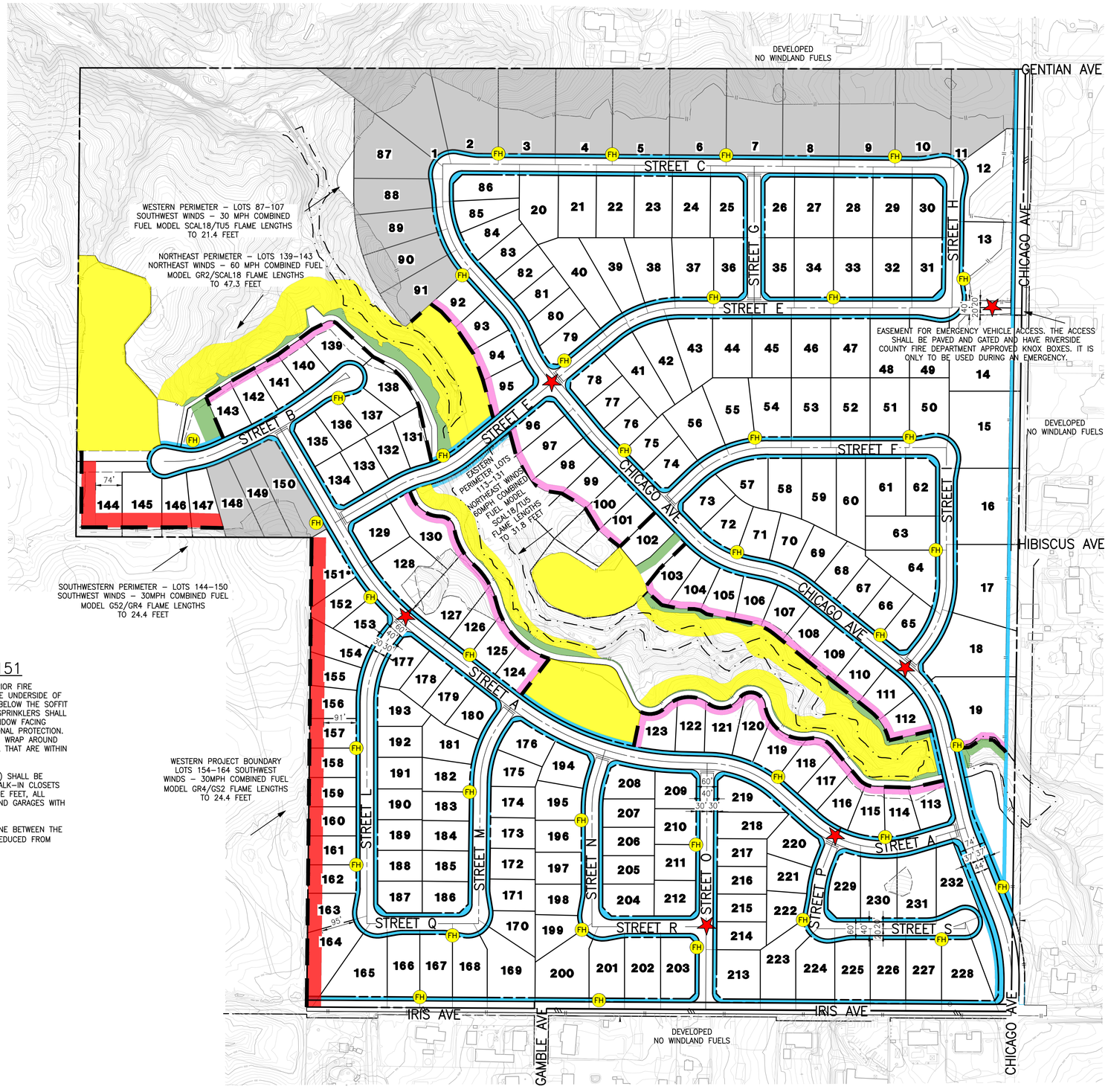
IN THE COUNTY OF RIVERSIDE, CALIFORNIA

ARROYO VISTA FUEL MODIFICATION PLAN

TRACT MAP 38510

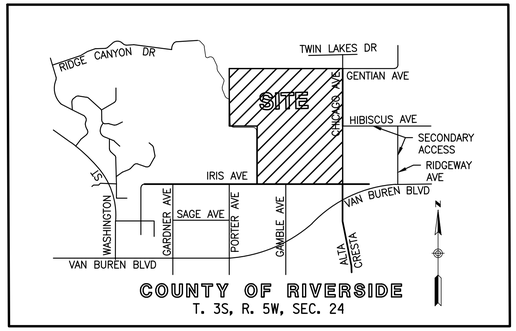


*NOTES FOR LOT 151

1. THE HOME SHALL HAVE THE INTERIOR FIRE SPRINKLER SYSTEM EXTENDED TO THE UNDERSIDE OF THE SOFFIT OR HIGH ON THE WALL BELOW THE SOFFIT THAT FACES WILDLAND FUELS. FIRE SPRINKLERS SHALL ALSO BE INSTALLED ABOVE EACH WINDOW FACING WILDLAND FUELS TO PROVIDE ADDITIONAL PROTECTION. THESE FIRE SPRINKLERS SHALL ALSO WRAP AROUND THE STRUCTURE ON EACH SIDE WALL THAT ARE WITHIN 40 FEET OF WILDLAND FUELS.

2. FIRE SPRINKLERS (PER NFPA 13D) SHALL BE INSTALLED – THIS SHALL INCLUDE WALK–IN CLOSETS OR ROOMS IN EXCESS OF 55 SQUARE FEET, ALL BATHROOMS REGARDLESS OF SIZE, AND GARAGES WITH LIVING SPACES ABOVE THE GARAGE.

3. CREATE A 20 FOOT NO BUILD ZONE BETWEEN THE STRUCTURE AND WILDLAND FUELS (REDUCED FROM THE CURRENT 40 FEET).



VICINITY MAP

NOT TO SCALE

OWNER

P & F INVESTMENT COMPANY
17100 PIONEER BLVD., SUITE 290
ARTESIA, CA 90701
PHONE (562) 775–4262
CONTACT: KWANG–TIEN HO

APPLICANT

TTLC RIVERSIDE CHICAGO, LLC
4350 VON KARMAN AVE., SUITE 200
NEWPORT BEACH, CA 92660
PHONE (925) 331–7006
CONTACT: MICHAEL TORRES

ENGINEER

RICK ENGINEERING COMPANY
1770 IOWA AVE., SUITE 100
RIVERSIDE, CA 92507
(951) 782–0707
CONTACT: RICHARD O'NEILL

ARROYO VISTA DEVELOPMENT - TTM 38510

LEGEND - FIRE PROTECTION PLAN MAP

UNINCORPORATED RIVERSIDE COUNTY, CALIFORNIA

Symbol	Description
Not Shown	**FUEL TREATMENT ZONE 0 (LOT OWNER MAINTAINED) -** An irrigated zone that is cleared of all existing plants that is 5 feet in width beginning at the outer wall of each structure. No combustible material or plants are allowed in this zone. Plants are limited to small plants typically less than 1 foot in height and that will not spread more than 1 foot. Usually these plants are placed in containers that are located between windows and doors. See written Fire Protection Plan for additional information.
No Color	**FUEL TREATMENT ZONE 1A (LOT OWNER MAINTAINED) -** The lot owner shall plant their lot with fire resistant vegetation and maintain it to Zone 1A criteria. Plants listed in the Prohibited Plant List found in Appendix A of the Fire Protection Plan shall not be planted. Zone 1A shall extend outward from Zone 0 for a distance of 45 feet. Maintenance will be on-going throughout the year as needed. Zone 0 plus Zone 1A will result in 50 feet of irrigated landscaping. The area is permanently irrigated and regularly maintained. See Fire Protection Plan for details. In larger lots that have over 50 feet between the rear of the home and the lot boundary, the area within 100 feet of the home shall be treated to Zone 2 criteria by the lot owner.
	FUEL TREATMENT ZONE 1B (HOA MAINTAINED) - A common area that is maintained to Irrigated Zone 1A criteria shown above by the HOA. It includes all manufactured slopes and level areas located within 50 feet of a home. This zone is often located in and surrounding water quality basins designed to retain runoff from precipitation. See written Fire Protection Plan for details.
	FUEL TREATMENT ZONE 2 (HOA MAINTAINED) - Areas located within 50 and 100 feet from each structure that are thinned within an owners lot or to protect an adjacent structure. This zone will frequently interlink to adjacent lot owners Zone 1A or HOA Zone 1B. This area may include small clusters of trimmed fire resistance native plants up to 18 inches in height and trimmed native trees limbed up to 6 feet from the ground where 50% of the vegetation is removed. The zone may include irrigated or temporarily irrigation needed for specimen shrub and tree establishment for revegetation. Selected native plant clusters over 18 inches in height must be separated by at least 1 1/2 times the mature height of the retained plants. Ground cover, native plants and grasses shall be weed whipped or mowed to 4" or less in stubble height each year once they dry out. See written Fire Protection Plan for additional details.
	ROADSIDE FUEL TREATMENT (HOA MAINTAINED) - This zone shall be maintained as described in Zone 1b above. This zone is permanently irrigated and is the most critical to safe ingress and egress. Should water supplies become limited, this zone should be the last to have its irrigation stopped. See written Fire Protection Plan for additional for details.
	NO BUILD ZONE (LOT OWNER MAINTAINED) - An area that is 20-feet in width that is maintained to Zone 1A criteria. It is located adjacent to wildland vegetation. No combustible construction including the home shall be located in this zone. The zone is suitable for walkways, water features, gardens, and similar non-combustible uses.
	NO BUILD ZONE 40 FEET (LOT OWNER MAINTAINED) - An area located at the rear of the lot adjacent to wildland fuels that is 40 feet in width that is maintained to Zone 1A criteria.No combustible construction including the home shall be located in this zone.
	SETBACK ZONE (ESTABLISHED BY BUILDER) - Homes built on these lots shall be setback from the rear property line and or from the Project boundary a minimum of 100 feet. This will provide space for 100 feet of fuel treatment within each lot.
	SOLID NON-COMBUSTIBLE WALL - A solid non-combustible radiant and convective heat deflection wall 6 feet in height shall be located as shown to both intercept radiant and convective heat from a wildfire. It shall also serve to trap a large number of wind blown embers and reduce fire behavior adjacent to it. See written Fire Protection Plan for details.

Prepared for: TTLC Riverside Chicago, LLC.
4350 Von Karmon Ave., Suite 200
Newport Beach, CA 92660

Prepared By: FIREWISE2000, LLC.
PO Box 339
Lower Lake, CA 95457
Telephone: 760-745-3947
Info@firewise 2000.com

SYMBOL LEGEND

SYMBOL	DESCRIPTION
★	Emergency/Fire Access Way Entrance
FH	The FH (Fire Hydrant) symbol is shown for reference only. Each fire hydrant is to be installed per Riverside County Fire Department requirements.

150 75 0 150 300
GRAPHIC SCALE: 1"=150'

Certified By

January 20, 2023

Mel Johnson, Owner — Date

FIREWISE2000, LLC
PO Box 339
Lower Lake, CA 95457
Phone: (760) 745-3947
Info@firewise 2000.com

RICK ENGINEERING COMPANY
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RIVERSIDE, CA 92507
951.782.0707
rickengineering.com

TTLC ARROYO VISTA
FUEL MODIFICATION PLAN
TRACT MAP 38510

PROJECT NO:	19427	SCALE:	1"=150'
DRAWN BY:	JMA/ARC	DATE:	1/11/2023

ARROYO VISTA DEVELOPMENT
FIRE PROTECTION PLAN
Tentative Tract Map 38510
APNs: 245-300-001, 245-300-004
WOODCREST, CALIFORNIA

January 20, 2023

Owner: **TTLC Arroyo Vista , LLC**
4350 Von Karman Ave, Suite 200
Newport Beach, CA 92660

Prepared by: **Herbert Spitzer, Senior Wildland Fire Associate**
***Fire*wise2000, LLC**

Certified by:

Mel Johnson, Owner
***Fire*wise2000, LLC**
PO Box 339
Lower Lake, CA 95457
760-745-3947

Arroyo Vista Development – TTM 38510
Fire Protection Plan
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APPENDICES

ARROYO VISTA DEVELOPMENT
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WOODCREST, CALIFORNIA
JANUARY 20, 2023

Executive Summary

This Fire Protection Plan (FPP) evaluated the proposed Arroyo Vista Development to ensure it does not unnecessarily expose people or structures to fire risks and hazards. The FPP has identified and prioritized the measures necessary to mitigate those impacts. The FPP has considered the property location, topography, geology, combustible vegetation (fuel types), climatic conditions and fire history. It has also considered water supply, access, structure ignitability and ignition resistant building materials, fire protection systems and equipment, impacts to existing emergency services, defensible space, and vegetation management.

The project was analyzed to identify potential adverse impacts and to identify adequate measures for impacts resulting from wildland fire hazards. The evaluation determined that the Riverside County Fire Department (RCFD) and the California Department of Forestry and Fire Protection (CAL FIRE) along with nearby fire departments will be able to provide adequate emergency services. CAL FIRE (under the State Responsibility Area Agreement) as well as other fire departments and fire protection districts, can be requested under a Mutual Aid agreement to respond in the event of a wildfire event in the area. Response times and the proximity of the development to the Wildland Urban Interface (WUI), in a Very High Fire Hazard Zone require that fire sprinklers be installed in all new residences.

In addition, this FPP lists fuel treatment requirements to mitigate the exposure of people or structures from a significant risk of loss, injury, or death from wildland fires. Zones 0, 1A, and 1B will be irrigated landscaped zones consisting of fire resistant and maintained plantings. Zone 1B is a permanently irrigated zone that is maintained by the HOA which includes manufactured slopes and areas with water quality basins located in proximity to structures.

Finally, this plan and its requirements will be incorporated by reference into the final project Conditions of Approval to ensure compliance with all current codes/regulations and significant standards.

ARROYO VISTA DEVELOPMENT
FIRE PROTECTION PLAN
Woodcrest, California

1.0 GENERAL DESCRIPTION

The Arroyo Vista Project (Project) is located northwest of the intersection of Chicago Ave and Iris Ave in the unincorporated area of Woodcrest, Riverside County, California. The proposed project is located within a declared High Fire Hazardous Zone. Arroyo Vista is a planned community (see Photo No. 1) for which this plan was developed. Once the project is completed, over 233 residential lots will be added to Riverside County. The Riverside County Fire Department (RCFD) contracts with CalFire for wildland fire protection and is the fire authority for the Project.

Photo 1 – Aerial photo of the Project area. *The arrow points to the approximate center of the Project. Note the eastern and southern sides of the project abuts existing development. To the Northwest and west, wildland fuels exist that are a wildland fire concern.*

A Fire Protection Plan (FPP) must be submitted to and approved by the RCFD. The FPP assesses the overall on-site and off-site wildland fire hazards and risks that may threaten life and property associated with the proposed Arroyo Vista development. In addition, the FPP establishes both short-term and long-term fuel treatment actions required to minimize any projected wildland fire hazards and assigns annual maintenance responsibilities for each of the required fuel treatment actions. Maintenance of fuel treatment zones will be performed by the lot owner within their lot and the Arroyo Vista Homeowners Association (HOA) for common areas.

1.1 General Information

Developer/Applicant:	TTLC Arroyo Vista, LLC 4350 Von Karmon Ave., Suite 200 Newport Beach, CA 92660
Approving Departments:	
Fire Authority:	Riverside County Fire Department
Water:	Western Municipal Water District

The proposed planned development calls for the building of 233 single-family homes on 140.8 gross acres. These homes will be a combination of one- and two-story structures. A vicinity map can be seen in Figure 1 below:

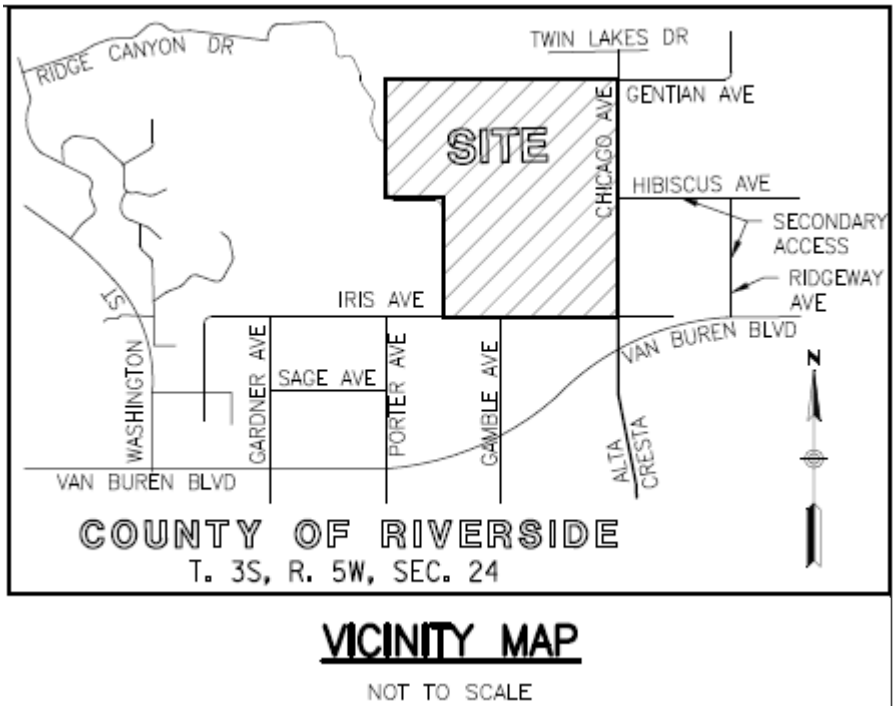


Figure 1 – Vicinity Map

1.2 Relevant Building Codes and Standards

Requirements of this FPP are based upon requirements listed in the 2019 California Fire Code, Chapter 49, Public Resources Code, Sections 4201 through 4204, and Government Code, Sections 51175 through 51189, or other areas designated by the enforcing agency to be at a significant risk from wildfires. It is also based on other codes and standards with Local Amendments as required; Chapter 7A-California Building Code; 2019 California Residential Code sections R337; National Fire Protection Association Standards (NFPA) 13-D, 2019 Edition, Riverside County Health, and Safety Code - Declaration of Nuisance 6.15.020, and supporting guidelines, the California State and Local Responsibility Area Fire Hazard Severity Zone Map; and NFPA Standard 1140.

1.3 Hazardous Vegetation and Fuels Around Buildings - Laws and Regulations

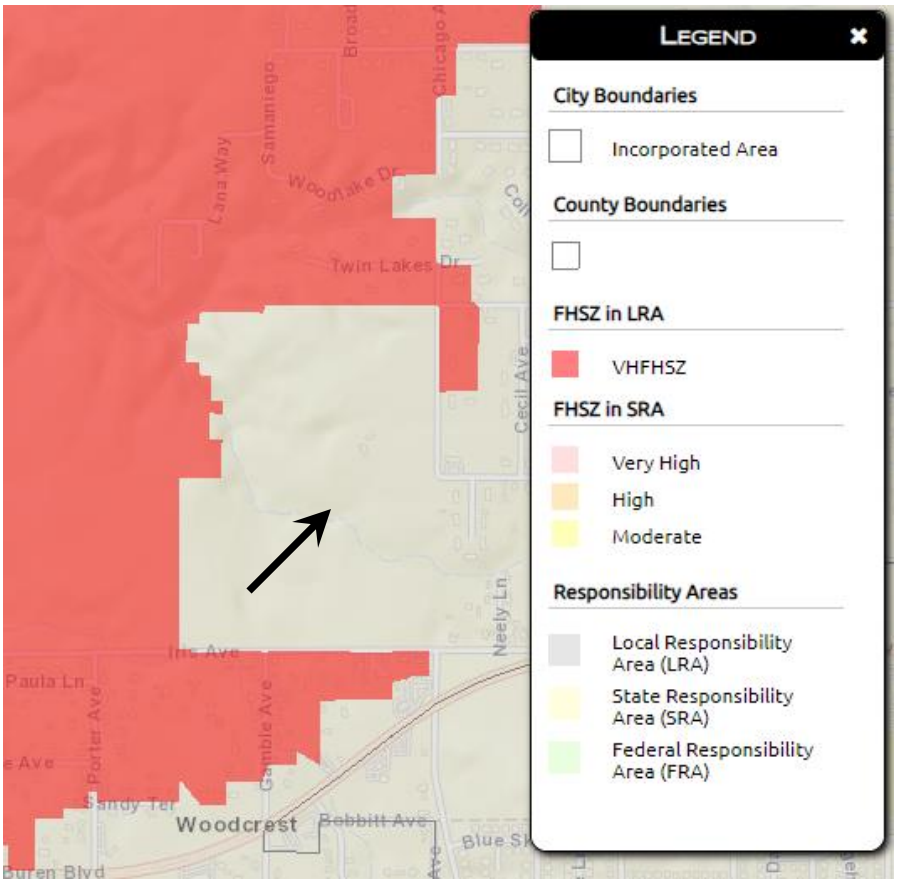
The following laws and regulations guide the requirements for Fire Protection. These include the following: Public Resources Code, Section 4291. California Code of Regulations, Title 14, Division 1.5, Chapter 7, Subchapter 3, Section 1299 (see guidance for implementation "General Guideline to Create Defensible Space"). California Government Code, Section 51182. California Code of Regulations, Title 19, Division 1, Chapter 7, Subchapter 1, Section 3.07, and Riverside County Ordinances; 787.9 and 460.154.

2.0 WILDLAND FIRE HAZARD AND RISK ASSESSMENT

The following hazard and risk assessment is based upon historical weather data and existing and forecasted vegetation that would exist in a climax plant community. Wildfire risk is a measure of the chance of a fire starting, as determined by the presence and activity of causative agents. The fire hazard is the result of a combination of vegetation, topography, weather, and the threat of fire to life and property that create difficult and dangerous conditions. The primary focus of this document is mitigation of the fire hazard and to a lesser extent, the reduction of risk of a fire starting within the tract.

2.1 On and Off-Site Fire Hazard and Risk Assessment

A portion of the project is located in a designated Very High Fire Hazard Severity Zone (VHFHSZ) as shown in the map below. It should be noted that at the time this map was created, nearly all the project site was agricultural with a large citrus orchard being present. Thus, at the time of this map's creation, the orchard did not present a wildland fire problem. That orchard has since been removed. The site, if not disturbed, will over time grow back from seed disseminated from adjacent wildlands or lying dormant in the soil. The Riverside County Fire Department Strategic Planning Division would at some point in the future reevaluate the entire County wildland fire hazard and would at that time most likely change the project area to either a high or a VHFHSZ designation. The County is thus justified in securing a FPP for the entire project site at this time.



Map of the Very High Fire Hazard Severity Zone for the Project as it was evaluated previously by the State. This map was based on the prior presence of a large orchard covering most of the Project site. As a result, most of the area is not shown as being in a VHFHSZ. The arrow points to the approximate center of the Project.

The Proposed Arroyo Vista development is located in lightly sloping terrain with short drainages with moderately steep slopes. To the northwest corner of the project is an area of approximately 16 acres that contains a proposed open space and a Water Quality Basin. In most cases, this area will be located over 100 feet from any structure. Fuel treatment on portions of the perimeter will be required to provide adequate fire protection. When the required 100 feet of fuel treatment cannot be established, additional building features are required. See Appendix 'F' for a site plan of the Project to aid in the visualization of the layout and descriptions that follow.

An intermittent stream with associated trees and shrubs runs from the southeast to the northwest. Hillsides to the northwest consist of primarily undisturbed vegetation (see Photo 2). On-site vegetation within lot boundaries and roadways will be completely removed during grading.

In assessing the wildland fire hazard to the proposed Project, it is necessary to consider plant succession and the climax plant communities. The fire behavior vegetation types described below, in the cardinal directions of north through west, are the most likely climax plant communities that

will exist without human intervention and the ones utilized for planning purposes. Several of the descriptions include interior wildland fire exposures such as those that will exist along the intermittent streambed where undeveloped land abuts several interior lots.

***Photo 2 – Undisturbed* Vegetation Located Northwest of the Project** *- primarily consists primarily of Scattered Sage and Buckwheat with grass located within the openings. Due to current drought conditions, grass species are likely stunted and would likely be larger under normal rainfall. Most of the Project site consists of disturbed vegetation.*

Northern Exposure

The Northern Project Boundary abuts both developed and undeveloped land as shown in Photo 3. Fuels on the nearby land to the north consist of a combination of Sage/buckwheat, grass, and weeds. Most of the perimeter lots along the northern boundary area are nearly an acre in size that will provide ample room for onsite fuels treatment if the homes are sited in the southern portion of each lot.

Interior Lots 138-143 will all have wildland fire exposure from the north. These lots abut Channel/Open Space Lot 'E' as shown on the Fire Protection Plan Map, Section 11.0. Several interior lots are to be located adjacent to wildland fuels located adjacent to the Channel/Open Space Lot 'F'. A trail is to be located along the south side of the lot above the streambed which will provide a means of performing fuel treatment maintenance and create a small barrier to wildland fire spread.

Photo 3 – Aerial Photo of the Northern Project Boundary. *All lots that abut the adjacent community will be approximately 1 acre in size allow ample space for fuel modification. The area within the Project that is located to the northwest, not in view, is currently undeveloped. A portion of this land including the intermittent streambed designated by the arrow will be designated as open space within the Project.*

The climax vegetation likely to exist along the northern exposure of the interior lots can be best described as a combined fuel model of Fuel Model gs2 – Moderate load, dry climate grass-shrub (70%) and SCAL18 – Sage/Buckwheat (30%). Slopes in this area range up to 25 percent and uphill which increases fire behavior.

Eastern Exposure

The eastern boundary of the project abuts existing development as shown in Photo 4. No wildland fire behavior calculations are thus presented for the eastern boundary of the project. However, within the project, Lot 'F' described as a Channel/Open Space lot exists. This interior lot runs from the southeast toward the northwest as shown in the site plan (Appendix E). All the homes that abut this lot will have wildland fire exposures from the east that will need to be mitigated.

Photo 4 *– North view along the eastern project boundary from Iris Ave. toward the future eastern entrance of Chicago Ave. The area to the east of the Project is developed. The group of palm trees seen in the photo above is located in an intermittent streambed within Lot F, designated as Channel/Open Space.*

Existing trees within Lot F can be seen in Photos 3 and 4. Tree species growing include a variety of palms, willows, and California Pepper Trees. Below this canopy are found a variety of shrubs including but not limited to Coyote Bush, buckwheat, sage, and Tree Tobacco.

Photo 5*- View of the tree canopy growing within the intermittent stream channel in what will be Lot F. Trees that exist in the channel include but are not limited to a variety of palms, willow and California Pepper. Willows, being deciduous trees, are typically fire resistant when properly maintained.*

The worst-case vegetation types are likely to exist as climax vegetation along the west side of Lot F, that is subject to a wildland fire from the east includes lots 113 – 131, 138 and 139. The likely fuels can be best described as a combined fuel model of SCAL18 – Sage/Buckwheat (70%) and tu5 – Very high load, dry climate timber-scrub (30%). Hillside slopes within the channel range from 15 to 35 percent.

Photo 6– *Looking north along the eastern project boundary (Chicago Avenue). Note the existing development along the right side of this photo. This development creates a barrier to wildfire establishment and spread.*

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Southern Exposure

A large portion of the southern boundary will abut Iris Ave, a paved roadway that extends from Chicago Ave. westward to Gamble Avenue for a distance of approximately a quarter of a mile. Beyond Gamble Ave., the roadway narrows and eventually turns into a dirt roadway. Along this portion of Iris Ave, existing homes and development exist along the south side of the roadway (See Photo 7). As a result, few wildland fuels remain as the existing property owners maintain their property. A view of the southern boundary can be seen in Photo 7.

To the south of lots 145-151 on adjacent property, wildland fuels will remain. The land is currently lightly vegetated due to a combination of ATV use and drought. The dominant plants

consist of grass, mustard, tumbleweed, and other herbaceous native and non-native species. The topography in this area is nearly level to downhill into the project with 10 percent slopes.

The worst-case vegetation types likely to exist as climax vegetation along the south side of lots 145-151 is a combined fuel model of gr4 – Moderate load, dry climate grass (70%) and gs1 – Low load, dry climate grass-shrub (30%).

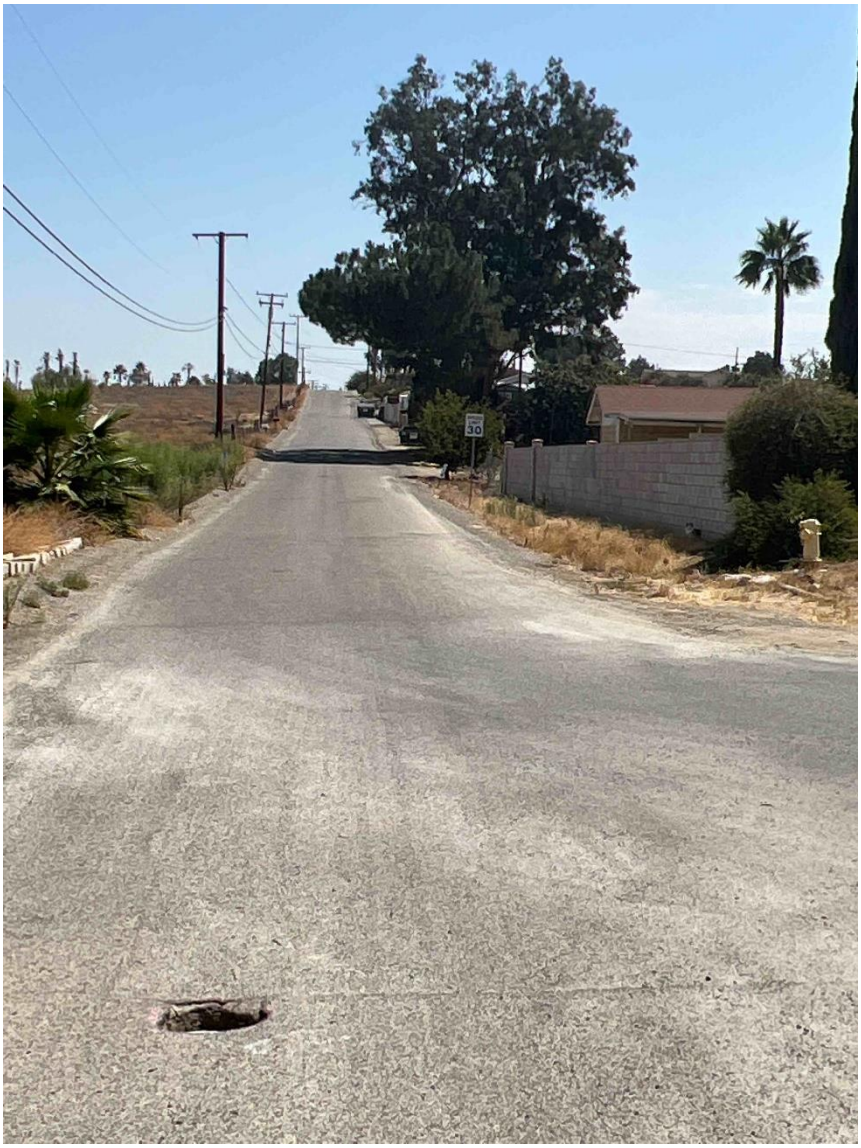


Photo 7 – *Looking east along Iris Ave. and a portion of the southern side of the Project. Homes are to be built along the left side of the photo or the north side of Iris Ave. There is sufficient room within the project for on-site fuel treatments to abate the fire hazard for a fire spreading to the north..*

Western Exposure

The entire western project boundary abuts wildland fuels as can be seen in Photo 8. To the Project's benefit, the repeated disturbance by ATV's has currently reduced wildland fuels and thus potential fire behavior but also increases the risk of a wildfire starting.

The western portion of the Project perimeter includes lots 144, 145 152, 153, and 155-165 have wildland exposures from the west. The likely climax vegetation type is a combined fuel model of gr4 – Moderate Load, Dry Climate Grass (70%) and gs2 – Moderate load, Dry Climate Grass-shrub (30%) for fire behavior planning purposes. The moderate load grass would likely occur following above average rainfall winters. Slopes range from level to 5 percent.

Photo 8 – Aerial Photo of Western Project Boundary. *The white arrow indicates where the homes will exist and be exposed to wildfires from the south and from the west. Note the high ATV activity which has resulted in bare ground. The black arrow points to where lots 87-91 will exist,also exposed to wildfire from the west. Note the intermittent streambed adjacent to where these lot will exist.*

Within the Project, west of lots 1 and 87-113, the most likely climax wildland vegetation consists of a combined fuel model of SCAL18 – Sage/Buckwheat (80%) and tu5 – Very high load, dry climate timber-grass-shrub (20%). Slopes in this area range up to 45 percent within the drainage formed by the intermittent streambed.

2.2 Critical Wildfire Concerns

The most critical weather pattern to the Project area is a hot, dry offshore wind, typically called a Santa Ana. Such wind conditions are usually associated with strong (60 MPH), hot, dry winds

with very low (<15%) relative humidity. Santa Ana winds originate over the dry desert land and can occur anytime of the year; however, they generally occur in the late fall (September through November). This is also when non-irrigated vegetation is at its lowest moisture content. Perimeter homes located on the northern and eastern boundaries (See Fire Protection Plan Map, Section 11.0) are subject to these winds and fire behavior.

The undeveloped areas adjacent to and within the project can contribute to a damaging wildland fire event. Any wind or topography driven wildfire burning under a northeastern (*Santa Ana*) wind to the north and east of the development or a wildfire burning under a typical southwestern wind to the west or south of the development can create a wildland fire hazard to the proposed structures due to wind-blown embers. Wildland fires starting north of the proposed residences on a typical fire day with a southwest wind will burn away from the proposed structures and will generally not be a significant wildland fire hazard. A wildland fire starting to the west of the development on a Santa Ana wind event day will also burn away from the development.

The installation of Chapter 7A of the California Building Code construction features will mitigate against the wind-blown ember threat (see Section 6.0 for a discussion of these features). The goal of this FPP is to prevent the loss of lives, buildings, and personal property when wildfires occur with the challenge of developing well planned home sites adjacent to wildland vegetation located within protected habitat. This goal is accomplished by requiring homes to be built with ignition resistant materials, as described in Chapter 7A of the California Building Code, and properly designing and maintaining fuel treatments that will safely mitigate the fire hazard to insignificant levels. When the required fuel treatments cannot be met, additional construction features shall be required.

2.3 Fire History

There has been a history of a large wildland fire burning in the area. A large wildland fire being defined is one that burns over 100 acres. Shown in Figure 2 is the fire history for the past 51 years for the project and surrounding area. The most recent fire shown burned to the west of the project. Fire history data was obtained from Cal Fire. Note, not all wildland fires are mapped. There were very likely other smaller fires. Fires of less than 100 acres are not shown unless they do significant damage or loss of life. It is likely that there were other wildland fires that have occurred, they just did not become large enough or very significant to be included in this data.

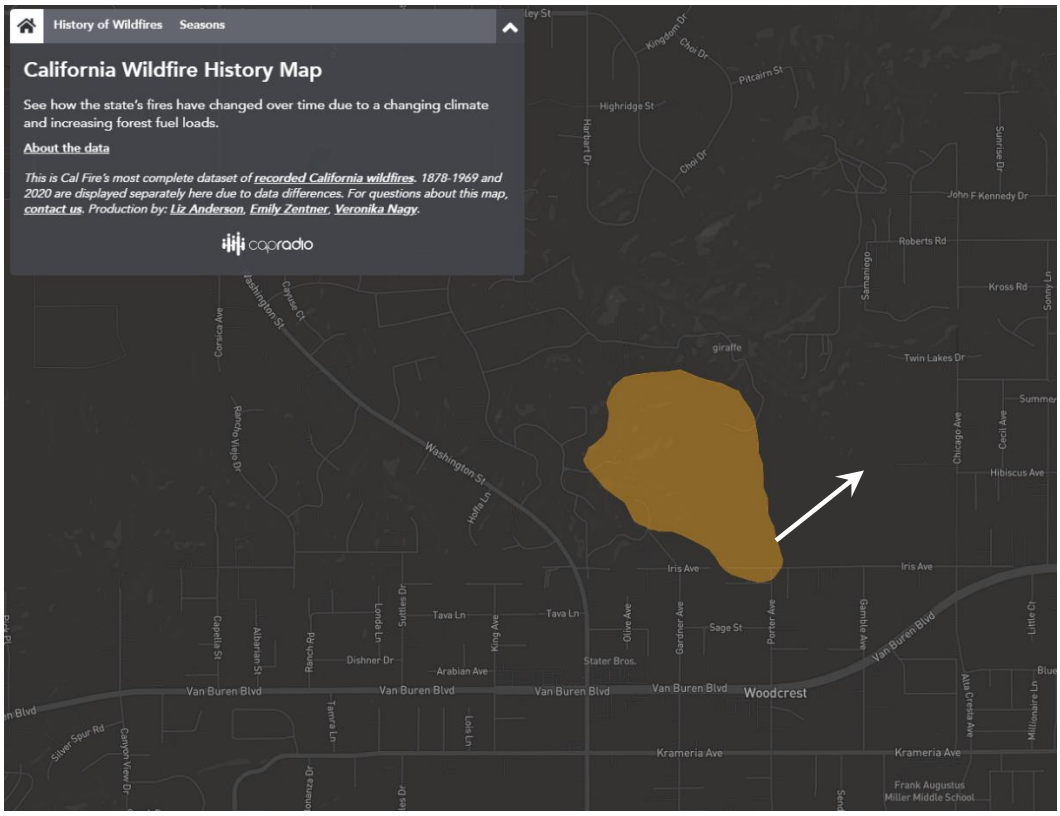


Figure 2 – ***Large Fire history*** *- on and surrounding the project site. The white arrow points to the project site. This is data for the period 1970 to 2021. The most recent fire burned the orange shape located west of the project site. It was not named but occurred in 1979.*

2.4 Weather Review and Assessment

Weather data was obtained from the RAWS (Remote Automatic Weather Station) network. The closest station to the project area is the Clark RAWS. RAWS are installed for the purpose of monitoring wildland fire weather. The Clark RAWS is located at an elevation of 1,720 feet at Latitude 33° 52' 36" and Longitude 117° 18' 32". This station is approximately 200 feet higher in elevation and located approximately 3.0 miles from the project. This station is thus an excellent choice for historic weather.

2.5 Predicting Wildland Fire Behavior

The BEHAVE 6.0.0 Fire Behavior Prediction and Fuel Modeling System developed by USDA–Forest Service research scientists Patricia L. Andrews and Collin D. Bevins at the Intermountain Forest Fire Laboratory, Missoula, Montana, is one of the best systematic methods for predicting wildland fire behavior. The BEHAVE Plus fire behavior computer modeling system is utilized by wildland fire experts nationwide.

Wildland fire managers use the BEHAVE modeling system to project the expected fire intensity, rate-of-spread and flame lengths with a reasonable degree of certainty for use in Fire Protection Planning purposes. ***FIREWISE2000, LLC.*** used the BEHAVE 6.0.0 Fire Behavior Prediction Model to make the fire behavior assessments for the Arroyo Vista development which are presented below.

2.6 Wildland Fire Behavior Calculations for the On- Site and Off-Site Hazardous Vegetative Fuels

Wildland fire behavior calculations have been projected for the hazardous vegetative fuels on the undeveloped areas that are located in proximity to proposed perimeter structures or structures within the project exposed to wildland fuels. These structures have the highest exposure to radiant and convective heat and therefore the most hazard (see the Fire Protection Plan Map). These projections are based on scenarios that are "worst case" Riverside County fire weather assumptions in the vicinity of the project area.

Over the past decade, California and much of the Western United States has been experiencing increased fire behavior from what was typically seen in the past as documented by firefighters from multiple agencies. It is due in part to our warming climate, which frequently results in lower relative humidity over prolonged periods of time in turn resulting in lower moisture content in both living and dead wildland fuels. When fuels are drier, they burn hotter and are easier to ignite, especially on hot days as the fuel temperature is closer to its ignition temperature. The fire behavior calculation inputs for anticipated fuel moistures have been adjusted to account for climate change and thus, better represent "worst case" weather. The downward fuel moisture adjustment results in approximately a 5 foot increase in flame lengths in fuels that contain brush and related species.

The scenarios which follow include the projected fire behavior under worst case wildland fuel and weather conditions and the expected fire behavior following the herein described fuel treatments required in a Vegetation Management Zone 2 described in greater detail in Section 5.4.

Fire Scenario #1, Northern Exposure Lots 139-143 ***Fire Approaching from the North or Northeast*** ***(Late Fire Season With 60 MPH North of Northeast Wind Conditions)***	
Fire Behavior Calculation Input Data • 25 percent slope • 60 mph 20-foot wind speed • 320º slope aspect from north • 45º wind direction from north	**Anticipated Fuel Moistures** * 1-Hour Fine Fuel Moisture of..…….. 2% * 10-Hour Fuel Moisture of…….…… 2% * 100-Hour Fuel Moisture of...…..…..…... 4% * Live Herbaceous Fuel Moisture of..…. 30% * Live Woody Fuel Moisture of..……. 45%
Expected Fire Behavior **Combined Fuel Model [gs2 – Moderate Load, Dry Climate Grass-shrub (70%) and SCAL18 – Sage/Buckwheat (30%)]**	
Rate of Spread - 488 ft/min	
Fireline Intensity - 24,867 BTU/ft/s	
Flame Length - 47.3 feet	
Expected Fire Behavior in Treated Fuels **Combined Fuel Model - [gr1 – Short Sparse Dry Climate Grass (50%) and tl2 – Low Load Broadleaf Litter (50%)]**	
Rate of Spread - 25 ft/min	
Fireline Intensity - 67 BTU/ft/s	
Flame Length - 3.1 feet	

Fire Scenario #2, Eastern Exposure Lots 113-131, 138 and 139 ***Fire approaching from the North or Northeast*** ***(Late Fire Season With 60 MPH North of Northeast Wind Conditions)***	
Fire Behavior Calculation Input Data • 35 percent slope • 60 mph 20-foot wind speed • 45º slope aspect from north • 45º wind direction from north	**Anticipated Fuel Moistures** * 1-Hour Fine Fuel Moisture of..…….. 2% * 10-Hour Fuel Moisture of…….…... 2% * 100-Hour Fuel Moisture of.....…….…. 4% * Live Herbaceous Fuel Moisture of..…. 30% * Live Woody Fuel Moisture of…..…... 45%
Expected Fire Behavior **Combined Fuel Model [SCAL18 – Sage/Buckwheat (80%) and tu5 – Very high load, dry climate timber-grass-shrub (20%)]**	
Rate of Spread - 123 ft/min	
Fireline Intensity - 10,475 BTU/ft/s	
Flame Length - 31.8 feet	
Expected Fire Behavior in Treated Fuels **Combined Fuel Model - [gr1 – Short Sparse Dry Climate Grass (60%) and tl2 – Low Load Broadleaf Litter (40%)]**	
Rate of Spread - 30 ft/min	
Fireline Intensity - 67 BTU/ft/s	
Flame Length - 3.1 feet	

Fire Scenario #3, Southern Exposure adjacent to Lots 145-151 ***Fire Approaching from the South or Southwest*** ***(Late Fire Season With 30 MPH West or Southwest Wind Conditions)***	
Fire Behavior Calculation Input Data • 10 percent slope • 30 mph 20-foot wind speed • 0º slope aspect from north • 225º wind direction from north	**Anticipated Fuel Moistures** * 1-Hour Fine Fuel Moisture of..…… 2% * 10-Hour Fuel Moisture of..…… 3% * 100-Hour Fuel Moisture of.....…….. 4% * Live Herbaceous Fuel Moisture of..… 30% * Live Woody Fuel Moisture of……..... 55%
Expected Fire Behavior **Combined Fuel Model [gr4 – Moderate load, dry climate grass (70%) and Gs2 – Moderate load, dry climate grass-shrub (30%)]**	
Rate of Spread - 513 ft/min	
Fireline Intensity - 5,871 BTU/ft/s	
Flame Length - 24.4 feet	
Expected Fire Behavior in Treated Fuels **Combined Fuel Model - [gr1 – Short Sparse Dry Climate Grass (50%) and Tl2 – Lo2 Load Broadleaf Litter (50%)]**	
Rate of Spread - 25 ft/min	
Fireline Intensity - 67 BTU/ft/s	
Flame Length - 3.1 feet	

Fire Scenario #4, Western Project Boundary Lots 152, 153 & 155-165 ***Fire Approaching from the South or Southwest*** ***(Late Fire Season With 30 MPH South or Southwest Wind Conditions)***		
Fire Behavior Calculation Input Data • 5 percent slope • 30 mph 20-foot wind speed • 220º slope aspect from north • 225º wind direction from north	**Anticipated Fuel Moistures** * 1-Hour Fine Fuel Moisture of..…… 2% * 10-Hour Fuel Moisture of..…… 3% * 100-Hour Fuel Moisture of.....…….. 4% * Live Herbaceous Fuel Moisture of..… 30% * Live Woody Fuel Moisture of……..... 55%	
Expected Fire Behavior **Combined Fuel Model [gr4 – Moderate Load, Dry Climate Grass (70%) and gs2 – Moderate load, Dry Climate Grass-shrub (30%)]**		
Rate of Spread - 529 ft/min		
Fireline Intensity - 5,881 BTU/ft/s		
Flame Length - 24.4 feet		
Expected Fire Behavior in Treated Fuels **Combined Fuel Model - [gr1 – Short Sparse Dry Climate Grass (50%) and Tl2 – Low Load Broadleaf Litter (50%)]**		
Rate of Spread - 25 ft/min		
Fireline Intensity - 67 BTU/ft/s		
Flame Length - 3.1 feet		

Fire Scenario #5, Lots 1 & 87-112 West Exposure ***Fire Approaching from the South or Southwest*** ***(Late Fire Season With 30 MPH South or Southwest Wind Conditions)***	
Fire Behavior Calculation Input Data • **35 percent slope** • **30 mph 20-foot wind speed** • **225º slope aspect from north** • **225º wind direction from north**	**Anticipated Fuel Moistures** * **1-Hour Fine Fuel Moisture of..……. 2%** * **10-Hour Fuel Moisture of..…… 3%** * **100-Hour Fuel Moisture of.....…….. 4%** * **Live Herbaceous Fuel Moisture of….. 30%** * **Live Woody Fuel Moisture of……..... 55%**
Expected Fire Behavior **Combined Fuel Model [SCAL18 – Sage/Buckwheat (80%) and tu5 – Very high load, dry climate timber-grass-shrub (20%)]**	
Rate of Spread - 57 ft/min	
Fireline Intensity - 4,441 BTU/ft/s	
Flame Length - 21.4 feet	
Expected Fire Behavior in Treated Fuels **Combined Fuel Model - [gr1 – Short Sparse Dry Climate Grass (50%) and Tl2 – Low Load Broadleaf Litter (50%)]**	
Rate of Spread - 17 ft/min	
Fireline Intensity - 48 BTU/ft/s	
Flame Length - 2.7 feet	

3.0 ASSESSING STRUCTURE IGINITIONS IN THE WILDLAND/URBAN INTERFACE

Structure ignitions from wildland wildfires basically come from three sources of heat: convective firebrands (flying embers), direct flame impingement, and radiant heat. The Behave Plus Fire Behavior Computer Modeling Program does not address windblown embers or firebrands from a structure ignition perspective. However, ignition resistant exterior building materials will be used in the construction of the Arroyo Vista homes (see APPENDIX 'D' for the description of Ignition Resistant Construction). Wind driven embers and radiant heat issues are addressed in this FPP.

3.1 Firebrands

Firebrands or embers as they are often referred to are pieces of burning materials that detach from burning fuels due to the strong convection fire drafts in the flaming zone. Firebrands can be carried a long distance (one mile or more) by fire drafts and strong winds. Severe wildland/urban interface fires can produce heavy showers of firebrands. The chance of these firebrands igniting a structure will depend on the number and size of the firebrands, how long they burn after contact, and the type of building materials, building design, and construction features of the structure. Firebrands landing on combustible roofing and decks and adjacent flammable vegetation are common sources for structure ignition. They can also enter a structure through unscreened vents, decks and chimneys, unprotected skylights, and overhangs.

Even with non-combustible roofing, firebrands landing on leaves, needles, and other combustibles located on a roof (due to lack of maintenance) or adjacent to a structure can cause structure ignition. Any open windows, doors or other types of unscreened openings are sources for embers to enter a structure during a wildland fire. If landscape guidelines are followed and the above-mentioned maintenance issues are addressed on a regular basis through HOA inspections and enforcement as outlined in the CCR's (see Section 7), firebrands should not be a concern for the Arroyo Vista residences, as the buildings will be constructed with ignition resistant building materials.

3.2 Radiant Heat/Direct Flame Impingement

Radiation and convection involve the transfer of heat directly from the flame. Unlike radiation heat transfer, convection requires that the flames or heat column contact the structure. An ignition from radiation (given an exposed flammable surface) heat transfer depends on two aspects of the flame: 1) the radiant heat flux to a combustible surface and, 2) the duration (length of time) of the radiant flux. The radiant heat flux depends on the flame zone size, flame-structure distance, and how much the combustible material of the structure is exposed to the flame. While the flame from a wildfire may approach 1,800 degrees Fahrenheit, it is the duration of heat that is more critical. For example, a blow torch flame typically approaches 2,100 degrees Fahrenheit, yet a person can easily pass their hand through the flame. Heat duration only becomes critical to a home with a wood exterior surface if the heat is allowed to remain for 30-90 seconds.

Research scientist Jack Cohen of the USDA-Forest Service has found that a home's characteristics (its exterior materials and design in relation to the immediate area around a home within 100 feet) principally determine the home's ignition potential. He calls the home and its immediate surroundings the 'home ignition zone'. In a study of ignition of wood wallboard, tests by a USDA Forest Service research team described in the Proceedings, 1st International Fire and Materials Conference showed that flame impingement for sufficient length of time (approximately 1 min.) ignites a typical hardboard siding material. The ignition temperature of wood is generally between 450°-500°F.

Fire agencies consider fuel treatment as a principal approach to wildland fire hazard reduction. Whenever the flame length is equal to or more than the separation of combustible vegetation from a combustible structure for 1-2 minutes in duration or more, there is a high probability of structure ignition. Contact with a fire's convection heat column also may cause ignition but the temperature of the column's gases are generally not hot enough or of long enough duration to sustain the ignition of the structure.

Comparing the expected wildland fire behavior projections in each of the scenarios in Section 2.6 against the required fuel treatment zones outlined in Section 5.0, demonstrates substantial reductions in the expected flame length. By requiring the structures exposed to the threat of wildfire to incorporate the following guidelines, those structures will be provided with the most effective treatment for minimizing losses from flame impingement and associated radiant heat intensities.

By requiring the structures exposed to the threat of wildfire to incorporate the following guidelines, those structures will be provided with the most effective treatment for minimizing losses from flame impingement and associated radiant heat intensities.

- Each structure is constructed of ignition resistant building materials as required by Chapter 7A of the California Building Code.
- The area surrounding each structure contains an Irrigated Zone (defensible space).

The eventual homeowners shall be required to maintain their properties to fuel treatment standards Zones 0 and 1A. Residents shall keep the roof and any rain gutters free of leaves, needles, and other combustible debris. All firewood and other combustible materials must be properly stored away from structures so that burning embers falling on or near structures have no suitable host. The Arroyo Vista lot owners are responsible for maintaining their homes and for keeping all doors and windows tightly closed whenever a wildland fire is reported in the vicinity. Under its authority in the CC&R's, the HOA shall conduct regular inspections to ensure that these requirements are met (see Section 7).

3.3 Fire Resistant Plant Palette

Wildland fire research has shown that some types of plants, including many natives, are more fire resistant than others. These low fuel volume, non-oily, non-resinous plants are commonly referred to as "fire resistant". This term comes with the proviso that each year these plants are pruned, all dead wood is removed, and all grasses or other plant material are removed from beneath the circumference of tree and shrub canopies. Some native species are not considered "undesirable" from a wildfire risk management perspective provided they are properly maintained year-round. Refer to APPENDIX 'A' for a list of prohibited plant species.

4.0 FIRE DEPARTMENT RESPONSE TIMES

The Arroyo Vista project is within the response area of the Riverside County Fire Department. The closest fire engine will be from the Riverside County Fire Station No 8 (Woodcrest), located at 16533 Trisha Way, Riverside, CA 92504. This Station is located approximately 2.5 miles away with a response time of approximately 6 minutes (travel and getaway) according to Google Maps. The second closest engine is RCFD Fire Station #11 located at 19595 Orange Terrace Parkway, Riverside CA 92508, approximately 2.7 miles from the furthest planned residences and 7 minutes travel time using Google Maps. The response time for the first in Fire Station is within NFPA Standard 1710, Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments, for the area.

There is no assurance that either of the nearby RCFD engines will be in their stations when a wildfire threatens the Arroyo Vista development from an ignition in the adjacent wildlands. RCFD engines may respond from other stations located further away or from other incidents. Additional agencies such as other nearby fire departments would likely respond equipment under mutual aid agreements but may arrive after the RCFD engines were on-scene. On high/extreme fire danger days there often may be multiple fire starts and engine companies may be already deployed on other incidents. This is

why projects designed for wildfire, use *"defensible space"*, ignition resistant building features, and key fuel treatment strategies that enable residents to substantially increase their ability to survive a wildfire on their own without the loss of their structure until firefighting equipment arrives. The goal of this FPP, therefore, is to make the Arroyo Vista development and its occupants as safe as possible and able to survive on their own until firefighting equipment arrives and/or residents can be safely evacuated.

5.0 FIRE PROTECTION ZONE DESCRIPTIONS & REQUIRED TREATMENTS

Described below are the required treatments for the Fire Protection Zones. All distances in this report are measured horizontally. The required 100 feet of Fire Protection can be achieved on most of the perimeter lots facing wildland vegetation. Zones 0, 1A, & 1B together provide 50 feet or more of irrigated treated area depending on location. When less than 100 feet of total fuel treatment is provided, additional construction features, outlined in Section 6.1 are required. The combined effect of fuel treatment and where required additional construction features, should mitigate for the less than 100 feet of required Fire Protection, and alleviate any radiant heat or direct flame impingement issues from the maximum projected **47.3**-foot flame lengths from the north under the worst-case weather and fuel moisture scenarios (see the Fire Protection Plan Map).

The area of greatest concern from a wildland fire perspective is in the northwest corner of the Project where the most extreme fire behavior has been calculated (See Fire Scenario 1). ***FIRE*****WISE2000, LLC** prefers that fuel treatment from a residence be at least 1.5 times the flame length which allows for unforeseen fire behavior. The minimum fuel treatment recommended is therefore 71 feet (1.5 X 47.3 feet).

Each homeowner shall be responsible for maintaining Fuel Modification Zones within their lot and the HOA shall be responsible for maintaining fuel treatments outside the property owners lot boundaries. The HOA shall enforce the requirements of Zone 0 and 1A on private lots. In the event a lot is repossessed, the unit/agency holding title to the lot will be responsible for Fuel Modification Zone maintenance.

Basic fuel modification zones are shown in Figure 4 on the following page. This shows each of the fuel treatment zones that surround each home. Note that on smaller lots or when located adjacent to the property lines, these zones may interlink or be required on the adjacent property to provide adequate protection. When fuel modification is restricted, additional building features will likely be required to provide an equivalent level of protection.

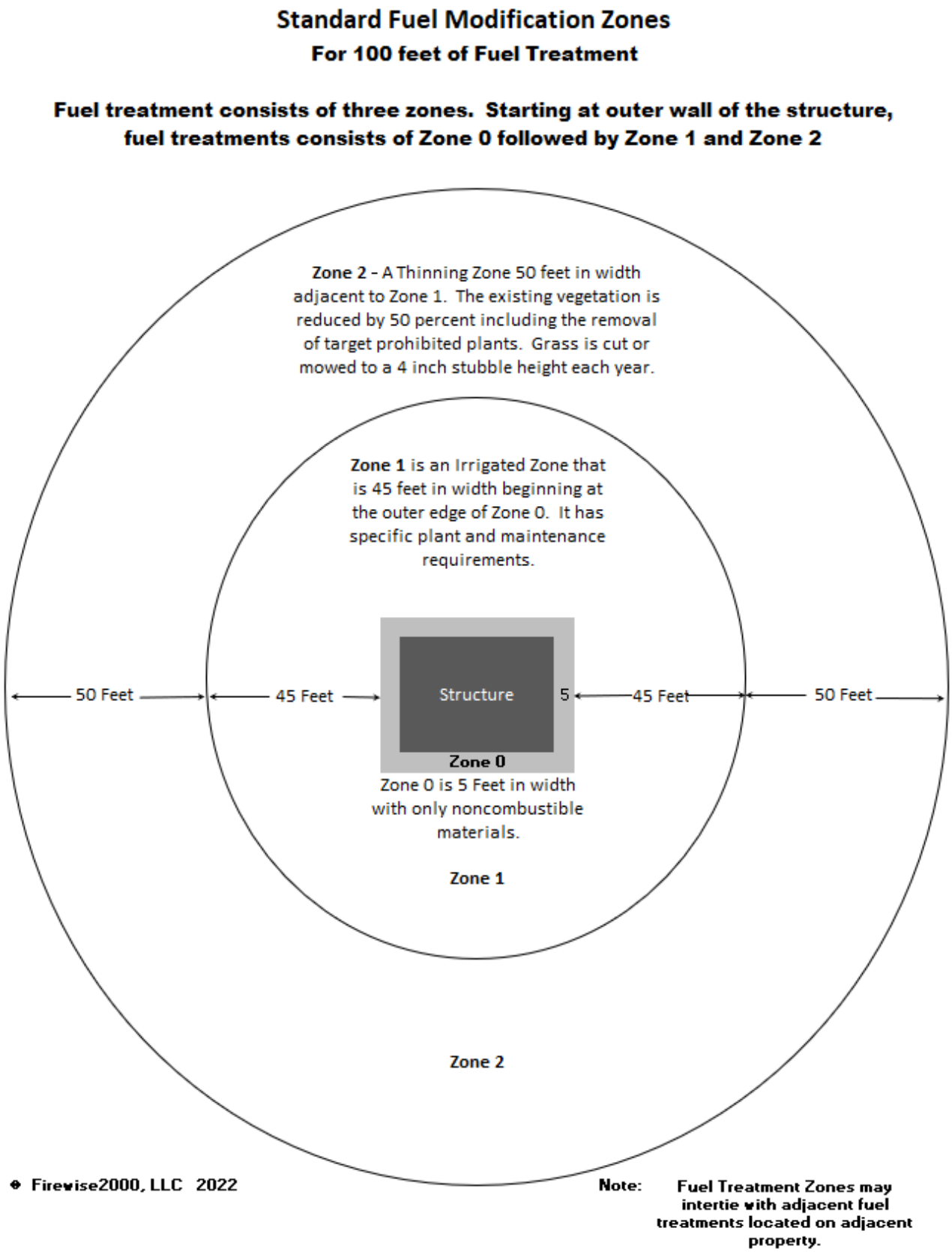


Figure 3 – *Standard Fuel Modification Zones for 100 feet of fuel* treatment.

5.1 Ember Resistant Zone 0 - Lot Owner Maintained (Location within 5 feet of each building to be determined by the building envelope). Not shown on the Fire Protection Plan Map.

Defined

In Zone 0, the intent is to create a landscape absent of all combustible materials. This zone includes the area under and around all decks, and requires the most stringent wildland fire fuel reduction and maintainenace. This area shall be kept clear of combustibles, plant based landscaping mulch, and all shrubs and trees. It may have a few plants, generally confined to pots or containers, that are low growing and nonwoody. No plants shall be grown beneath windows or adjacent to doorways. Each plant shall be properly irrigated and maintained and may include species such as sedges, lilys, and succulents. Plants that grow in water are also a good choice.

Place plastic garage and recycling containers outside this zone. Combustible fencing shall not exist within the zone nor be attached to any structure. Store firewood in Zone 2 described in Section 5.4 or inside a fully enclosed storage shed.

The soil surface may be bare ground or covered with hardscape features such as pavers, gravel, concrete, rock, or other non-combustible material. Water features are also a good choice for this zone.

5.2 Fuel Modification Zone 1A - Maintained by the Lot Owner of Single-Family Homes Located on Numbered Lots *(Shown as NO COLOR on the Fire Protection Plan Map)*

Defined

Fire Protection Zone 1A is an irrigated zone, beginning at the outer edge of Zone O and extending to the lot boundary or a minimum of 50 feet from a home. This zone shall be privately maintained by each homeowner. Commonly called the defensible space zone, it shall be free of all combustible construction and materials. It is measured from the exterior walls of the structure or from the most distal point of a combustible projection, an attached accessory structure, or an accessory structure located within 10 feet of a habitable structure. It provides the best protection against the high radiant heat produced by wildfire. It also provides a generally open area in which fire suppression forces can operate during wildfire events. This zone includes a level or level-graded area around the structure.

For lots where the home is located more than 50 feet from the rear property line, the portion of the lot located over 50 feet of the home shall be maintained to the criteria described in Section 5.4 Fuel Modification Zone 2A. In this case, the zone shall be maintained by the property owner. Zone 2A is a thinning zone that includes native vegetation. Irrigation is not required in Zone 2A.

As a way to reduce water use, artificial turf may be installed in place of water consuming grass In Zone 1A as long as the turf material is installed on a sand or noncombustible material and has a Class A fire rating of between 0 and 25 as measured by the ASTM E84, standard testing method for assessing the surface burning characteristics of building products. Artificial turf melts when exposed to extreme heat but does not burn and contribute to fire spread. The

intent of this zone is to significantly reduce the probability of fire coming in contact with a structure.

Required Landscaping

- Plants in this zone need to be fire resistant and shall not include any pyrophytes that are high in oils and resins such as pines, eucalyptus, cedar, cypress, or juniper species. Plants used in fuel treatment zones should exhibit the following qualities to be the most "fire resistant": thick, succulent, or leathery leaf species with high moisture content; tendency to produce limited litter; the presence of high salt levels or similar compounds which may contribute to fire resistance; ability to withstand drought and frost; and the ability to withstand severe pruning.
- Zone 1A will be cleared of all fire prone and undesirable plant species (see APPENDIX 'A').
- Landscape designs using hardscape features such as driveways, swimming pools, concrete, rock, pavers, trails, and similar non-combustible features to break up fuel continuity within Zone A1 are encouraged.
- Landscaping shall be permanently irrigated and consist of fire-resistant, maintained native or ornamental plantings, such as turf, approved groundcovers, etc.
- Plants shall be low-growing and acceptable to the Riverside County Fire Department. The mature height of most shrubs shall not exceed 18 inches. Small groups of 3-5 shrubs over 18 inches in height are allowed if the grouping is located 20 feet or more from a structure and not located within the dripline of any tree.
- Trees shall be single specimens or groupings of not more than three trees selected from the approved plant list. Trees are to be planted such that the mature canopies will be at least 10 feet from the exterior walls of the structure or from the most distal point of a combustible projection, an attached accessory structure, or an accessory structure located within 10 feet of a habitable building.
- Landscape plans that incorporate trees shall provide for a minimum of six feet of vertical separation from low growing, irrigated vegetation beneath the canopy of each tree.
- No combustible mulch shall be used in Zone 1A.
- While not visually advisable, bare ground also meets the non-combustible requirement and is therefore acceptable.

Required Maintenance

- Lots shall be maintained year-round by each individual property owner within their property boundary (lot lines) as required by this FPP and the RCFD.
- Remove and replace any dead or dying plant material monthly.
- Trees must be maintained to have a minimum of six feet of vertical separation from low growing, irrigated vegetation beneath the canopy of each tree.
- Irrigation systems shall be tested for proper coverage and flow rates bimonthly. Drip irrigation may be utilized to reduce water use, prevent disease by minimizing plant water contact, allowing the space between plants to remain dry thus reducing weed growth.

- Irrigation systems shall not be turned off other than for required maintenance and or during periods of extended rainfall. Restart the system when the soil dries out.
- All trees and shrubs must be maintained to the current ANSI A300 standards [*Tree, Shrub, and Other Woody Plant Maintenance —Standard Practices (Pruning)] see the following link:* *https://www.tcia.org/TCIA/Build_Your_Business/A300_Standards/A300_Standards.aspx*

5.3 Fuel Modification Zone 1B - HOA Maintained *(Shown as Green on the Fire Protection Plan Map)*

Defined

Zone 1B is an irrigated zone beginning at the outer edge of Zone 1A and is up to 50 feet in width that is permanently irrigated and maintained on graded land. It includes all manufactured slopes and common areas where the HOA is to maintain the landscaping to the criteria described in Section 5.2. As shown on the Fire Protection Plan Map, Section 11.0, Zone 1B will extend into open space for a distance of 30 feet from the side or rear lot line. This action is needed as the location of the home within the lot is unknown at the time of the writing of this FPP. See Photo 6 for an example of a landscaped manufactured slope.

Required Landscaping

Same as Zone 1A

Required Maintenance

Same as Zone 1A

***Photo 7** – An example of an irrigated manufactured slope (Zone 1B) that is planted with fire resistant vegetation.*

5.4 Fuel Modification Zone 2 - HOA Maintained *(Shown as Yellow on the Fire Protection Plan Map)*

Defined

Fire Protection Zone 2, often called a thinning zone, is a non-irrigated area typically covered in wildland fuels but also includes debris basins and is designed to reduce any existing or future wildfire threat. Zone 2A shall be located between 50 and 100 feet of any structure located within the development. This zone is designed to reduce the fuel load in native vegetation or vegetation growing in debris basins to reduce the radiant and convective heat of a wildland fire by reducing flame length, ember production, and slowing the rate of fire spread. Periodic maintenance of debris basins to remove sediments can also be utilized to maintain any encroaching vegetation.

Required Landscaping

Removal of all dead, woody, and flammable debris, and exotic flammable vegetation found in APPENDIX 'A'.

Required Maintenance

- As grasses and weeds begin to cure (dry out) each year, they shall be cut to 4 inches or less in height.
- Annually remove all dead and dying vegetation, highly flammable exotic species, and flammable trash (see APPENDIX 'A').
- Special consideration will be given to rare and endangered species, geologic hazards and tree ordinances, or other conflicting restrictions.

- Individual shrubs shall be thinned to reduce their foliage mass or fuel loading.
- Efforts shall be made to retain root systems that provide for erosion control.
- Debris and trimmings produced by thinning and pruning shall be removed from the site. Recycling debris and trimmings helps reduce weed growth and protect the soil from erosion.

5.5 Roadside Fuel Treatment (HOA Maintained) Shown as *Blue* on the Fire Protection Plan Map.

Defined

The area located 20 feet on either side of any access road that is landscaped and maintained to Irrigated Zone 1A criteria described above in Section 5.2 or it shall free of all vegetation. All of this zone is located in common areas, not within any residential lot. Should water availability become an issue at any time in the future, this zone is critical to maintain and continue to irrigate should it be planted.

5.6 No Build Zone *(Shown as Pink on the Fire Protection Plan Map)*

Defined

The No Build Zone is located adjacent to wildland fuels and within 20 feet of the rear or side yard lot line or begins at the limits of grading as shown on the Fire Protection Plan Map, Section 11.0. The No Build Zone is an irrigated zone where no construction can occur, including the home. The lot owner shall perform the required Zone 1A Fuel Modification as well as not allow any combustible construction within this zone. This zone when combined with Zone O, 1A, 1B and Zone 2A or 2B thinning located within the common area that is maintained by the HOA will result in 100 feet of fuel treatment for each home. When 100 feet of fuel treatment cannot be provided, see Section 6.0 regarding additional construction features.

This area is suitable for recreational uses, gardens, pools, animal kennels and similar features. The zone is needed to create a 20-foot wide space between the adjacent open space/channel and the structures.

5.7 No Build Zone 40 Feet *(Shown as Red on the Fire Protection Plan Map)*

Defined

The No Build Zone 40 Feet is located adjacent to wildland fuels and is located within 40 feet of the rear yard lot line as shown on the Fire Protection Plan Map, Section 11.0. The requirements within this zone are the same as those described for Section 5.6

5.8 Setback Zone *(Shown as Grey on the Fire Protection Plan Map)*

On larger lots numbered 1-11, 87-91, and 148-150, the builder shall construct the homes on these lots a minimum of 100 feet from the rear lot boundary and or Project boundary. This space will provide an area for 100 feet of fuel treatment within each lot. These treatments are described in Sections 5.1 and 5.2.

6.0 CONSTRUCTION STANDARDS

All structures within the Arroyo Vista shall meet all wildland/interface standards to the satisfaction of the RCFD and be designed and constructed with ignition resistant construction requirements. All homes located along the perimeter and exposed to wildland fuels shall be located a minimum of 20 feet from the rear and in several cases also the side yard property line where no combustible construction will be allowed. All construction and ignition resistant requirements shall meet the 2019 CA Fire and Building Code, and Chapter 7A-California Building Code or the current codes in force at the time of permit application. For a description of the current construction requirements as of the date of this report, see APPENDIX 'D'. The fire protection features described herein shall be maintained to equivalent or greater ignition resistance.

All non-habitable accessory structures such as decks, balconies, patios, covers, gazebos, and fences shall be built from non-combustible materials. The owners are not restricted from having concrete/brick patios, walkways, or a swimming pool within the Fuel Treatment Zones in compliance with other codes. Homeowners shall check with the Riverside County Building Department to determine if construction permits are required. Refer to APPENDIX 'C' for photos and examples of non-combustible decks, patio covers, and railings for these non-habitable accessory structures.

Any damaged or replacement window, siding, vent, roof covering, or non-combustible wall shall meet or exceed the original intent of the fire protection discussed in this plan.

6.1 Pre-Construction Requirements: Construction or building permits shall not be issued for the development until the fire code official inspects and approves required fire apparatus access, setbacks, and water supply including fire hydrants for the construction site. Prior to the delivery of combustible building construction materials to the construction site the following conditions shall be completed to the satisfaction of the RCFD:

- Zones 0, 1A and 1B shall be cleared of all vegetation prior to construction and subsequently planted to the requirements stated in Sections 5.1, 5.2 and 5.3 after construction is completed.
- Approved Zone 2A, and 2B fuel treatments shall be provided prior to combustible material arriving on the site and shall be maintained throughout the duration of construction.

6.2 Additional Construction Requirements – applies to all Lots

In the event of a wildfire in the adjacent wildlands, all the structures in the Project will be showered with embers. Embers are forecast to travel over one mile in the vegetation types located along the northern perimeter. To mitigate this hazard, the following additional construction features will be required:

1. Vents in the structures shall be "Brandguard", "O'Hagin Fire & Ice® Line – Flame and Ember Resistant" or equivalent ember resistant type vents.

2. Operable windows shall be provided with metal mesh bug screens over the operable opening to replace traditional vinyl bug screens to prevent embers from entering the structure during high wind conditions when windows may be inadvertently left open.

3. All houses shall have automatic door closers on all vehicle garage doors (standard on most new automatic garage door openers as a security feature), that can be set to close after a certain period of time with no activity.

6.3 Additional Construction Requirements – **<u>Required for Lots 19, 91-127, 130, 131, 138-147 and 151, 152, 154-164 located adjacent to wildland fuels:</u>**

The following additional construction feature shall be applied at the rear and or side lot boundary to the homes built with a reduced or lacking Zone 1A or Zone 2A Fire Protection zone as shown on the Fire Protection Plan Map (See Section.11.0)

- A six (6) foot solid non-combustible radiant and convective heat deflection wall shall be installed at the locations shown on the Fire Protection Map to aid in radiant and convective heat deflection. The upper half of said wall may be a view wall where tempered fire-rated glass is utilized as long as the wall remains solid and noncombustible (See Appendix 'F' for an example). Post and glass frame assemblies shall be composed of metal such as steel, and 6063T5 aluminum alloys or equivalent, respectively, which will not melt and allow the glass to fall out.

A solid wall located at the top of slopes or on flat land well away from a home will have tremendous impact on radiant and convective heat, ember collection, and reduction in wind speeds adjacent to the wall thus reducing fire behavior. These impacts are demonstrated in Figure 4.

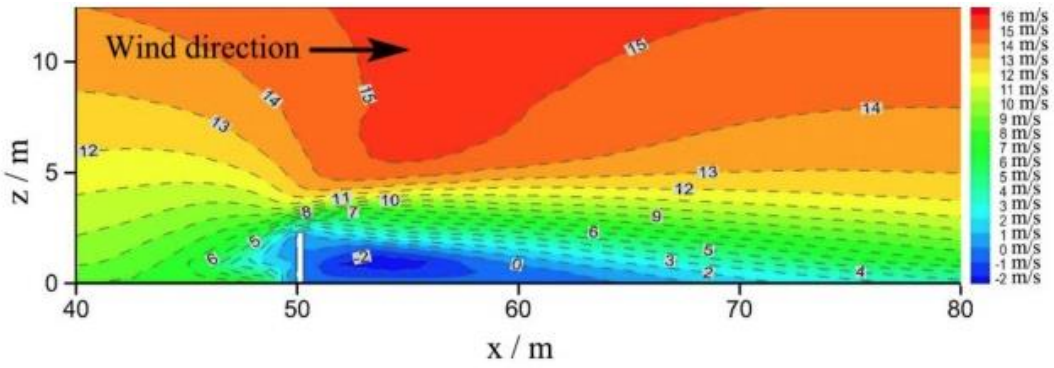


Figure 4 – Impacts on Wind Speed and Ember Deposition Resulting From a 6-foot Wall. *The above figure is based on a wind speed of 14 m/s (31 MPH). Note that the wind, both on the windward and leeward sides of the wall, is reduced. These areas will thus trap embers and blowing debris (area shown in blue and light green). The wind speed on the windward side of the wall is significantly reduced for a distance equal to several times the height of the wall. This reduces fire behavior including flame length, a critical factor in fire protection planning. Ref: Dong et al., 2007.*

7.0 MANDATED INCLUSION IN THE CC&R'S

The HOA CC & Rs shall be recorded on each parcel and include the following statements:

1) The HOA shall be responsible for all required fuel treatment and fire protection measures in the common areas. Homeowners shall be responsible for all required fuel treatment and fire protection measures on their respective lots.

2) The HOA shall have the authority for enforcing required fuel treatment measures around all structures and placing restrictions on combustible structures within fuel treatment zones.

3) Each lot owner shall annually financially contribute their fair share of HOA required fuel treatment costs.

4) The HOA has the authority to enforce a ban on trash dumping and disposal of green waste in open space areas or fuel treatment zones.

5) All landscaping plans, including additional structures, must be approved by the HOA.

6) The HOA is responsible to the Riverside County Fire Department for the completion of all required fuel treatment in the common areas. Required on-going maintenance will be accomplished on an as needed basis. Should maintenance not be performed in a manner consistent with the approved Fire Protection Plan, the Riverside County Fire Department shall have the right to abate any treatment zone they deem a threat to the Arroyo Vista Development or adjoining properties. In doing so, all cost incurred will be billed to the owner(s). At the discretion of the Riverside County Fire Department Fire Marshal, yearly inspection of treatment areas may be required.

7) The HOA is responsible for providing new property owners with recorded CC&R's or disclosure statements identifying the responsibilities for maintaining the Fire Protection zone within their property as defined in the approved Fire Protection Plan.

8) The Riverside County Fire Department or its designated representative shall decide any disputes related to individual lot landscaping or fuel treatment, with respect to interpretation of the fuel treatment Plan. The decision shall be final and binding on the lot owner.

9) Assembly Bill 38 requires a seller of property located in a High or Very High Fire Hazard Severity Zone to provide the buyer with documentation stating the property is in compliance with the defensible space requirements of the Riverside County Fire Department.

   If compliance cannot be obtained by the close of escrow, the seller and buyer can enter into a written agreement showing that the buyer agrees to obtain documentation of compliance within one year of closing escrow.

8.0 INFRASTRUCTURE

Infrastructure includes the basic systems needed to develop a property and support its use by its residents and or businesses. For Fire Protection planning purposes, these typically consist of the water supply for fire hydrants and fire sprinkler systems and accessways to and from the property.

8.1 Water Supply

The Western Municipal Water District (WMWD) will provide the Project with its water supply. An approved permanent water supply capable of supplying the required fire flow for fire protection shall be provided by the developer and accepted by WMWD prior to any combustible material placed on the site and the commencement of construction. The water supply system shall be a looped system served from a minimum of two points.

Water supplies for fire protection and hydrants shall be in accordance with APPENDIX 'B' and APPENDIX 'C' of the California Fire Code. Based on the total square footage of the largest proposed residence, the minimum fire flow shall be 1,500 GPM at 20 psi residual pressure for a 2-hour duration, since each building will be equipped with an automatic fire sprinkler system in accordance with NFPA Standard 13D.

Single family residences equipped with fire sprinklers shall have fire hydrants spaced a maximum of 500 feet apart, dead end streets or roads shall not exceed 400 feet from the end of the street or road.

8.2 Roads/Driveways and Gates

The primary ingress and egress for the Arroyo Vista will be from Chicago Avenue and Street N. An emergency access will be created in the northwest corner of the project between Chicago Avenue to Street H (See Section 8.3 for additional information). Should the access be solely for the purpose of Fire Protection access, at the end of the access, a pipe gate or similar RCFD approved gate that is noncombustible shall be installed with a Knox pad lock for Fire Department access.\

All access roads will be a minimum of 24 feet in width. The right of way for Chicago Ave. is planned to be 74 feet with 44 feet being paved. The Iris Ave access from Street N, a 40-foot-wide paved roadway located within a 60 foot right of way. The emergency vehicle access is to be located within a 40 foot wide easement extending from the existing Chicago Ave to the intersection of H and E streets. Within the travel way of each roadway will be the paved roadway, sidewalks, and irrigated Zone 1A landscaping. All driveways and access roads within the development shall be termed "Fire Access Roads". All fire access roads shall meet the requirements of the RCFD and shall be all weather surface capable of supporting loads of 75,000 lbs. gross vehicle weight.

Street J terminates at a cul-de-sac with a driveway that is in excess of 150 feet in length that leads to lots 139-142. The RCFD requires an approved turnaround if a driveway exceeds 150 feet in length. A hammerhead turnaround or an equivalent will be required at the end of this driveway.

The minimum access driveway width will be 24 feet. Along this roadway, no parking signage shall be installed to the satisfaction of the RCFD.

The access to all portions of each structure must be within 150 feet of the available fire department access. This is often referred to as a hose pull distance and represents the amount of hose that firefighters must pull from an engine to reach around each structure. The hose pull must be calculated based on the firefighter access paths, and cannot go through or over walls, hedges, cars, buildings, etc.

Any gates to be installed shall meet RCFD Standards and shall be approved by the RCFD prior to fabrication and installation. Gate entrances shall be at least two feet wider than the width of the traffic lanes serving that gate shall be a minimum of 14 feet in width. Any gate providing access from a road to the development shall be setback at least 30 feet from the roadway and shall open to allow a vehicle to stop without obstructing traffic on the road.

Should gates be installed at the entrances to the project, they shall be automatic and shall be equipped with a rapid entry system. Gates activated by the rapid entry system shall remain open until closed by the rapid entry system. A Knox override key switch or similar device acceptable to the RCFD must be installed outside the gate in an approved, readily visible, and unobstructed location at or near the gate to provide emergency access. Gates accessing more than four residences or residential lots, or gates accessing hazardous, institutional, educational or assembly occupancy group structures, shall also be equipped with approved emergency traffic control-activating strobe light sensor(s), or other devices approved by the Fire Chief, which will activate the gate on the approach of emergency apparatus with a battery back-up or manual mechanical disconnect in case of power failure.

8.3 Fire Protection Access Ways/Fuel Modification Maintenance

Fire Protection access ways are used not only in the community in the event of a need to evacuation but also will be utilized for fuel treatment zone maintenance and wildland fire suppression operations. Access for the maintenance of vegetation within Water Quality Basins can be performed from adjacent streets or via access easements. Maintenance of vegetation along the Channel/Open Space lots can be performed from Chicago Ave and Streets A and E (See Fire Protection Plan Map – Section 11.0)

For the purposes of fuel modification zone treatment, a trail of 16 feet in width will be located along the entire length of Lot F and north of the lots number 139-148 including Lot A. Maintenance residues can be easily removed using this access way.

9.0 HOMEOWNER/BUYER REQUIREMENTS AND EDUCATION

A copy of this Fire Protection Plan shall be available in the Arroyo Vista Sales Office for review by any potential homebuyer. Additionally, a copy of this FPP shall be signed by each homebuyer as part of their escrow papers acknowledging the requirements, restrictions and responsibilities outlined in

this FPP. This FPP (including Appendices A and D and the Map Exhibit) and all the requirements contained therein including but not limited to all fuel treatment maintenance and fire protection systems are an obligation that transfers to subsequent purchasers of said properties. Subsequent owners and sellers shall include copies of this FPP in all escrow papers. Each year prior to the onset of fire season, the HOA shall provide the lot owners with information regarding wildfire mitigation efforts necessary for community fire safety that are contained within this FPP.

By reviewing this FPP each homeowner shall be aware of the herein described fire protection measures, the requirements of this FPP (Figure 3), the types of non-combustible construction, additional required construction features; and the plant materials that are prohibited within their lot's boundaries. Of particular importance are Section 6.0 and APPENDIX 'D' which lists construction requirements, Section 5.0 and APPENDIX 'A' of this plan which provides guidance in the types of plants that are not allowed to be established in landscaped areas within Fire Protection Zones. Plant selection is critical as embers often travel over a mile during Santa Ana wind events.

Each homeowner further acknowledges that:

1) Dumping or disposal of trash or yard trimmings in fuel treatment zones is prohibited.

2) Each homeowner shall be responsible for keeping their home's roof area free of combustible debris including leaves, limbs, and similar materials.

3) Each homeowner shall remove all combustible outdoor furniture and combustible materials located within 20-feet of the structure into a garage or home in the advance of wildfire. Alternatively, these combustible materials may be placed within a pool.

4) All landscaping plans, proposed additional structures or conversion of existing structures to other uses, must be reviewed and approved under the guidance and approval of the HOA and RCFD.

When performing maintenance such as mowing or using a chainsaw, be especially careful as a spark can start a wildfire. Use of battery-operated equipment is less likely to cause a problem. Modern battery technology includes a heat sensor inside the electric motor and when it gets hot it flips a switch killing the motor until it has had a chance to cool down. This feature lessens the likelihood of a fire.

Homeowners should be aware that smoke is harmful to your health, especially if a person has asthma or chronic obstructive pulmonary disease, including bronchitis and emphysema. People with pre-existing health conditions related to the heart or circulatory systems may want to relocate to a safe area before official notification to relocate to avoid smoke impacts. It is recommended that people leave the area affected by wildfire smoke, if indoor air cannot be kept clean.

Ready, Set, Go is the evacuation strategy proposed for this project as described on the Cal Fire website and widely utilized by fire agencies and departments throughout the County. Should a wildfire exist that threatens the property or safety of people at the site, the following actions shall be implemented:

1. ***Ready – Preparing for the Fire Threat:*** *Take personal responsibility and prepare long before the threat of a wildfire so the home is ready in case of a fire. Maintain a defensible space by clearing brush away from all structures. Use fire-resistant landscaping and harden structures with fire-safe construction measures. Assemble emergency supplies and belongings in a safe spot. Make sure all individuals within the area are 'on the same page' in commitment to advance preparation. Plan escape routes.*

2. ***Set – Situational Awareness When a Fire Starts:*** *Pack vehicle(s) with emergency items. Stay aware of the latest news from local media and the local fire department for updated information on the fire and perform the following:*

    - ✓ *Close all windows and doors that lead outside to prevent sparks from entering the house.*
    - ✓ *Close all doors within the house in case the house does catch on fire; this will slow down the spread of the fire from room to room.*
    - ✓ *Move all combustible materials in the home away from windows to prevent the possibility of heat from a fire radiating through windows and glass doors and catching flammable materials inside the home on fire. This includes drapes, curtains, and furniture.*
    - ✓ *Close windows and all Venetian blinds or noncombustible window coverings.*
    - ✓ *Turn on the lights in each room, porch, and yard. This aids in visibility when the smoke gets thick and darkens the sky.*
    - ✓ *Fill all sinks, bathtubs, and buckets with water in case the power goes out.*
    - ✓ *Shut off any gas valves within the house or outside.*
    - ✓ *Open the damper on fireplaces to stabilize inside/outside pressure, but close fireplace screens to keep sparks from igniting the house.*

3. ***Go – Leave early!*** *Following an Action Plan makes one prepared and firefighters are now able to best maneuver the wildfire and ensuring everyone's safety. Follow instructions given by the Fire Department official on site.*

For assistance regarding evacuation, how to prepare and what to take, see Appendix G – Evacuation Checklist.

Evacuation from the Project can be accomplished via three routes. These include Chicago Ave from the southeast, Street O from the south and from a emergency vehicle access located in the northeast at the southern end of H street that extends to Chicago Avenue to the east. Resident should always follow evacuation orders issue by local authorities.

10.0 Conclusions

This FPP evaluated the adverse environmental effects that a residential development may have from wildland fire and properly mitigate those impacts to ensure that this development does not unnecessarily expose people or structures to a significant risk of loss, injury or death involving wildland fires.

The requirements of this FPP provide the fuel treatment standards required to mitigate the exposure of people or structures to a significant risk of loss, injury, or death. Fuel treatment zones provide 100 feet of fuel treatment that includes a defensible space zone for fire suppression forces and will protect structures from radiant and convective heat. These zones shall be a combination of landscaped zones that are permanently irrigated and consists of fire resistant and maintained plantings and thinning zones. The maintenance requirements include the removal of all prohibited highly combustible native vegetation but permit plantings with very specific criteria.

The Project will have adequate emergency access in terms of road access and construction standards for roadways and streets. The RCFD, CAL FIRE, and nearby fire departments will provide fire protection through mutual aid. Response times and the proximity of the development to the Wildland Urban Interface (WUI), and a subdivision in a High Fire Hazard Zone require fire sprinklers to be installed in all residences.

11.0 Fire Protection Plan Map

Attached to this FPP is a FIRE PROTECTION PLAN MAP or in a file that contains the Map. This map depicts the locations of all proposed fuel treatment locations as well as fire access roads, lot lines, and development boundaries and projected fire behavior at various locations.

APPENDIX 'A'

Prohibited (& Fire Prone) Plant Species List
For Fire Protection Zones in Moderate, High & Very High Hazard Areas

	Botanical Name	Common Name	Plant Form
1.	Acacia species •	Acacia	Shrub/Tree
2.	Adenostema fasciculatum	Chamise	Shrub
3.	Adenostema sparsifolium	Red Shank	Shrub/Tree
4.	Artemisia californica	California Sagebrush	Shrub
5.	Anthemis cotula	Mayweed	Weed
6.	Arundo donax	Giant reed	Grass/weed
7.	Brassica nigra	Black Mustard	Weed
8.	Brassica ropa	Yellow Mustard	Weed
9.	Cedrus species	Cedar	Tree
10.	Cirsim vugare	Wild Artichoke	Weed
11.	Conyza canadensis	Horseweed	Weed
12.	Cortaderia selloana	Pampas Grass	Tall Grass
13.	Cupressus species	Cypress	Tree
14.	Cytisus species	Broom	Shrub
15.	Eriogonum fasciculatum	Common Buckwheat	Shrub
16.	Eucalyptus species	Eucalyptus	Shrub/Tree
17.	Heterotheca grandiflora	Telegraph plant	Weed/shrub
18.	Juniperus species	Junipers	Succulent
19.	Lactuca serriola	Prickly lettuce	Weed
20.	Nicotiana bigelevil	Indian tobacco	Shrub
21.	Nicotiana glauca	Tree tobacco	Shrub
22.	Pennisetum species	Fountain Grass	Ground cover
23.	Pinus species	Pines	Tree
24.	Rosmarinus species	Rosemary	Shrub
25.	Retama monosperma	Broom	Shrub
26.	Salvia species • •	Sage	Shrub
27.	Silybum marianum	Milk thistle	Weed
28.	Spartium junceum	Spanish Broom	Shrub
29.	Urtica urens	Burning nettle	Weed
30.	Washingtonia species	Palms	Tree

• Except:
Acacia redolens desert carpet (Desert Carpet ground cover)

•• Except:
Salvia columbariae (chia)
Salvia sonomensis (Creeping Sage)

APPENDIX 'B'

Literature References

1. *Standard Fire Behavior Fuel Models: A Comprehensive Set for Use with Rothermel's Surface Fire Spread Model,* General Technical Report RMRS-GTR-153. June 2005. Joe H. Scott, Robert E. Burgan, United States Department of Agriculture - Forest Service, Rocky Mountain Research Station, Missoula, Montana.

2. *BehavePlus: Fire Modeling System, version 5.0: Variables.* General Technical Report RMRS-GTR213WWW Revised. September 2009. Patricia L. Andrews, United States Department of Agriculture - Forest Service, Rocky Mountain Research Station, Missoula, Montana.

3. *Behave Plus Fire Modeling System, Version 5.0.4,* General Technical Report RMRS-GRT-106WWW Revised. July 2008. Patricia L. Andrews, Collin D. Bevins, Robert Seli. United States Department of Agriculture - Forest Service, Rocky Mountain Research Station, Missoula, Montana.

4. California Code of Regulations Title 14 section 1280 and Title 24 Part 9

5. California Public Resources Code Sections 4201 through 4204

6. California Government Code, sections 51175 through 51189

7. 2019 California Fire Code portion of the CBSC, including appendices to Chapters 1 & 4 and Appendices B, F & H and Local Amendments

8. California Building Code- Chapter 7A - *Materials and Construction Methods for Exterior Fire Exposure.*

9. 2019 California Residential Code (CRC) Section R337

10. *The California State and Local Responsibility Area Fire Hazard Severity Zone Map – Fire and Resource Assessment Program of CAL FIRE.* County of Riverside Ordinance No. 787 (as amended through 787.9) *The California State and Local Responsibility Area Fire Hazard Severity Zone Map – Fire and Resource Assessment Program of CAL FIRE*.

11. Dong et al., 2007, Z. Dong, W. Luo, G. Qian, H. Wang**. A wind tunnel simulation of the mean velocity fields behind upright porous fences.** Agric. For. Meteorology., 146 (1-2) (2007), pp. 82-93

12. National Fire Protection Association - NFPA 13 Standard for the Installation of Sprinkler Systems in One and Two-Family Dwellings and Manufactured Homes, 13-R &13-D, 2022 Edition

13. National Fire Protection Association – NFPA 1140 Standard for Wildland Fire Protection. 2022 Edition.

14. Riverside County Fire Department Standards #06-05, revised 6/1/11, #06-06 revised 6-30-11, #06-11 revised 2/2/17, and #16-001 revised 10/23/17.

15. Western Region Climate Center. *Historic Climate Data from Remote Automated Weather Stations.* RAWS USA Climate Archive. Reno, NV. Data for all Remote Automated Weather Stations is available at: http://www.raws.dri.edu/index.html

APPENDIX 'C'

Non-Combustible & Fire-Resistant Building Materials For Balconies, Carports, Decks, Patio Covers and Floors

Note: The Office of the State Fire Marshal (SFM) Fire Engineering Division administers licensing programs and performs engineering functions affecting consumer services and product evaluation, approval, and listing. The following link is to the State Fire Marshal's office for more information on the Building Material List for noncombustible and fire resistant building materials: https://osfm.fire.ca.gov/divisions/fire-engineeringand-investigations/building-materials-listing/bml-search-building-materials-listing.

Examples of non-combustible & fire-resistant building materials for balconies, carports, decks, patio covers, and floors are as follows (these are only examples and materials listed here must meet local fire and building codes:

I. NON-COMBUSTIBLE HEAVY GAGE ALUMINUM MATERIALS - *Metals USA Building Products Group - Ultra-Lattice*

Ultra-Lattice Stand Alone Patio Cover

Ultra-Lattice Attached Patio Cover

Ultra-Lattice Solid Patio Cover

Ultra-Lattice Vs. Wood

II. FRX Exterior Fire-Retardant Treated Wood

Exterior Fire Retardant Treated (FRT) Wood

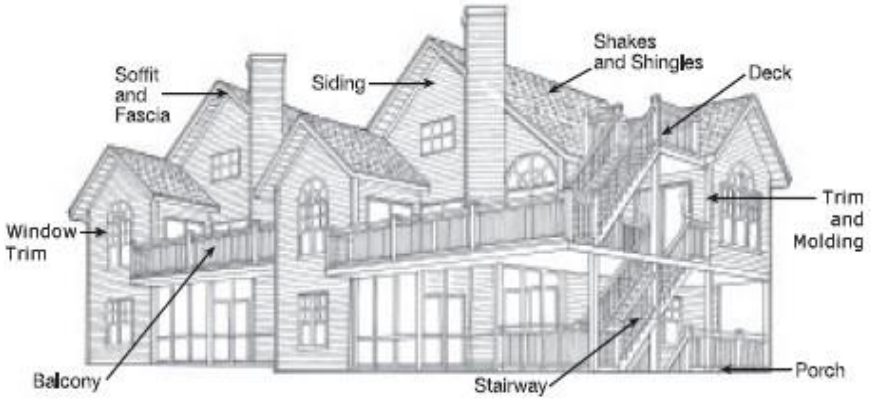
FRX® fire retardant treated wood may be used in exterior applications permitted by the codes where: public safety is critical, other materials would transfer heat or allow fires to spread, sprinkler systems cannot easily be installed, corrosive atmospheres necessitate excessive maintenance of other materials, or fire protection is inadequate or not readily available. Local Building, Residential and Urban-Wildland Interface Codes and regulations, permit the use of fire-retardant treated wood in specific instances. See below for typical exterior uses and typical residential uses.

Typical Exterior Uses

- Wall coverings
- Balconies
- Decks
- Stairways
- Fences
- Sheds
- Gazebos
- Roof coverings
- Open-air roof systems
- Canopies and awnings
- Storefronts and facades
- Eaves, soffits, and fascia
- Agricultural buildings and horse stalls
- Scaffolding and scaffold planks
- Construction staging
- Various other residential and commercial uses

Typical Residential Uses

Property owners and Architects: See this 2-minute video and the illustration below.

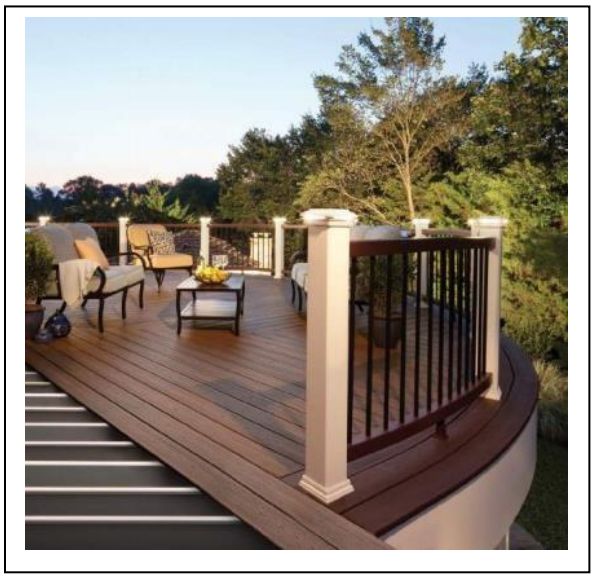


Rising concerns over fire damage and the adoption of urban-wildland interface codes have increased the use of FRT wood in residential structures.

For information on fire retardant treated wood for exterior uses, visit www.frxwood.com.

III. TREX COMPANY, INC. – "Trex Transcend®, Trex Select® and Trex Enhance® wood and polyethylene composite deck board, nominal ranging in size from 1" x 5-1/2" to 13/8" x 5-1/2" installed per manufacturer maximum edge-to-edge gap of 3/16". All Trex decking products meet or exceed the SFM 12-7A-4A testing protocol.

Trex combines both beauty and fire defense. A few examples of installations are shown below:



IV. SOLID "WOOD" DECKING

Company Name: Various Manufacturers
Product Description: Solid "Wood" decking, when installed over minimum 2" x 6" solid "Douglas Fire" or better joists, space 24" or less on center, and decking and joints comply with American Softwood Lumber Standard PS2o as follows:

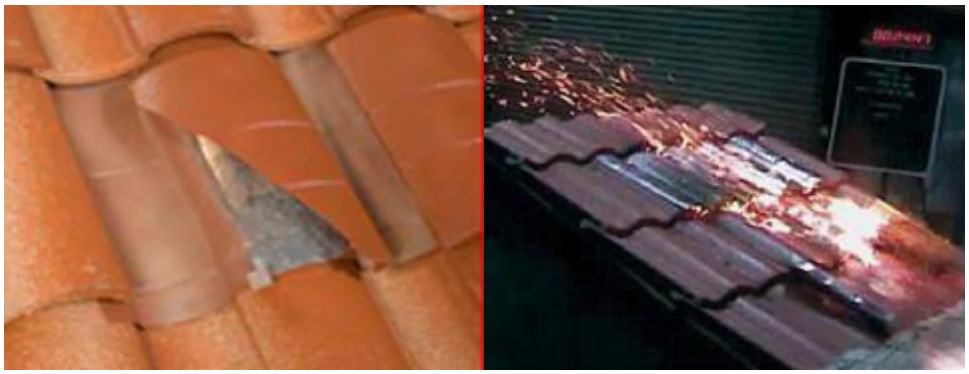
Minimum nominal 5/4"thick and nominal 6" wide decking boards with a maximum 3/8" radius edges made of solid wood species "Redwood", "Western Red Cedar", "Incense Cedar", "Port Orford Cedar", or "Alaska Yellow Cedar" having a Class B Flame Spread rating when tested in accordance with ASTM E84. Lumber grades; construction common, commercial, or better grade for Redwood; 3 common, commercial, or better grades for Cedars.

V. Vents

Examples of Approved Vents

Brandguard

O'Hagin Fire & Ice® Line – Flame and Ember Resistant
An available option for all O'Hagin attic ventilation products, this attic vent not only features all the same design, construction elements and color choices as the O'Hagin Standard Line, but also features an interior stainless-steel matrix that resists the intrusion of flames and embers. This patent-pending attic vent is accepted for use by many local fire officials for installation in Wildland Urban Interface (WUI) zones.



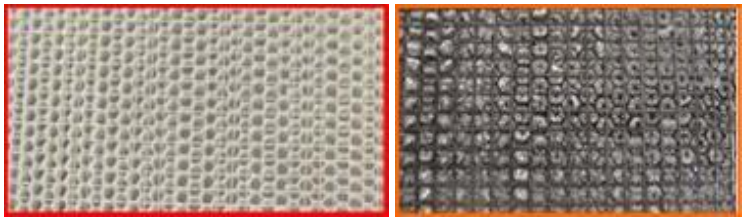
Vulcan Vents

The founders of Gunter Manufacturing have been working closely over the last two years, with the scientists and inventors of Vulcan Technologies to bring to market this incredible product.

Combining our quality vent products with the fire-stopping honeycomb matrix core designed by Vulcan has produced unique and remarkable results.

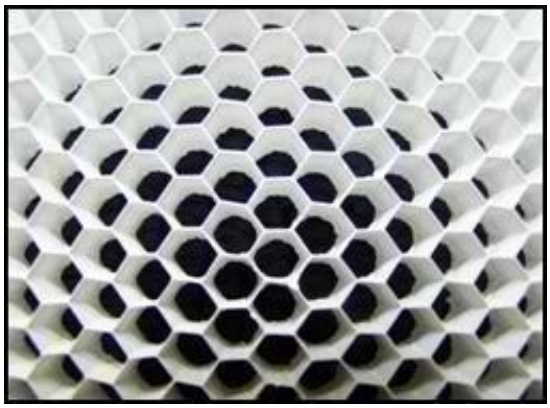
At Gunter manufacturing has over 50 years of combined sheet metal manufacturing experience. Special orders are not a problem. Their vent frames are industry standard frames so there is little or no learning curve for installers and contractors. Their stated goal is to provide people with the vents they need to secure their homes with additional safety against wildfires and give them piece of mind from knowing that their home or structure is protected by a product that works!

The core of their fire and ember safe vents are manufactured out of hi-grade aluminum honeycomb and coated with an intumescent coating made by FireFree Coatings. The intumescent coating is designed to quickly swell up and close off when exposed to high heat. The expanded material acts as an insulator to heat, fire, and embers

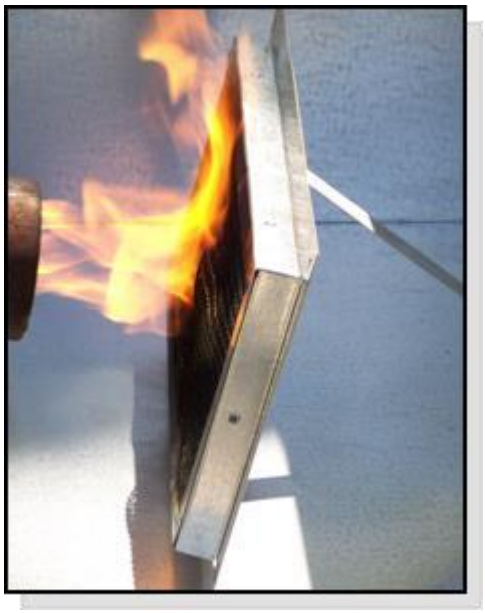


Before **After**

After the cells close off, they are extremely well insulated, and fire or embers cannot penetrate.
Even before the cells close off, the vent is designed to protect against flying embers. In many cases embers will attack a structure before fire ever comes near, so this feature is very important.



Close-up of the coated honeycomb matrix.



Fire easily passes through a standard vent, on the left, but stops cold when it comes up against a Vulcan Vent shown on right.

APPENDIX 'D'

Ignition Resistant Construction Requirements

The following is a summary of the current requirements for ignition resistant construction for high fire hazard areas under Chapter 7A of the California Building Code (CBC) 2019 edition and the current California Residential Code. However, the requirements listed below are not all inclusive and all exterior building construction including roofs, eaves, exterior walls, doors, windows, decks, and other attachments must meet the current CBC Chapter 7A ignition resistance requirements, the California Fire Code, and any additional County and/or City codes in effect at the time of building permit application. See the current applicable codes for a detailed description of these requirements and any exceptions.

1. All structures will be built with a Class A Roof Assembly and shall comply with the requirements of Chapter 7A and Chapter 15 of the California Fire Code. Roofs shall have a roofing assembly installed in accordance with its listing and the manufacturer's installation instructions.

2. Roof valley flashings shall be not less than 0.019-inch (0.48 mm) No. 26 gage galvanized sheet corrosion-resistant metal installed over not less than one layer of minimum 72-pound (32.4 kg) mineral-surfaced nonperforated cap sheet complying with ASTM D3909, at least 36-inch-wide (914 mm) running the full length of the valley.

3. Attic or foundation ventilation louvers or ventilation openings in vertical walls shall be covered with a minimum of 1/16-inch and shall not exceed 1/8-inch mesh corrosion-resistant metal screening or other approved material that offers equivalent protection.

4. Where the roof profile allows a space between the roof covering and roof decking, the spaces shall be constructed to resist the intrusion of flames and embers, be fire stopped with approved materials or have one layer of a minimum 72-pound (32.4 kg) mineral-surfaced nonperforated cap sheet complying with ASTM D3909 installed over the combustible decking.

5. Enclosed roof eaves and roof eave soffits with a horizontal underside, sloping rafter tails with an exterior covering applied to the under-side of the rafter tails, shall be protected by one of the following:
    - noncombustible material
    - Ignition-resistant material
    - One layer of $^{5}/_{8}$-inch Type X gypsum sheathing applied behind an exterior covering on the underside of the rafter tails or soffit
    - The exterior portion of a 1-hour fire resistive exterior wall assembly applied to the underside of the rafter tails or soffit including assemblies using the gypsum panel and sheathing products listed in the Gypsum Association Fire Resistance Design Manual
    - Boxed-in roof eave soffit assemblies with a horizontal underside that meet the performance criteria in Section 707A.10 when tested in accordance with the test procedures set forth in ASTM E2957.

- Boxed-in roof eave soffit assemblies with a horizontal underside that meet the performance criteria in accordance with the test procedures set forth in SFM Standard 12-7A-3.
  Exceptions: The following materials do not require protection:
  1. Gable end overhangs and roof assembly projections beyond an exterior wall other than at the lower end of the rafter tails. 2. Fascia and other architectural trim boards.

6. The exposed roof deck on the underside of unenclosed roof eaves shall consist of one of the following:
   - Noncombustible material, or
   - Ignition-resistant material, or
   - One layer of 5/8-inch Type X gypsum sheathing applied behind an exterior covering on the underside exterior of the roof deck, or
   - The exterior portion of a 1-hour fire resistive exterior wall assembly applied to the underside of the roof deck designed for exterior fire exposure including assemblies using the gypsum panel and sheathing products listed in the Gypsum Association fire Resistance Design Manual.
     Exceptions: The following materials do not require protection:
     1. Solid wood rafter tails on the exposed underside of open roof eaves having a minimum nominal dimension of 2 inch (50.8 mm).
     2. Solid wood blocking installed between rafter tails on the exposed underside of open roof eaves having a minimum nominal dimension of 2 inch (50.8 mm).
     3. Gable end overhangs and roof assembly projections beyond an exterior wall other than at the lower end of the rafter tails. 4. Fascia and other architectural trim boards.

7. Vents - ventilation openings for enclosed attics, enclosed eave soffit spaces, enclosed rafter spaces formed where ceilings are applied directly to the underside of roof rafters, and underfloor ventilation openings shall be fully covered with metal wire mesh, vents, other materials or other devices that meet one of the following requirements:
   A. Vents listed to ASTM E2886 and complying with all the following:
      i. There shall be no flaming ignition of the cotton material during the Ember Intrusion Test.
      ii. There shall be no flaming ignition during the Integrity Test portion of the Flame Intrusion Test.
      iii. The maximum temperature of the unexposed side of the vent shall not exceed 662°F (350°C).
   B. Vents shall comply with all the following:
      i. The dimensions of the openings therein shall be a minimum of $^{1}/_{16}$-inch (1.6 mm) and shall not exceed $^{1}/_{8}$-inch (3.2 mm).
      ii. The materials used shall be noncombustible.
      Exception: Vents located under the roof covering, along the ridge of roofs, with the exposed surface of the vent covered by noncombustible wire mesh, may be of combustible materials.
      iii. The materials used shall be corrosion resistant.

8. Vents shall not be installed on the underside of eaves and cornices.

   Exceptions:
   1. Vents listed to ASTM E2886 and complying with all the following:
      - There shall be no flaming ignition of the cotton material during the Ember Intrusion Test.
      - There shall be no flaming ignition during the Integrity Test portion of the Flame Intrusion Test.
      - The maximum temperature of the unexposed side of the vent shall not exceed 662°F (350°C).
   2. The enforcing agency shall be permitted to accept or approve special eave and cornice vents that resist the intrusion of flame and burning embers.
   3. Vents complying with the requirements of Section 706A.2 shall be permitted to be installed on the underside of eaves and cornices in accordance with either one of the following conditions:
      3.1.The attic space being ventilated is fully protected by an automatic sprinkler system installed in accordance with Section 903.3.1.1 or,
      3.2.The exterior wall covering, and exposed underside of the eave are of noncombustible materials, or ignition-resistant materials, as determined in accordance with SFM Standard 12-7A-5 Ignition-Resistant Material and the requirements

9. All chimney, flue or stovepipe openings that will burn solid wood will have an approved spark arrester. An approved spark arrester is defined as a device constructed of nonflammable materials, having a heat and corrosion resistance equivalent to 12-gauge wire, 19-game galvanized steel or 24-gage stainless steel. or other material found satisfactory by the Fire Protection District, having ½-inch perforations for arresting burning carbon or sparks nor block spheres having a diameter less than 3/8 inch (9.55 mm). It shall be installed to be visible for the purposes of inspection and maintenance and removeable to allow for cleaning of the chimney flue.

10. All multi-family structures will have automatic interior fire sprinklers installed according to the National Fire Protection Association (NFPA) 13R 2019 edition - *Standard for the Installation of Sprinkler Systems in Low-Rise Residential Occupancies*.

11. All single-family structures will have automatic interior fire sprinklers installed according to the National Fire Protection Association (NFPA) 13D 2019 edition – Standard for the Installation of Sprinkler System in One- and Two-Family Dwellings and Manufactured Homes.7

12. The exterior wall covering, or wall assembly shall comply with one of the following requirements:
    - Noncombustible material, or
    - Ignition resistant material, or
    - Heavy timber exterior wall assembly, or
    - Log wall construction assembly, or
    - Wall assemblies that have been tested in accordance with the test procedures for a 10-minute direct flame contact expose test set forth in ASTM E2707 with the conditions of acceptance shown in Section 707A.3.1 of the California Building Code, or

- Wall assemblies that meet the performance criteria in accordance with the test procedures for a 10-minute direct flame contact exposure test set forth in SFM Standard 12-7A-1.

  Exception: Any of the following shall be deemed to meet the assembly performance criteria and intent of this section including;
  - One layer of 5/8-inch Type X gypsum sheathing applied behind the exterior covering or cladding on the exterior side of the framing, or
  - The exterior portion of a 1-hour fire resistive exterior wall assembly designed for exterior fire exposure including assemblies using the gypsum panel and sheathing products listed in the Gypsum Associate Fire Resistance Design Manual.

13. Exterior walls shall extend from the top of the foundation to the roof and terminate at 2-inch nominal solid blocking between rafters at all roof overhangs, or in the case of enclosed eaves, terminate at the enclosure.

14. Gutters shall be provided with the means to prevent the accumulation of leaf litter and debris within the gutter that contribute to roof edge ignition.

15. All rain gutters, down spouts and gutter hardware shall be constructed from metal or other noncombustible material to prevent wildfire ignition along eave assemblies.

16. No attic ventilation openings or ventilation louvers shall be permitted in soffits, in eave overhangs, between rafters at eaves, or in other overhanging areas.

17. All projections (exterior balconies, decks, patio covers, unenclosed roofs and floors, and similar architectural appendages and projections) or structures less than five feet from a building shall be of non-combustible material, one-hour fire resistive construction on the underside, heavy timber construction or pressure-treated exterior fire-retardant wood. When such appendages and projections are attached to exterior fire-resistive walls, they shall be constructed to maintain same fire-resistant standards as the exterior walls of the structure.

18. Deck Surfaces shall be constructed with one of the following materials:
    - Material that complies with the performance requirements of Section 709A.4 when tested in accordance with both ASTM E2632 and ASTM E2726, or
    - Ignition-resistant material that complies with the performance requirements of 704A.3 when tested in accordance with ASTM E84 or UL 723, or
    - Material that complies with the performance requirements of both SFM Standard 12-7A-4 and SFM Standard 12-7A-5, or
    - Exterior fire-retardant treated wood, or
    - Noncombustible material, or
    - Any material that complies with the performance requirements of SFM Standard 12-7A-4A when the attached exterior wall covering is also composed of noncombustible or ignition resistant material.

19. Accessory structures attached to buildings with habitable spaces and projections shall be in accordance with the Building Code. When the attached structure is located and constructed so that the structure or any portion thereof projects over a descending slope surface greater than 10

percent, the area below the structure shall have all underfloor areas and exterior wall construction in accordance with Chapter 7A of the Building Code.

20. Exterior windows, skylights and exterior glazed door assemblies shall comply with one of the following requirements:
    - Be constructed of multiplane glazing with a minimum of one tempered pane meeting the requirements of Section 2406 Safety Glazing, or
    - Be constructed of glass block units, or
    - Have a fire-resistance rating of not less than 20 minutes when tested according to NFPA 257, or
    - Be tested to meet the performance requirements of SFM Standard 12-7A-2.

21. All eaves, fascia and soffits will be enclosed (boxed) with non-combustible materials. This shall apply to the entire perimeter of each structure. Eaves of heavy timber construction are not required to be enclosed as long as attic venting is not installed in the eaves. For the purposes of this section, heavy timber construction shall consist of a minimum of 4x6 rafter ties and 2x decking.

22. Detached accessory buildings that are less than 120 square feet in floor area and are located more than 30 feet but less than 50 feet from an applicable building shall be constructed of noncombustible materials or of ignition-resistant materials as described in Section 704A.2 of the California Building Code.

    Exception: Accessory structures less than 120 square feet in floor area located at least 30 feet from a building containing a habitable space.

23. All side yard fence and gate assemblies (fences, gate, and gate posts) when attached to the home shall be of non-combustible material. The first five feet of fences and other items attached to a structure shall be of non-combustible material.

24. Exterior garage doors shall resist the intrusion of embers from entering by preventing gaps between doors and door openings, at the bottom, sides, and tops of doors, from exceeding 1/8 inch. Gaps between doors and door openings shall be controlled by one of the methods listed in this section.
    - Weather-stripping products made of materials that:
        (a) have been tested for tensile strength in accordance with ASTM D638 (Standard Test Method for Tensile Properties of Plastics) after exposure to ASTM G155 (Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials) for a period of 2,000 hours, where the maximum allowable difference in tensile strength values between exposed and non-exposed samples does not exceed 10%; and
        (b) exhibit a V-2 or better flammability rating when tested to UL 94, Standard for Tests for Flammability of Plastic Materials for Parts in Devices and Appliances.
    - Door overlaps onto jambs and headers.
    - Garage door jambs and headers covered with metal flashing.

25. Exterior doors shall comply with one of the following:

1. The exterior surface or cladding shall be of noncombustible material or,
2. The exterior surface or cladding shall be of ignition-resistant material or,

3. The exterior door shall be constructed of solid core wood that complies with the following requirements:
   3.1. Stiles and rails shall not be less than 1-3/8 inches thick.
   3.2. Panels shall not be less than 1-1/4 inches thick, except for the exterior perimeter of the panel that shall be permitted to taper to a tongue not less than 3/8 inch thick.
4. The exterior door assembly shall have a fire-resistance rating of not less than 20 minutes when tested according to NFPA 252 or,
5. The exterior surface or cladding shall be tested to meet the performance requirements of Section 707A.3.1 when tested in accordance with ASTM E2707 or,
6. The exterior surface or cladding shall be tested to meet the performance requirements of SFM Standard 12-7A-1.

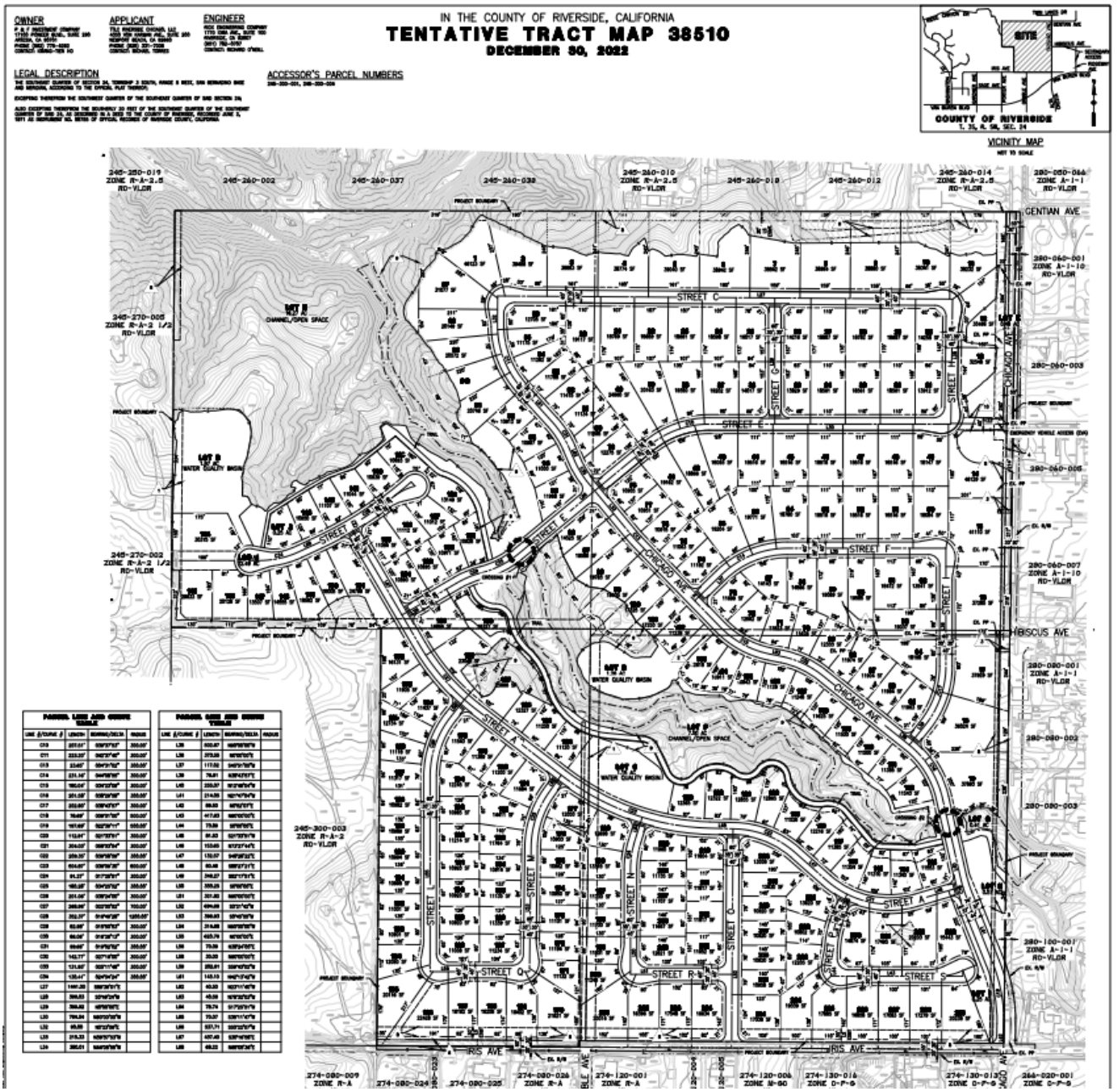
26. Fire access tunnels shall have two hour rated walls consisting of two layers of 5/8" Type 'X' gypsum wallboard panels on each side of the studs. The EZ Taping Systems "Fire Tape" product or equivalent should be used as an alternative to convention joint tape when:
    1. Two or more layers of listed Type 'X' gypsum wallboard are applied vertically with joints staggered and joints of the face board are":
       a. Tightly butted and taped with EZ Taping Systems "Fire Tape" or equivalent product or
       b. Finished with joint compound of EZ Taping Systems "Fire Tape" or equivalent product if the gap between gypsum wallboard panels are visible at the joint.
    2. Two or more layers of USG "Sheetrock" Fire code C gypsum wallboard are applied (horizontally or vertically).
    3. Gypsum panels shall be attached with Type S drywall screws, placed 8" oc to vertical edges and 12" oc to top and bottom runners and intermediate studs.
    4. Fire Tape shall be nominal 2" wide and applied on the vertical joints at studs.

** FAHJ – Fire Authority Having Jurisdiction
SFM – State Fire Marshal
NFPA – National Fire Protection Association

APPENDIX ‘E’

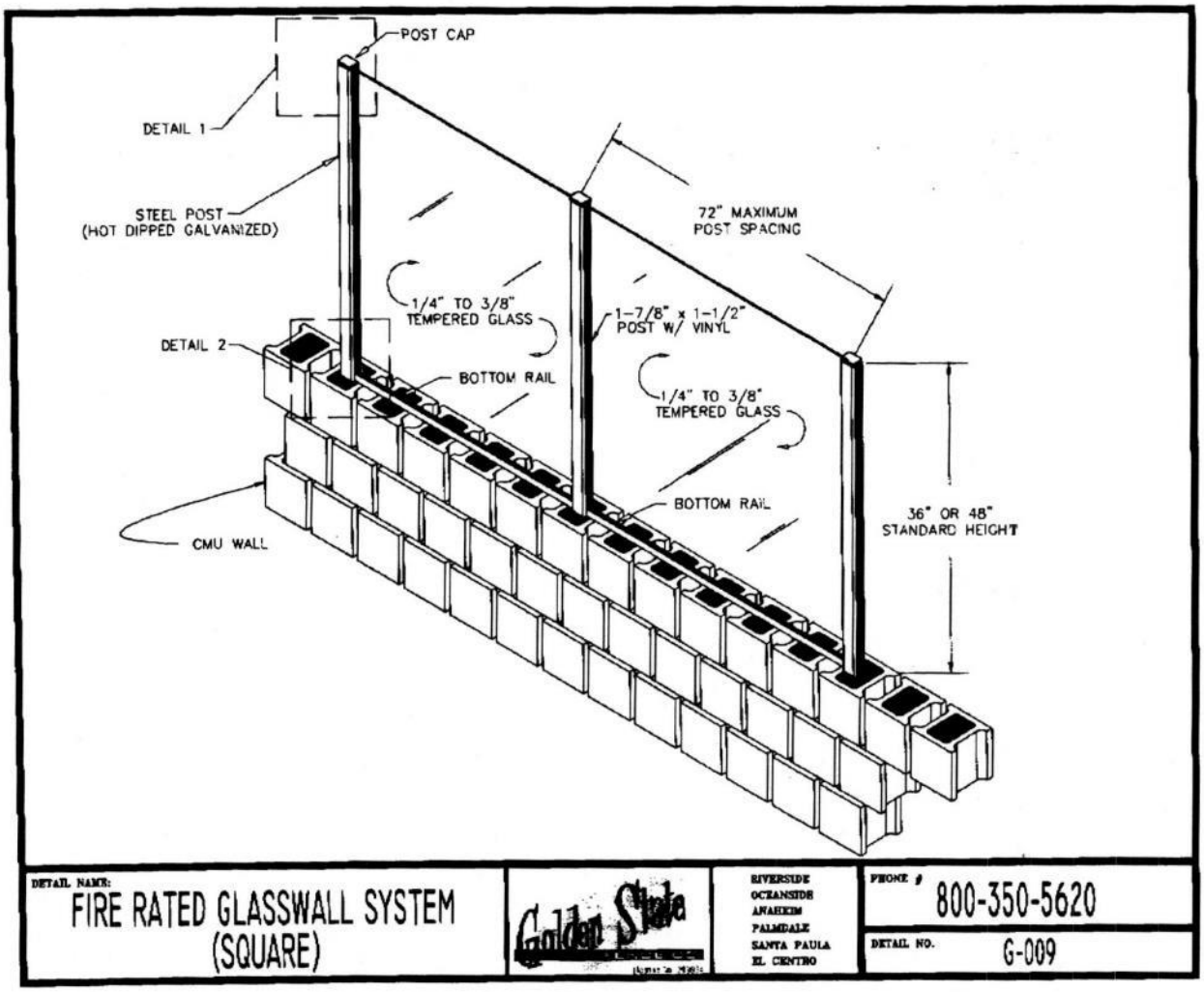
SITE PLAN – ARROYO VISTA PROJECT

Use for general layout purposes only.



APPENDIX 'F'

EXAMPLE OF A VIEW WALL



APPENDIX 'G'

EVACUATION CHECKLIST – WHAT TO TAKE

The following is a recommended list of items to take should a person or family expect that they could be evacuated due to a wildfire. It was adapted from numerous United States Forest Service, Bureau of Land Management and Cooperative Extension publications.

1. Outside the Home:

- Move all flammable outdoor furniture or other combustibles away from the home, either place them inside the home, garage or throw it into a pool.
- Turn off natural gas at the meter or propane gas at the tank, remove BBQ propane tank, take it with you or store it in a secure place such as the garage or away from your house.
- Turn on outdoor lighting so in darkness, emergency responders will know where the home is located.
- Close all exterior vents, doors, and windows.
- Leave exterior doors and gates unlocked to allow emergency responder access.
- Fill trash cans and buckets with water and place them where emergency responders can find them, preferably in a well-lit area.
- Connect garden hoses to exterior faucets and attach nozzles if available.
- If there is time, wet down landscaping to provide additional moisture, especially wet down flammable mulches.

2. Inside the House:

- Close the Fireplace damper.
- Close all windows and exterior vents, close all interior and exterior doors including the garage door, remove flammable curtains from windows.
- Close fire-resistant drapes, shutters, and blinds.
- Close and lock any cat or doggie doors that lead to the outside.
- Move fabric covered furniture away from windows and toward the center of the room.
- Leave a light on in each room.
- Close all interior doors as you leave.

3. Preparation of Family, Pets, and Livestock:

- Round up your pets: get them secure and ready to go into the car with no way of escape before they are loaded into the car (this is especially important with cats).

- Have pet carriers, leashes, food bowls, food, litter boxes, litter, and other pet needs ready to go & ready to be loaded into a car.
- Make a prior arrangement to contact a neighbor or friend who might be available to help you in an evacuation situation with loading or driving a second or third vehicle, or to help with large animals such as horses, penned animals etc.
- Evacuate all family members that are not essential to preparing the house for wildfire if possible.
- Notify your emergency contact person of your plans.
- Draft an e-mail, send to friends and family about your intentions.
- Plan several evacuation routes from your home and follow local emergency personnel's directions.
- Designate a safe meeting place and contact person.
- Notify the local Humane Society or other organizations for assistance with larger animals if needed.
- Evacuate pets and livestock, do not set them loose.
- Load containers with drinking water and food.
- Take a first aid kit.

4. What to Wear:

- Wear only cotton or wool clothes, including long sleeve shirt, pants and or jacket, a hat and boots or close toed shoes.
- Carry gloves, a cotton handkerchief to cover your face and goggles to protect your eyes.
- Keep your battery powered cell phone, flashlight, and portable radio with you at all times.

5. To Go Bag Items:

- Important files, back-up disks, plug-in USB virtual drive, small compact file box ready to go. Include such things as homeowner's policy, auto policies, life & investment files, bank records etc. (or store in a fireproof safe or fireproof vault).
- Include a backup battery powered flashlight, portable radio, and extra batteries.
- Cell phone charger
- Address books for both snail mail and email that include your doctor(s) contact information.
- Prescription medications.
- Sufficient clothing for 3-5 days in him and her bags.
- Personal toiletries including: deodorant, disposable shavers, extra toothbrushes, shampoo & shaving cream, toothpaste, and feminine supplies to last 3-5 days.

- Computer backup files.
- Family heirlooms, photo albums and videos
- Inventory of home contents (consider making a video inventory now, prior to an emergency).
- ATM, credit, and debit cards.
- Medications such as ibuprofen, aspirin, and antihistamines
- Prescription glasses
- Social security cards
- Passport's
- Driver's licenses
- Take important documents such as birth certificates, health insurance cards, marriage certificates, home deed and insurance policies and power of attorney and will.
- Take masks that will reduce exposure to both disease and the inhalation of flying ash.
- Take all household & car keys, wallet, and handbag
- A container of sanitary wipes.

6. Vehicle Preparation:

- Place your vehicle on the driveway facing the street.
- Ensure that the vehicle has at least 1/2 tank of fuel in your vehicle at all times.
- Roll up the car windows and close the moon roof.
- Close the garage door but leave it unlocked.
- If you do not drive, make other arrangements for transportation in advance.

7. Other Useful Items (If time is available):

- Take cameras & expensive jewelry and important electronic devices.
- If you have enough room, consider a few items from your camping or picnic supplies
- Pillows & light blankets (in case you might have to sleep outside while evacuated).
- Take special or valuable items (make your own list).