



Berryessa Estates Firesafe Council
Community Wildfire Protection Plan
March 2025



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Executive Summary

The Berryessa Estates Firesafe Council (BEFSC) has developed this Community Wildfire Protection Plan (CWPP); a CWPP is a community-based plan focused on identifying and addressing specific local hazards and risks from wildfire. It describes what is at risk and provides a road map of actions for a community to address the wildfire threat. It may also open up funding opportunities to implement the plan. CWPPs are authorized and defined in Title I of the Healthy Forests Restoration Act (HFRA), passed by Congress in 2003.

The area included within the BEFSC has had an active fire history, which brings focus to this plan. It is understood that not all fires can be prevented, but appropriate structure construction, vegetation management and other mitigation practices can minimize the impact and destruction of wildfires.

Decision Makers

The following community representatives approved the development of the CWPP:

- BEFSC
- Napa Communities Firewise Foundation (NCFE)
- CAL FIRE/Napa County Fire Department
- Napa County Board of Supervisors

Community Involvement

A Community Wildfire Protection Plan was engaged by NCFE and the BEFSC¹ and includes input from the BEFSC community, including local government, non-profits and local fire authorities. The entities involved in wildfire preparedness are:

- BOR
- Napa County Fire Department/CAL FIRE
- Napa County Open Space
- Residents of Berryessa Estates
- Lake Berryessa Resort Improvement District
- NCFE

The Evaluation serves as a foundation for recommendations for projects to minimize threat from wildfire to life safety and damage to homes and natural resources. It is based on a review of the terrain, weather, fuels, and fire history of the area, compared to the values at risk, and likely scenarios of fire ignition and spread.

¹ Prepared by Carol Rice, a wildland fire manager specializing in wildland fire risk issues, with Wildland Res Mgt

Introduction

Fire hazard is a special concern in the Berryessa Estates area in central Napa County. The area is located in the interface between wildlands and developed areas where fires may spread from wildlands to the homes, possibly damaging structures or even threatening lives. Conversely, wildlands are subject to increased ignition potential from elevated levels of human activities. Most fires in Napa County are human caused².

This CWPP serves as a platform for recommendations for projects to minimize threat to life safety and damage from wildfire to homes and natural resources. It is based on a review of the terrain, weather, fuels and fire history of the area, compared to the values at risk, and likely scenarios of fire ignition and spread.

The Berryessa Estates community boundary covers 17,734 acres in northern Napa County and is fully within the organized Berryessa Estates Fire Safe Council (BEFSC). The community is sandwiched between Lake Berryessa to the southeast, Pope Valley to the southwest, the Berryessa Knoxville FSC to the northeast, and Lake County to the northwest. It is generally a remote area, with Aetna Springs being the closest population center to the south.

Within this area, data records show approximately 508 parcels and 322 structures. Elevation ranges from 430 feet along the edge of Lake Berryessa to over 1,850 feet on Snell Peak and along the ridgeline at the western edge of the FSC area. The area is best characterized by steep and rugged terrain throughout most of the southern and central portions, with mostly moderate slopes north of Snell Valley. It borders Lake Berryessa, a major geographical feature in Napa County. The residential area in the east is situated at lower elevations close to the edge of Putah Creek where it runs into Lake Berryessa.

There are many rural residents within the Berryessa Estates community boundary. They are mostly concentrated in the eastern portion of the Berryessa Estates development area, although there are also a few scattered residences toward the center and further south. Outside the boundary, there are more dispersed homes throughout Pope Valley to the southwest, as well as a cluster of homes in the Berryessa Pines residential subdivision just southeast of the boundary of the BEFSC.

More details on each will be presented in the following sections.

² <https://www.nps.gov/articles/wildfire-causes-and-evaluation.htm>



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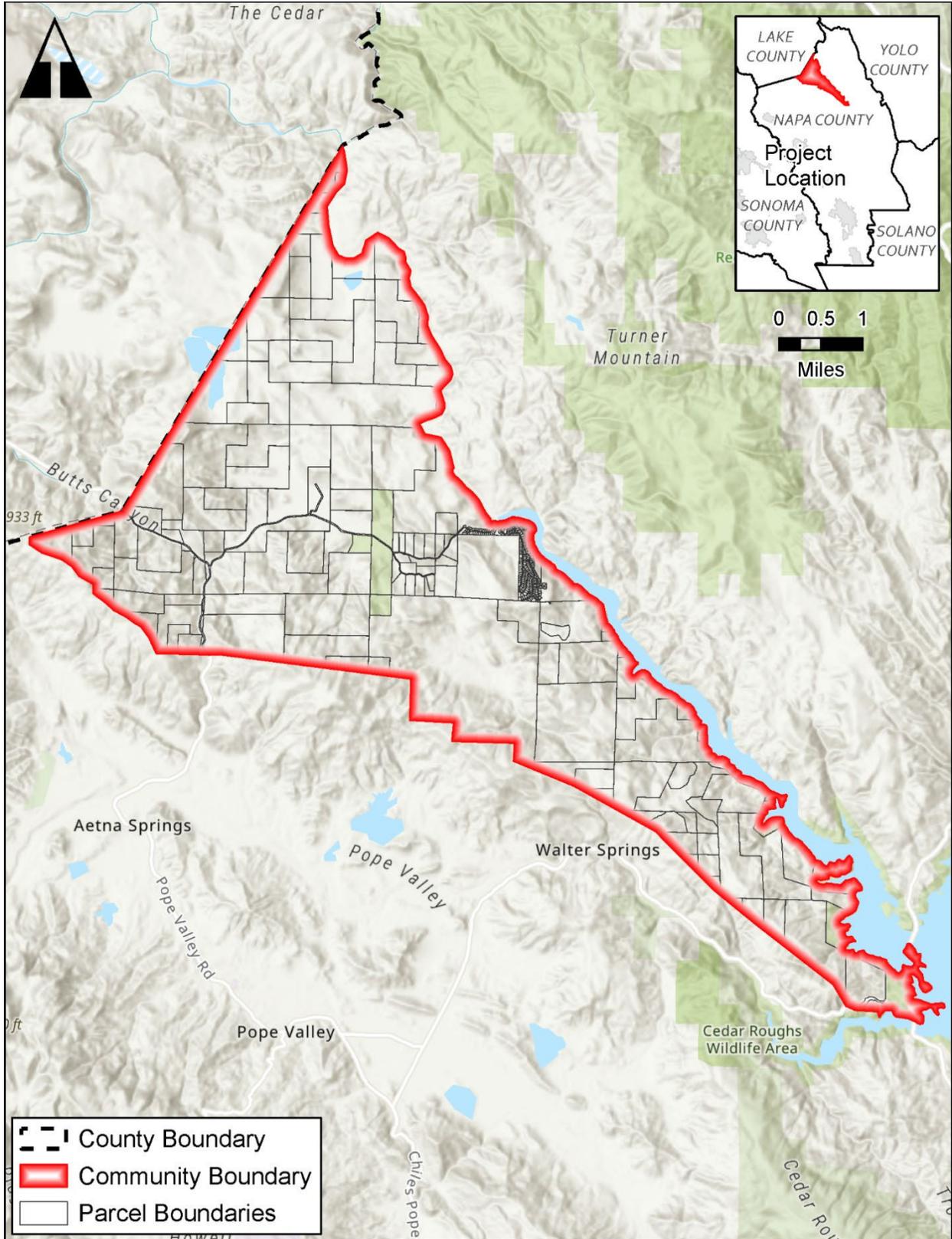


Figure 1. Area of interest – Berryessa Estates FSC boundary (shown in red).

Values at Risk

The most important values at risk are life safety, then improvements to property (residential structures and vineyards), then natural resources. Because all the evacuation routes are long and involve poor road conditions (albeit up to code), the threat to human life is significant.

Homes in Berryessa Estates are at risk from wildfire for a number of reasons. Structures are generally older, dating before the requirement for ignition resistant construction. The presence of ignition-resistant construction is closely related to the age of the structures; structures built after 1996 have features that prevent ignition such as non-flammable roofs, double-paned windows, and stucco siding. Many older structures have been remodeled and a few property owners have installed personal fire suppression systems involving various water sprinkler strategies.

Most roofs of the residential structures are less flammable. However, the structures have wood porches and decks, though wood fences are not common. The application to be a recognized NFPA Firewise Community noted that combustible siding, decks, unprotected vents, skirting, and wooden attachments make the buildings prone to ignition.

Structures are located on a variety of slopes within the FSC boundary and are mostly found on the eastern side off Stagecoach Canyon Rd. There are a few short roads that branch off from Stagecoach Canyon Rd near Putah Creek and connect to most of the structures in the area. Structures tend to have short but narrow driveways, often with only one ingress/egress route.

Critical infrastructure includes the Lake Berryessa Resort Improvement District sewage treatment plant and ponds south of the Berryessa Estates community, and a series of water tanks within the community.



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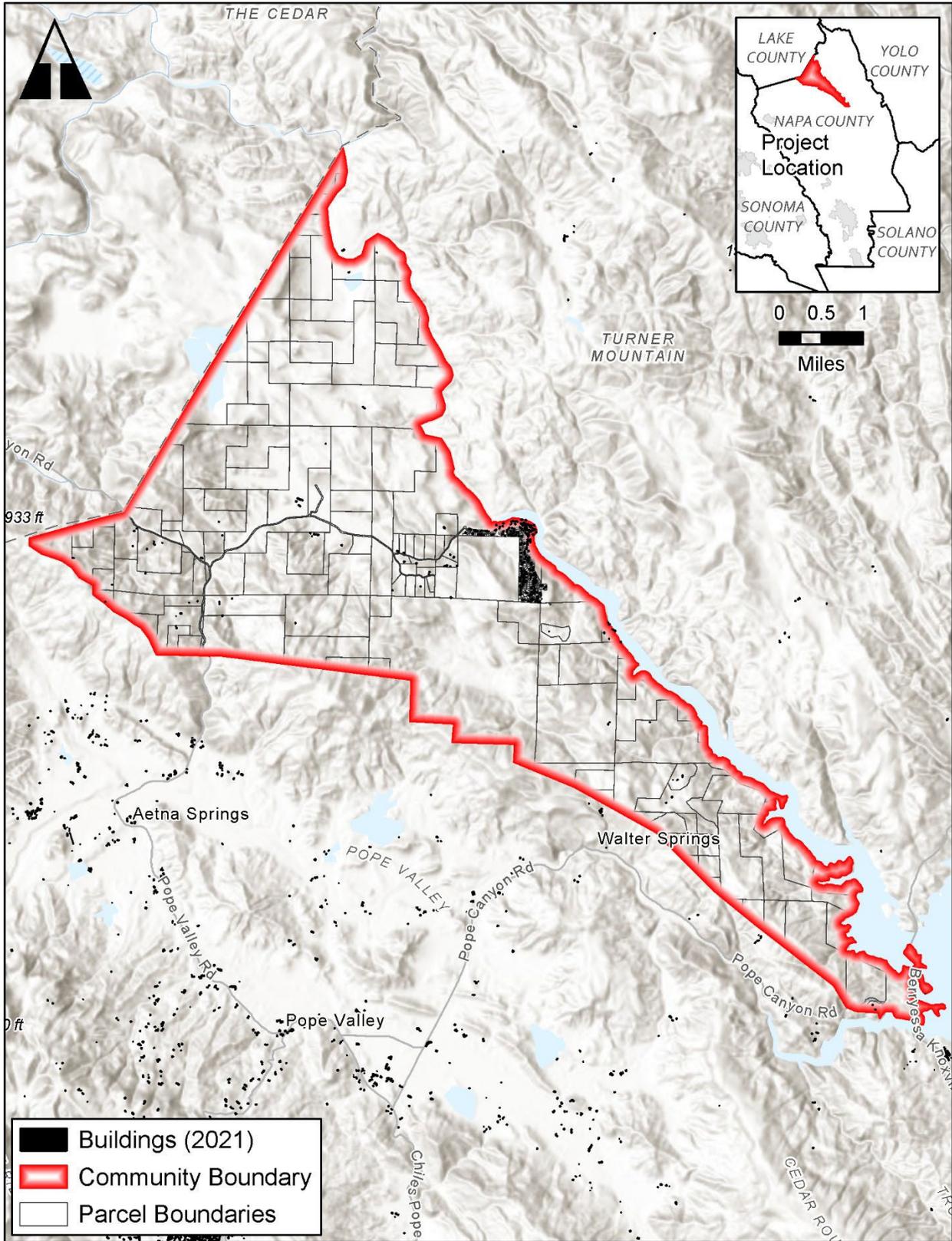


Figure 2. Structures (shown in black) within Berryessa Estates community boundary.

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Land Use: The Napa County parcel database shows that Berryessa Estates is dominated by vacant lands. Vacant lands account for 77% of the lands within Berryessa Estates and are spread throughout the area. 48% of these vacant parcels are rural, with 7% having miscellaneous improvements. Another 28% are non-taxable vacant parcels.

Residential lands account for 5% of the total area. These are largely located in the northern half along Butts Creek and Stagecoach Canyon Rd. These lands are critical for fire protection. Additionally, 0.4% of parcel area is designated as commercial. Commercial parcels are located in the east and are adjacent to both vacant and residential parcels.

18% of parcels fall into the agricultural category. These are a mix of vineyards and non-vineyard contract lands. They dominate the area north of Snell Valley and are also found around Butts Canyon.

Table 1. Number of parcels and county land use within the Berryessa Estates area (Napa County GIS Open Data Portal, accessed in July 2021).

Category	Acres	Parcel Count	Percent (%)
Agricultural	3128	19	18%
CONTRACT NON-VINEYARD W/1 RES	932	3	5%
CONTRACTS LAND - NON-VINEYARD	558	2	3%
VINEYARD > 5 AC W/1 RES	319	3	2%
VINEYARD LAND > 5 AC	1320	11	7%
Residential	850	198	5%
CONDOMIN/TOWNHOUSE COMMON AREA	1	1	0%
RURAL RES < 5 AC W/1 RES	78	183	0.4%
RURAL RES > 5 AC W/1 RES	313	11	2%
RURAL RES > 5 AC W/2 SFRS	155	2	1%
RURAL RES > 5 AC W/5 MORE SFRS	303	1	2%
Vacant	13584	302	77%
VACANT LAND NON-TAXABLE	4984	33	28%
VACANT LAND RURAL	7422	257	41%
VACANT LAND VALUED BY S.B.E.	0.1	1	0%
VACANT RURAL W/MISC IMPS	1178	11	7%
Commercial	61	3	0.4%
IMPRVD LAND NON-TAXABLE	61	3	0.4%

Topography

Topographic features - such as slope and aspect (orientation with respect to sun and wind) and the overall form of the land - have a profound effect on fire behavior. Topography affects a wildfire's intensity, direction, and rate of spread. An area's topography also affects local winds, which are either "bent" or intensified by topographic features. Topographic features can also induce daily upslope and downslope winds. The speed, regularity, and direction of these winds (and other winds) directly influence the direction of wildfire spread and the shape of the flaming front.

For example, fires burning on flat or gently sloping areas tend to burn more slowly and to spread more horizontally than fires burning on steep slopes. This makes ridgetop positions more vulnerable than valleys.

The area encompasses a broad range of slopes and aspects, though the area is mostly rugged. Slopes range from 0% in Snell Valley and Big Basin to over 100% on the sides of Snell Peak.

To the southwest of Butts Canyon, a steep ridgeline runs along the FSC boundary and meets the border with Lake County. This is an important control location for fires. In addition to Snell Peak, there are several shorter peaks north of Snell Valley and in the southeast near where Putah Creek runs into Lake Berryessa. Butts Canyon Creek and Stone Corral Creek run west to east across the area, roughly separating it into thirds.



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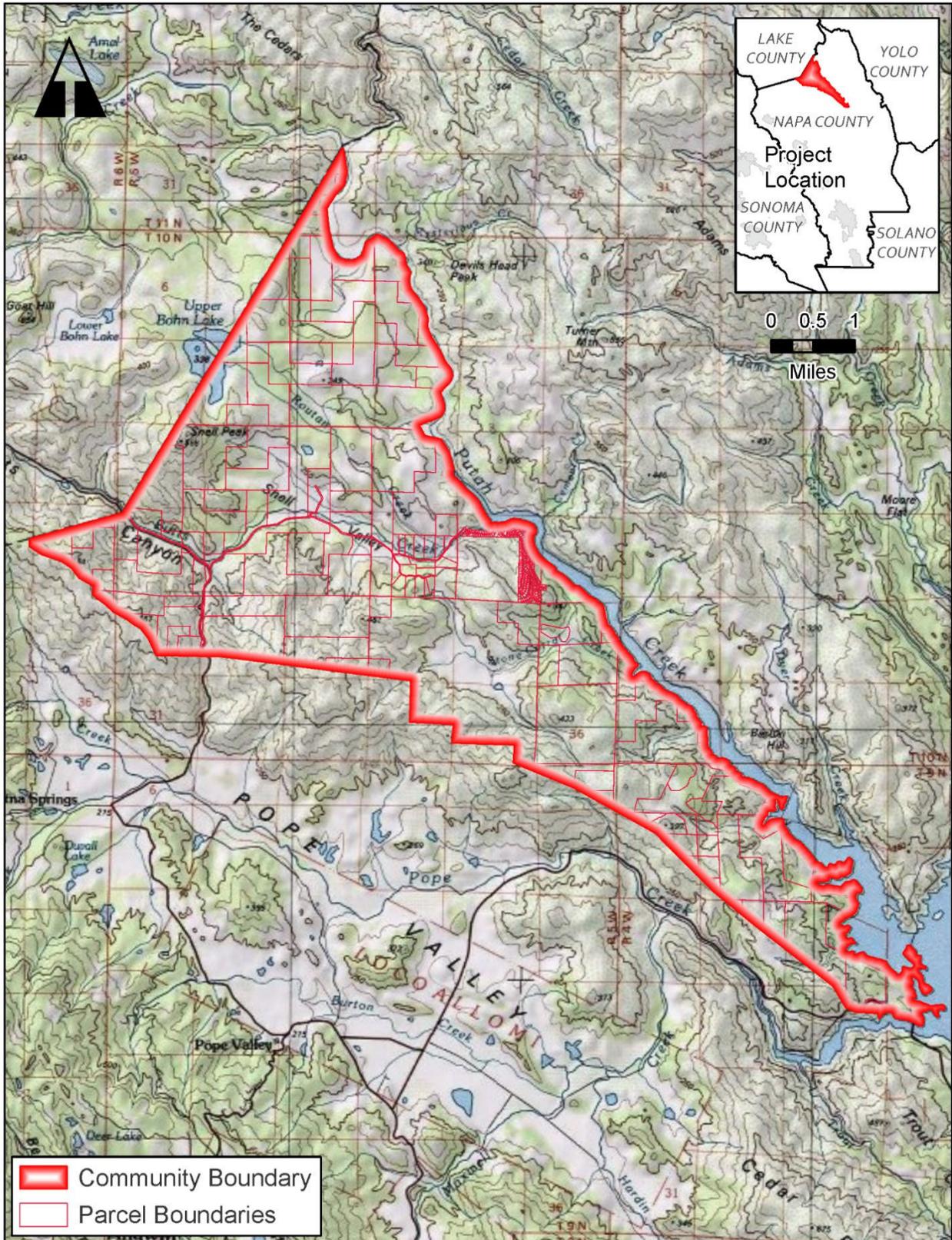


Figure 3. USGS Topographic map of the Berryessa Estates FSC area (boundary shown in red).

Watersheds and Orientation of Canyons:

- Butts Canyon: This major canyon is primarily oriented in the northwest-southeast direction and crosses the Napa-Lake County border. It occupies the westernmost part of the FSC area and curves in the north-south direction near Pope Valley.
- Jerd Creek Canyon: Located in the southern portion of the area, this canyon follows Jerd Creek, which runs from west to east into Putah Creek.
- Stagecoach Canyon: This canyon runs in the northeast-southwest direction between Missimer Snell Valley Wildflower Preserve and the point at which Butts Creek meets Putah Creek. It is aligned with the predominant winds from the southwest and the more concerning Diablo winds from the northeast.
- Stone Corral Creek Canyon: Stone Corral Creek runs through the center of this canyon into Putah Creek. The canyon is divided into two sections. The western portion, which starts in Spanish Valley, runs in the northeast-southwest direction, while the eastern portion runs in the northwest-southeast direction starting at Stone Corral. The western half is aligned with both the predominant winds from the southwest and the Diablo winds from the northeast.

The Berryessa Estates area is mostly divided between the Spanish Valley, Butts Creek, and Mysterious Creek watersheds. It also contains small portions of the Pope Canyon Watershed. Multiple creeks exist in the area. They include Butts Creek, Snell Creek, Routan Creek, Stone Corral Creek, Jerd Creek, and several seasonal creeks.

More details of the terrain follow in the discussion of weather.

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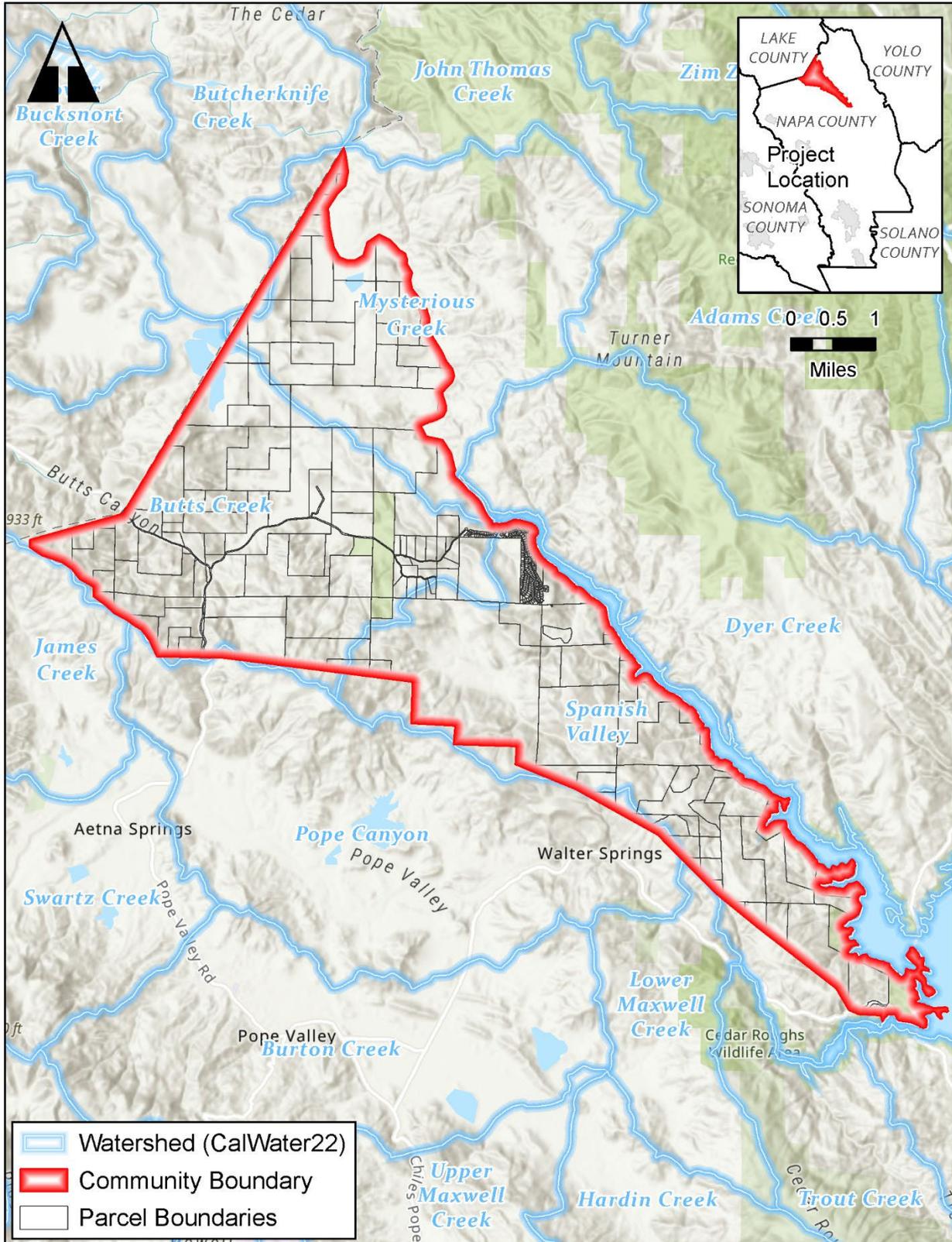


Figure 4. Watershed map of the Berryessa Estates area (boundary shown in red).

Weather

Weather conditions significantly impact both the potential for ignition and the rate, intensity, and direction in which fires burn. The most important weather factors used to predict fire behavior are wind, temperature, and humidity

Temperatures and Humidities: Summer days are usually warm but comfortable; temperatures normally range from lows in the 40's and to highs in the 90's, with an occasional high reaching a maximum of 105 degrees Fahrenheit. Humidity can drop to the single digits in the summer and fall.

The Berryessa Estates FSC lies in a relatively protected area and would be subject to occasional episodes of several still, stagnant air formed by stationary highs during summer months. This overall weather pattern -- characterized by continuous high temperatures and low relative humidities -- enhances the possibilities of ignition, extreme fire behavior and extreme resistance to fire control.

Winds: The most important influence on fire behavior is wind. Wind can greatly affect the rate of fire's spread and the output of a fire. Wind increases the flammability of fuels both by removing moisture through evaporation and by angling the flames so that they preheat the fuels in the fire's path. The direction and velocity of winds can also control the direction and rate of the fire's spread. Winds can carry embers and firebrands downwind that can ignite spot fires ahead of the primary front. Gusty winds cause a fire to burn erratically and make it more difficult to contain.

Wind will tend to follow the pattern of least resistance and is therefore frequently deflected and divided by landforms. Canyon slopes produce pronounced daily up-canyon and down-slope winds caused by differential heating and cooling of air during the day. This occurs region-wide and on a local scale.

Most of the area is characterized by northwest-to-southeast aligned ridges with several peaks in both the northern and southern portions of the area. These ridges slow the regionally dominated southwesterly winds. However, strong winds from the northeast could produce strong up slope and erratic winds. Many of the peaks can align with the predominant wind direction (southwest-northeast), acting as funnels for strong afternoon winds or the less common Diablo winds from the northeast.

The winds that create the most severe fire danger typically blow from the north, usually in October. Winds from the east and north bring low humidity and elevated fire danger and can wreak havoc on the forested and chaparral covered areas, causing fire to spread to the south. These winds are the same ones that blew during the largest fires in Napa County; an unnamed fire in 1939 follows the pattern of larger fires influenced by these northeasterly winds. Those larger fires include the C. HANLY fire in 1964 along with its companion fire in 1965, the P.G. & E. #10 fire. Again, in 1976 and 1982, two fires, the IDA CLAYTON fire and the SILVERADO fire also started under these conditions. More recently, the TUBBS and NUNS fire in 2017 and the

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GLASS fire in 2020 also followed this pattern and burned substantial parts of Napa County, close to the Berryessa Estates area of interest as well as surrounding lands.

These northeasterly events generally last from 15 to 35 hours, but in 2000, 2003, 2005, 2017, 2018, 2019, and 2020 these events in October and November lasted for 5 to 14 days. This type of wind could “push” a fire from the upper eastern slopes of Napa Valley down across into the vineyards on the valley floor to the higher slopes to the west and beyond into Sonoma County.

Any southwestern-facing aspect of the Berryessa Estates area can exacerbate its risk from the Diablo winds. This is because these foehn or subsiding winds accelerate with decreasing elevation.

Vegetation

The 2016 Vegetation Map of Napa County³ (updated from the 2004 version) was used as reference for this evaluation. There are six main vegetation categories within the Berryessa Estates area along with three non-veg types (rock outcrop, developed, and streams and reservoirs). The major vegetation categories mapped are listed in Table 2.

Table 2. Vegetation acres by major vegetation categories within the Berryessa Estates area (Vegetation Map of Napa County).

Vegetation Major Category	Acres	Percent (%)
Agriculture	388	2%
Coniferous Forest	221	1%
Developed	178	1%
Grassland	2096	12%
Oak Woodland	5212	29%
Riparian Woodland	97	1%
Rock Outcrop	29	0.2%
Shrubland	9199	52%
Streams and Reservoirs	300	2%

In addition, the landscaped environment surrounding buildings and homes includes vegetation not captured in the vegetation.

Each vegetation type burns differently, based on the amount of biomass available to burn, the distribution of biomass in the vegetation, as well as the moisture and oil content of the foliage and dead material. A discussion on each major type follows the map on the next page.

Note: the tables and maps presented here reflect **pre-2020** conditions

³ https://data-cdfw.opendata.arcgis.com/datasets/b9855bea85c14190ab030da86441301c_0/explore

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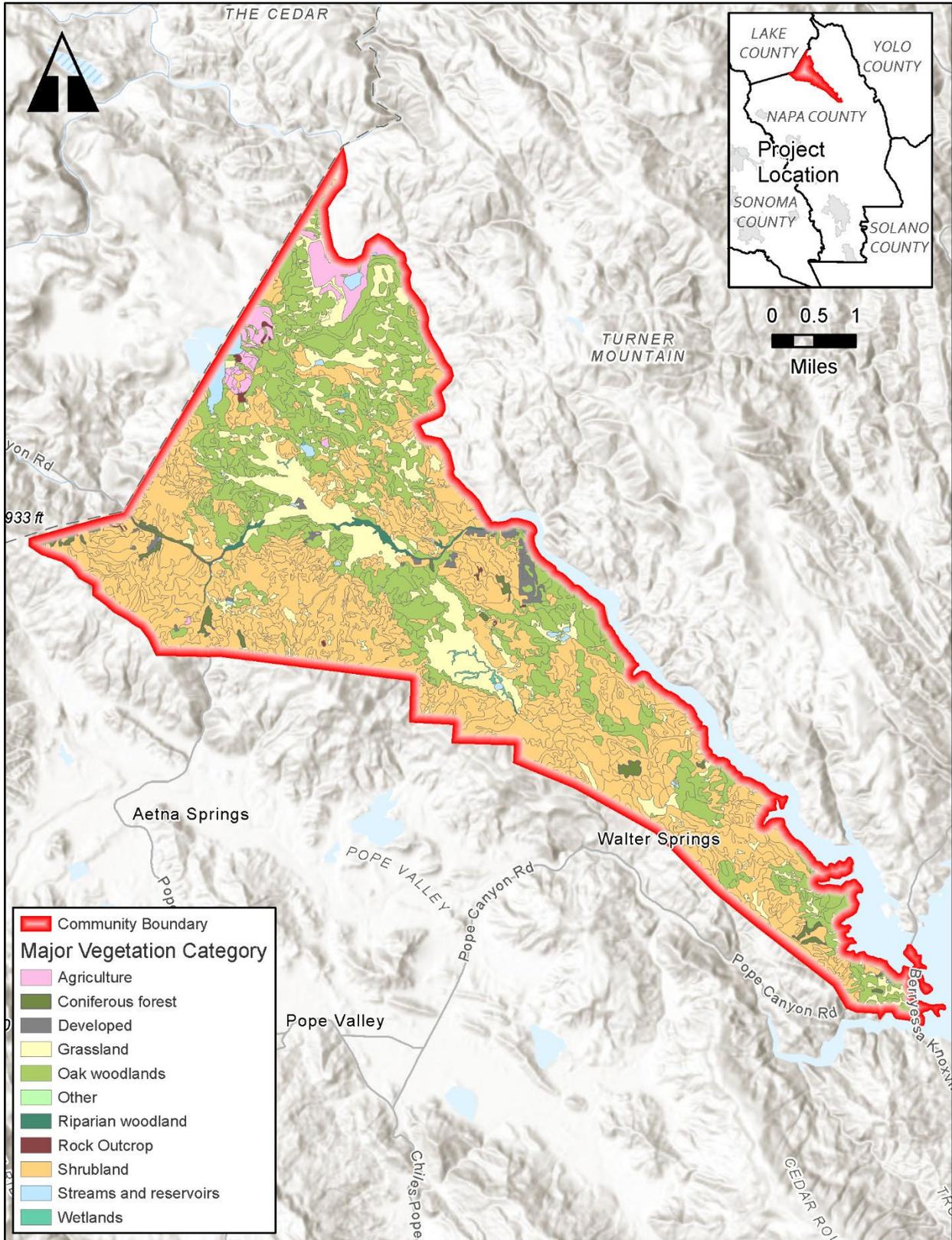


Figure 5a. Vegetation map – Berryessa Estates area (boundary shown in red) (Napa Vegetation Map, 2016).

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Oak Woodland: 29% of the Berryessa Estates area was mapped as Oak Woodland in 2016, occurring on the flanks of hillsides and ridgetops throughout the area. In most areas, dense canopies, with little or no grass or shrubs under the canopies, typify these oak woodlands. The tree canopy in the lower reaches of the drainages is dominated by blue oak, but also includes interior live oak, mixed oak, valley oak, and occasional pines. In more exposed areas, where the canopy opens up, shrubs are dominant in the understory.

Currently, the oak woodlands are recovering from the LNU Lightning Complex in 2020, and are sprouting from the base. Few trees were left unscorched, and standing dead trunks are the norm. The sprouts are in the form of bushes, with many stems. Grass and shorter shrubs are interspersed between the oaks.

If a fire were to occur in the area within the next decade, the vegetation can be expected to burn as a grassy shrubland until trees grow in height and form a more closed canopy. Because the foliage of the tree sprouts and chaparral is all new, a fire would be dampened by the live growth, but propelled by the grass in and amongst the re-sprouting trees



Shrubland: Prior to the LNU Lightning Complex shrubland occupied 52% of the Berryessa Estates area. All shrublands are re-growing on steep hillsides throughout the area. The picture on the following pages illustrates the pattern of re-growth. Shrublands are also interspersed with patches of oak woodlands. While these distinct areas were mapped as Shrubland, brush exists throughout and often contributes to other vegetation types described in this document. The specific mapped alliances mapped in 2016 will persist after the fires and include:

- California Bay - Leather Oak - (Rhamnus spp. (Foothill Pine)) Mesic Serpentine
- Chamise Alliance
- Chamise - Wedgeleaf Ceanothus
- Leather Oak - California Bay - Rhamnus spp. Mesic Serpentine Chaparral
- Leather Oak - White Leaf Manzanita - Chamise Xeric Serpentine
- Mixed Manzanita - (Interior Live Oak -California Bay - Chamise) West County

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- Scrub Interior Live Oak - Scrub Oak - (California Bay - California Ash - Birch Leaf Mountain Mahogany - Toyon - California Buckeye) Mesic East County
- White Leaf Manzanita - Leather Oak - (Chamise - Ceanothus spp. (Foothill Pine)) Xeric Serpentine



Currently, the brush on the hillside is growing rapidly, from re-sprouts and seeds. The new foliage will act to dampen fire spread and heat output, but any dead sticks remaining from the LNU lightning complex will faster fire spread. The hazard posed by this vegetation type is not great now, but will increase every year. When the plants grow together, sticks and twigs will die from too much shade, and the hazard will grow.

When mature, brush produces severe fire behavior, with flames longer than 20 feet in length. Intense, fast-spreading fires in chaparral burn the foliage as well as the live and dead fine woody material in the brush crowns. The foliage is highly flammable and dead woody material in the stands significantly contributes to increased fire intensity.

Currently, this type of vegetation is hazardous, but would be characterized because it produces a fast-moving fire with flames longer than 12 feet. In a decade, this fuel type will constitute the highest hazard. Direct attack is not possible, and containment efforts would need to rely on backfiring or suppression strategies other than line building because the perimeter of the fire is likely to grow faster than a line could be built.

Agriculture (Cropland/Vineyards): Only 2% of the land in the Berryessa Estates area is mapped as agriculture. This occurs in small sections in the northern part of the area of interest. The agricultural areas are a mix of vineyards and non-vineyard croplands.

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Very little damage was incurred in this land use because fires are usually benign in croplands or vineyards. In the case of vineyards, biomass is concentrated in live vines, with a mowed or bare soil surface. A fire can spread quickly through the vineyard where there is a ground cover. However, this situation is rare. Vineyards were instrumental in stopping the Howell Mountain fire in 1983, and formed the edges of fires in the Tubbs, Nuns, and Kincade Fires, but were part of the contagion in the Cavedale Fire in Napa in 1996. Vineyards often have access roads on the perimeter and within the interior, further aiding containment. With all that said, however, in the Glass fire of 2020, many vineyards were burned through.

Annual Grasslands (Herbaceous): Accounting for 12% of the Berryessa Estates area, annual grasslands were mapped throughout as scattered pockets in oak woodlands and shrublands. Additionally, a few larger patches were mapped in Snell Valley and Spanish Valley. The extent of grasslands expanded after the LNU Complex, now interspersed between oak woodlands, shrublands and conifers. Grasses are flash fuels and fire spread can be rapid through herbaceous areas, but these fires can be easy to spot and contain.

Conifer Forest: Prior to the LNU Complex, coniferous forests occurred in a few small patches at the western and eastern extremes of the Berryessa Estates area, as well as in the hills around Spanish Valley. Together, they constitute only around 1% of the area. Many of these trees were killed during the LNU lightning Complex. However, regeneration on newly bared soil is likely. These young trees do not present a fire hazard. Instead, the burned, dead material from the mature trees is a challenge as it fuels fires that are harder to contain and suppress. The specific mapped conifer forest includes:

- Douglas-fir - Ponderosa Pine
- Foothill Pine
- Foothill Pine / Mesic Non-serpentine Chaparral
- Knobcone Pine
- McNab Cypress
- Sargent Cypress

Knobcone pines (*Pinus attenuata*) are native to the region, but they proliferated in the Mayacamas after they were aially seeded after the 1964 fire. Knobcone pines actually require fire to reproduce in great quantity. They often grow as dense even-aged stands after a fire, and burn as entire stands, intensifying and accelerating fire behavior. Monterey pine (*Pinus radiata*), another fire pine, is another flammable species that was introduced to our area and should be removed when possible.

Conifer forests are often found on north-facing slopes and do not pose a significant fire hazard under normal conditions. However, when hot, dry weather occurs, these forests do offer a large fuel load to burn and can exhibit greater fire intensity. Of all the vegetation types in the Berryessa Estates area, dense, coniferous forests are most likely to burn as a crown fire. When a fire reaches tree crowns, embers are distributed throughout adjacent areas (including vulnerable residential areas). Dead material from dying oaks increases fire intensity.

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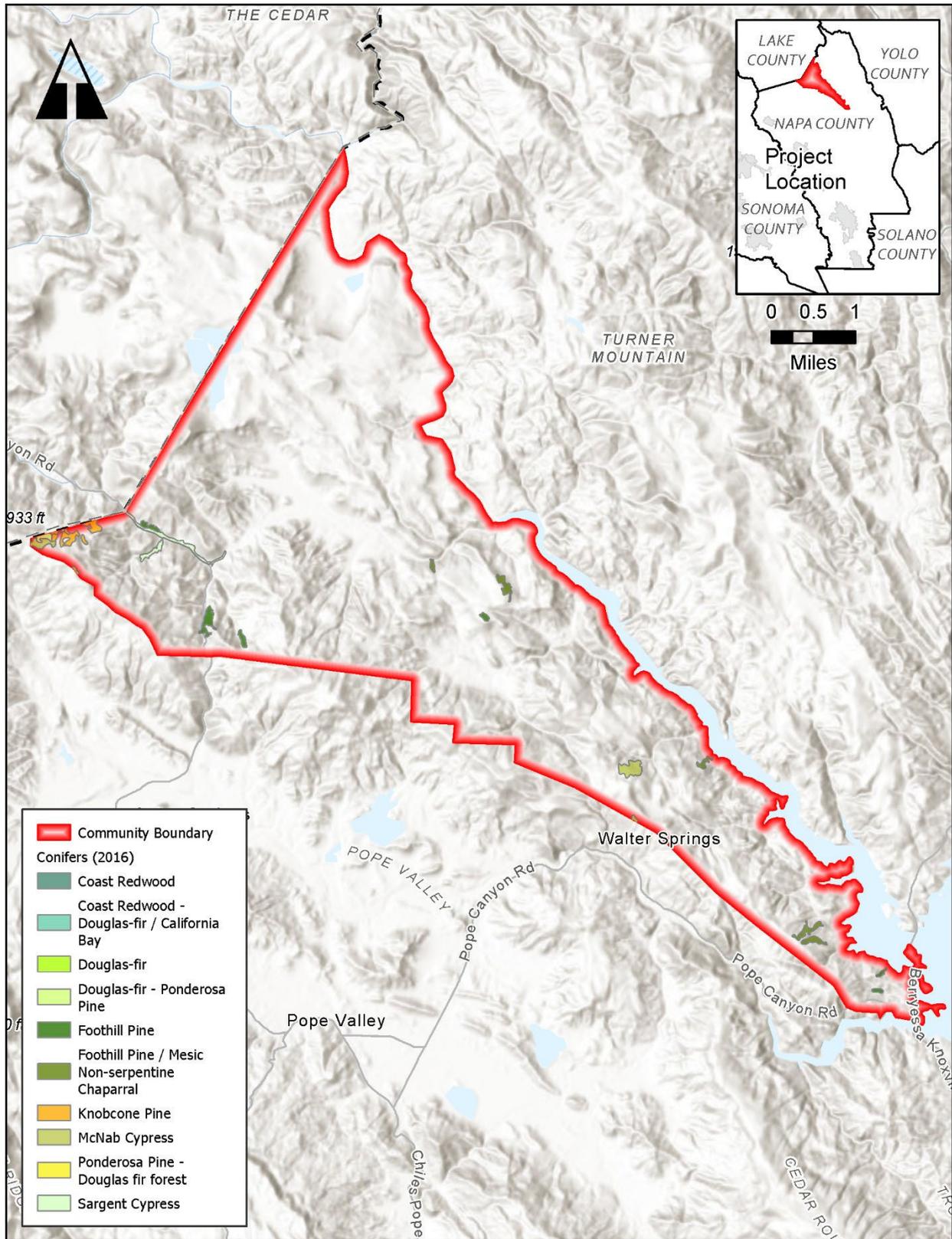


Figure 5b. Conifer map – Berryessa Estates area (boundary shown in red) (Napa Vegetation Map, 2016).

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Landscaping: Landscaped areas -- being closest to homes -- may make the greatest impact on survivability of a house during a fire arising in wildlands. Landscaped areas either (1) are moist, thus will not likely burn; (2) contain large amounts of fuel which will burn with great intensity; or (3) are landscaped with fire resistant plants, and only burn slowly with little heat release.

While research results regarding fire resistance of landscape plants are meager, several important generalities have surfaced. First, the overall volume of biomass as well as the spacing and design of the garden is more critical than the species selected. Horizontal spaces between planting masses and the house are important components of a fire safe landscape. Similarly, vertical spacing between tree branches, shrubs, ground cover and the structure (particularly windows) are also part of a well-designed garden.

Maintenance of landscaped areas is necessary to remove dead material and to maintain vertical and horizontal spaces. Neglect of landscape maintenance can lead to a significant worsening of the fire hazard closest to the structure.

Landscaping in the Berryessa Estates FSC is generally consistent with fire safety principles, in large part due to a recent cost-share program to create and enhance defensible space. A few residences have abundant vegetation – especially in vacant lots - that can endanger adjacent and nearby residents if they are within a few hundred feet of each other.

Predicted Fire Behavior

The distribution within an area of expected flame lengths can be predicted using public-domain software and data. FlamMap⁴ was used to model fire behavior using a county-wide dataset developed from the Napa County Vegetation Map⁵.

Flame lengths are expected to be high (over 12 feet) in much of the FSC, outside the developed areas because of the combination of heavy fuels, especially in the mixed forest and chaparral. Where a well-developed understory is present under the oak canopies, fires are also expected to burn with high intensity.

Fires can also be expected to burn fast when they are propelled by dry grass and chaparral. Vineyards can moderate both the fire intensity and fire spread but would not provide good suppression opportunities for safe evacuation because they are small in comparison to the tracts of uninterrupted vegetation.

Predicted Flame Lengths: Long flame lengths can be expected in shrublands and dense forests where understory is present. Vineyards and areas of well-maintained defensible space can be expected to burn with low intensity even under the most extreme conditions. Flame length most directly relates to the ability of a firefighter to safely attack a fire; flames longer than

⁴ <https://www.firelab.org/document/flammap-software>

⁵ <https://ncff-cwpp-dms-usa.hub.arcgis.com/maps/b2de24b3562e4e27b0fbea2921e2c9e4/explore>

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eight feet prevent safe, effective direct attack. Flame length is also closely related to structural damage – the higher the flame length, the more likely a structure could be lost.

54% of the area has a predicted flame length of over 8 feet when predicting for a northeasterly wind at 15 miles per hour. This leaves about 46% of the area predicted to have less than 8-foot flame lengths. Of those areas, 31% are predicted to have less than 4-foot flame lengths.

The higher flame lengths are concentrated in the shrublands throughout Berryessa Estates and are especially abundant in the steep terrain of the southern two thirds of the area. The lower flame lengths are mainly predicted in the valleys and flatter portions of the northern part of the area, occurring mostly in grasslands and oak woodlands as well as locations with some shelter from winds.

Note that the no predicted fire category accounts for agriculture and developed areas (includes vegetation in residential parcels) that may indeed burn – as evidenced in many of the recent fires in Napa County. In particular, no-till vineyards provide more potential fuels than vineyards with bare earth.

Table 3. Predicted flame length by category and area (in acres) within the Berryessa Estates area (based on Napa Veg Map-based landscape version 2-2021 with a Northeast wind at 15 mph with low fuel moistures).

Predicted Flame Length	Acres	Percent (%)
No predicted fire	782	4%
Less than 4 ft	4789	27%
4.1 – 8 ft	2690	15%
8.1 – 12 ft	1196	7%
Greater than 12 ft	8264	47%

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Predicted Crown Fire Activity: The potential for crown fire is crucial. When fires spread into crowns, thousands of embers are produced and lofted into ignitable fuels, often overwhelming fire suppression personnel. While both the coniferous and oak forests can torch, hardwoods are less likely to have fire reach to the tree crowns, unless vegetation is burning underneath.

For Berryessa Estates, a relatively small area is predicted to have fire spread within the tree canopy (tree-to-tree or crown fire), which is rare in hardwoods. Areas with higher density of coniferous forests are most at risk of torching and crown fires. These are scattered throughout the area south of Snell Valley and persist on hillsides and steep ridges.

Table 4. Predicted crown fire activity (or fire type) by category and area (in acres) within the Berryessa Estates area (based on Napa Veg Map-based landscape version 2-2021 with a Northeast wind at 15 mph with low fuel moistures).

Crown Fire Activity	Acres	Percent (%)
No predicted fire	778	4%
Surface fire canopy cover < 20%	4167	24%
Surface fire with canopy > 20%	6428	36%
Torching fire (passive crown fire)	5436	31%
Crown fire	912	5%

A combination of no predicted fire and surface fire in a canopy cover of less than 20% accounts for approximately 28% of the Berryessa Estates area. These areas are concentrated in the flatter parts of Berryessa Estates such as the major valleys, as well as in agricultural areas and less dense portions of oak woodlands.

Of the places predicted to have only a surface fire, we identified those areas with a more tree canopy (over 20%) to highlight areas that do not torch but could, in contrast to locations that have no trees, and thus where crown fire is not possible. These areas account for 36% of the predicted surface fire. Places where torching is predicted account for 31% of the total area. These areas are predominantly on steep mid-slopes and places where the vegetation is not protected from strong winds. They occur mainly in the steeper parts of the southern half of Berryessa Estates, with some surrounding the main residential area along Stagecoach Canyon Rd. And lastly 5% of the area is predicted to have active crown fire. While this is a relatively low number, in comparison to other communities, this is somewhat elevated. Field verification is recommended. Active crown fire is predicted on the steepest north- and east-facing slopes throughout the area, but it is concentrated in the mountainous areas surrounding Snell Valley and Spanish Valley.

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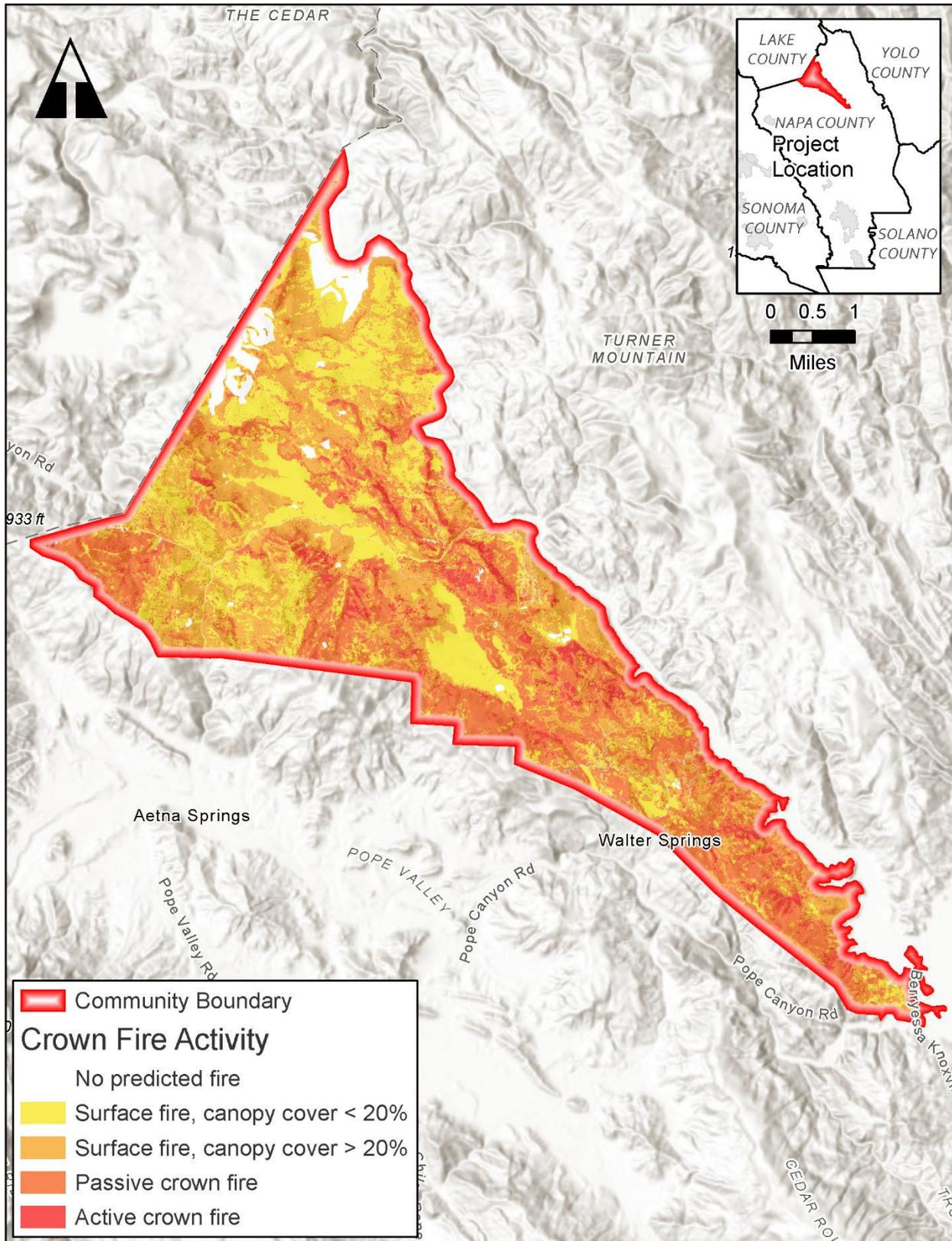


Figure 7. Predicted crown fire activity map (based on LANDFIRE landscape version 2.0 with a Northeast wind at 15 mph with low fuel moistures). Berryessa Estates area boundary (shown in red).

Fire History

In the past decades, 20 fires have been recorded occurring near the Berryessa Estates area. Most notable are the large and wide-ranging Hennessy fire of 2020, the Valley and Jerusalem fires of 2015, the Butts fire of 2014, and the Sixteen fire of 1999.

Large fires have directly impacted most of the area within the Berryessa Estates community. The fire history map shows that the vast majority of the neighborhood was last visited by fire in 2020, suggesting a relatively lower fuel load compared to in other areas that have not experienced fire recently.

Table 5. List of recorded fires near the Berryessa Estates area (CAL FIRE, 2020).

Year	Month	Date	Fire Name	Cause	Acres	Comments
1951	September	9/11/1951	ROUTAN CREEK	Unknown/Unidentified	948.9	
1951	September	9/12/1951	GEO. SNYDER	Unknown/Unidentified	629.1	
1953	July	7/11/1953	W.M ALDERSON #2	Unknown/Unidentified	2,920.3	
1955	August	8/7/1955	SAMUEL SPRINGS	Unknown/Unidentified	696.4	
1955	September	9/4/1955	CEMENT CREEK	Unknown/Unidentified	498.1	
1961	September	9/2/1961	POPE VALLEY SERIES	Unknown/Unidentified	1,702.2	
1963	September	9/27/1963	FOLEY FARM RI ESCAPE	Unknown/Unidentified	382.9	
1966	August	8/6/1966	JERICHO	Unknown/Unidentified	2,677.2	
1983	July	7/10/1983	POPE CANYON	Equipment Use	1,682.2	
1996	January	Unknown/Unidentified	GUENOC	Unknown/Unidentified	649.3	
1999	October	10/16/1999	SIXTEEN	Arson	37,893.1	
2002	August	8/9/2002	POPE	Equipment Use	753.9	

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2006	June	6/29/2006	HOMESTAKE 2	Unknown/ Unidentifie d	124.3	GUENOC RANCH
2014	July	7/1/2014	BUTTS	Unknown/ Unidentifie d	4,297.3	FIMT H6UW
2015	August	8/9/2015	JERUSALEM	Unknown/ Unidentifie d	25,118.4	\$25 Million (Cost)
2015	September	9/12/2015	VALLEY	Unknown/ Unidentifie d	76,084.8	\$59 Million (Cost)
2018	June	6/1/2018	BERREYESSA	Unknown/ Unidentifie d	2.8	
2018	September	9/8/2018	SNELL	Unknown/ Unidentifie d	2,488.2	
2020	August	8/17/2020	HENNESSEY	Lightning	305,351. 9	Part of the LNU LIGHTNING COMPLEX
2020	May	5/24/2020	SPANISH	Equipment Use	17.3	Brandon Bertolino

A recurring history of large fires (over 10,000 acres in size), which typically burn for several days, has been well established in Napa County. The typical period between such large fires is approximately 20-30 years. Like much of California, fires in Napa County are almost entirely caused by human-related accidental ignitions. With that said, in 2020, several lightning-strike fires burned in Napa County and west into Sonoma County.

In the past, fires did not involve large numbers of structures because of the historic rural nature of Napa County; however, structure damage is now a common concern whenever wildland fires of any size occur.

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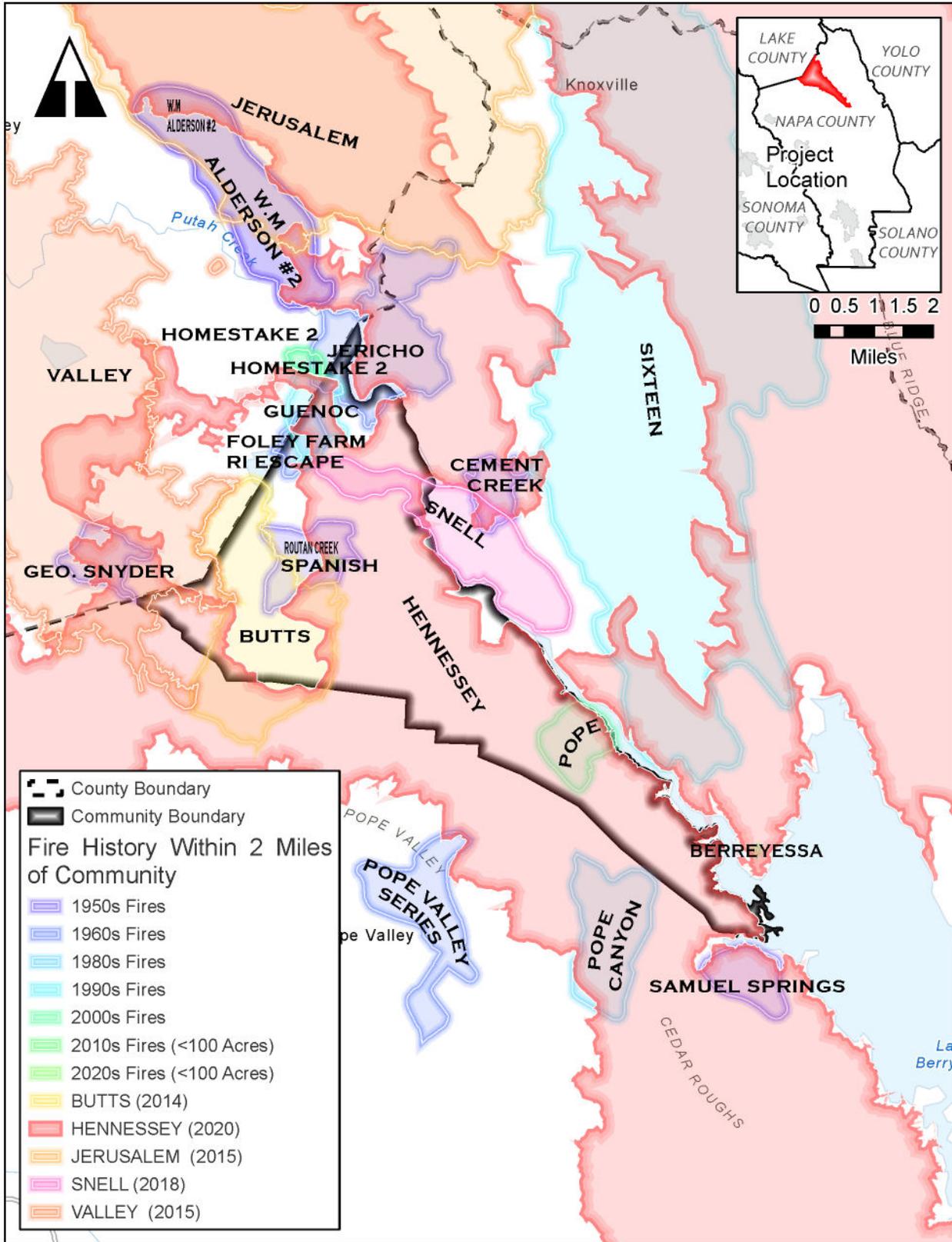


Figure 8. Fire perimeters/fire history map of Berryessa Estates area (CAL FIRE FRAP, 2021).

Access

In general, access to the boundaries and interior of the Berryessa Estates area is poor. The area is accessed by one primary road: Old Stagecoach Canyon Rd. The community is remote and the access road is long and winding. However, the roads are up to county standards with some turn-around space at the end of residential roads. Even so, the density of structures and remoteness of the community make evacuation a concern.

The main ingress/egress is provided by the combination of Butts Canyon Rd, Snell Valley Rd, and Stagecoach Canyon Rd, which collectively run across the center of the area in the east-west direction. The entire Berryessa Estates community is served by one way in and one way out. This route can be accessed via Butts Canyon Rd, which connects to Lake County to the northwest and Pope Valley Rd to the south. Pope Canyon Rd and Berryessa Knoxville Rd also provide access to the southeasternmost point of the FSC area, with the former running north-south along the shore of Lake Berryessa and the latter running through Pope Canyon west of the FSC boundary. There are several smaller local roads that lead into the main residential area from Stagecoach Canyon Rd. These several loop roads offer more than one way to access the main road. However, this patchwork of roads consists of loops and dead ends. There are no other means of egress entering or leaving Berryessa Estates, other than fire roads that may or may not be maintained.

Most roads are barely two lanes with no shoulders. Pavement (road surface) is generally in good shape but may show signs of deterioration in some areas. Some curves are simultaneously sharp and steep. Many residences are served by short driveways, a few of which are behind locked gates. Locked gates can further delay emergency response and discourage/prevent inspection by local fire authorities. There are several loop roads which would offer more than one way to access the main road.

Some segments of roads roadsides have abundant roadside vegetation. This vegetation could block the road while burning, and after, as trees fall (a common event during a fire). Despite ongoing removal of pines and shrubs near roads in the Berryessa community, trees can fall, blocking passage or vegetation can burn with such intensity that emergency response and evacuation cannot occur. Roadside vegetation has been maintained throughout some lengths of roads; however, one blockage would be significant.



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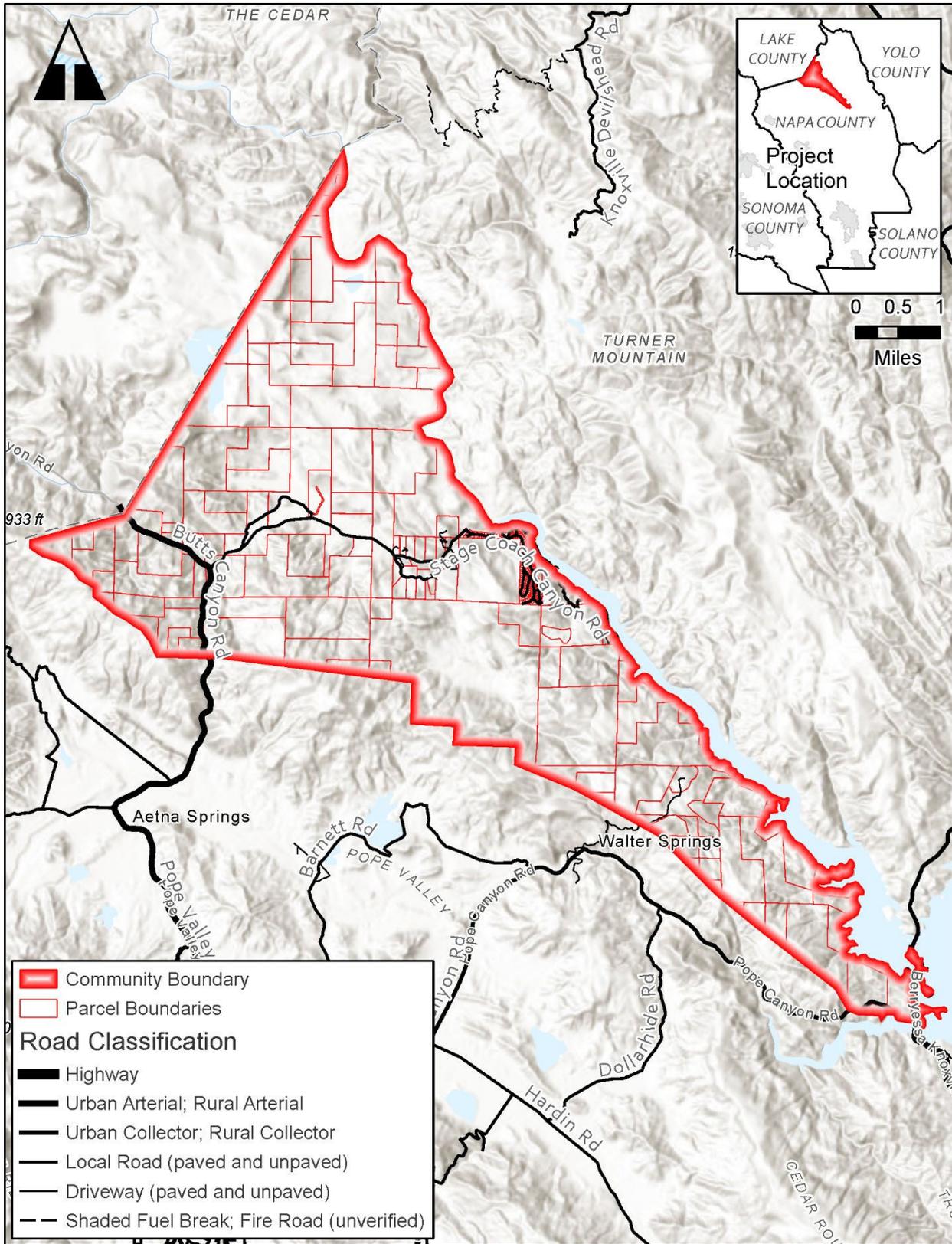


Figure 9. Access and street map of Berryessa Estates area (shown with red outline).

Hazard Ranking

The majority of the Berryessa Estates area is within CAL FIRE’s State Responsibility Area (SRA). 13% is not within the SRA. The area not within the SRA is all designated as a Federal Responsibility Area (FRA).

For the SRA portions of the Berryessa Estates area where CAL FIRE determined a fire hazard assessment, they show 55% of the area is categorized as a **Very High Fire Hazard Severity Zone**. A smaller area was classified as High (22%), with the remainder categorized as Moderate (9%).

Table 6. Fire hazard severity zone by area (acres) within Berryessa Estates area boundary (CAL FIRE, 2023 – current version).

Fire Hazard Severity Zone (CAL FIRE)	Acres	Percent (%)
Moderate	00	0%
High	372	2.1%
Very High	15,019	84.7%
Low Hazard or Outside of SRA	2,343	13%

See map on next page.



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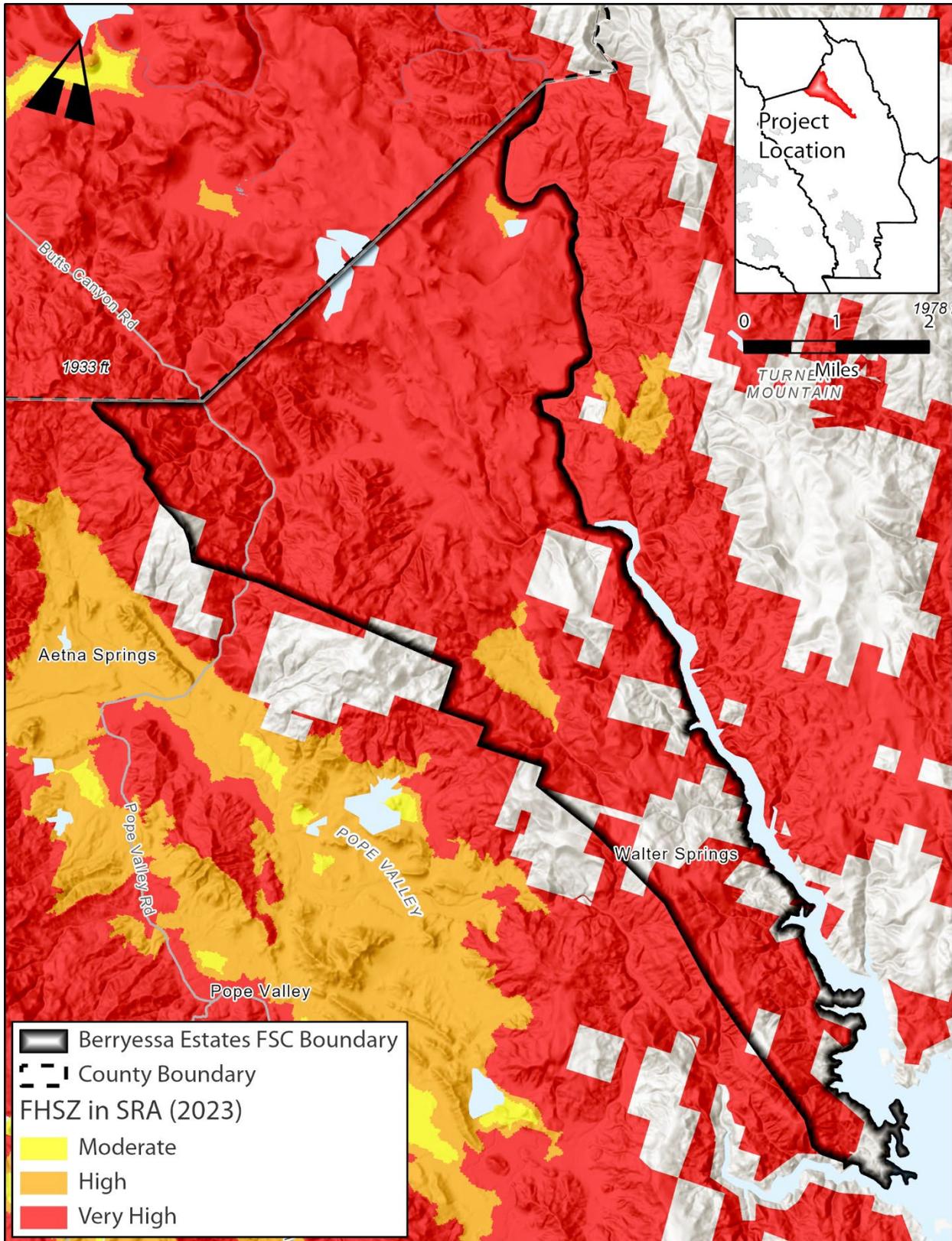


Figure 10. Distribution of Fire Hazard Severity Zones (CALFIRE, 2023).

The Plan

The elements of this Plan have been arrived at through a collaborative process, with the understanding that some elements of this Plan will require outside funding, that some elements will be easier to accomplish than others, and that all elements will take some time.

Projects

Completed Projects

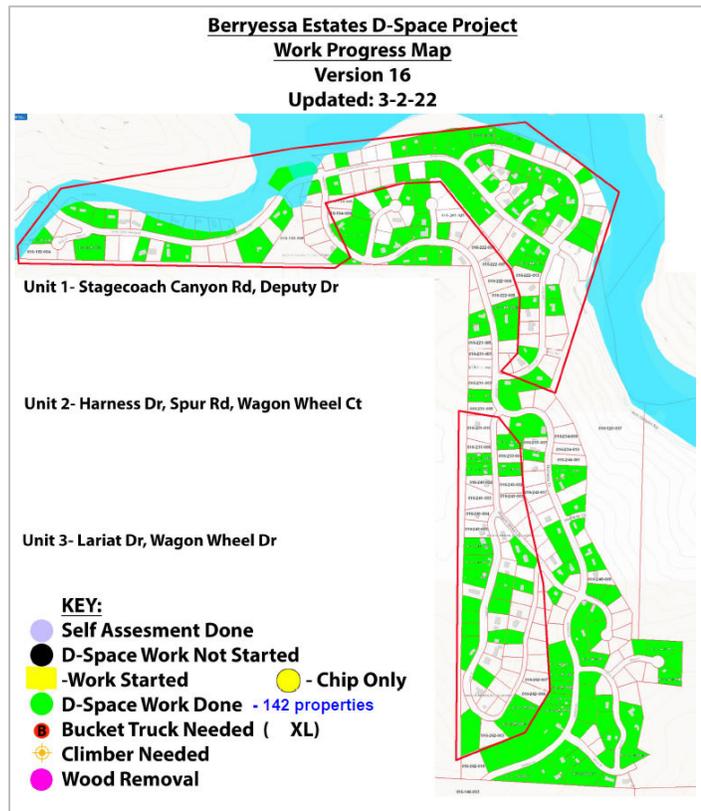
Defensible Space: The most significant completed project that protects structures is the creation and expansion of defensible space within the Berryessa Estates community. As a result of the California FireSafe Council funding, 142 of 182 local properties participated in this a defensible space demonstration project; the cost of the project was less than it would cost to replace or rebuild two of those homes. While a few vacant parcels remain in need of management, this project vastly improved the safety of the community.

In August 2022, a home fire on one of the untreated lots did not rage through the community; it was easily stopped because all of the surrounding properties had been treated. The Berryessa Estates defensible space program removed an unprecedented 1 million cubic yards--or 1,000 dump truck loads of brush and over 2,000 trees were pruned. Napa County Code Enforcement expanded the work by abating empty lots within the community.

Earlier, another successfully funded 19SFA/Napa County project this spring was to clear, pile, and burn nearly 400 piles on over 40 acres with Firestorm, for the Berryessa Estates FSC. That project timing was critical, as the Spanish Fire burned nearby on May 22, 2020.

Access routes: Access routes have been treated through a variety of funding sources and volunteer commitment. Treatments focused on removal of trees apt to strike powerlines or fall across roads, and removal of vegetation that might burn with enough intensity to block access.

Fuel breaks: Over the years, the fuel breaks encircling the Berryessa Estates community have saved the community from wildfires. These are critical infrastructure and a proven defense from



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wildfires. Owing to NCCFF funding sources, some fuel management projects, including the two fuel breaks and dozer lines for containment, have been accomplished, with additional work planned.

2014 CWPP Projects: The BEFSC has succeeded in accomplishing many of the projects recommended in the 2014 CWPP, with additional projects ongoing and in maintenance since 2014. These include projects aimed at increasing evacuation and access, reducing vegetation, reducing ignitability of structures, and bolstering emergency response.

Completed, ongoing, and in-maintenance projects include:

- Re-string/realign powerlines on road to Marina to remove tension on dead, hazardous trees
- Installation of reflective, large address numbers on houses
- Removal of the majority of the 20 fireboxes
- Rebuilding of 2 water tanks to ensure adequate and sustained water supply
- Reduction of fuels around the water tank at the southern end of Harness
- Extension of the peripheral fuelbreak to the area south of Harness Dr.
- Reduction of fuels along roadways within Berryessa Estates
- Ongoing maintenance of the fuelbreak on the periphery of the development
- Installation of reflective address signs

For the past several years the resident homeowners in Berryessa Estates have benefitted from the curbside chipping program provided by Napa County. Residents remove brush, dead trees, and limb-up trees on their property, and bring the waste to the curbside. Using a website, they schedule the chipper. The piles are regularly treated in about 10 days. The community will continue to use this service as a part of its fire safety planning and activities.

In the spring of 2014 the State Responsibility Area (SRA) Fire Prevention Fee allowed CAL FIRE to hire seasonal defensible space inspectors. The personnel assigned to Napa County were able to visit each property in the Estates, provide a defensible space inspection, information, and education to the residents regarding their homes. This was in conjunction with the Napa County Fire Department's Hazard Abatement Officer who also responded to resident complaints related to the County Fire Hazard Abatement Ordinance.

Planned Projects

CAL FIRE-Funded Projects: NCCFF has applied for a grant from CAL FIRE to fund the Eastside Berryessa Estates Grazing Project, which, if funded, will provide for 138 acres of grazing on the east side of the community. The project includes 17 acres of roadside fuel reduction along Stage Coach Canyon Road (funded as match by the County of Napa), and 20 acres of mastication with LNU equipment and operators (also as match). The area has one-way in and out and is near public lands (e.g. BLM, County, and Bureau of Reclamation (BOR)). The grazing and mastication treatments are located primarily on Napa County Regional Park lands. The

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remainder of the grazing area is on county-owned Lake Berryessa Resort Improvement District land. BLM is also planning prescribed burns nearby in 2024.

The grant would also provide for the purchase of BEACON BOXES for fire response to be installed at sites as determined by Napa County Fire and LNU, likely the one-way in and out entrances to the Berryessa Estates, Berryessa Highlands, and Berryessa Pines communities. Additionally, the grant would fund the purchase of approximately 600 REFLECT TO PROTECT address signs, including water tank, pool/pond, firetruck turnaround, and evacuation zone information, which will be distributed to residents in the greater Lake Berryessa area.

FEMA-Funded Projects:

The Berryessa Estates grazing project is expected to receive FEMA funding to the County of Napa in the coming years, which will facilitate both expansion (reducing heavier fuels) and maintenance of 39 acres of this project in the area closest to the homes. That project will include thinning of hazardous fuels, hence benefitting from the initial grazing treatment implemented under this grant. NCCFF will work with the emerging Napa Prescribed Burn Association (PBA) to support the Berryessa Estates community to explore the use of prescribed fire to ensure the project area is maintained over the long term.

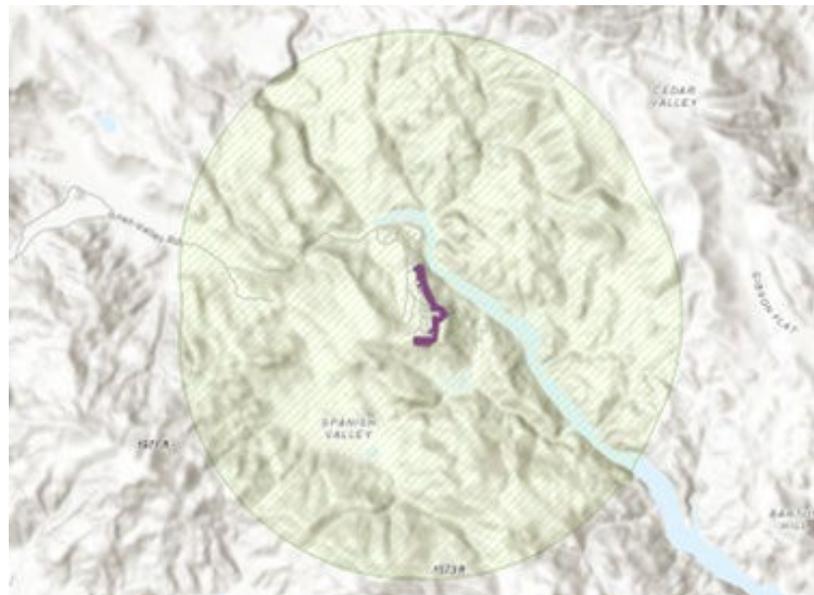


Figure 12. Tubbs/Glass Fire Complex Fuel Mitigation Project map.

Figure 12 shows the location of a project potentially funded by the Federal Emergency Management Agency (FEMA). This project was part of a Hazard Mitigation Grant Program application by Napa County entitled Tubbs/Glass Fire Complex Fuel Mitigation. The project is to treat fuels east of residences in Napa County Open Space lands.

BLM-Funded Projects

The Bureau of Land Management has been an important partner installing and maintaining a fuelbreak on the lands west of the Berryessa Estates. A proposed project is to conduct a prescribed burn on both the BLM land and the Bureau of Reclamation lands

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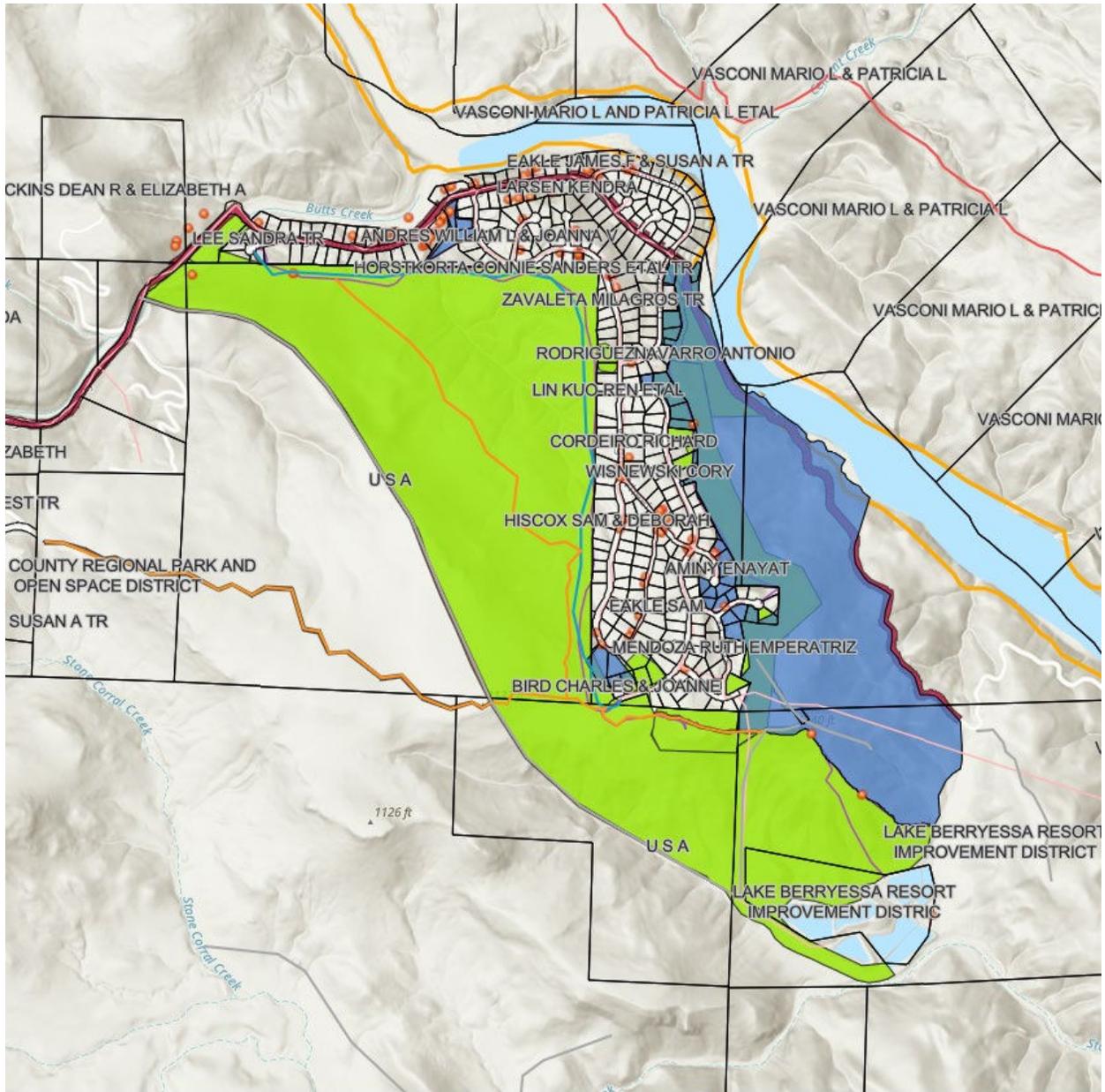


Figure 11. Federally-funded projects. The blue shows lands likely to be funded by FEMA; the green is a project to be funded by the BLM.

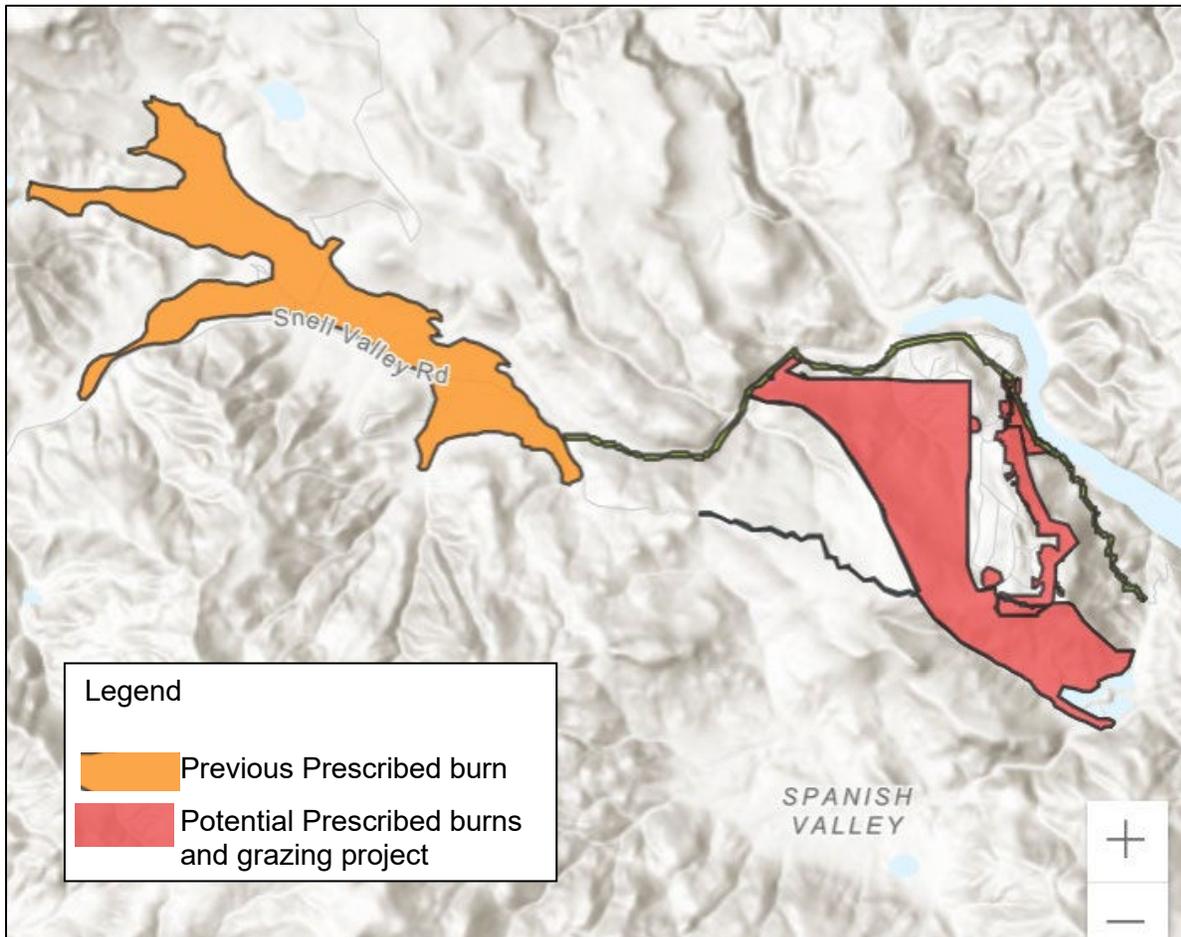


Figure 12. Berryessa Estates FSC planned and proposed fuel reduction projects by type.

Additional Recommended Projects

Several projects were recommended to enhance the fire safety within the Berryessa Estates area. As part of the process of developing the CWPP, the community identified additional projects. Some of the projects can be accomplished by residents, working together or individually, and some which require significant funding. These projects include actions such as

1. Installation of compliant address signs for the few properties without them,
2. Widening roads in places to create turnouts,
3. Establishing alternative evacuation routes,
4. Establishing an emergency communication system,
5. Identifying temporary refuge areas for residents along the main roads,
6. Expanded roadside treatments along Stagecoach Road,
7. Explore ways to ensure power during emergencies, such as a PGE electric back line or loop from Lake County, undergrounding lines, or a microgrid that would serve Berryessa Estates,

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8. Advocate for ways to report wildfires and other emergencies in Butts Canyon, including the installation of wireless and solar-powered emergency phones as a form of call-boxes in places with no/little cell phone reception. Work with Napa OES, PG&E and CalTrans for such emergency communications.

The project below indicates treatment of roadsides (Project Number 6) for an expanded width along Stagecoach Road from near Missimer Wildflower Preserve to the eastern end of Stagecoach Rd.

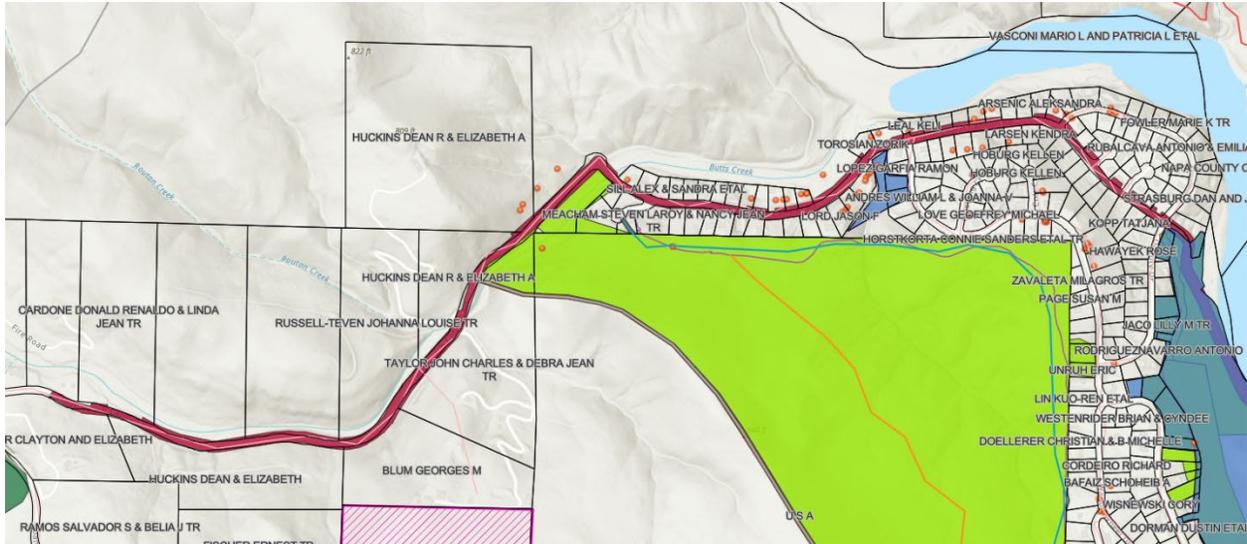


Figure 13. *Berryessa Estates FSC planned roadside vegetation treatment – expanded width*

In 2023, the BEFSC was recognized as a National Fire Protection Association **Firewise USA** community. The application includes a three-year action plan that addresses projects to support outreach and education, home hardening, defensible space and fuel reduction and evacuation planning. Table 7 is a summary of projects identified in the action plan.

Table 7. *Projects identified during development of the Action Plan.*

Outreach and Education Goals
Obtain and distribute educational information on defensible space, home hardening and preparation for fire emergencies.
Develop a database of conditions assisting fire response and provide them to firefighters, e.g. water sources, access conditions.
Update FSC’s public-facing webpage with informational and educational materials.
Participate in one wildfire-related education/information meeting with a subject matter expert to improve awareness of wildfire risks; convey salient points to FSC.
Convene at least one community meeting to update on the latest fire-related programs and activities.
Convene at least two board meetings to review programs and plans.

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Conduct voluntary parcel-by-parcel evaluation of residences in the FSC area regarding defensible space and fire-resistant landscaping choices, and retrofit options.
Install Firewise community signage at visible locations.
Develop a list of properties that require defensible space work that are owned by disadvantaged, low income and/or senior homeowners.
Continue establishing area subgroups within the FSC and appoint representatives to the FSC board from those areas to develop education and action programs tailored to their needs.
Home Hardening Goals
Obtain and post educational materials on webpage of best practices for structure retrofitting.
Work with residents and private companies to implement home hardening and educate residents about state and county suggested guidelines.
Develop a grant-funded pilot program to implement home hardening on a match basis.
Work with Real estate agents to assist in the education of new homeowners to hardening needs and defensible space needs.
Defensible Space/ Fuel Reduction Goals
Conduct roadside vegetation treatments along key access routes.
Clear the 10-foot county road right of way up to 30 feet where possible with Landowner permission of hazard trees and brush to maintain safe ingress & egress.
Research and identify other landscape modification actions that would provide protection against wildfire spread and plan their funding and implementation
Promote and execute the defensible space cost-share program; encourage sign-ups.
Promote Napa County chipping days on webpage
Develop and implement FSC capacity to raise matching donations for potential grant funded vegetation management and fire protection activities; carry out fund-raising activities.
Manage volunteer work groups to reduce fuel and provide general fire maintenance support to project areas.
Pursue grant and private funding for western border of BOR perimeter Defensible space dozer maintenance.
Pursue grant and public funding for Open Space fuel break on east side of Napa Open Space parcel.
Assist public works in defensible space of water storage areas.
Evacuation Planning and Wildfire Preparedness
Update FSC evacuation plan.
Create or update pre-attack map identifying firefighting resources, e.g. water, access routes.
Carry out a practice evacuation in one of the FSC subareas.
Update call lists.
Update door knocking list and follow up for disabled or elderly residents.
Paint and maintain neighborhood hydrants, in collaboration with fire chief.
Replace missing blue road reflectors throughout community roadway.
Create plan for emergency water storage for LBRID and fire house during drought conditions.

Approval Signatures

The Berryessa Estates Community Wildfire Protection Plan was developed collaboratively and in consultation with interested parties, including Napa Communities Firewise Foundation, Napa County Fire Department, CAL FIRE, and the residents of the Berryessa Estates community.

The Plan identifies and prioritizes areas for hazardous fuel reduction treatments and recommends other types and methods of treatments that will protect the Berryessa Estates Community.

The following entities acknowledge the receipt of this Community Wildfire Protection Plan:

Acknowledged:  Date: 06/04/2025
[Anne Cottrell \(Jun 4, 2025 11:28 PDT\)](#)
Anne Cottrell, Supervisor, Napa County District 3

Acknowledged:  Date: 06/05/2025
Matt Ryan, Unit Chief, CAL FIRE and Fire Chief, Napa County Fire Department

The following individuals agree with the contents of this Community Wildfire Protection Plan:

Agreed:  Date: 06/05/2025
[Christopher Thompson \(Jun 5, 2025 16:53 PDT\)](#)
Christopher Thompson, Chairman of the Board, Napa Communities Firewise Foundation

Agreed:  Date: 06/06/2025
[Clinton Heise \(Jun 6, 2025 18:55 PDT\)](#)
Clinton Heise, Lead, Berryessa Estates Fire Safe Council

Agreed:  Date: 06/09/2025
[Jonathan Niksa \(Jun 9, 2025 08:40 PDT\)](#)
Jonathan Niksa, Lead, Berryessa Estates Fire Safe Council

BEFSC CWPP Final for signature 20250601

Final Audit Report

2025-06-09

Created:	2025-06-03
By:	Sharon Gardner (shari@napafirewise.org)
Status:	Signed
Transaction ID:	CBJCHBCAABAAfopmpmqoCYKh7tIEHDsoM9XrjJP9Lca2

"BEFSC CWPP Final for signature 20250601" History

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