Village of Angel Fire

Community Wildfire Protection Plan

2022 Update

Forest Stewards Guild
putting the forest first

VILLAGE OF ANGEL FIRE NEW MEXICO

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Executive Summary

The 2022 Village of Angel Fire Community Wildfire Protection Plan (CWPP) documents, updates, and formalizes the past efforts and future ambitions of key partners in the area to make residents and forests better able to safely coexist with increasing wildfire frequency and severity. Since the previous CWPP in 2016 much has changed in the Village of Angel Fire, and this updated CWPP captures those changes. The updates in the 2022 CWPP account for progress made among fire professionals in the Village of Angel Fire, changed circumstances, and new statewide and federal plans.

This plan assesses the wildfire preparedness needs in the Village of Angel Fire, including building capacity for implementing wildfire risk reduction projects in partnership with land management agencies, the use of prescribed fire, as well as education and outreach through both the Firewise and Fire Adapted Communities programs. This plan uses data from the 2020 NM Forest Action Plan and attempts to align with planning efforts related to Shared Stewardship, the Forest and Watershed Restoration Act, and many other efforts to address wildfire risk reduction and watershed health across boundaries.

In many ways, the process of developing this CWPP is as important as the document itself. With that in mind, we encourage Core Team members and Village of Angel Fire residents to think of this document as an actionable plan and work collaboratively to move from planning into implementation.

The most important elements of this CWPP are the priority actions and priority fuels projects that guide future actions to prepare for wildfire in the Village (Table 2). These were developed in consultation with the Core Team and community stakeholders and are the heart of the CWPP. By fulfilling these recommendations, the Village of Angel Fire will have a chance to become better prepared for wildfire and grow the resilience to recover from one.

This CWPP is intended to inform existing planning efforts across the Village of Angel Fire and the State of New Mexico. To use this document most effectively, users are advised to find areas of overlap between priority areas in the 2020 NM Forest Action Plan, Shared Stewardship priorities between the US Forest Service and NM State Forestry Division, priority action items within this community-level CWPP, priority actions within the Colfax County CWPP, and priorities within Source Water Protection Plans. Planning projects in areas where priorities overlap in high-risk areas will improve the likelihood of receiving funding.

The following sections provide more detail on wildfire preparedness in general to clarify the recommendations in the priority action tables, recommendations for post fire recovery, the collaboration process used in this CWPP update, the WUI and Communities at Risk update process, and the fire threat analysis process.

Introduction

What is a Community Wildfire Protection Plan?

A Community Wildfire Protection Plan (CWPP) sets a community on the right path towards being prepared for wildfire. This takes many forms but what we have highlighted in this plan are the priority actions that residents and entities in the Village of Angel Fire should take to prepare the Village, its lands, and its residents for wildfire. These priority actions are formed through the recommendations of a diverse group of dedicated stakeholders called the Core Team. Just as important as the recommendations in this plan though is the process of forming the Core Team and keeping that team together to act on the recommendations of the plan.

The federal government has recognized that many communities in the United States live in or near fire adapted ecosystems that often bring inherent risks of wildfire. The Healthy Forest Restoration Act (HFRA) (Public Law 108-148 2003) acknowledges this and the fact that the federal government cannot provide funds to reduce hazardous wildland fuels for all communities at risk. The HFRA therefore established a mechanism to prioritize communities at risk to ensure that federal funds to reduce hazardous fuels go to those communities at highest risk. This mechanism is the CWPP (Public Law 108-148 2003). With a completed CWPP a community or group of communities can apply for federal funds appropriate to reduce hazardous fuels or other prioritized actions that have been identified through the CWPP process.

The minimum requirements for a CWPP as described in the Healthy Forests Restoration Act are:

(1) Collaboration: A CWPP must be collaboratively developed by local and state government representatives, in consultation with federal agencies and other interested parties.

(2) Prioritized Fuel Reduction: A CWPP must identify and prioritize areas for hazardous fuel reduction treatments and recommend the types and methods of treatment that will protect one or more at-risk communities and essential infrastructure.

(3) Treatment of Structural Ignitability: A CWPP must recommend measures that homeowners and communities can take to reduce the ignitability of structures throughout the area addressed by the plan.

The HFRA requires that three entities mutually agree to the final contents of a CWPP:

- The applicable city or county government:
- The local fire department(s); and
- The state entity responsible for forest management.

Preparing a Community Wildfire Protection Plan: A Handbook for Wildland-Urban Interface Communities was released in 2004 and provided a basic outline for CWPP preparation. This was supplemented in 2008 by the more exhaustive *Community Guide to preparing and implementing a Community Wildfire Protection Plan.* Both guidance documents can be accessed at: https://www.forestsandrangelands.gov/resources/communities/index.shtml. These guidance documents are excellent and the links and resources section in the 2008 document is especially useful for CWPP implementation and tracking accomplishments and progress.

CWPP Updates

Planning efforts periodically need updating. The New Mexico Fire Planning Task Force recommends that CWPPs be updated every five years in order to assess new hazards and monitor progress made since the last CWPP update. This evaluation can generate new ideas, recommendations, or changes. Building community resilience to wildfire requires an adaptive approach that uses the lessons of the past to inform future management. It is important to remember that this CWPP update is a living document. As new information becomes available and conditions on the ground change, priorities may need to be updated.

In 2021, the New Mexico Association of Counties (NMAC), in collaboration with New Mexico State Forestry (NMSF) and the Forest Stewards Guild (FSG), developed guidelines for updating CWPPs (EMNRD, 2021). The 2021 guidelines were designed to improve CWPP effectiveness based on actual experiences from the planning process. You can view these guidelines in full by visiting: https://www.emnrd.nm.gov/sfd/wp-content/uploads/sites/4/State-Forestry-CWPP-Requirements-2021.pdf

How to Use this CWPP Document

CWPPs are the best process we have for organizing wildfire risk reduction projects across jurisdictional boundaries at the local level, in this case that is the community-level. The community risk ratings in this plan (high, medium, and low), as well as the priority action items can be used to build rationale for a proposed treatment within funding proposals. For example, a wildfire risk reduction project that is documented as a priority action in the CWPP that is located within or adjacent to a high-risk community will receive stronger consideration for funding from New Mexico State Forestry Division, New Mexico Counties, the US Forest Service, and many other potential funders.

Community-level CWPPs are best used in tandem with planning efforts at the County and State of New Mexico level. Finding areas where priority actions in high-risk communities identified in this CWPP align with NM State Forestry's priority areas in the 2020 NM Forest Action plan or in the Shared Stewardship priorities between NM State Forestry and the US Forest Service, will enhance project proposals by providing clear rationale for State Forestry and the US Forest Service fund proposed actions. To work effectively with NM State Forestry and US Forest Service, use the Shared Stewardship portal to explore and propose actions within Shared Stewardship priority areas: https://nmssp.org/#/

Much of the Village of Angel Fire has been identified within the 2020 NM FAP and within the Shared Stewardship priorities as high priority in the Enchanted Circle Priority Area (Figure 1).

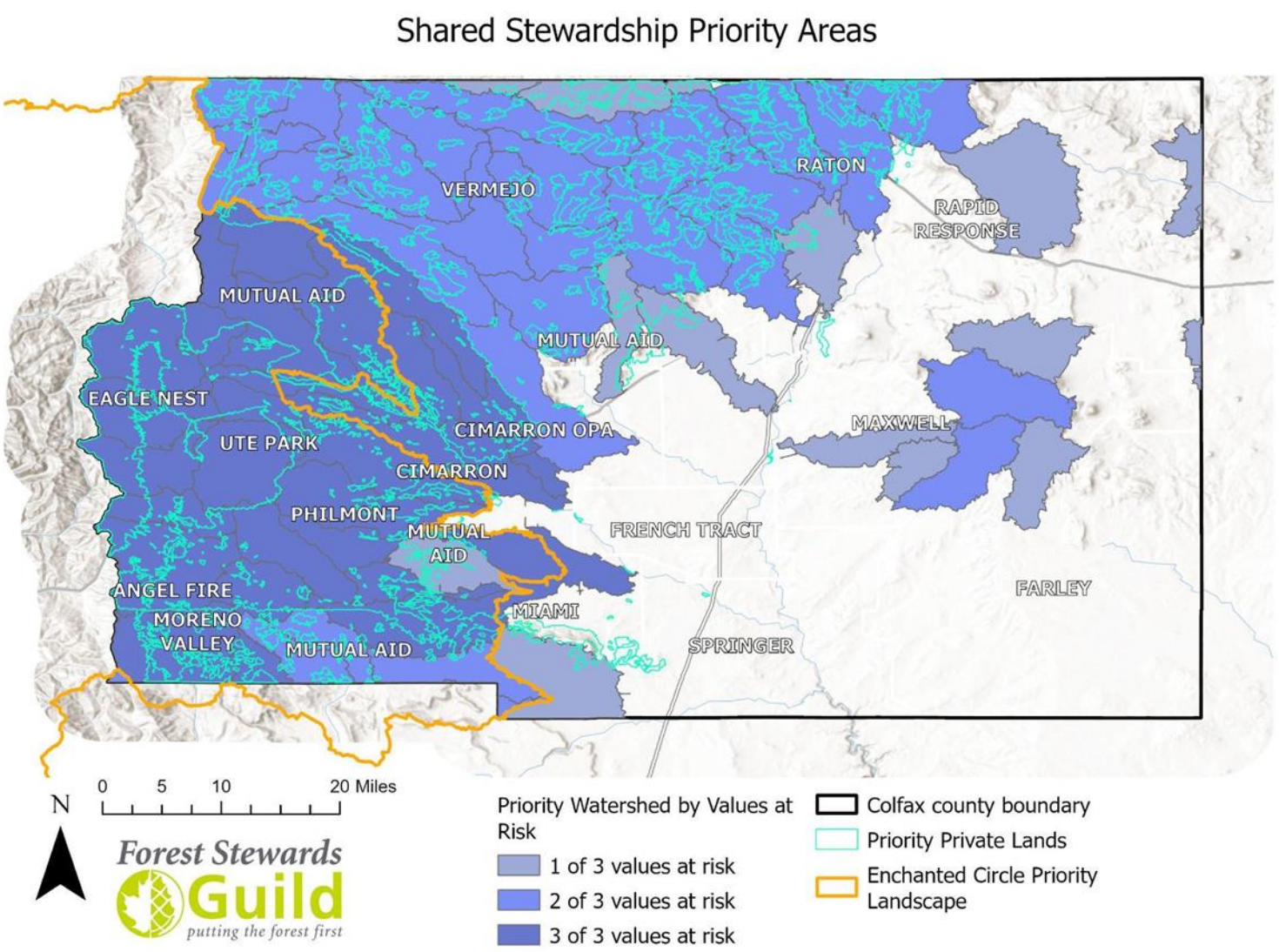


Figure 1 Enchanted Circle Priority landscape and Shared Stewardship Priority Watershed Areas

Previous and Ongoing Wildfire Planning in the Village of Angel Fire

2016 Community Wildfire Protection Plan

In accordance with the Healthy Forests Restoration Act (HFRA) of 2003, the Village completed a CWPP in 2016. The previous Village of Angel Fire CWPP was written in 2016 by the Forest Stewards Guild. It is available on the Forest Stewards Guild's website:

https://foreststewardsguild.org/wp-content/uploads/2022/05/Village-of-Angel-Fire-CWPP-2016.pdf

The previous plan covers in great detail the background information for the CWPP, including the wildfire risk reduction accomplishments from 2009-2016, community hazard ratings and priority rankings, cross-walk between companion plans, a general wildfire preparedness section, a post-fire recovery section, and a description of the collaborative process that contributed to the plan. Although at the time of the 2022 CWPP Update for Village of Angel Fire this information is at least 14 years old, much of it is still valid. Therefore, the 2022 CWPP Update only includes information from the 2016 CWPP where applicable. We encourage readers to refer to the 2016 plan for any background information on this 2022 Update.

The 2022 CWPP Update greatly expands on concrete recommendations to advance wildfire preparedness and features upgraded mapping of values and wildfire risk.

County Level Wildfire Protection Plans

Colfax County is in the process of updating the County-wide CWPP. The CWPP update process for Colfax County and Village of Angel Fire were aligned through joint-CWPP meetings where stakeholders were supported in providing information to both planning efforts.

Upon completion the 2022 Colfax County CWPP update will replace the existing CWPP, which is currently available on the Forest Stewards Guild's website:

https://foreststewardsguild.org/wp-content/uploads/2022/05/Colfax-County-CWPP_2008.pdf

Accomplishments since 2016 CWPP

There have been many accomplishments that have advanced the Village of Angel Fire's wildfire preparedness since 2016. One goal of a CWPP update is to catalog these accomplishments and determine how wildfire risk has been reduced. The following listing is a synopsis of accomplishments identified during the compilation of the 2022 CWPP Update. Presumably many other important accomplishments occurred that are not listed here. Refer to Figure 6 for a summary of all fire and fuel treatment areas in the county.

Thinning and Fuel Breaks

Village of Angel Fire

- Via del Rey and El Camino thinning
- Non-Federal Lands (NFL) grant on girlscouts camp through NM State Forestry Division
- Defensible space thinning in nearby Taos Pines community
- Large fuel breaks and containment lines related to the Calf Canyon/Hermit's Peak wildfire (undetermined locations as of 06/27/22)

US Forest Service-Carson National Forest

- Palo Flechado thinning
- Pueblo Ridge thinning
- Baca Canyon thinning
- Arra and La Jara fuel breaks along boundary between Carson NF and Village of Angel Fire
- Large fuel breaks and containment lines related to the Calf Canyon/Hermit's Peak wildfire (undetermined locations as of 06/27/22)

NM State Trust Lands

- Black Lake thinning and prescribed fire south of Village of Angel Fire
- Upper Coyote Creek/Elk Ridge FAWRA Project

Wildfire and Prescribed fire

- 2013 White's Peak Fire (~1275 acres) lighting caused ignition
- 2018 Ute Park Fire (36,740 acres) unknown ignition
- 2016 and 2021 Black Lake thinning and prescribed fire on neighboring State Trust Lands
- Apache and La Jara prescribed fires on neighboring Carson NF
- 2022 Cooks Peak Fire (Ongoing: 59,359 acres as of 5/12/2022) human ignition, under investigation
- 2022 Calf Canyon and Hermit's Peak wildfire (341,735 acres as of 6/26/22)

Planning

- Carson National Forest - La Jara, and Valle Vidal projects on adjacent land
- Taos Pueblo - Pueblo Ridge RTRL project
- State Land Office – White's Peak project
- New Mexico State Forestry – Cimarron Range and Upper Coyote Creek, Elk Ridge projects through the Forest and Watershed Restoration Act (FAWRA)

Colfax County

- Worked with State to put together a BAER team for the 2018 Ute Park Fire.
- 2022 Colfax County CWPP update

Community Organizations

- VAF Fire Adapted Communities committee has organized annual days with landowners organized by FD
- VAF Fire Adapted Communities committee in Angel Fire (AF) helped AF-City Council pass a defensible space ordinance; provision in which AF bills homeowners $10-$12 monthly for wood waste
- The nearby Taos Pines Firewise group has thinned many private properties and set a good example for neighboring communities.

Companion Plans

This community-level CWPP is intended to be used in tandem with existing planning efforts across Colfax County and the State of New Mexico. To use this document most effectively, we recommend finding areas of overlap between priority areas in the 2020 NM Forest Action Plan, Shared Stewardship priorities between the US Forest Service and NM State Forestry Division, and priority action items within this CWPP. Planning projects in areas where priorities overlap will improve the likelihood of receiving funding.

FAP 2020

The 2020 New Mexico Forest Action Plan (EMNRD 2020) (FAP) identifies many forestlands and WUI areas within and surrounding the Village of Angel Fire as high to very high priority areas for intervention. The FAP provides detailed information about the state's natural resources, including threats to resources, resource assets, risks to resources, and data gaps, as well as a series of strategies to manage forest and watershed resources at risk.

The forestlands surrounding Village of Angel Fire are identified as among those with the highest wildfire risk to biodiversity, human communities, and water supplies in the state. The watersheds of the Moreno Valley and the Cimarron Range and the Cimarron River are among the top ranging watersheds at risk of wildfire in the state according to the plan's assessment maps. As a result, the private forestlands surrounding the Village in Colfax county rank high in the state priority ranking for shared stewardship funding and technical support. Additionally, the FAP ranked the estimated attainment percentage of any projects around the Moreno Valley and in the Cimarron Range regarding risks to biodiversity, communities, and water resources among the highest in the state.

Effective implementation of the CWPP will, therefore, greatly contribute to the goals of the FAP and to the reduction of risks to biodiversity, communities, and water resources in the county. The following sections describe several other plans and planned initiatives that support the CWPP through specific and local actions.

Cimarron Watershed Alliance Plans

The Cimarron Watershed Alliance has several planning documents that have been developed which pertain to watershed health with a special emphasis on surface water resources. The 2017 update to the Cimarron Watershed Based Plan, a 2017 Moreno Valley Wetlands Action Plan, and a 2022 Cimarron Watershed Restoration Plan funded by a grant from the Bureau of Reclamation WaterSMART program. The Cimarron watershed contains ten different ecoregions within its 671,147 acres. Most of the watershed is in the Southern Rocky Mountain Ecoregion (476,114 acres). The rest of the watershed is in the Southwestern Tablelands Ecoregion of the Great Plains to the east.

Each ecoregion has diverse ecological conditions, management regimes, and challenges. Some regions are impacted more profoundly by legacy management problems, in particular steep terrain is less resilient to impact. Most of the steeper terrain is forested with forests covering more than half of the watershed. Because many of the forests are headwaters in the steeper parts of the Cimarron watershed, forest management has an outsized impact on quality and quantity of water that reaches lower elevations.

The CWA worked with Ecotone Landscape Planning to collaborate with stakeholders to define forest management goals. "An Overview of Forest Management Priorities for Improving Water Storage Opportunities in Headwater Catchment Areas in the Upper Cimarron Watershed, New Mexico", summarizes the importance of forest management in the watershed. The in-depth report that examines the intersection of forest management and water, "Water Storage Opportunities in Headwater Catchment Areas in the Upper Cimarron Watershed, New Mexico" can be accessed online at: https://www.usbr.gov/watersmart/cwmp/docs/2018/applications/phase1/009-CWMP-Cimmaron.ARC_508.pdf

NM Rural Water Users Association

The New Mexico Water Association (NMRWA) provides technical assistance and training to public drinking water systems throughout the state. NMRWA's Source Water Protection Program works with public water systems to identify potential threats to their drinking water and develop a plan to address these threats. An important focus of NMRWA's Source Water Protection Program is articulating the relationship between drinking water systems and wildfire and postfire effects.

Graham prepared the Village of Angel Fire Source Water Protection Plan in 2016 that identified wildfire and postfire effects as potential threats and sources of contamination to the Village's drinking water. In 2017, Graham worked with the Philmont Scout Ranch, New Mexico Environment Department, and Daniel B. Stephens and Associates to prepare a Source Water Protection Plan that again identified wildfire and postfire effects as potential threats to Philmont's many drinking water sources. Work on the Philmont Scout Ranch Source Water Protection Plan was set aside in 2018, due in part to the Ute Park Fire.

Wildfire and postfire impacts can affect both groundwater and surface water systems. Effects on groundwater systems can be less direct and immediate than for surface water systems – for example, contamination of groundwater from damaged septic and other wastewater systems. Wildfires and postfire processes can impact the rate of runoff and sedimentation into surface water sources, including turbidity, the type and quantity of nutrients (especially nitrogen), and total suspended solids. Some types of heavy metals, fallout radionuclides, cyanide, polychlorinated biphenyls (PCBs), are also typically present in floods originating from burn areas. The presence of any of these substances may require additional testing and/or treatment of the water source to ensure that it meets safe drinking water standards.

In addition to applying the standard fire hardening and defensible space practices to water utility structures and other infrastructure, recommendations to the Village of Angel Fire and Philmont Scout Ranch included providing land managers and emergency responders with information about the water systems' critical infrastructure; participating in CWPP updates; and coordinating on forest treatments.

Geospatial Analysis and Map Descriptions

Additional information regarding the maps in Figures 5-11 is available in Table 1.

Fire Threat Analysis

To guide the creation of the CWPP it's crucial to identify areas of the greatest wildfire threat so that actions can be prescribed to fit the conditions on the ground (Williams et al., 2013; Brummel et al., 2010). Using a data-driven process to locate these treatments can lead to better outcomes and a better cost-benefit ratio (Low et al. 2010). An accurate assessment of hazards can also inspire action as stakeholders and residents see the threat they are confronted with (Jakes et al, 20017). Wildfire risk is determined by finding the intersection of where areas of hazard occur with values that are placed at risk by that hazard (Bar Massada et al. 2009).

To establish a rating of wildfire risk for Communities at Risk the stakeholders of the CWPP core team used a collaborative process to identify important values in the county, including human infrastructure such as homes, communication towers, or powerlines, as well as areas that provide key ecological

services such as primary watersheds (Fleeger, 2008). By determining the fire hazard rating at those values, a preliminary assessment of the fire risk was made. This risk assessment was then modified by adjusting ratings according to local knowledge. Even though the threat map does not show the conditions of any one real-world fire, it shows how fires under a single set of modeled fuel and weather conditions will burn across the entire county to aid in comparing one area relative to another area.

To support this process we used spatial data from the recent 2020 NM Forest Action Plan that takes into account fuel and topographic conditions (EMNRD, 2020). These data estimate wildfire hazard as a function of burn probability and conditional fire intensity.

Wildfire threat data combines landscape burn probability and conditional fire intensity into a single pixel value that identifies the fire threat for that pixel. The wildfire threat map provides a way to compare one area to another. Ultimately the threat of a wildfire, its intensity and probability of it occurring, combined with its likelihood to impact values at risk such as communities and communication points (Scott et al., 2013) will determine the priority of wildfire preparation and mitigation across the village.

Before this map can be used to determine wildfire risk it is important to understand its assumptions and limitations. The modeling that is depicted in the maps below uses historical weather conditions observed by Remote Automated Weather System (RAWS) from each predictive services area and historical ignitions of fires over 300 acres (from 1992-2011).

Additionally, the modeled conditions are based on assumptions of fuel data from 2012 LANDFIRE. The wildfire threat map does not reflect changes in fuel conditions from fuel treatments or wildfires since 2012. To account for these changes, we include a map of forest treatments and wildfire boundaries to use in tandem with our wildfire threat analysis. It's crucial to understand that the wildfire threat map is simply a model based on one set of conditions that we chose to closely match reality as possible. Actual fires in and around the Village of Angel Fire could be influenced by an infinite set of weather conditions that are not represented in this model.

However, given these limitations, this model will give stakeholders in the CWPP process a visual basis to help frame what they already know about wildfire hazards. The threat map shows how fires under a single set of conditions will burn across the entire Village to aid in comparing one area relative to another area.

Wildfire Threat

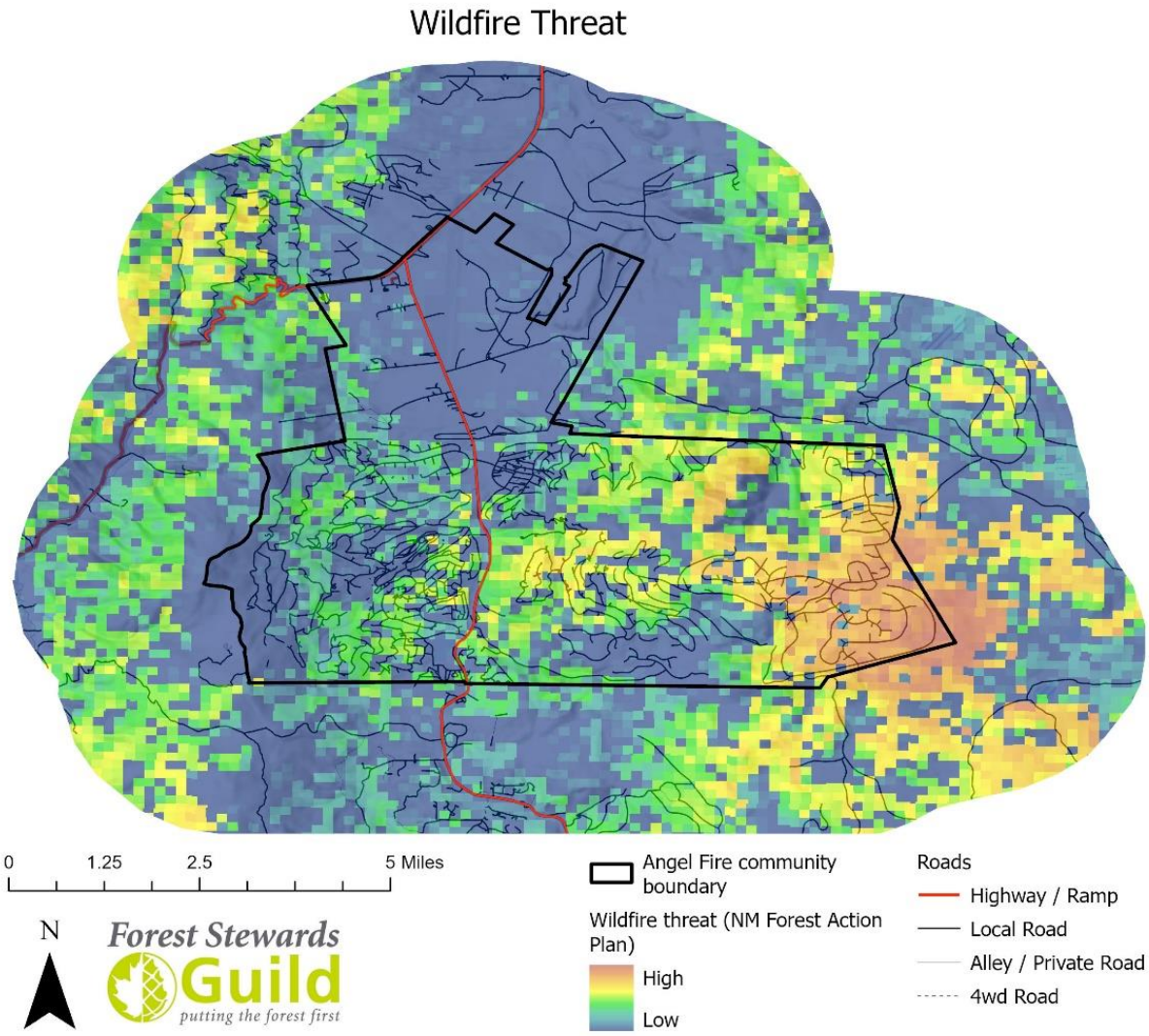


Figure 2 Wildfire Threat Map

Wildland Urban Interface

The Wildland-Urban Interface Map Includes:

- Address Locations and Values at risk – NM address point data provided point data for all addresses in the county, these points were visually verified and buffered at .2 miles.
- Microsoft Building Footprints – this data set contains computer identified building footprints across all 50 states. This data captures building locations that may not have been included in address data. This data was inspected and cleaned for use in the Village of Angel Fire. Verified points were buffered at .2
  miles. https://wiki.openstreetmap.org/wiki/Microsoft_Building_Footprint_Data
- Primary Escape Routes – The Colfax County GIS departments provided maps of all inventoried roads. The Core team identified primary escape routes and these buffered at a tenth of a mile.
- Cell towers and Radio Repeaters- The Colfax County GIS department provided a map of locations and they were buffered at a quarter mile.
- Powerlines – Major transmission lines were buffered at a tenth of a mile to indicate areas that are more prone to ignitions and should be considered for treatment.
- Utility Infrastructure – Major solar and wind utility installations were included and buffered at .2 miles.
- Recommendations of the Core Team - This data was further amended based on new construction identified from satellite imagery and recommendations and knowledge of the Core Team.

Wildland-Urban Interface

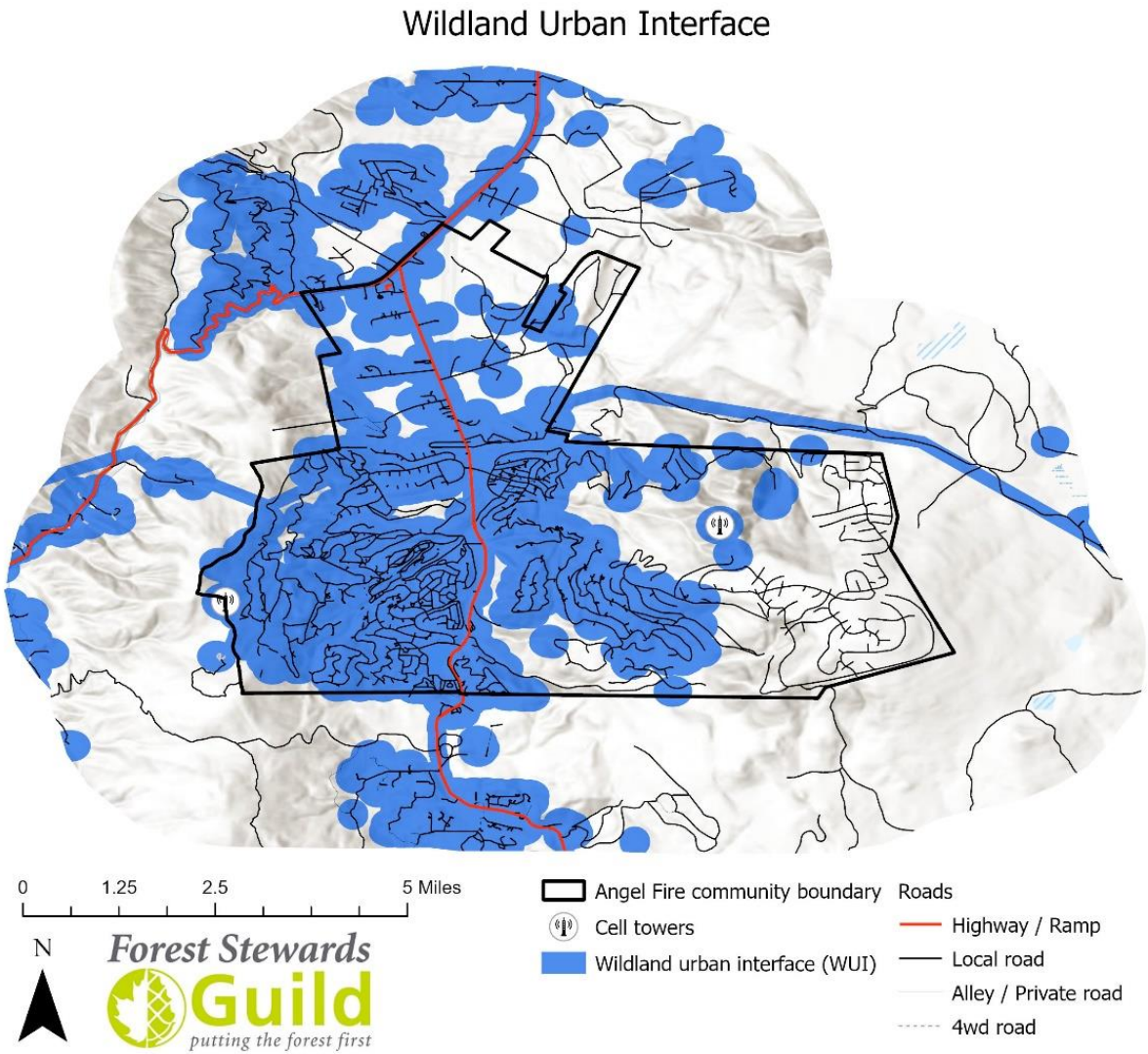


Figure 3 Wildland-Urban Interface (WUI) map

Surface Ownership

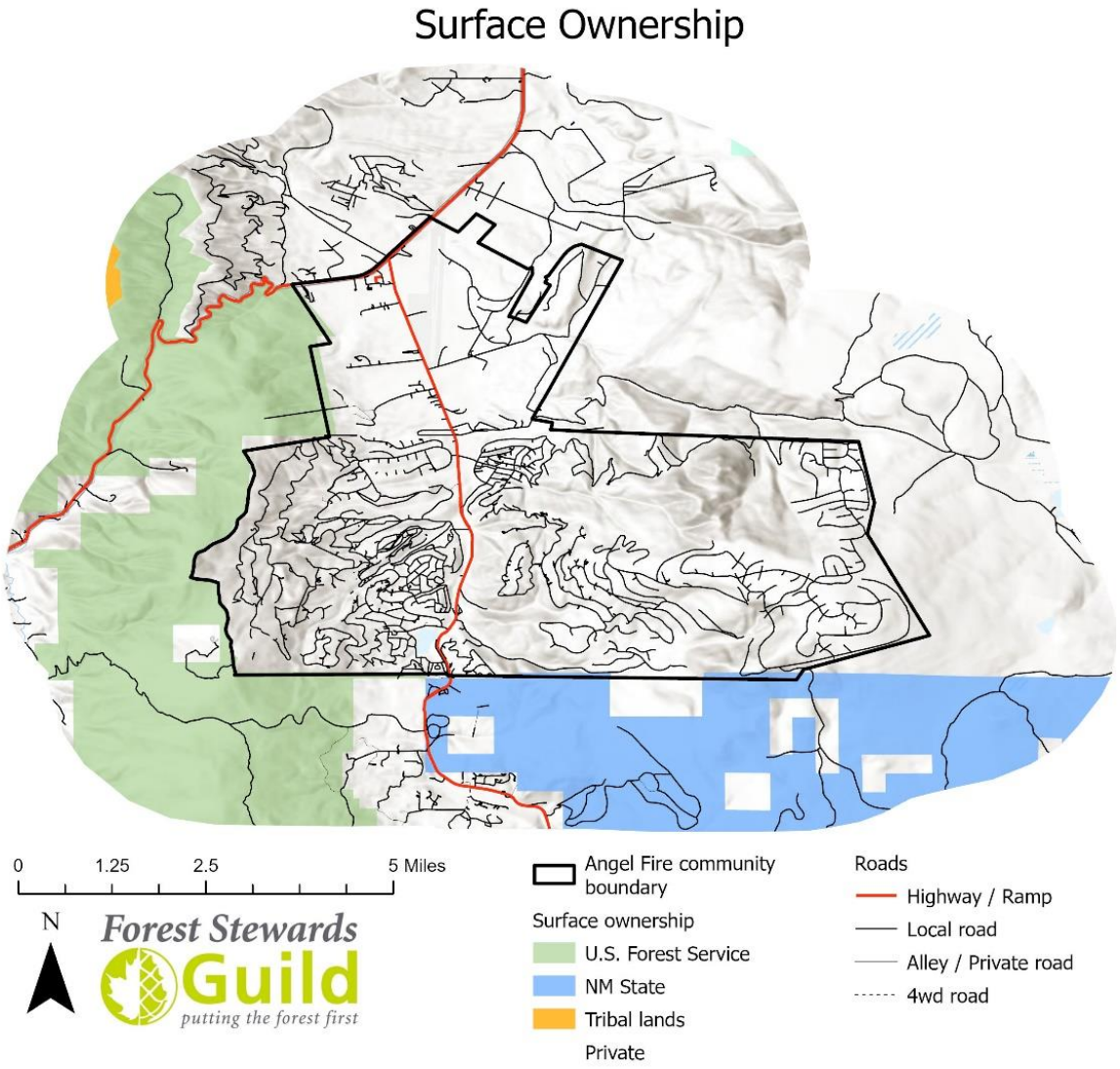


Figure 4 Surface Ownership Map

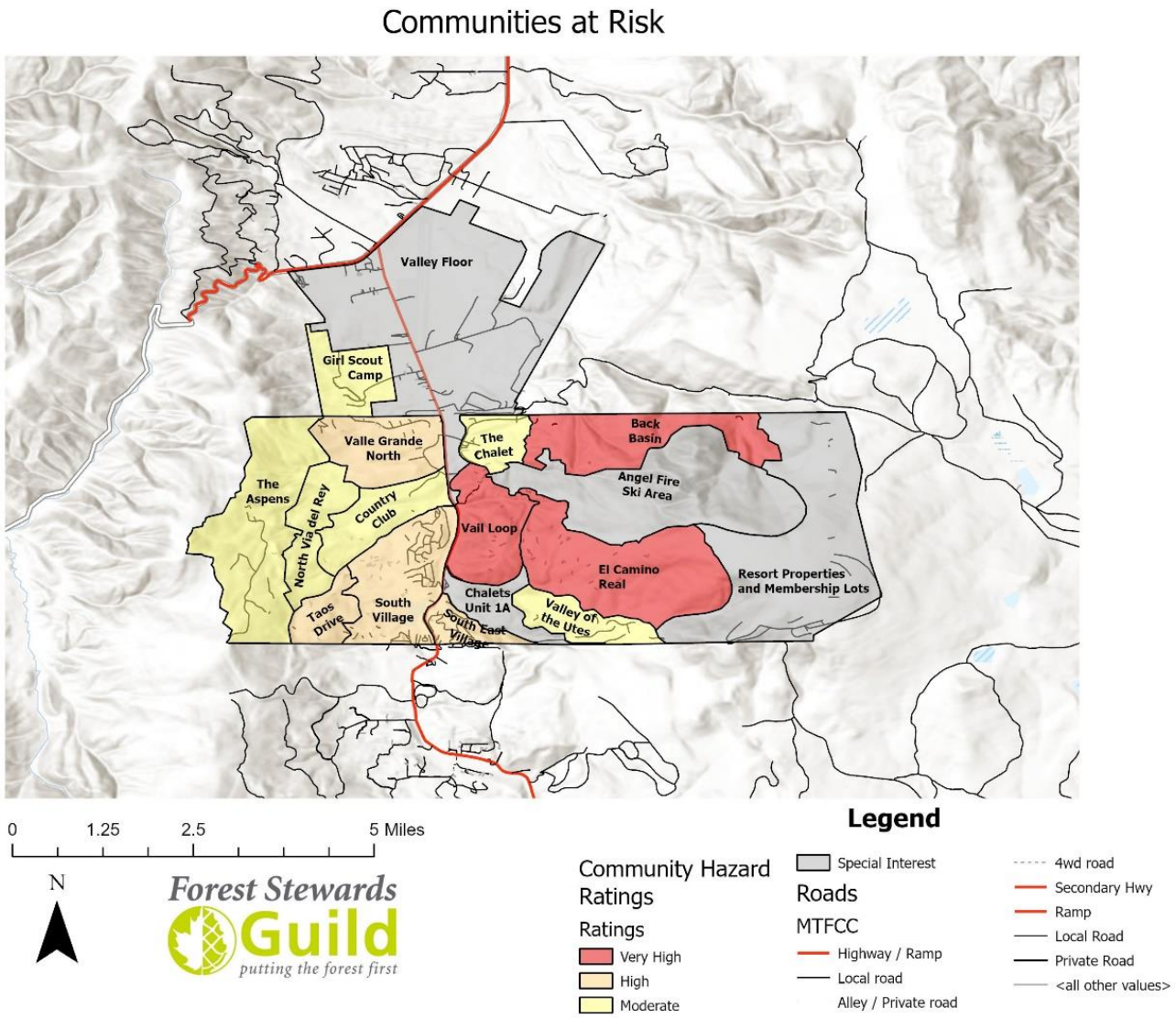


Figure 5 Communities at Risk Map

Fuel Treatments and Wildfires

Fuel treatments and prescribed fires were identified from direct outreach to project partners and the New Mexico Forest Treatments map. This map is a collaborative effort to record and make available key data about projects that are occurring across all jurisdictions in New Mexico to facilitate well informed decision making for future planning. It is hosted by the New Mexico Forest and Watershed Restoration Institute (NMFWRI) and managed by the NMSF Division's Forest and Watershed Health Office. The fuel treatments on the map are lumped into 5 types:

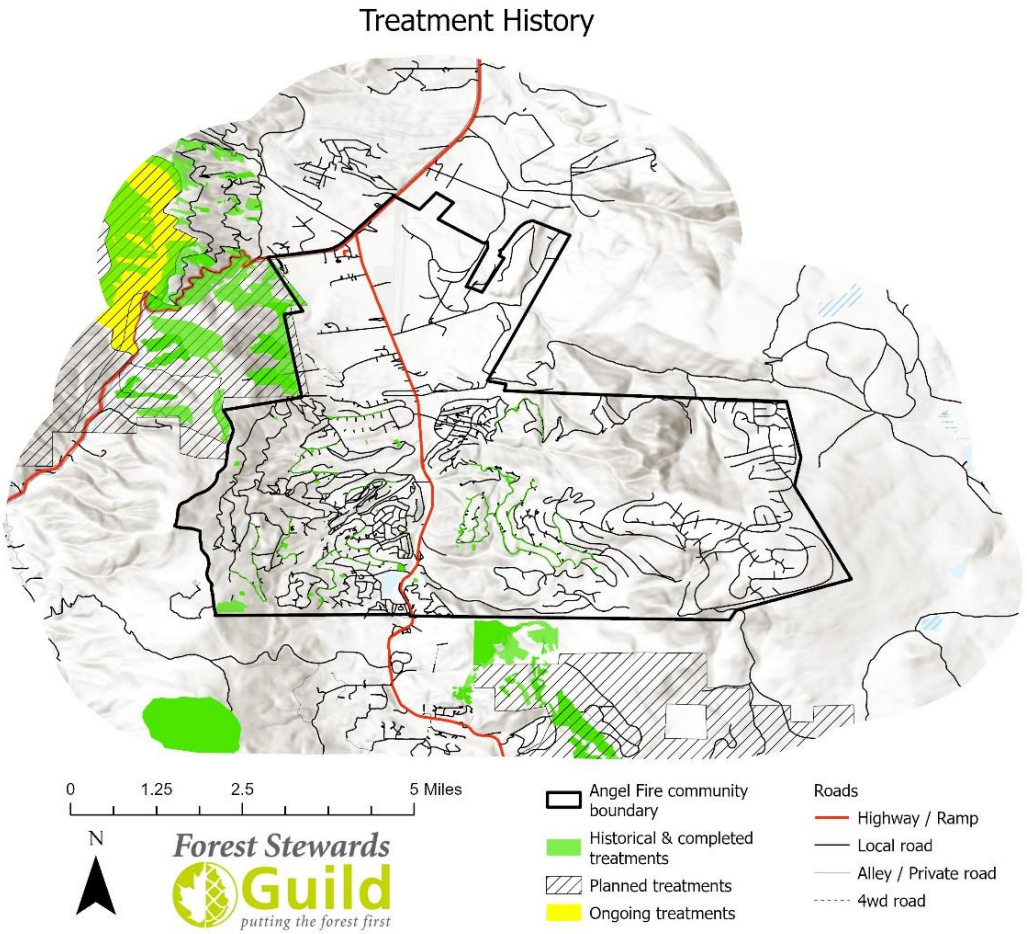


Figure 6 Treatment and Fire Areas Map.

Post-Wildfire Erosion Threat

This map displays post-fire debris flow threat and population centers that are most at risk from flooding. Post-fire debris flow data was obtained from the 2020 NM Forest Action Plan (EMNRD, 2020). Debris flow hazard is a combination of probability of a debris flow and potential volume of debris flow. An important caveat is that this dataset shows where debris flows will originate and not necessarily where they will end up. This zone shows where floods are likely to occur and areas where communities should be prepared for a post fire debris flow if a wildfire occurs above them in the watershed. These data were compiled for the entire state, a locally specific effort for the Village of Angel Fire would yield more applicable results.

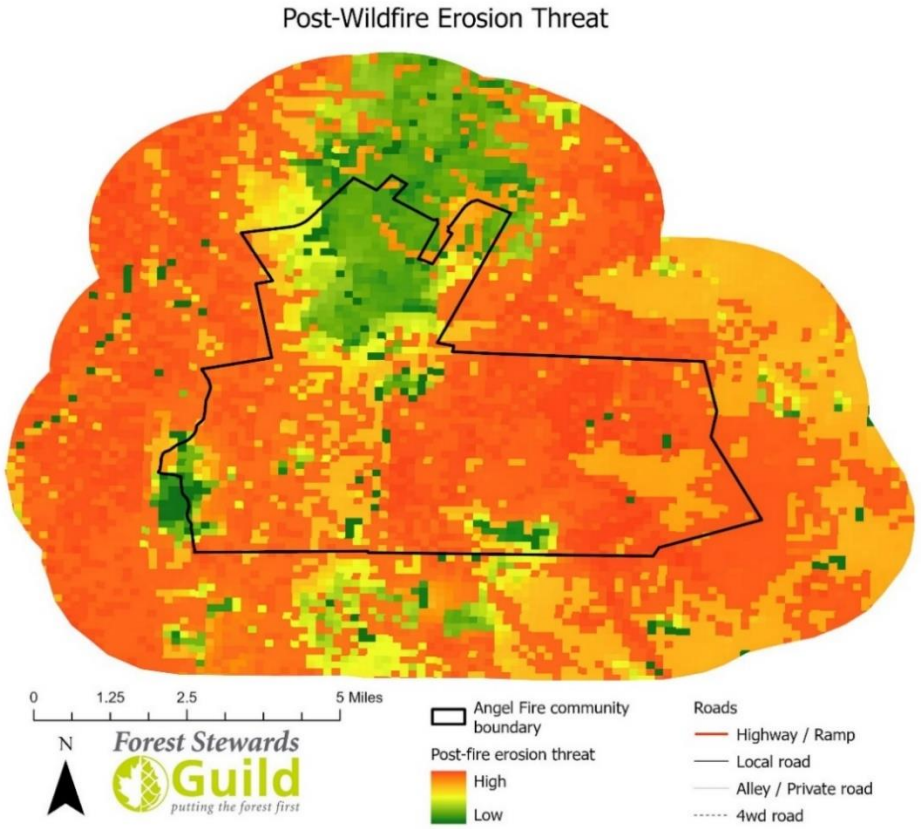


Figure 7 Wildfire Erosion Hazard Map

Water Resource Protection

This map displays data from the 2020 NM FAP, NMED, New Mexico Water Division, and RGIS to show water resources across the Village of Angel Fire to support mitigation activities related to protecting water sources and water infrastructure.

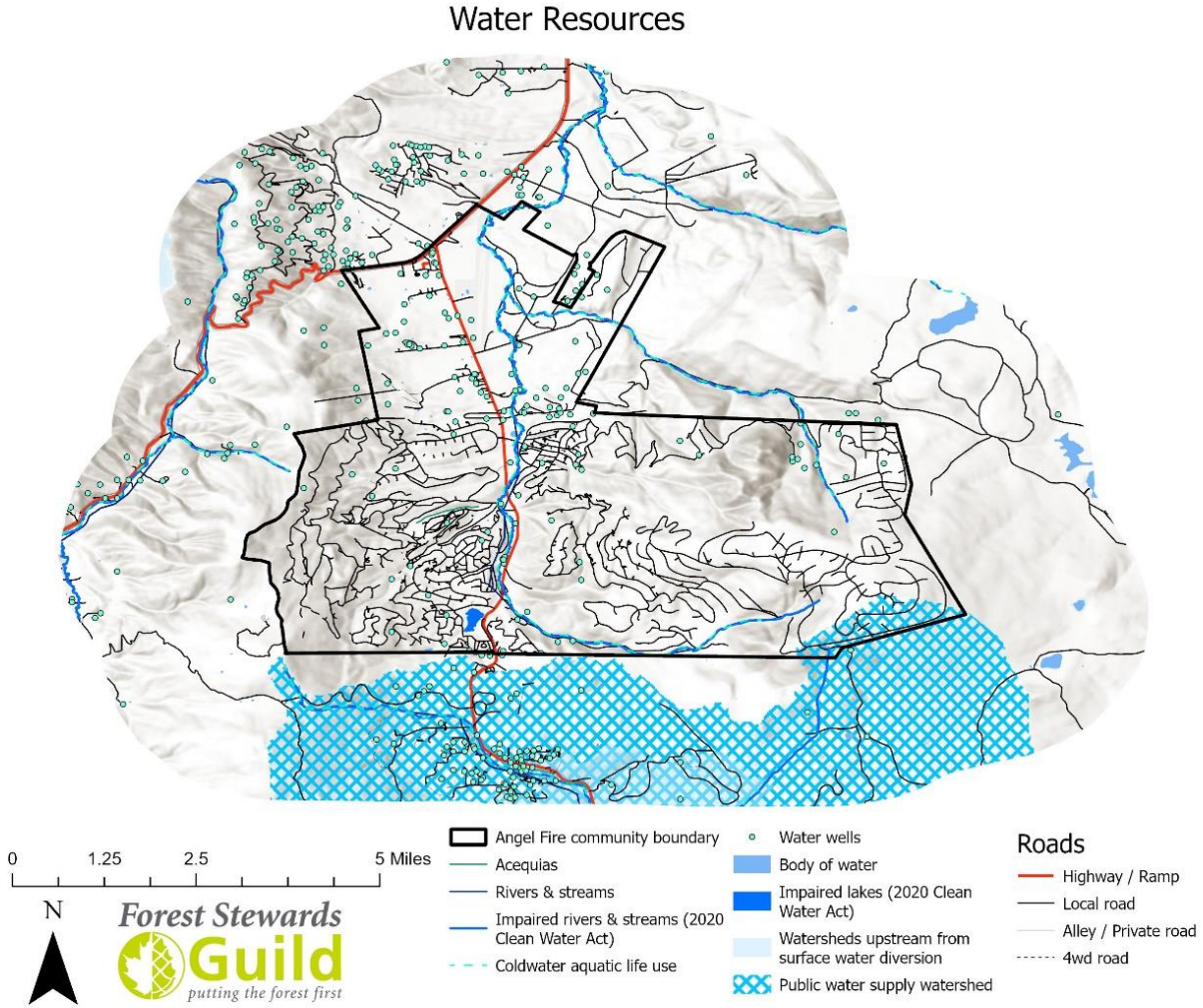


Figure 8 Water Resources Map

Wildfire Risk to Public Water Supply

This map depicts wildfire threat overlaid with surface water runoff weighted by beneficiaries. This map identifies where water sources that are most valued by public water system users are most at risk of wildfire.

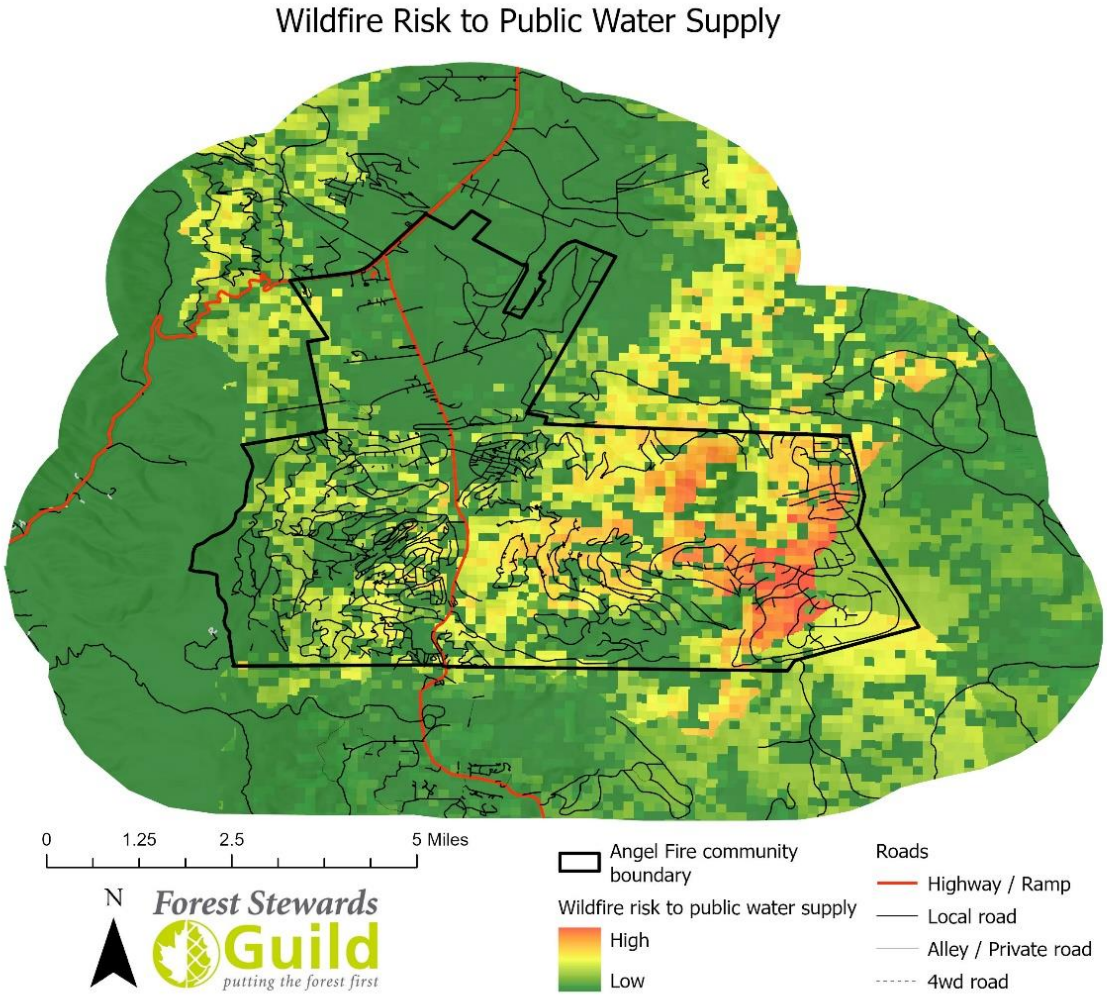


Figure 9 Wildfire Risks to Public Water Supply Map

Wildfire Risk to Irrigators

This map depicts wildfire risk to irrigators dependent on surface water. Wildfire threat data are overlaid with surface water runoff and weighted by beneficiaries. This map identifies where water sources that are most valued by irrigators are most at risk of wildfire.

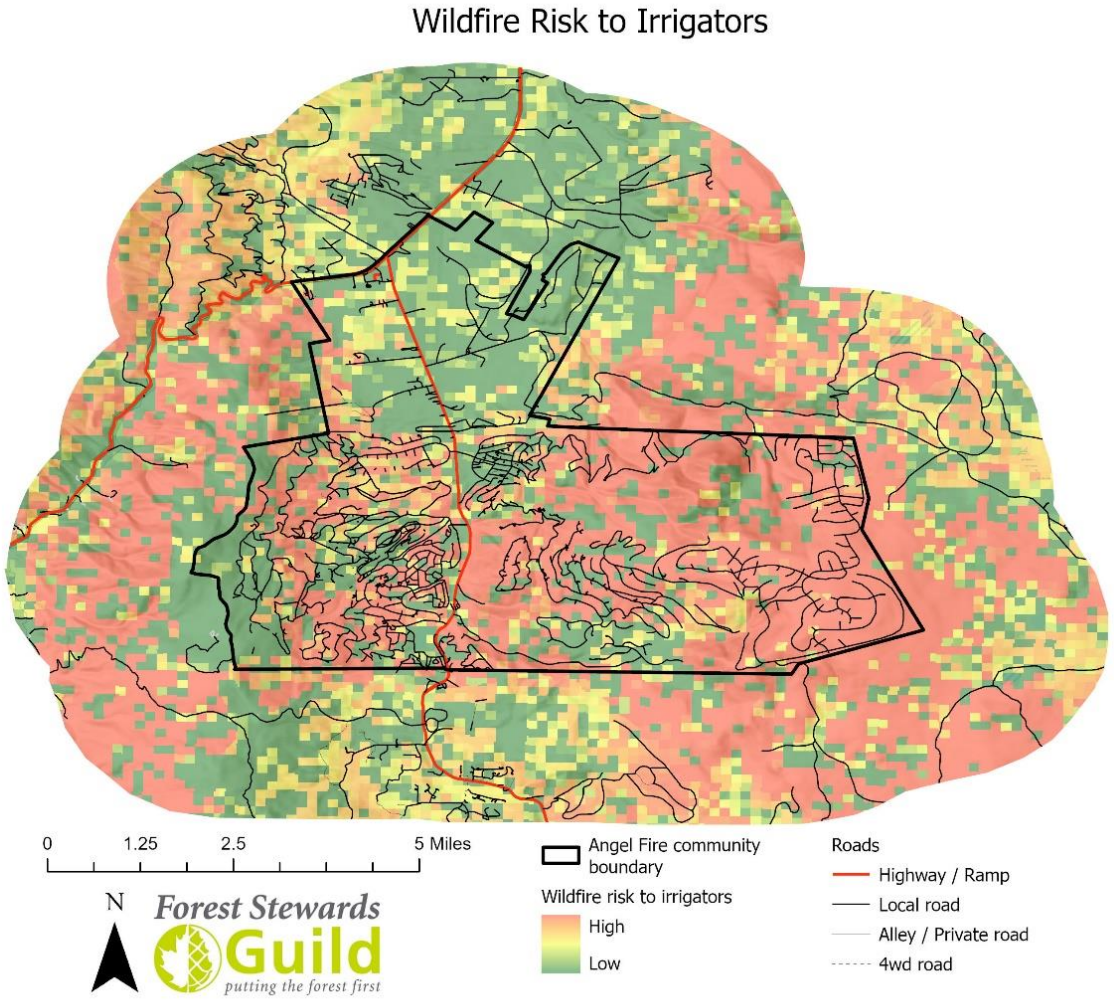


Figure 10 Wildfire Risks to Irrigators Map

Highest Threat Parcels

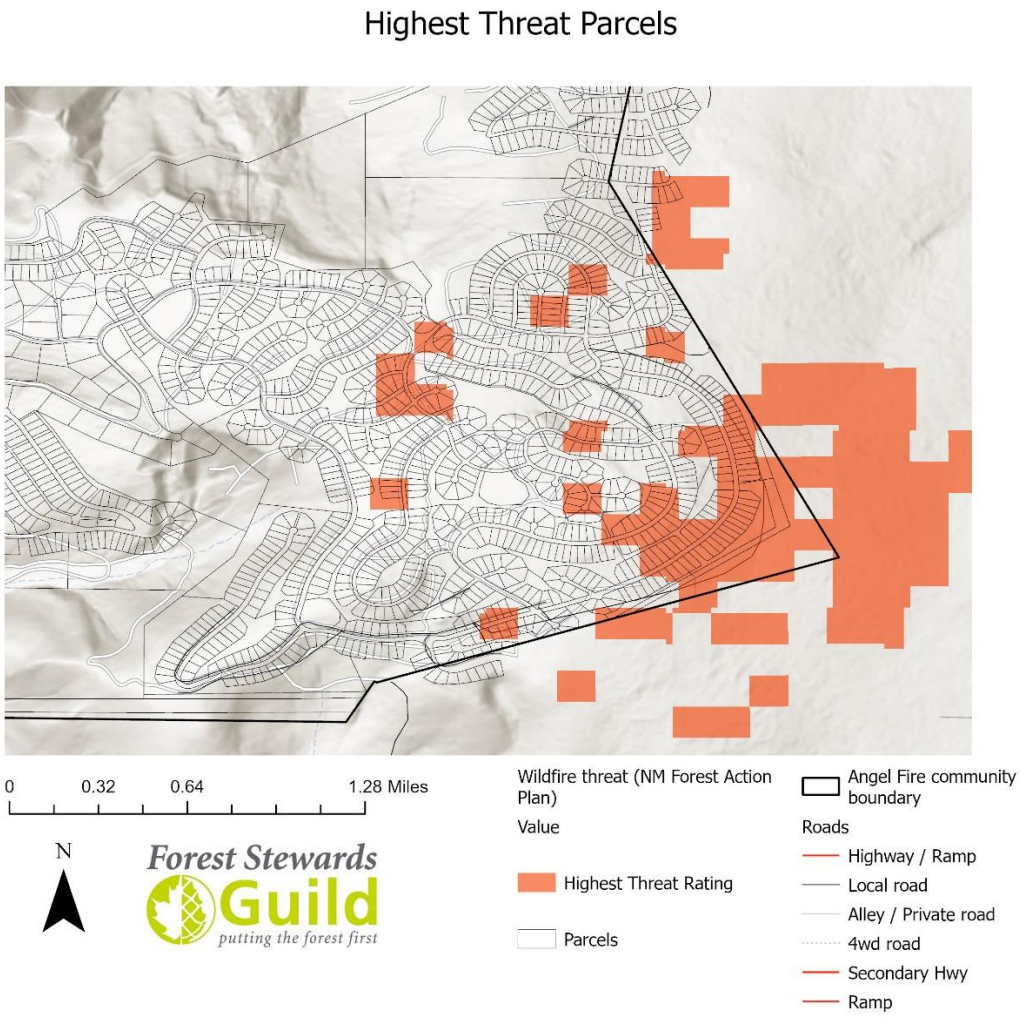


Figure 11 Highest Threat Parcels within Angel Fire Resort Properties

Map Descriptions

Table 1: Additional map descriptions for figures 2-11

Map Title	Map Description
Surface Ownership (Figure 4)	The surface ownership map displays the ownership of land by the various public land managers and private entities within the Village of Angel Fire
Communities at Risk (Figure 5)	This Communities at Risk Map displays communities that are at risk of wildfire within the Village of Angel Fire. Many of the risk ratings remained unchanged from the 2016 CWPP.
Fuel Treatments & Wildfires (Figure 6)	Fuel treatments and prescribed fires were identified from project partners and the New Mexico Forest Treatments map. This map is a collaborative effort to record and make available key data about projects that are occurring across all jurisdictions in New Mexico to facilitate well informed decision making for future planning. It is hosted by the New Mexico Forest and Watershed Restoration Institute (NMFWRI) and managed by the NMSF Division's Forest and Watershed Health Office. The fuel treatments on the map are grouped into 5 types: • Type 1 - Low intensity thinning with slash removed • Type 2 - High intensity thinning with slash removed • Type 3 - Low intensity thinning with slash lop and scattered • Type 4 - Moderate intensity mastication with slash remaining • Type 5 - High intensity Mastication with slash remaining
Post Wildfire Erosion Hazard (Figure 7)	This map displays post-fire debris flow hazard and population centers that are most at risk from flooding. Post-fire debris flow data was obtained from the 2020 NM Forest Action Plan (EMNRD, 2020) Debris flow hazard is a combination of probability of a debris flow and potential volume of debris flow. An important caveat is that this dataset shows where debris flows will originate and not necessarily where they will end up. This zone shows where floods are likely to occur and areas where communities should be prepared for a post fire debris flow if a wildfire occurs above them in the watershed. These data were compiled for the entire state, a locally specific effort for the Village of Angel Fire would yield more applicable results.
Water Resources (Figure 8)	This map displays data from the 2020 NM FAP, NMED, New Mexico Water Division, and RGIS to show water resources across the Village of Angel Fire to support mitigation activities related to protecting water sources and water infrastructure. See locally specific actions in Table 3.
Wildfire Risk to Public Drinking Water Supply (Figure 9)	This map depicts wildfire threat overlaid with surface water runoff weighted by beneficiaries. This map identifies where water sources that are most valued by public water system users are most at risk of wildfire.
Wildfire Risk to Irrigators (Figure 10)	This map depicts wildfire risk to irrigators dependent on surface water. This map identifies where water sources that are most valued by irrigators are most at risk of wildfire. Wildfire threat data are overlaid with surface water runoff and weighted by beneficiaries.
Highest Threat Parcels (Figure 11)	Highest threat parcels within Angel Fire Resort. These properties represent a useful starting point for treatment on private lands within Angel Fire Resort.

Priority Actions

* Denotes priority actions that are considered bottlenecks or prerequisites to accomplishing other listed priorities.

In this CWPP "Priority Actions" include (a) bottlenecks and prerequisites in the realm of coordination, planning, and capacity building for accomplishing listed priorities and (b) priority actions at an implementation level. At the level of bottlenecks and prerequisites, there is a growing need to respond to the emerging strategies for landscape-scale planning. The recently announced US Forest Service strategy for landscape-scale planning in the Enchanted Circle priority area in New Mexico as part of the national Wildfire Crisis investment strategy (WCS - Confronting the Wildfire Crisis: Initial Landscape Investments to Protect Communities and Improve Resilience in America's Forests, 2022) will provide financial incentives for this landscape-scale approach in areas surrounding the Village of Angel Fire. In 2021, the State Forestry Division (NM SFD) announced a multi-year funding program for forest management and fire prevention in the Cimarron Range area. The latter state funding was boosted with a federal appropriation in early 2022 and will likely tie into the WCS initiative through the Shared Stewardship approach between the US Forest Service and NM SFD.

In the context of landscape-scale planning it will be important that a collaborative partnership of entities address essential regional capacity requirements to create an enabling environment for the effective implementation of priority activities on the land. Procedures for coordination and communication between public agencies, community organizations, large private landowners, and tribal entities are one example of the needed capacity requirements to be resolved. Another set of requirements pertains to the need to collaborate at a regional level on the development of economic drivers, such as wood processing and product manufacturing facilities, sort yards, road infrastructure, as well as power and water utilities to support the business network that is required in response to the planned forest management work. Regional coordination between other landscape-scale initiatives, such as the Rio Chama CFLRP and the Rio Grande Water Fund land restoration program will need to direct the location and scale of key processing facilities.

Various social and economic prerequisites will have to be addressed and resolved at a landscape-scale as well. These include, for example, sustained employment of key staff, such as one or more WUI coordinators and public outreach staff for the Village of Angel Fire, the training of forest workers, and the expansion of the regional pool of contractors that can implement the priority forest treatments. Other requirements include clarity in the procedures and funding mechanisms between state and federal entities and community organizations (e.g., fire departments, fire wise groups, HOAs, and watershed associations) for local support of the preparation of project proposals for funding. The Village of Angel Fire lacks a work force and adequate housing for a potentially growing workforce in the private sector that is needed to support the initiatives suggested through the landscape-scale funding at federal and state levels. Therefore, coordination and investments toward workforce development and retention and adequate housing and schooling are essential elements in an enabling environment that must be created to scaffold priority actions recommended in this CWPP. Table 5 describes the detailed priority actions at an implementation level.

See Table 5 in the 2022 Colfax County CWPP update for funding opportunities that may support the items listen in the priority action table below.

Table 1 Priority Action Table by Project Category

Priority Fuel Reduction Projects

Priority Level	Action & Detail
HIGH	**Complete NEPA and Continue Treatment on State Trust Land**
	Detail: Black Lake, Valley of the Utes, White's Peak - particularly in WUI areas and along major roads and highways. *Who*: NM State Land Office, NM DOT
HIGH	**Collaborate with Taos Pueblo to obtain implementation funding for Phase I & II of the RTRL, Fee Lands Project**
	Detail: This project is NEPA approved for Phase I, and needs listening sessions for Mexican Spotted Owl for Phase II clearance. Phase I includes a 300' fuel break around the communities of Taos Pines, Lakeview Pines, and Idlewild. Phase II would create a 300' fuel break along the ridge between the Moreno Valley and the Blue Lake Wilderness. *Who*: Moreno VFD, Colfax County, Taos Pueblo, Cimarron Watershed Alliance
HIGH	**Complete NEPA analysis on the South side of Taos Canyon into Colfax County**
	Detail: *:* Extend into Colfax County along West Ridge and along boundary with the Village of Angel Fire. Explore the use of categorical exclusions for expediting NEPA process in this area. *Who*: Taos Pueblo, Carson NF, Village of Angel Fire Taos Pines subdivision
HIGH	**Thinning and slash disposal from Palo Flechado, Apache Pass, down to FR 76**
	Detail: Continue existing work in this area to Forest Road 76 *Who*: Carson NF, private landowners
HIGH	**Implementation of the Cimarron Range and Upper Coyote Creek Elk Ridge FAWRA grants**
	Details: Local partners to work with NM State Forestry Cimarron District to support implementation of the Cimarron Range and Upper Coyote Creek Elk Ridge FAWRA grants and more work along the lines of the CWA forestry study and plan *Who*: NM Forestry Division, Private Landowners
HIGH	**Thinning or fuel breaks along major highways and evacuation routes**
	Details: Particularly US Hwy 64 in Cimarron Cyn and at Palo Flechado Pass; Camino del Rey; El Camino; Valley of the Utes Road; NM 120; and NM 434. *Who*: Carson NF, NM DOT, NM Game & Fish, NM State Land Office, Village of Angel Fire Resort, Village of Angel Fire roads department, private landowners in partnership with NM State Forestry Division
	Thinning and slash disposal on Angel Fire Resort properties with high wildfire risk and high slope (>30%).
	Details: Work with Angel Fire Resort and utility companies to address absentee landowners. Consider waiving lien fees in exchange for treatment access – See Figure 11 *Who*: Angel Fire Resort, private landowners in partnership with NM State Forestry Division
	La Jara and Apache thinning and prescribed fire

	Details: Project area surrounds the Village of Angel Fire from Taos Pines into Angel Fire. *Who*: Carson NF
	Fuel reduction thinning and slash disposal in Black Lake
	Details: Thinning focused on the South side of Village of Angel Fire along Country Club 1 and 2 on the west side of 434 *Who*: Private landowners in partnership with NM State Forestry Division
	Dry mixed-conifer and ponderosa pine forest should be thinned to densities of 40 to 80 tree stems per acre (or 30 to 60 sq ft basal area per acre)
	Details: Rates should be higher at higher elevations and on cooler and moister sites (e.g., north facing slopes); all ladder fuels must be removed. For maximum benefits, the fuels reduction thinning should be followed with slash removal using a prescribed burn and/or mastication of the slash (more details in narrative). *Who*: Village-wide with landowners and land managers
	Pinyon-juniper woodland ecosystems should not be treated unless in specific circumstances.
	Details: Such circumstances include (a) Wildland Urban Interface areas or (b) ecotones between PJ ecosystems with a grass component (e.g., PJ savannah) and fire-prone higher elevation ponderosa pine or dry mixed conifer forest that has a priority indication for protection (more details in narrative) *Who*: Village-wide landowners and land Managers
	Burn or masticate large slash piles
	Details:Identify burn windows with snow on the ground and on upcoming forecast to pile burn slash piles. *Who*: Village of Angel Fire

Community Involvement

Priority Level	Action & Detail
HIGH*	**Host Community Chipper Days**
	Details: Use chipper days to provide education and outreach around defensible space thinning while disposing of slash. *Who*: Village of Angel Fire Fire Department, WUI coordinator, Angel Fire Resort, Soil and Water Conservation Districts, Angel Fire FAC committee, Angel Fire Firewise
HIGH*	**Develop and distribute the Welcome to the Village packet**
	Details: Start providing wildfire preparedness information to new residents as early as possible to address absentee and second home owners. Provide information about emergency alerts, assessments, and other preparedness information. *Who*: Village of Angel Fire Fire Department, Angel Fire Resort, Angel Fire Association of Property Owners
HIGH*	**Continue to Employ a Village of Angel Fire Wildland Urban Interface Coordinator**.
	Details: WUI coordinators are essential to supporting outreach and education to communities, working with land management agencies on landscape treatments, and tracking implementation of other priority action items in this CWPP.

	Who: Village of Angel Fire Fire Department
HIGH*	**Develop a Plan for Implementing Priority Action Items in this CWPP**
	Details: Work with members of the Angel Fire Fire Adapted Communities Committee to develop funding proposals related to this CWPP. *Who*: Village of Angel Fire FAC committee, Angel Fire Fire Department, Angel Fire community members
HIGH*	**Collaborative Fire Funding Sources**
	Details: Work to establish funding sources which can be used to address forest treatments and post fire community needs on private lands *Who*: USFS, FEMA, DHSEM
	Levy taxes to pay for fuel reduction work and hire people to remove burn piles
	Details: Work with commissioners to develop tax levy to support fuel reduction work. *Who*: Village of Angel Fire FAC Committee, Village of Angel Fire Fire Department, private contractors with burn qualifications through the NM Certified Burner program
	Work with Angel Fire Resort for Wildfire Education
	Details: Use Figure 11 to support targeted outreach to property owners with the highest wildfire threat. Send information to absentee or second home owners using contact information associated with water utility bills. *Who*: Village of Angel Fire Fire Department, Angel Fire Resort
	Thinning and defensible space ordinance that is applied to present and absent landowners.
	Details: Establish codes and ordinances that encourage resident/ homeowner mitigation *Who*: Village of Angel Fire FAC Committee, Village of Angel Fire Commissioners, Village of Angel Fire community members

Wildfire Preparedness

Priority Level	Action & Detail
HIGH	**Education about Colfax County's reverse 911 communication system**
	Detail: Educate Village of Angel Fire residents on the county's reverse 911 communication system. *Who:* Village of Angel Fire WUI coordinator
HIGH	**Share defensible space and Ready, Set, Go! information**
	Detail: Share information with residents of Village of Angel Fire *Who:* Village of Angel Fire Fire Department, Village of Angel Fire Resort, Village of Angel Fire FAC committee
HIGH	**Specific assessment of fire and post-fire threats around water infrastructure**
	Detail: See Figure 8 for starting point for water resources. Consider wells and storage tanks, and energy infrastructure (propane, solar, electric) *Who*: Village of Angel Fire water utility, utility companies,
	Thinning and clearing around above ground powerlines
	Detail: Use the threat map and data of powerlines to find high priority coordors for treatment.

	Who: Kit Carson electric, Village of Angel Fire FD
	Education and awareness around the use of prescribed fire
	Detail: Prescribed fire continues to be an important tool for getting fuel reduction done at scale. Share information and identify training opportunities related to the NM certified burner program. *Who*: Village of Angel Fire Fire Department, private landowners, existing contractors, Angel Fire Resort facilities personnel
	Develop a program to provide smoke resources during wildfire and prescribed fires
	Detail: Consider applying for funding to create a HEPA filter donation program for at-risk individuals. Provide smoke information and links to airnow.gov where residents can get up-to-date info related to air quality. *Who*: Local health departments and Presbyterian rural health in partnership with Village of Angel Fire
	Annual town hall education meetings about wildfire risk leading into fire season
	Detail: continue to build trust and community engagement by hosting pre-season town hall meetings where residents can get information about how to reduce wildfire risk. *Who*: Village of Angel Fire Fire Department, Village of Angel Fire FAC committee, private landowners

Reducing Structural Ignitability

Priority Level	Action & Detail
HIGH	**Offer home and property risk assessments and training**
	Detail: Support defensible space and structural hardening by providing assessment of home and property risk. Consider offering training opportunities for contractors and community leaders to learn how to conduct assessments. *Who*: Village of Angel Fire Fire Department, private contractors, community Firewise leaders
HIGH	**Rewrite slash ordinance to support defensible space thinning and slash disposal.**
	Detail: Consider supporting pile burning through the NM Certified Burner program. *Who*: Village of Angel Fire, NM State Forestry Division, private contractors, private landowners
	Educate insurance companies on wildfire risk reduction through mitigation activities
	Details: Work with insurance companies to identify standards for property mitigation and incorporate these into assessment programs. Who: Village of Angel Fire Resort, Village of Angel Fire FAC committee, Rocky Mountain Insurance Association
	Adopt portions of International Wildland-Urban Interface Code 2021
	Who: Village of Angel Fire, Angel Fire Resort
	All med/high/very high-risk areas - evaluate defensible space
	Details: 5 ft of ground fuels and 30 ft of intact ladder fuels and potential ember sources further out

	Who: Firewise leaders, soil and water conservation districts, Angel Fire Fire Department, private landowners

Fire Responders and Equipment

Priority Level	Action & Detail
HIGH*	**Training and PPE for wildland fire**
	Details: Seek VFA grants for fire districts to support training and PPE Who: NM State Forestry, NM BLM, the Forest Stewards Guild
HIGH	**Continued opportunities for TREX-style collaborative burns with local fire departments**
	Details: Particularly on Black Lake and State Trust Lands where collaborative burning has taken place over the years. Consider creating smaller format training exchanges related to the NM Certified Burner training. *Who*: NM SLO, NM State Forestry Division, VFDs, Angel Fire FD
	Purchase a type 7 UTV with wildland equipment (sled and litter carry), a type 6 engine, and a type 3 engine
	Details: Pursue State Fire Assistance funding to purchase this equipment. *Who*: Village of Angel Fire Fire Department, State Fire Assistance
	Coordinate with domestic water producers and Angel Fire Resort to access water in case of emergency
	Details: County wide coordination and agreements for FDs to use rural domestic water supplies for firefighting. As a prerequisite to make this item feasible, public water systems need to have a backup generator in place. *Who*: Village of Angel Fire Fire Department, Angel Fire Resort, private landowners
	Pursue NM Certified Burner status through NM State Forestry
	Details: Train VFD personnel and contractors in the use of pile burning to dispose of slash. *Who*: Village of Angel Fire Fire Department, Angel Fire Resort staff, existing contractors, private landowners

Evacuation planning, Roads, Transportation

Priority Level	Action & Detail
HIGH	**Post-fire flooding and erosion mitigation and evacuation planning for US Hwy 64 corridor along Cimarron Canyon**
	Detail: US hwy 64 is at risk of post fire flooding and causes bottlenecks in case of wildfire. Infrastructure improvements are needed to establish a safe and effective evacuation route. Consider applying for FEMA grant funding for infrastructure improvement (see post-fire section) *Who*: NM DOT, Colfax County, Village of Angel Fire FD
HIGH	**Improve access to remote areas that are impeded by locked gates or poor road conditions.**
	Details: Identify and improve access to areas that have locked gates or poor road conditions that would inhibit emergency evacuation or fire response.

	Who: Local FD's, State & Private Land Managers
HIGH	**Establish clear registration protocols for Village of Angel Fire alerts and Colfax County Code Red.**
	Details: Work with Colfax County office of emergency management to establish a clear and common process for signing up for alerts. Provide reminders to update contact information and address. *Who*: Colfax County, Village of Angel Fire Fire Department, Angel Fire Resort, Angel Fire Association of Property Owners
HIGH	**Purchase sign boards for roadside messages related to wildfire risk, evacuation, etc.**
	Details: Use sign boards for fire prevention messages, evacuation messages, prescribed fire information and other important information. *Who*: Village of Angel Fire, NM DOT
	El Camino Paving Project
	Details: Paving El Camino to support wildfire response and evacuation. *Who*: Village of Angel Fire Resort, Village of Angel Fire
	Seek NASA evacuation funding
	Details: NASA funding can support effective evacuation planning for the Village of Angel Fire. *Who*: Village of Angel Fire Fire Department
	Work with Taos County EMS and Colfax County EMS to coordinate evacuation along hwy 64
	Who: Taos County Emergency Manager, Colfax County Emergency Manager, Angel Fire Fire Department

Communication

Priority Level	Action & Detail
HIGH*	**Purchase a new communication tower and new repeater system for Village of Angel Fire**
	Details: Provide information about new communication system to all VFD and municipal personnel. *Who*: NM Forestry
HIGH*	**Establish communication plan between Village of Angel Fire FD and Village of Angel Fire**
	Detail: Clarify the type and timing of information sharing during an emergency event. Create message templates for evacuation, flooding, wildfire, etc. *Who*: Village of Angel Fire, Village of Angel Fire Fire Department
	Develop multiple methods of communicating emergency messages that account for people with disabilities
	Detail: See links in Appendix A. Reverse 911 for public information, sirens, and/or dedicated FM radio channel for emergency notification, sign boards, phone tree. *Who*: Village of Angel Fire Fire Department
	Current fire danger signs
	Detail: Establish clear process for updating fire danger signs

	Who: Carson NF, Village of Angel Fire
	Emergency phone access or cell coverage locations for 911 and smoke reporting in Taos Canyon
	Detail: Work with Taos County and NM DOT to provide this emergency phone access. *Who*: NM DOT, Colfax County, Taos County

Water Resource Protection

Priority Level	Action & Detail
HIGH	**Complete mitigation activities around water treatment facilities, water tanks, and other water infrastructure**
	Detail: Use source water protection plans to strengthen your funding proposal for work around water infrastructure. Mitigate against flames and post-fire sediment/debris flows. *Who*: Village of Angel Fire, NRCS, private landowners in partnership with NM State Forestry Division, Angel Fire Resort
	Distribute necessary connections for water tanks to feed fire trucks
	Details: Make sure fire engines have the necessary adapters/tools to connect to various water sources across the county, including water tanks and snow machines. *Who*: Village of Angel Fire Fire Department
	Repair broken water lines on El Camino
	Detail: Protect water infrastructure by repairing and maintaining water lines. *Who*: Village of Angel Fire
	Check all hydrants to ensure adequate function
	Details: Due to the amount of hydrants across the Village of Angel Fire, create a plan for checking and repairing all hydrants at least every 2 years. *Who*: Village of Angel Fire Fire Department

Wildland Urban Interface and Communities at Risk

Understanding Wildfire Risk

Wildfire risk can be understood as a combination of the likelihood and intensity (together called the "hazard " or "threat") and the exposure and susceptibility (together called "vulnerability") related to a wildfire event. In this plan, we use GIS data and fire behavior modeling to account for wildfire threat and input from the core team and the general public to understand the vulnerability of communities throughout the Village of Angel Fire. Both the threat modeling and input from the core team can augment risk ratings. In some cases, the threat of wildfire may be low according to our modeling, but vulnerability is high enough that the overall risk will be rated as high. Vulnerability can account for things like the socioeconomic conditions in a community effected by wildfire and their ability to financially recover, for example.

To learn more about wildfire risk to communities, visit: https://wildfirerisk.org/understand-risk/

Wildland Urban Interface

The WUI is defined as any area where human infrastructure intersects with wildland fuels that cause a fire hazard (Radeloff, 2005). Having a clearly defined WUI area helps focus fuel treatments and other fire

mitigation work that needs to happen in the Village. The Core Team decided to take a more expansive definition of the WUI based on other examples from the US that use consistent buffers of identified values at risk throughout the Village. Although most WUI definitions use potential fire behavior as a main driver when defining WUI our method emphasizes the human infrastructure within an area (Stewart, 2007). This approach creates a consistent definition of WUI uninfluenced by potential fire behavior, that we believe is more inclusive and provides all communities and individuals the justification they need to proceed with their own fire mitigation efforts and recognizes what they value most within their communities. This approach is also applicable for the predominantly rural Village of Angel Fire, where modeled fire behavior shows there is some risk of fire throughout the community. When this WUI layer is coupled with wildfire modeling it creates a robust and layered approach that allows for interpretation by the Core Team, Stakeholders and the Community as they plan their wildfire mitigation activities.

WUI Determination Process

This plan bases its WUI definition on specific values at risk as determined in 2022. There are 11,757 total acres of WUI in the county included in the 2022 CWPP. During the WUI determination process drafts of the WUI area were reviewed by the Core Team and community and refined based on their local knowledge. These values were included in the 2022 WUI layer with a specific buffer distance for each value.

The input data included:

- Address Locations and Values at risk – The New Mexico RGIS database provided point data for all addresses in the county, these points were visually verified and buffered at a .2 miles.
- Microsoft Building Footprints – this dataset contains computer identified building footprints across all 50 states. These data capture building locations that may not have been included in address data. These data were inspected and cleaned for use in the Village of Angel Fire. Verified points were buffered at .2 miles. https://wiki.openstreetmap.org/wiki/Microsoft_Building_Footprint_Data
- Primary Escape Routes – The Colfax County GIS department provided a map of all inventoried roads. The Core team identified primary escape routes and these were buffered at a tenth of a mile.
- Cell towers and Radio Repeaters- Homeland Infrastructure Foundation Level Data (HIFLD) provided a map of location and they were buffered at a quarter mile.
- Powerlines –Homeland Infrastructure Foundation Level Data (HIFLD) Major transmission lines were buffered at a tenth of a mile to indicate areas that are more prone to ignitions and should be considered for treatment.
- Oil and gas wells – New Mexico Energy, Minerals, and Natural Resources department (EMNRD) provided data on oil and gas wells in the Village of Angel Fire. Wells were buffered at a quarter of a mile.
- Rail lines – the Colfax County GIS specialist provided data of rail lines within and adjacent to the Village of Angel Fire. Rail lines were buffered at a tenth of a mile.
- Recommendations of the Core Team - This data was further amended based on new construction identified from satellite imagery and recommendations and knowledge of the Core Team.
- Surface water data was obtained from New Mexico Department of the Environment, the 2020 NM FAP, and New Mexico RGIS

Communities at Risk

Following New Mexico CWPP guidelines a CWPP must delineate communities and assign them a community hazard rating (CHR) of low, moderate, or high wildland fire risk (EMNRD, 2021). Since the communities in Angel Fire all have some degree of wildfire risk, we added very high wildfire risk to add an additional layer of risk and avoid listing any of the communities within the village as low risk.

Thirteen neighborhoods or communities in the Village of Angel Fire were assessed for wildfire risk. A community may be a town or a locally known area where people live, including HOAs, neighborhoods and more loosely defined areas. Many of these communities are combined with adjacent nearby communities where the fire risk is similar, these grouped communities can be seen in the table below. We intended to cover every neighborhood in the Village with this list, so even if it is not explicitly listed, the risk rating for nearby communities should apply. Descriptions and maps showing the products used in the analysis are located in the appendices and at the online wildfire viewer.

The CHRs take in factors such as the relative fire risk, ingress and egress and other factors specific to each community that change a community's risk rating such as fuel type and local VFD capacity. Ratings were initially determined by surveying the core team at the first meeting. To propose initial CHRs those survey results were combined with the fire hazard analysis for the county that combines fire intensity and probability. The initial ratings were further refined by recommendations of the Core Team, the Fire Chiefs Association, and the public based on actions that have happened in specific communities to reduce fire risk, improvements of the structural ignitability of buildings within the communities, and efforts of communities to become more fire adapted or establish themselves as a designated Firewise Community.

Table 2 Communities at Risk Ratings

Community Name	2009 Hazard Rating	2016 Hazard Rating	2022 Hazard Rating
Back Basin	Very High	High	Very High
Vail Loop	Very High	High	Very High
El Camino Real	Very High	High	Very High
Taos Drive	High	High	High
South Village	High	High	High
Valle Grande North	High	High	High
South East Village	High	High	High
Girl Scout Camp	Moderate	Medium	Moderate
The Aspens	Moderate	Medium	Moderate
North Via del Rey	Moderate	Medium	Moderate
Country Club	Moderate	Medium	Moderate
The Chalet	Moderate	Medium	Moderate
Valley of the Utes	Moderate	Medium	Moderate

Collaboration

A CWPP must be a collaborative effort involving all parties with a stake in wildfire risk in the community. This ensures that all viewpoints are represented and the setting of priorities is balanced among all groups (Fleeger, 2008). The 2022 CWPP update was a collaborative effort between the CWPP core team and CWPP stakeholders and the community at large. This CWPP features a robust outreach effort that included a field tour with surrounding County and community-level Core Teams, Core Team and

Community Meetings, two surveys customized to the recipient, targeted interviews, and outreach to the community through print and online methods.

Table 3 below lists CWPP stakeholders who were invited to participate in the 2022 Village of Angel Fire CWPP update process. In addition to these individual invitations, the CWPP update was also publicized through multiple outlets, including: the Black Lake RX Fire, Colfax County CWPP meetings, a CWPP webpage, the Forest Stewards Guild, church bulletins, the Village of Angel Fire Fire Department, and other informational materials distributed by core team members. The CWPP update team also solicited input from area residents during community meetings that were advertised via email, Facebook posts, and a webpage, on the Forest Stewards Guild's website. The Village of Angel Fire Fire Department was contacted throughout the update process to capture their input on the CWPP update.

A field tour of the enchanted circle area supported collaboration between Taos County, Colfax County, and the Village of Angel Fire. Core team members from the three areas identified common protocol for mapping and agreed to host a joint meeting where stakeholders from all three areas could prioritize fuel reduction projects across boundaries in the Enchanted Circle area. The joint meeting took place in February of 2022 at the Village of Angel Fire community center. Over 35 community members from Taos County, Colfax County, and the Village of Angel Fire participated in the public and core team meetings on February 17th, 2022.

Table 3 Village of Angel Fire CWPP 2022 Update Stakeholder List

Stakeholders - Village of Angel Fire 2022 CWPP Update		
Name	**Organization**	**Position**
Mark Manley	Angel Fire Resort	Legal Representative
Jo Mixon	Village of Angel Fire	Mayor
Mike Overby	Angel Fire Firewise	Angel Fire Firewise
Karly Ramirez	Village of Angel Fire	Public Works Admin
Santos Martinez	Village of Angel Fire	Planning and Zoning
Kevin Henson	Village of Angel Fire	Fire Chief
Craig Sime	Village of Angel Fire	Fire Captain
Matt Billingsley	FAC committee	Council Liason
Dave Schoepfle	FAC committee	Committee Member
Ray Honea	FAC committee	Committee Member
Dave Hartson	FAC committee	Committee Member
Deke Willis	Red River FD	Red River Fire Chief
Bruce Jassman	Moreno Valley VFD	Moreno Valley Fire Chief
Scott Gibson	Eagle Nest FD	Eagle Nest Fire Chief
Kevin Pacheco	NM State Forestry	District FMO
Arnie Friedt	NM State Forestry	District Forester
Mark Meyers	NM State Land Office	Forester
Ryan Darr	NM Game and Fish	Lands Program Manager
Ray Corral	US Forest Service	Zoned Fire Management Officer
Kyle Sahd	NM Bureau of Land Managerment	Fire Management Officer

Penni Davey	Association of Angel Fire Property Owners	President
Bob Elsinger	Taos Pines Firewise Communities	President
Gina Bonner	Taos Pines Firewise Communities	Resident
Henry Garland	Taos Pines Firewise Communities	Resident
Troy Padilla	Colfax County Coalition of Firewise Communities	representative
Joe Stehling	Colfax County Coalition of Firewise Communities	representative
Molli Grove	Village of Angel Fire	Projects and grants
Mollie Walton	Cimarron Watershed Alliance	Restoration Ecologist
J.R. Logan	Taos County	WUI Coordinator
Renee Romero	Taos Pueblo	Fire Management Officer

Core Team

The CWPP core team makes up the heart of the CWPP. This group of County officials and individuals from other organizations participate in gathering information for the CWPP, and guide the setting of priorities and designation of WUI and Communities at risk. For a CWPP to function and lower wildfire risk in the county it is crucial that the CWPP Core Team continue to gather well after the CWPP is completed and coordinate efforts to match the priorities set in the plan. Table 4 below lists the members of the CWPP core team that participated in 2022. This list should be modified as the Core Team changes.

Table 4 Village of Angel Fire CWPP 2022 Update Core Team List

Core Team - Village of Angel Fire 2022 CWPP Update		
Name	**Organization**	**Position**
Mark Manley	Angel Fire Resort	Legal Representative
Jo Mixon	Village of Angel Fire	Mayor
Mike Overby	Angel Fire Firewise	Angel Fire Firewise
Kevin Henson	Village of Angel Fire	Fire Chief
Craig Sime	Village of Angel Fire	Fire Captain
Matt Billingsley	FAC committee	Council Liason
Dave Hartson	FAC committee	Committee Member
Bruce Jassman	Moreno Valley VFD	Moreno Valley Fire Chief
Scott Gibson	Eagle Nest FD	Eagle Nest Fire Chief
Kevin Pacheco	NM State Forestry	District FMO
Arnie Friedt	NM State Forestry	District Forester
Mark Meyers	NM State Land Office	Forester

Ray Corral	US Forest Service	Zoned Fire Management Officer
Kyle Sahd	NM Bureau of Land Managerment	Fire Management Officer
Bob Elsinger	Taos Pines Firewise Communities	President
Gina Bonner	Taos Pines Firewise Communities	Resident
Henry Garland	Taos Pines Firewise Communities	Resident
Mollie Walton	Cimarron Watershed Alliance	Restoration Ecologist
J.R. Logan	Taos County	WUI Coordinator
Renee Romero	Taos Pueblo	Fire Management Officer

Key Informant Interviews

To capture in-depth information from core team members the Forest Stewards Guild conducted interviews with 10 key informants from the core team. Key informants were chosen to supplement in-person and survey data. Interviews attempted to represent the range of organizations, agencies, and private landowners represented in and around the Village of Angel Fire. Interviews were conducted over the phone and typically lasted around forty-five minutes. Ten interviews were completed, and interviewees represented 8 different organizations.

Table 5 Key Informational Interviews for Village of Angel Fire CWPP 2022 Update

Key Informant Interviews - Village of Angel Fire 2022 CWPP Update		
Name	**Organization**	**Position**
Ray Corral	Carson National Forest	Zoned Fire Management Officer
Kevin Henson	Village of Angel Fire Fire Department	Fire Chief
Craig Sime	Village of Angel Fire Fire Department	Lieutenant
Bruce Jassman	Moreno Valley Fire Department	Fire Chief
Scott Gibson	Village of Eagle Nest Fire Department	Fire Chief
Mike Overby	Village of Angel Fire Firewise	Firewise leader
Mark Meyers	New Mexico State Land Office	Forester
Tom Vigil	Colfax County	Emergency Manager
Martha Graham	NM Rural Water Users Association	Source Water Protection Program Lead
Nick Cardenas	Colfax County	Fire Marshall

FSG used an interview guide that covered various topics, including: fuels treatments, communication, travel/transportation, evacuation/alerts/notifications, training, suppression resources, Fire Adapted Communities, human ignitions, post fire preparations, communities at risk, and accomplishments.

Community Meetings and Outreach

Multiple meetings for Village of Angel Fire residents and stakeholders were held to discuss progress made since the 2016 CWPP; to determine updates to communities at risk ratings and priority rankings; and to identify priority action items for the 2022 CWPP update. The community meetings engaged members of various communities throughout the county to discuss issues of wildfire protection and preparedness. Some questions posed at these meetings engaged homeowners in assessing their own wildfire risk prevention practices, such as open space thinning, fuel breaks, and defensible space zone treatments. Table 6 provides an overview of the core team and public meetings convened for the 2022 Village of Angel Fire CWPP update and organizations that were represented at those meetings

Table 6 Meetings and Outreach Conducted for Village of Angel Fire CWPP 2022 Update

Date	**Meeting Type**	**# of participants**	**Representation (organizations, e.g. Forest Service, State Forestry, etc.)**
October 27th, 2021	Public Meeting (field tour)	6	Forest Service, American Creek Properties, Pueblo of Sandia, Cimarron Watershed Alliance, NMSF
November 18th 2021	Core Team	11	NMSF, Cimarron Watershed Alliance, Village of Angel Fire, Village of Eagle Nest Fire Department, Taos Pueblo, Taos Pines Firewise, NM State Land Office, NM BLM, Moreno Valley Fire Department
February 17th, 2022	Core Team	27	Sandia Pueblo, Village of Eagle Nest, Colfax County, Angel Fire Resort, Village of Angel Fire, NMSF, Taos Pueblo, New Mexico Rural Water Users, Moreno Valley EMS, American Creek Properties, Philmont Scout Ranch, NM BLM, Taos Pines Firewise, Carson National Forest, Woodsharks .LLC, Elk Ridge Firewise,
February 17th , 2022	Public Meeting	33	Colfax County, Angel Fire Resort, Village of Angel Fire, NMSF, Taos Pueblo, New Mexico Rural Water Users, Moreno Valley EMS, American Creek Properties, Philmont Scout Ranch, NM BLM, Taos Pines Firewise

Large, printed maps were used as a tool through all community meetings to facilitate location-specific conversation about wildfire protection. Maps helped to prompt discussion between core team members and their communities about wildfire risk throughout the county,

Outreach about the CWPP update was completed through in-person visits, where flyers were hung on bulletin boards, and through social media and web outreach, where digital flyers were posted to partner websites and circulated via email.

Wildfire Preparedness

Community Oriented Programs

Fuel reduction projects and wildfire risk reduction projects in general are just one component of a successful strategy to reduce the negative effects associated with wildfire. We must couple fuel reduction projects with education and outreach about how to live within landscapes that are prone to wildfire.

The following sections provide an introduction to the Fire Adapted Communities and Firewise frameworks. These sections provide a starting point to engage in a more in-depth discussion into each of these topics. See Appendix A for in-depth sections on: structure hardening, developing defensible space, conducting home ignition zone assessments, planning for evacuations, planning and improving ingress/egress systems and improving roadways, managing human sources of ignition, planning for smoke impacts and smoke impact mitigation, developing communication systems (emergency notifications and first responder communications), and forming a community emergency response team.

Fire Adapted Communities

The concept of "Fire Adapted Communities" comes from The National Cohesive Wildland Fire Management Strategy (NCWFMS), which was initiated in 2009. The NCWFMS is a strategic push to work collaboratively among all stakeholders and across all landscapes, using best science, to make meaningful progress towards the three goals: 1) resilient landscapes, 2) fire adapted communities, and 3) safe and effective wildland fire response. Since the NCWFMS, this reference of fire adapted communities has been refined conceptually and embedded within formal networks that are committed to putting the concept into action.

The core idea of a Fire Adapted Community (FAC) is an acknowledgement that with increasing frequency and severity of wildfire, our communities need to learn to coexist safely with wildfire. Improving community wildfire adaptation involves working across sectors to consider before, during, and after the wildfire. There are many roles within a fire adapted community, including: residents, fire departments, businesses, local governments, land management agencies, and other stakeholders. The process of developing a fire adapted community requires professional relationship building and peer-learning between residents, fire departments, businesses, local governments and land management agencies. This process is incremental and ongoing. Topic areas related to fire adapted communities include but are not limited to: resident mitigation; wildfire response; safety and evacuation; recovery; infrastructure and business; regulations; policy and plans; prevention; public health; landscape treatments; and partnerships and community engagement. This approach differs from the Firewise Communities program, which focuses on public education and resident-led fire risk mitigation before a wildfire.

Table 7 Components of a Fire Adapted Community

Components of a Fire Adapted Community			
	Before a wildfire	**During a wildfire**	**After a wildfire**
Residents	***Firewise***, defensible space, home hardening, packing a go-bag, signing up for alert systems.	***Ready, Set, Go!*** Evacuation for people and livestock	***After the Wildfire Guide***, Insurance claims, rebuilding/re-entry, erosion/flood mitigation, replanting.
Fire departments	Evacuation planning, wildland training, assessments, wildfire prevention campaigns, public education, fuel reduction treatments, establishing mutual aid agreements	Wildfire response, evacuation, emergency alerts systems, shelters, equipment and PPE.	Coordinating reentry, erosion/ flood mitigation, applying for post-fire funding.
Businesses	Backing up important documents, appropriate insurance policy, planning for evacuation and alternative income streams.	Evacuation, alternative income streams, communication to clientele	Insurance claims, rebuilding/re-entry, inventory.
Local governments	Codes and ordinances, responsible development, infrastructure to support wildfire response, community wildfire protection planning, education and outreach to residents, working with public health departments for smoke readiness	Alignment with emergency communications and evacuation, working from alternate locations in case of evacuation, smoke resources	Seeking post-fire funding, reentry/rebuilding, restoring utilities.
Land management agencies	Planning and implementing landscape scale fuel reduction, prescribed fire implementation, wildland training, establishing mutual aid agreements	Safe and effective wildland response, early rehabilitation and erosion mitigation,	Erosion/flood mitigation, replanting, salvage logging, infrastructure stabilization
Core processes: communication, peer-learning, relationship-building			

New Mexico has the Fire Adapted New Mexico learning network (FACNM), which is set up to support communities in their incremental process of becoming more fire adapted. The statewide network hosts webinars, in-person events, monthly calls, and curated resources to support local leaders. The network is committed to supporting local communities by working with local leaders to set up learning and networking opportunities. Past examples include workshops to share best practices for pile burning on private land, webinars about community smoke programs, home hazard assessment trainings, and many more.

The core of the FACNM network is its members, who can share lessons learned about how to approach wildfire adaptation efforts. We encourage anyone who is interested to visit the website www.facnm.org and consider joining the network as a member and for more information.

Both individuals and organizations can join FAC and FACNM to gain access to resources, tools, and connections with other members working toward wildfire resiliency. See Appendix A for additional information about FAC and the FACNM Learning Network.

Firewise Communities

Firewise Communities is a recognition program administered by the National Fire Protection Association (NFPA). Firewise Communities (i.e., communities with a Firewise USA Community designation) focus on reducing the loss of life and property from wildfire – particularly before a wildfire is burning -- for residents and homeowners. This is accomplished through providing resources that allow communities to responsibly build and maintain structures on their properties and to assist each other in preparing for, and recovering from, wildfire. Firewise emphasizes fuels reduction and gives recommendations for steps homeowners can take to reduce their individual risk to wildfire. For example, practices to reduce flammable materials close to the home and home maintenance practices that reduce the chance of a home catching fire. Several resources for homeowners, such as an online toolkit and checklist for steps to reduce wildfire risk can be found at www.firewise.org. Firewise recognition is achieved after a community completes a 6-step process:

1. Forming a Firewise board/committee of community residents and other applicable wildfire stakeholders
2. Verifying community risk to wildfire by obtaining a wildfire risk assessment as a written document from the local fire department, State Forestry Division, or US Forest Service. This assessment is a living document and needs to be updated every five years.
3. Developing an action plan based on the assessment, which should be updated every three years.
4. Hosting a “Firewise Day” outreach event.
5. Investing a minimum of $2 per capita in local Firewise actions for that year.
6. Submitting an application at portal.firewise.org to your Firewise state liaison.

Firewise recognition is an important tool for a community in the ongoing process of becoming fire adapted. Many communities working to become fire adapted begin by becoming recognized as a Firewise Community.

Other Wildfire Preparedness Strategies

Besides getting organized and developing participatory learning experiences for residents, there are several key wildfire preparedness strategies that have become part of the standard package of

community wildfire protection planning. The most important strategies are described in Appendix A and include:

- Structure Hardening
- Developing Defensible Space
- Conducting Home Ignition Zone Assessments
- Planning for Evacuations
- Planning and Improving Ingress/Egress Systems and Improving Roadways
- Managing Human Sources of Ignition
- Planning for Smoke Impacts and Smoke Impact Mitigation
- Developing Communication Systems (emergency notifications and first responder communications)
- Forming a Community Emergency Response Team

Planning for Post-Fire Recovery

As a wildfire will eventually occur in, or around, the Village of Angel Fire, it is important to plan for how the village and individual communities will recover after a wildfire. NMSF provides an excellent resource for thinking about post-fire recovery called *After Wildfire* (www.afterwildfirenm.org). For this CWPP we briefly cover some aspects of this topic. We recommend that the Core Team reconvene to discuss this topic at length and create detailed plans for the village.

Immediate Post Fire Safety

The foremost post-fire recovery concern is safety. After a wildfire, it is important that residents do not return to their homes or businesses until officials have determined it is safe. Because utility services can be disrupted by wildfire:

- Do not drink or use water from the faucet until officials say it is okay.
- Use extreme caution around trees, power poles, and other tall objects that may have lost stability during the fire.
- If you have a propane tank or system, contact a propane supplier, turn off valves on the system, and leave valves closed until the supplier inspects your system.

In addition:

- Be on the lookout for smoke or sparks that may still be burning.
- Be aware that smoke levels in the air may continue to be hazardous to health even after residents are allowed to return following an evacuation.

Flooding and Erosion

Post-fire flooding is a major concern. The map in Figure 7 displays post-fire debris flow hazards and illustrates which population centers are most at risk from flooding. In these maps, post-fire debris flow was modeled using a standard methodology (Cannon et. al., 2010). Debris flow hazard is a combination of probability of a debris flow and potential volume of debris flow. An important caveat is that this dataset shows where debris flows will originate and not necessarily where they will end up.

The heavy monsoon-season rains common in New Mexico in the late summer and early fall can often bring flooding and debris flows after wildfire. These storms are typically local, very intense, and of short duration, delivering large amounts of rain in a short period of time. When such storms develop over

burned areas, the ground cannot absorb the rain quickly enough, forcing the water and topsoil to run off the burned area, accumulate in streams, and produce flash floods. Post-fire debris flows also pose a risk to water infrastructure, such as reservoirs and pipe systems.

FEMA flood risk maps can still help guide post-fire preparation for flooding. Some homes and businesses may want to reevaluate their flood insurance coverage as post-wildfire floods are often more extensive than the flood risk might indicate before a wildfire. Be sure to reference local source water protection plans to support planning for post-fire recovery and infrastructure mitigation related to water.

Important resources related to flooding in the Village of Angel Fire can be found at:

- NM Flood, Projects and Maps: https://nmflood.org/?page_id=336
- New Mexico Multi-hazard Risk Portfolio: https://nmflood.org/wp-content/uploads/2013/10/NM_MHRP2015.pdf

NM After Wildfire Guide

The New Mexico *After Wildfire* guide (http://afterwildfirenm.org/) is a comprehensive resource for communities seeking to develop emergency plans ahead of potential wildfires. Besides offering guidelines on immediate safety and flood information, the guide also includes the following sections:

- Mobilizing your community – provides points to help local governments and community leaders get started on recovery coordination
- Who can help? - describes programs and services provided by agencies and non-profits for communities and individuals affected by wildfire
- Post-wildfire land management treatments to facilitate recovery
- Financial tips for individuals and communities after wildfire

The guide suggests that communities designate a Post Fire Coordinator (or multiple coordinators) to work directly with local, state or federal agencies, emergency response officials, volunteers, and other stakeholders to address needs and seek assistance. Post Fire Coordinators may be part of the CERT mentioned above in the Wildfire Preparedness section.

It may be appropriate to implement post-wildfire recovery efforts, such as erosion control or planting, in affected forested areas. First, however, communities should be sure to identify values-at-risk post-wildfire and focus on treatments that reduce the threats to those values. The *After Wildfire* guide has a catalog of potential treatments that include:

- Seeding and mulch to reduce erosion;
- Contour log felling and other erosion barriers;
- Installation of check dams and other channel treatments; and
- Culvert modifications and other road treatments.

Lessons Learned

The Ute Park Fire

"The threat of wildfires, which will increase in severity due to climate change, has the potential to have the most severe deleterious effect on the ecological and social conditions in the Cimarron watershed. The Ute Park Fire of 2018 burned 36,740 acres, resulting in the closure of Philmont Scout Ranch for the

summer, the loss of 14 buildings, and prolonged flooding in the community of Ute Park. Because the fire was predominantly on private land, there was no mechanism for burn rehabilitation or for helping private landowners deal with the aftereffects of the fire. The fire also created significant problems for municipalities. They had to contend with sediments from runoff resulting from the fire that overwhelmed the infrastructure of the municipal water systems." (Walton, 2021)

Post fire flooding from the Ute Park Fire has been a major problem with few good solutions. After the fire, debris flows closed US Hwy 64 on an almost daily basis during the 2018 monsoon season. NM DOT installed concrete Jersey Barriers along the right of way and assumed responsibility for cleaning sediment from the highway and the right of way. Debris flows onto the highway have decreased since 2018, partly due to decreased rainfall during 2019, and perhaps because much of the available sediment has washed away, leaving mostly bedrock in the ephemeral drainages.

While impacts to US Hwy 64 have decreased, post fire flooding continues to be a problem in the community of Ute Park and in many of the ephemeral drainages that run off the fire scar directly in the Cimarron River. One heavily burned drainage in particular has impacted several homes in the Ute Park Community. These homeowners have spent a considerable amount of their own money to divert debris flows away from their homes, keep roads open, and haul away sediment and debris. A few homeowners have reportedly given up and no longer attempt to protect or occupy their homes.

Infrastructure for drinking water and irrigation water have been severely impacted by the Ute Park Fire post fire flooding, sediment, and debris flows. Sediment Removal can be very problematic, and the Ute Park Fire has been cited as a huge source of sediment in the system. In the irrigation systems, since the Ute Park Fire, sometimes 4 feet of sand can be deposited overnight. The City of Raton diverts water from the Cimarron River immediately below the confluence with Turkey Creek. After the Ute Park Fire, turbidity in the Cimarron River became a significant problem at the Raton diversion. Dan Campbell of Raton Water Works reported that whereas turbidity might have maxed out at 100 NTUs before May 2018, turbidity since the fire has been measured as high as 1,000 NTUs. Besides suspended sediment, large boulders and woody debris have been transported down the river and Turkey Creek tributary. Some of this debris has been deposited and lodged near the water intake. Subsequent to some summer storms it has taken multiple days with heavy machinery to clear the diversion of debris before water treatment could resume. (Walton, 2021)

A BAER report for the 2018 Ute Park Fire was prepared by SWCA Environmental Consulting for the New Mexico Department of Homeland Security and Emergency Management and can be found here: https://www.swca.com/sites/default/files/final_ute_park_report_compressed.pdf

FEMA Hazard Mitigation Planning

There are numerous funding sources available for pre- and post- fire mitigation through FEMA grant programs. These include the Building Resilient Infrastructure and Communities (BRIC) program, the Flood Mitigation Assistance Program (FMA), the Hazard Mitigation Assistance Program, and the Hazard Mitigation Program - Post Fire. These grants require an investment of time and substantial training to obtain. One of the first steps for some of these, but not all, is to create a FEMA Hazard Mitigation Plan. There is funding available through FEMA to develop a Hazard Mitigation Plan. The first step to unlocking

this funding is for a government entity (county), or an entity working on their behalf (non-profit), is to contact the State Hazard Mitigation Officer with the New Mexico Department of Homeland Security (DHSEM). This person will support training and proposal development in partnership with the county to obtain FEMA funding.

References

Bar Massada, A., Radeloff, V. C., Stewart, S. I., & Hawbaker, T. J. (2009). Wildfire risk in the wildland-urban interface: A simulation study in northwestern Wisconsin. Forest Ecology and Management, 258(9), 1990–1999. https://doi.org/10.1016/j.foreco.2009.07.051

Brummel, R. F., Nelson, K. C., Souter, S. G., Jakes, P. J., & Williams, D. R. (2010). Social learning in a policy-mandated collaboration: community wildfire protection planning in the eastern United States. *Journal of Environmental Planning and Management*, *53*(6), 681-699.

Cannon, S. H., Gartner, J. E., Rupert, M. G., Michael, J. A., Rea, A. H., & Parrett, C. (2010). Predicting the probability and volume of postwildfire debris flows in the intermountain western United States. *Bulletin*, *122*(1-2), 127-144.

Conver, Joshua L., Donald A. Falk, Stephen R. Yool, and Robert R. Parmenter. 2018. "Modeling Fire Pathways in Montane Grassland-Forest Ecotones." *Fire Ecology* 14(1):17-32. DOI:10.4996/fireecology.140117031.

EMNRD. (New Mexico Energy, Minerals, and Natural Resources Department, Forestry Division). 2020a. 2020 New Mexico Forest Action Plan. A Collaborative Approach to Landscape Resilience. New Mexico Energy, Minerals and Natural Resources Department, Forestry Division. Santa Fe, NM.

EMNRD. (New Mexico Energy, Minerals, and Natural Resources Department, Forestry Division). 2021. 2021 Community Wildfire Protection Plan (CWPP) Update Guidelines. New Mexico Energy, Minerals and Natural Resources Department, Forestry Division. Santa Fe, NM.

Forest and Watershed Restoration Act of 2019 - FAWRA https://www.emnrd.nm.gov/sfd/forest-and-watershed-restoration-act-fawra/#:~:text=The%20Forestry%20Division%20selects%20high,Watershed%20Restoration%20Act%20(FAWRA).

Field, Jason P., David D. Breshears, John B. Bradford, Darin J. Law, Xiao Feng, and Craig D. Allen. 2020. Forest Management Under Megadrought: Urgent Needs at Finer Scale and Higher Intensity. Frontiers in Forests and Global Change, 23 December 2020. https://doi.org/10.3389/ffgc.2020.502669.

Fleeger, W. E. (2008). Collaborating for success: Community Wildfire Protection Planning in the Arizona white mountains. *Journal of Forestry*, *106*(2), 78–82. https://doi.org/10.1093/jof/106.2.78

Jansens, Jan-Willem. 2021. Water Storage Opportunities in Headwater Catchment Areas in the Upper Cimarron Watershed, New Mexico. Cimarron Watershed Alliance, under a WaterSMART grant of the USDI Bureau of Reclamation.

Kurc, S. A., and E. E. Small. 2004. "Dynamics of Evapotranspiration in Semiarid Grassland and Shrubland Ecosystems during the Summer Monsoon Season, Central New Mexico." *Water Resources Research* 40(9):W09305. DOI: 10.1029/2004WR003068.

Low, A., Low, G., Provencher, L., & Abele, S. L. (2010). Enhanced conservation action planning: Assessing landscape condition and predicting benefits of conservation strategies. Journal of Conservation Planning (Vol. 6).

Lynn, K., and W. Gerlitz. 2005. Mapping the Relationship between Wildfire and Poverty. National Network of Forest Practitioners, Resource Innovations at the University of Oregon, and the United States Department of Agriculture Forest Service State and Private Forestry, Portland, OR.

Mitchell, J. W. (2009, January). Power lines and catastrophic wildland fire in southern California. In Proceedings of the 11th International Conference on Fire and Materials (pp. 225-238).

Moeser, C. D., P. D. Broxton, A. Harpold, and A. Robertson. 2020. Estimating the effects of forest structure changes from wildfire on snow water resources under varying meteorological conditions. Water Resources Research, 56, e2020WR027071. https://doi.org/ 10.1029/2020WR027071.

Radeloff, V. C., Hammer, R. B., Stewart, S. I., Fried, J. S., Holcomb, S. S., & McKeefry, J. F. (2005). The wildland–urban interface in the United States. *Ecological applications*, *15*(3), 799-805.

Reynolds, RT et al. 2013. "Restoring Composition and Structure in Southwestern Frequent-Fire Forests: A Science-Based Framework for Improving Ecosystem Resiliency. RMRS-GTR-310. USDA Forest Service Rocky Mountain Research Station.

Scott, J., Thompson, M., & Calkin, D. (2013). A Wildfire Risk Assessment Framework for Land and Resource Management. USDA Forest Service / UNL Faculty Publications. Retrieved from https://digitalcommons.unl.edu/usdafsfacpub/328

Stewart, J.B., C. J. Watts, J. C. Rodriguez, H. A. R. De Bruin, A. R. van den Berg, and J. Garatuza-Payán. 1999. "Use of Satellite Data to Estimate Radiation and Evaporation for Northwest Mexico." *Agricultural Water Management* 38(3): 181–193. DOI: 10.1016/S0378-3774(98)00068-7.

Stewart, S. I., Radeloff, V. C., Hammer, R. B., & Hawbaker, T. J. (2007). Defining the wildland–urban interface. Journal of Forestry, 105(4), 201-207.

The National Strategy: the final phase in the development of the national cohesive wildland fire management strategy. (2019). Retrieved from https://www.forestandrangelands.gov/strategy/thestrategy.shtml

Tolley, Douglas G., Marty D. Frisbee, and Andrew R. Campbell. 2015. "Determining the Importance of Seasonality on Groundwater Recharge and Streamflow in the Sangre de Cristo Mountains Using Stable Isotopes" in *New Mexico Groundwater Recharge and Streamflow in the Sangre de Cristo Mountains, 66th Field Conference, Geology of the Meadowlands, Las Vegas Region.* Geological Society Guidebook 66. Socorro: New Mexico Geological Society.

USDI (U.S. Department of the Interior). 2011. "West-Wide Climate Risk Assessments: Bias-Corrected and Spatially Downscaled Surface Water Projections." USDI Bureau of Reclamation Technical Memorandum 86-68210-2011-01 (March).

USGCRP (U.S. Global Climate Research Program). 2018. *Fourth National Climate Assessment*. Washington, DC: USGCRP. https://nca2018.globalchange.gov/. Chapter 25: Southwest. https://nca2018.globalchange.gov/chapter/25/.

Walton, M. 2021. Cimarron Watershed Restoration Plan. Prepared with funding support from the Bureau of Reclamation WaterSMART Program.

Weinstein, G. 2014. Angel Fire's revised thinning ordinance fails to survive to second reading. Sangre de Cristo Chronicle. Retrieved from https://sangrechronicle.com/angel-fires-revised-thinning-ordinance-fails-to-survive-second-reading/

Williams, D. R., Jakes, P. J., Burns, S., Cheng, A. S., Nelson, K. C., Sturtevant, V., … Souter, S. G. (2013). Community Wildfire Protection Planning: The Importance of Framing, Scale, and Building Sustainable Capacity. Journal of Forestry, 110(8), 415–420. https://doi.org/10.5849/jof.12-001

Appendix A: Additional Information on Community Oriented Programs

Fire Adapted Communities

One of the largest challenges in establishing Firewise and Fire Adapted Communities in the Village of Angel Fire is the large proportion of part-time and absentee homeowners who are unavailable for extended periods of time. In order to overcome this obstacle, community leaders must establish creative and flexible opportunities for engagement. One example of such leadership came from the Village of Angel Fire's Fire Department, who hosted a very successful Facebook Live fundraiser with absentee homeowners. Other opportunities would require engaging homeowners in specific times of year when a majority are present by hosting community events that include an educational component. By combining the two approaches of hosting virtual events that are accessible to even those who are not physically present in the community and hosting in-person events during strategic times of the year, a greater number of homeowners may be reached. These efforts will undoubtedly require a large amount of outreach to spread the word and could therefore best be carried out by a dedicated community group or fire department. Reaching out directly to homeowner associations would also be a useful tool in encouraging larger community participation.

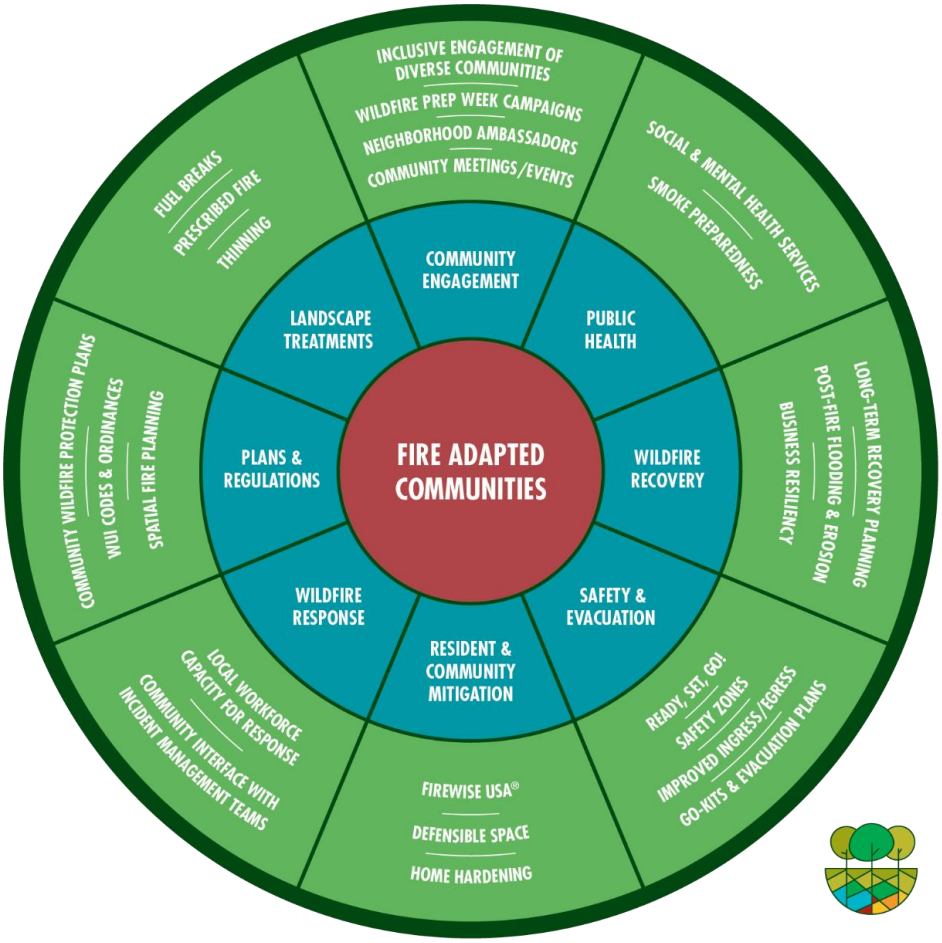


Figure 12 Fire Adapted Communities Diagram

The risk of wildfire is shared between neighbors, communities, and jurisdictions. The reduction of that risk is best accomplished through both top-down and grassroots approaches. Top-down strategies (regulations, zoning, ordinances, etc.) provide guidelines for residents to follow that require them to take responsibility for their own safety, as well as that of their communities and neighbors. However, some rural communities in New Mexico have opposed past ordinances regarding wildfire mitigation (Weinstein, 2014). In order to cultivate greater community support, the Fire Adapted Communities (FAC) Network utilizes a grassroots method focused on outreach, education, and the direct involvement of individuals residing in the WUI (https://facnm.org/). By promoting and developing a FAC, local governments and land managers may find alternatives to ordinances and regulations or find a more receptive and educated public when proposing such measures as defensible space thinning.

Part of being fire adapted is recognizing that not all members of the community can prepare for, respond to, and recover from a wildfire in the same ways. Research and experience have shown that socially vulnerable populations may not be able to mitigate and recover from wildfire to the same extent as the less vulnerable members of the community (Lynn & Gerlitz, 2005). Residents of an older age may not have the ease of mobility to move their wood pile, clean gutters and eaves, or rake needles and debris. Households that are below the poverty threshold may not have access to funds to reduce structural ignitability by installing a new roof, or they may not be able to pay for fuels reduction treatments. Consideration to protect these groups form wildfire should be made when designing wildfire mitigation programs. For resources related to functional needs and accessibility in fire adapted communities, please see the following blogpost from the Fire Adapted New Mexico learning network: https://facnm.org/news/2022/5/11/wildfire-wednesdays-86-disability-and-wildfire

Visit Fire Adapted New Mexico at www.facnm.org or the national Fire Adapted Communities network at www.fireadaptednetwork.org for more information.

The Home Ignition Zone: Home Hardening and Defensible Click here to enter text.Space

Residents can significantly reduce their wildfire risk by creating defensible space around their homes and hardening their homes to the potential for ignition. The combination of home hardening and defensible space is considered the home ignition zone.

To learn more about how to prepare the home ignition zone for wildfire, visit the National Fire Protection Associations page: https://www.nfpa.org/Public-Education/Fire-causes-and-risks/Wildfire/Preparing-homes-for-wildfire

For a collection of resources related to home hardening and defensible space, visit: www.facnm.org/prepare.

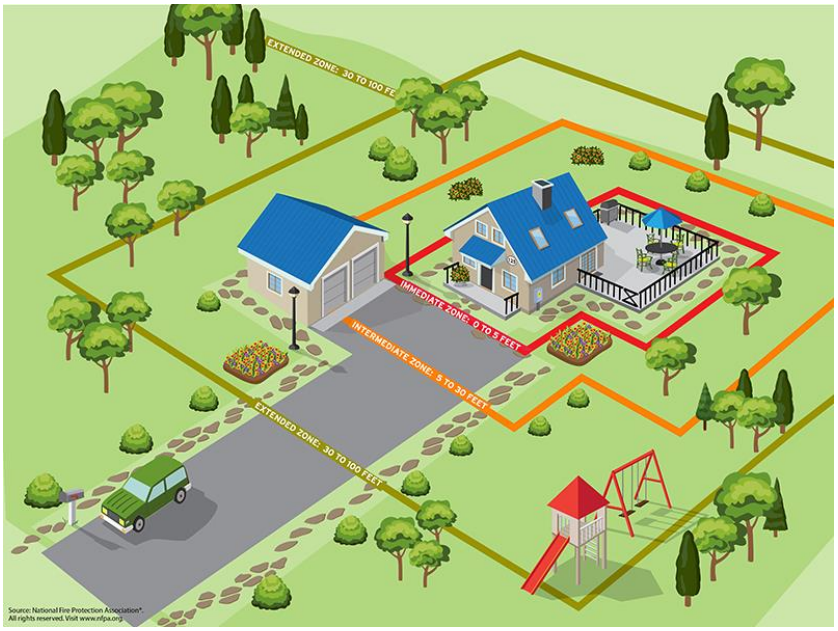
Structure Hardening

Addressing the materials and construction of the structure is important to reducing the risk of the home igniting. A significant resource that should guide residents as they consider new construction or retrofit of structures is the research from the Insurance Institute for Business and Home Safety on factors that contribute to home ignitions from wildfire. Their research addresses a wide variety of factors from vents that limit ember entry to buildings and materials that siding, and decks are constructed of that resist wildfire. Their research can be accessed at https://ibhs.org/risk-research/wildfire/ as well as in this series of one-page reviews on specific materials from NFPA available here https://facnm.org/prepare.

Defensible Space Zones

Targeting trees, shrubs, and other vegetation in the immediate vicinity of the house can also make the home more fire resistant. Firewise USA recommends three zones of defensible space that provide useful guidance for County residents (Firewise USA, 2016):

Figure 13 Zones of Defensible Space



Zone 1: Encircles the structure and all its attachments (wooden decks, fences, and boardwalks) for at least 30 feet on all sides. *Note:* the 30-foot number comes from the very minimum distance, on flat ground, that a wooden wall can be separated from the radiant heat of large flames without igniting.

In Zone 1:

- Space plants carefully, selecting those that are low-growing and free of resins, oils and waxes that burn easily.
- Mow the lawn regularly.
- Prune trees six to ten feet up from the ground.
- Space coniferous trees to allow 30 feet between crowns. Trim back trees that overhang the house.
- Create a 'fire-free' area within five feet of the home, using non-flammable landscaping materials and/or high-moisture-content annuals and perennials.
- Remove dead vegetation from under decks and within 10 feet of the house.
- Consider fire-resistant materials for patio furniture, swing sets, etc.
- Remove firewood stacks and propane tanks; they should not be located in this zone.
- Water plants, trees and mulch regularly.
- Consider xeriscaping if you are affected by water-use restrictions.

Zone 2: 30 to 100 feet from the home.

In Zone 2:

- Select plants that are low-growing, well irrigated and minimally flammable.
- Leave 30 feet between clusters of two to three trees, or 20 feet between individual trees.
- Encourage a mixture of deciduous and coniferous trees.
- Create 'fuel breaks' such as driveways, gravel walkways, and lawns.
- Prune trees six to ten feet up from the ground.

Zone 3: 100 to 200 feet from the home. NOTE: Because of other factors such as topography, the recommended distances to mitigate for radiant heat exposure extend between 100 to 200 feet from the home – on a site-specific basis. In this area:

- Conduct thinning of trees, although less space is required than in Zone 2.
- Remove smaller conifers that are growing between taller trees (these can serve as "ladder fuels" and give ground-level fires a path into the crowns of larger, mature trees).
- Remove heavy accumulation of woody debris.
- Reduce the density of tall trees so that their canopies do not touch.

Assessments

Many resources exist to assist people in making their homes more resistant to wildfire. An assessment of the factors that make a building vulnerable to wildfire is the best place to start. Individuals and fire departments can perform this assessment themselves with the help of a guide such as the one from Firewise https://www.nfpa.org/assets/gallery/riskassessment/story.html" https://www.nfpa.org/assets/gallery/riskassessment/story.html or at https://facnm.org/assessmentools, or they can contact a local professional to help with the assessment. An assessment completed by a professional or the homeowner themselves will provide a plan to tackle the most hazardous issues first and then move to less hazardous issues.

Evacuation

Residents should be ready to leave as soon as evacuation is recommended by officials, in order to avoid being caught in fire, smoke, or road congestion. Evacuating early helps firefighters keep roads clear of congestion and lets them move more freely to do their job. Resources are available to help residents prepare ahead of time for evacuation (see the resources for residents section). Early preparation can help residents with everything from packing lists—essentials can include taking a supply of critical medications—to how to address pets and livestock.

Here is a list of resources related to evacuation:

- Ready, Set, Go. This is the best tool for residents to prepare for different stages of evacuation: https://www.emnrd.nm.gov/sfd/wp-content/uploads/sites/4/FINAL-new-mexico-RSG-guide-2017_000.pdf
- Colfax County emergency alerts to learn about changes in evacuation plans: http://www.co.colfax.nm.us/government/emergency_management.php
- Past experiences and insights from evacuation: Firsthand Accounts: How to Prepare Your Community for a Wildfire Evacuation.
- Evacuation planning for fire departments:

- https://www.fema.gov/sites/default/files/2020-07/planning-considerations-evacuation-and-shelter-in-place.pdf
- https://fireadaptednetwork.org/evacuation-a-resource-round-up/

At the community level, the CWPP update includes a priority action item to establish safety zones and/or evacuation staging areas. A safety zone is an area without burnable fuel that is large enough so that the distance between the firefighters and flames is at least four times the maximum flame height. These should be established and made known in a community, but it should be made clear to residents that these safety zones do not allow any reduction in other preparations, since they should only be relied upon as a last resort.

Ingress and Egress/ Roads

Ingress (access for wildfire suppression equipment and personnel) and egress (ways for residents and visitors to escape the wildfire) are crucial to wildfire preparedness. Communities with only one way in and out, such as Idlewild, face a greater risk during wildfires. Planning evacuation routes at the community or fire district level is one way to identify hazards ahead of time. Actions to improve ingress and egress during a wildfire may include thinning along roadways, road condition improvements, and signage directing residents where to go during an emergency. The best course of action to remedy one way in one way out roads would be to add a second access route and the possibility of this should be assessed on a case-by-case basis. However, in many cases this is impractical and, in this case, widening roads and adding or improving turn outs will help ease this problem to allow for a two-way flow of traffic.

Some secondary roads that provide access for fighting wildland fires in the Village of Angel Fire are in poor condition and will hamper response by firefighters and evacuation by residents during an emergency. In addition, many communities have one way in and one way out access roads. An evaluation of roads in each district would be helpful to indicate where turnarounds are needed and to establish a point of no return for large fire apparatus. Specific roads that need evaluation and improvement are identified in the Priority Actions section.

Human Sources of Ignition

On average in the U.S., human-caused wildfires burn over half of the total acres burned by wildfire in a given year. Even in the Southwest, where lightning ignites many wildfires, people are responsible for many of the largest, most severe fires. Many of the human-caused ignitions originate from abandoned campfires and downed powerlines. Others arise from vehicles, fireworks, cigarettes, cook stove sparks, and burning yard waste. Understanding the patterns of human ignitions and effectiveness of prevention strategies is therefore crucial to reducing the impact of high-severity wildfire.

Since human ignitions are preventable, increasing education and awareness could be the key to reducing the number of large wildfires. In the planning and implementation of education and awareness initiatives, it is important to keep in mind:

- Prevention efforts should recognize the variation in how and where people start wildfires
- Prevention should be tailored to mode of ignition
- Outreach should be implemented to reach people who are likely to build campfires

For more information on human ignitions, risk awareness, and wildfire prevention in New Mexico, refer to FSG's March 2018 report: *Increasing Wildfire Awareness and Reducing Human-Caused Ignitions in Northern New Mexico* (http://forestguild.org/wildfire_prevention).

Campfires

In outreach and education efforts, it is important to understand the causes and patterns of ignition. Especially considering that 80% of wildfires are caused by campfires within a ¼ mile of a road, it is necessary to redouble efforts at campfire education (Evans 2018). The above-cited report provides the following insights into campfire ignitions:

- Abandoned campfires account for 44% of human-caused wildfires in the Southwest since 2011.
- 80% of wildfires started by campfires are within a quarter mile from a road.
- Campfire bans have demonstrated limited effectiveness, possibly due to their great importance to people recreating.

Power Lines

Electric power lines are increasingly becoming common ignition points for large wildfires in New Mexico. Three major incidents have occurred since 2011, and in May 2018 a power line ignited the Los Alamitos fire, which burned 67 acres in two hours. Part of the prominence of power line ignitions can be attributed to the fact that the conditions that often lead to downed powerlines—specifically high winds—also contribute to increasing the intensity and reach of wildfires, as well as the difficulty of firefighting (Mitchell, J. W. 2009).

In April 2013, the Forest Service held a summit with western utilities in Los Angeles to discuss the issue; the New Mexico representative identified 505 miles of transmission line at risk. This number likely underestimates the risk, as smaller energy cooperatives are underrepresented in this listing.

Greater collaboration is needed between the CWPP core team and local (Kit Carson Electric, Springer Electric Cooperative, Northern New Mexico Gas Company, etc.) utility companies. Strategies for reducing ignition potential from power lines include encouraging off the grid solar systems and burying future or expanded power lines networks. Communities and landowners have a role to play to identify power lines, poles, and transformers that are in poor condition or have excessive brush underneath and contact utilities or other authorities. Volunteer Fire Departments should work with communities to identify areas where power infrastructure poses the risk of wildfire ignition. Regular inspections of lines, poles, transformers, etc. will help reduce the likelihood of human-caused wildfires from faulty power infrastructure.

Smoke Impacts

Wildfire smoke can have significant negative effects on public health. This can be the case even from fires occurring miles away or after a local fire has been controlled. Some demographics are particularly at risk, including people over 65 years old, under 18, and pregnant women. People whose health may already be compromised may also be particularly vulnerable to the effects of wildfire smoke; for this reason, special consideration should be given to preparing hospitals, assisted living facilities, and other health service centers. Residents with heart or lung diseases or any kind of respiratory issues are at particularly elevated risk of adverse smoke impacts.

Personal Smoke Mitigations

For residents, the Center for Disease Control recommends the following measures to decrease the impact of wildfire smoke:

- Check local air quality reports.
- Keep indoor air as clean as possible by keeping doors and windows shut; consider obtaining high efficiency particulate air (HEPA) filters to aid in keeping indoor air clean. Installing a HEPA filter in bedrooms can provide around 8 hours nightly of clean breathing, regardless of air conditions outside and during waking hours.
- Avoid activities that increase indoor pollution such as smoking, burning candles, spraying aerosols, vacuuming, and using fireplaces or gas stoves.
- Assuming you are in a safe place, away from the fire, limiting physical exercise can help to limit smoke inhalation. During exercise, people can increase their air intake as much as 10 to 20 times over their resting level.
- Seek shelter in a designated evacuation center or away from the affected area if necessary.
- Above all, seek to limit your exposure to smoke.

Community Smoke Mitigation

For community leaders, here are some considerations and steps ahead of a potential wildfire to prepare your communities:

- "Safe spaces" should be designated and prepared where community members can have a respite from smoky air. Communities should explore installing integrated HEPA filters at key locations such as public libraries, hospitals, nursing homes, and schools so that places provide clean air to vulnerable populations during their normal daily activities.
- Organizers should consider suspending certain outdoor activities and events if air quality is poor. Outdoor sports events and school recesses are examples of activities that can be canceled, postponed, or moved indoors to minimize exposure.
- Create a system to supply sensitive individuals with portable HEPA filters during times of smoke impacts. HEPA filter loan programs have been implemented on small scales that succeed in providing clear for the most vulnerable residents in an area.

Helpful websites include:

- New Mexico Fire Info, Smoke Management - New Mexico Fire Information - an interagency effort by federal and state agencies in New Mexico
- Air Now, Interactive Map of Smoke Monitors & Fire Current Conditions - Environmental Protection Agency
- Smoke and HEPA Filter Loan Program - from Fire Adapted New Mexico
- Protect Your Health on Smoky Days - from New Mexico Environmental Public Health
- Wildfire Smoke Frequently Asked Questions - Environmental Protection Agency
- New Mexico's Smoke Management Program - New Mexico Environment Department's Air Quality Bureau

Communication

Communication is one of the best tools for reducing the impact of wildfires. Good communication allows firefighters to efficiently suppress wildfires, residents to evacuate if the need arises, and responders to help those in need. In order to ensure good communication during an incident, it is crucial to have lines

of communication established before an incident. Emergency responders from the County, VFDs, and state and federal agencies need to be sure they understand each other's communications protocols and requirements. Pre-wildfire season meetings of key individuals is a worthwhile investment to ensure seamless communication during a wildfire. These meetings also serve to build the personal connections and trust that can be very important during an incident.

Emergency Notifications

In addition to effective communication between first responders, a way to communicate emergency information to residents and visitors is crucial, especially in the event of an evacuation. The most basic version of this is going door to door during an emergency but this takes time and is usually only employed at the last moment during the early stages of an incident or during large incidents after additional staff has been brought in to handle this task. An up-to-date rural addressing system will aid in these door-to-door efforts. A coordination meeting between the different agencies that manage address data would be helpful to ensure that there aren't gaps in accountability across the county.

Another essential communication tool that is already in place in Colfax County to assist with wildfire and other emergency notifications is the "Code Red" reverse 911 system. The Code Red system will send notifications to all landline phones in a selected area. The new system allows you to enter additional information into the emergency notification system to be notified through other devices cell phones, a text device, email address, fax number, or work phone number. This allows for mass notifications to be sent out in the event of any sort of emergency. It also allows for more frequent one-way communication from emergency managers, pre-evacuation notices, and any other early warnings can be sent out in the early stages of emergencies well before evacuation notices. Other devices can be registered through the County's Emergency Management website: (https://www.co.colfax.nm.us/government/emergency_management.php).

Communication for First Responders

Communication is a challenge in areas within and surrounding the Village of Angel Fire County. Steep canyons and mountains limit the extent of radio and cell phone coverage in many areas. The lack of timely communication is a concern that we heard of from many community members and core team members. Eliminating radio dead spots will provide for firefighter safety and effective response by allowing better communication with the county dispatch and fellow first responders.

Community Emergency Response Team

The Federal Emergency Management Agency (FEMA) has a program called Community Emergency Response Team (CERT) to help community members take part in the response to disasters. The CERT program helps volunteers use training learned in the classroom and during exercises to assist others in their community after a disaster when professional responders are not immediately available to help.

More information on the CERT Program can be found on the following web pages:

https://www.ready.gov/community-emergency-response-team

https://www.fema.gov/news-release/2003/05/29/community-emergency-response-team-cert-program