
APPENDIX B

COMMUNITIES



The purpose of this appendix is to examine, in greater detail, the Communities in the Village of Angel Fire and their recommended treatments. Of the thirteen Communities within the Village, three were found to represent a very high hazard, four were rated as high hazard; and six were rated as moderate hazard. Four Areas of Special Interest were also rated for their relative physical hazards (see Figures B-1 and B-2). Tables B-1 and B-2 present the information in tabular form. Figure B-3 displays an overview of all of the recommended road treatments and shaded fuelbreaks, which are then displayed in more detail in Figures B-4 through B-16.

COMMUNITY ASSESSMENT METHODOLOGY

The community level methodology for this assessment uses a Wildfire Hazard Rating (WHR) that was developed specifically to evaluate communities within the Wildland Urban Interface (WUI) for their relative wildfire hazard.¹ The WHR model combines physical infrastructure such as structure density and roads; fire behavior components like fuels and topography; and the field experience and knowledge of wildland fire experts. This model has been proven and refined by use in rating over 1,400 neighborhoods throughout the United States.

Many knowledgeable and experienced fire management professionals were queried about specific environmental and infrastructure factors, wildfire behavior, and hazards. Weightings within the model were established through these queries. The model was designed to be applicable throughout the western United States.

The model was developed from the perspective of performing structural triage on a threatened community in the path of an advancing wildfire with moderate fire behavior. The WHR survey and fuel model ground truthing are accomplished by field surveyors with WUI fire experience. The rating system assigns up to a maximum of 60 points based on seven categories: average lot size, slope, primary aspect, average fuel type, fuel continuity, dominant construction type, and surface fuel loading. The higher the community scores, the lower its wildfire hazard. For example, a community with an average lot size of less than 1 acre and slopes of greater than 30% would receive 0 points for those factors, whereas a community with an average lot size of 5 acres and slopes of less than 15% would receive 16 points for the same factors. Additional hazards are then subtracted from the subtotal of points earned in the seven categories to give a final numeric value. The final value is then used to group communities into one of five hazard ratings: Extreme, Very High, High, Moderate, or Low.

It is important to note that not all groupings occur in every geographic region. There are some areas with no low hazard communities, just as there are some areas with no extreme communities. The rankings are also related to what is customary for the area. For example, a high hazard area on the plains of Kansas may not look like a high hazard area in the Sierra Nevada. The system creates a relative ranking of community hazards in relation to the other communities in the study area. It is designed to be used by experienced wildland firefighters who have a familiarity with structural triage operations and fire behavior in the interface.

¹ C. White, "Community Wildfire Hazard Rating Form" Wildfire Hazard Mitigation and Response Plan, Colorado State Forest Service, Ft. Collins, CO, 1986.

Figure B-1. Community Hazard Ratings

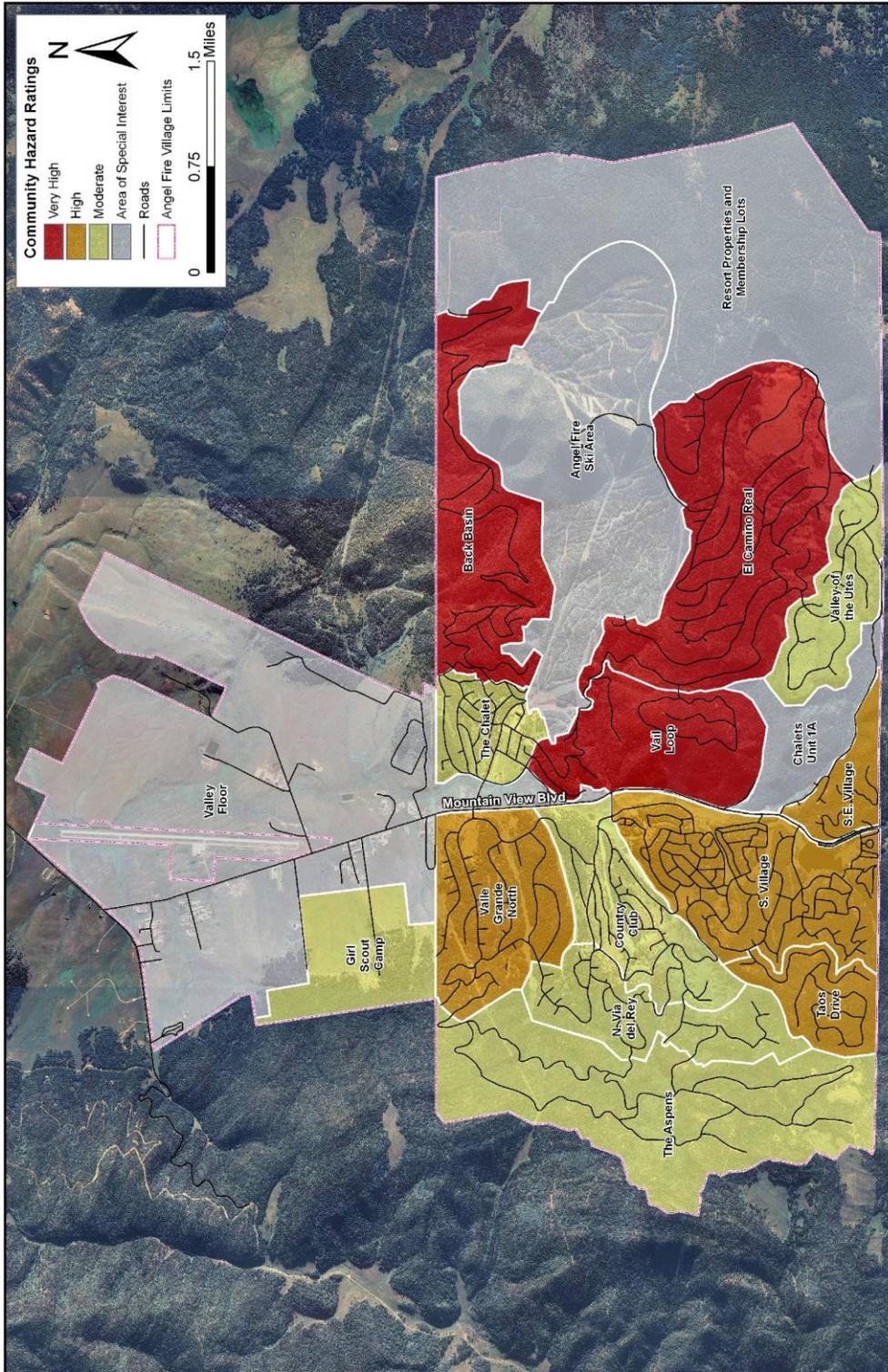


Table B-1. Relative Hazard Rankings for Communities in the Village of Angel Fire (refer to Figure B-1 on previous page)

Priority Ranking	Community Name	Hazard Rating
1	Vail Loop	Very High
2	Back Basin	Very High
3	El Camino Real	Very High
4	Taos Drive	High
5	South Village	High
6	South East Village	High
7	Valle Grande North	High
8	The Aspens	Moderate
9	North Via del Rey	Moderate
10	Country Club	Moderate
11	The Chalet	Moderate
12	Valley of the Utes	Moderate
13	Girl Scout Camp	Moderate

Communities in the Angel Fire Community Wildfire Protection Plan with a ranking of very high or high should be considered as ranking high for the purpose of conforming to the reporting requirements for the New Mexico Fire Planning Task Force.

Table B-2. Relative Physical Hazard Rankings for the Areas of Special Interest (refer to Figure B-2 on the next page)

Priority Ranking	Area of Special Interest	Relative Physical Hazard Rating
1	Angel Fire Ski Area	Moderate
2	Chalets Unit 1A	Moderate
3	Resort Property & Membership Lots	High
4	Valley Floor	Low

Figure B-2. Areas of Special Interest Ratings

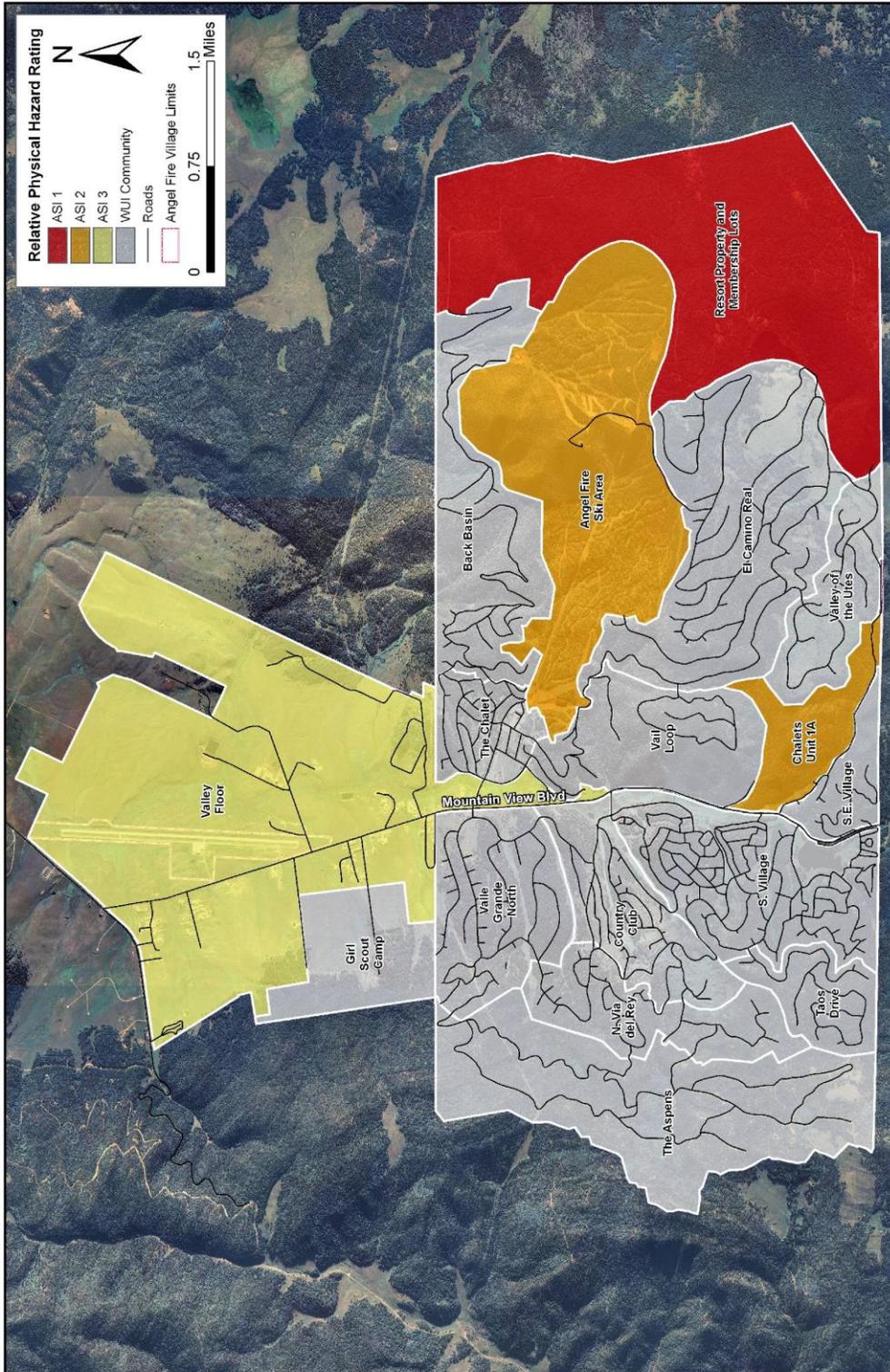
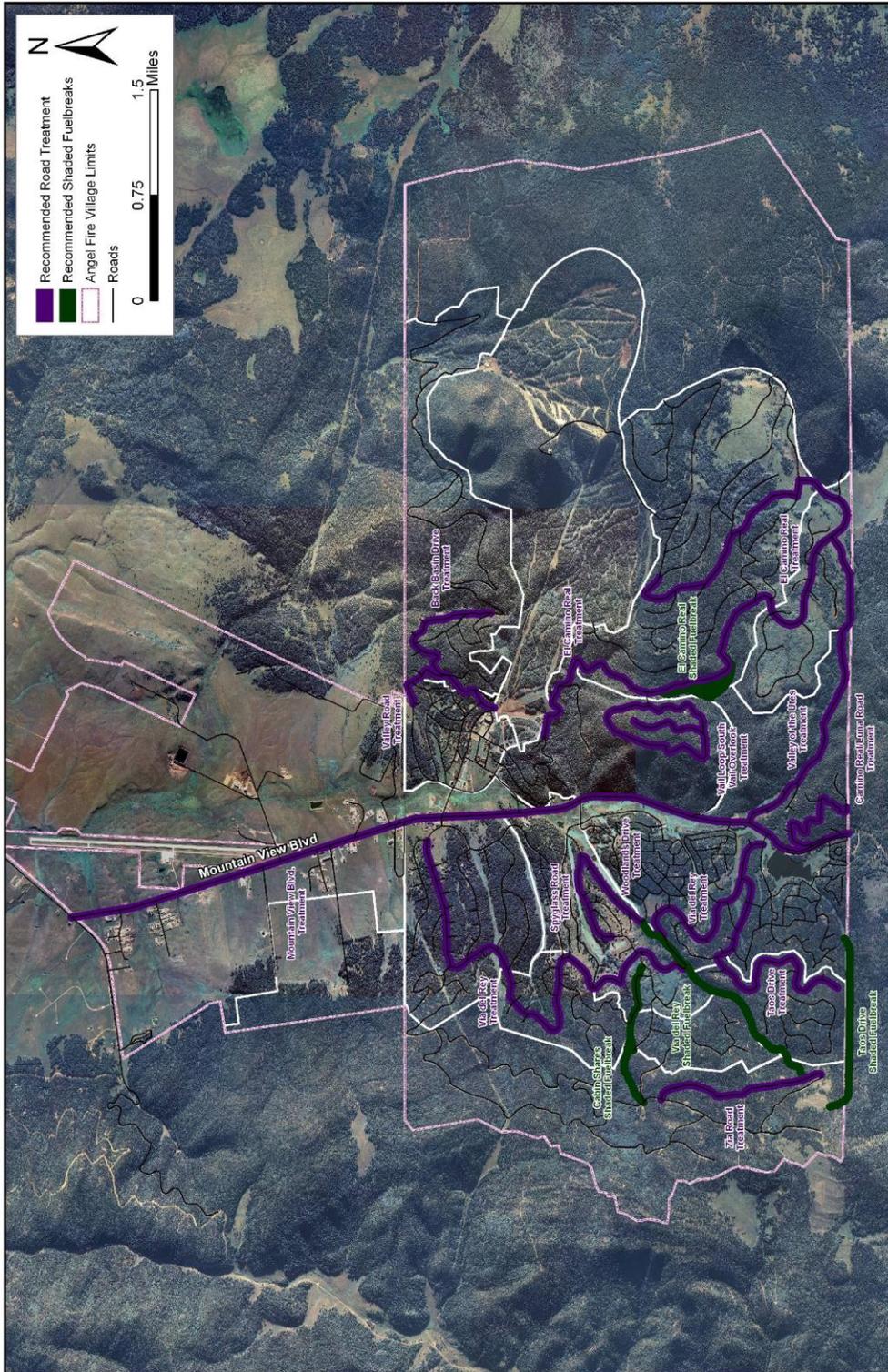


Figure B-3. Recommended fuels treatments



1. *Vail Loop* – Hazard Rating Very High



Description

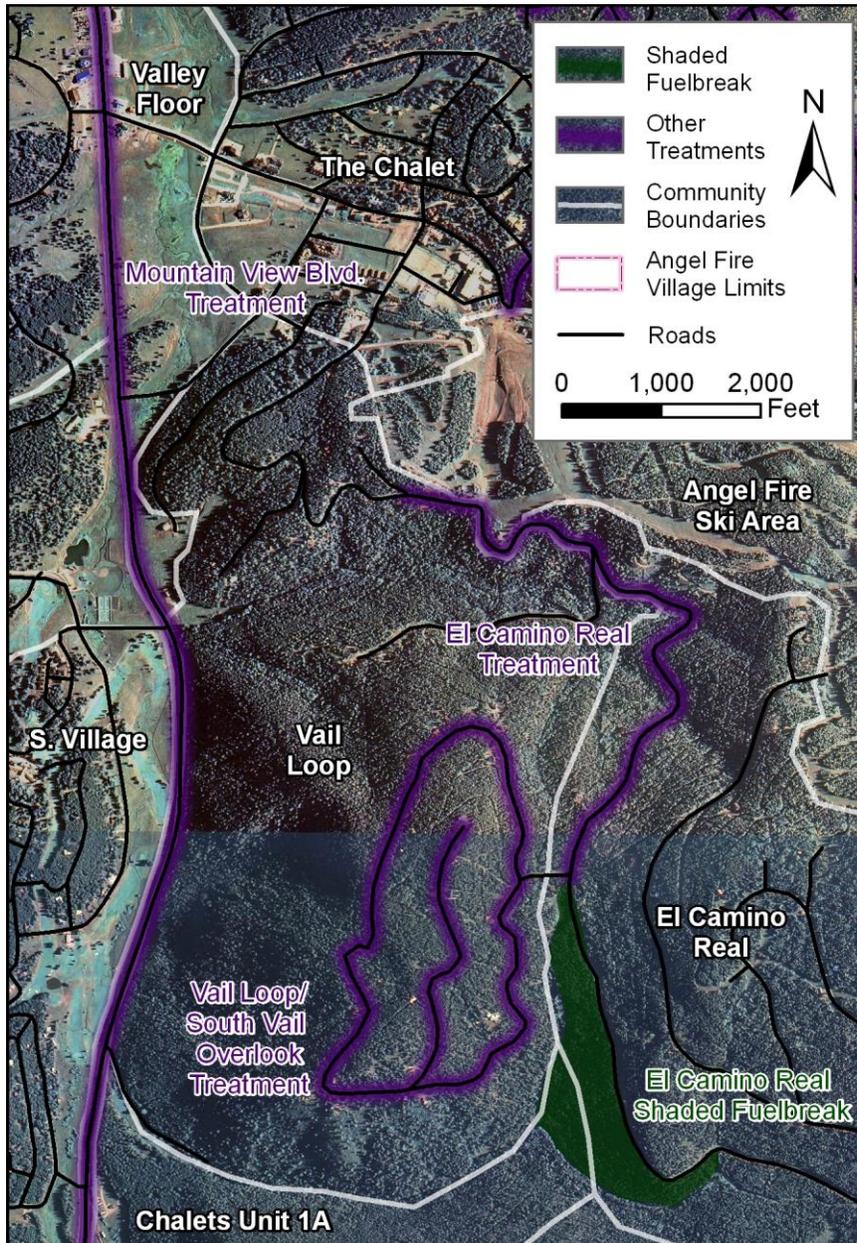
Vail Loop is a community that has similar infrastructure to most of the communities within the Angel Fire Village. Residences are located on lots over an acre in size. Although the homes have roofs that are highly resistant to fire, the siding is a mixture of combustible and non-combustible materials. There are open areas under decks where wood is stored and fire could potentially threaten the house. Steep slopes, ravines and chimneys are topographical features that are prominent throughout. Many of the structures are located in drainages that contain thick fuels. Not all of the houses have defensible space, but there are some that have exceptionally well done mitigation work. Some of the driveways are extremely (>30%) steep and inaccessible. Addressing is inconsistent, and many of the houses lack reflective addressing. The roads are well maintained gravel, and are generally greater than 20 feet wide. There are adequate turnarounds and hydrants are located throughout the neighborhood.

The dominant tree species in the area is Douglas fir. Pure, dense stands of fir are most common, but various other species are also located within the community, including white fir, and aspen. There is an exceptional variety in the fuels, including a west facing slope with Gambel oak and piñon pines. Although surface fire is likely under moderate weather conditions, torching is possible, especially along the Vail Overlook road and in the west facing slopes and drainages below the community on the west side. Low rates of spread are expected. Extreme weather conditions would promote tree torching, especially on the west facing slope that leads up from the highway. The steep slopes promote preheating and continued burning. Long flame lengths and increased rates of spread are probable, especially up south facing slopes where fuels are typically drier and more susceptible to fire spread.

Recommendations

- Clear fuels 300' downhill along the north side of Vail Loop (Figure B-4). Conduct roadside thinning along Vail Overlook and the south side of Vail Loop. Thinning and clearing along these roads will provide for safe access and egress for residents and emergency crews.
- Conduct roadside thinning along Mountain View Boulevard to reduce the possibility of an ignition along the highway spreading into the community.
- Clear fuels around areas used for RV and trailer storage.
- Improve road signs so they are non-combustible, 4" and reflective.
- Adequate defensible space is recommended for all homes.
 - Simply mowing or weed whacking for 50 feet around homes and structures, and cleaning leaf and needle litter from roofs and gutters and away from foundations, will profoundly increase structure survivability.
 - Discourage the use of combustible materials for the construction of projections below roof line such as decks.
- Open areas below decks and projections should be enclosed or screened to prevent the ingress of embers and kept clean of flammable materials, especially where such openings are located on slopes above fuels. Use fine mesh metal screen (1/4" or less) to cover eaves, roof, and foundation vents.
 - Discourage the planting of flammable ornamental vegetation within 30 feet of homes.
- Replace plastic address markers, using reflective, non-combustible materials. A good guideline for this practice is to place the markers five feet above ground level on the right side of the driveway.
- Extended defensible space is recommended for most homes, due to the dangerous topography and heavy fuel loads in and adjacent to this community.
- Remove wood piles and any flammable yard clutter to at least 30 feet from structures and propane tanks. Wood piles should be located uphill or even with homes; never downhill.

Figure B-4. Recommended Fuels Treatments for Vail Loop



2. Back Basin – Hazard Rating Very High



Description

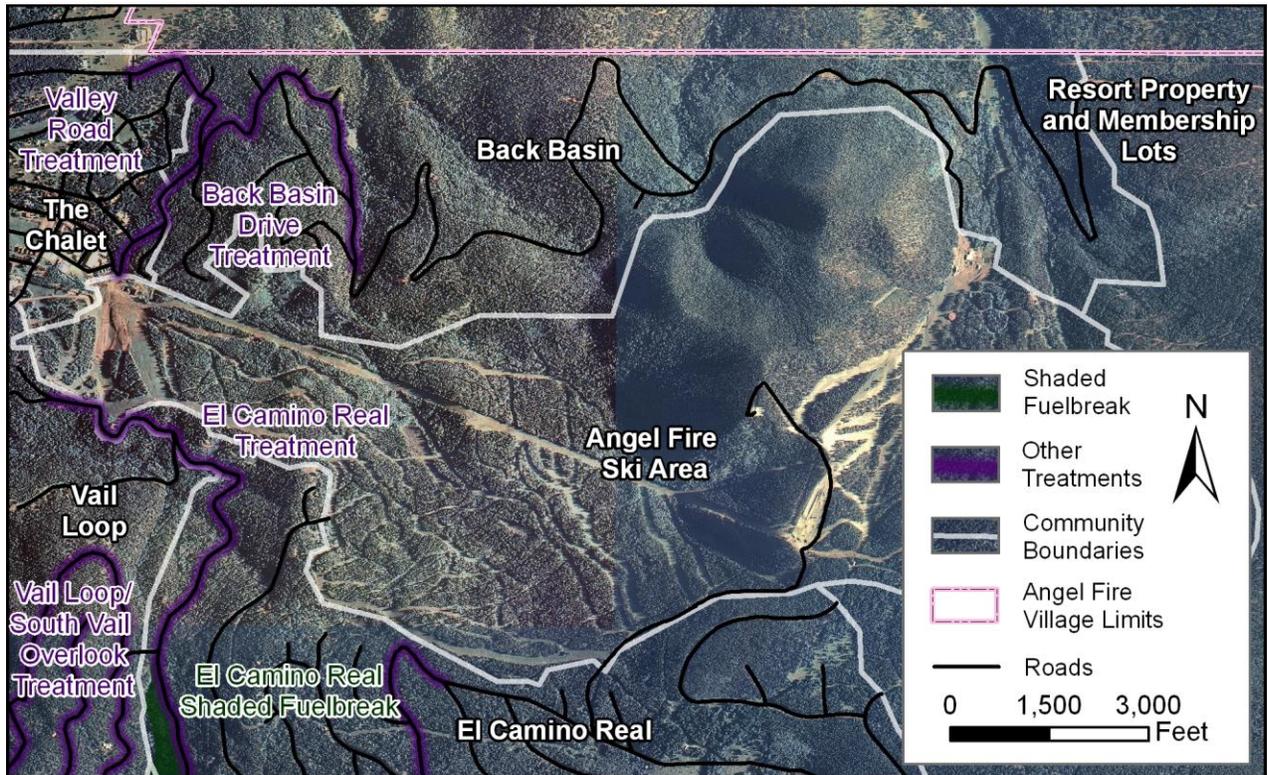
Back Basin is a community that borders the ski area and has low housing density. Most of the homes are located off of Back Basin Road and are on steep slopes. The lots are over an acre and are undeveloped, but lots with houses have metal roofs that have high fire resistance and mixture of combustible and non-combustible siding. Addressing is consistent with reflective plastic markers mounted on metal rods. Defensible space has been completed around some residences and as a function of clearing the land to build the houses. The utilities are all underground. There is only one way in and out via Back Basin Road, which is long and windy. Roads are generally wider than 20 feet and have adequate clearance and turnarounds. While the road slope is generally under 10%, there are a few sections that approach this grade. The street signs are wooden and non-reflective. There are hydrants located along the Back Basin Road.

The fuels in the community are dense. The main tree species is ponderosa pine with a large component of Douglas fir in the understory. At higher elevations, Engelmann spruce and subalpine fir are present. The ponderosa canopy closure is continuous and the Douglas fir seedlings act as ladder fuels, allowing fire to progress into the ponderosa canopies. Since the road has been cleared, much of the material removed has been discarded into large (6' x 8' x 4') piles along the side of Back Basin Road. There are some steeper slopes below the houses to the north of Back Basin Road. Under moderate weather conditions, surface fire would be likely. Flame lengths would likely be less than four feet. Under extreme weather, active crown fire is uncommon, but individual tree torching is probable under both moderate and weather conditions. Torching would produce flame lengths longer than 12 feet, making ground control of the fire impossible. Rates of spread are not expected to be faster than ¼ mile (20 chains) per hour with moderate weather, but could exceed ½ mile (40 chains) per hour, especially on the steep slopes due to preheating.

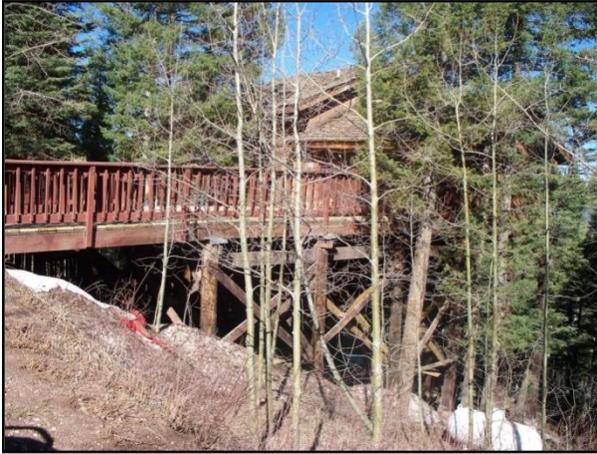
Recommendations

- Create a roadside fuelbreak along Back Basin Road. Focus on thinning fuels 300' below the road. Tie into the more developed area within The Chalet (Figure B-5). This will protect the access and egress along this road, since it is the only route within the community.
- Additional roadside thinning should be continued and tie from Back Basin Road along Mammoth Mountain Road to the north (Figure B-5).
- Remove slash piles from the side of the road.
- Improve road signs so they are non-combustible, 4" and reflective
- Adequate defensible space is recommended for all homes.
 - Simply mowing or weed whacking for 50 feet around homes and structures, and cleaning leaf and needle litter from roofs and gutters and away from foundations, will profoundly increase structure survivability.
 - Discourage the use of combustible materials for the construction of projections below roof line such as decks.
- Open areas below decks and projections should be enclosed or screened to prevent the ingress of embers and kept clean of flammable materials, especially where such openings are located on slopes above fuels. Use fine mesh metal screen (1/4" or less) to cover eaves, roof, and foundation vents.
 - Discourage the planting of flammable ornamental vegetation within 30 feet of homes.
- Replace plastic address markers, using reflective, non-combustible materials. A good guideline for this practice is to place the markers five feet above ground level on the right side of the driveway.
- Extended defensible space is recommended for most homes, due to the dangerous topography and heavy fuel loads in and adjacent to this community.
- Remove wood piles and any flammable yard clutter to at least 30 feet from structures and propane tanks. Wood piles should be located uphill or even with homes; never downhill.

Figure B-5. Recommended Fuels Treatments for the Back Basin Area



3. *El Camino Real* – Hazard Rating Very High



Description

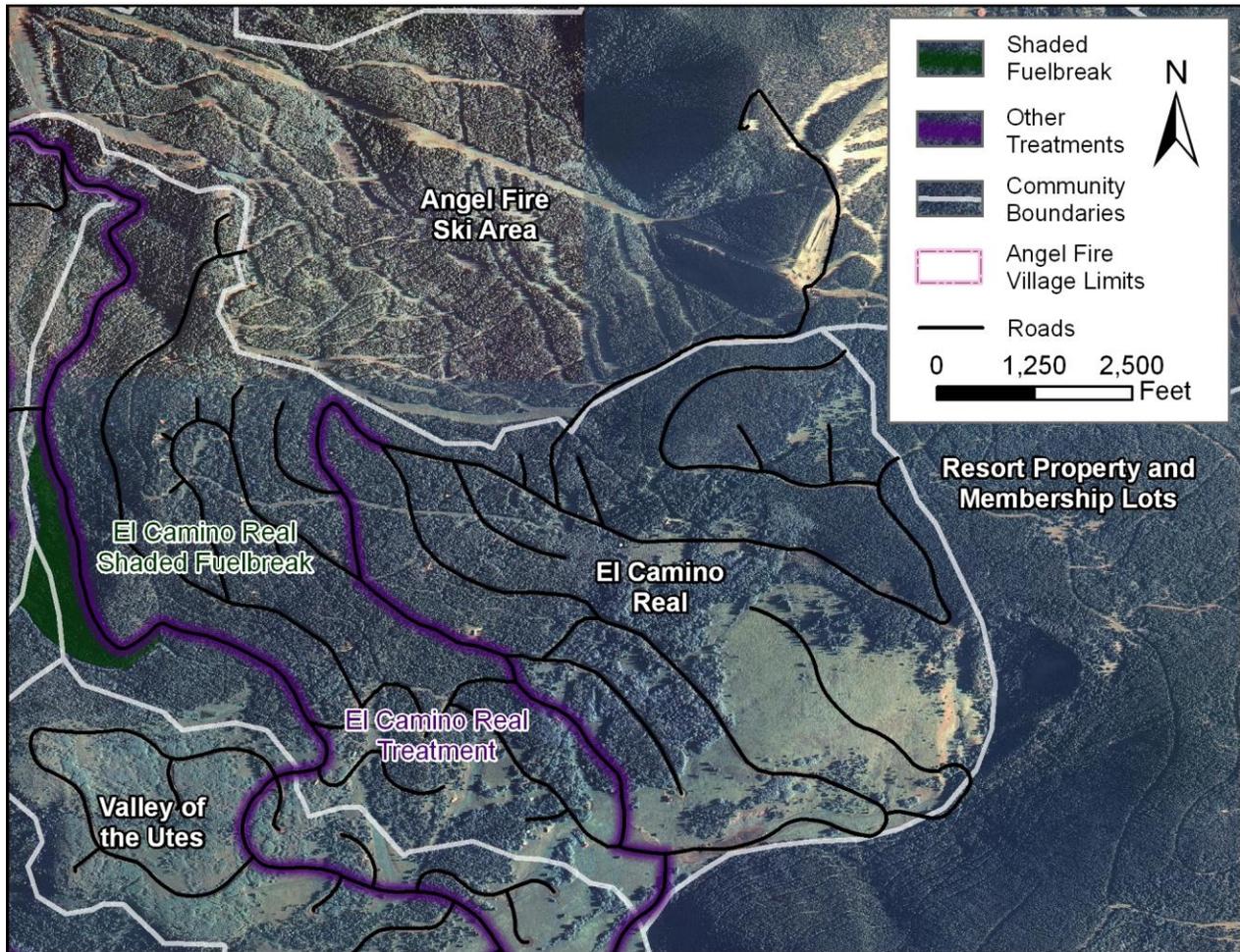
El Camino Real is similar to many of the other communities in Angel Fire Village. Some houses have non-combustible siding, while others have combustible wood siding and decks. All of the structures have non-combustible roofs, which are a requirement of the Village. The lots are generally larger than an acre, but many are vacant and have over-grown vegetation. Some homeowners have created defensible space around their property, but not all of the residents have yet to complete mitigation work. The utilities are located underground. There are multiple routes of ingress/egress along well maintained gravel roads, but often the roads can be confusing and travel is likely to be slowed if there were a wildfire. Although the road grades are less than 10%, many of the driveways are much steeper and access by emergency equipment is limited. Road signs are non-combustible, but not reflective, making them difficult to read at night. There are hydrants available throughout the community, as well as several water municipal water tanks, holding more than 50,000 gallons each.

The dominant fuel type throughout the community is mixed conifer. The majority of the trees are Douglas firs and some bristlecone pine. The canopy and the understory both have heavy amounts of fuel loading. At higher elevations, subalpine fir and Engelmann spruce are the dominant species. Moderate weather conditions will support surface fire, and some individual tree torching. Low rates of spread and flame lengths would be common. However, extreme weather conditions are capable of moving fire from the surface into the canopies. Large-scale tree torching is likely, especially along the main roads like Cheerful Overlook, El Camino Real, Panorama Way, and Skyview Lane. This issue is intensified on the south facing slopes and rates of spread could be upwards of ½ mile (40 chains) per hour. Flame lengths would likely be longer than 12 feet, inhibiting use of ground crews. If a fire were to start along Mountain View Boulevard, the fuels to the west of El Camino Real would be preheated, and crown fire would spread up the west facing aspect. Dense fuels on the south border of the community could also carry fire quickly up through the tops of the trees and carry fire quickly uphill towards homes located on the top of the peak.

Recommendations

- Create a shaded fuelbreak along the west facing slope. Use the drainage as the lower boundary and continue uphill to El Camino Real (Figure B-6). Contour around to the south aspect on the south side of the community.
- Work on roadside thinning along the entire length of El Camino Real through the community, focusing on downhill fuels (Figure B-6). This is a major road in the community, and transitions into Valley of the Utes to the south, and then loops back into the community of El Camino Real. The entire length of this road should be thinned to protect the evacuation route.
- Mark evacuation routes with reflective signage.
- Improve road signs so they are 4" and reflective.
- Adequate defensible space is recommended for all homes.
 - Simply mowing or weed whacking for 50 feet around homes and structures, and cleaning leaf and needle litter from roofs and gutters and away from foundations, will profoundly increase structure survivability.
 - Discourage the use of combustible materials for the construction of projections below roof line such as decks.
- Open areas below decks and projections should be enclosed or screened to prevent the ingress of embers and kept clean of flammable materials, especially where such openings are located on slopes above fuels. Use fine mesh metal screen (1/4" or less) to cover eaves, roof, and foundation vents.
 - Discourage the planting of flammable ornamental vegetation within 30 feet of homes.
- Replace plastic address markers, using reflective, non-combustible materials. A good guideline for this practice is to place the markers five feet above ground level on the right side of the driveway.
- Extended defensible space is recommended for most homes, due to the dangerous topography and heavy fuel loads in and adjacent to this community.
- Remove wood piles and any flammable yard clutter to at least 30 feet from structures and propane tanks. Wood piles should be located uphill or even with homes; never downhill.

Figure B-6. Recommended Fuels Treatments for the El Camino Real Area



4. Taos Drive – Hazard Rating High



Description

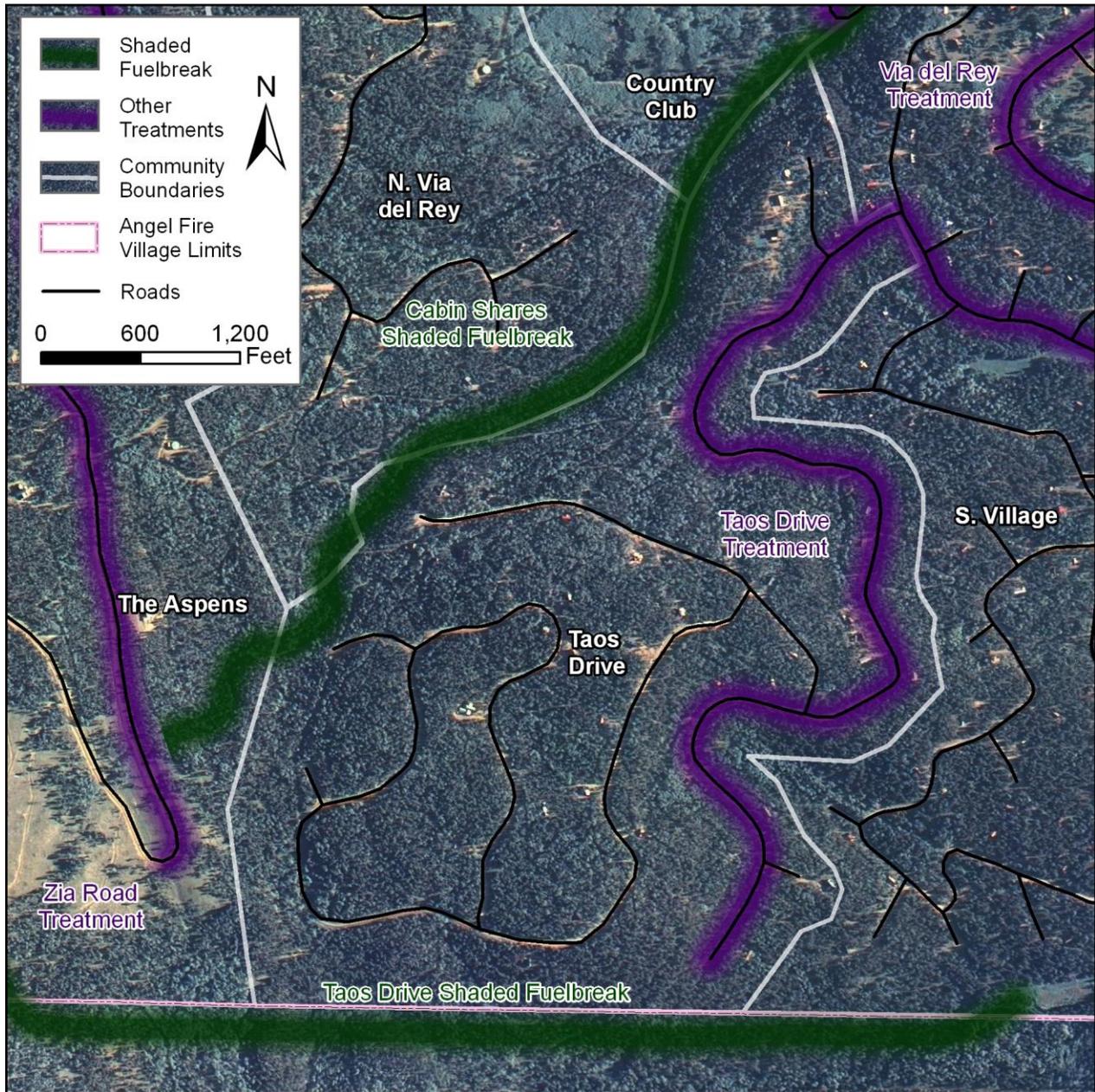
Taos Drive is located at the south end of the Village. The homes are similar to many of the others on the west side of the Village, in that the roofs are metal, and highly resistant to fire, and there is a mixture of combustible and non-combustible siding and decks. While some defensible space mitigation has been completed, most homes do not have any defensible space. The lots are typically under an acre in size. All of the utilities are located underground. Addressing is variable; some houses have reflective markers along the driveways, while others are unmarked or difficult to read. Unlike most of the other communities, Taos Drive has a higher number of year-round residences. Wood storage is an issue, since many people are storing wood against the structures and on decks. The Taos Drive community has a single gravel road for ingress/egress along Taos Drive and has multiple dead ends that are unmarked, which could present serious problems during an evacuation. The roads within the community are generally 24 feet wide and are gravel. There are adequate turnarounds throughout. Street signs are present, but are combustible and non reflective. Hydrants are present, but they are sparsely located.

Like many of the communities, the fuels within the Taos Drive community are extremely dense. Both ponderosa pines and Douglas firs are dominant tree species. Aspen are mixed within the mixed conifers. There is not a large quantity of surface fuels. Although most of the community has slopes less than 15%, there are drainages and areas greater than 30%. With moderate weather conditions, surface fire is most likely throughout the entire community, regardless of fuels or slope. Flame lengths would be less than four feet. Rate of spread is expected to be less than ¼ mile per hour. Extreme weather may cause torching along the south end of the community, especially on the south and east facing slopes. Rate of spread is not expected to be very fast. Fire spread from tree to tree is not likely because the lack of ladder fuels to bring the fire into the crowns with moderate conditions. However, higher speed winds could create flame lengths that are long enough to extend into the crowns and cause small areas of torching and flying embers.

Recommendations

- Extend the existing fuelbreak from the Osha/Zia Fire through the Taos Drive community along the south border (Figure B-7). Tie into the greenbelt that extends from Monte Verde Lake to the west.
- Conduct thinning along Taos Drive, as it is a major evacuation route for the community.
- Improve road signs so they are non-combustible, 4" and reflective.
- Replace plastic address markers with reflective metal signs.
- Make sure all dead ends are marked as such.
- Adequate defensible space is recommended for all homes.
 - Simply mowing or weed whacking for 50 feet around homes and structures, and cleaning leaf and needle litter from roofs and gutters and away from foundations, will profoundly increase structure survivability.
 - Discourage the use of combustible materials for the construction of projections below roof line such as decks.
- Open areas below decks and projections should be enclosed or screened to prevent the ingress of embers and kept clean of flammable materials, especially where such openings are located on slopes above fuels. Use fine mesh metal screen (1/4" or less) to cover eaves, roof, and foundation vents.
 - Discourage the planting of flammable ornamental vegetation within 30 feet of homes.
- Replace plastic address markers, using reflective, non-combustible materials. A good guideline for this practice is to place the markers five feet above ground level on the right side of the driveway.
- Extended defensible space is recommended for most homes, due to the dangerous topography and heavy fuel loads in and adjacent to this community.
- Remove wood piles and any flammable yard clutter to at least 30 feet from structures and propane tanks. Wood piles should be located uphill or even with homes; never downhill.

Figure B-7. Recommended Fuels Treatments for the Taos Drive Area



5. South Village – Hazard Rating High



Description

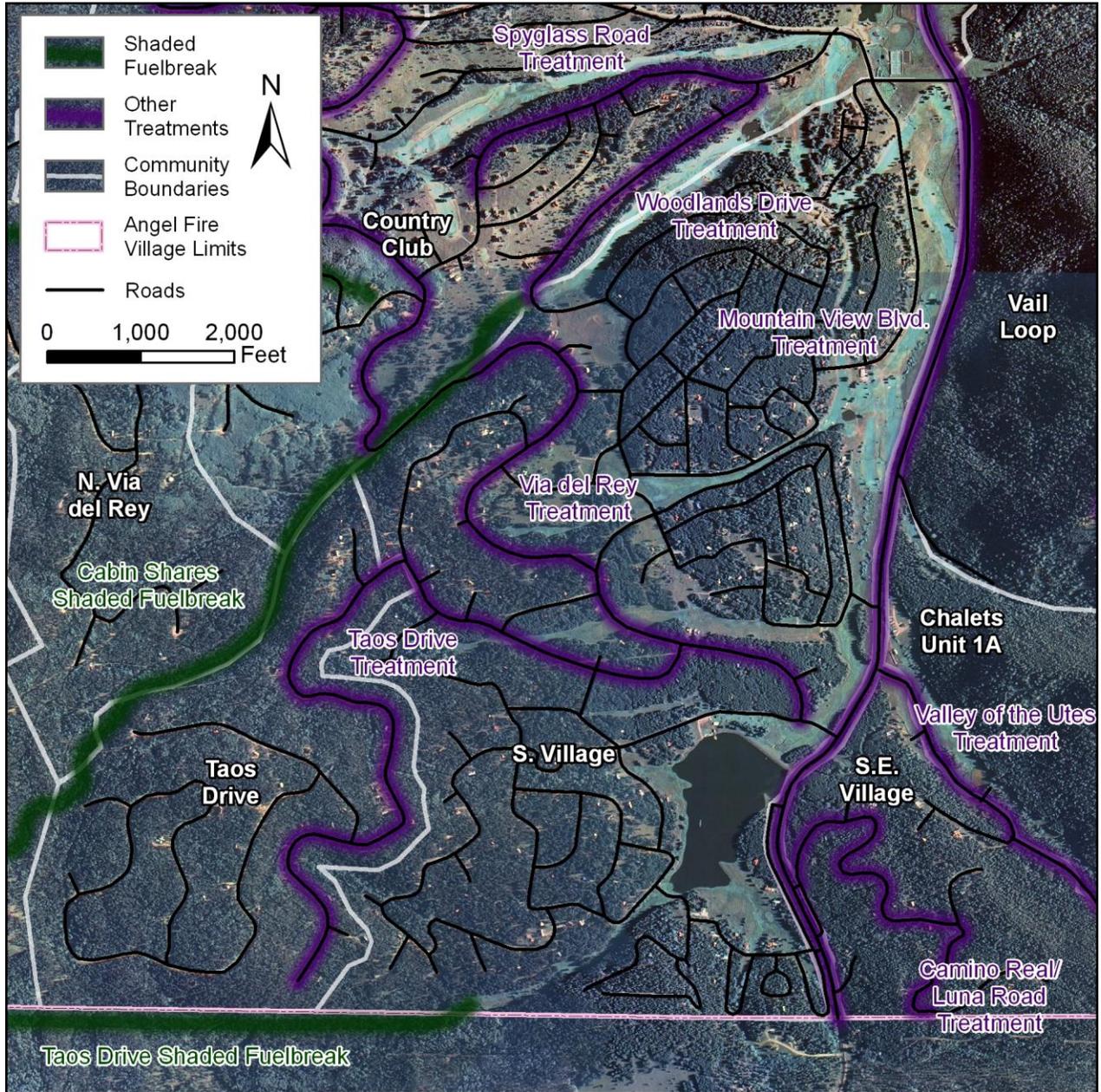
The South Village community is similar to the Taos Drive community in terms of housing density and infrastructure. Lot sizes are less than an acre, and houses are relatively dense. There are undeveloped lots within this community as well, in addition to a non year-round population. Almost all of the houses have metal roofs, but there are a few that still have cedar shake roofs and combustible siding. Wood is frequently stored against houses. The majority of the homes have reflective plastic signs, but the plastic is often broken. Some homes have defensible space, but the majority are lacking any mitigation. Houses that are located around Monte Verde Lake are located in a more open area. There are multiple ways in and out of the community along a series of maintained gravel roads. However, the road network leading into the community from Lakeview Park Drive is extremely confusing. The road names include Lake Park Drive, Lakewood Park Terrace, Lakeview Circle, and Lakeview Park. Because the road signs are inconsistent, it is often difficult to determine which road is which. Road widths and turnarounds allow for emergency equipment access. Hydrants are present, but are not found with as high of frequency as some other places in the Village.

Around the lake, grass and ponderosa pine are the dominant fuels. There is little regeneration in the understory, so as a result, few ladder fuels. In the transition from the open grasslands to the forest, there is a large aspen component. On the slopes, mixed conifer, including ponderosa pine and Douglas fir become more dominant. Pockets of aspen are present throughout. There is not a large threat of fire in the tree crowns under moderate weather conditions. There are not enough ladder fuels or strong enough wind to allow fire to spread into the crowns. Rates of spread would likely be slower than a quarter mile per hour. Higher wind speeds are capable of carrying the fire into the trees and torching groups of trees. Longer flame lengths could produce embers that could spread fire to the houses within the community.

Recommendations

- Create a landscape fuelbreak uphill from the base of the drainage along the northwest boundary (Figure B-8). Tie into the open area to the north and continues into the Taos Drive community, linking with the recommended fuels treatment for Taos Drive.
- Because they are major evacuation routes, conduct roadside thinning along Cimarron Trail, Sarazen Terrace, and Via del Rey (Figure B-8).
- Maintain existing greenbelts, including removing conifers that are encroaching into the areas.
- Consider clarifying street names in the area surrounding Monte Verde Lake area
- Improve road signs so they are 4" and reflective.
- Consider clarifying street names in the area surrounding Monte Verde Lake area
- Adequate defensible space is recommended for all homes.
 - Simply mowing or weed whacking for 50 feet around homes and structures, and cleaning leaf and needle litter from roofs and gutters and away from foundations, will profoundly increase structure survivability.
 - Discourage the use of combustible materials for the construction of projections below roof line such as decks.
- Open areas below decks and projections should be enclosed or screened to prevent the ingress of embers and kept clean of flammable materials, especially where such openings are located on slopes above fuels. Use fine mesh metal screen (1/4" or less) to cover eaves, roof, and foundation vents.
 - Discourage the planting of flammable ornamental vegetation within 30 feet of homes.
- Replace plastic address markers, using reflective, non-combustible materials. A good guideline for this practice is to place the markers five feet above ground level on the right side of the driveway.
- Remove wood piles and any flammable yard clutter to at least 30 feet from structures and propane tanks. Wood piles should be located uphill or even with homes; never downhill.

Figure B-8. Recommended Fuels Treatments for the South Village Area



6. South East Village – Hazard Rating High



Description

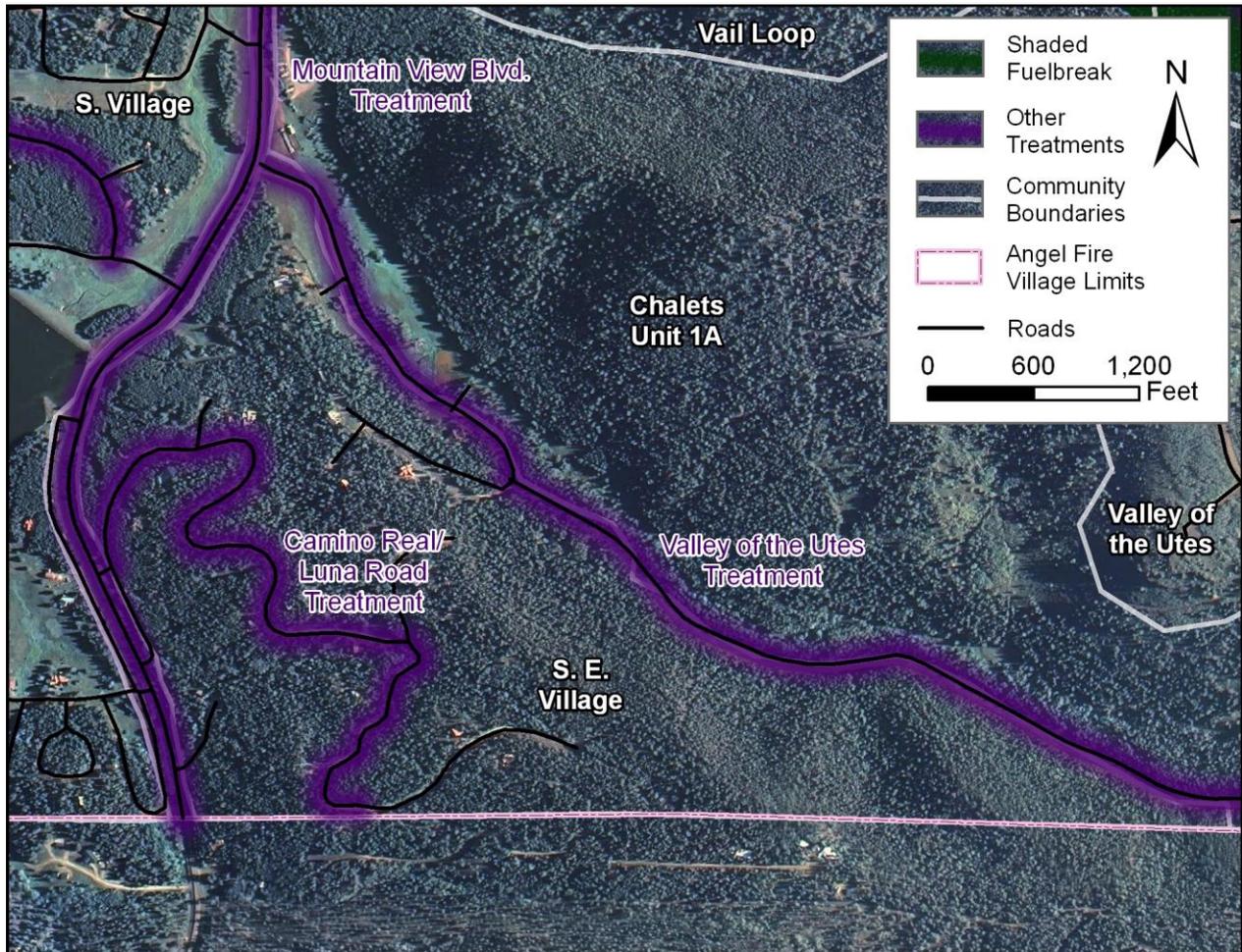
The South East Village is similar to the South Village, but is on the opposite side of Mountain View Boulevard. As a result, the aspect is west facing instead of east facing. Houses are located on lots less than an acre in size. The deck and siding is a mixture of both combustible and non-combustible materials. Roofs are metal and highly resistant to fire. There is a large component of non year-round residents. Wood storage is often against structures and trees located on the property. The addressing is inconsistent and needs improving. Some of the houses have defensible space, but not all. The presence of vacant lots which have had no mitigation work completed poses a threat to the adjacent developed lots. There is new construction occurring throughout, and all new building should adhere to the Wildland Urban Interface Code. All of the utilities are located underground. There is only one way in and out of the community, but the close proximity of the highway shortens evacuation times. Roads are good gravel and provide adequate turnarounds for apparatus. Street signs are often not present, and those that are, are not reflective and fashioned from combustible materials. Hydrants are scattered through the community.

Mixed conifer stands are the dominant species at the lower elevations and on the sides of the drainages. Aspen are present in the drainages due to the high amount of available water. Ponderosa pine is also present and dense stands of ponderosa exist with Douglas fir in the understory. There is continuous crown cover, but rather low surface loading. There is a significant component of small trees in the understory. Under moderate weather conditions, crown fire is not expected; surface fires would be most likely. However, given the prevailing south west winds and the steep slopes that lead from Mountain View Boulevard, more active fire behavior could be possible. Small groups of trees torching can preheat trees further up the hill and allow for an uphill fire run.

Recommendations

- Conduct roadside thinning on Camino Real, working 300' downhill (Figure B-9).
- Conduct roadside thinning along Valley of the Utes Drive since it is a major evacuation route (Figure B-9).
- Maintain the fuelbreak on the south end of the South East Village. This fuelbreak limits the occurrence of fire spreading uphill into the community.
- Work on roadside thinning and mowing along Mountain View Boulevard.
- Ensure evacuation routes are marked with reflective signage.
- Improve road signs so they are 4" and reflective.
- Adequate defensible space is recommended for all homes.
 - Simply mowing or weed whacking for 50 feet around homes and structures, and cleaning leaf and needle litter from roofs and gutters and away from foundations, will profoundly increase structure survivability.
 - Discourage the use of combustible materials for the construction of projections below roof line such as decks.
- Open areas below decks and projections should be enclosed or screened to prevent the ingress of embers and kept clean of flammable materials, especially where such openings are located on slopes above fuels. Use fine mesh metal screen (1/4" or less) to cover eaves, roof, and foundation vents.
 - Discourage the planting of flammable ornamental vegetation within 30 feet of homes.
- Replace plastic address markers, using reflective, non-combustible materials. A good guideline for this practice is to place the markers five feet above ground level on the right side of the driveway.
- Remove wood piles and any flammable yard clutter to at least 30 feet from structures and propane tanks. Wood piles should be located uphill or even with homes; never downhill.

Figure B-9. Recommended Fuels Treatments for the South East Village Area



7. Valle Grande North – Hazard Rating High



Description

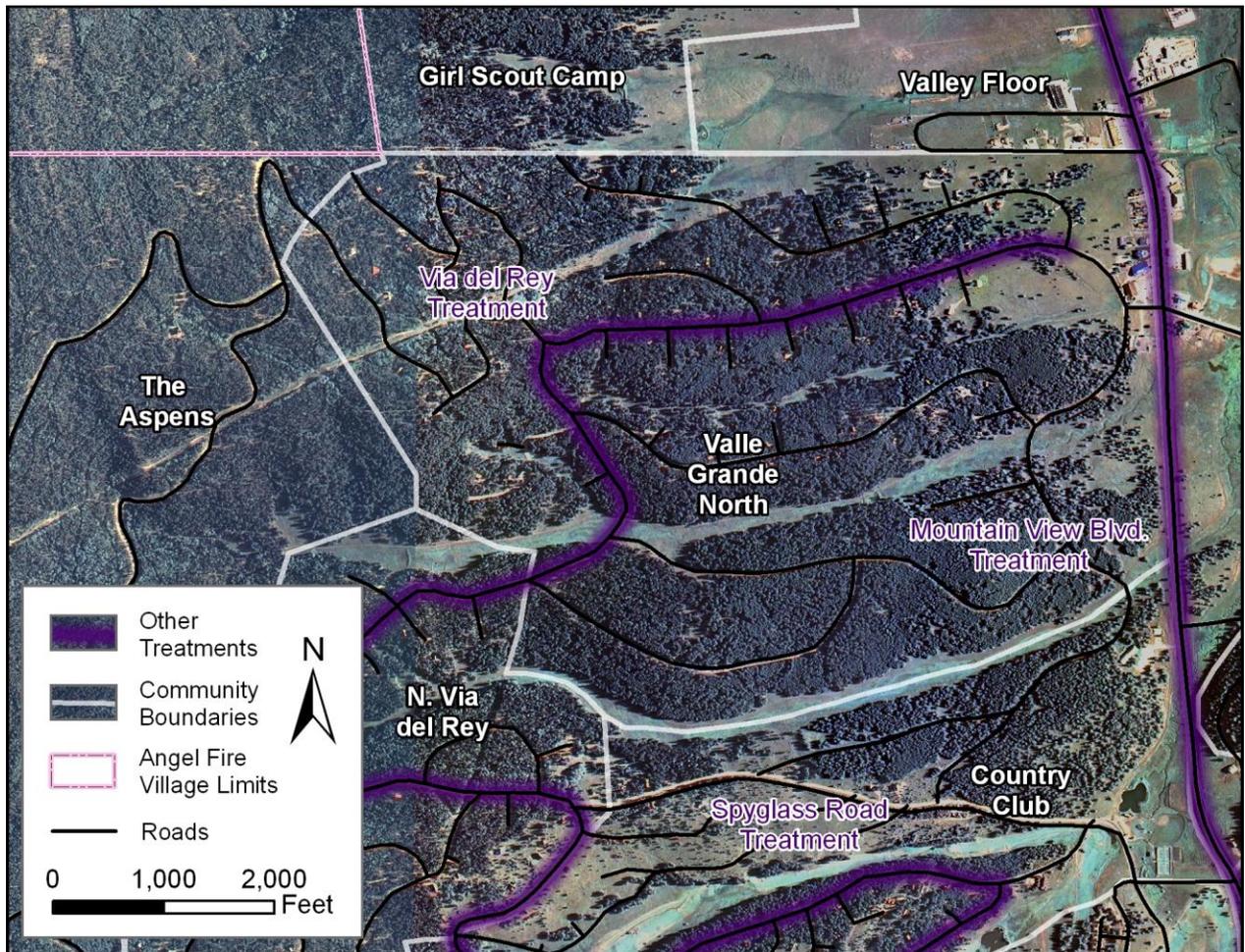
Houses in this area are located on lots that are less than an acre in size. Some of the residences are built mid-slope, aligned with small, steep ravines. There are many undeveloped lots throughout the community. The existing residences are comprised of metal roofs, which are highly resistant to fire, but they typically have combustible siding. Needle build-up on roofs is common. Little defensible space work has been done around many of the structures. A large percentage of the homes are not occupied year-round. Wood storage is often under or on decks, and right against the homes. The utilities are all located underground. Home addressing is inconsistent; not every house has reflective plastic signage, and some that do are broken due to snow damage. The south section of the community does not currently have any infrastructure. The land has been marked into individual lots, but no building has been occurring yet. Underground utilities, including power, phone, and sewer lines will be underground. Any building will be required to have a metal roof and defensible space. There are multiple routes of ingress/egress within the community along paved and gravel roads. Many roads within the community are dead ends, but are not marked. Street signs are either not present or if present, are neither fire resistant nor reflective. Hydrants are present, but are sparsely located. Green belt trails are located throughout, which encourage use by residents.

The vegetation in the community is extremely dense. Ponderosa pines are the dominant species and are growing in what is known as 'dog-hair' stands. There are a few Douglas fir trees that are beginning to grow in the understory, but overall, little light penetrates the canopy. As a result, the understory is comprised of little surface vegetation, mainly needle-cast. The area of the community west of Via del Rey has lower density trees and an oak understory. The south facing slopes have drier fuels that are predisposed to fire. Moderate weather conditions include lower wind speeds, which are not capable of carrying fire into the tree canopies. Higher speed winds are more likely to create longer flame lengths that can extend into the crowns. As a result, clumps of trees are likely to torch. The extended flame lengths from the torching can heat fuels further uphill, and allow active crown fire to spread uphill. North facing slopes are typically more moist, and do not have the propensity to burn.

Recommendations

- Because Via del Rey is a major evacuation route in the community, conduct roadside thinning along the road to ensure safe evacuation.
- Maintain greenbelts that run through the community and reduce conifer encroachment.
- Investigate using the utility easements as potential fuelbreaks.
- Roadside mowing along Mountain View Boulevard.
- Consider forest management on private property for areas that extend beyond the defensible space zones. This project should focus on reducing basal area and forest health.
- Improve road signs so they are non-combustible, 4" and reflective.
- Make sure all dead ends are marked as such.
- Adequate defensible space is recommended for all homes.
 - Simply mowing or weed whacking for 50 feet around homes and structures, and cleaning leaf and needle litter from roofs and gutters and away from foundations, will profoundly increase structure survivability.
 - Discourage the use of combustible materials for the construction of projections below roof line such as decks.
- Open areas below decks and projections should be enclosed or screened to prevent the ingress of embers and kept clean of flammable materials, especially where such openings are located on slopes above fuels. Use fine mesh metal screen (1/4" or less) to cover eaves, roof, and foundation vents.
 - Discourage the planting of flammable ornamental vegetation within 30 feet of homes.
- Replace plastic address markers, using reflective, non-combustible materials. A good guideline for this practice is to place the markers five feet above ground level on the right side of the driveway.
- Remove wood piles and any flammable yard clutter to at least 30 feet from structures and propane tanks. Wood piles should be located uphill or even with homes; never downhill.

Figure B-10. Recommended Fuels Treatments for the Valle Grande North Area



8. *The Aspens* – Hazard Rating Moderate



Description

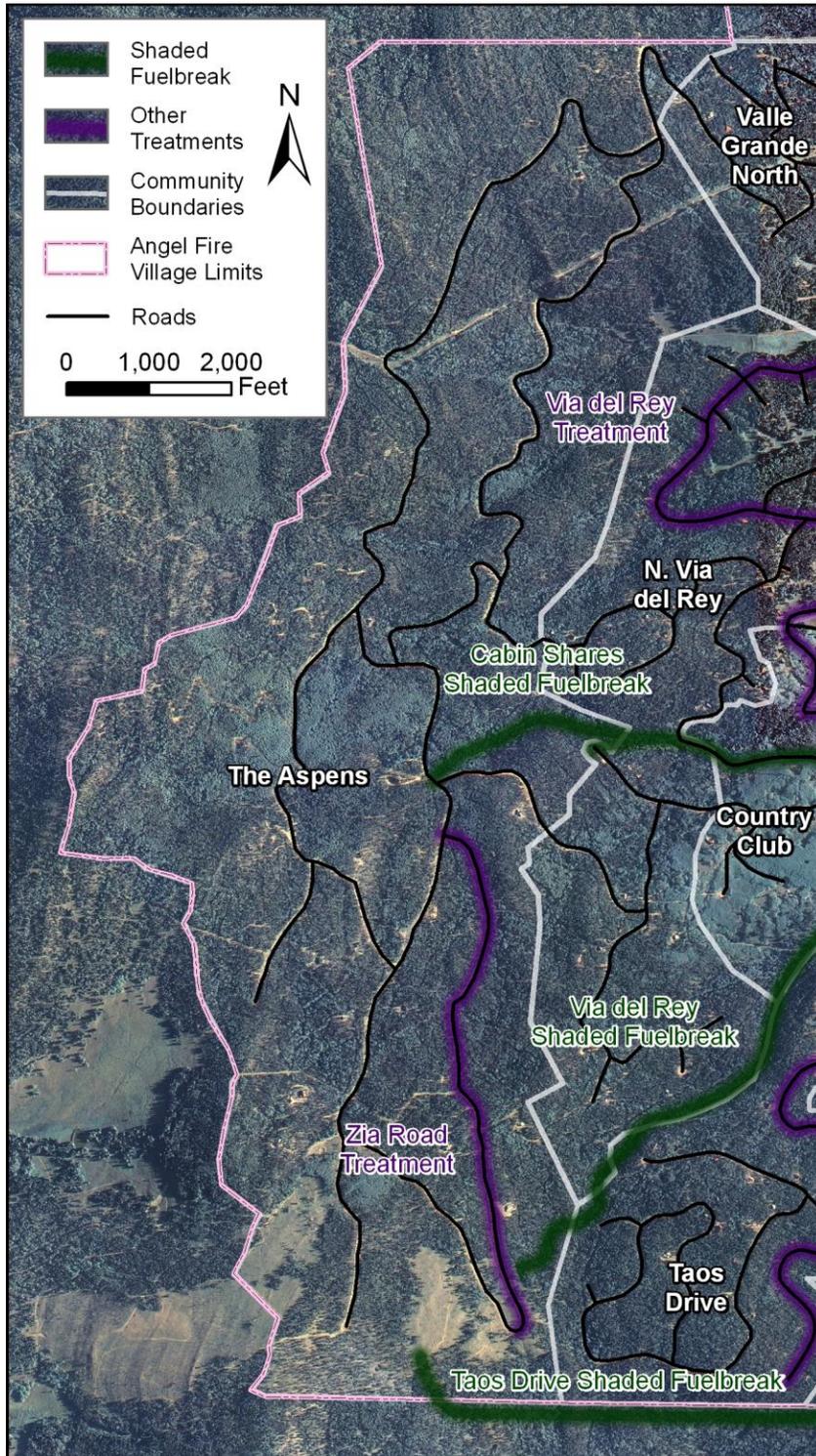
The Aspens community spans the west side of Angel Fire Village and borders the Carson National Forest. There are only a few homes in the community, and many vacant lots that have yet to be developed. Many of the homeowners do not live here year-round. The existing residences have metal roofs, and generally a mixture of combustible and non-combustible siding and decks. The majority of the homes do not have any defensible space. Many new, large, timber homes are being built along Via de Maria. Utilities are all located underground. Home addressing is mixed, and it is often not reflective or visible from the driveways. Several of the driveways are long and steep. Road widths are wide and provide adequate turnarounds; however, road signs are not reflective and are made out of combustible materials. There are multiple ways in and out of The Aspens, but the routes are long and could become confusing if a wildfire were to occur. Hydrants are located every 300 feet. There is also a 200,000 gallon water tank located within the community.

The fuels in The Aspens community are diverse. There is a large aspen component throughout the community. To the east, the community is lower in elevation, and there is a greater component of Douglas fir and subalpine fir. The exposure to the community stems from the national forest to the west. Large drainages and steep slopes extend from the National Forest directly to the community. A strong south west wind could allow fire to spill over the ridge into the community, as it did during the Osha/Zia Fire in 1998. As a result, a fuelbreak was created along the south end of the community. The existing fuelbreak is useful in protection from this scenario, in addition to the numerous aspen trees, which do not readily burn. There are only a few areas where conifer stands may support torching given moderate weather conditions. Rates of spread are likely to be less than ¼ mile (20 chains) per hour with flame lengths less than four feet. With extreme weather conditions, more torching and longer flame lengths are probable, especially on south facing slopes, as seen in the northern end of the community. Where mixed conifer stands are present more torching and active fire behavior will occur than in areas with aspen stands.

Recommendations

- Conduct roadside thinning off of Zia Road, extending 300' downhill (Figure B-11).
- Maintain the fuelbreak and mitigation completed during the Osha/Zia Fire
- Improve road signs so they are non-combustible, 4" and reflective.
- Mark escape routes so they are clearly visible.
- Adequate defensible space is recommended for all homes.
 - Simply mowing or weed whacking for 50 feet around homes and structures, and cleaning leaf and needle litter from roofs and gutters and away from foundations, will profoundly increase structure survivability.
 - Discourage the use of combustible materials for the construction of projections below roof line such as decks.
- Open areas below decks and projections should be enclosed or screened to prevent the ingress of embers and kept clean of flammable materials, especially where such openings are located on slopes above fuels. Use fine mesh metal screen (1/4" or less) to cover eaves, roof, and foundation vents.
 - Discourage the planting of flammable ornamental vegetation within 30 feet of homes.
- Replace plastic address markers, using reflective, non-combustible materials. A good guideline for this practice is to place the markers five feet above ground level on the right side of the driveway.
- Extended defensible space is recommended for most homes, due to the dangerous topography and heavy fuel loads in and adjacent to this community.
- Remove wood piles and any flammable yard clutter to at least 30 feet from structures and propane tanks. Wood piles should be located uphill or even with homes; never downhill.

Figure B-11. Recommended Fuels Treatments for the Aspens Area



9. North Via del Rey – Hazard Rating Moderate



Description

North Via del Rey is located downhill of The Aspens community. The community sits above the golf course, which acts as a partial fuelbreak from potential ignitions from Mountain View Boulevard. There are a lot of empty lots located within the community, and the housing density is higher in the southern part of the community. Residences are located on lots around an acre or smaller. The houses have roofs that have high fire resistance and mixed combustible/non-combustible siding. Some of the year round and non year round residents have completed defensible space. However, there are many that still lack any mitigation work. RVs in the area are parked near large amounts of fuels. Addressing is mostly consistent with reflective plastic numbering, but many of the signs have been broken and are no longer decipherable. There are ways in and out of the community, but there are multiple dead ends that are not marked and may be confusing in the event of a wildfire. Via del Rey is an important road for the west side of the Village. It is long and there are many homes that are located within close proximity. Roads are gravel, but are between 20-24 feet wide, there are adequate turnarounds, and they are well maintained. Street signs are made out of wood and are not reflective. Water is available from sparse hydrants.

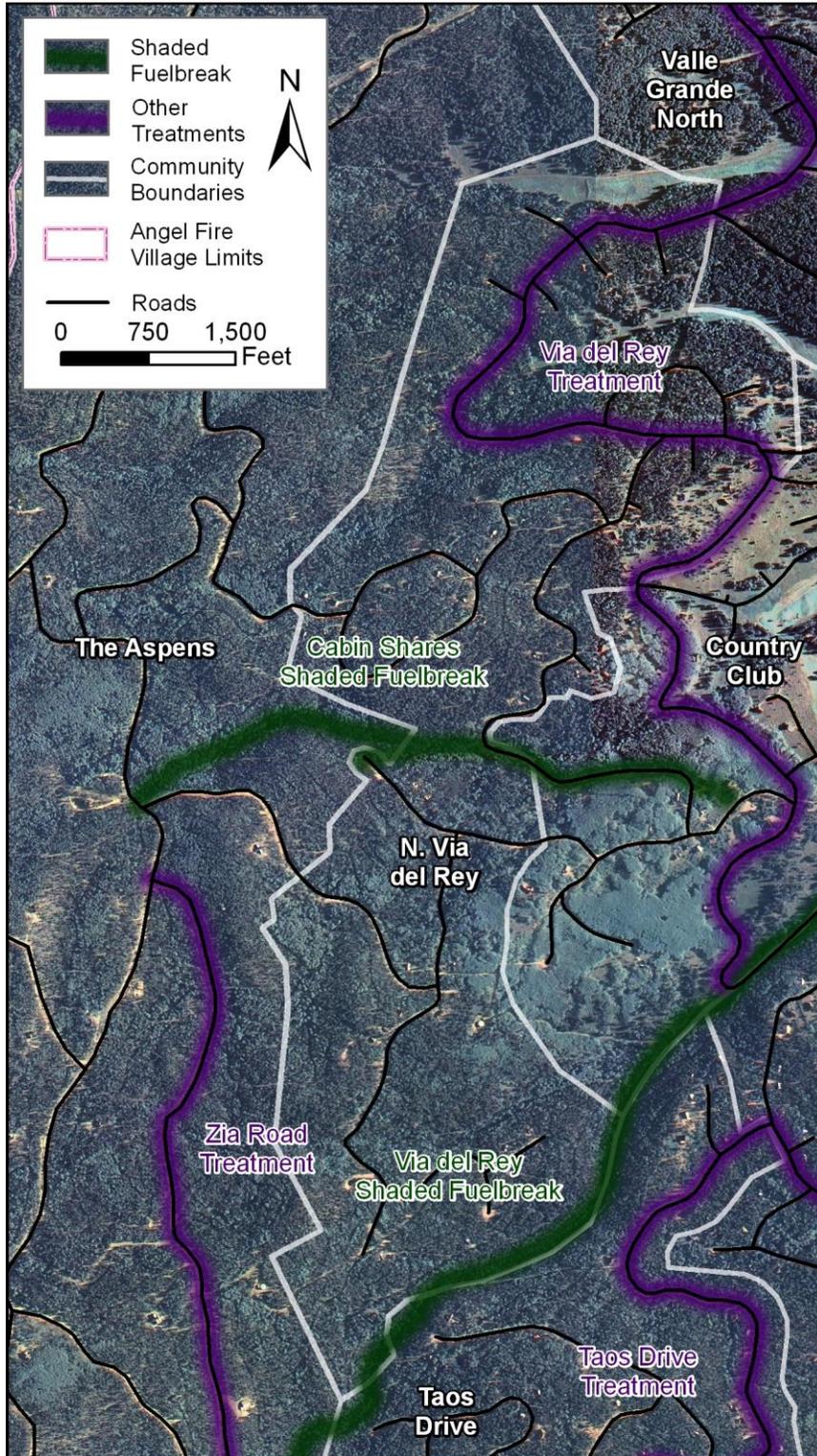
While many of the fuels are mixed conifers, including ponderosa pine and Douglas fir, there are large areas of aspen and Gambel oak. There are several drainages that lead from the highway into the community. The drainages have slopes that are close to 30% and are heavily vegetated.

Surface fire is most likely going to occur throughout the community under moderate weather conditions. There are a few areas where individual tree torching may be seen along Peralta Drive. Expected flame lengths are less than four feet. Increased tree torching, flame lengths around eight feet are expected given extreme weather. Rates of spread will be faster in the steep, south facing drainages. Preheating of upslope fuels and flying embers could further fire spread up hill. Pockets of fuels could carry fire uphill and impinge upon the roads and limit visibility along evacuation routes.

Recommendations

- Because Via del Rey is a major evacuation route in the community, conduct roadside thinning along the road to ensure safe evacuation (Figure B-12).
- There is a recommended shaded fuelbreak that is located inside this community. It is anchored in the community of Country Club and continues to the west into the Aspens community. The fuelbreak is located in the drainage and will help prevent ember cast from potentially starting a fire below part of the community (Figure B-12).
- Improve road signs so they are 4" and reflective
- Clear fuels around areas used for RV and trailer storage .
- Ensure evacuation routes are marked with reflective signage.
- Roadside thinning along potential evacuation routes.
- Ensure dead end roads are marked as such.
- Adequate defensible space is recommended for all homes.
 - Simply mowing or weed whacking for 50 feet around homes and structures, and cleaning leaf and needle litter from roofs and gutters and away from foundations, will profoundly increase structure survivability.
 - Discourage the use of combustible materials for the construction of projections below roof line such as decks.
- Open areas below decks and projections should be enclosed or screened to prevent the ingress of embers and kept clean of flammable materials, especially where such openings are located on slopes above fuels. Use fine mesh metal screen (1/4" or less) to cover eaves, roof, and foundation vents.
 - Discourage the planting of flammable ornamental vegetation within 30 feet of homes.
- Replace plastic address markers, using reflective, non-combustible materials. A good guideline for this practice is to place the markers five feet above ground level on the right side of the driveway.
- Remove wood piles and any flammable yard clutter to at least 30 feet from structures and propane tanks. Wood piles should be located uphill or even with homes; never downhill.

Figure B-12. Recommended Fuels Treatments for the North Via del Rey Area



10. *Country Club* – Hazard Rating Moderate



Description

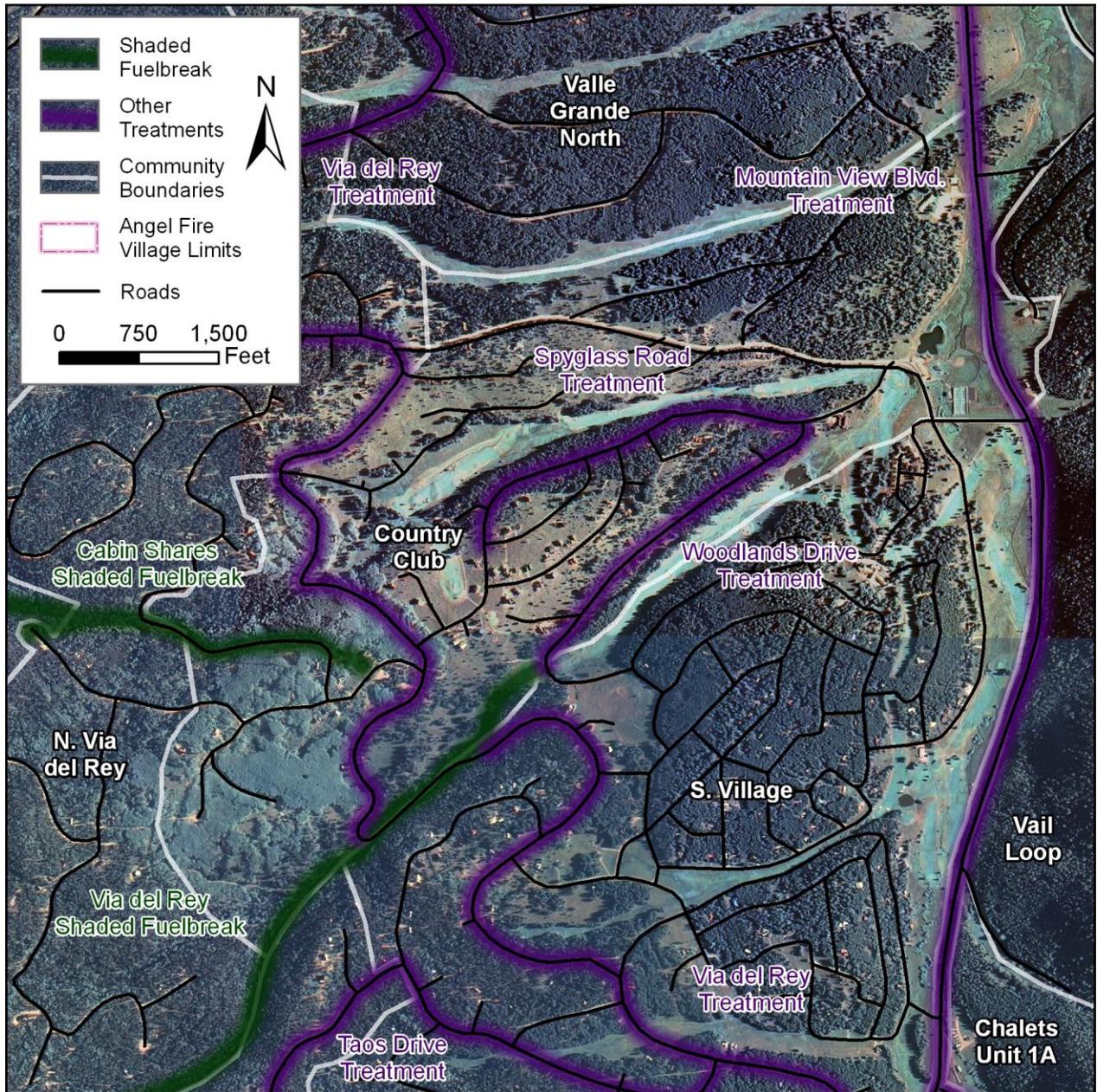
The area encompassed by the Country Club community is diverse in terms of the types of homes and fuels. The lots sizes are less than an acre, and the house construction is consistent, including high fire resistant metal roofs and mixed combustible siding and decks. There are some houses that back to the golf course, which acts as a fuelbreak. The community also includes the area known as the 'Cabin Shares', which provides for higher density, multi-family housing. There are a fair number of homes that are built midslope. Residences around the lake and near the highway have good defensible space. Many of the homes that are located to the west are lacking good defensible space. The addressing is poor throughout, and it is often difficult to see the addresses because they do not have reflective signs or there is no addressing present. A large percentage of the population does not live in the community year-round. Unlike many communities in Angel Fire, there are a large number of paved roads within Country Club. Well maintained gravel roads also exist to provide access to the houses further up the slope, like Agua Fria Drive and Santo Domingo Road. There are multiple routes for ingress/egress if a fire were to occur. Road signs are not reflective and made out of wood. The greatest risk to this community stems from its close proximity to Mountain View Boulevard. Water supply is from hydrants located throughout.

The parts of Country Club near Mountain View Boulevard are comprised of light, flashy grass fuels. The golf course is a major component of the area, and is unlikely to burn. Surrounding the golf course, the fuels are much denser. Thick stands of ponderosa pines are found and there is a large component of Douglas fir in the understory. Neither torching nor active crown fire is expected under moderate weather conditions. Rates of spread will be under 0.5 miles per hour, and flame lengths will likely be less than four feet, allowing for on the ground work by fire crews. During extreme weather conditions, crown fire is still not likely, but rates of spread are likely to be fast up the multiple drainages located within the community. As a result, flame lengths longer between eight to 12 feet may occur along preheated south facing slopes.

Recommendations

- Conduct roadside thinning on Spyglass and Woodlands Drive (Figure B-13). This will help ensure safe egress in the event of a wildfire.
- Because Via del Rey is a major evacuation route in the community, conduct roadside thinning along the road to ensure safe evacuation. Thinning does not need to be as drastic in areas with lighter fuels, such as grass or aspens.
- Maintain the greenbelts that run through the community and limit conifer encroachment into the areas.
- Improve road signs so they are non-combustible, 4" and reflective.
- Provide information brochures to visitors during time of high fire danger.
- Roadside mowing along Mountain View Boulevard.
- Mark evacuation routes with reflective signage.
- Adequate defensible space is recommended for all homes.
 - Simply mowing or weed whacking for 50 feet around homes and structures, and cleaning leaf and needle litter from roofs and gutters and away from foundations, will profoundly increase structure survivability.
 - Discourage the use of combustible materials for the construction of projections below roof line such as decks.
- Open areas below decks and projections should be enclosed or screened to prevent the ingress of embers and kept clean of flammable materials, especially where such openings are located on slopes above fuels. Use fine mesh metal screen (1/4" or less) to cover eaves, roof, and foundation vents.
 - Discourage the planting of flammable ornamental vegetation within 30 feet of homes.
- Replace plastic address markers, using reflective, non-combustible materials. A good guideline for this practice is to place the markers five feet above ground level on the right side of the driveway.
- Remove wood piles and any flammable yard clutter to at least 30 feet from structures and propane tanks. Wood piles should be located uphill or even with homes; never downhill.

Figure B-13. Recommended Fuels Treatments for the Country Club Area



11. *The Chalet* – Hazard Rating Moderate



Description

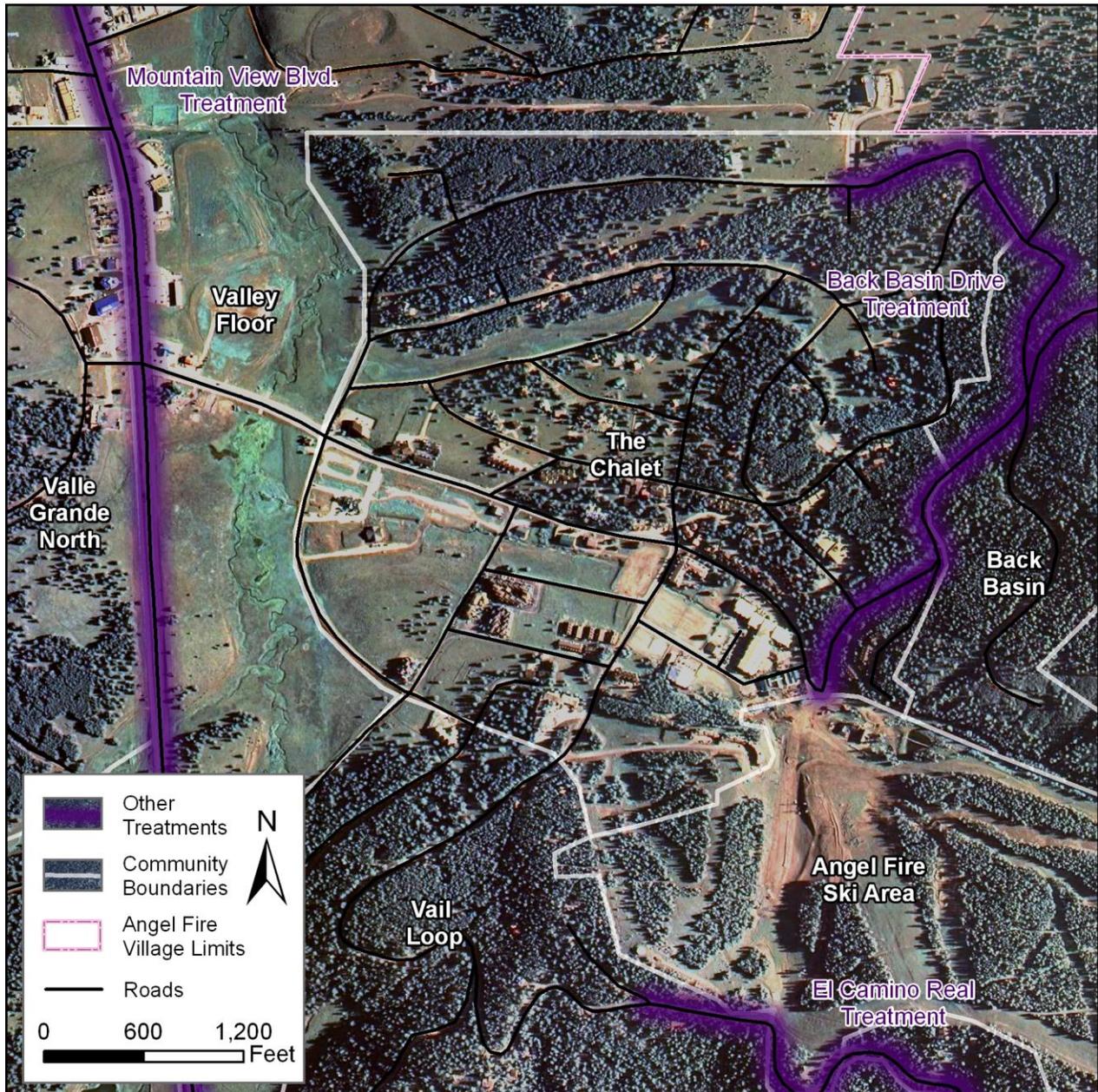
This area of the Angel Fire Village is different from many of the other communities. The Chalet is the area that is at the base of the ski area, has much higher housing densities, and includes many condominiums and businesses. As with the houses, the condos typically have metal roofs and combustible siding. All of the utilities are located below ground. The number of people staying in the condominiums is lower during the summer than during the winter ski season. There is defensible space for many of the buildings, just based on the land cleared to build and the urban nature of the area. The roads are paved, and road signage is good. Road widths provide for fire apparatus access, as well as adequate turnarounds. There are hydrants located along the main roads and the community is extremely close to the fire department.

Right around the main lodge and the businesses, the fuels have been removed, thus removing the risk of wildfire. However, surrounding this urban area, the fuels are ponderosa pines with a grass understory. Moderate and extreme weather conditions are unlikely to result in crown fire, but a surface fire is expected. Flame lengths are likely to be less than eight feet with either moderate or extreme weather. Fire behavior is not likely to be active.

Recommendations

- Conduct roadside mowing along Mountain View Boulevard.
- Provide information in the form of brochures for visitors and guests on wildfire risk, especially during the summer months when fire danger is high.
- Adequate defensible space is recommended for all homes.
 - Simply mowing or weed whacking for 50 feet around homes and structures, and cleaning leaf and needle litter from roofs and gutters and away from foundations, will profoundly increase structure survivability.
 - Discourage the use of combustible materials for the construction of projections below roof line such as decks.
- Open areas below decks and projections should be enclosed or screened to prevent the ingress of embers and kept clean of flammable materials, especially where such openings are located on slopes above fuels. Use fine mesh metal screen (1/4" or less) to cover eaves, roof, and foundation vents.
 - Discourage the planting of flammable ornamental vegetation within 30 feet of homes.
- Replace plastic address markers, using reflective, non-combustible materials. A good guideline for this practice is to place the markers five feet above ground level on the right side of the driveway.
- Remove wood piles and any flammable yard clutter to at least 30 feet from structures and propane tanks. Wood piles should be located uphill or even with homes; never downhill.

Figure B-14. Recommended Fuels Treatments for The Chalet Area



12. Valley of the Utes – Hazard Rating Moderate



Description

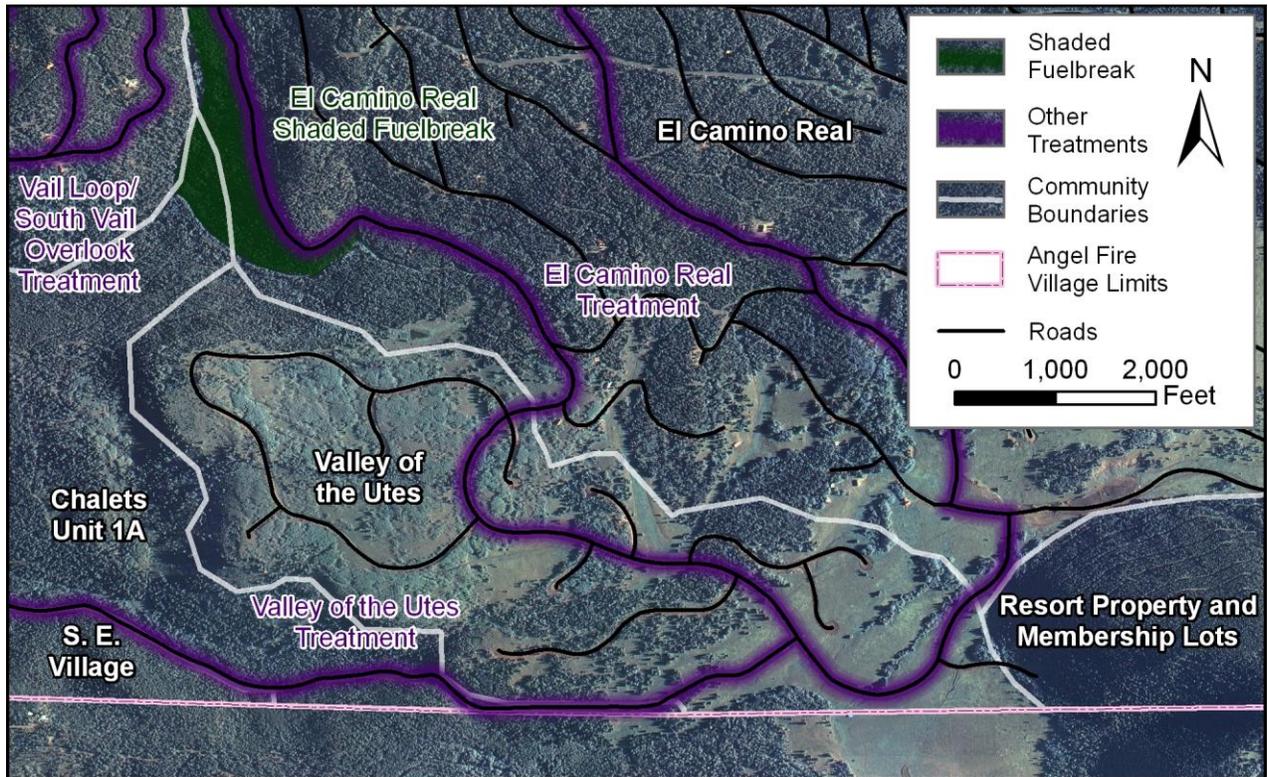
The housing density in this community is low. The lot sizes are larger than an acre and there are many vacant lots interspersed between developed lots. The homes have metal roofs, and mixture of combustible and non-combustible siding and decks. Defensible space has been completed for a few homes, but others lack defensible space. Home addressing is inconsistent. Some residences have reflective plastic addressing while others are either missing addresses or are non-reflective. All of the utilities are buried below ground and there is a hydrant system throughout. The road system consists of well maintained gravel roads, with multiple routes for ingress and egress. Road widths are greater than 20 feet and have adequate turnarounds for emergency vehicles. The street signs are metal, but non-reflective.

The dominant tree species in the community are aspen, which have regenerated after the fire that occurred in 1978. Large grassy meadows are also present. Small conifer trees, like Douglas fir, are beginning to grow beneath the aspen. Under moderate conditions, the light, flashy nature of the grasses could carry surface fire quickly through the area. The chance of crown fire activity is minimal due to the aspen canopy. Given extreme weather, there is some chance for individual tree torching within the conifer stands. Flame lengths are expected to be less than four feet, but could potentially as high as 12 feet, which would alter suppression strategies. The lack of extreme slope, high winds, and receptive vegetation diminish the risk of active, fast spreading crown fire. There is some risk of fire spreading in from the area owned by the resort to the south west, but once the fire reaches the aspen, it is likely that fire behavior would decrease.

Recommendations

- Because El Camino Real is major evacuation route within the community, conduct road-side thinning along this route. Concentrate on areas with conifers, as those areas will burn with more intensity than open aspen stands (Figure B-15).
- Maintain aspen stands by clearing out conifers.
- Improve road signs so they are non-combustible, 4" and reflective
- Adequate defensible space is recommended for all homes.
 - Simply mowing or weed whacking for 50 feet around homes and structures, and cleaning leaf and needle litter from roofs and gutters and away from foundations, will profoundly increase structure survivability.
 - Discourage the use of combustible materials for the construction of projections below roof line such as decks.
- Open areas below decks and projections should be enclosed or screened to prevent the ingress of embers and kept clean of flammable materials, especially where such openings are located on slopes above fuels. Use fine mesh metal screen (1/4" or less) to cover eaves, roof, and foundation vents.
 - Discourage the planting of flammable ornamental vegetation within 30 feet of homes.
- Replace plastic address markers, using reflective, non-combustible materials. A good guideline for this practice is to place the markers five feet above ground level on the right side of the driveway.
- Remove wood piles and any flammable yard clutter to at least 30 feet from structures and propane tanks. Wood piles should be located uphill or even with homes; never downhill.

Figure B-15. Recommended Fuels Treatments for the Valley of the Utes Area



13. Girl Scout Camp – Hazard Rating Moderate

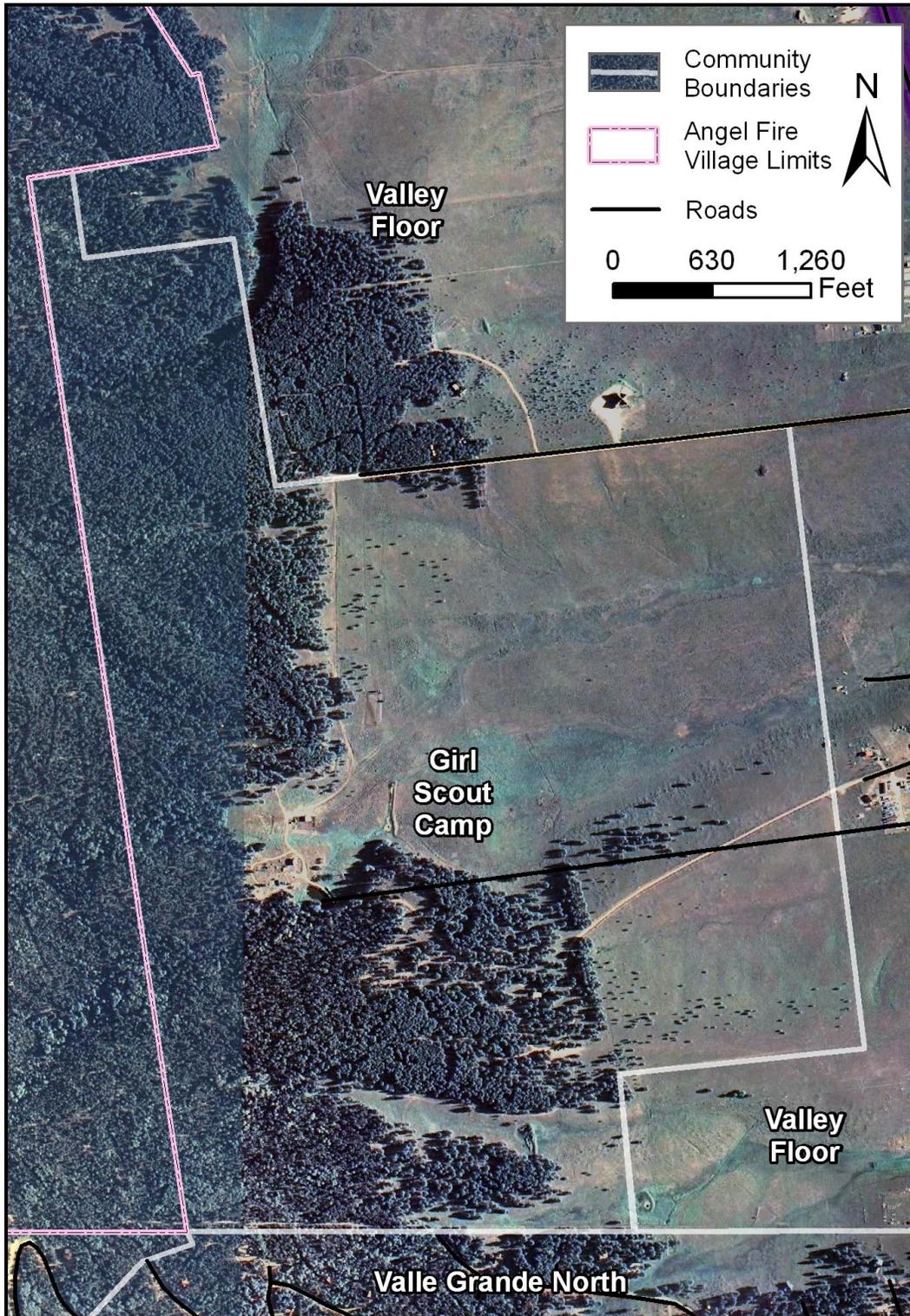
The “Girls Scouts of New Mexico Trails” owns Camp Elliot Barker (Camp) for summer camping activities. The 536 acre ranch was originally formed in 1962 by Elliot Barker. The Camp is located in the northwest corner of the Village of Angel Fire and shares its western boundary with the Carson National Forest. The camp is currently closed for property improvement (www.nmgirlscouts.org). The main building is located in the open meadow, and there are approximately 12 small cabins located in the forested area on the north portion of the ranch. The buildings are constructed out of old logs and are open under the decks, which allows for fuel accumulation. The roofs are metal and are non-combustible. There is only one way into the Camp via Elliot Barker Road. However, it is bordered to the north by West Ridge Road. The road is well maintained gravel. There is no reliable water source (like a hydrant). A small pond is on the property but should not be relied upon as a water source in case of a wildland fire.

The property is approximately one half mountain meadow/grasslands in the lower elevations to the east, with forest lands to the west. The forest lands are comprised of ponderosa pine on the mid-slopes where the structures are located and mixed conifer on the upper slopes. The forest stands are generally very dense. A Forest Stewardship Plan was completed for the Camp in 2006 by Rachel Wood, Certified Forester, Wood Resource Group, and approved by New Mexico State Forestry, Cimarron District. The overall land management objectives for the property are to promote forest health and reduce the threat from a catastrophic wildfire. The Forest Stewardship Plan recommends detailed management and treatment prescriptions for each area of the Camp. The plan identified creation of defensible space around camp structures and moderate to heavy hazardous fuels thinning in adjacent forest lands as top priorities. The Forest Stewardship Plan recommends review of the forest management plan every five years. Fire behavior is variable because of the diversity of the fuels. The open grasslands can burn quickly but are not likely to allow extension into the ponderosa pines. Fire originating from the west in the forested stands poses a risk to the cabins but would transition out of the trees into the grass given the dominant wind pattern.

Recommendations

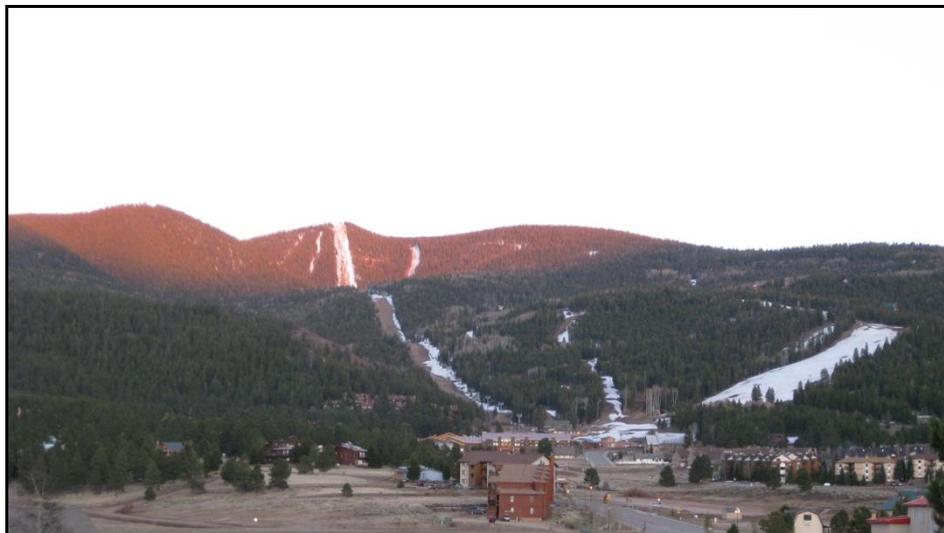
- Conduct annual grounds maintenance to clear woody debris and conifer needles away from structures.
- Close off open areas beneath cabins that can experience vegetation build-up.
- Review evacuation procedures each year with camp staff.
- Educate campers on campfire safety and fire awareness.
- Create defensible space around camp structures and conduct moderate to heavy hazardous fuels thinning in adjacent forest lands.
 - Simply mowing or weed whacking for 50 feet around homes and structures, and cleaning leaf and needle litter from roofs and gutters and away from foundations, will profoundly increase structure survivability.
 - Discourage the use of combustible materials for the construction of projections below roof line such as decks.
- Open areas below decks and projections should be enclosed or screened to prevent the ingress of embers and kept clean of flammable materials, especially where such openings are located on slopes above fuels. Use fine mesh metal screen (1/4" or less) to cover eaves, roof, and foundation vents.
 - Discourage the planting of flammable ornamental vegetation within 30 feet of homes.
- Remove wood piles and any flammable yard clutter to at least 30 feet from structures and propane tanks. Wood piles should be located uphill or even with structures; never downhill.

Figure B-16. Graphic of the Girl Scout Camp Area



Areas of Special Interest

1. Angel Fire Ski Area ASI – *Physical Hazard Rating Moderate*



Description

The Angel Fire Ski Area offers 2,077 feet of vertical terrain available for skiers and snowboarders. There are 74 trails and two terrain parks. Approximately 210 inches of snow fall annually. Over six miles of Nordic skiing is also available. In the summer, the lifts are open for mountain bikers. Several large downhill competitions are scheduled during the summer months.

Structures include the Angel Fire Lodge, a restaurant at the top of the mountain, and multiple buildings for equipment storage. The main communications tower for the Village is located at the top of the ski area.

Most of the fuels within the ski resort are Engelmann spruce and subalpine fir. There are steeper slopes in this area than within the other communities, especially along the north and west sides. These steep slopes are likely to experience tree torching during moderate weather conditions because of the preheating effect of the slope and the density of the fuels.

Recommendations

- Consider using snow making equipment in the summer for fire suppression activities
- Install a fire danger warning sign at the ski area loading zone to increase visitor awareness during the summer
- Educate staff members on fire safety, including safe practices while conducting maintenance, like welding for example.
- Provide information in the form of brochures for visitors and guests on wildfire risk, especially during the summer months when fire danger is high
- Maintain defensible space around all buildings and water tanks

2. Resort Property and Membership Lots ASI - *Physical Hazard Rating High*

Description

The property within this area is owned by the Resort and individuals. Resort owners approximately half of the land in the area, including Chalet Unit 6 and Chalet Unit 3B amended. These lots have the potential to be developed. Over 2,000 people own land known as the Membership Lots. The Resort has not made a commitment to develop these lots, so it would be difficult for individuals to bring in infrastructure. As a result, road access is limited, no utilities have been installed, and there is a low chance of this occurring in the future. By owning a Membership Lot, an individual is required to be a member of the Angel Fire Resort. This results in access to the country club, golf course, Olympic Park, and ski area.

This area is the most likely to experience extreme fire behavior. The dense spruce/fir cover type is the densest fuel in the entire Village. There are two large bowls, that both face north west. These two areas are the steepest within the area of special interest. The combination of south-south-west winds and tree density would allow for long flame lengths, torching, and fire spreading from crown to crown. Preheating from fire below would allow fire to spread uphill. High elevation subalpine forests get more snow and retain moisture longer than lower elevation forests. As a result, there is longer time between fires, but when there is a fire, it is typically large and stand replacing. Because these lots are located over 9,500 feet, these areas fall into the fire regime of less frequent, more severe fires.

Recommendations

- Investigate creating a forest management plan for the entire area. This will focus on forest health, which is the primary goal since no values are at risk other than the view-shed.
- If road are to be used frequently, conduct limbing and thinning for 100' on each side of the road.

3. Chalets Unit 1A ASI - *Physical Hazard Rating Moderate*

Description

The property is currently owned by the Angel Fire Resort. There are approximately 10 lots, but there are no plans to sell these at this point. The slopes are extremely steep, being greater than 30% on the south aspect and sections over 45% on the north aspect. Fuels are mixed conifer ponderosa pine and Douglas fir on all aspects. There is a small amount of aspen along the ridge. An ignition at the base of the peak could easily transfer from the understory fuels into the tree canopies an result in active crown fire up the hill; this is especially true for the drier, south slope. Given the predominant south west wind, fire could also spread into the Valley of the Utes community. At this point, it would likely transition out of the trees and into the grass. There are steep drainages further east in the Chalets ASI that could also be hazardous for the communities of Vail Loop and El Camino Real. Fire coming from below could limit ingress and egress within these communities and pose a risk to the homes. Long flame lengths could create embers that could cause spotting and land on roofs and decks, thus causing home ignition.

4. Valley Floor ASI - *Physical Hazard Rating Low*



Description

The northern part of the Angel Fire Village is an open valley bottom. Fuels consist of flashy grasses and some small shrubs such as sage. Much of the area is commercial, rather than residential, but there are a few homes in the area. These fuels dry out easily and would carry surface fire quickly. The highway experiences an increased level of traffic, and a single discarded cigarette butt could potentially start a wildfire. Depending on the length of the grass and wind speed, flame lengths could be between four and 12 feet long. Flame lengths above four feet are typically not able to be suppressed by hand crews. It should be noted that the grasslands extend south through the Village along Mountain View Boulevard. The areas along the side of the highway are primarily commercial, and as a result, much of the fuels have been removed between the grass and forested areas, limiting fire spread.

Recommendations

- Roadside mowing along Mountain View Boulevard
- Defensible space for all buildings, both residential and commercial