochures | Begin grant applications in 2011; continue on an ongoing basis starting in 2011 |
| GCDEM, TNF, ASFD, ASLD, and associated fire departments and districts | **A2**—Enhanced Public Education, Information, and Outreach | Work with land agencies for the acquisition, operation, and maintenance of a green-waste disposal site within reasonable proximity to community | Locate and coordinate with land management agency; excavate pit and fence: $20,000.00 | Begin planning with agencies in FY 2011/12; implement in FY 2012/13 |
| | **A3**—Enhanced Public Education, Information, and Outreach | Create fire-safety and fire-awareness posters for public places | Development, printing, and distribution costs: $5,000.00 | Solicit funds for production and printing in 2012; publish and post in 2012 |

*Note*: ASFD = Arizona State Forestry Division; ASLD = Arizona State Land Department; FY = fiscal year; GCDEM = Gila County Department of Emergency Management and Public Health Preparedness; NPS = National Park Service; TNF = Tonto National Forest.

[a] Projects are designated by project type (E = equipment; A = administrative) but not ranked in order of importance.

**Table 4.3.** Future recommendations for wildland fire protection and reduced ignitability

| Project partner | Project[a] | Equipment/expense | Timeline |
|---|---|---|---|
| GCDEM, ASFD, TNF, BLM, and associated fire departments and districts | **E5**—Obtain a medium-size water tender to better traverse rural landscape than larger units | 1,500-gallon water tenders, 4-wheel drive: $185,000.00 | Acquire tender in FY 2013/14; assess additional tender needs in FY 2014/15 |
| GCDEM, ASFD, TNF, NPS, BLM, and associated fire departments and districts | **A5**—Work with Gila County to develop a notification and evacuation plan for the community | Staff time, coordination efforts, research, and meetings: $5,000.00 | Begin planning in FY 2013/14; implement in FY 2014 |
| GCDEM, ASFD, TNF, BLM, APS, SRP, and associated fire departments and districts | **A6**—Work with SRP and APS on vegetative management treatments within and adjacent to utility corridors where opportunities exist on private lands | Staff time, coordination efforts, research, and meetings: $5,000.00 | Begin planning in FY 2013/14; implement in FY 2014 |

*Note*: APS = Arizona Public Service; ASFD = Arizona State Forestry Division; BLM = Bureau of Land Management; FY = fiscal year; GCDEM = Gila County Department of Emergency Management and Public Health Preparedness; NPS = National Park Service; SRP = Salt River Project; TNF = Tonto National Forest.

[a] Projects are designated by project type (E = equipment; A = administrative) but not ranked in order of importance.

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

The GCDEM and the Core Team will implement public outreach and education programs for residents to heighten awareness and understanding of the threat that wildland fire poses to the communities.

Table 4.4 lists the Core Team's priority recommendations for promoting community involvement. Additional programs that could be used or developed to enhance community outreach and education may be implemented in the future. The Core Team will use the resources of the ASFD, TNF, NPS, and BLM for additional public education programs and community outreach. Community bulletins and other public service announcements concerning wildfire threat and preparedness should be developed with assistance from local fire departments and districts, ASFD, TNF, NPS and BLM.

**Table 4.4.** Future recommendations for enhanced public education, information, and outreach

| Project partner | Project[a] | Equipment/expense | Timeline |
|---|---|---|---|
| GCDEM, TNF, BLM, NPS, ASFD, and associated fire departments and districts | **A7**—Establish and maintain roadside fire-danger warning signs and other informational and directional road signs along major roads as determined by the CWPP Working Group | Construction and placement: $5,000.00 | Construct and implement in FY 2013/14 |
| | **A8**—Create and distribute community bulletins | Development, printing, and distribution costs: $5,000.00 | Develop in FY 2012; distribute continually |
| | **I2**—Acquire Redzone, or equivalent software, and field data recorders or PDAs to complete home fire assessments and implement fire-safe recommendations | Software and data recorder: $1,300.00<br>Assessment completion: $2,000.00 | Acquire software and complete assessments in FY 2012/13; implement recommendations in FY 2013 |
| | **I3**—Encourage private businesses that perform Firewise land treatments; encourage market development of WUI by-products from vegetative fuel mitigation programs | Marketing plan to be developed | Initiate community marketing planning meetings in FY 2012 |
| | **I4**—Replace and maintain fencing adjacent to high OHV use areas | Assess in 2012; initial plan for 1 mile of new or repaired fencing | Estimate $6,000.00m per mile of standard 4-wire fencing |

*Note*: ASFD = Arizona State Forestry Division; BLM = Bureau of Land Management; CWPP = community wildfire protection plan; GCDEM = Gila County Department of Emergency Management and Public Health Preparedness; NPS = National Park Service; FY = fiscal year; OHV = off-highway vehicle; PDA = personal digital assistant; TNF = Tonto National Forest; WUI = wildland-urban interface.

[a] Projects are designated by project type (A = administrative; I = infrastructure) but not ranked in order of importance.

# V. MONITORING PLAN

Monitoring is essential to ensure that Southern Gila County CWPP goals are met. The Southern Gila County CWPP Core Team, local fire departments and districts, GCDEM, ASFD, TNF, NPS, and BLM will actively monitor the progress of the Southern Gila County CWPP action recommendations to determine the effectiveness of ongoing and completed projects in meeting Southern Gila County CWPP objectives, as well as to recommend future projects necessary to meet Southern Gila County CWPP goals.

In accordance with Section 102.g.5 of HFRA, Southern Gila County CWPP communities will participate in any multiparty monitoring program established by state and federal agencies, or other interested parties, to assess progress toward meeting Southern Gila County CWPP objectives. The Core Team believes that participation in multiparty monitoring will provide effective and meaningful ecological and socioeconomic feedback on landscape and site-specific fuel reduction projects and watershed enhancements and will also help BLM, TNF, NPS, ASFD, ASLD, GCDEM, southern Gila County municipalities, and fire departments and districts with future land management planning.

This section details the performance measures that will be used to assess the effectiveness of implementing the Southern Gila County CWPP action recommendations. Monitoring will include assessing and evaluating the implementation of individual Southern Gila County CWPP projects and a given project's effectiveness in furthering Southern Gila County CWPP objectives.

## A. Administrative Oversight, Monitoring, and Southern Gila County CWPP Reporting

The CWPP Working Group—composed of southern Gila County fire chiefs, GCDEM, TNF, ASFD, ASLD, NPS, BLM, and other future-identified interested individuals and agencies requested to participate in the CWPP Working Group by the Core Team—will be mutually responsible for implementing and monitoring the Southern Gila County CWPP action recommendations in coordination with a future-established CWPP Working Group. The CWPP Working Group should identify appropriate grant and other funding mechanisms necessary to implement the action recommendations of the Southern Gila County CWPP. Grant information should be routinely searched to identify updated grant application cycles. the following is a list of federal, state, and nongovernmental Web sites that provide updated information about grant application cycles:

### Federal

- www.fs.fed.us/r3
- www.fs.fed.us/r3/partnerships/
- www.fireplan.gov
- www.firegrantsuport.com
- www.az.nrcs.usda.gov
- www.blm.gov/az
- www.firewise.org
- www.ncwg.gov

**State**

- www.azsf.az.gov
- www.azgfd.gov
- www.cals.arizona.edu/firewise
- www.southwestareagrants.org

**Nongovernmental**

- www.iwjv.org
- www.sonoran.org
- www.iafc.org

As needed, GCDEM, in coordination with the future-established CWPP Working Group, will produce a report detailing implementation of Southern Gila County CWPP projects and overall progress toward meeting Southern Gila County CWPP goals. The CWPP Working Group should report successful grant awards received for implementing the Southern Gila County CWPP action recommendations to the Southern Gila County CWPP signatories. The CWPP Working Group's report will also include recommendations to the signatories for updating the Community Mitigation Plan and the Prevention and Loss Mitigation Plan portions of the Southern Gila County CWPP, through the use of the principles of adaptive management. This information will ensure timely decision making for all levels of government and will provide input necessary for developing future work plans and for prioritizing project recommendations over the life of the Southern Gila County CWPP. Appendix A provides information on the data used in the analysis of the Gila County CWPP and the appropriate contacts for updating the Southern Gila County CWPP. Once the Southern Gila County CWPP is updated, it will be submitted to GCDEM, ASFD, all cooperating fire departments and districts, municipal governments, SRP, APS, TNF, NPS, and BLM for their concurrence. Once concurrence is achieved, the action recommendations of the revised Southern Gila County CWPP are to be forwarded for funding through HFRA and other appropriate funding sources.

## B. Effectiveness Monitoring

Table 5.1 outlines the performance measures that the CWPP Working Group will use to assess Southern Gila County CWPP performance against goals for the fiscal year. In addition to monitoring the listed performance measures, the CWPP Working Group should assess the current status of wildland fuel hazards and look for any new or developing issues not covered by the Southern Gila County CWPP. As new issues arise, such as new invasive-species infestations, further risks and recommendations for treatment should be identified, and the CWPP should be revised as necessary to meet Southern Gila County CWPP goals. To help track fuel treatments planned and completed through local, state, and federal programs, the CWPP Working Group will provide requested detailed mapping information to the ASFD.

**Table 5.1.** Performance measures to assess Southern Gila County CWPP progress

| Goal | Performance measure |
|---|---|
| Improve fire prevention and suppression | Reduction of wildland fire occurrence and acres burned (unplanned) in the WUI:<br>• Green-waste disposal sites available in high-risk communities.<br>• Type 3 fire engine acquired.<br>• Type 6 brush truck acquired.<br>• Effectiveness monitoring of fire prevention and suppression will include the following:<br>  • Acres burned and degree of severity of wildland fire<br>  • Percentage of wildland fire controlled on initial attack<br>  • Number of homes and structures lost to wildland fire<br>• New water sources developed in key areas.<br>• Consistent fire training in use.<br>• Wildland firefighter PPE acquired as needed. |
| Reduce hazardous vegetative fuels | Effective treatment of high-risk areas by acre:<br>• Number of treated acres of nonfederal WUI lands in Condition Class 2 or 3 are identified as high priorities by the Southern Gila County CWPP and should be moved to Condition Class 1 or another acceptable level of wildland fuel loading and continuity.<br>• Acres treated to acceptable fuel levels within priority treatment management areas.<br>• Total acres treated through any fuel-reduction measures, including prescribed fire, that are conducted in, or adjacent to, the WUI. The change of condition class should be determined for small projects or treatment areas through the use of the LANDFIRE database |
| Restore watershed health | Acres of fuel reduction or watershed enhancement treatments that meet restoration treatment guidelines for riparian habitats:<br>• Coordination with and support of GCDEM, ASFD, ASLD, TNF, NPS, and BLM in implementing and determining social, economic, and environmental effects of riparian restoration treatments (Treatments 6 and 9, see Table 3.1 in mitigation plan).<br>• Acres of saltcedar-invaded riparian areas identified and undergoing restoration treatments. |
| Promote community involvement | Initiation of public outreach programs:<br>• Countywide community CWPP Working Group initiated.<br>• Public outreach programs and promotions implemented to enhance volunteer efforts to reduce hazardous fuels.<br>• Number and areas (community or dispersed residents) of private landowners supporting and implementing fuel reduction projects.<br>• GCDEM and local fire departments and districts developed and implemented evacuation plans for identified high-risk areas.<br>• Roadside fire-danger warning signs in English and Spanish installed at strategic points within the WUI.<br>• Fire-awareness articles printed in local newspapers.<br>• Fire-safety awareness program, posters, and information available in public places. |
| Encourage economic development | Wood-products industry growth and diversification to use all sizes of material removed by fuel reduction treatments:<br>• Number of value-added wood products developed by the community.<br>• Number of new markets (local firewood sales) for local products created. |

*Note*: ASFD = Arizona State Forestry Division; ASLD = Arizona State Land Department; BLM = Bureau of Land Management CWPP = community wildfire protection plan; GCDEM = Gila County Department of Emergency Management and Public Health Preparedness; NPS = National Park Service; PPE = personal protection equipment; TNF = Tonto National Forest; WUI = wildland-urban interface.

# VI. Declaration of Agreement and Concurrence

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

## Agreement

| | |
|---|---|
| Gila County Board of Supervisors | Date |
| City of Globe | Date |
| City of Miami | Date |
| City of Winkelman | Date |
| City of Hayden | Date |
| Arizona Public Service Company | Date |
| Salt River Project | Date |
| Chief, Globe Fire Department | Date |
| Chief, Canyon Fire Department | Date |
| Chief, Tri-City Fire Department | Date |
| Chief, Miami Fire Department | Date |
| Chief, Hayden Fire Department | Date |

Chief, Winkelman Fire Department — Date

Chief, Tonto Basin Fire Department — Date

Chief, Pleasant Valley Fire Department — Date

## Concurrence

Arizona State Forester, Arizona State Forestry Division — Date

Gila District Manager, Bureau of Land Management — Date

Forest Supervisor, Tonto National Forest — Date

Superintendent, Tonto National Monument — Date

## VII. REFERENCES

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# APPENDIX A. INFORMATION DATA SHEET AND CONTACTS

All final-analysis GIS data—including flammability analysis, fuel hazards analysis, ignition history and density, community values analysis, cumulative risk analysis, treatment management units, and areas of elevated concern—are located at the Gila County Department of Emergency Management and at Logan Simpson Design Inc.

## A.1. CWPP Base Information Data Source

| Name | Type | Source | Contact Information |
|---|---|---|---|
| Wildland Fuel Hazards | Shapefile | Logan Simpson Design Inc. | Chris Thompson (480) 967-1343; cthompson@logansimpson.com |
| Wildland-Urban Interface (WUI) | Shapefile | Logan Simpson Design Inc. | Chris Thompson (480) 967-1343; cthompson@logansimpson.com |
| Vegetation Zones | Raster | Southwest Regional Gap Analysis Project (USGS 2005) | http://earth.gis.usu.edu/swgap/ |
| Landownership | Shapefile | Arizona State Land Department, Land Resources Information System (20071029) | Gary Irish (602) 542-2605 |
| Ignition History | Shapefile | Bureau of Land Management | http://wildfire.cr.usgs.gov/firehistory/ |

## A.2. Southern Gila County CWPP Contacts

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# APPENDIX B. NATIONAL FIRE DANGER RATING SYSTEM FUEL MODEL SELECTION KEY

**I. Mosses, lichens, and low shrubs predominate ground fuels**

A. Overstory of conifers occupies more than one-third of the site

*Model Q*

B. No overstory, or it occupies less than one-third of the site

*Model S*

**II. Marsh grasses and/or reeds predominate**

*Model N*

**III. Grasses and/or forbs predominate**

A. Open overstory of conifer and/or hardwoods

*Model C*

B. No overstory

1. Woody shrubs occupy more than one-third but less than two-thirds of the site

*Model T*

2. Woody shrubs occupy less than two-thirds of the site

a. Grasses and forbs are primarily annuals

*Model A*

b. Grasses and forbs are primarily perennials

*Model L*

**IV. Brush, shrubs, tree reproduction, or dwarf tree species predominate**

A. Average height of woody plants is 6 feet or greater

1. Woody plants occupy two-thirds or more of the site

a. One-fourth or more of the woody foliage is dead

(1) Mixed California chaparral

*Model B*

(2) Other types of brush

*Model F*

b. Up to one-fourth of the woody foliage is dead

*Model Q*

c. Little dead foliage

*Model O*

2. Woody plants occupy less than two-thirds of the site

   *Model F*

B. Average height of woody plants is less than 6 feet

1. Woody plants occupy two-thirds or more of the site
   a. Western United States

      *Model F*

   b. Eastern United States

      *Model O*

2. Woody plants occupy less than two-thirds but greater than one-third of the site
   a. Western United States

      *Model T*

   b. Eastern United States

      *Model D*

3. Woody plants occupy less than one-third of the site
   a. Grasses and forbs are primarily annuals

      *Model A*

   b. Grasses and forbs are primarily perennials

      *Model L*

**V. Trees predominate**

A. Deciduous broadleaf species predominate

1. Area has been thinned or partially cut, leaving slash as the major fuel component

   *Model K*

2. Area has not been thinned or partially cut
   a. Overstory is dormant; leaves have fallen

      *Model E*

   b. Overstory is in full leaf

      *Model R*

B. Conifer species predominate

1. Lichens, mosses, and low shrubs dominate as understory fuels

   *Model Q*

2. Grasses and forbs are the primary ground fuel

   *Model C*

3. Woody shrubs and/or reproduction dominate as understory fuels
   a. Understory burns readily

(1) Western United States

*Model T*

(2) Eastern United States

(a) Understory is more than 6 feet tall

*Model O*

(b) Understory is less than 6 feet tall

*Model D*

b. Understory seldom burns

*Model H*

4. Duff and litter, branch wood, and tree boles are the primary ground fuel

a. Overstory is over mature and decadent; heavy accumulation of dead debris

*Model G*

b. Overstory is not decadent; only a nominal accumulation of debris

(1) Needles are 2 or more inches long (most pines)

(a) Eastern United States

*Model P*

(b) Western United States

*Model U*

(2) Needles are less than 2 inches long

*Model H*

**VI. Slash predominates**

A. Foliage is still attached; little settling

1. Loading is 25 tons/acre or greater

*Model I*

2. Loading is less than 25 tons/acre but greater than 15 tons/acre

*Model J*

3. Loading is less than 15 tons/acre

*Model K*

B. Settling is evident; foliage is falling off; grasses, forbs and shrubs are invading

1. Loading is 25 tons/acre or greater

*Model J*

2. Loading is less than 25 tons/acre

*Model K*