APPENDIX FIRE

GUENOC VALLEY WILDFIRE PREVENTION PLAN

MAHÁ

GUENOC VALLEY

DRAFT WILDFIRE PREVENTION PLAN

FOR THE FIRST PHASE OF THE
MAHA RESORT AT GUENOC VALLEY

FEBRUARY 5, 2020

ACKNOWLEDGMENTS

The *Maha Guenoc Valley Wildfire Prevention Plan* was created as part of collaborative effort between the County of Lake, representatives from the California Department of Forestry & Fire Protection (CAL FIRE), design and engineering teams, and grazing consultants. The group relied upon local knowledge and trusted resources to identify the key fire risks throughout the site and then develop an innovative and comprehensive wildfire prevention strategy.

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Note: Site plans throughout this document are intended to demonstrate key wildfire prevention concepts. Final site plans are subject to change; please refer to the tentative and final maps for detailed site plan information, including parcel layouts and circulation alignments. In addition, the wildfire prevention commitments for the McCain Canyon entry road option are detailed in the McCain Canyon entry road grading plan.

OVERVIEW

GOALS & INTENT

The Maha Resort at Guenoc Valley is situated in a unique northern California landscape. The site's hills and valleys filled with oak woodlands, grasslands, vineyards, and grazing pastures will create an exceptional visitor and resident experience. Yet, this same setting also presents critical wildfire risks. A development of this size and expense requires a comprehensive approach to protect the environment and buildings from wildfire damage.

The *Maha Guenoc Valley Wildfire Prevention Plan* presents an integrated approach to wildfire management throughout the project site. This plan includes a thorough consideration of the site's wildfire history as well as vegetative, topographic, and climatic wildfire risks. These risk patterns inform a series of essential wildfire prevention strategies for all components of the project. This includes innovative concepts and commitments that will contribute to a wildfire resilient setting. For example, goat, sheep, and cattle will reach many hard-to-access areas of the property to graze dry grasses and reduce understory vegetation, both of which are significant wildfire risk factors. As determined by the Homeowner's Association, the project site will additionally be protected with fire breaks along the roadway network as well as along unprotected areas of the property boundary. In the case of an actual wildfire, the on-site emergency response system will quickly be deployed–which includes everything from high-definition fire detection cameras to an on-site emergency and fire response center.

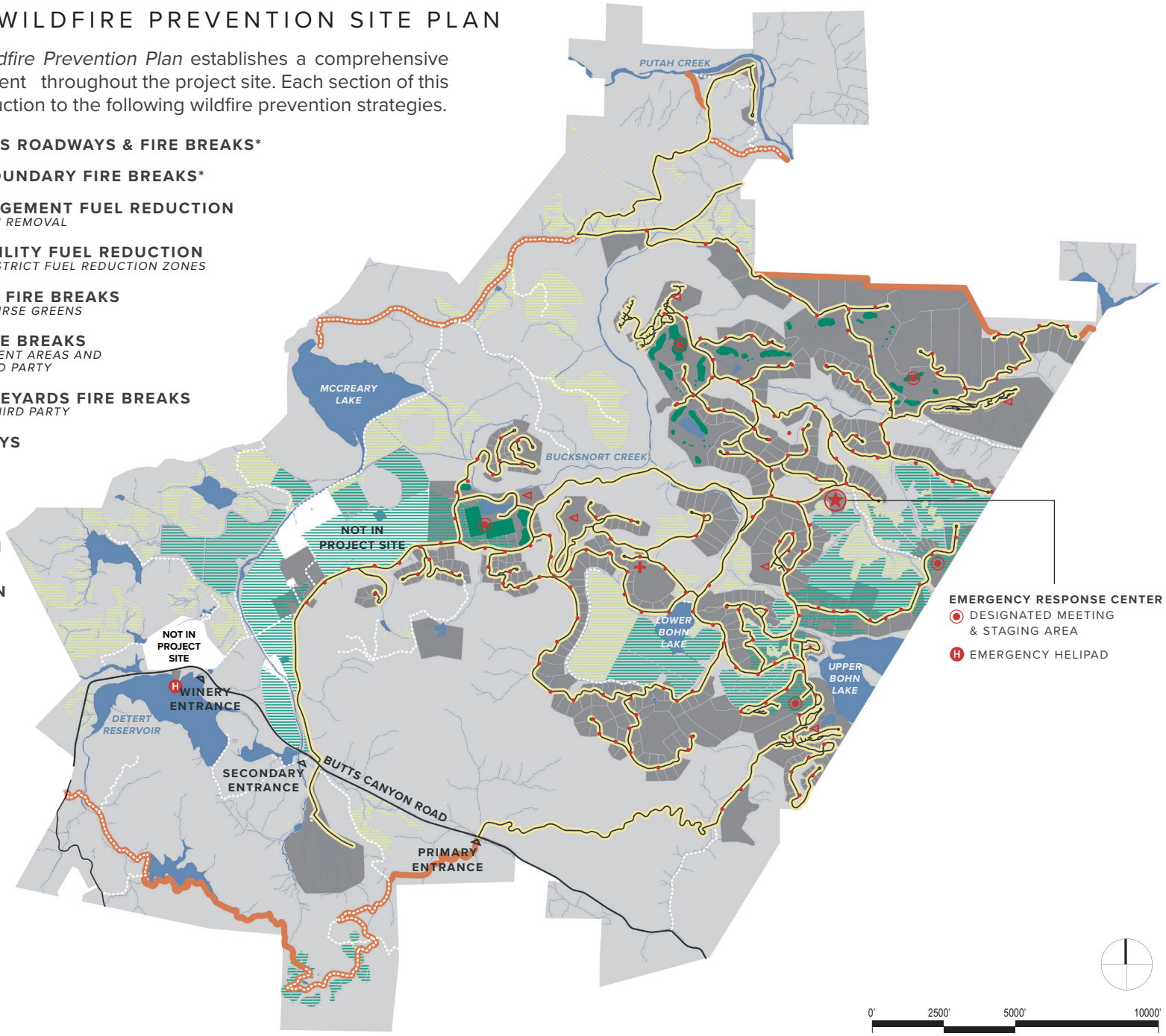
These efforts will be part of an overall commitment to developing long-term wildfire resilience through innovative partnerships, research, and strategies. The resort will follow the guidance and establish collaborations with the County of Lake, the California Department of Forestry & Fire Protection (CAL FIRE) and the local fire department, South Lake County Fire, to continuously improve the wildfire prevention plan. These actions will all contribute to the resort's plege to become a Firewise Community as designated by the National Fire Protection Association (NFPA), which will reinforce the long-term ability to address wildfire risk. With comprehensive and careful planning, Maha Resort at Guenoc Valley will offer an dynamic and effective ability to reduce wildfire risk for all residents, visitors, and workers.

OVERVIEW
COMPREHENSIVE WILDFIRE PREVENTION SITE PLAN

The *Maha Guenoc Valley Wildfire Prevention Plan* establishes a comprehensive approach to wildfire management throughout the project site. Each section of this plan will provide a brief introduction to the following wildfire prevention strategies.

- **PRIMARY TWO-WAY ACCESS ROADWAYS & FIRE BREAKS***
- **VOLUNTARY PROPERTY BOUNDARY FIRE BREAKS***
- **ACTIVE LANDSCAPE MANAGEMENT FUEL REDUCTION**
  GRAZING AND MANUAL VEGETATION REMOVAL
- **RESIDENTIAL/RESORT/FACILITY FUEL REDUCTION**
  STRUCTURE FIRE SPRINKLERS AND STRICT FUEL REDUCTION ZONES
- **IRRIGATED RECREATIONAL FIRE BREAKS**
  EQUESTRIAN FIELDS AND GOLF COURSE GREENS
- **IRRIGATED VINEYARDS FIRE BREAKS**
  CURRENTLY PLANTED IN DEVELOPMENT AREAS AND AREAS LONG-TERM LEASED BY THIRD PARTY
- **POTENTIAL IRRIGATED VINEYARDS FIRE BREAKS**
  IN AREAS LONG-TERM LEASED BY THIRD PARTY
- **EXISTING RANCH ROADWAYS**
  USED FOR ACTIVE FUEL REDUCTION AND EMERGENCY ACCESS
- **EMERGENCY RESPONSE CENTER**
- **EARLY DETECTION SYSTEM**
  HIGH-DEFINITION CAMERA
- **EMERGENCY NOTIFICATION SIREN SYSTEM**
  EXACT LOCATIONS TBD
- **DESIGNATED MEETING & STAGING AREA**
- **HELIPADS**
- **FIRE HYDRANTS**
- **WATER SOURCES**
  RESERVOIRS, LAKES, PONDS, CREEKS & STREAMS

**To be constructed at the discretion of the Homeowner's Association if and when necessary*



OVERVIEW
IMPLEMENTATION & MANAGEMENT

The *Maha Guenoc Valley Wildfire Prevention Plan* will create a comprehensive framework to guide the plan's continuous development, implementation, and management. Beyond meeting code requirements defined by the County of Lake and the State of California, the project team will work closely with the California Department of Forestry & Fire Protection (CAL FIRE) and the local fire department, South Lake County Fire, to continuously identify strategies to improve the wildfire prevention plan.

The plan will be implemented through the resort's Covenants, Conditions, & Restrictions (CC&Rs), development agreement, and Guenoc Vally District (GVD) zoning ordinance documents, which will all be overseen by the County of Lake through the development permitting process. The resort's residential homeowner's association (HOA) will provide ongoing oversight of the plan's management, operations, and enforcement. The ability for this organization to oversee the wildfire plan will be specified within the resort's CC&Rs.

SITE CONTEXT
PROJECT SETTING & HISTORY

The Maha Resort at Guenoc Valley is located approximately 100 miles north of the Bay Area in the agricultural and viticultural region of North–central California. The resort is located in the southeastern corner of the County of Lake, three miles southeast of Middletown and on Napa County's northern border.

Guenoc Valley, a small inland valley, is comprised of varying landscapes and conditions. The valley experiences greater seasonal temperature extremes than neighboring areas, and has a wide range of elevation changes throughout the property. These varying elevations support various vegetation types and uses; a series of vineyards generally cover the lower areas and slopes, while oak woodlands, grasslands, and chaparral covered hillsides offer plenty of opportunities for livestock grazing.

At approximately 16,000 acres, the resort site remains one of the largest privately owned properties in the state of California. The property first came to public attention when a portion of the ranch was owned by the British Actress, Lillie Langtry. Through the years the land has continued to be utilized for outdoor recreational pursuits, vineyards, and agriculture.

PROJECT SITE LOCATION

In resort site is located approximately 100 miles north of the Bay Area on the border of Napa and Lake County with close access to Clearlake and Santa Rosa.

SITE CONTEXT
PROJECT SITE PLAN

This site's inherent agricultural and rural character will continue to be a valuable aspect of the resort experience. The proposed development—which includes boutique hotels, residential estates, recreational amenities, operational facilities, roadways, and trailways—will be carefully integrated into the site. The resort will prioritize protecting and enhancing vineyards, grazing pastures, and undeveloped open areas throughout the development process.

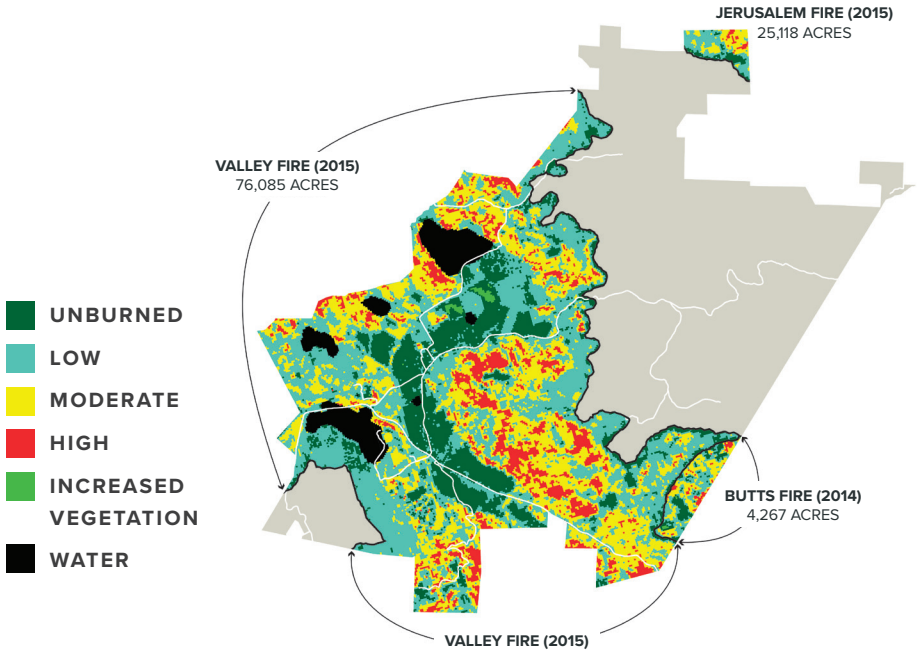
1 ON-SITE WORKFORCE HOUSING
2 AERIAL SITE ACCESS
3 CENTRAL BACK-OF-HOUSE OPERATIONS
4 MAHA FARM
5 EQUESTRIAN CENTER & LODGE
6 BOHN RIDGE RESORT
7 SPA & WELLNESS
8 EMERGENCY RESPONSE CENTER
9 RESORT AT TROUT FLAT
10 GOLF COURSE
11 RED HILL RESORT
12 TENT CAMP AREA

SITE CONTEXT
WILDFIRE HISTORY

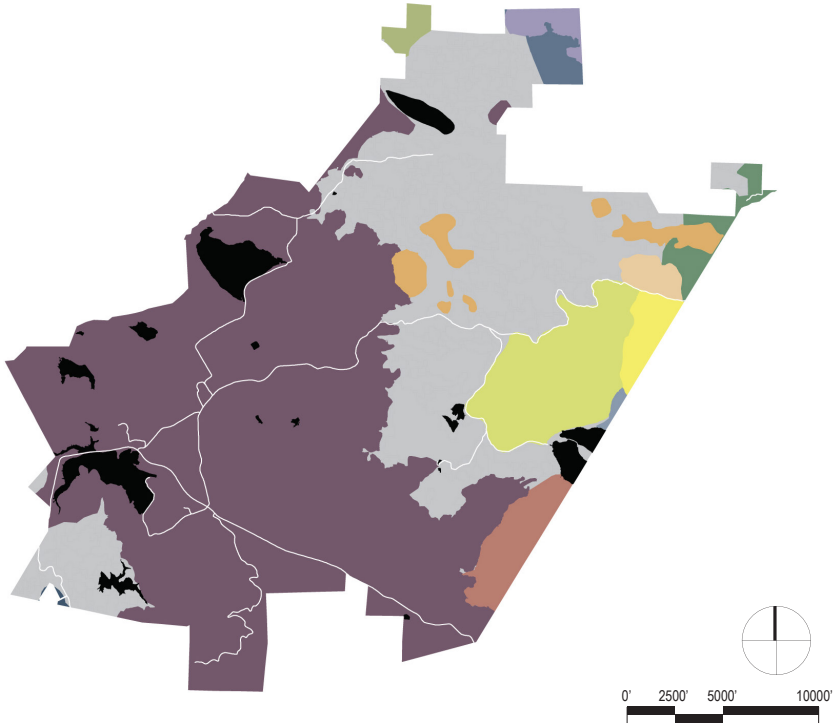
Guenoc Valley is located in a fire prone region of California. Although wildfire is a year-round possibility, risk increases during the late summer into the fall. During this time of the year, hot days with a lack of precipitation dries out vegetation, which increases the risk for wildfire, particularly during windy days. Climate change could further affect these risk factor patterns.

Wildfires have affected the site throughout its history. Since the 1950s, fires of varying size and intensity have burned parts of the project site. A few of the more recent fires, including the Butts Fire in 2014 and the Jerusalem and Valley Fires in 2015, were large-scale fires which spread from off-site and affected large portions of the site as well as nearby properties. In particular, the Valley Fire caused wide-spread damage to the southern portion of the site, particularly along Butts Canyon Road. These affects are still visible and present today.

The scale, severity, and effects of the most recent wildfires are all important considerations in developing a rigorous wildfire prevention strategy.



BURN SEVERITY OF MOST RECENT WILDFIRES
SOURCE: National Burn Severity Mapping Project, National Park Service - U.S. Geologic Survey, 2014 and 2015



SITE WILDFIRE HISTORY SINCE 1950s
SOURCE: California Fire Return Interval Departure (FRID), USDA Forest Service, Pacific Southwest Region, 2012 with 2016 update

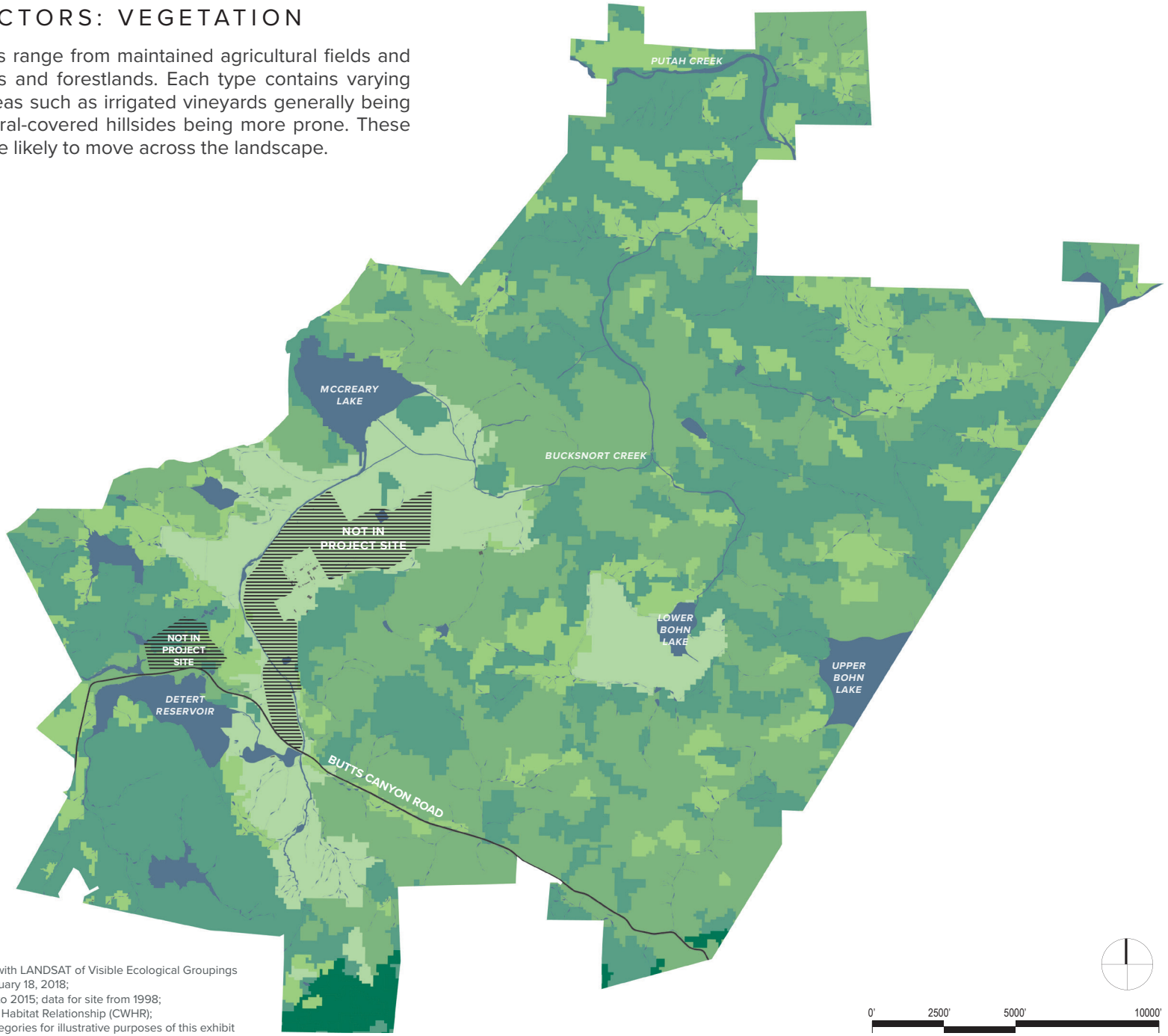
SITE CONTEXT

WILDFIRE RISK FACTORS: VEGETATION

The dominant vegetation types range from maintained agricultural fields and vineyards to dense woodlands and forestlands. Each type contains varying levels of wildfire fuels, with areas such as irrigated vineyards generally being less prone to fires and chaparral-covered hillsides being more prone. These patterns affect how wildfires are likely to move across the landscape.

VEGETATION COVERAGE

- AGRICULTURE
- GRASSLANDS
- CHAPARRAL
- OAK WOODLANDS
- GENERAL FORESTLANDS
- WATER

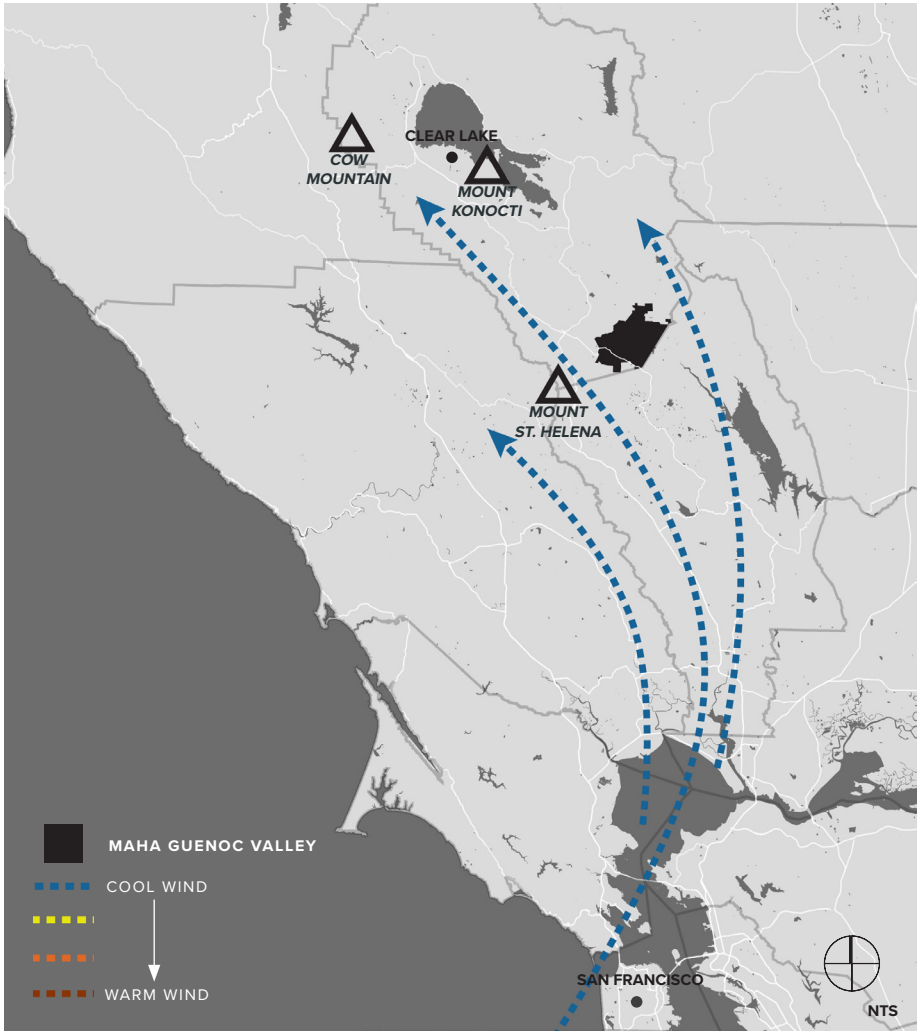


SOURCE:
U.S. Forest Service, Classification and Assessment with LANDSAT of Visible Ecological Groupings (CALVEG), EVeg Mid Region 5 North Coast Mid, January 18, 2018;
data source information ranges from the year 1998 to 2015; data for site from 1998;
data source crosswalked with the California Wildlife Habitat Relationship (CWHR);
CWHR categories simplified to the above seven categories for illustrative purposes of this exhibit

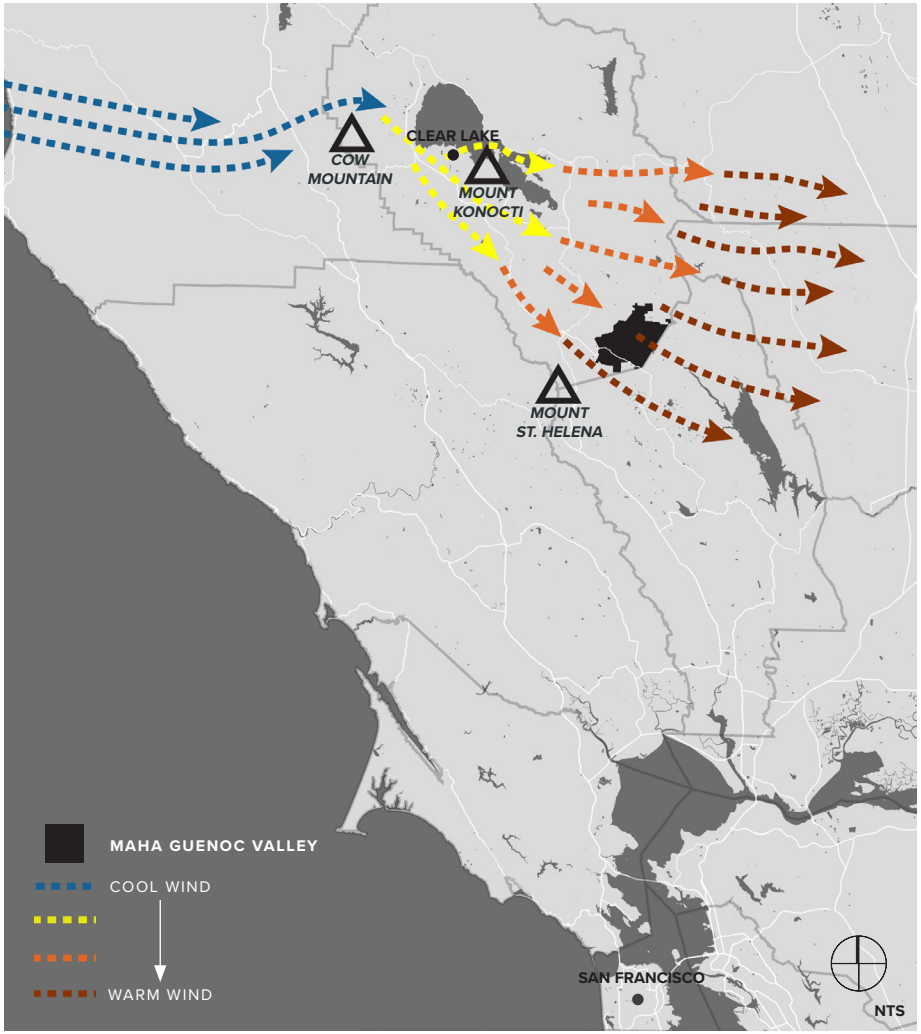
SITE CONTEXT
WILDFIRE RISK FACTORS: REGIONAL WIND PATTERNS

Windy conditions during the fire season increase the likelihood of fires erupting, rapidly escalating, and increasing in intensity and scale. Depending on various climatic conditions, regional wind patterns may vary seasonally and even daily. However, the resort site is primarily affected by two regional wind patterns: the Konocti Winds and Diablo Winds.

The Konocti Winds, as shown below, affect the site with varying morning and afternoon wind patterns. In the morning, wind typically flows northward from the Bay Area. In the afternoon, cool air flows eastward from the coast over Cow Mountain and towards Clear Lake, splits around Mount Konocti, and then increases in speed and temperature as it flows southwards towards Highway 20, Morgan Valley, and Guenoc Valley.



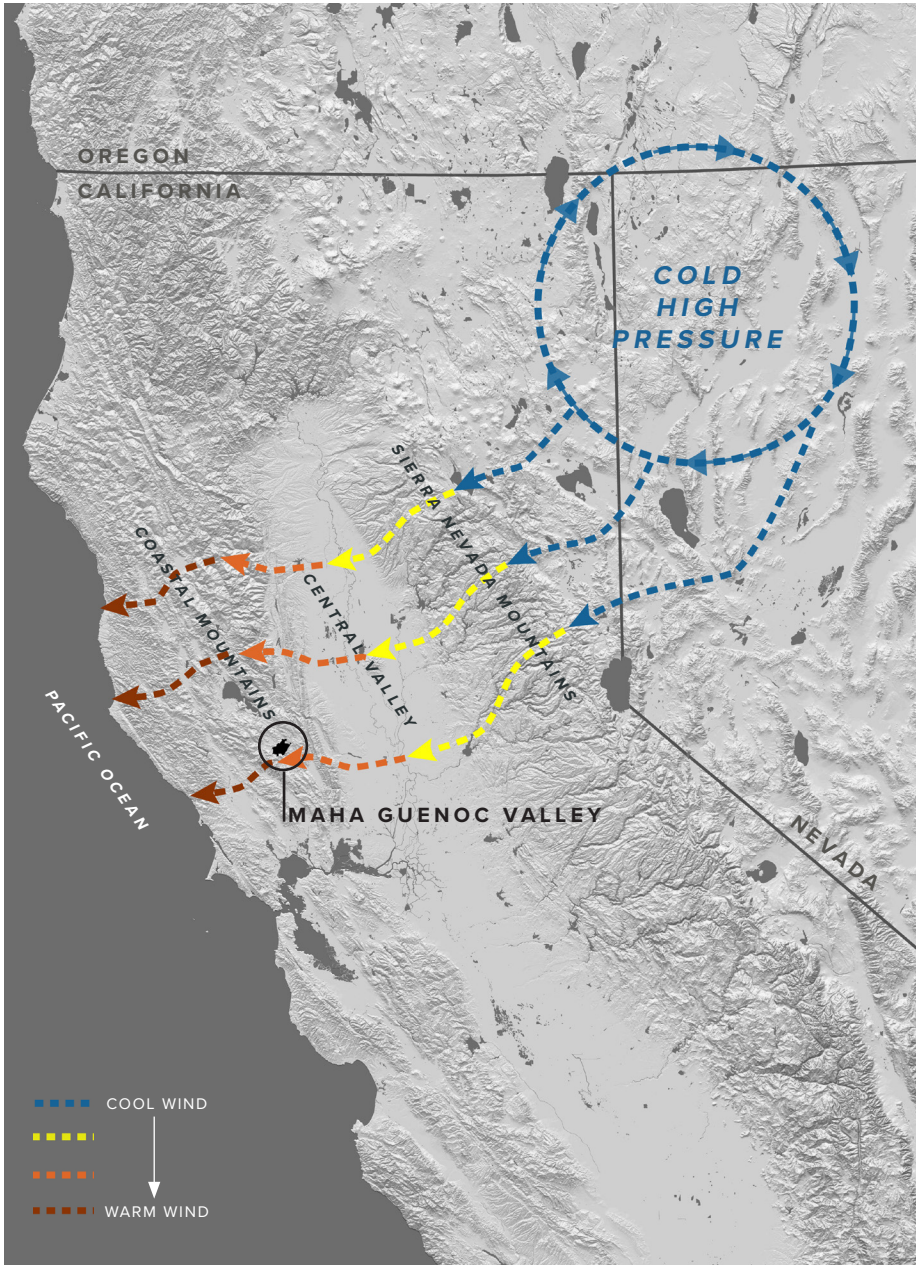
MORNING KONOCTI WIND PATTERNS
SUNRISE – NOON



AFTERNOON KONOCTI WIND PATTERNS
NOON – SUNSET

SOURCE:
South Lake County Fire Protection District and National Weather Service San Francisco Bay Area, 2019

SITE CONTEXT
WILDFIRE RISK FACTORS: REGIONAL WIND PATTERNS



DIABLO WIND PATTERNS

As shown on the right, the resort site is also subject to the Diablo Winds. This wind pattern begins in the Great Basin area of Nevada and Utah. The jet stream pushes cool, high pressure air from the area down to California. Once crossing over and cascading down the Sierra Nevada mountain range, the air increases in temperature and decreases in humidity; the air continues to increase in temperature as it crosses the Central Valley.

Finally, the warm air increases in speed as it pushes between narrow gaps in the Coastal Mountain ranges towards the Pacific Ocean. This pattern primarily affects the region during high fire risk seasons in the fall and winter.

FIRE WEATHER WATHCES & RED FLAG WARNINGS

When certain climate conditions combine, the National Weather Service may issue either a Fire Weather Watch or a Red Flag Warning.

A **Fire Weather Watch** indicates that local conditions resulting in extreme fire could occur in the next 12 - 72 hours. Wildfires are possible, but not imminent or currently occurring.

A **Red Flag Warning**—the highest and most serious type of alert—indicates to residents that local conditions may result in extreme fire behavior within 24 hours. Wilfires are ongoing or may begin shortly.

Various combinations of climate conditions can result in either a watch or warning, including:

- Low relative humidity
- Strong winds
- Dry fuels
- Potential for dry lightening strikes

During both Fire Weather Watches and Red Flag Warnings, residents are urged to practice extreme caution, as major wildfires could be started with a simple spark.

SOURCE:
California Department of Forestry & Fire Protection, “Red Flag Warning & Fire Weather Watches,” 2019
National Oceanic and Atmospheric Administration: National Weather Service, “Understanding Wildfire Warnings, Watches and Behavior,” 2019
San Francisco Chronicle, “Are infamous Diablo winds responsible for recent wildfires?,” 2019

SITE CONTEXT

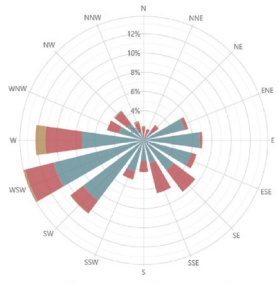
WILDFIRE RISK FACTORS: LOCAL WIND PATTERNS

While affected by the larger Konocti and Diablo wind patterns, the resort site's topography and microclimates also contribute to unique wind conditions. The wind patterns shown in this map are based on three local wind stations and demonstrate a likely wind condition for a typical day during the July through November fire season. Depending on a variety of climatic conditions, local wind patterns could easily change direction and speed and affect the spread of potential wildfires.

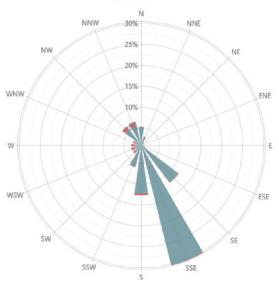
WIND DIRECTION

WIND SPEED

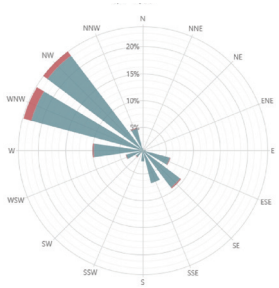
- > 0 to 5 mph
- > 5 to 10 mph
- > 10 to 20 mph
- > 20 to 30 mph
- > 30 mph



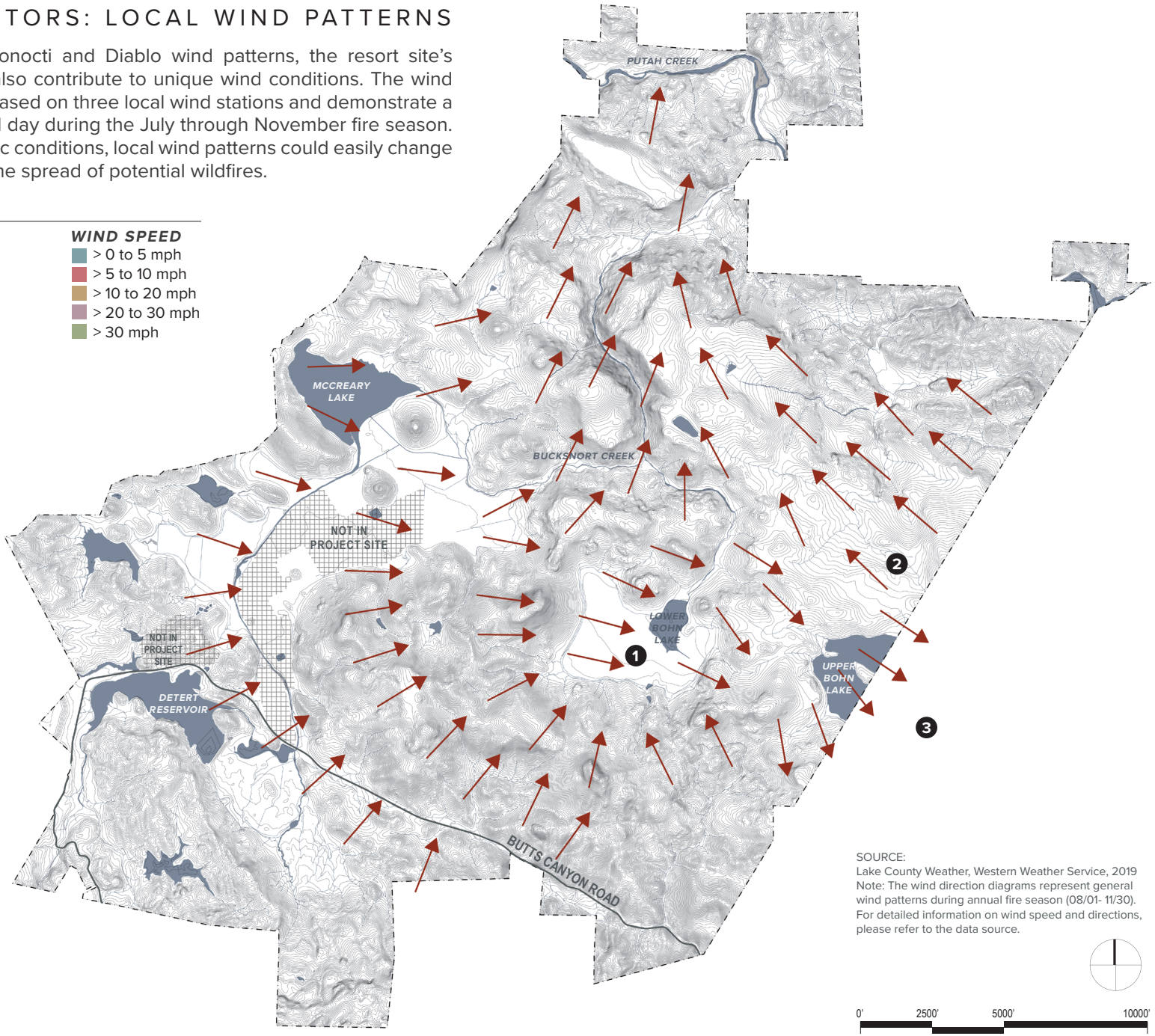
1 LOWER BOHN



2 UPPER BOHN NORTH



3 UPPER BOHN SOUTH



SOURCE:
Lake County Weather, Western Weather Service, 2019
Note: The wind direction diagrams represent general wind patterns during annual fire season (08/01- 11/30). For detailed information on wind speed and directions, please refer to the data source.

0' 2500' 5000' 10000'

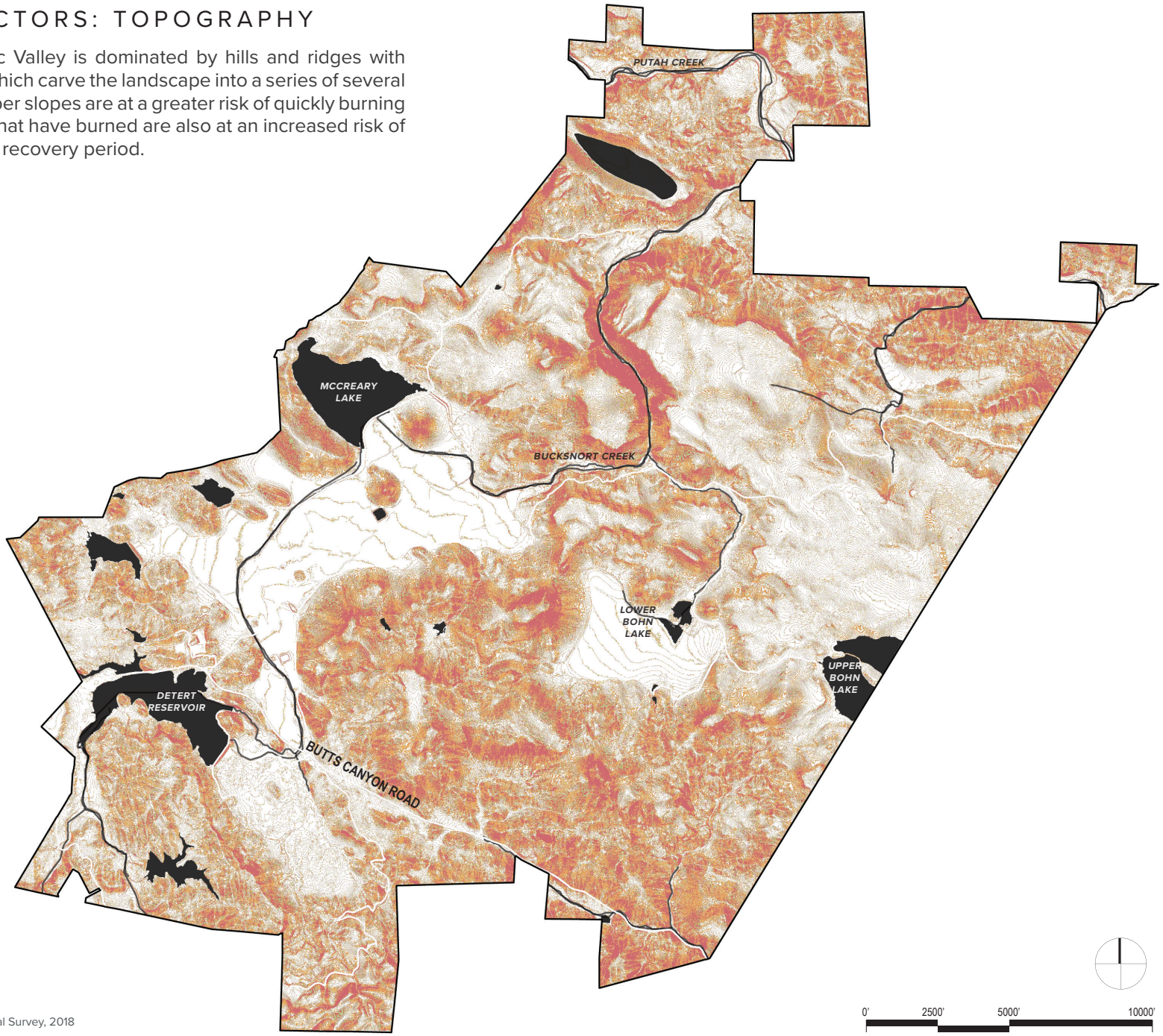
SITE CONTEXT

WILDFIRE RISK FACTORS: TOPOGRAPHY

A significant portion of Guenoc Valley is dominated by hills and ridges with slopes exceeding 30 percent, which carve the landscape into a series of several smaller valleys. Areas with steeper slopes are at a greater risk of quickly burning during a wildfire. Steep slopes that have burned are also at an increased risk of erosion during the post-wildfire recovery period.

SLOPE PERCENTAGE

- 0-5%
- 5-10%
- 10-20%
- 20-30%
- 30-50%
- 50%+



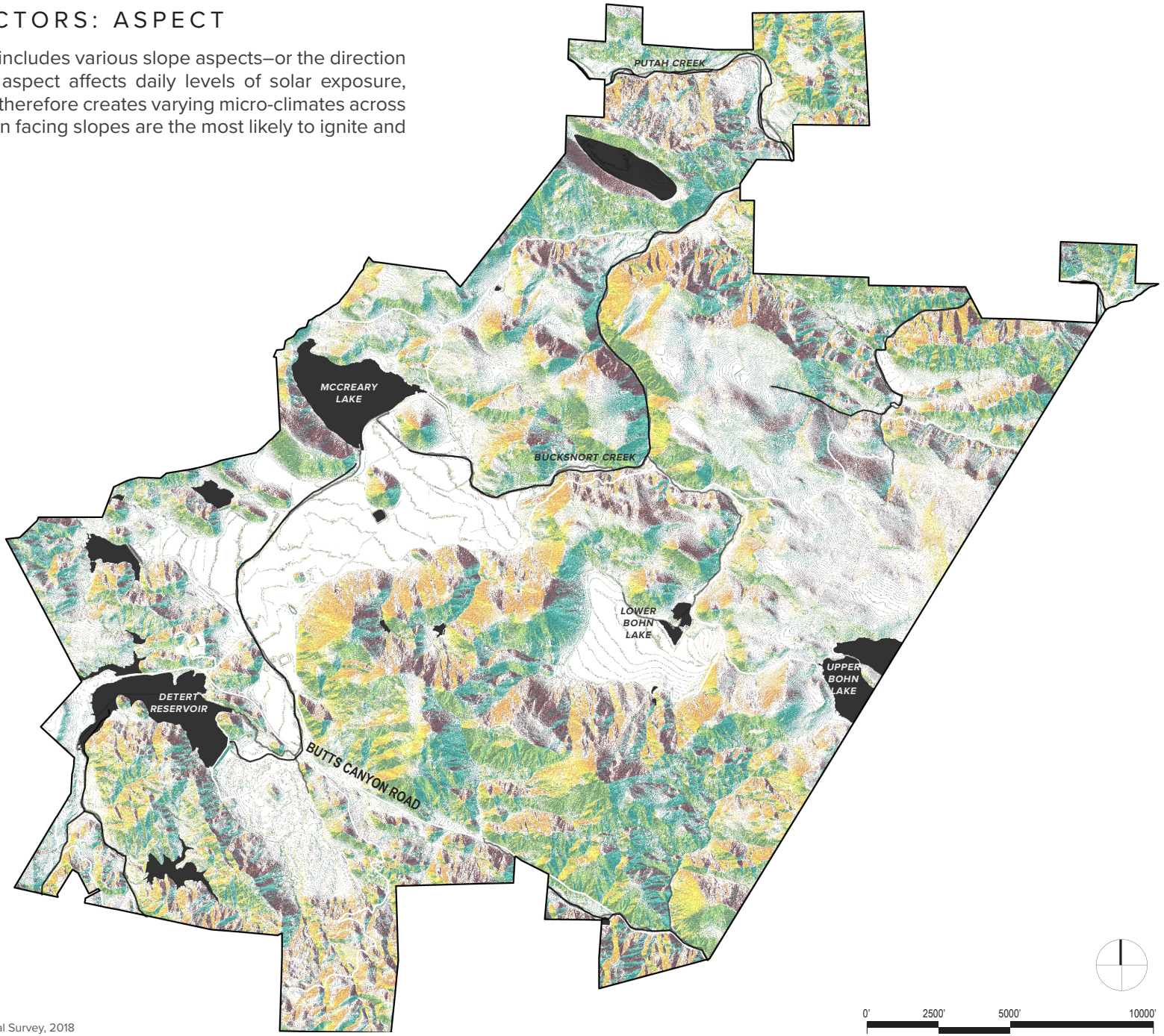
SOURCE:
1 meter Digital Elevation Model (DEM), U.S. Geological Survey, 2018

SITE CONTEXT
WILDFIRE RISK FACTORS: ASPECT

The resort site's diverse terrain includes various slope aspects–or the direction that a slope faces. The slope aspect affects daily levels of solar exposure, humidity, and temperature, and therefore creates varying micro-climates across the site. South and southwestern facing slopes are the most likely to ignite and burn.

ASPECT

- FLAT
- NORTH
- NORTHEAST
- EAST
- SOUTHEAST
- SOUTH
- SOUTHWEST
- WEST
- NORTHWEST



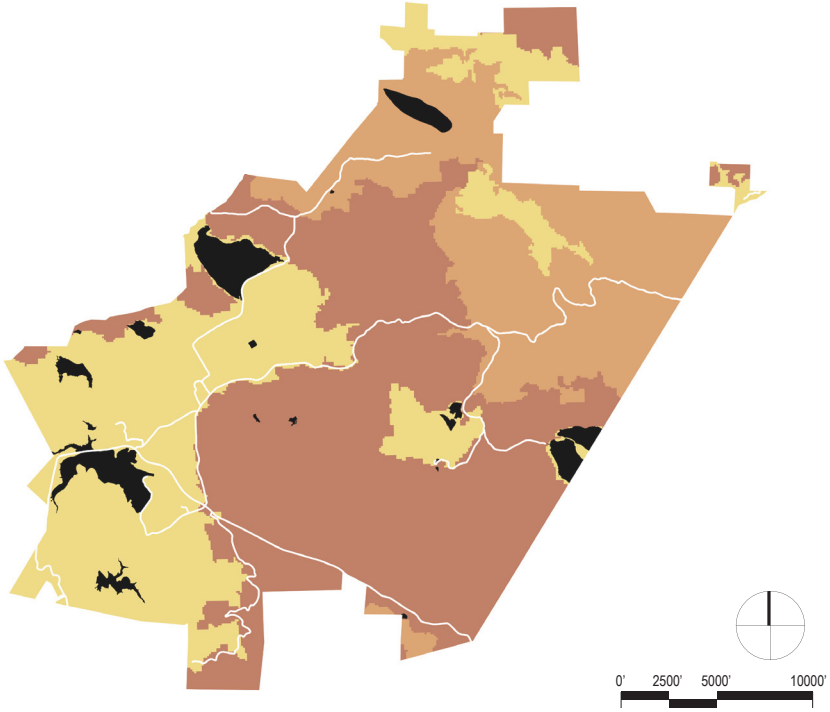
SOURCE:
1 meter Digital Elevation Model (DEM), U.S. Geological Survey, 2018

SITE CONTEXT
WILDFIRE RISK SEVERITY

The specific factors that affect wildfire risk are complicated. A wide range of topographic and landscape conditions create a complex environment to predict and prepare for potential wildfires.

Various risk factors—including those described in the preceding pages—are considered in developing CAL FIRE's Fire Hazard Severity Zones rating system and map. This rating system situates the resort site in a moderate to very high severity zone. The highest risk areas are in the southeast and central parts of the site. These areas have the steepest slopes, are more likely to have a chaparral vegetation coverage, and are exposed to northern-moving winds.

Given the connection between fire risk and slopes, the site's lower risk locations tend to be the flatter valley areas to southwest and northeast. This risk is further reduced where the land is more actively cultivated with vineyards and others farming practices. The areas around the site's many water bodies also generally have a lower risk severity.



FIRE HAZARD SEVERITY ZONES

SOURCE: Lake County Fire Hazard Severity Map, CAL FIRE, 2007

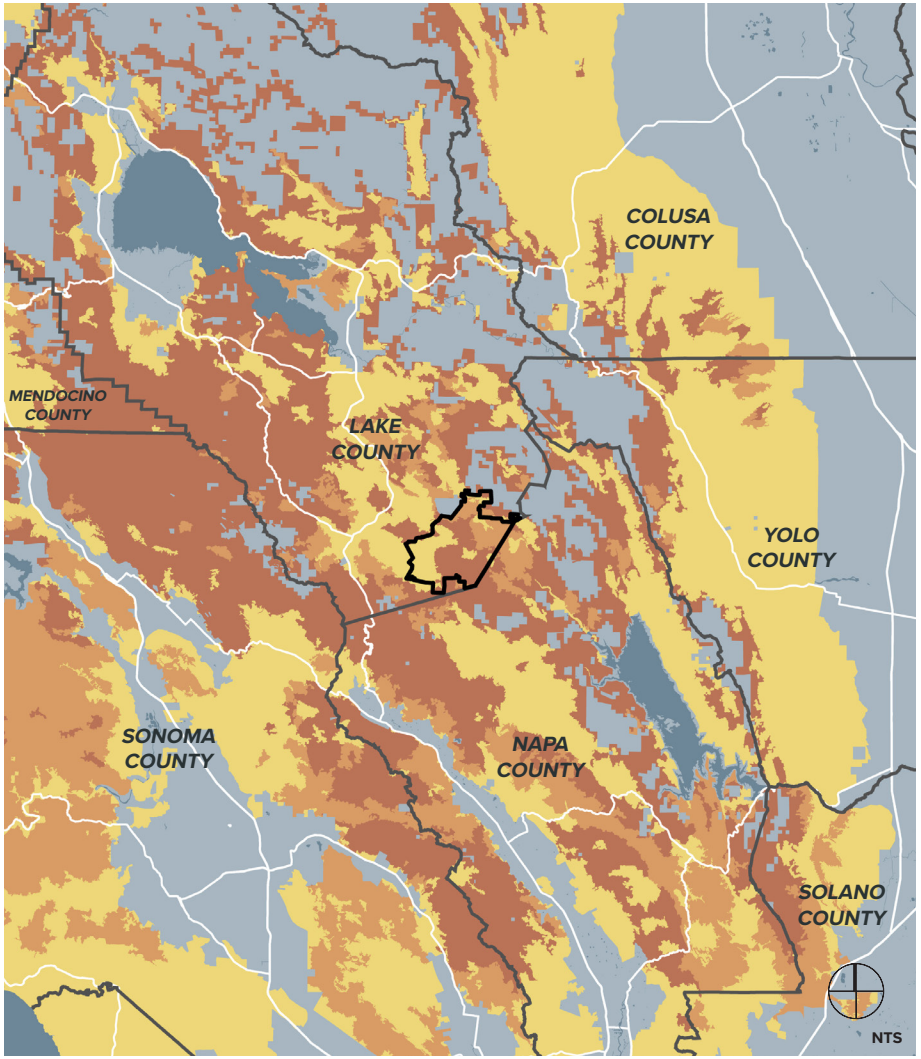
- MODERATE SEVERITY
- HIGH SEVERITY
- VERY HIGH SEVERITY

SITE CONTEXT
WILDFIRE REGIONAL RISK

Cataloging environmental risks is the first step to successfully develop a wildfire prevention plan. However, even with the best research and preparation within the site, fires on neighboring properties can rapidly move across the property boundaries.

While Guenoc Valley's setting is an inherent part of its attraction, the surrounding rural landscapes can also increase the site's wildfire risk. The property is bordered by ranches, pastures, woodlands, and forests with various levels of fire hazard severity. The northern edge of the property is adjacent to the Snow Mountain National Monument, an area of land stretching across approximately 330,000 acres and managed by the Bureau of Land Management (BLM).

The minimally managed landscapes within these neighboring areas tend to have less rigorous wildfire prevention practices, which can result in larger fuel reserves. As detailed in the following pages, additional precautions will be taken along the property boundaries where the risk of fires spreading onto the site is greater.



FIRE HAZARD SEVERITY ZONES

SOURCE: California Fire Hazard Severity Map, CAL FIRE, 2007

- *MAHA GUENOC VALLEY*
- FEDERAL OR LOCAL RESPONSIBILITY AREA
- MODERATE SEVERITY
- HIGH SEVERITY
- VERY HIGH SEVERITY

GENERAL WILDFIRE PREVENTION

GENERAL WILDFIRE PREVENTION STRATEGIES

In order to retain the resort site's inherent rural quality, a low-impact design plan prioritizes limited buildings, roadways, or infrastructure. Undeveloped areas will be managed to reduce wildfire risk through the following strategies:

- **Fire Breaks**
  Fire breaks will be established and maintained along all roadway corridors as well as vulnerable property boundary edges.

- **Active Landscape Management**
  Fields, pastures, woodlands will be actively managed to reduce fire risk. These areas will be continuously grazed with a rotation of cattle, sheep, and goat livestock. In certain locations, dead or fire-prone vegetation may also be manually thinned or removed with machinery and crews.

- **Irrigated Green Belt**
  Vineyards, orchards, gardens, and recreational fields—as well as irrigated residential, resort, and facility landscapes—will all become part of a site-wide irrigated green belt.

FIRE BREAKS

DISRUPT FIRE PATHWAYS

A network of fire breaks will be developed throughout the site, especially along roadways; they will be established and maintained as phases are built.

ACTIVE LANDSCAPE MANAGEMENT

LOP & SCATTER

This involves thinning and removing flammable and dead vegetation through felling and cutting; material is then distributed across the ground.

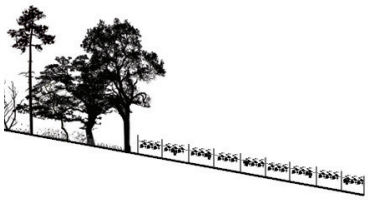
MASTICATE

Flammable and dead vegetation is thinned and removed with chopping, grinding, and mowing; material is then scattered across the ground.

GRAZE WITH LIVESTOCK

Sheep, goat, and cattle livestock will graze understory grasses and vegetation; the livestock will continuously rotate throughout the property.

IRRIGATED GREEN BELT

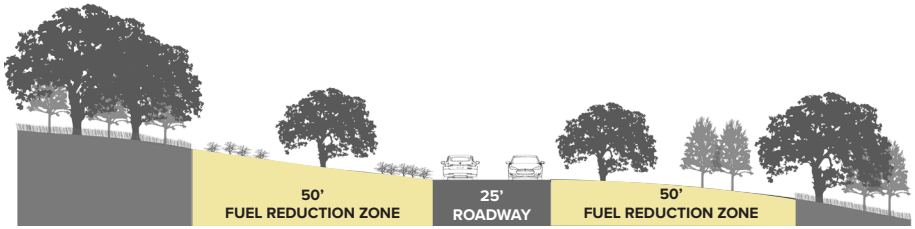


CONNECT IRRIGATED AREAS

Where feasible, contiguous green belts with irrigated farmlands, landscapes, and recreational fields will be developed.

GENERAL WILDFIRE PREVENTION
FIRE BREAK NETWORK

TYPICAL ROADWAY FIRE BREAK



Fire breaks are areas where wildfire risk is reduced by strategies such thinning and removing dead vegetation, separating canopies, and maintaining the vegetated understory through grazing.

All roadways will be bordered on each side by a fuel reduction zone. As an overall defense strategy, 100 foot wide fire breaks could also be established and maintained at select vulnerable areas of the property boundary.

PRIMARY TWO-WAY ACCESS ROUTES & ROADWAY FIRE BREAKS

VOLUNTARY PROPERTY BOUNDARY FIRE BREAKS

GENERAL WILDFIRE PREVENTION
ACTIVE LANDSCAPE FIRE MANAGEMENT

The resort's landscapes will be actively managed to reduce fire risk. This will be achieved through a two-part strategy. First, livestock grazing will be heavily relied upon to reduce fire risk (see next page). Grazing will primarily take place within the site's undeveloped rural landscapes; where feasible and permissible, grazing may also be used to manage landscapes within resort, residential, and facility parcels as well as within vineyards.

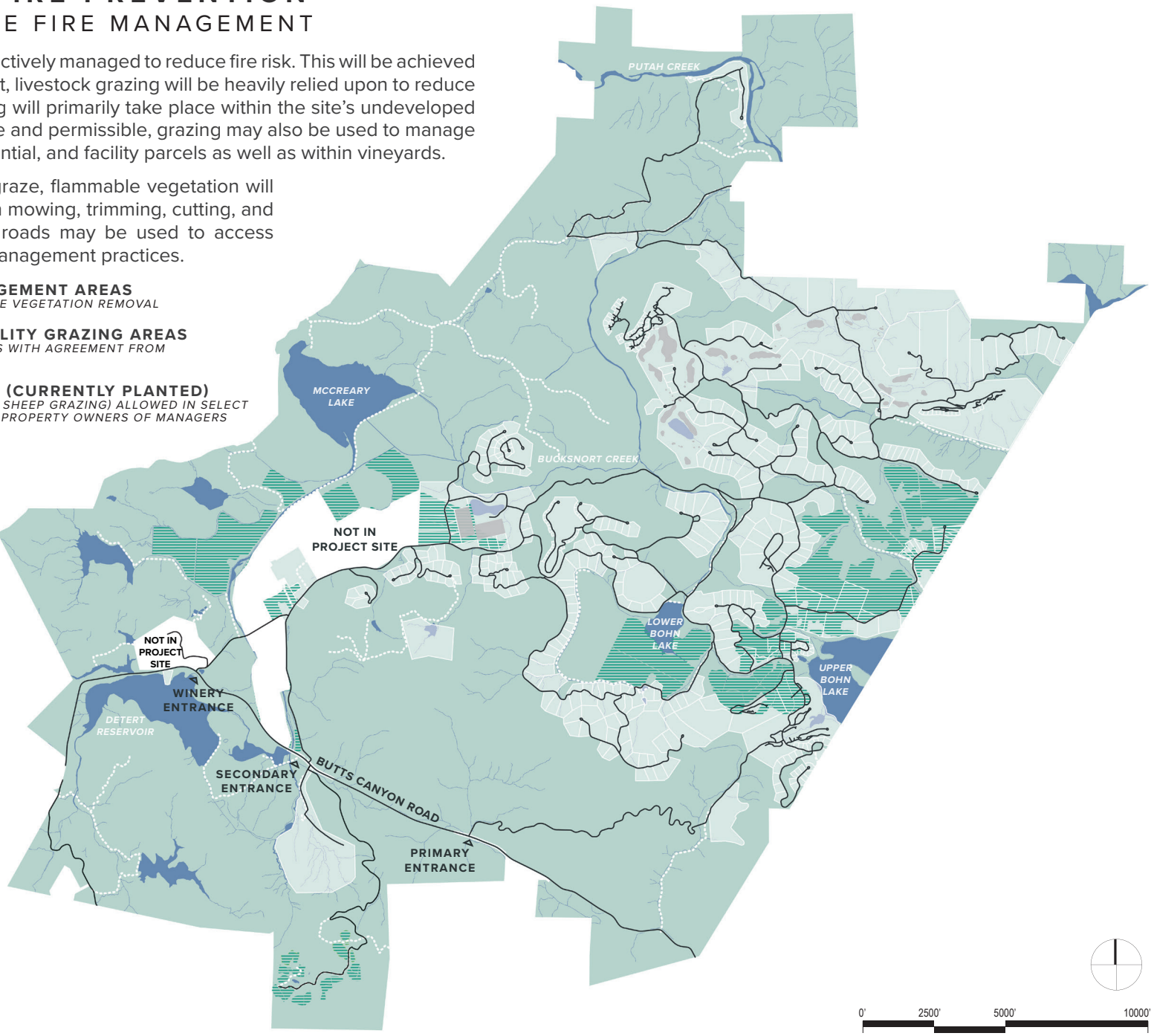
In areas that are infeasible to graze, flammable vegetation will be manually addressed through mowing, trimming, cutting, and brush removal. Existing ranch roads may be used to access more remote areas for active management practices.

ACTIVE LANDSCAPE MANAGEMENT AREAS
CONTINUED GRAZING AND SELECTIVE VEGETATION REMOVAL

RESIDENTIAL/RESORT/FACILITY GRAZING AREAS
GRAZING ALLOWED IN SELECT AREAS WITH AGREEMENT FROM PROPERTY OWNERS OR MANAGERS

VINEYARD GRAZING AREAS (CURRENTLY PLANTED)
MINIMALLY IMPACTFUL GRAZING (I.E. SHEEP GRAZING) ALLOWED IN SELECT VINEYARDS WITH AGREEMENT FROM PROPERTY OWNERS OF MANAGERS

EXISTING RANCH ROADS



GENERAL WILDFIRE PREVENTION
GRAZING PRACTICES

As a key component of the active landscape management plan, goat, sheep, and cattle livestock will continuously rotate throughout the resort site to reduce and remove overgrown and dead vegetation.

As these animals are capable of moving around difficult terrain, allowing them to graze throughout the site will ensure that hard-to-reach areas are regularly maintained. And, as each of these species prefers different types of vegetation, a regular rotation will broaden the types of flammable vegetation that is reduced and removed.

The following matrix provides general standards of site-wide, long-term grazing practices. Although the exact configuration of grazing areas and corridors may shift over time, these general parameters will help to coordinate the placement and movement of herds throughout the site.

Species	**Primary Foraging Behavior**	**Equivalent Animal Unit** *	**Preferred Vegetation**	**Minimum Practical Grazing Area** (Acres) **	**Maximum Practical Grazing Slope** (Percent %) (Wet Ground / Dry Ground)	**Maximum Density** (lbs per acre) (Wet Ground/Dry Ground) ***	**Grazing Season**	**Herd Type**
Goats	Browsing	0.2	Chaparral, Brush, Poison Oak, Weeds	0.15 AC	60% / 80%	15,000 lbs / 60,000 lbs	April - October	Seasonal/ Contracted
Sheep	Grazing	0.2	Oak Woodland/ Grassland, select weeds	0.15 AC	60% / 80%	15,000 lbs / 60,000 lbs	April - June	Seasonal/ Contracted
Cattle	Grazing	1.0	Oak Woodland/ Grassland	0.5 AC	50% / 70%	10,000 lbs / 50,000 lbs	Year Round	Resident

* "Equivalent Animal Units" establishes a consistent unit factor to compare herd sizes; for example, a herd of 10 cows (1.0 AU) is equivalent to a herd of 50 goats (0.2 AU)

** The "Minimum Practical Grazing Area" is significantly dependent on herd size; these minimum practical grazing areas assume that herd sizes will remain equally small in order to accommodate efficient grazing in and around small spaces between buildings and roads.

*** The "Maximum Density" is the maximum collective herd weight supported per graze-able acre

GENERAL WILDFIRE PREVENTION
IRRIGATED GREEN BELT

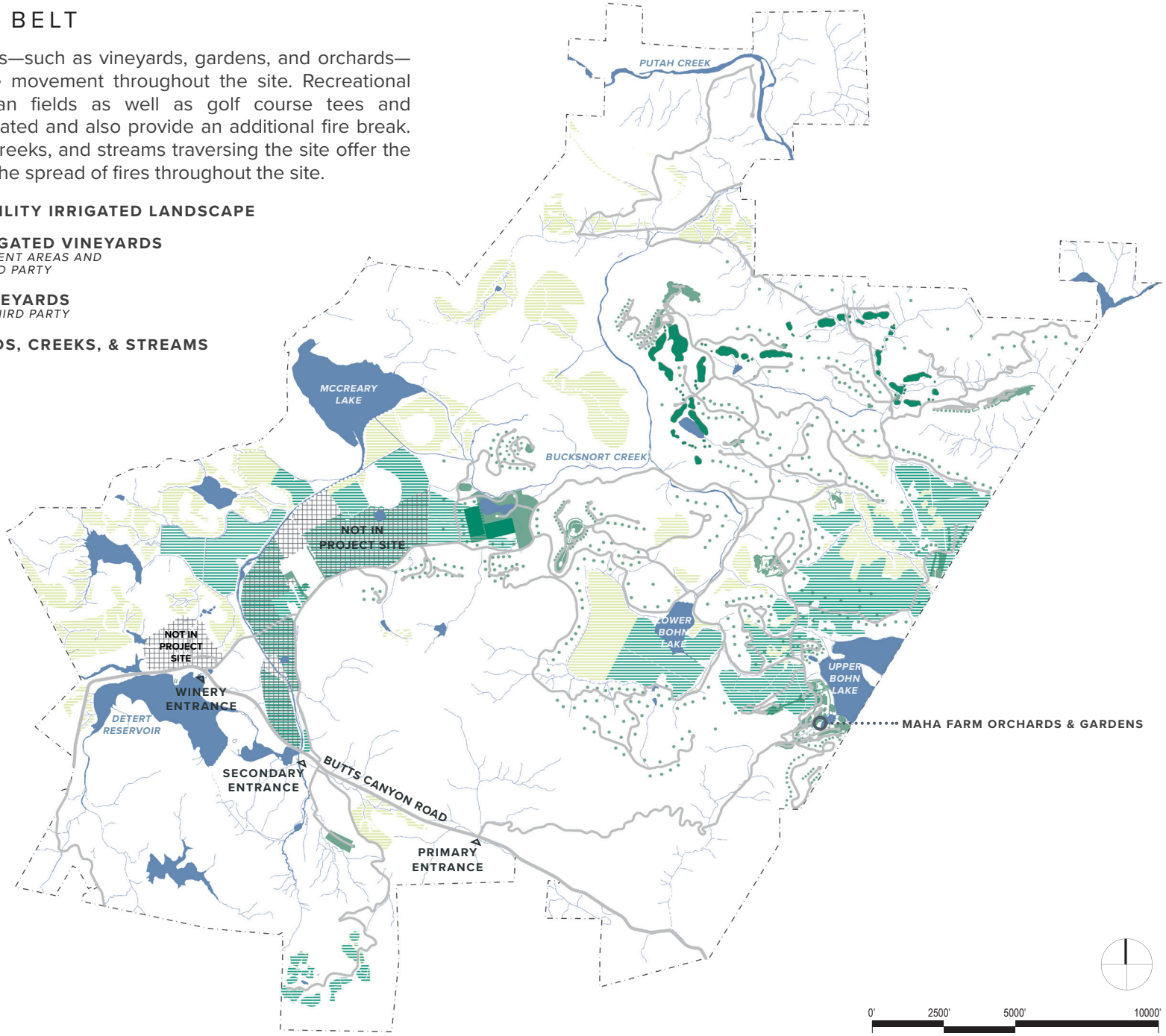
Irrigated agricultural operations—such as vineyards, gardens, and orchards—will interrupt potential wildfire movement throughout the site. Recreational amenities—including equestrian fields as well as golf course tees and fairways—will be regularly irrigated and also provide an additional fire break. The reservoirs, lakes, ponds, creeks, and streams traversing the site offer the additional benefit of reducing the spread of fires throughout the site.

RESIDENTIAL/RESORT/FACILITY IRRIGATED LANDSCAPE

CURRENTLY PLANTED IRRIGATED VINEYARDS
CURRENTLY PLANTED IN DEVELOPMENT AREAS AND AREAS LONG-TERM LEASED BY THIRD PARTY

POTENTIAL IRRIGATED VINEYARDS
IN AREAS LONG-TERM LEASED BY THIRD PARTY

RESERVOIRS, LAKES, PONDS, CREEKS, & STREAMS



CONSTRUCTION WILDFIRE PREVENTION

RESPONSIBILITIES & PROCEDURES

Construction practices will be carefully monitored to ensure that operations which could ignite a wildfire are minimized to the greatest extent possible.

Fire Safety Oversight and Responsibilities

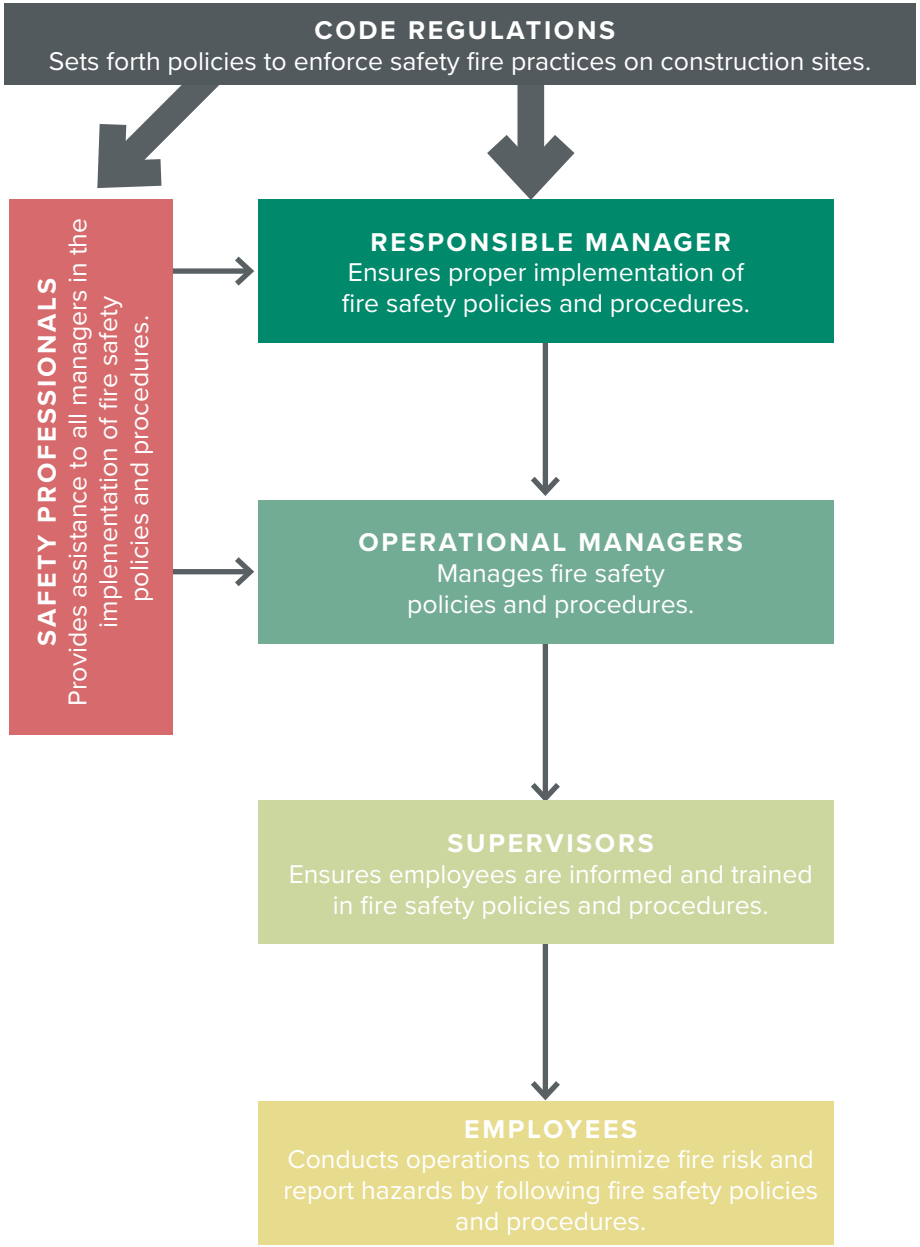
Beyond set code regulations, the project's general contractor has established fire prevention and protection procedures for every level of management and employment (see flowchart). This includes the following:

- Safety Professionals will advise and assist the Responsible and Operational Managers in charge of the project on fire safety;
- Supervisors–as advised by the Safety Professionals–will play a pivtol role in ensuring employees are informed and trained in fire safety. They will often conduct workforce training to educate employees about the fire hazards associated with specific tasks. They will also approve and carefully monitor any hot work or the use of temporary portable heaters. Supervisors will ensure that fire extinguishing equipment is present on all work sites and regularly inspected; and
- All managers and employees will be well-informed on procedures to immediately report fires.

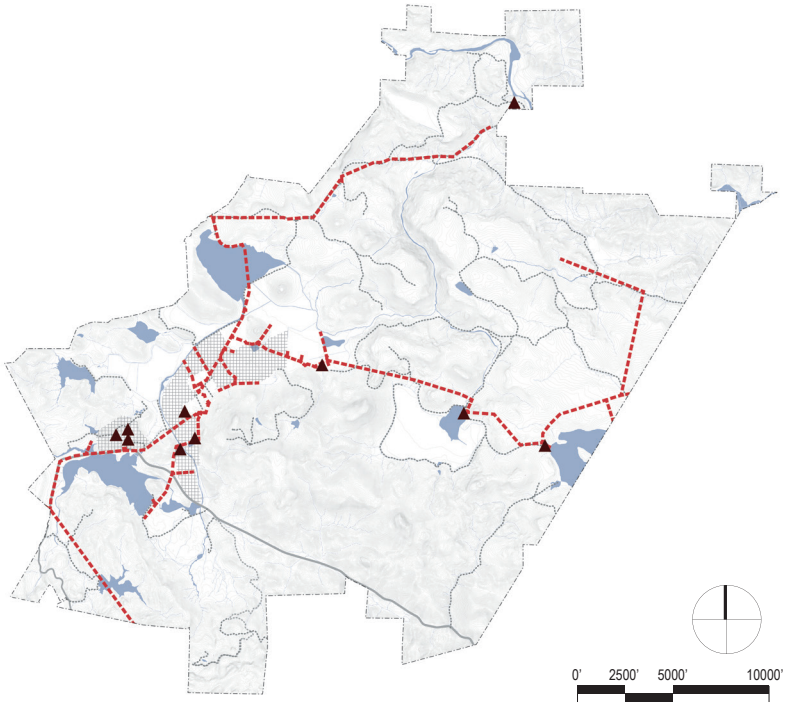
Fire Safety Procedures

During wildfire season, there is a heightened risk of construction-caused fires. In particular, heavy machinery has the potential to ignite fires during site preparation, preliminary grading, and utility line establishment. In order to mitigate fire risk during construction, the local CAL FIRE unit has recommended the following fire safety procedures, among others:

- One round-tip shovel and one water fire extinguisher should be available within 10 feet of all work areas;
- Portable fire extinguishers should be kept in every construction vehicle and piece of equipment;
- Vegetation within the work area should generally be mowed by noon during wildfire season or whenever wildfire conditions are present;
- Hot work should establish a wildfire watch for the duration of work and for 30 minutes after;
- Everyone working on-site should be aware of their location within the project in the event that they must report a fire;
- Everyone working on-site should have access to a cell phone or radio system to report a fire; and
- Everyone working on-site should have access to a pressurized air horn available to alert others in case of an emergency.



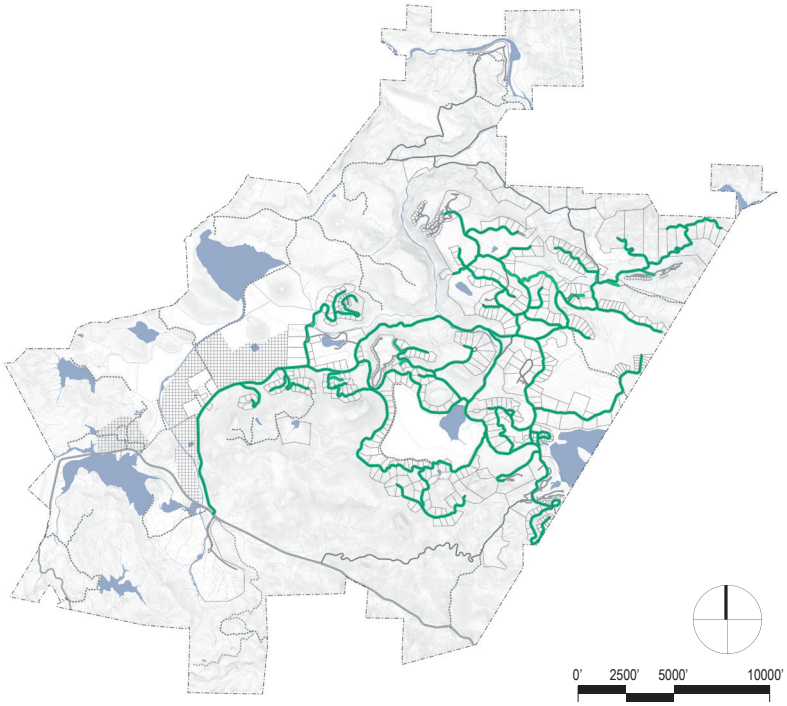
UTILITY WILDFIRE PREVENTION
ELECTRIC NETWORK



EXISTING OVERHEAD NETWORK
The existing power distribution network primarily relies upon overhead electrical lines, which can pose fire risk in the event of downed or sparking lines.

▲ EXISTING SERVICE CONNECTION

EXISTING OVERHEAD SERVICE LINES



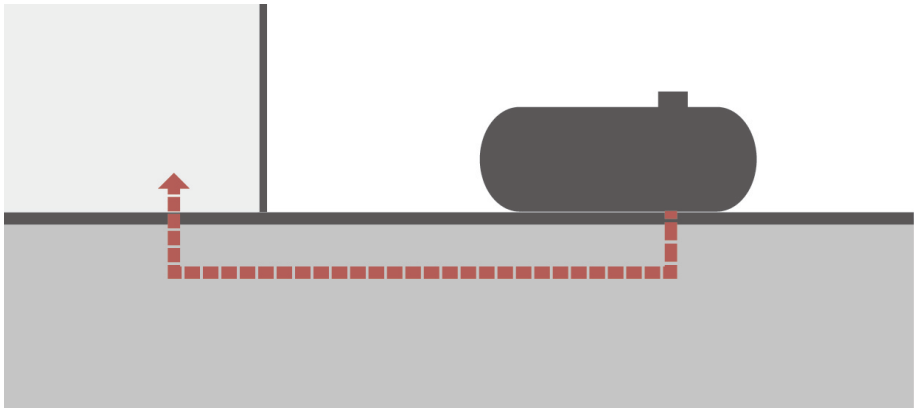
PROPOSED UNDERGROUND NETWORK
To the maximum extent feasible, the proposed electric network will be undergrounded in a joint trench system. This will ensure a safer distribution of power and reduce or eliminate the risk of overhead powerlines causing wildfires during windy conditions.

UNDERGROUND POWER AND DATA LINES

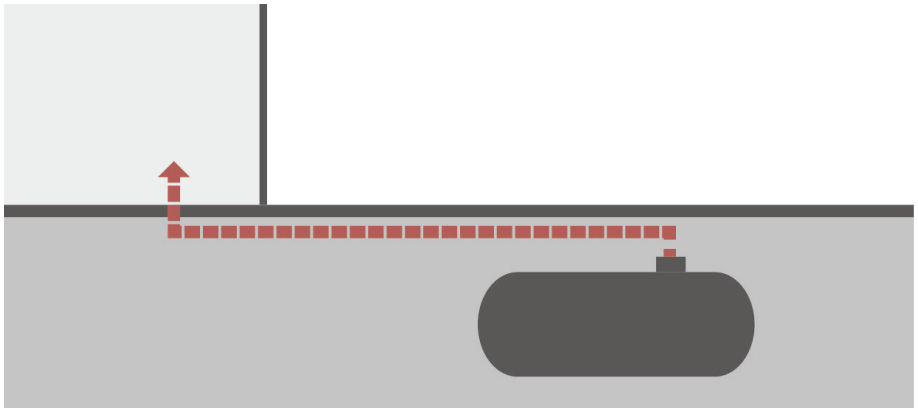
UTILITY WILDFIRE PREVENTION
PROPANE GAS SYSTEM

Similar to the strategy of undergrounding power lines, gas propane tanks will be undergrounded throughout the resort. This approach reduces the risk of gas related wildfires while also controlling for temperature fluctuations.

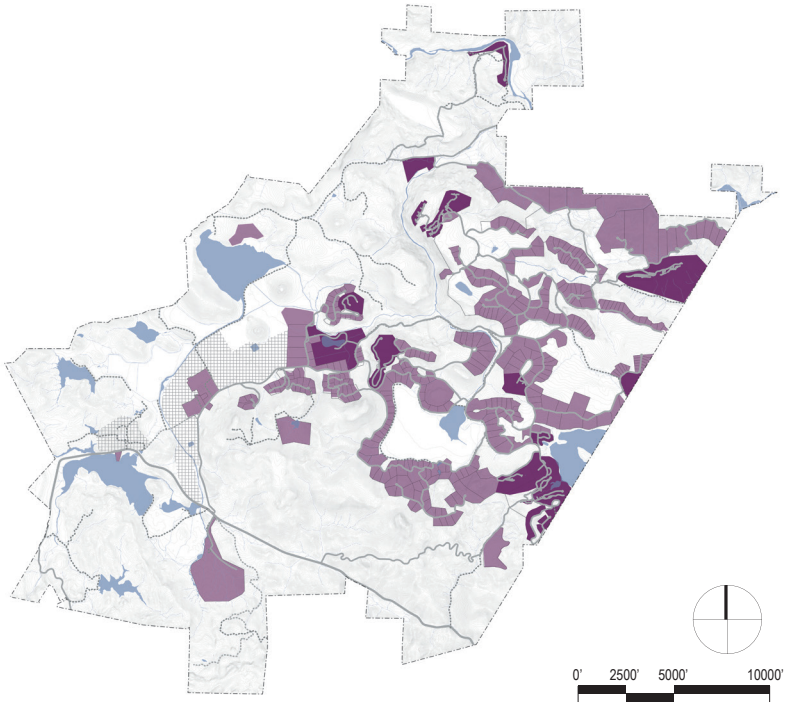
Each residential estate will be serviced by an individual underground gas tanks. Resort communities–which includes both resort and resort residential structures– will utilize a shared propane gas tank system with a localized underground distribution system.



TYPICAL ABOVE GROUND PROPANE TANKS
Above ground tanks are the standard and more affordable option, but present a greater risk of gas leaks and the potential to fuel wildfires.



PROPOSED UNDERGROUND PROPANE TANK
Propane tanks will be undergrounded to improve wildfire safety and benefit from the stabilized temperature control.



PROPOSED PROPANE GAS NETWORK
To the maximum extent feasible, propane gas tanks will be undergrounded throughout the resort, with residential estates serviced by individual tanks and resort communities serviced by shared tanks and distribution systems.

- **RESIDENTIAL ESTATES AND SUPPORTING FACILITIES SERVICED BY INDIVIDUAL UNDERGROUND TANKS**
- **RESORT COMMUNITIES SERVICED BY SHARED UNDERGROUND TANKS**

RESIDENTIAL LANDSCAPE WILDFIRE PREVENTION

SITE BUILDING & DETERMINE TOTAL DEFENSIBLE SPACE

If a wildfire occurs, it poses a considerable risk to residential homes and their occupants. Homeowners will be advised to implement various wildfire prevention strategies.

Site Structures to Reduce Fire Risk

The first step in addressing wildfire risk is to properly site residential structures. While the ideal residential structure location will be based on many factors (including views, accessibility, and privacy), residential property owners will be encouraged to closely consider certain criteria which reduces fire risk.

This includes siting buildings on the most level portion of the property. Wherever possible, residential structures should avoid being placed on mid-slopes, ridge edges, or directly between high points.

Determine Total Defensible Space

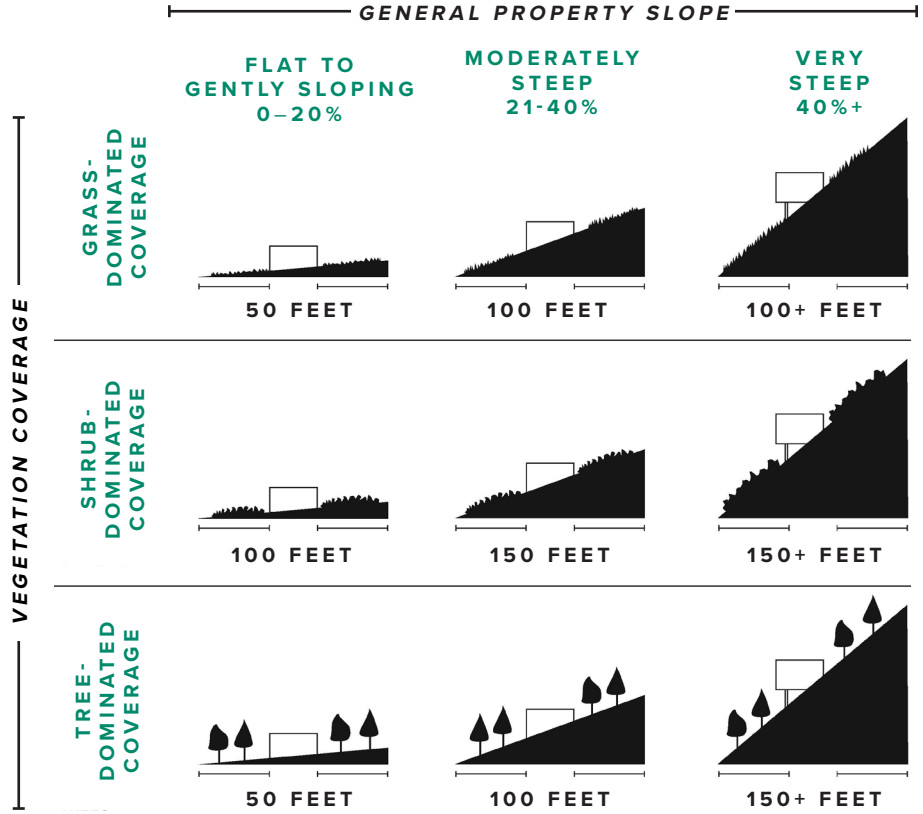
Homeowners will be advised to establish and maintain defensible space for the purposes of reducing fire risk in the immediate vicinity of the residential structure. The total defensible space will depend on the unique vegetated coverage and topographic conditions of each residential property (see right):

- **Grass-Dominated Coverage**
  Depending on slopes, 50 to 100 feet of total defensible space from the building edge in landscapes dominated by grasses, weeds, and widely scattered shrubs

- **Shrub-Dominated Coverage**
  Depending on slopes, 100 to 150+ feet of total defensible space from the building edge in landscapes dominated by shrubs, scrub, or chaparral

- **Tree-Dominated Coverage**
  Depending on slopes, 50 to 150+ feet of total defensible space from the building edge in landscapes dominated by trees; if understory is substantially shrubs, homeowners should follow “shrub-dominated coverage” category

Wherever necessary or possible, adjacent residential property owners and the resort ownership will cooperatively address defensible space concerns which cannot be fully established or maintained within the residential property line.



DETERMINING TOTAL DEFENSIBLE SPACE

The total defensible space will vary based on the unique vegetated coverage and topographic conditions of each property. In the above diagrams, the indicated length relates to the total defensible space measured from the building edge.

RESIDENTIAL LANDSCAPE WILDFIRE PREVENTION

DETERMINE DEFENSIBLE ZONES

Once the building has been sited and the total defensible space has been determined, homeowners will be advised to establish and maintain two zones of defense. These zones and associated fuel reduction strategies will reduce the risk of fire in the immediate vicinity of the residential structure:

- **Zone 1: Remove Flammable Vegetation**

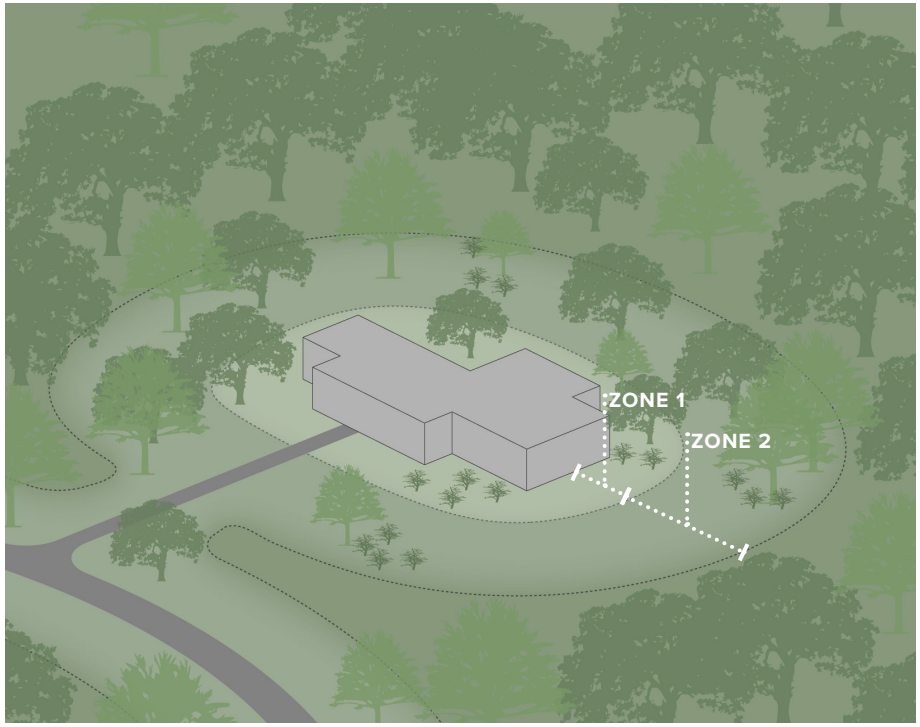
  Regardless of the total defensible space, the first defense zone will be maintained zero to 30 feet from the edge of the residential structure.

  Within this zone, flammable vegetation should be removed. This includes removing all standing dead trees and shrubs. All downed dead trees, tree branches, and shrubs should also be removed if not yet decayed. Trees should generally be pruned up to a height of 10 feet, depending on tree species and understory conditions. Flammable shrub species should be thoroughly pruned.

- **Zone 2: Reduce Flammable Vegetation**

  The second defense zone should be maintained from 30 feet from the building edge to the edge of the total defensible space (e.g. 50 feet, 100 feet, 150 feet–see previous page); this includes a defensible space of zero to 15 feet from the driveway edge.

  Within this zone, flammable vegetation should be reduced. Trees and shrubs should be selectively addressed to reduce flammable vegetation parts, including pruning dead or lower branches. Dead vegetation should also be selectively removed within this wider zone.



STANDARD RESIDENTIAL DEFENSIBLE ZONES
Two defensible zones should be established and maintained within the total defensible space.

ZONE 1 REMOVE FLAMMABLE VEGETATION

ZONE 2 REDUCE FLAMMABLE VEGETATION

RESIDENTIAL LANDSCAPE WILDFIRE PREVENTION

PREPARE THE PROPERTY

After the defensible space and zones have been determined, the residential property should be assessed for key fire risks. Primarily, continuous and dense vegetation creates a condition in which fires can quickly spread. Trees and shrubs should be vertically and horizontally separated in order to reduce “ladder fuel” conditions–or situations in which flames can easily move upwards from the vegetation understory to the canopy.

The following offers general vegetation clearance and spacing recommendations in order prepare the site for residential dwellings. Although these standards should be followed across the entire defensible space, greater adherence to these standards should be followed within Zone 1.

Tree and Shrub Vertical Clearance

In general, the lowest level of the canopy branches should be three times greater than the height of the vegetation understory. This vertical separation relationship can be established through either pruning the vegetation understory or the overhead tree limbs. For example, if a shrub is three feet in height, the lowest level of the directly overhead canopy branches would be trimmed or pruned to a height of 12 feet.

Tree and Shrub Horizontal Spacing

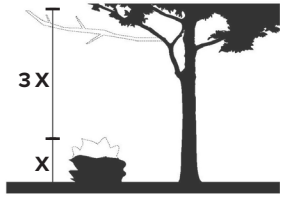
Individual or small clusters of trees and shrubs should generally be separated based on the horizontal spacing standards (see right) in order to reduce potential fire movement. For example, if a residential property is “moderately steep,” shrubs that are three feet in height should be separated by 12 feet. Note that the recommended tree and shrub horizontal separation distances are measured from the canopy edge, not the trunk.

LADDER FUELS

Flames burning at lower levels can ignite taller plants by moving up vegetated “ladder fuels”.

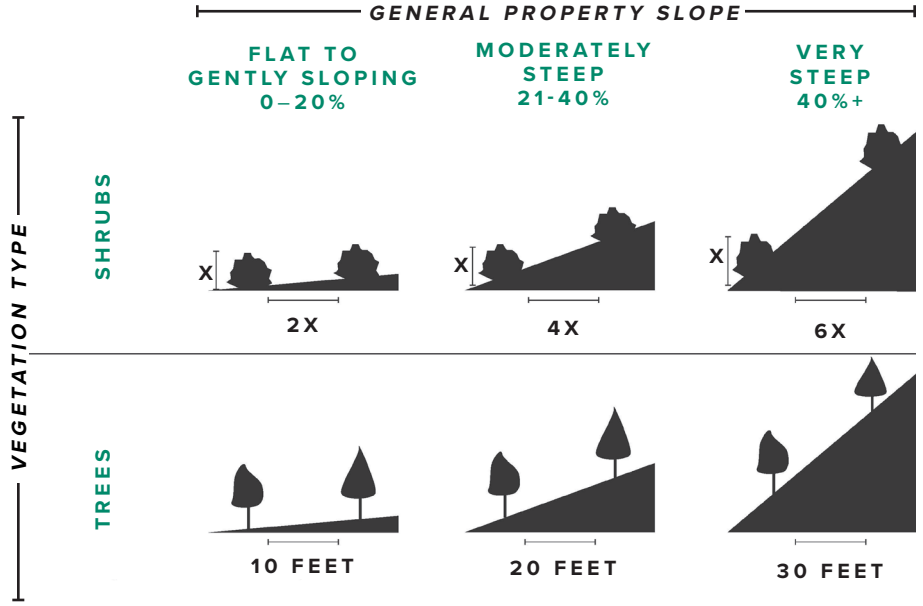
The potential for ladder fuels can be avoided by separating vegetation vertically and horizontally.

VERTICAL CLEARANCE



The lowest level of the canopy branches should be three times greater than the height of the vegetation understory.

HORIZONTAL SPACING



Individual or small clusters of trees and shrubs should be separated in order to reduce potential fire movement

RESIDENTIAL LANDSCAPE FIRE PREVENTION
ESTABLISH NEW LANDSCAPE

After the residential property has been cleared of flammable vegetation and ladder fuels have been addressed, various strategies can reduce wildfire risk where establishing a new landscape design.

Fire-Resistant Planting Design and Selection
New planting design should follow the spacing and clearance strategies delineated above. Planting designs and patterns should anticipate the mature size of new trees and shrubs. Simple, low-volume, and well-separated planting designs will generally achieve these spacing and clearance objectives. All efforts should be made to avoid tree limbs touching the residential structure or powerlines; tree limbs should also not be within 10 feet of the chimney.

Planting selection should avoid fire-prone species and instead prioritize fire-resistant species. In general, fire-resistant species are low-growing with a high moisture content and have stems or leaves that are not resinous, oily, or waxy.

Small-Scale Fire Breaks: Hardscapes and Irrigation
Wherever possible, the landscape design should be configured to create a series of smaller-scale fire breaks in the immediate vicinity of the residential structure.

For example, driveways, walkways, patios, and parking areas could be selectively spread out to impede a potential fire path; non-combustible materials (such as mulch, boulders, and rocks) will additionally reduce fire risk. Pools, water features, ponds, or streams could also be creatively used as small-scale fire breaks. Irrigation systems used to establish or maintain landscapes could also create an irrigated fire break.

Additional Strategies
Additional landscape design strategies should be prioritized to reduce fire risk and improve emergency response. This includes the following:

- Constructing fencing with non-combustible materials, such as stone or metal, rather than wood;
- Enclosing areas below decks to reduce the risk of debris ignition;
- Clearly marking the address number on the house itself and at the driveway entry to aid in identification in the case of a fire emergency; and
- As much as possible, designing driveways and bridges to allow for large-scale emergency vehicle access.

FIRE PRONE PLANTING TO AVOID
Certain plants should be avoided because of their fire prone characteristics, such as resinous, oily, or waxy leaves. This includes trees such as the Eucalyptus.

FIRE RESISTANT PLANTING TO USE
Fire resistant plants should be used as much as possible. This includes plants that are low-growing and have a high moisture content.

RESIDENTIAL LANDSCAPE FIRE PREVENTION

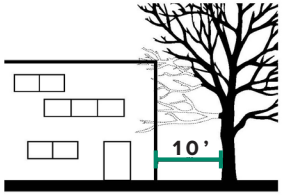
MANAGE LANDSCAPE TO REDUCE RISK

Various landscape management practices can address wildfire hazards within the residential landscape over time.

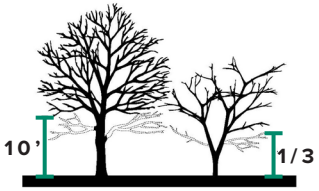
This includes the following recommendations for residential property owners:

- Periodically inspect the residential property to maintain defensible space—which includes ongoing removal and reduction of flammable vegetation and reestablishment of vegetation clearance and spacing standards;
- Prune tree limbs which are within 10 feet of buildings or chimneys or are otherwise encroaching on powerlines;
- Within the defensible space, trim tree limbs below 10 feet in height; for smaller trees, prune the lower 1/3 of the branches;
- Routinely mow grasses and wildflowers within the defensible space to a maximum height of 4 inches, particularly during dry seasons;
- Keep vegetation well-irrigated, particularly within the first defense zone;
- Where feasible, irrigation systems used for plant establishment should be maintained for additional wildfire protection;
- Install fine mesh metal on eaves, roofs, and vents to prevent embers from entering the structure;
- Remove vegetation debris that accumulates on the roof or within the rain gutters;
- Place combustible debris (such as firewood, wood scraps, grass clippings, leaf piles, or garbage cans) and propane tanks outside of the first defense zone; and
- Keep any ignitable outdoor furniture and equipment (i.e. wooden brooms and shovels) 10 feet away from the residential structure.

PRUNE, TRIM, AND MOW



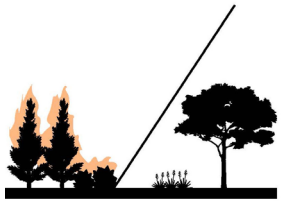
PRUNE: Prune tree limbs which are within 10 feet of building or chimneys or are otherwise encroaching on powerlines.



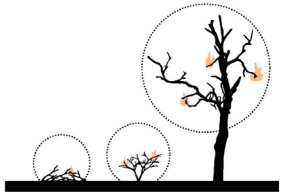
TRIM: Within the defensible space, trim tree limbs below 10 feet in height; for smaller trees, prune the lower 1/3 of the branches

MOW: Mow and grass to a maximum of 4 inches in height.

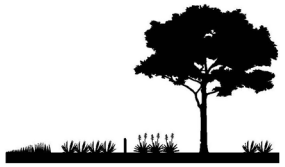
LEAN, CLEAN, AND GREEN



LEAN: Minimize or eliminate the use of flammable vegetation and emphasize the use of low-growing herbaceous (non-woody) plants. Ornamental trees and shrubs should be kept green.



CLEAN: Remove all dead trees and shrubs within the defensible area. Remove all dead leaves, twigs, cones and branches. Reduce thick layers of pine needles to a depth of 2 inches.



GREEN: Keep plants green and healthy by irrigating throughout the fire season.

RESIDENTIAL BUILDING WILDFIRE PREVENTION

EXTERIOR BUILDING STRATEGIES

The fire safety of a building starts with design and material decisions. All residential buildings will abide by relevant California Building Codes “CBC” and Wildland Urban Interface “WUI” standards. The following are a selection of strategies to prevent fires on the building exterior:

1 | Class A rated roof with non-combustible covering
The roof is the most vulnerable part of the home in the event of a wildfire. Class A rated roofs are highly resistant to fire by minimizing the ability of flames to spread.

2 | Fire resistant eaves, overhangs, and soffits
The risk of embers getting caught in the eaves and igniting can be minimized by the eliminating or shortening overhangs, or otherwise constructing eaves, overhangs, and soffits with non-combustible materials.

3 | Building vents precautions
Vents in roofs, soffits, and exterior walls should be made of non-combustible materials with screens to prevent the penetration of embers.

4 | Underground utility connections
Wherever possible, utility connections should be undergrounded, particularly for electrical and fuel-related utilities.

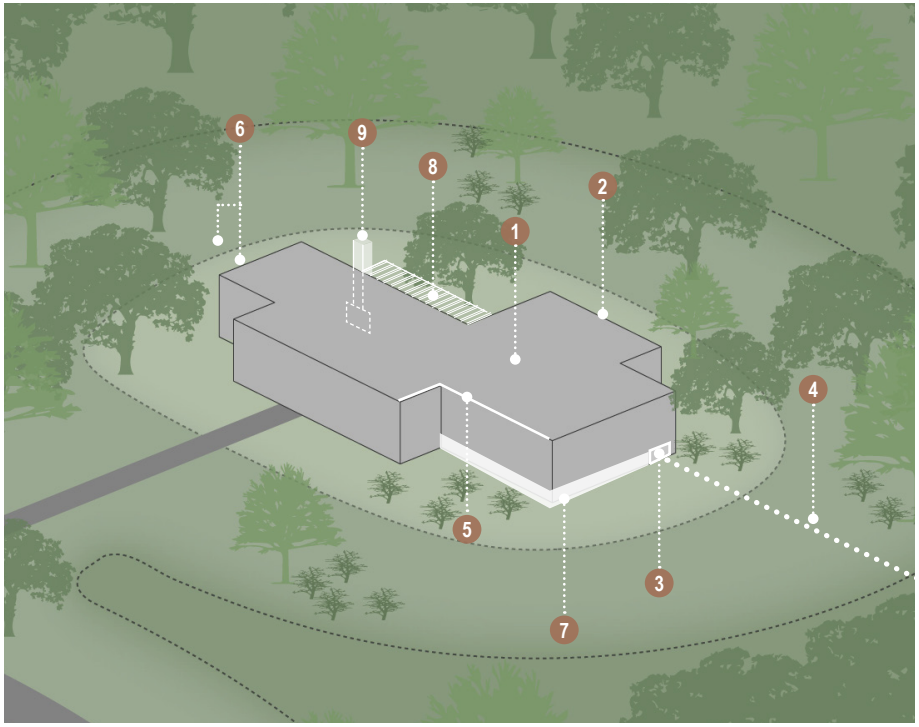
5 | Non-combustible leaf guards over gutters
Leaf guards can reduce the build-up of combustible leaf debris. Guards, gutters, and downspouts should be made of noncombustible material.

6 | Exterior fire suppression systems
Exterior fire suppression systems will be encouraged for all primary residential structures; these systems will be required for primary residential structures on dead-end roads that exceed ¼ mile in length. Fire suppression systems are remote or heat-activated. During a fire, they prevent substantial damage to the primary building as well as nearby outdoor features.

7 | Fire resistant material for exposed foundations
Fire resistant materials should be used for all exposed foundations above grade, including both open and closed foundations.

8 | Fire resistant deck materials
Decks connected to residential structures should be fire resistant, which can be achieved by using fire retardant treated timber, fire resistant plastic, and non-combustible materials for all deck components, including skirting to protect the deck underside.

9 | Exterior fire places and wood stoves
Anything with an exposed flame, such as a outside fireplace or wood stove, should have a screen built into the design to protect against stray embers.



RECOMMENDED EXTERIOR DESIGN STRATEGIES

The highlighted items are a selection of strategies to incorporate into the residential building to address wildfire safety.

1. CLASS A RATED ROOFS WITH NON-COMBUSTIBLE COVERING
2. FIRE RESISTANT EAVES, OVERHANGS, AND SOFFITS
3. BUILDING VENT PRECAUTIONS
4. UNDERGROUND UTILITY CONNECTIONS
5. NON-COMBUSTIBLE LEAF GUARDS OVER GUTTERS
6. EXTERIOR FIRE SUPPRESSION SYSTEMS
7. FIRE RESISTANT MATERIAL FOR EXPOSED FOUNDATIONS
8. FIRE RESISTANT DECK MATERIALS
9. EXTERIOR FIRE PLACES AND WOOD STOVES

SOURCE: FEMA, Home Builder’s Guide to Construction in Wildfire Zones, 2008

RESIDENTIAL BUILDING WILDFIRE PREVENTION
INTERIOR BUILDING STRATEGIES

On the inside of residential structures, certain precautions and practices can further protect the home. The following are a selection of interior building strategies to reduce wildfire risk:

1 | Smoke detectors throughout the home
Smoke detectors should be located throughout the house to cover all livable areas. If placed in hallways between living and sleeping areas, smoke detectors can reach many rooms. In addition, smoke detectors shall be programmed to communicate directly to a fire and security monitoring companies.

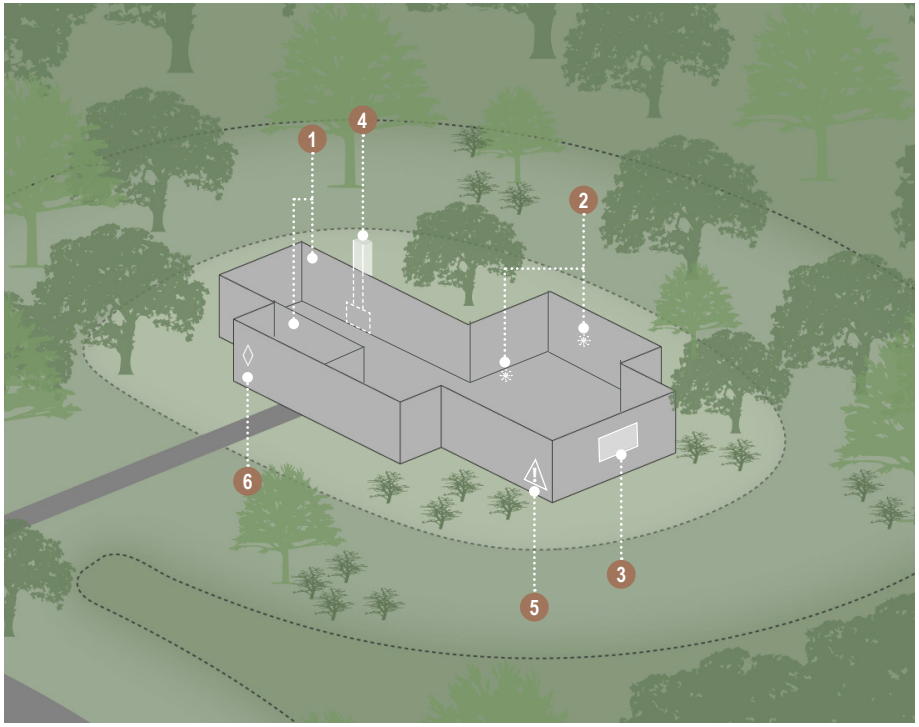
2 | Interior fire sprinklers
Interior fire sprinklers come in a variety of styles in order to blend with the home's aesthetic. They are automatically activated by high heat and can include a warning system.

3 | Window security quick-release
If window security bars or other protection systems are installed, a quick-release system should be included to allow for immediate escape in the case of a wildfire emergency.

4 | Chimney maintenance
Chimneys should be inspected yearly to remove all flammable debris and material.

5 | Combustible hazardous material protection
All combustible materials should be stored in protected safety containers away from appliances with ignition sources, such as stoves and water heaters.

6 | Wildfire fighting tools
Homeowners should have easy access to wildfire emergency tools, such as a shovel, hoe, rake, and bucket.



RECOMMENDED INTERIOR DESIGN ELEMENTS

The fire safety of a structure starts with design decisions. The highlighted items are a selection of some strategies to incorporate into residential architecture.

1. SMOKE DETECTORS THROUGHOUT THE HOUSE
2. INTERIOR FIRE SPRINKLERS
3. WINDOW SECURITY QUICK-RELEASE
4. CHIMNEY MAINTENANCE
5. COMBUSTIBLE MATERIAL PROTECTION
6. WILDFIRE FIGHTING TOOLS

SOURCES: FEMA, Home Builder's Guide to Construction in Wildfire Zones, 2008; CalFire, Homeowners Checklist, 2009

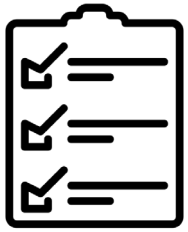
WILDFIRE PREVENTION PREPAREDNESS

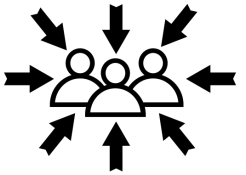
RESIDENT RECOMMENDATIONS

Homeowners will be advised to plan for the event of a wildfire. This will require preparing in advance and developing specific action plans for different scenarios.

Pre-Fire Preparations

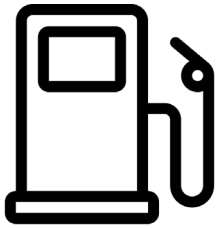
- Develop an emergency plan with your family;
- Place important documents in a fire-proof box close to the exit;
- Practice how to shut off key utilities, including water, gas, and electricity;
- Discuss plans for evacuation, including what to bring and where to go;
- Determine multiple evacuation routes in case one is blocked;
- Develop a communication plan in case your family is separated;
- Select meeting places a safe distance the home; and
- Identify a non-local contact person who knows your emergency plan.





Potential Fire Threat (including Red Flag Warnings)

- Pay attention to local news for updates and evacuation notices;
- Keep flashlights and portable chargers ready in case of power shutoff;
- Ensure that your car has gas, as stations often become crowded;
- Confirm that all garden hoses are attached and accessible;
- Prop a ladder against the house for the potential need for roof access;
- Disable electronic garage openers so this area can be manually opened;
- Prepare and pack essential items to prepare for potential evacuation; and
- Gather pets in kennel of on leashes to keep them close and safe



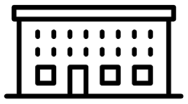
Notice to Evacuate

- Stay together as a household and remember that time is of the essence;
- Dress appropriately with long pants/sleeves, layers, and face protection;
- Shut off the home's gas supply, but leave lights and water on;
- Close all doors and windows but leave exterior doors unlocked;
- Pack water, supplies, and other essentials in the car;
- Ensure all car windows are closed while evacuating;
- Choose evacuation routes selected by emergency personnel; and
- Follow all directions and signage provided by emergency personnel.



Shelter in Place

- Take shelter within a building whenever possible;
- Close all windows and doors, but leave unlocked;
- Remain close to the front door and low to the ground;
- Continue to monitor the fire and stay observant;
- If not at home, proceed to a designated meeting & staging area;
- If unable to reach either home or a designated meeting & stage area, park and take shelter in your car;
- If in the car, stay on paved roads and park away from vegetation; and
- Leave headlights and emergency flashers on while you wait for aid.

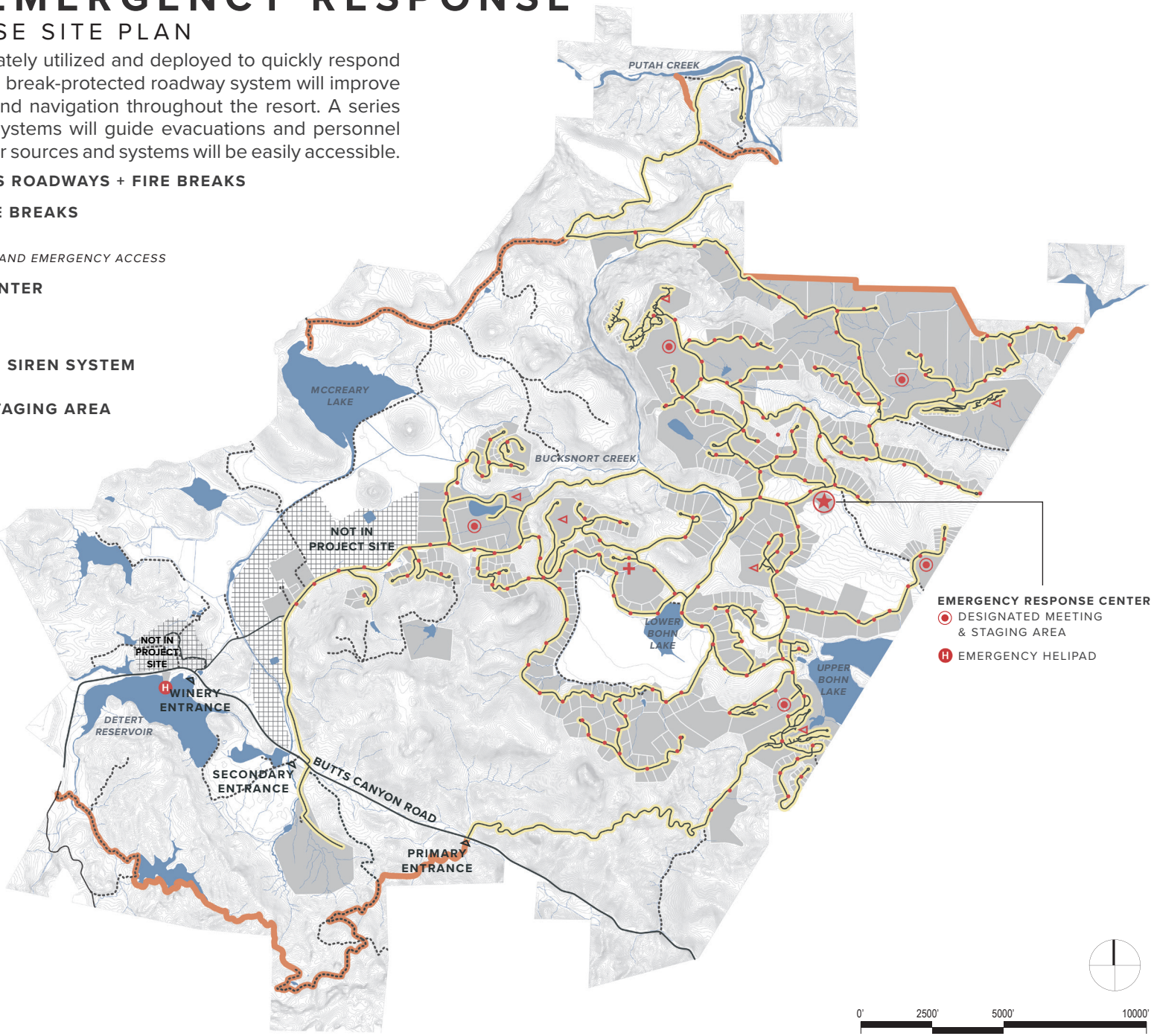


WILDFIRE EMERGENCY RESPONSE

WILDFIRE RESPONSE SITE PLAN

Various systems will be immediately utilized and deployed to quickly respond to a wildfire emergency. The fire break-protected roadway system will improve emergency personnel access and navigation throughout the resort. A series of emergency communication systems will guide evacuations and personnel response. Fire suppression water sources and systems will be easily accessible.

- **PRIMARY TWO-WAY ACCESS ROADWAYS + FIRE BREAKS**
- **PROPERTY BOUNDARY FIRE BREAKS**
- **EXISTING RANCH ROADS**
  USED FOR ACTIVE FUEL REDUCTION AND EMERGENCY ACCESS
- **EMERGENCY RESPONSE CENTER**
- **EARLY DETECTION SYSTEM**
  HIGH-DEFINITION CAMERA
- **EMERGENCY NOTIFICATION SIREN SYSTEM**
  EXACT LOCATIONS TBD
- **DESIGNATED MEETING & STAGING AREA**
- **HELIPAD**
- **FIRE HYDRANTS**
- **WATER SOURCES**
  RESERVOIRS, LAKES, PONDS, CREEKS & STREAMS



WILDFIRE EMERGENCY RESPONSE

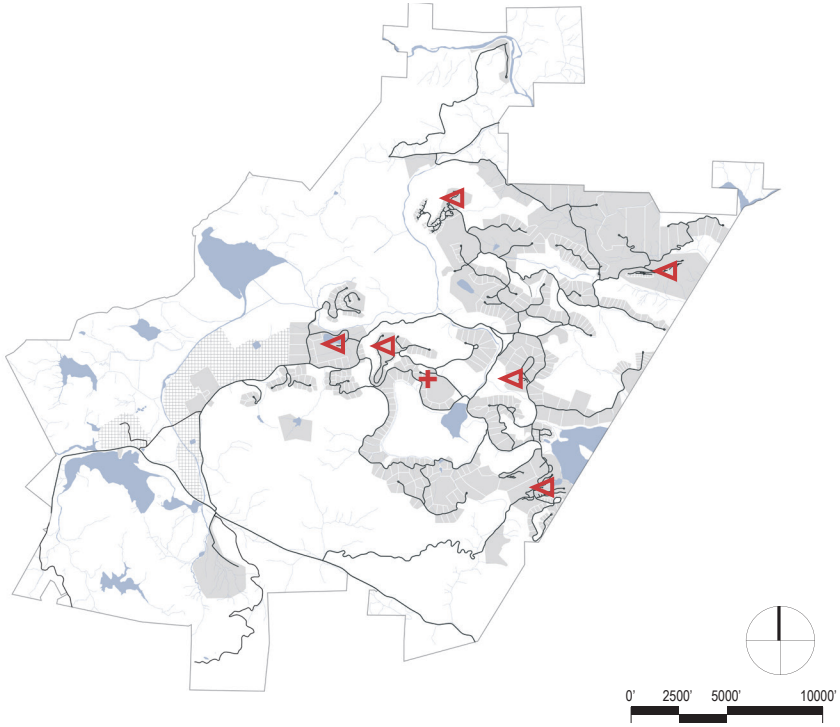
WILDFIRE EMERGENCY DETECTION & COMMUNICATION SYSTEMS

Efficient emergency communication is critical for providing immediate information to residents, visitors, and employees. In the event of a wildfire emergency, the following detection and communication systems will quickly be deployed:

Early Detection System
An early detection system will immediately identify potential fires igniting on site or in the vicinity. This system includes a high-definition camera installed in the center of the resort.

Emergency Notification Siren System
Located throughout the resort, the siren system will alert people to a wildfire emergency and announce updated information and directions.

Opt-out Communication System
All residents, visitors, and employees will be enrolled in an opt-out phone-based communication system, such as Nixle, to receive emergency notifications. This system will supplement the site-wide emergency siren system to ensure that everyone is alerted of important emergency information and updates.



COMMUNICATION RESPONSE SYSTEM

Key communication technologies will aid in detecting and communicating wildfire emergencies.

+ **EARLY DETECTION SYSTEM**
HIGH-DEFINITION CAMERA

◁ **EMERGENCY NOTIFICATION SIREN SYSTEM**
EXACT LOCATIONS TBD

WILDFIRE EMERGENCY RESPONSE

WILDFIRE EMERGENCY RESPONSE CENTER & REFUGE AREAS

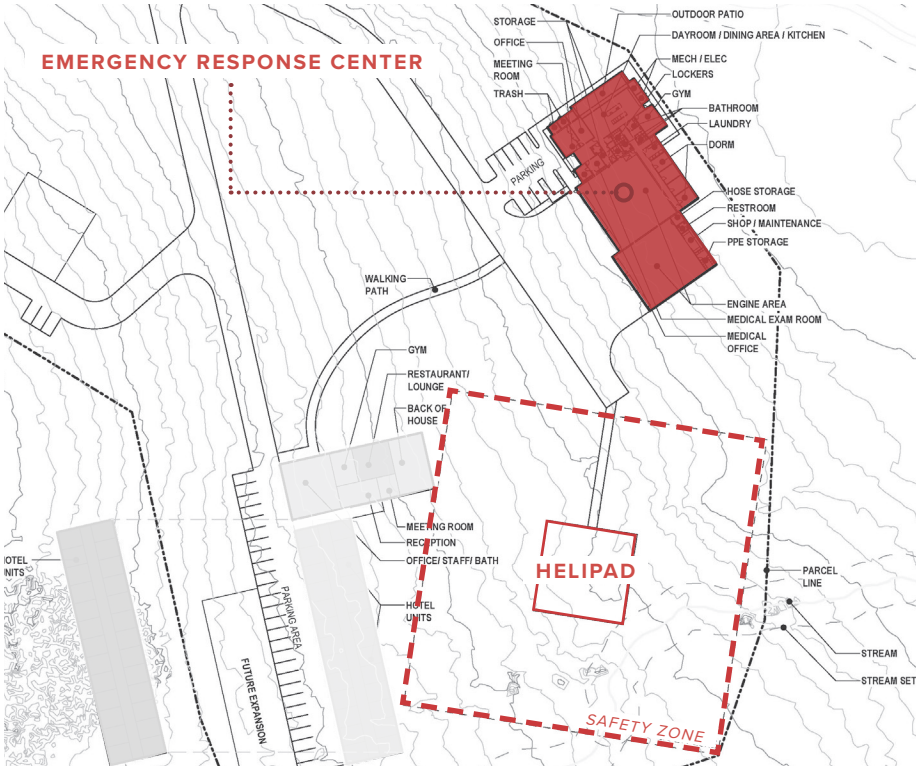
Various areas of the site will play a pivotal role in servicing evacuees and emergency personnel in the case of wildfire emergency.

Emergency Response Center

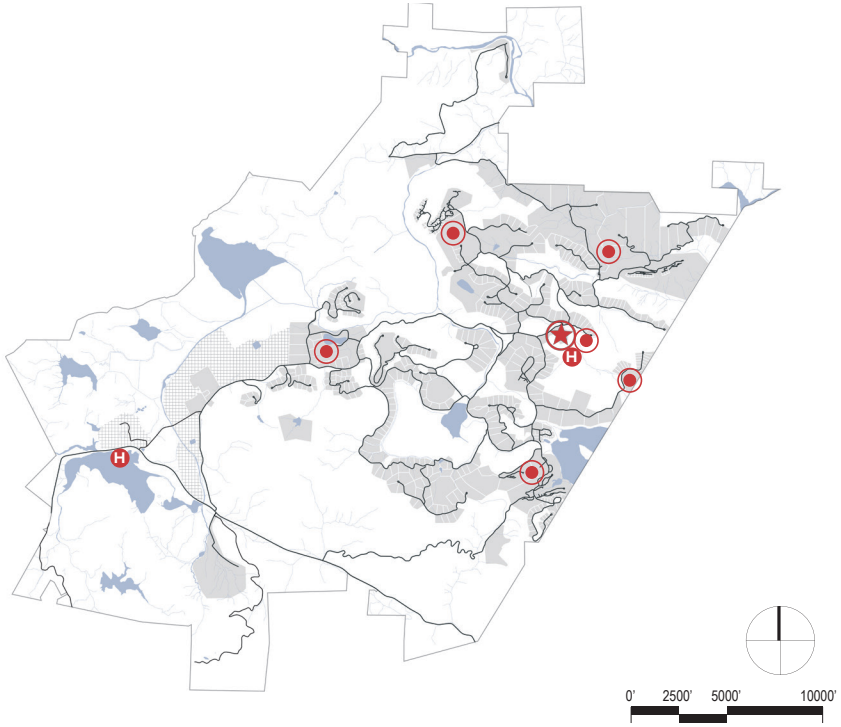
The on-site Emergency Response Center will serve as a primary location for first responders to gather and coordinate efforts. The center will include essential fire-fighting equipment and minor medical supplies. In the case of a major wildfire, the center can act as a headquarters for operations. A helipad will be located on-site for emergency landings and take-offs; and additional helipad at Detert Reservoir can also be used during emergencies

Designated Meeting & Staging Areas

Depending on the circumstances of a wildfire emergency, it may be difficult to evacuate. In this situation, residents, visitors, and employees will be directed to gather at designated meeting & staging areas where they will be provided information and assistance.



EMERGENCY RESPONSE CENTER SITE PLAN



EMERGENCY RESPONSE CENTER & MEETING POINTS

The emergency response center is located in a centralized area to service the entire site; temporary meeting points are dispersed throughout the site in order to provide easily accessible locations for all residents, visitors, and employees.

- **EMERGENCY RESPONSE CENTER**
- **HELIPADS**
- **DESIGNATED MEETING & STAGING AREAS**

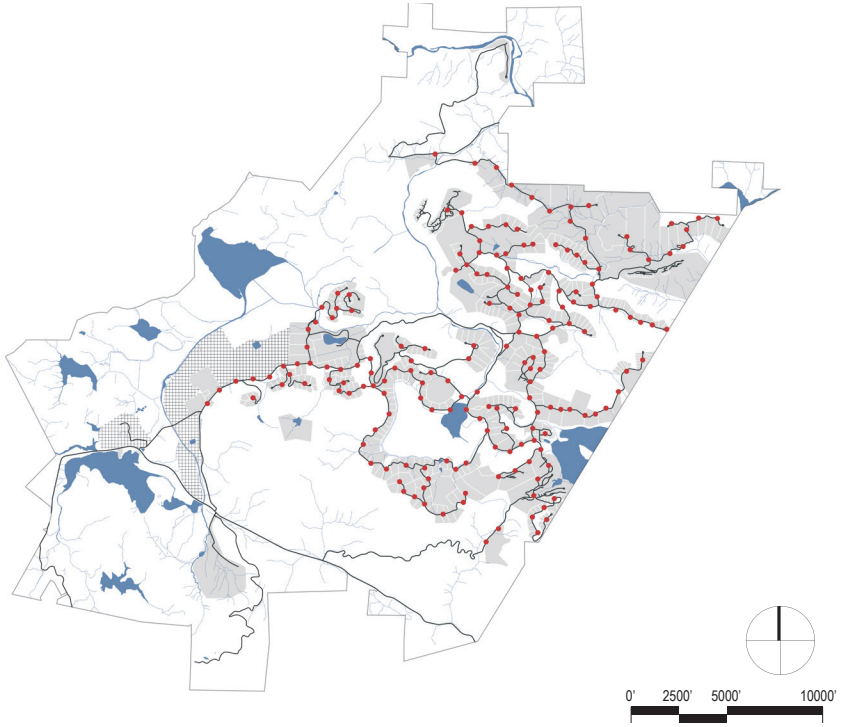
WILDFIRE EMERGENCY RESPONSE
WILDFIRE WATER SUPPLY & SUPPRESSION SYSTEM

If wildfires occur, a comprehensive, on-site water supply and fire suppression system will service firefighting needs.

Fire Suppression Water Sources
Fire suppression systems will be serviced by reclaimed and non-potable water sources, such as recycled wastewater, non-treated groundwater, and surface water reservoirs. Surface water sources—including reservoirs, lakes, ponds, creeks, and streams—can also be drawn upon by fire engines or helicopter buckets in the case of a wildfire emergency.

Fire Suppression Water System
A connected non-potable water distribution system will supply all water to fire hydrants as well as interior and exterior fire suppression systems. Portions of the system will be designed as a loop to maximize flow. Booster pump systems will also maintain water pressure above minimum requirements. Additional water storage may also be established in areas further from water sources for wildfire emergencies.

Fire Hydrants
All hydrants will have the capacity to maintain a minimum of a two-hour flow. Hydrants will be located within close proximity to roadways and spaced to maintain required flow to all parts of the site.



WILDFIRE WATER SUPPLY & SUPPRESSION SYSTEM
A network of fire hydrants and surface water sources will service the entire site.

- **FIRE HYDRANTS**
- **WATER SOURCES**
  RESERVOIRS, LAKES, PONDS, CREEKS & STREAMS

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Note: Data source information ranges from the year 1998 to 2015; data for site from 1998; data source crosswalked with the California Wildlife Habitat Relationship (CWHR); CWHR categories simplified seven categories for illustrative purposes of the exhibit.