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## VIEJAS HILLS ESTATES TENTATIVE MAP

BLACKWOLF DRIVE  
ALPINE, CA. 91901  
PROJECT ID NUMBERS: TM-5245-1  
December 26, 2017

APPLICANT:  
Neal Reynolds/Viejas Hills LLC  
PO Box 2010  
Alpine CA. 91901

*Prepared for the County of San Diego*

by

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**SDC PDS RCVD 01-05-18**  
**TM5245TE**

TM-5245-1 VIEJAS HILLS ESTATES FIRE PROTECTION PLAN

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# CHAPTER 1

## INTRODUCTION

This Fire Protection Plan (FPP) has been prepared for the VIEJAS HILLS ESTATES Tentative Map TM 5245-1, located in Alpine, CA.

The purpose of the FPP is to assess the potential impacts resulting from wildland fire hazards and identify the measures necessary to adequately mitigate those impacts.

As part of the assessment, the Plan has considered the property location, topography, geology, combustible vegetation (fuel types), climatic conditions, and fire protection systems and equipment, impacts to existing emergency services, defensible space and vegetation management.

The plan identifies and prioritizes areas for hazardous fuel reduction treatments and recommends methods of treatments that will protect one or more at-risk communities and essential infrastructures. The Plan recommends measures that property owners must take to reduce the probability of ignition of structures throughout the area addressed by the Plan.

### 1.1 Project Location, Description and Environmental Setting

#### 1.1.1 Project Location

The proposed project site is in the unincorporated community of Alpine, approximately twenty-six (26) miles east of the Pacific Ocean and 19 miles north of the United States-Mexican International Border in San Diego County, California.

The Project is located north of the Interstate 8 highway corridor, east of East Victoria Drive, and north of Otto Avenue. The project is immediately adjacent to the lands developed by Tentative Map Project Number 4978, which are located on Blackwolf Drive and Fazio Road. Access to the project site will be from the intersections of Otto Avenue and Blackwolf Drive or Otto Avenue and Fazio Road.

Alpine is primarily a semi-rural residential community with 5536 housing units and a population of approximately 16,468 people.

The Project Site is located on lands designated by the CAL-FIRE Fire and Resource Assessment Program (FRAP) and the Alpine Fire Protection District as a Very High Fire Severity Area (VHSFA). It is also on lands designated as State Responsibility Area (SRA), in which CAL-FIRE has primary responsibility for suppressing wild fire incidents.

The Project is within the service area of the Padre Dam Municipal Water District.

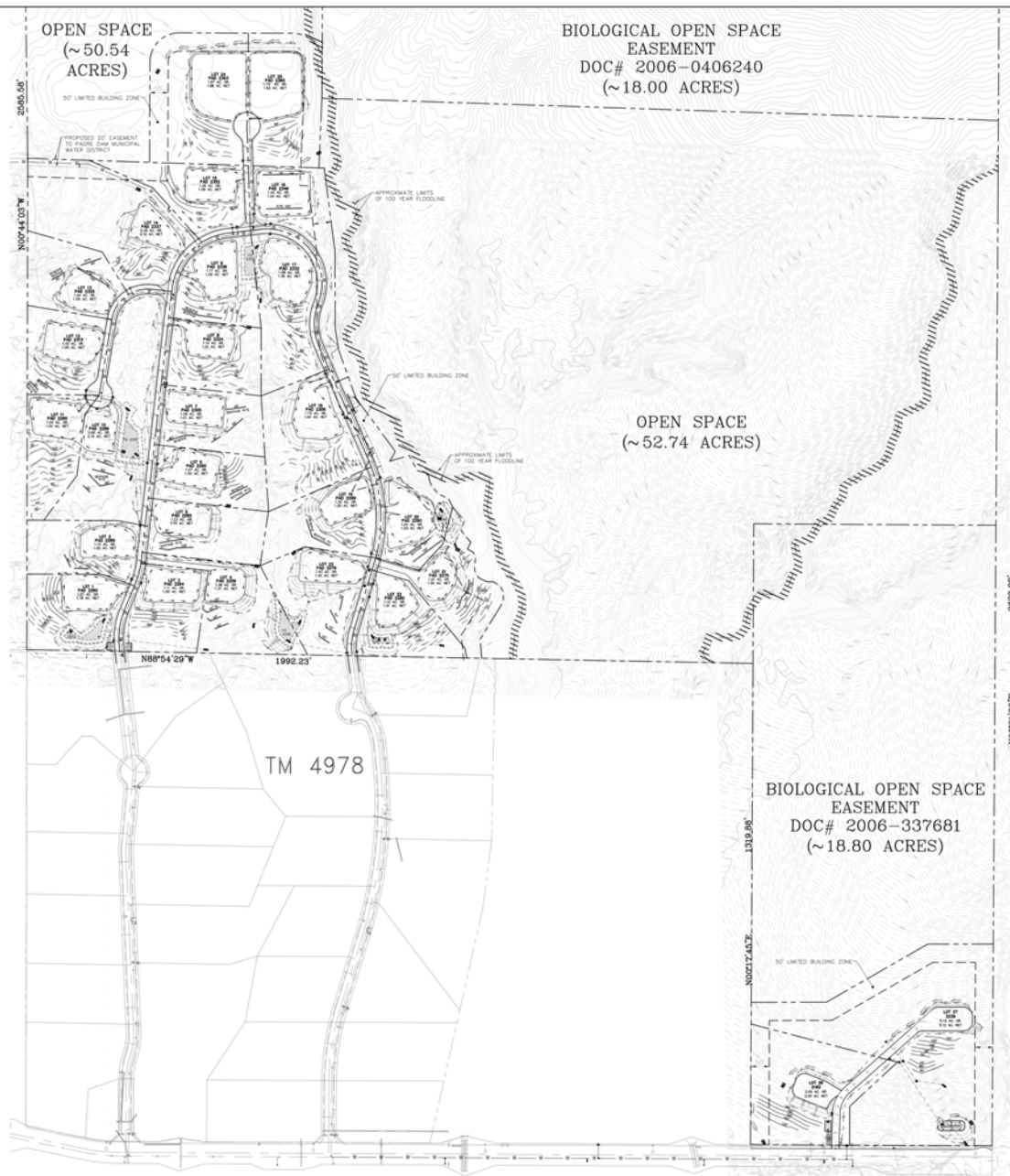


Figure 1.1.1 - Proposed Project Map – TM-5245-1 Viejas Hills Estates

## 1.1.2 Project Description

The Project is currently undeveloped land that measures approximately 181 acres. There is existing single family residential development on the southwest, south and southeast sides of the project. The Interstate 8 highway corridor is approximately 0.20 miles (970.38 feet) south of the Project site.

The Project site has been zoned for Limited Agriculture (A-70) and has a proposed General Plan designation as SR-1 Semi-Rural.

The Project site is roughly trapezoidal in shape, with the long sides having a south-to-north configuration. The south side of the Project will connect directly to the TM-4978 development and with the existing roadways on either side of this development.

The western side of the existing TM-4978 site is bifurcated by a major drainage with a south-to-north configuration, with the existing roadway corridors straddling the west and east side of the canyon.



*Western Drainage Between Fazio Road and Blackwolf Drive*

There is a second major drainage east of the Fazio Road right-of-way corridor that is, from aerial photography, a wetlands-riparian area space. A natural creek bed, with a large amount of oak and other tree species, runs through this depression in a north to south configuration. North of this drainage, the landscape projects upward to the north and east with land masses that potentially qualify as Steep Slopes areas.



*Eastern Drainage, East of Fazio Road, Looking North from Otto Avenue*

#### 1.1.2.1 Proposed Project Use

The Project will sub-divide the undeveloped land into twenty-seven (27) residential lots. Two of the proposed parcels (lots 26 and 27) will be southeast of the main development area with direct access from the eastern portion of Otto Avenue.

The smallest proposed lot is one (1) acre.

The Project intends to place twenty-five (25) single family dwellings the north of the TM 4978 development site. The proposed primary road for the Project Site will form a loop at the far northern end of the Project, connecting the existing dead-end Blackwolf Drive and Fazio Road right-of-way corridors into a single pathway. A proposed dead-end street, Enzley Court, is proposed on the west side of Blackwolf Drive, approximately at the center of the Project site. A second dead-end street, Viejas Spur, will be at the proposed intersection of Blackwolf Drive and Fazio Road and will have a south to north configuration.

## Parcel Sizes

The Project proposes the following Parcel Sizes:

- Lot # 1 – 1.27 gross acres
- Lot # 2 – 1.10 gross acres
- Lot # 3 – 1.11 gross acres
- Lot # 4 – 1.38 gross acres
- Lot # 5 – 1.23 gross acres
- Lot # 6 – 1.07 gross acres
- Lot # 7 – 1.10 gross acres
- Lot # 9 – 1.17 gross acres
- Lot # 10 -2.66 gross acres
- Lot # 11 – 1.04 gross acres
- Lot # 12 – 1.10 gross acres
- Lot # 13 – 1.04 gross acres
- Lot # 14 – 2.35 gross acres
- Lot # 15 – 1.26 gross acres
- Lot # 16 – 1.42 gross acres
- Lot # 17 – 1.58 gross acres
- Lot # 18 – 1.73 gross acres
- Lot # 19 – 1.32 gross acres
- Lot # 20 – 1.24 gross acres
- Lot # 21 – 1.01 gross acres
- Lot # 22 – 1.12 gross acres
- Lot # 23 – 1.43 gross acres
- Lot # 24 – 1.97 gross acres
- Lot # 25 – 1.73 gross acres
- Lot # 26 – 2.0 gross acres
- Lot # 27 – 5.12 gross acres

Open Space Tract parcels are discussed below in Section 1.1.2.3.



*Approximate Area of the Western Project Site*

#### 1.1.2.2 Location of Easements

##### Utility Infrastructure:

Electrical - San Diego Gas & Electric Company maintains easements for underground electrical distribution conduits and lines running beneath the existing streets and parcels of the established sub-division south of the Project Site.

Gas Service – There is no existing gas service right-of-ways on the Project Site. Gas service will be provided by individual propane tank and gas supply piping located on each parcel.

Sewer – There is no existing or proposed sewage disposal right-of-ways on the Project Site. Sewage disposal will be accomplished through the use of approved septic systems and leech fields.

#### 1.1.2.3 – Open Space Areas

There are four (4) Open Space Easements adjacent to the Project site (see Figure 1.1.1).

Open Space Tract A is at the extreme northwest corner of the Project Site. It is contiguous west, north and east property lines of Lots 24 and 25, adjacent to the northwest corner of Lot 15 and north of Lot 14.

Open Space Tract B adjacent to the northeast corner of Lot 25.

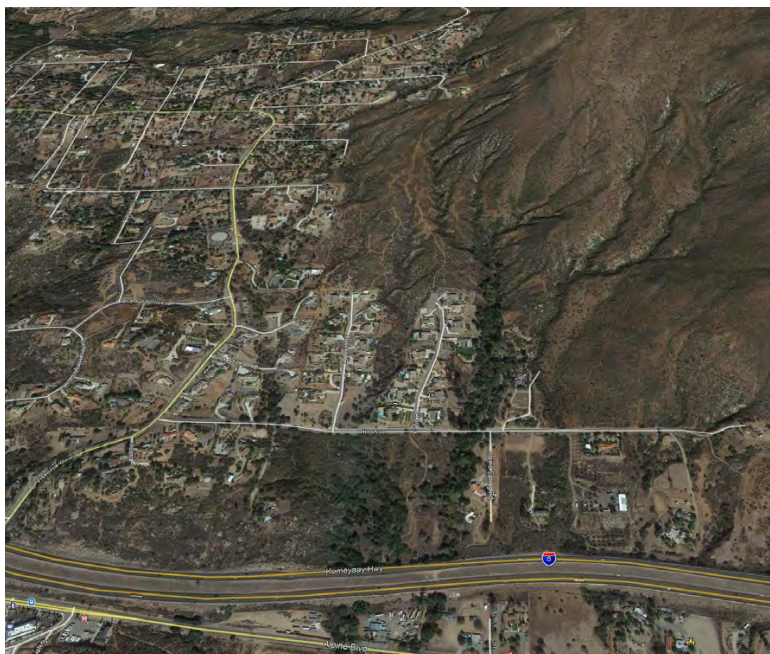
Open Tract C begins on the east side of the Project Site, starting at Lot 25 and moving to the east to the Cleveland National Forest Boundary, and south to Otto Avenue adjacent to Lot 22.

Open Space “D” is adjacent to the northern property lines of Lots 26 and 27.

#### 1.1.2.4 – Off-Site Improvements

The Project site is bordered on two (west and north) by substantial existing developments of single family residences that were either part of sub-division developments or erected as single buildings. The Interstate 8 right-of-way passes in an east-to-west swath south of the Project Site and Otto Avenue.

Nine hundred (900') feet east of the Project Site is the lower slopes of Viejas Mountain, which extends upward and away from the Project Site in a west-to-east configuration. The development of single family parcels north and northwest of the Project Site follows the base of the slopes of Viejas Mountain in a south-to-north configuration.



*Off-Site Development Adjacent to Project Site*

#### 1.1.2.4.1 – Roads

The primary access point to the Project site is from the intersection of East Victoria Drive and Otto Avenue. From this intersection, the Project Site can be reached by proceeding in an easterly direction on Otto Drive to the intersection of Blackwolf Drive or, further to the east, Fazio Road.



***Primary Access Point to Project Site –  
Intersection of East Victoria Drive & Otto Avenue***



***Primary Western Access to Project Site from Otto Avenue & Blackwolf Drive***



*Primary Eastern Access to Project Site from Otto Avenue & Fazio Road*

#### 1.1.2.4.2 – Utilities

Power: Electrical energy will be provided to the Project site by San Diego Gas & Electric Company, a Sempra Energy division.

Fuel Gas Service: Houses in the existing Blackwolf Phase I project site are served by individual LPG tanks. Viejas Hills Estates also proposes the use of individual LPG tanks, with home owners selecting private LP gas companies for fuel gas services.

Telephone Services: Hard-wired telephone services in the vicinity of the Project Site are provided by independently selected providers as determined by residents.

Sewer Service: Sewage disposal for the Project site is proposed as on-site septic systems.

Water: The project site will be served by the Padre Dam Municipal Water District.

### 1.1.3 Environmental Setting

#### 1.1.3.1 Dates of Site Inspections/Visits

The Project Site was visited for analysis of topography, vegetation, access and fire behavior purposes on the following dates:

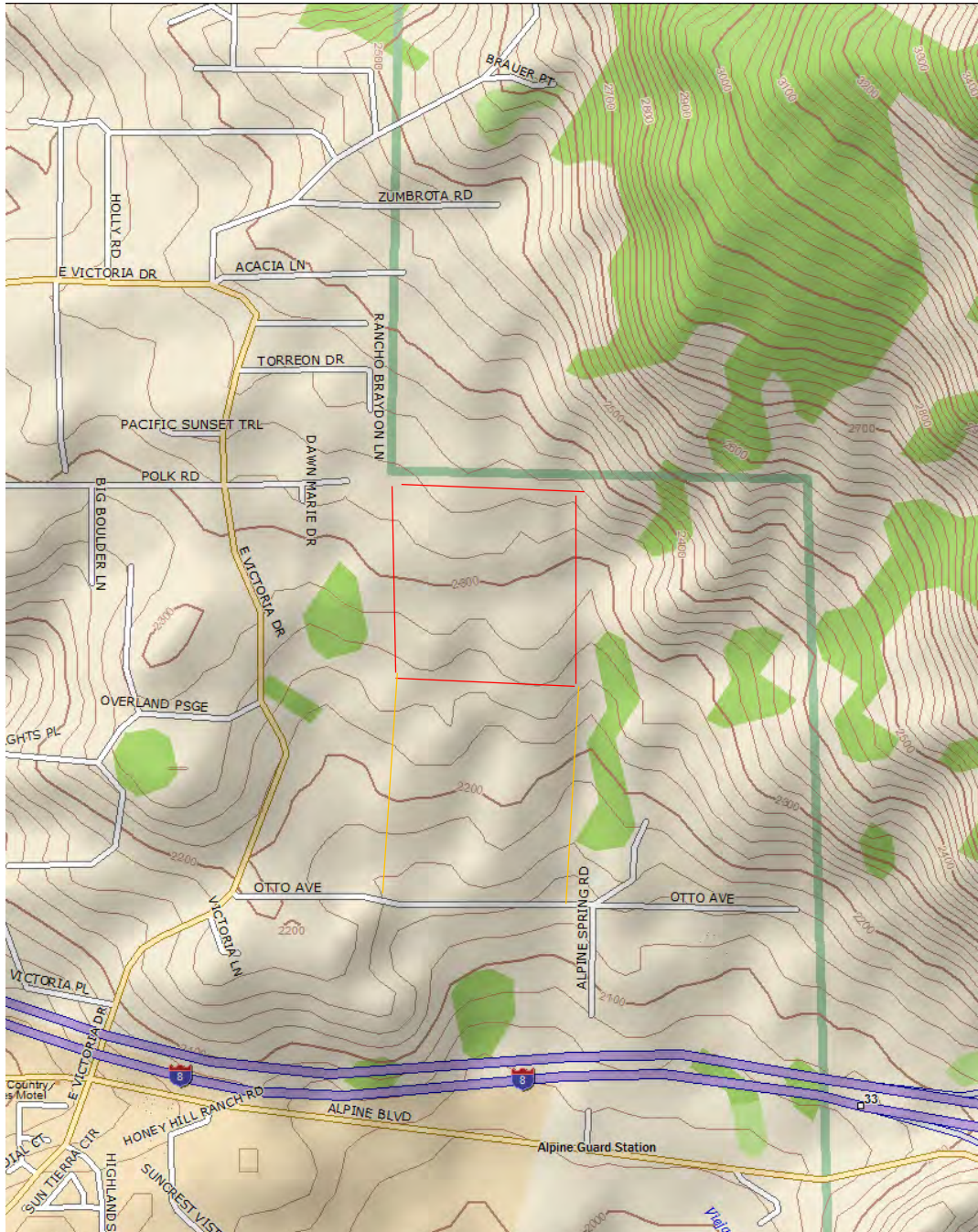
- September 23, 2017
- December 26, 2017

#### 1.1.3.2 Topography

The Project Site is located north of the Interstate 8 right-of-way corridor.

West of the Project Site, the landscape is relatively flat adjacent to East Victoria Drive with a gentle slope that becomes increasingly steeper as one travels in an easterly direction.

There are two major drainages on the Project Site, both with south-to-north configurations. The western drainage originates immediately east of the intersection of Blackwolf Drive and Otto Avenue and forms a natural separation between Blackwolf Drive and Fazio Road to the east. The eastern drainage begins forming adjacent to the west-bound Interstate 8 right-of-way corridor and tracks in a north-to-south direction immediately east of Fazio Road before dissipating into the steep slopes of Viejas Mountain.



**Topographical Map of Project Site and Surrounding Area**  
**RED Box – Project Site; ORANGE Box – TM 4976**



***Slope Evaluations Used for BEHAVE Fire Modeling Calculations***



*Figure 1.1.3.2.B – Location of Major Drainages on Project Site*

### Topographic Influence of Viejas Mountain

Viejas Mountain lies immediately east and northeast of the Project Site and has a roughly triangular shape on all aspects. The mountain is approximately two (2) miles long on its south-to-north axis and the peak has an elevation point of 4187 feet Above Sea Level (ASL). This places the majority of the mountain looming approximately 2000 feet above the highest point on the project site. The west facing slope of Viejas Mountain has a slope of approximately 39% and slopes downward toward the East Victoria Drive area over a distance of approximately one mile (5178 feet).



*Relationship of Viejas Mountain to Project Site  
Viejas Mountain (BLUE arrow); Entrance to Project Site (YELLOW arrow)*

During normal summer months with usual south and southwest winds, the mass of Viejas Mountain will act as a diurnal heat sink source for the area. With its broad slopes, the exposed ground will absorb solar energy, producing strong up-canyon winds over a considerable distance. Fire starting at the base of the mountain will be pulled upslope and through the varying patchy and compact vegetative fuel beds on the slopes. The thermal heat sink will also impact fires starting at some distance from the actual mountain, also drawing fire in an easterly and northeasterly direction by the natural convection currents caused by solar heating of the ground and plant life.

During Santa Ana/Northeasterly wind events, Viejas Mountain might be expected to block the path of the wind pattern by its long and massive shape rising above the surrounding landscape. Fire history in the area (most recently, the 2003 Cedar Fire) supports this hypothesis.

Santa Ana Wind Events are caused by an atmospheric High Pressure Zone occurring in the desert plains in the Northern Nevada and Utah areas, with a corresponding Low Pressure Zone in place off-shore of San Diego, and other parts of Southern California, over the Pacific Ocean. Seeking atmospheric equilibrium, the zone of High Pressure migrates toward the Low Pressure Zone, forming wind plumes. As the wind plumes

move towards Southern California, it descends from the upper elevations over Nevada, causing adiabatic compression of the air mass. The compression forces creates an increase of temperature of approximately five (5•) degree for every 1000 feet of elevation drop. An average elevation change of 5000 feet from the Nevada plains to Sea Level will produce a twenty-five (25•) degree increase of air temperature.

The bulk of Viejas Mountain will force the descending air mass over its bulk for varying distances. However, Santa Ana wind events tend to produce unpredictable wind behavior and the air mass, held temporarily aloft by the mass of Viejas Mountain, can, without warning, violently “surface” in a manner similar to the severe downdrafts common in thunderstorms. This results in extreme, wind-drive fire behavior across the ground surface and can cause a 180-degree wind shift, moving the fire rapidly in another direction.

During the 2003 Cedar Fire, the north side of Viejas Mountain absorbed the brunt of the northeast winds, causing extreme fire behavior and “blow-up” conditions over a large area of the mountain.

Decadent, thirty-plus (30+) year old vegetation was exposed to high winds (30 to 40 mile per hour at the surface), which drove a long flame front directly up the slopes. Daily heating of the fuel and soils on the slope pre-heated the vegetation before the arrival of the flame front. The dessicating northeastern winds pre-heated the vegetation, further depleting its fuel moisture content. The arrival of the flame front on the northern slope triggered several incidences of Area Ignition, especially in canyons and drainages, where large tracts of acreage simultaneously ignited over a short period of time.

The fire lofted burning embers aloft and deposited them over the peak of the mountain in receptive vegetation on the downwind side. Numerous spot fires erupted and, under the influence of normal diurnal slope heating, back-burned up the slope at slower rates of spread than the flame front on the wind exposed north and eastern sides of Viejas Mountain. A strong firefighting Structure Protection Group, assembled along Victoria Drive, kept the fire from spreading into the Victoria and Project Site areas.

#### 1.1.3.3 Vegetation

Vegetation on the Project Site is a mixture of Southern California Chaparral shrub and brush types and riparian growth and trees along the creek bed drainages at the center and southern sides of the development area.

The vegetative fuels have uninterrupted continuity and fuel heights exceeding ten feet over extended areas of the Site. The estimated fuel age is fourteen plus (14+) years; a large amount of the vegetation appears to be in a decadent state, with a high dead-to-live fuel ratio.



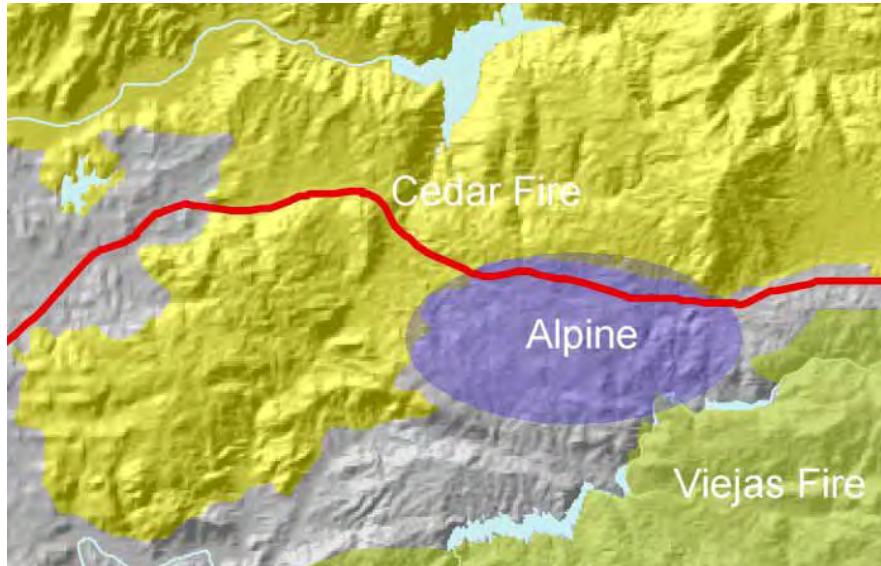
*Typical Fuel Height on Project Site – North of Fazio Road Cul de Sac*



*Typical Fuel Types, Loading and Heights on Project Site – Looking Northwest at Viejas Mtn.*

### 1.1.3.3 Fire History

The Community of Alpine has experienced numerous wildfires in the past.



The map shows the boundaries of the two most recent major fires.

The Viejas Fire of January 2001 passed to the south of several heavily populated areas of Alpine.

The Cedar Fire of October 2003, while passing just to the north of the most heavily populated areas of town, destroyed a large number of homes in the Peutz Valley and Harbison Canyon.

In the past forty-five years, major wildland fires have directly impacted the area around the Project Site:

- 1970 – Laguna Fire – started on September 26 and burned through the Alpine Community on September 27<sup>th</sup>. The fire burned a total of 175,425 acres. The Laguna fire destroyed 382 homes in San Diego County and passed through an unpopulated region of Alpine. In addition to the ten homes burned in Alpine, 114 were destroyed in Harbison Canyon and another 117 were lost in Crest.
- 2003 – Cedar Fire – started on October 25<sup>th</sup> and burned through parts of the Alpine community, Harbison Canyon and Crest. 2,232 homes were destroyed County-wide and the fire consumed 280,278 acres before it was controlled almost two weeks later. The weather conditions at the USFS Alpine Remote Automated Weather Station on October 26, 2003 were 86 degrees, wind speed at 26 mph, relative humidity 4% and fuel moisture average 4%.

The Project Site was not impacted by the burn perimeters of the Laguna and Viejas Fires. A portion of the Project Site, especially areas close to the base of Viejas Mountain, was burned over during the Cedar Fire.

#### 1.1.3.4 Climate

Like most of Southern California, San Diego County and the project site has a Mediterranean Climate typified by warm to hot dry summers and mild to cool winters. Summer temperatures range between the mid-nineties and low one hundreds during the summer and fall months with occasional extraordinarily hot, dry spells similar to desert conditions occurring.

Rainfall averages nine to fifteen inches at the lower elevations where the project site is located.

Santa Ana winds are one of the most notable weather conditions in Southern California and San Diego County. Typically, these dry winds occur during the late summer and fall months (September through November) but may happen at any time during the year. With combined adiabatic (compression) heating (for every 1000 feet of elevation decline, temperature increases five degrees) and wind velocities exceeding 40 miles per hour, Santa Ana winds severely exacerbate wildfires, especially during drought conditions.

The U.S. Forest Service Weather Information Management System provides information about weather patterns in San Diego County. Daily afternoon weather observations in San Diego County were analyzed for forty-four years (1961-2005) at selected fire stations.

San Diego County is divided into five climate zones between the coast and desert. Weather data between April and December are used to represent the annual fire season in San Diego County, with the most severe fire weather conditions in September and October.

The following table was derived by the analysis of San Diego County's Interior Climate Zone where the project is located.

| Worst Case Weather and Burning Conditions, Interior Zone |             |          |            |               |
|----------------------------------------------------------|-------------|----------|------------|---------------|
| Period                                                   | Temperature | Humidity | Wind Speed | Burning Index |
| Summer                                                   | 90-109      | 5-9%     | 18 mph     | 153           |
| Santa Ana                                                | 90-109      | 5-9%     | 24 mph     | 168           |
| Peak                                                     | 90-109      | 5-9%     | 56 mph     | -             |

#### 1.1.3.5 Land Ownership

The Project site is currently owned by Viejas Hills LLC, PO Box 2010, Alpine CA.91901

All existing developed lands around the Project site are essentially single family residences owned by individual private owners.

#### 1.1.3.6 Existing Land Uses

The Project site is bordered on two sides (west and north) by existing single family residences that were either part of sub-division developments or erected as one time projects.

The Interstate 8 right-of-way passes in an east-to-west swath south of the Project Site.

South of Interstate 8, the land has been developed as a combination of commercial-industrial or residential buildings and agricultural lands.

#### 1.1.3.7 Proposed Land Uses

The Project site is currently designated as Land Use A-70, Limited Agricultural.

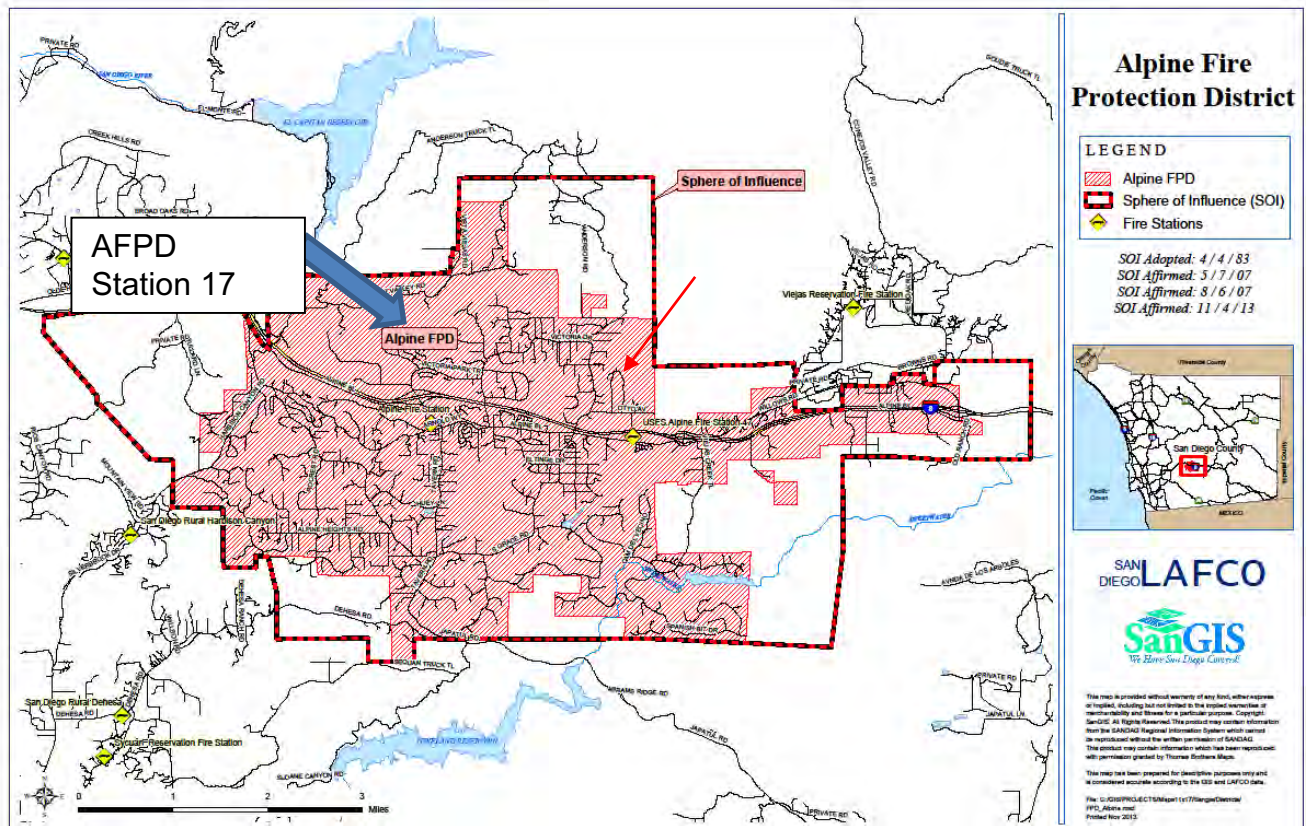
The Viejas Hills Estates Residential Development will be zoned for Semi-Rural Residential SR-1 land use.

## CHAPTER 2 GUIDELINES FOR THE DETERMINATION OF SIGNIFICANCE

### 2.1 Emergency Services – Availability and Travel Time

#### 2.1.1 Emergency Services Availability

The Project is within the Sphere of Influence and jurisdictional boundaries of the Alpine Fire Protection District.



Alpine Fire Protection District Map Red Arrow –Project Site Location

The Fire District is an “all risk” career agency providing 24-7-365 fire protection services to an area of approximately 27.5 square miles. The community was recently evaluated by the Insurance Services Office, resulting in an upgraded fire protection rating from 3/8b to 2/2Y.

The District has one fire station housing a Type I Structure Fire Engine, a Type III Brush Fire Engine and one paramedic ambulance. Station 17 is manned by four (4) career firefighters that cross-staff the Type I and Type III engines and two private company EMS personnel assigned to the paramedic ambulance. Medic 17 currently serves the Project Site for emergency medical services under a County of San Diego contract with Mercy Medical Response.



*Alpine FPD Station 17*

### 2.1.2 – Travel Time

The project site is located approximately 2.1 miles from the closest permanently staffed Fire Station (Alpine FPD Station # 17).

Using the NFPA 1142 response time formula, assuming a constant 35 miles per hour travel speed, the County of San Diego estimates a response time for fire apparatus driving from Station 17 to the project site is approximately four minutes.

| Table S-1 Travel Time Standards from the Closest Fire Station* |                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                              |
|----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Travel Time                                                    | Regional Category (and/or Land Use Designation)                                                                                                                                                                                                                                    | Rationale for Travel Time Standards**                                                                                                                                                                        |
| 5 min                                                          | <ul style="list-style-type: none"> <li>■ Village (VR-2 to VR-30) and limited Semi-Rural Residential Areas (SR-0.5 and SR-1)</li> <li>■ Commercial and Industrial Designations in the Village Regional Category</li> <li>■ Development located within a Village Boundary</li> </ul> | In general, this travel time standard applies to the County's more intensely developed areas, where resident and business expectations for service are the highest.                                          |
| 10 min                                                         | <ul style="list-style-type: none"> <li>■ Semi-Rural Residential Areas (&gt; SR-1 and SR-2 and SR-4)</li> <li>■ Commercial and Industrial Designations in the Semi-Rural Regional Category</li> <li>■ Development located within a Rural Village Boundary</li> </ul>                | In general, this travel time provides a moderate level of service in areas where lower-density development, longer access routes and longer distances make it difficult to achieve shorter travel times.     |
| 20 min                                                         | <ul style="list-style-type: none"> <li>■ Limited Semi-Rural Residential areas (&gt;SR-4, SR-10) and Rural Lands (RL-20)</li> <li>■ All Commercial and Industrial Designations in the Rural Lands Regional Category</li> </ul>                                                      | In general, this travel time is appropriate for very low-density residential areas, where full-time fire service is limited and where long access routes make it impossible to achieve shorter travel times. |

Table 5-1, Travel Time Standards, from the County of San Diego General Plan's Safety Element indicates that a maximum response time of five (5) minutes is allowed for Single Family Dwellings in Land Use Designations SR-0.5 and SR-1, Semi-Rural Residential Areas.

*Finding:* The Alpine Fire Protection District's Form PDS-399-F *Project Facility Availability – Fire* form, shows the Project site has a response distance from Station 17 of 2.1 miles, with a response time of four (4) minutes.

*Finding:* The Project is in compliance with the General Plan's Emergency Response Time criteria.

To confirm these Findings, response travel time trials were conducted during the September 23, 2017 site visit. The travel times were timed on two separate stopwatches under normal, *non-emergency* driving conditions with normal and construction zone traffic impact patterns encountered along the response routes used to reach the project site, with the following results

- Average response time from Station 17 to Project Site, with a travel route from Tavern Road to Arnold Way to Alpine Blvd., Alpine Blvd to East Victoria Road and East Victoria to Otto Avenue was four (4) to five (5) minutes.
- MapQuest projected travel time using this route was four (4) minutes.

*Finding:* This response route is approximately two (2) miles long. Traveling under non-emergency conditions and obeying all speed limits along the route, the average driving time between Station 17 and the entrance to the Project Site is 4.5 minutes.

#### 2.1.4 General Emergency Response Findings

The Alpine Fire Protection District is a member of the Heartland Automatic Aid Agreement and San Diego County Fire Mutual Aid Agreement. The Automatic Aid Agreement augments Alpine's emergency resources from surrounding career agencies on a closest-engine-basis. Heartland resources responding to wild land fires are assisted by automatic responses from CAL-FIRE and the U.S. Forest Service.

##### Structure Fire Alarms

A typical First-Alarm Structure Fire assignment for a fire occurring within the Alpine Fire District would include Alpine Engine 17 (4 personnel), Viejas Engine or Truck 25 (4 personnel, cross-staffing), Lakeside Engine 26 (3 personnel) and Engine 3 (3 personnel), one paramedic unit and one Duty Chief.

Second and Third Alarm assignments will double the First Alarm response for a Second Alarm and triple the First Alarm response for a Third Alarm.

##### Vegetation Fire Responses

Three (3) Type I Structure Engines; two (2) Type III Brush Engines; one (1) medic unit; One (1) Water Tender; one (1) Battalion/Duty Chief

The Project Site is in State Responsibility Area (SRA).

Alpine FPD vegetation fire response levels reflect a standard Heartland Zone Medium Wildland Dispatch response, with resource levels decreased because of the number of CAL-FIRE fire apparatus and equipment concurrently dispatched to all incidents.

##### CAL-FIRE Vegetation Fire Responses

Low Wildland – Two (2) Type III engines, one (1) Battalion Chief

Medium Wildland – Four (4) Type III engines, one (1) BC, one (1) bulldozer, two (2) hand crews, two (2) helicopters, one (1) air attack, two (2) air tankers

High Wildland – six (6) Type III engines, one (1) BC, two (2) dozers, four (4) hand crews, three (3) helicopters, one (1) air attack, three (3) air tankers

NOTE: These are basic response levels. Response levels are subject to change based on anticipated weather and fire behavior conditions, staffing patterns for unusual events, and State-wide resource commitments.

##### U.S. Forest Service Vegetation Response

The Project Site is immediately adjacent to the Cleveland National Forest western boundary. As an off-site Wildland Urban Interface Zone development, fires originating

on or near the Forest Boundary are considered a danger to the Forest and the USFS will respond a Forest Threat Zone vegetation fire response in addition to Heartland Zone and CAL-FIRE response patterns.

## 2.2 Emergency Access and Evacuation

### 2.2.1 Emergency Access

Primary emergency access to the Project Site is derived from East Victoria Drive, a public road with a south-to-north configuration and an improved edge of pavement to edge of pavement paved width of thirty (30) feet, with established driving lanes between white delineator lines having a width of twenty-two (22') feet.



*East Victoria Drive & Otto Avenue Intersection, Looking South*

Otto Avenue has an existing improved paved width of approximately thirty-two (32') feet. The paved road macadam (asphaltic concrete) surface of Otto Avenue exhibits a well-weathered condition.



*Otto Avenue Looking West*

### 2.2.2 On-Site Road Conditions

There are no existing paved roads on the proposed Project Site.

Development of the TM-4976 Site installed two existing dead-end roads, separated by a major drainage, that lead up to the proposed location of the Project Site. Blackwolf Drive is on the west side of the existing single family development and Fazio Road is on the eastern side.

The existing right-of-way for Blackwolf Drive has an improved paved width of approximately twenty-four (24') feet.



*Intersection of Blackwolf Drive & Otto Avenue, Looking North*

The existing right-of-way for Fazio Road has an improved paved width of approximately twenty-four (24) feet.



*Intersection of Fazio Road and Otto Avenue, Looking Northeast*

## Evacuation Routes

Future residents will use Otto Drive as the primary initial evacuation route from the Project Site.

Turning onto Otto Drive, residents will travel in a westerly direction to East Victoria Drive. At the intersection of East Victoria Drive residents are provided with two directions of evacuation travel.

Residents may turn south (left) on East Victoria Drive and proceed toward Alpine Blvd. At Alpine Blvd, two additional directions of travel are provided:

- Residents may turn west (right) and proceed to the intersection of Alpine Blvd and Tavern Road. Residents will have multiple evacuation or shelter options during the travel to Tavern Road and Alpine Blvd or upon turning southbound on Tavern Road.
  - o The Alpine Community Center is a designated Evacuation Site for the community and is located approximately one-half-way between West Victoria Drive and Tavern Road on the north side of Alpine Blvd.
  - o Turning south bound on Tavern Road, residents may proceed to either Joan McQueen Middle School or Boulder Oaks Elementary School. Both sides are designated Community Emergency Shelters. They are located approximately one (1) mile south of the intersection.
  - o Turning north (right) at the intersection, residents can proceed to the Interstate 8 corridor. There are two directions of evacuation travel provided on Interstate 8 – east bound to the Viejas Indian Reservation and west bound towards the community of Lakeside and the Cities of El Cajon, La Mesa and San Diego.
- Residents may turn east (left) and proceed towards the West Willows and Alpine Blvd intersection. Turning north on West Willows, residents can either enter the east or west bound sides of Interstate 8 for travel out of the community. Alternatively, residents can travel in an easterly direction on West Willows to the Viejas Indian Reservation Gaming Center, which provides large parking lots and buildings for shelter-in-place and potential Safety Zones.

Turning north (right) on East Victoria Drive, residents will follow the westerly loop of the road towards the Alpine Town Center Area.

- At the intersection of Victoria Park Terrace, residents may turn west (right) and then proceed to the Interstate 8 interchange, where two directions of travel are available.
  - o Residents may turn west (right) onto the west bound I-8 on-ramp and proceed towards the community of Lakeside, City of El Cajon or additional cities to the west.
  - o Residents may turn east (left) on to the east bound I-8 on ramp and proceed east to the Viejas Reservation and Casino with its large parking lots that may serve as a community safety zone.
- Bypassing the Interstate 8 interchange, residents can continue south on Tavern Road until reaching the Alpine Blvd. intersection, approximately 750 feet south

of the I-8 overcrossing bridge. Two additional directions of travel are available to residents at this intersection.

- o Residents may turn west (right) on Alpine Blvd. and proceed in this direction towards the community of Lakeside, City of El Cajon and other cities to the west of the community
- o Residents may turn east (left) on Alpine Blvd and proceed to the Alpine Community Center, approximately two blocks away. The Alpine Community Center is a designated Community Safety Zone and Evacuation Center. Alpine Elementary School is immediately adjacent to the Community Center and is a designated Primary Shelter area.
- o Residents may proceed straight through the intersection and proceed to Joan McQueen Middle School, approximately one mile away, which is a designated Community Safety Zone and Primary Shelter.

#### 2.2.4 – Shelters and Fire Safe Zones

Shelters - Alpine has four primary shelters and an evacuation site available to the Red Cross.

Primary Shelters:

- Alpine Elementary School, 1850 Alpine Boulevard (RED side-by-side stars)
- Shadow Hills Elementary School, 8770 Harbison Canyon Road
- Joan MacQueen Middle School, 2001 Tavern Road (YELLOW star)
- Boulder Oaks Elementary School, 2320 Tavern Road (ORANGE star)

Evacuation Site – The Evacuation Site is designated as the Alpine Community Center, located at 1830 Alpine Boulevard (RED side-by-side stars)

#### Fire Safe Zones

If it is impossible to evacuate from the Alpine area because of traffic congestion on the roads, all of the above locations can serve as Fire Safe Zones. Other potential, but unofficial, Fire Safe Zones are depicted on Figure 2.2.4 as GREEN stars.

#### Emergency Services

The Red Cross has been contracted to provide emergency services at all of these locations as and when they are needed.

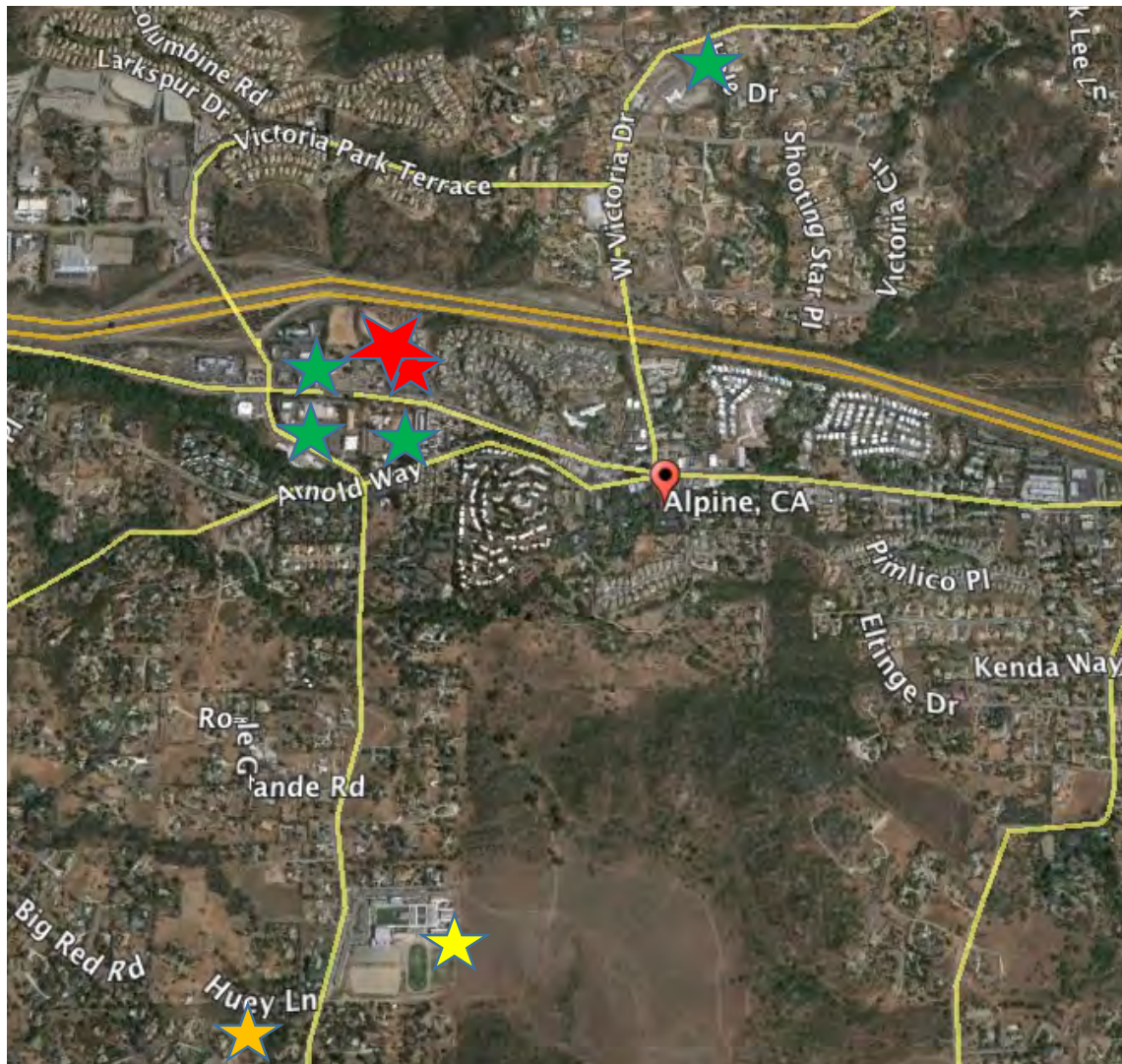


Figure 2.2.4 - Evacuation Center and Fire Safe Zones

## 2.2 Firefighting Water Supply

### 2.3.1 - Existing Water Distribution System

The project site is served by the Padre Dam Municipal Water District.

The Project Site is currently undeveloped and there is no water distribution infrastructure provided.

The nearest fire hydrant to the project site on Fazio Road is 3506 Fazio Road, at the entrance to the existing opposite the existing cul-de-sac bulb. The hydrant is a commercial type two 2-1/2" and one 4" discharge ports.

The nearest fire hydrant to the project site on Blackwolf Drive is 3536 Blackwolf Drive, at the entrance of the existing cul-de-sac bulb. The hydrant is a commercial type two 2-1/2" and one 4" discharge ports

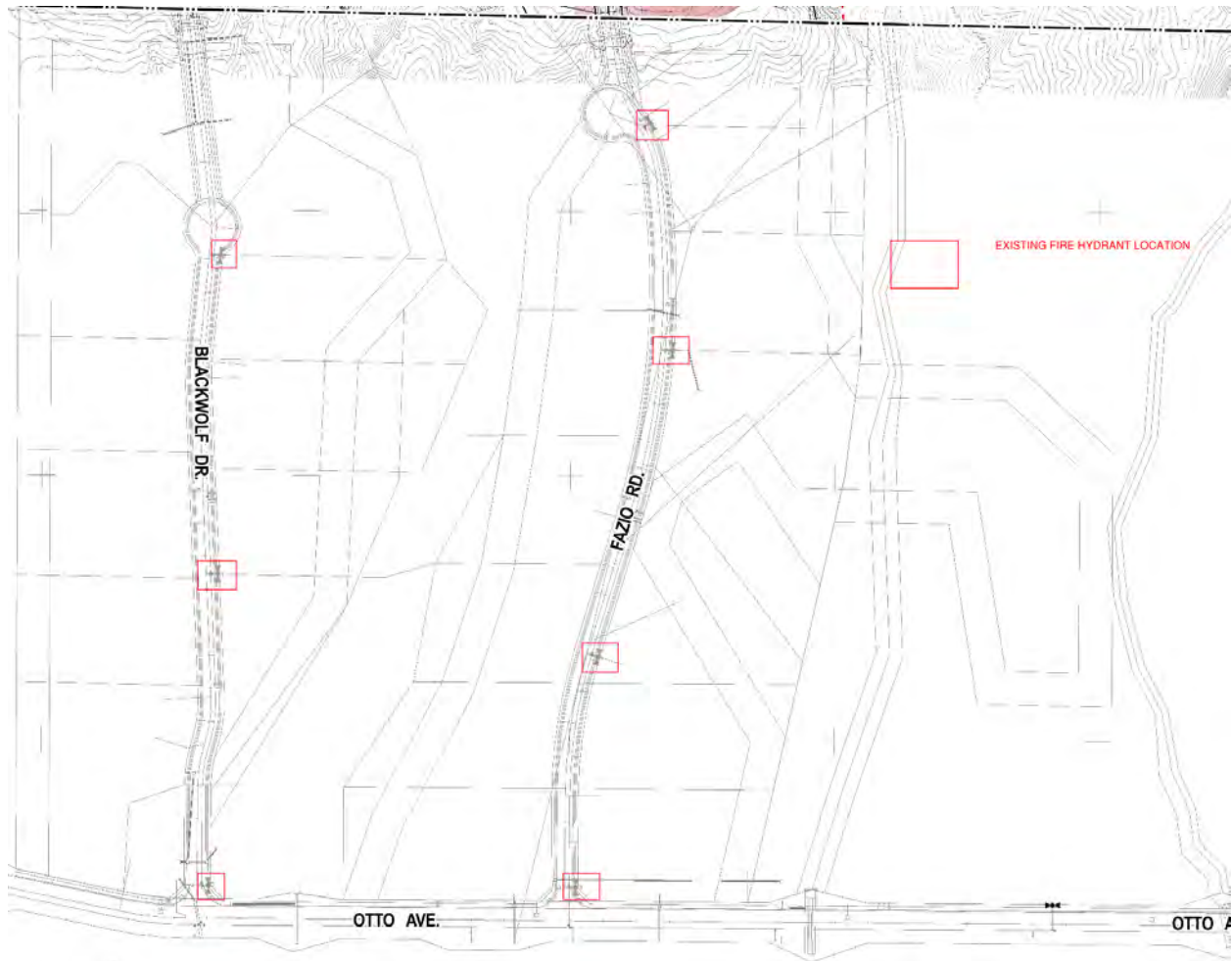
Additional fire hydrants are distributed at California Fire Code and County of San Diego and Alpine FPD Ordinance required and Alpine Fire Marshal approved intervals throughout the established sub-division to the south of the Project Site. See the map below for hydrants installed in the existing Blackwolf Phase I area.

All fire hydrants in the established sub-division have two 2-1/2" and one 4" discharge port.

There are no hydrants on Otto Drive east of the Fazio Road intersection.



*Typical Existing Fire Hydrant, Blackwolf Phase I Development-Fazio Road*



*Existing Fire Hydrant Locations – Phase I, Black Wolf Estates*

## 2.4 Fire Sprinkler Systems

There are no existing buildings on the Project Site. All new and future buildings will have automatic fire sprinkler systems compliant with NFPA Standard 13-D installed as required by the most current edition of the Alpine FPD ordinances and San Diego County Consolidated Fire Code.

## 2.5 Ignition Resistant Construction

There are no existing buildings or structures on the proposed Project Site.

All new and future buildings and structures will be required to conform to Chapter 7-A of the County of San Diego Building Code for Ignition Resistant Building Construction Standards for Wildland-Urban Interface Areas.

## 2.6 Defensible Space, Ornamental Landscaping and Vegetation Management

There are no existing structures and buildings on the proposed Project Site.

Defensible Space, Vegetation Management and Ornamental Landscaping are regulated by provisions found in the County of San Diego Consolidated Fire Code, California Fire Code, International Wildland Urban Interface Code, California Public Resources Code, California Health and Safety Code and the California Government Code. Buildings and structures erected in brush covered lands are generally required to have defensible space and fuel modification zones measuring 100 feet in depth.

All regulatory provisions contain exception clauses allowing diminished defensible space depth when sufficient clearance cannot be accomplished because of parcel constraints and restrictions. In such cases, defensible space is provided as “Zone 1” (removal of all native vegetation with replacement consisting of fire- and/or drought-resistant species and “approved”, irrigated landscaping) fuel modification zones that extend to established property lines.

Recent revisions to State legislation limits extension of the maximum 100-foot-deep defensible space zones on properties in extra hazardous locations. It is only allowed following a site evaluation by CAL-FIRE (or Local Fire Authority Fire) Prevention personnel and after a written justification has been produced. Property owners cannot be required to provide off-site fuel modification zones and defensible space beyond their property lines.

## CHAPTER 3 ANTICIPATED FIRE BEHAVIOR IN THE VICINITY

### 3.1 Fire Behavior Model

#### 3.1.1 Summary Narrative

Anticipated Fire Behavior was analyzed after visiting the Project and identifying the on- and off-site natural vegetative fuels. Terrain and topographical inputs were determined by site visits and making comparisons with two- and three-dimensional maps. Weather inputs were derived from the Interior Zone Worst Case Weather and Burning Conditions table supplied by the County of San Diego Guidelines for Fire Protection Plans and by 2003 Cedar Fire weather and fuel parameters, which were previously established as worst-case fire behavior conditions in San Diego County.

The above data inputs were subjected to analysis by the BEHAVE-Plus 5.0.5 Wildland Fire Modeling program to determine potential wild fire behavior at the Project Site.

The BEHAVE-Plus Fire Behavior Prediction and Fuel Modeling System is a computer-based systematic method of predicting wild land fire behavior. It was developed by the U.S. Forest Service at the Intermountain Forest Fire Laboratory, Missoula, Montana, and is used by wild land fire experts and scientists nationwide.

BEHAVE-Plus is designed to predict fire spread and describes fire behavior only at the flame front of a fire.

The primary parameter of the BEHAVE fire behavior calculations are dead fuels less than one-quarter (1/4") inch in diameter that readily carry fire across the landscape. Fuels larger than three (3) inches in diameter are not included in the BEHAVE calculations. The BEHAVE fire model describes a wildfire spreading through surface fuels, which are the burnable materials within six (6) feet of the ground and contiguous to the ground.

#### 3.1.2 Use of Fire Model Inputs – Caveat

The BEHAVE-Plus Fire Behavior Model is a tool used by fire authorities to estimate the behavior of fire moving towards a structure under certain assumptions. The Fire Behavior Model is only an estimate and is not designed to replace the experience of the local Fire Authority, who is familiar with local wildfire behavior. The Behave-Plus fire model is not the only recognized fire model that is available; it is used by this report because it is currently used by most fire consultants.

### 3.2 Anticipated Fire Behavior

Evaluation of anticipated fire behavior on the Project site used historical data, analysis of significant wind events and identifying the different fuel models present in the area.

The strongest winds likely to impact the Project are from the east/northeast during Santana wind events. The area adjacent to the Project site has steep south-and west-facing slopes intersected by a number of major drainages. The project is bisected by a major drainage located below ridgetops upon which single family dwelling neighborhoods have been established by TM-4978. A second major drainage is immediately east of the Project Site and established neighborhood and has a north to south configuration, which while not in direct alignment with topography and vegetative fuels that will be influenced by a strong northeast wind conditions, will significantly influence and impact fire spread and behavior under Santa Ana wind conditions.

The normal south and southwest winds typically associated with the area are occasionally strong and gusty. The dual south to north major drainages inside and immediately adjacent to the established neighborhood and proposed Project site have an alignment that will be influenced by southwesterly winds with moderate to significant impacts on fire spread and behavior in the vegetative fuels and across the topography. It should be noted, however, that these normal winds are generally associated with cooler, moist air and usually have relative humidity ranges of 40% or more. They are considered a serious wildfire weather condition when wind speeds are over 20-MPH and relative humidity is 30% or lower.

The Project is currently covered by vegetation typical of Fuel Models TU-5 (oak woodland with grass understory) in the eastern riparian drainages and Fuel Model SH-5 Heavy Load, Dry Climate southern mixed chaparral and shrubs on the remainder of the Site.

The chaparral and shrub fuels consistent with Fuel Model SH-5 are, according to BEHAVE computer fire modeling, the most severe fire behavior conditions measured for the Project Site.

For the overall analysis of fire behavior, all fire scenarios will use fuel models SH-5 to predict fire behavior under various conditions and locations on the Project Site.

### 3.2.1 Fire Behavior Threat Analysis

An evaluation of the Project Site was has determined that it will be exposed to the following foreseeable wild fire threats as listed below. The predicted fire behavior is the worst-case scenario anticipated for the environmental and weather parameters of the Project site.

| Location                                              | Flame Length | Rate of Spread | Spotting        |
|-------------------------------------------------------|--------------|----------------|-----------------|
| East Side, Viejas Mountain Exposure (Fuel Model SH-5) | 41 feet      | 488 ft./min.   | 1.6 miles, 100% |
| East Drainage (Fuel Model TU-5)                       | 19.2 feet    | 62.5/min.      | 1.0 miles, 100% |
| West Off-site Exposure (FM SH-5)                      | 40.9 feet    | 485 ft./minute | 1.6 miles, 100% |

*Worst-Case BEHAVE Fire Modeling Predicted Fire Behavior*

The fire behavior analysis scenarios listed below are for existing, pre-Project completion conditions only. Development of the Project Site will change anticipated fire behavior and will be addressed in Section 4.7.1.1.



*Figure 3.2.1 - Overview of Project Site Depicting Topographic Features*

#### 3.2.1.1 Fires Originating Along the I-8 Corridor, Late Afternoon, Summer Southwest Winds

The normal summer late afternoon south and southwest winds found in the area are occasionally strong and gusty. These winds tend to be cooler, have relatively moist air and usually have higher a relative humidity of 40% or more. They are considered a serious wildfire weather condition when wind speeds are over 20-MPH and relative humidity is 30% or lower.

For purposes of fire behavior analysis, for worst-case situation, that a fire will start near the southeast corner of the Project Site and immediately adjacent to the Interstate 8 right-of-way corridor.



*Anticipated Fire Behavior for Fires Starting Along I-8 During Typical Summer Afternoon Periods*

Fires starting south of the Project site will be pushed northwest by the prevailing winds and will enter the drainage bisecting the project site and the drainage immediately east of the Project Site that contains the riparian creek bed.

The winds will primarily push the fire in a southwest to northeast direction. The Black Wolf Estates (phase 1) residential neighborhood south of the Project Site will be impacted by the fire front entering one or both of the south-to-north drainages.

The fire front will travel through the drainages until it reaches the base of the slopes of Viejas Mountain. Afternoon solar radiation heating on the exposed slopes will increase ground and fuel temperatures, establishing moderate up-canyon wind patterns. These wind patterns will influence the fire front and direct it upslope and away from the Project Site and the Black Wolf Estates I.

The west facing slopes of Viejas Mountain are covered with light grassy fuels and moderate to heavy concentrations of shrub and brush vegetative fuels. There are multiple drainages on Viejas Mountain that have fuels and topography in direct alignment with the prevailing southwestern winds.

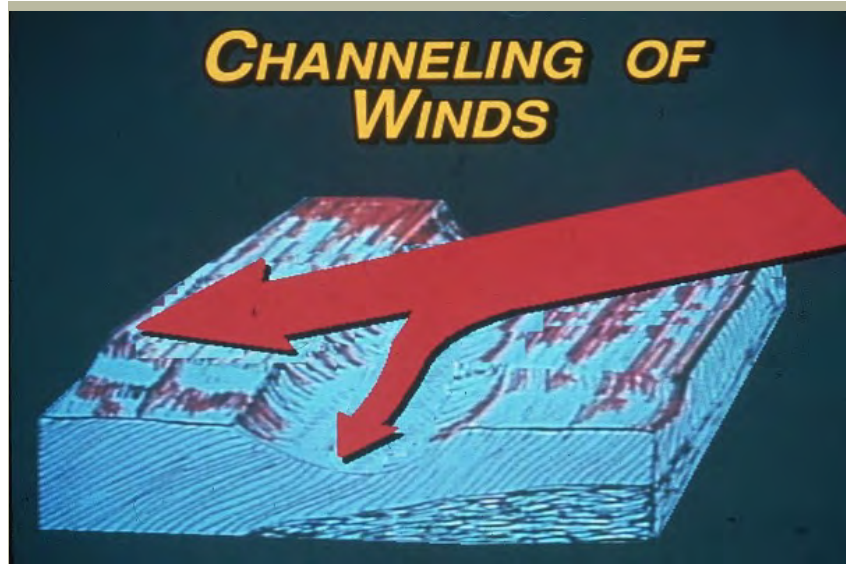
When the fire front reaches the base of the mountain side, fire behavior may change significantly. Under continuing upslope wind influences, the Rate of Spread will increase, driving the fire both up- and cross-slope into previously unburned fuels on the mountainside. However, the general fire behavior at the base of the mountain, although moving with rapid rates of spread, will tend to have slower spread rates than on the slopes and canyons as it moves across the landscape through unmanaged vegetation adjacent to the developed East Victoria Drive area.

Fire entering the southwest to northeast configured drainages will generally progress in a northerly direction as the fire front progresses up Viejas Mountain. As fire enters the wind and topography aligned canyons, it will be rapidly drawn through the topographical features toward the ridge lines to the east. Rate of Spread will accelerate in the topographical draw as the wind in the narrow canyon is channeled upward, with a major flame front developing and making a run towards the homes to the north and east. Once established on the slopes of Viejas Mountain, controlling the spread of the fire will present a serious challenge to fire resources.

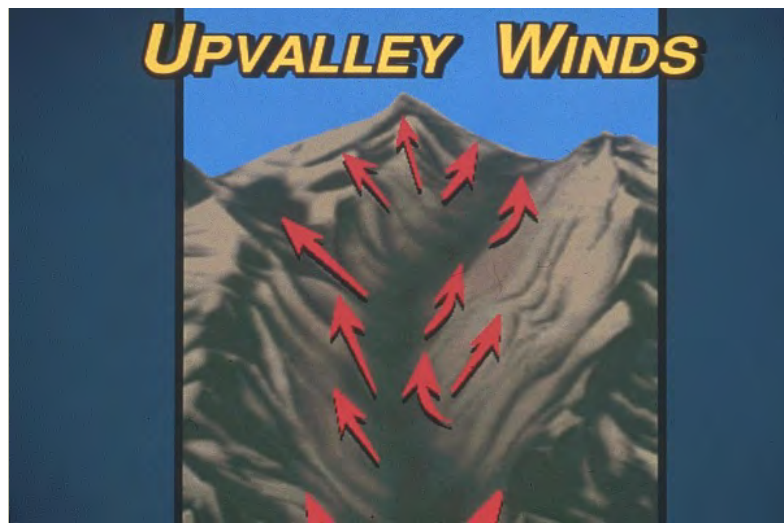
Fire behavior may become unpredictable because of gusty winds; erratic winds; wind eddies on ridgelines; long-range spotting with firebrands deposited in receptive vegetation downwind for distances over two miles; and rapid fire extension upslope in natural chimneys.

Natural topographic features associated with the development of fire whirls are present on the mountainside and in the natural drainages inside the Black Wolf I and the Viejas Hills Estates Project Site areas, and along prominent peaks and ridgetops. Unstable, erratic winds, in combination with topographical outcroppings and unevenly heated ground, could trigger fire whirls, resulting in unpredictable rates of spread and intensity. Fire behavior at the bottom of the slope will be impacted by the erratic fire behavior developing upslope.

The flame front can be expected to follow the base of the mountain under the influence of the southwest winds, with rapid rates of spread. The flame front will create potential direct flame contact, convective and radiant heat exposures to all buildings and structures along the path of its spread across the landscape. Firebrands lofted by convective will land in the vegetation island between homes west and northwest of the Project Site and in unmanaged vegetation fuel beds east of East Victoria Drive.

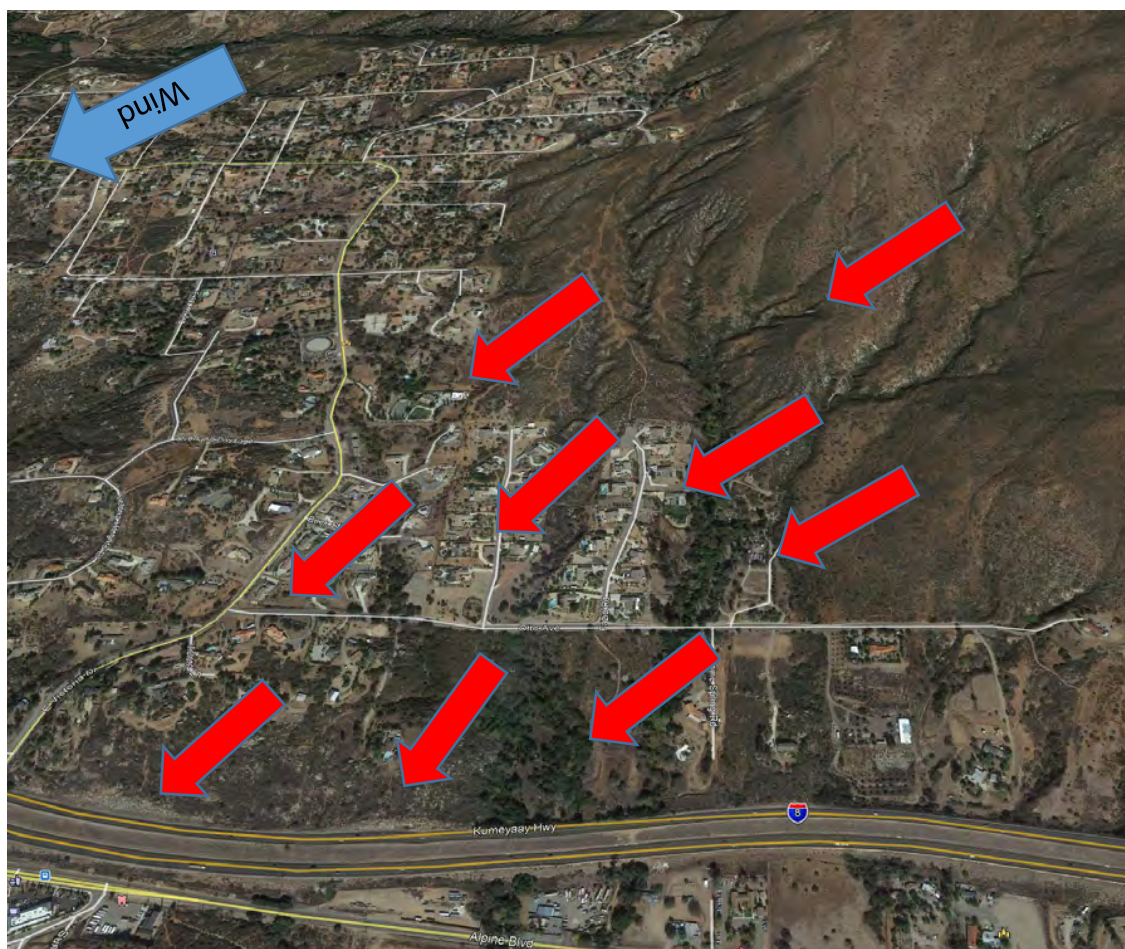


Diagrams Showing Typical Channeling of Winds Through Canyons



#### 3.2.1.2 Fires Originating from Viejas Mountain, Northeast/Santa Ana Wind Event

For purposes of fire behavior analysis, for worst-case situation, a fire will start off-site on the southwest facing slope of Viejas Mountain, east of East Victoria Drive. The fire is a result of fire brands deposited downwind from a main body of fire on the east side of Viejas Mountain.



*Anticipated Fire Behavior for Fires Starting on Viejas Mountain, Santa Ana Wind Event*

Santa Ana Northeast winds, with velocities of 30 mph, or more, will influence the fire's head (leading edge of the flame front) and drive the fire across the landscape in a southwesterly direction with a high rate of flame spread. Rate of spread, based on wind speed, topography and vegetative fuel types is anticipated to be 488 feet per minute.

The flame front will move across the landscape and slopes of Viejas Mountain in a southwesterly direction before reaching the Project site and impacting the existing residential areas. It is foreseeable that one, if not several residential buildings, depending on building construction, fire intensity and condition of fuel modification zones (defensible space) around buildings, will ignite with the flame front passage.

Natural vegetation between the residential areas, the Project Site and the slopes of Viejas Mountain are moderate to heavy chaparral fuel types, with moderate to heavy canopy loading and mixed broken and unbroken continuity and compactness. Fuel height varies between three (3') and approximately six (6') feet, with the average being 4-1/2 feet.

The vegetation in this area can be described as Fuel Model SH-5, High Load Dry Climate Shrub. Worst-Case Fires in this fuel bed will produce flame lengths of approximately forty-

one (41') feet, will progress across the landscape at an average rate of 488 feet per minute and will loft fire brands 1.6 miles with 100% ignition in downwind receptive fuel beds.

Under the influence of northeast Santa Ana winds, the flame front will progress rapidly cross-slope and downslope in a southwesterly direction.

Fire behavior may be unpredictable due to gusty winds; erratic winds; wind eddies on ridgelines; long-range spotting with firebrands deposited in receptive vegetation downwind for distances over two miles; and rapid fire extension downslope into natural chimneys. Natural topographic features associated with the development of fire whirls are present along the prominent ridge lines and natural drainages with prominent peaks.

The flame front can be expected to follow the hillside slopes and drainage under the influence of the northeast winds, with rapid rates of spread. The flame front will create potential direct flame contact, convective and radiant heat exposures to all buildings and structures along the path of its spread across the landscape. Firebrands lofted by convective will land in the vegetation islands between homes within the Blackwolf I and East Victoria Drive residences, in the Open Space Easements adjacent to and inside of the Project Site, and into established developed areas south of the Interstate 8 right-of-way corridor, igniting receptive and unmanaged vegetation, and potentially, non-fire resistive buildings and structures.

This FPP will prescribe implementation of the current Fire Code requirements that should mitigate fire risks from either a 60-mph northeast Santa Ana wind or any prevailing 30-mph southwest or south wind.

All Project residential buildings will be built to the Ignition Resistant Building Material Standards specified in Chapter 7-A of the California Building Code, the San Diego County - Consolidated Fire Code, and County of San Diego Building Code.

### 3.2.1.3 Fires Originating from East Victoria Area, Southwest Winds

For purposes of fire behavior analysis, for worst-case situation, a fire will start adjacent to established residential parcels on the eastern side of East Victoria Drive, directly west of the proposed Project Site.

Fires starting west of the Project site will be pushed northwest by the prevailing winds. The winds will primarily push the fire in a southwest to northeast direction.

The fire front will travel upslope towards the Project Site while simultaneously moving cross-slope in a northeasterly direction, reaching the slopes of Viejas Mountain. Afternoon solar radiation heating on the exposed slopes will increase ground and fuel temperatures, establishing moderate up-canyon wind patterns. These wind patterns will influence the fire front and direct it upslope and towards the Project Site.



*Anticipated Fire Behavior for Fires Starting in East Victoria Drive Area, Typical Summer Afternoon*

The west facing slopes of Viejas Mountain are covered with light grassy fuels and moderate to heavy concentrations of shrub and brush vegetative fuels. There are multiple drainages on Viejas Mountain that have fuels and topography in direct alignment with the prevailing southwestern winds.

When the fire front reaches the prominent slopes of Viejas Mountain, fire behavior may change significantly. Under continuing upslope wind influences, the Rate of Spread will increase, driving the fire both up- and cross-slope into previously unburned fuels on the mountainside. However, the general fire behavior at the base of the mountain, although moving with rapid rates of spread, will tend to have slower spread rates than on the slopes and canyons as it moves across the landscape through unmanaged vegetation adjacent to the developed East Victoria Drive area.

Fire entering the southwest to northeast configured drainages will generally progress in a northerly direction as the fire front progresses up Viejas Mountain. As fire enters the wind and topography aligned canyons, it will be rapidly drawn through the topographical features toward the ridge lines to the east. Rate of Spread will accelerate in the topographical draw as the wind in the narrow canyon is channeled upward, with a

major flame front developing and making a run towards the homes to the north and east. Once established on the slopes of Viejas Mountain, controlling the spread of the fire will present a serious challenge to fire resources.

Fire behavior may become unpredictable because of gusty winds; erratic winds; wind eddies on ridgelines; long-range spotting with firebrands deposited in receptive vegetation downwind for distances over two miles; and rapid fire extension upslope in natural chimneys.

Natural topographic features associated with the development of fire whirls are present on the mountainside and in the natural drainages inside the Black Wolf I and Project Site areas, and along prominent peaks and ridgetops. Unstable, erratic winds, in combination with topographical outcroppings and unevenly heated ground, could trigger fire whirls, resulting in unpredictable rates of spread and intensity. Fire behavior at the bottom of the slope will be impacted by the erratic fire behavior developing upslope.

The flame front can be expected to follow the base of the mountain under the influence of the southwest winds, with rapid rates of spread. The flame front will create potential direct flame contact, convective and radiant heat exposures to all buildings and structures along the path of its spread across the landscape. Firebrands lofted by convective will land in the vegetation island between homes west and northwest of the Project Site and in unmanaged vegetation fuel beds east of East Victoria Drive.

## CHAPTER 4 ANALYSIS OF PROJECT EFFECTS

### 4.1 Adequate Emergency Services

#### 4.1.1 – Fire Authority Having Jurisdiction

The Alpine Fire Protection District provides year-round (24-7-365) public safety services, including fire protection, emergency response, medical aid, fire prevention, disaster preparedness, search and rescue and community education programs.

The Department operates one fire station and is responsible covering a response area of 27.5 square mile area.

The Department has been evaluated by the Insurance Services Office and received a Fire Suppression rating of “2/2Y” on a “1 to 10” scale, with “1” being the most effective fire services and “10” the least effective.

The Fire Department dispatches three Type I (Structure) Engine Companies, One Truck (ladder) Company and a Command and Control Chief Officer to all first alarm structure

fire responses. The First Alarm assignment for Vegetation Fires is three Type III (Brush) Engines. Alpine FPD is a participant in the Central (Heartland) Zone Automatic Aid Agreement, which dispatches on a “Boundary Drop” basis where the closest engine to a reported emergency responds without consideration given to jurisdictional boundaries.

*Finding: The standard First Alarm Structure response provided by the Alpine Fire Protection District is commensurate to dispatch levels and personnel assignments for other career Fire Departments in San Diego County.*

*Finding: A minimum of twelve (12) firefighters (four companies with a minimum staffing of three firefighters) respond with a Command and Control officer to all incidents. This fire assignment provides one engine company for interior fire attack operations, one engine company for RIC (Rapid Intervention Crew for firefighters in distress rescue operations), one engine company to support interior fire attack operations and one company to provide ventilation, search and rescue functions, forcible entry and utility securement tasks.*

*Finding: The Alpine Fire Department First Alarm assignments provide an effective initial attack firefighting force.*

#### 4.1.2 – Response Time and Nearest Fire Station

The Response Policy of the Alpine Fire Protection District is to have resources arrive at fire and other emergency incidents within five (5) minutes of initial dispatch 80% of the time.

The County of San Diego’s General Plan Emergency Response Time criteria for semi-rural single family residential parcels is five (5) minutes.

Fire Station 17, the closest Fire Station to the Project Site, is approximately 2.1 miles from the Project Site and the estimated travel time under normal, non-emergency driving conditions is under five (5) minutes.

Fire Station 25, the next closest fire station to the project site, is approximately four (4) miles from the Project site and the estimated travel time under normal, non-emergency driving conditions is six (6) minutes.

*Finding – The primary fire apparatus resources for the Project, under normal, non-emergency driving conditions, will be able to travel to the Project Site within the County’s General Plan Emergency Response Time criteria.*

## 4.2 Fire Access

### 4.2.1 - Access to Project Site

The Project Site currently has two ingress and egress routes.

Primary access to the Project is from East Victoria Drive, which has a twenty-six (26') foot improved paved width. East Victoria Drive begins south of the Project area at its intersection with Alpine Blvd. and continues in a south to north and, eventually, a northwest direction until it merges with West Victoria Drive. Proceeding north on East Victoria Drive for approximately one-quarter mile, the intersection of Otto Avenue is reached. Fire apparatus will turn east (right) on Otto Avenue to reach the Project site.

Otto Avenue is a public road with a thirty-two (32') foot improved paved width. Otto Avenue has a west to east configuration and dead-ends at the base of Viejas Mountain east of the Project Site.

The western entrance point to the Project site begins at the intersection of Otto Avenue and Blackwolf Drive. Blackwolf Drive is a twenty-four (24') road with a south to north configuration. Access to the project site is by traveling north on Blackwolf Drive until the Project area is reached.

On completion of Project development, Blackwolf Drive will loop across the landscape and connect with Fazio Road, forming a single vehicle access pathway in and out of the Project area.

The eastern entrance point to the Project site begins at the intersection of Otto Avenue and Fazio Road. Fazio Road is a twenty-four (24') road with a south to north configuration. Access to the project site is by traveling north on Fazio Road until the Project area is reached.

#### 4.2.2 – Current Road Conditions

The southern ingress and egress route on Otto Avenue is paved with an asphaltic concrete (asphalt, macadam) paved surface. The paving surface appears to be in fair to good condition, exhibiting moderate amounts of weathering but with no obvious potholes. The right-of-way does not serve a gated community; there are no obstructions, traffic calming devices or chokepoints along the lengths on Otto Avenue.

The west (Blackwolf Drive) and east (Fazio Road) ingress and egress routes are paved with an asphaltic concrete (asphalt, macadam) paved surface. The paving surface appears to be in good condition, exhibiting minimal amounts of weathering, with no obvious potholes or repairs. The Black Wolf I development not a gated community; there are no obstructions, traffic calming devices or chokepoints along the lengths of Fazio Road and Blackwolf Drive.

#### 4.2.3 – Proposed Access Roads

There are four (4) proposed streets that will serve the Project Site for egress and ingress purposes:

- Blackwolf Drive
- Fazio Road

- Enzley Court
- Viejas Spur

Blackwolf Drive is the western access road for the Project Site. It has a south to north west-to-east configuration, beginning at its intersection with Otto Avenue. This street will have an improved paved width of twenty-four (24') feet and will loop in a northwest to northeast arc to connect with Fazio Road. The maximum grade on the existing Blackwolf Drive is 9.6% adjacent to 3536 Blackwolf Drive.

Fazio Road is the eastern access road for the Project Site. It has a south to north configuration, beginning at its intersection with Otto Avenue. It has an improved paved width of twenty-four (24') feet. The maximum existing grade is 9.5%, which is located between the intersection of Otto Avenue and 3548 Fazio Road.

Enzley Court begins at its intersection with Blackwolf Drive immediately adjacent to the beginning of the west to east loop that will connect with Fazio Road. Enzley Court is on the west side of Blackwolf Drive and turns in a southerly direction to parallel the Black Wolf Road corridor. Enzley Court has a proposed length of approximately 440 feet and will end in a cul-de-sac bulb. The proposed width will be twenty-four (24') feet.

Viejas Spur begins at the top of the loop connecting Blackwolf and Fazio Roads. It has a south to north configuration, will terminate in a cul-de-sac bulb of approximately 270 feet and will have a proposed paved width of twenty-four (24') feet.

#### 4.2.4-- On-Going Road Maintenance

The project developer has three options for funding private road maintenance:

1. California Civil Code Section 845 – requires that the owner(s) of a private road easement to maintain the road in good repair through formal agreements or proportional sharing of costs incurred. Enforcement of the in perpetuity road maintenance operations is by legal action in a court of law having jurisdiction over the right-of-way or by judgment of an impartial arbitrator. The judgment may be enforced as a money judgment by any party against any other party to the legal action taken.
2. County of San Diego Private Road Maintenance Agreement - as authorized by Section 21065 of the California Public Resources Code and Sections 81.402(c)(1) and 81.703(c)(1) of the County of San Diego Code of Regulatory Ordinances, the developer, individual lot owners and the County may enter into private road maintenance agreements. This type of agreement binds current and future low owners to provide equal and proportional sharing of road maintenance costs that include, but are not limited to, the following operations - reasonable and normal road improvement and maintenance work to adequately maintain said private road easement and related drainage facilities to permit all weather access, filling of chuck holes, repairing cracks, repairing and resurfacing of roadbeds, repairing and maintaining drainage structures, removing debris, maintaining signs,

markers, striping and lighting, if any, and other work reasonably necessary or proper to repair and preserve the easement for all weather road purposes.

3. Creation of a Permanent Road Division – A Permanent Road Division zone is a special district established at the request of property owners with a common road related need in a specific area for repairs and maintenance. Property owners must pay all of the costs of the PRD through a special benefit assessment or parcel charge assessment on their property tax bill. The cost to each individual property owner is determined by the benefit their property receives as a result of road repair and maintenance.

*Finding: The Project has been conditioned to provide an in-perpetuity Private Road Maintenance agreement with the County of San Diego that is satisfactory to the Director of Public Works.*

### 4.3 Water Supply

#### 4.3.1 – Existing Water Distribution System

The project site is served by the Padre Dam Municipal Water District.

The Developer has applied to Padre Dam MWD for a “Project Facility Availability Form” (“Will Serve” letter) for the Project. The Project Facility Availability Form states that the existing or proposed water infrastructure may support the Project. (See *Attachment “G”*)

The required fire flow in a water main is 2500 gallons per minute for new sub-divisions.

### 4.4 Ignition Resistant Construction and Fire Protection Systems

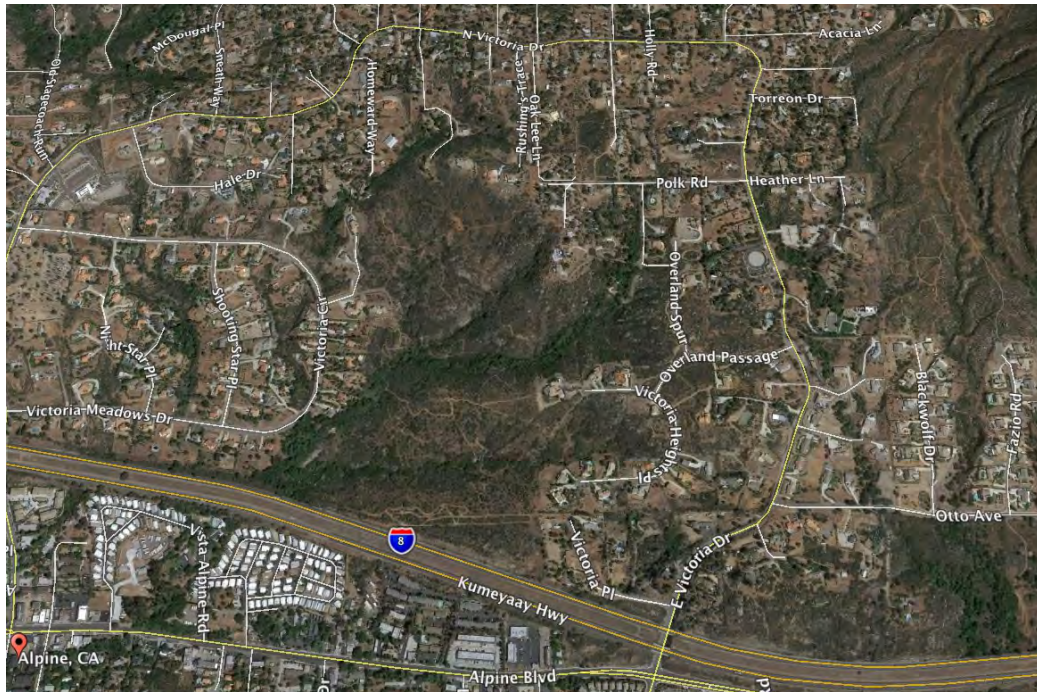
#### 4.4.1.1 – Existing Structures on Project Site

There are no buildings or structures on the proposed Project Site.

All new and future buildings and structures will be required to conform to Chapter 7-A of the County of San Diego Building Code for Ignition Resistant Building Construction Standards for Wildland-Urban Interface Areas. Automatic fire sprinkler systems conforming to NFPA Standard 13-D for residential fire sprinklers in one and two family dwellings shall be installed for all buildings and auxiliary structures designated by the most current Alpine FPD local ordinances and the San Diego County Consolidated Fire Code.

#### 4.4.1.2 – Existing Off-Site Structures

Off-site, the community around the project is zoned for, and developed as, residential occupancies. Single Family Residences surround the Project Site on three (3) sides, with the Interstate 8 right-of-way corridor serving as the fourth side.



*Existing Development Around the Project Site*

Site visits to the area in conjunction with analysis of the Project Site indicates that most of the off-site single family dwellings have been built in compliance with former County of San Diego Enhanced Fire Resistant Construction and current California Building Code Chapter 7-A requirements for Wildland Urban Interface (WUI) Areas.

Approved Fire Resistant Construction features include, but are not limited to:

- Installation of NFPA Standard 13-D Residential Fire Sprinklers
- Class A Non-combustible Roofs
- Boxed and enclosed Roof Eaves
- Fire resistant or non-combustible wall siding
- Dual pane fire resistant or tempered glass windows
  - o Dual pane windows – one pane shall be tempered glass

#### 4.5 Fuel Modification Zones- Defensible Space

Site visits to the area in conjunction with analysis of the Project Site indicate that the existing residences in the area have varying degrees of Fuel Modification Zone and Defensible Space compliance. It is estimated that 50% of the homes in the area have inadequate defensible space maintenance, as evidenced by combustible native and non-

native vegetation allowed to grow unmanaged, in some cases, within ten (10') of buildings. In many cases, fuel canopies within defensible spaces have not been thinned by 50% of their growth and dead and dying fuels have not been removed.



*Typical Fuel Modification Conditions Throughout the Adjacent Residential Developments*

The Project Developer is *not* responsible for the lack of off-site Fuel Modification Zone compliance. This is the individual property owner's responsibility.

However, the Project Site, when completed according to the prescriptive treatments of this Fire Protection Plan, will mitigate large areas of formerly unmanaged vegetative fuels that currently expose off-site buildings and properties to hazardous conditions.

## 4.6 Fire Fuel Assessment

### 4.6.1 General Description of On-Site Vegetative Fuels

The site visits revealed that the primary vegetation on the Project Site is native species of Mixed Southern Chaparral intermixed with shrubs with riparian growth trees. These fuel type covers the undisturbed habitat and proposed developed areas of the site.

In addition to the Biological Resources Map, the site visit determined that the native vegetative fuels on the site can be classified as SH-5, Heavy Load Dry Climate Shrub according to the most current edition of *Standard Fire Behavior Fuel Models: A Comprehensive Set for Use with Rothermel's Surface Fire Spread Model*.

### Shrub Fuel Type Models (SH)

The primary carrier of fire in the SH fuel models is live and dead shrub twigs and foliage, in combination with dead and down shrub litter. A small amount of herbaceous fuel may be present, especially in SH1 and SH9, which are dynamic models (their live herbaceous fuel load shifts from live to dead as a function of live herbaceous moisture content). The effect of live herbaceous moisture content on spread rate and flame length can be strong in those dynamic SH models.

### SH-5 Heavy Load, Dry Climate Shrub



*Typical SH-5 Heavy Load Dry Climate Shrub Growth on Project Site*

The primary carrier of fire in SH-5 is woody shrubs and shrub litter. SH-5 has a moderate fuel load and fuel depth of about one to two feet. The rate of spread is low and flame lengths are low. Typical fuel loading is 5.2 tons per acre and the extinction moisture content is 15%.

#### 4.6.2 Fire Behavior of Identified Vegetative Fuels

A detailed discussion of the fire behavior for vegetative fuels on the Project Site is discussed in Section 3.2 (above).

#### 4.6.3 Fire Behavior Threat Analysis

A detailed discussion of the Fire Behavior Threat Analysis for vegetative fuels on the Project Site is discussed in Section 3.2 (above).

### 4.7 Fire Behavior Modeling

#### 4.7.1 Fire Behavior Modeling Summary

Wildland fire behavior calculations have been projected for the hazardous vegetative fuels on the undeveloped adjacent sites bordering the project and inside the proposed residential development. These projections are based on “worst case” fire scenarios that could impact the project site.

The computer based BEHAVE-Plus Version 5.0.5 was used to develop the fire behavior assessments impacting the project. The BEHAVE Fire Behavior Calculations display the expected Rate of Fire Spread (expressed in feet per minute), Fire Line Intensity (Btu/ft./sec), and Flame Length (feet) for SH-5, Heavy Load, Dry Climate Shrub of native fuels during peak Santa Ana wind conditions expected in the Project's climate zone. Variables were slope, projected wind speed, and the anticipated weather. The tables also include the calculation inputs used in the Modeling System obtained from project site observations and fuel levels typically observed during the local fire season.

##### 4.7.1.1 Projected Fire Behavior

*Anticipated Fire Behavior – Treated Project Site* -The combination of required defensible space around structures and enhanced fire resistive building code requirements for the project site will remove and/or modify the existing highly flammable natural vegetation, creating an entirely different fuel model most resembling Urban Development (NB-1) or Agricultural Land (NB-3).

Fuel Model NB-1 includes lands covered with suburban development that will not support wild fire spread but may experience structural fire losses during vegetation fire incidents. Building ignitions usually occur from house to house exposures or from firebrands, neither of which are modeled by current Fuel Model parameters.

The fuel model sets currently used by fire scientists, fire behavior analysts and Fire Protection Plan consultants do not have the ability to simulate fire behavior changes created by various fuel treatments. Fuel Models are based on fully cured vegetation at or near their seasonal extinction moistures and, concurrently, at the worst part of the

annual fire season. This tends to produce over-prediction of fire spread rates and other fire behavior parameters, especially in annual grass fuels.

The Fuel Model parameters used by BEHAVE-Plus for grass fuels expresses an extinction moisture content level of 15% for annual grasses and assumes a potential heat release rate of approximately 8000 BTUs per pound of fuel present on the landscape, whether the fuel is in a “live” or “dead” condition.

Irrigated lawns, as proposed as part of the defensible space guidelines for the project, will have a fuel moisture content of at least 120%. Fuel moisture contents of 120% result in green, non-cured vegetation, with all herbaceous materials remaining in the “live” fuel categories. As a result, grassy fuels with high fuel moisture content will produce flame lengths of one (1') or less and have a rate of spread of approximately 5 chains (330 feet) per hour (5.5 feet per minute) when exposed to a 20 m.p.h. mid-flame wind.

### *Anticipated Fire Behavior, Untreated Open Space Easements On Project Site*

The proposed Open Space Easements on and adjacent to the Project Site creates large areas of unmanaged flammable vegetation surrounding the parcels developed for single family dwellings. This creates a classic Wildland Urban Interface area where lands with “higher levels of housing density” are grouped together and are immediately adjacent to, or surrounded by, lands covered by heavy natural vegetation. This is comparable to the WUI Intermix where there is more than one house in every forty (40) acres where wildland fuels dominate the landscape.

The County of San Diego Resource Protection Ordinance places special controls on development on lands adjacent to sensitive biological habitats, steep slopes, wetlands and floodplain areas. The RPO does not allow clearing, thinning or grubbing of natural vegetation for fire protection purposes in sensitive habitat lands and riparian or wetland areas.

The Memorandum of Understanding between the U.S. Fish & Wildlife Service, California Department of Fish & Game and the San Diego County Fire Agencies requires landowners and fire agencies to avoid vegetation removal in recognized riparian areas, such as the drainage on east side of the Project site.

Thus, natural vegetation within the Open Space Tracts will remain unmanaged. With time, the age of the mature vegetative fuels continues unabated, with commensurate increases of dead and dying materials in the vegetative canopies, leading to decadent fuels with explosive combustibility.

The Fire Behavior Characteristics for the unmanaged vegetative fuels in the Open Space Tracts will remain consistent with those identified in Section 3.2.1.

The BEHAVE modeled fire behavior is worst-case scenario during peak Santana-Northeast wind weather events for Fuel Model SH-5 Heavy Dry Climate Shrub vegetation. Field evaluation indicates that some Fuel Model SH-7, Very Heavy Dry Climate Shrub, vegetation may be present at isolated locations on the Project Site; FM

SH-5, however produces more extreme combustibility than SH-7. The Rate of Spread for SH-7, while considered high, is lower than SH-5 fuels, but the flame lengths are similar and usually very high. The differences in rate of spread and combustibility are a result of fuels with contiguous and compacted continuity and heavier canopies where foliage does not allow free circulation of air through the vegetative mass, thus retarding combustibility.

Shrub-type fuels in the unmanaged Open Space Tracts and US Forest Service lands east and northeast of the Project Site will produce the following fire behavior characteristics:

- Flame lengths between forty (40) and forty-two (42) feet
- Rate of spread – between 485 and 488 feet per minute
- Ignition through firebrand deposition – 100% at a down-wind range of 1.6 miles
- Flame heights of approximately sixty-seven (67') feet.

Flame lengths and flame height, while seeming synonymous with each other, should not be confused with each other.

Flame length is a measurement of the depth of the fire front as it moves across the landscape through combustible vegetative fuels.

Flame height is a measurement of the thermo-chemical reaction of the fire as it consumes available fuel. Flame height depends on the amount fuel available and the amount of air being entrained into the sides of the flame front. Entrainment is the mixing of ambient air into the combustion zone by turbulent eddies, which is most notable in the random fluctuation and varying dimensions of the flame front typical of wild fire combustion. In turbulent flames, the combustion height does not have a constant or stationary value.

BEHAVE fire modeling calculations are based on fuel beds with continuous depth and compactness. As the flame front moves out of the unmanaged Open Space tract vegetation into the fuel modified defensible space, the fuel beds change, with less flammable materials available for combustion.

As exhibited in Section 4.7.1.1, fires moving out of the Open Space Tracts into developed residential areas will have a subsequent decrease in combustion with the changes in fuel types and continuity.

With less available fuel, the thermo-chemical reaction diminishes, with corresponding drops in Heat Release Rates, turbulent flame heights and the depth of the flame front moving across the landscape. The smaller Heat Release Rate also lowers the radiation and convective heat transfer mechanisms, limiting exposure of buildings separated from fuel beds by the distance provided by defensible space. The design of the fuel modification zones and required defensible space, also limits open flame intrusion into the developed residential areas.

## 4.8 Defensible Space and Vegetation Management

#### 4.8.1 Flammable Vegetation

##### Fuel Modification Zone # 1

With minimal exceptions, all combustible natural vegetation shall be removed from FMZ Zone 1, the first fifty (50') feet of land surrounding the building envelope for each parcel. Exceptions include single specimens of vegetation that is maintained in perpetuity and which does not allow flame propagation along the landscape.

See Section 4.8.2 for details.

##### Fuel Modification Zone 2

In FMZ 2, extending between fifty (50') and one-hundred (100') feet from each building envelope, the canopies of combustible vegetation are thinned by 50%, through thinning and/or removal of live and dead and dying vegetative materials. This area of thinned vegetation is to be maintained in perpetuity.

See Section 4.8.2 for details.

#### 4.8.2 Fuel Modification Zones for Building Pads

Fuel Modification Zones are specific areas on a property where vegetation has been removed, planted with alternative landscaping or modified in ways that increase the likelihood that a structure will survive a wildfire, improve defensible space around the structure for firefighting activities and prevent flame contact with the building from a spreading fire. In this strategy, vegetation, including ornamental plants, non-native, naturalized or invasive plant species may be removed and are re-planted with fire- and drought-tolerant species, or may be thinned to decrease the available natural vegetative fuel loading on the property. The reduction of available fuel effects the flame lengths and the amount of heat produced by the fire and decreases fuels around houses that can ignite through firebrands and ember showers produced by wildfires moving across the landscape.

Each sub-zone in a Fuel Modification Plan is designed to lower the amount of fuel available to a wildfire the closer the fire gets to a building. Additionally, the amount of moisture retained by plants inside Fuel Modification Zones increases as the distance from buildings decreases. However, it is important to remember that following Fuel Modification principles (removal of flammable vegetation, thinning flammable vegetation and providing irrigated fire resistant landscaping with in perpetuity maintenance of defensible space) does *not* guarantee structure survivability during wildfires. This strategy merely increases the chance of survivability to a “reasonable level of relative safety.”

Because of the nature of Southern California soils, it is imperative to consider the potential for hillside erosion and the need for slope stabilization. Every effort should be

made to avoid the need for total removal of native vegetation on hillsides. Increasing structural setbacks for proposed structures on slopes will reduce the amount of work required on the adjoining hillside as well as improving defensible space around the structure. Efforts should be made to use modified native vegetation on slopes as much as possible to provide adequate hillside stabilization. Native plants are better adapted to local topography and provide important wildlife habitat and protection from erosion. Erosion concerns, combined with the need to address water conservation measures, require the careful selection of plant species as well as the placement of pathways, patios, retaining walls and other landscaping features so that a well-designed fire-wise landscape provides an environment that accomplishes more than achieving the goal of fire safety mitigation.

Defensible space can be accomplished in ways other than plant modification. Paved brick, gravel pathways, rock borders, dry streambeds, water features, swimming pools and other features made of non-combustible materials can contribute to a structure's defensible space. Structural survivability can also be improved through the use of fire resistive building construction standards as outlined in Chapter 7-A of the California Building Code.

#### 4.8.2.1 General Fuel Modification Zone Requirements

##### **4.8.2.1.1 Fuel Modification Zone 1**

Fuel Modification Zone 1 comprises the first defensible space surrounding a building and has a minimum width of 50 feet. Fuel Modification Zone 1 includes the level building pad. If 50 feet is not obtainable around each structure on a lot, each individual lot owner is still required to maintain his or her front, side and back yards to a zone depth of 50 feet on the flat building pad and on natural slopes or manufactured slopes around their homes with irrigated fire resistant Zone 1 landscaping requirements.

Plants in this irrigated Zone will not include any pryophytes, which are high in oils and resins, including eucalyptus, cedar and juniper species (*see Appendix A - Prohibited Plant list*). Trees must be planted and maintained so that when they reach maturity their branches are at least 10 feet away from any structure.

This fire-resistant landscaped zone is permanently irrigated and will consist of fire resistant and maintained plantings. Thick succulent or leathery leaf plant species are the *most* fire resistant' plants with paper-thin leaves and small twiggy branches are the *least* fire resistant.

Regular maintenance and continued irrigation is very important in Zone 1. Plants with *high* moisture content are *less* likely to burn. Sidewalks, concrete patios, decorative rock, swimming pools, and similar landscape features may be included in this zone (and Zone 2) as these features will not support fire.

This irrigated zone (unless irrigation causes erosion) consists of native and non-native fire resistant and maintained plantings less than 18 inches high. This Zone may also

contain fire resistant specimen size trees or single well-spaced ornamental shrubs taller than 18 inches, intermixed with ground covers

Although *all* plants *will* burn under *extreme* fire conditions, research has shown that some types of plants, including many natives, are more fire resistant than others.

The Recommended Plant List in *Appendix 'A'* includes a list of low fuel volume, non-oily, non-resinous plants commonly referred to as “fire resistant”. This term comes with the caveat that these plants must be annually pruned, all dead wood removed, and all grasses or other plant material are removed from beneath the circumference of their canopies.

The Recommended Plant List in *Appendix 'A'* includes native species occurring on the Project property that are *not* considered “undesirable” from either a biological or wildfire risk management perspective *if* they are *properly* maintained by June 1st of each year.

(See *Appendix F* for Fuel Modification Zone 1 requirements).

#### 4.8.2.1.2 Fuel Modification Zone 2

Fuel Modification Zone 2 starts at the outer perimeter edge of Zone 1 and extends outward for an additional 50 feet, but *may* extend beyond the minimum required depth of 50 feet (for a minimum total defensible space of 100 feet).

Zone 2 Fuel Modifications thin vegetation canopies by fifty percent (50%), especially in undesirable plants (See *Appendix A*).

Zone 2 also requires the removal of dead and dying materials in vegetation canopies; thinning, lacing and pruning of branches; and mowing and weed-whipping of grasses and weedy plants. Landscaping and maintenance of plantings will include limited irrigation to ensure establishment of fire-resistant landscaping (ground covers, shrubs and trees).

(See *Appendix F* for Fuel Modification Zone 2 requirements)

#### 4.8.2.2 – Defensible Space Around Buildings

Fuel modification zones are required around every building designed for human habitation and buildings designed to house farm animals.

Fuel modification zones shall comply with the following requirements:

(a) When a building is located 100 feet or more from the property line, the fuel modification zone shall have a depth of 100 feet from habitable buildings. The area within the first fifty (50') feet of buildings shall be cleared of non-fire resistive vegetation and re-planted with fire-resistant plants or approved irrigated landscaping. In the area between 50 to 100 feet from a building, all dead and dying vegetation shall

be removed. Native vegetation may remain in this area if the vegetation is modified and thinned so that combustible vegetation does not occupy more than 50% of the area. Trees may remain in both areas provided that the horizontal distance between crowns of adjacent trees and crowns of trees and structures is not less than 10 feet.

(b) When a building or structure in a hazardous fire area is setback less than 100 feet from the property line, the requirements above shall be met to the extent possible in the area between the building and the property line.

(c) The building official and the FAHJ may provide lists of prohibited and recommended plants. Samples of prohibited and recommended plant lists are included in Appendix A.

(d) When the subject property contains an area designated to protect biological or other sensitive habitat or resource, no building or other structure requiring a fuel modification zone shall be located so as to extend the fuel modification zone into a protected area.

All required Fuel Modification Zones and Defensible Spaces shall be in place prior to Final Building Inspection and issuance of a Certificate of Occupancy. Fuel Modification Zones and Defensible Space shall be maintained in perpetuity.

Representatives of the Alpine Fire Protection District shall have the right to enter private property to insure the fuel modification zone requirements are met.

#### 4.8.3 Vegetation Management Practices

Fuel Modification Zones must be maintained to fulfill the requirements of this Fire Protection Plan and meet the requirements of the Alpine Fire Protection District. Maintenance shall include, but is not limited to, initial planting, weeding, irrigation installation, maintenance and plant pruning, the removal of dead or dying and downed vegetation and replacement of plants as required.

The following requirements shall apply to this project:

1. Each property owner shall be responsible for all irrigation and landscaping of Fuel Modification Zones within their property boundaries. Fuel Modification Zones and Defensible Space shall be limited to the area within established property lines and shall not extend off-site of established parcels.
2. The Alpine Fire Protection District will hold each parcel owner within the proposed project accountable for enforcement of all wildfire protection issues discussed in this Fire Protection Plan.
3. Each property owner shall not allow dumping of trash or disposal of yard trimmings within Fuel Modification Zones and Defensible Space areas.
4. The Alpine Fire Protection District, or its designated representative(s), shall decide any disputes relating to individual lot landscaping or fuel treatments

involving the interpretation of this Fire Protection Plan. Decisions made by the Fire Protection District shall be final and binding on property owners.

5. If modifications to the Tentative Map Plans occur, any and/or all of the Fire Protection Plan may be revised at the discretion of the Alpine Fire Protection District.
6. All exterior boundaries of Zones 1 and 2 Fuel Modification Zones shall be permanently marked on the ground for the purpose of guiding annual fuel management maintenance and inspection operations. The most reliable markers are steel fence posts with a baked-on painted finish. The upper half of the aboveground portion of the fence post shall be painted a bright “day-glow” orange color to improve visibility. Fuel Treatment Zone markers shall be spaced so that other markers on each side of installed markers can be readily seen from that marker.
7. Brush removal shall be completed prior to commencing any flammable construction.
8. During construction at least 50 feet of clearance around the structures shall be free of all flammable vegetation as an interim fuel modification zone during construction of any structure.
9. Debris and trimmings produced by thinning and pruning will be removed from the site
10. The annual completion of all designated Fuel Modification Treatments will occur before June 15<sup>th</sup>.
11. All individual landscaping plans, including additional structures, will comply with the Fire Protection Plan.
12. Trees and plants will be planted in accordance with the County of San Diego Approved Plants for Defensible Space in Fire Prone Areas List as shown in Appendix A or as approved by the Alpine Fire Protection District.

#### 4.9 Cumulative Impact Analysis

San Diego County's weather, fuel, and terrain contribute to the development of intense, uncontrolled wild fires as evident by the recent Cedar, Paradise and Otay fires of October 2003 and the Witch, Harris and Poomacha Fires of 2007.

The areas of greatest concern for the impact of wild fires are development projects immediately adjacent to, or intermixed with, undeveloped wild land areas or unmanaged vegetation stands in Open Space preserves. As the population of San Diego County increases and the Wildland Urban Interface (WUI) expands, fire hazards and risks will continue to be encountered. Vehicle access to residential subdivisions next to WUI areas or Open Space easements and an increase in other human activities in these areas increases the risk of property loss, injury or death and contribute to the impact of potential wild land fires.

The proposed development of Viejas Hills Estates is a partial in-fill project between existing developed residential and other undeveloped properties.

Viejas Hills Estates proposes a twenty-seven (27) lot land division for future residential development on currently undeveloped parcels covered with unmanaged native, naturalized and invasive vegetation. The existing undeveloped parcel represents a potentially significant fire hazard to adjacent off-site properties and creates an unrestricted path of fire extension into developed residential areas. These threats will continue until the mitigations proposed by this Fire Protection Plan are implemented with the development of the parcels.

Development of the Viejas Hills Estates property will provide the Project Site and surrounding residential development with enhanced water supply and fire hydrant distribution.

Development of Viejas Hills Estates property will have a positive impact on Alpine Fire Protection District finances. The current San Diego County Fire Mitigation Fees, based on \$0.56 per square foot of habitable space, will provide an initial return of between \$1568.00 (anticipated 2800 square foot Single Family Dwelling) to \$2240.00 (4000 sq.ft. SFD) to the District for capital improvements such as apparatus replacement, hose purchase, fire station maintenance and firefighting equipment. Twenty-seven (27) single family dwellings with a 2500 square foot footprint will provide the District with an estimated minimum one-time benefit of \$42,336.00 for capital expenditures.

Based on an estimated, minimum \$900,000 sales price, an estimated \$243,000.00 per year in 1% general San Diego County property taxes will be raised, a portion of which will be returned to the District for operating expenses.

- Alpine Fire District will receive \$36450.00 in property taxes for the Project, based on a tax receipt rate of \$0.15 received for every tax dollar collected.

The proposed single family dwellings on the project site will produce annual fire assessment fee income of \$1922.40 for the Alpine Fire District (based on a \$71.20 assessment of four benefit units per dwelling; \$17.08 per benefit unit).

## CHAPTER 5 MITIGATION MEASURES & DESIGN CONSIDERATIONS

### 5.1 – Road and Access Mitigations

#### 5.1.1 Existing Road and Access

The Project Site currently has two major south-to-north ingress and egress routes and one east to west access road.

The east to west access route to the Project Site is from Otto Avenue. Otto Avenue has a thirty-eight (38') foot improved paved width all weather road surface. The paving

surface appears to be in fair to good condition, exhibiting moderate amounts of weathering, but with no obvious potholes or repairs.

The first south to north access point is on Blackwolf Drive. Blackwolf Drive extends in a south to north configuration from its intersection with Otto Avenue. During Project development, Blackwolf Drive will be extended from its current cul-de-sac bulb in a northeasterly loop to connect with Fazio Road to the east.

Fazio Road is the second south-to-north configured access point for the Project. Fazio Road extends from its intersection with Otto Avenue and currently terminates in a cul de sac. Project development, as noted above, will loop in a northwesterly direction to connect with Blackwolf Drive.

The existing development south of the Project Site is not a gated community; there are no obstructions, traffic calming devices or chokepoints along the lengths of Blackwolf Drive and Fazio Road.

### 5.1.2 – Proposed Mitigations

#### 5.1.2.1 – Streets and Roadways

The County Consolidated Fire Code and Alpine Fire Protection District Ordinances require new streets serving more than two single family dwellings to have a minimum improved width of twenty-four (24') feet.

The Project is proposing improved paved road widths to match the existing road configurations of Viejas Hills Estates. Therefore, curb-to-curb improved paved width will be a minimum of twenty-four (24') feet. The Alpine Fire Protection District requires that any roads and streets with an unobstructed paved width less than thirty-two (32') feet will be formally designated as a Fire Lane. Roads with a minimum width of thirty-two (32') feet are allowed to have parking allowed on one side of the roadway. If parking is desired on both sides of the road, the improved paved width shall be widened to forty (40') feet.

##### 5.1.2.1.1 – Roadway Surface

Alpine FPD has required that roadway surfaces shall have the capability of supporting the imposed loads of fire apparatus with a designed minimum weight bearing capability of 75,000 pounds.

The Project proposes grades on Enzley Court that may exceed 15%.

The County Consolidated Fire Code and Alpine Fire Protection District Fire Code Adoption Ordinance requires that any roadway with a grade exceeding 15% must provide mitigations to resolve fire apparatus traction problems on steep hillsides.

Both Fire Codes require a Portland cement concrete driving surface that is deeply broom-brushed perpendicular to the travel direction, creating a corrugated pavement enhancing traction for heavy vehicles using the roadway.

Other paving surfaces may be used if 1) they are approved by both the Alpine Fire District and the County of San Diego; 2) meet current Department Public Works requirements for

private and/or public streets; and 3) provide an Alternate Means of Compliance with the Same Practical Effect as the brushed concrete road surface.

The County Consolidated and Alpine Fire District Fire Codes do not allow road gradients to exceed 20%.

5.1.2.2 – Private Driveways – all private driveways on the project site will be provided with an approved all-weather paved surface. Driveways shall have an improved paved minimum width of sixteen (16') feet.

Driveway slopes shall not exceed 15% without additional mitigation consisting of a minimum of three (3") of concrete that is brushed perpendicular to the driving surface to provide additional traction. Driveway widths shall have a minimum improved paved surface of sixteen (16') feet and maximum slope shall not exceed 20%. Angle of approach and departure at the intersection of driveways and roads shall not exceed 7 degrees or a 12% slope.

Driveways exceeding a length of 150 feet from streets shall be provided with approved Fire Department Turnarounds. Fire Department Turnarounds may be required on Parcels 4, 7, 8, 9, 11, 16, 18, 19, 20, 21, 22, 24, 25. Parcels 26 and 27 at the isolated eastern part of the Project site will be required to install fire department turnarounds.

5.1.2.3 – Fire Apparatus Access Road Obstructions - The Project has proposed the installation of streets with improved paved widths of twenty-four (24') feet. All proposed streets provide minimum Fire Code required improved widths and will be designated as Fire Lanes.

Fire Lane Designation:

Fire Lanes may be identified and designated by the following means when allowed by the Alpine Fire Marshal, as stipulated by options specified in Section 22500.1 of the California Vehicle Code:

1. Fire Lanes are identified by red curbs and posted signs that identify the presence of the Fire Lane.

Red curbs shall be supplied with white stenciled letters that are plainly visible from vehicles, which indicate the presence of the Fire Lane and prohibit parking. Where curbs are not provided, a minimum eight (8") inch red stripe, with corresponding sized white stenciled letters, shall be placed at the right-of-way edge of pavement in a continuous stripe on the paved surface.

Fire Lane Signs shall be posted thirty (30') feet apart, identifying the Fire Lane and mandating "No Parking", along the length of all restricted road ways.

2. Fire Lanes are identified by posted signs only, at intervals specified by the Alpine Fire Marshal.
3. Fire Lanes are identified by red curbs only.

Signs, posting, red curbs and white stenciling shall comply with the requirements of Section 22500.1 of the California Vehicle Code. Signs, posts, red curbs and white stenciling shall be maintained in perpetuity as part of the road maintenance agreement.



*Typical Approved Fire Lane/No Parking Sign – Existing Blackwolf Estates*

#### 5.1.2.4 – Length of Dead-end Roadways

The maximum length of dead end roads system for proposed property developments is a function of County Zoning requirements.

For parcels zoned one (1) acre or less, the maximum length of a dead-end road is 800 feet. For parcels between one (1) and 4.99 acres, the maximum dead-end length is 1320 feet.

For parcels between five (5) and 19.99 acres, the maximum dead-end length is 2640 feet.

*Finding:* All parcels on the northern side of the Project site exceed one (1) acre.

*Finding:* The Project Site has been designated A-70 Zoning, with minimum parcels sizes of one (1) acre. Maximum length of dead-end roads serving the proposal parcels with sizes between one and 4.99 acres is 1320 feet.

There are two dead-end streets proposed for the Project Site: Enzley Court and Viejas Spur.

Enzley Court is on the west side of the development and has a north to southwest curved configuration before ending in a cul-de-sac. It has a proposed length of 340 feet.

Viejas Spur is at the far northern end of the developed Project Site and has a straight-line south to north configuration. It is at the intersection completing the loop of Blackwolf and Fazio Roads and has a proposed length of approximately 325 feet.

Both of the dead-end roads have a seventy-four foot (74') diameter cul-de-sac bulb.

*Finding:* Neither Enzley Court or Neal's Spur exceed the maximum dead-end road length of 800 or 1320 feet. No mitigation is required for dead-end road lengths.

## 5.2 – Water Supply Mitigations

### 5.2.1 Existing Water Supply

The existing water supply for the Project is off-site and in the existing sub-division area.

The nearest fire hydrants are near the existing cul-de-sacs at the northern ends of Blackwolf Drive and Fazio Road. Both hydrants have two 2-1/2" and one 4" discharge ports. Additional fire hydrants are distributed at Code and Ordinance required and Alpine Fire Marshal approved intervals throughout the established sub-division.

### 5.2.2 Padre Dam Municipal Water District Project Conditions

The Padre Dam Municipal Water District has issued the following Project Conditions:

1. Domestic service and fire hydrant requirements will determine if the proposed project will require water main extensions from the existing services. If a water main extension is required, the developer prepare plans and install the new water distribution infrastructure in compliance with PDMWD's rules, regulations and specifications.
2. PDMWD has not required that all proposed buildings be connected to their infrastructure. Approval of alternative water supply and water supply systems is under the jurisdiction of the County of San Diego.
3. The Developer is required to provide PDMWD with a number of easements on the Project Site to allow for development of future water delivery infrastructure.

4. PDMWD has not made a commitment to the availability of anticipated and required fire flows for the project site. This is contingent on final project approval and payment of capacity and meter fees.
5. PDMWD recognizes the following Project constraints:
  - Water main extension may be required for lots 26 and 27 at the eastern end of the Project
  - On- and off-site water main looping may be required.
  - Computer analysis of the proposed mains may be required

### 5.2.3 Proposed Mitigations

The existing water supply exceeds the maximum hose lay and hydrant spacing distances permitted by the latest editions of the California Fire Code, Alpine Fire Protection Distance and the County Consolidated Fire Code for service within the Project Site.

#### Fire Hydrant Location and Spacing Mitigation Plan:

To provide the most effective hydrant spacing and reasonable hose lay distances between proposed structures and the new water supply infrastructure, it is recommended that a minimum of eleven (11) fire hydrants be installed at the following locations:

- At Lot # 3, approximately 480 feet north of the existing fire hydrant at the existing cul de sac bulb on Blackwolf Drive
- At Lot # 5, east side of Blackwolf Drive
- At Lot # 7 on the east side of Blackwolf Drive, at Lot 7 and 8 Property Line
- At the Intersection of Blackwolf Drive and Enzley Court (Lot 14)
- At Lot # 12, at the northwest entry corner of the cul de sac bulb of Enzley Court
- At the intersection of Enzley Court and Blackwolf Drive, northwest corner
- At the intersection of Fazio Road and Neal's Spur, northeast corner (Lot 25)
- Between Lot # 17 and 18, east side of Fazio Road
- At Lot # 20, east side of Fazio Road
- Otto Avenue, approximately 725 feet east of the intersection of Fazio Road
- Otto Drive, at the proposed driveway intersection for Lot # 26 and 27 on the north side of Otto Avenue

This mitigation plan is based on average hydrant spacing distances of approximately 500 feet, with hydrants installed per the County Consolidated Fire Code requirements at intersections and cul-de-sac bulb entrances.

Fire hydrants installed for the Project shall meet the following minimum requirements:

- Installed per Padre Dam Municipal Water District installation standards
- Installed with an approved break-off check valve spool in areas where vehicular damage may occur
- Have two 2-1/2" and one 4" discharge ports

- Street shut-off valves shall be placed in a readily available location, as determined by the Alpine Fire Marshal and the Padre Dam Municipal Water District

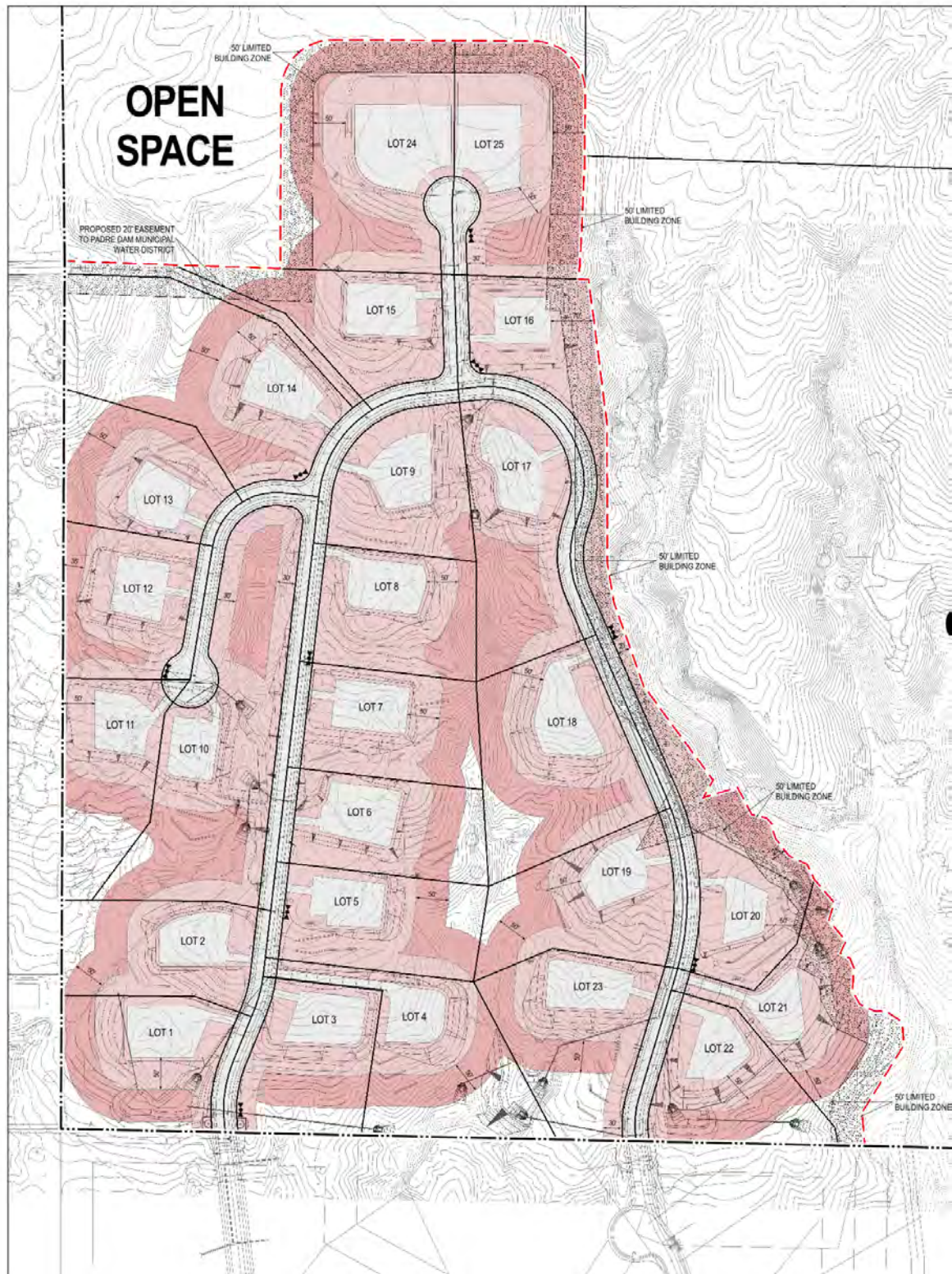


Figure 5.2.2 – Proposed Fire Hydrant Locations – West Project Site

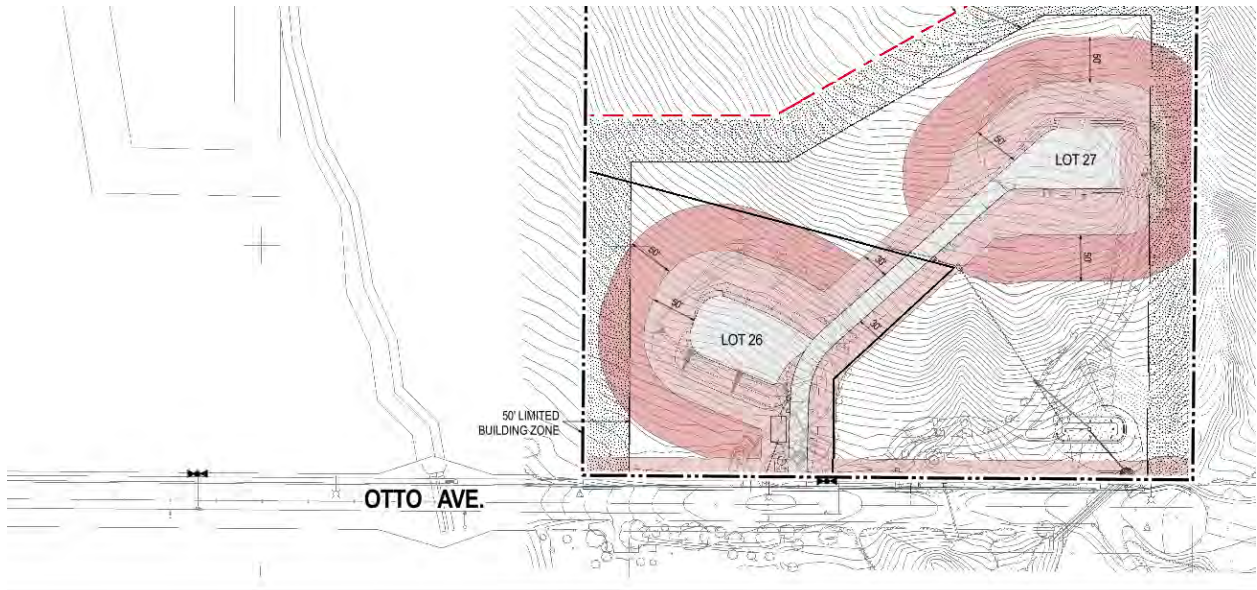


Figure 5.2.2.B – Proposed Fire Hydrant Locations, East Side of Project

## Water Mains

The Padre Dam Municipal Water District has conditioned the Project with providing a water main easement, beginning at the northwest corner of the Project Site and extending in an easterly direction from Heather Lane to the west.

Existing water distribution infrastructure will require extension and looping of the main system to provide a reliable source of firefighting water.

Minimum required fire flow for the new development is 2500 gallons per minute. Mains capable of providing the required flow generally have ten (10") to twelve (12") inch internal diameters to reduce friction loss rates.

## 5.3 – Ignition Resistant Construction and Automatic Fire Sprinkler Mitigations

### 5.3.1 Existing Structures

There are no existing structures at the project site.

### 5.3.2 Proposed Mitigations

All new buildings and structures shall be provided with automatic fire sprinklers complying with National Fire Protection Pamphlet 13-D - *Fire Sprinklers for One- and Two-Family Dwellings*.

All new and future buildings and structures will be required to conform to Chapter 7-A of the County of San Diego Building Code for Ignition Resistant Building Construction Standards for Wildland-Urban Interface Areas and California Building Code Chapter 7-A construction standards.

Examples of detailed, but not-all-inclusive, requirements for building construction in Very High Severity Areas are included in *Appendix E*.

*Finding:*

Table 705.8 of the California Building Code regulates the maximum area of exterior wall openings based on the distance between buildings and the type of protection associated with the wall opening.

All new buildings erected on the Project Site may have Type V Construction.

Exterior walls construction shall meet the requirements of California and San Diego County Building Code Chapter 7-A.

Type V building exterior walls that have a fire separation distance of less than thirty (30') feet shall have a minimum one-hour Fire Resistive rating.

Exterior walls with a fire separation distance greater than thirty (30') feet are not required to have a minimum one-hour fire resistive rating but must comply with the criteria of, or meet one of the exceptions for, Chapter 7-A exterior wall construction.

The installation of automatic residential fire sprinkler systems does not qualify as an exemption for buildings from the required one-hour fire resistive exterior wall rating.

The new single family residences built on the Project site will:

- Have automatic fire sprinklers
- Have Chapter 7-A compliant Type V construction
- Have a minimum side yard separation distance of thirty (30') feet between structures
- Are allowed to have 100% of allowable openings without restriction or fire resistive protection

**TABLE 705.8**  
**MAXIMUM AREA OF EXTERIOR WALL OPENINGS BASED ON FIRE SEPARATION DISTANCE AND DEGREE OF OPENING PROTECTION**

| FIRE SEPARATION DISTANCE<br>(feet) | DEGREE OF OPENING PROTECTION                  | ALLOWABLE AREA* |
|------------------------------------|-----------------------------------------------|-----------------|
| 30 or greater                      | Unprotected, Nonsprinklered (UP, NS)          | No Limit        |
|                                    | Unprotected, Sprinklered (UP, S) <sup>i</sup> | Not Required    |
|                                    | Protected (P)                                 | Not Required    |

*Finding:*

In the ISO Standards Manual, Guide for Determination of Needed Fire Flow, 2006 Edition, commercial buildings closer than forty (40') from each other are considered to have an exposure impact.

Using the formula:  $NFF = C_i (o_i) [1.0 + (X+P)]$

The fire flow for a particular building can be determined, where:

$$C_i = 18F (\sqrt{A})$$

Where F = coefficient of construction (wood frame = 1.5)  
A = effective area

O<sub>i</sub> = Occupancy type (C-2 limited combustibility = 0.85)

X+P = 0.126 (exposure coefficient for wood frame building with 30' separation)

For a 2400 square foot wood frame building, the required fire flow is

$$NFF = C [(18)(1.5)\sqrt{2400}] \times O (.85) \times (1.0 + 0.126)$$
$$NFF = 1191.510195 \text{ gpm}$$

Certain exceptions apply to Needed Fire Flow formula calculations:

- The fire flow calculations only apply to commercial buildings
- The fire flow calculations have limited application to sprinklered building

Thus, while considering a commercial building within forty (40') of the walls of another commercial building to have an exposure problem, the ISO does *not* consider a residential building thirty (30') feet from another residential building as having an exposure problem. This can be validated by dropping the construction factor of 0.126 in the exposure portion of the formula, whereby the needed fire flow for a 2400 square foot, fully involved single family residential building becomes 1058 gpm, or a difference of 133 gpm.

*Finding:*

With a non-penalizing exposure distance and exception provided by installation of automatic fire sprinklers, a reduced ISO fire flow requirement for buildings on the Project Site is allowed.

If needed, Chapter 7-A required levels of fire resistive exterior wall construction, allow a reduced ISO fire flow requirement for buildings on the Project Site.

The County of San Diego Consolidated Fire Code and the Alpine FPD Fire Code permits calculation of required fire flow for proposed buildings in Wildland Urban Interface Zones to be calculated using the ISO Fire Flow Determination Formula.

The California Building Code does not consider a building having less than 70 feet of Zone 2 Defensible Space (FMZ) as a hazardous condition and does not require fire resistive protective over exterior wall openings.

The built-in Ignition Resistant Construction standards mandated by California Building Code Chapter 7-A provide sufficient protection from radiant, convection and direct flame contact heat exposures to prevent direct ignition from exterior exposure to wildfires.

*Conclusion: If needed as an Alternate Means of Compliance, the proposed construction features of the buildings and the installation of automatic residential fire sprinklers provide same practical effect mitigation for the reduced fuel modification zone depth and defensible space limit of 100 feet or to the property line, whichever is closer, set by the California Public Resources Code 4291.*

## 5.4 - Defensible Space and Fuel Modification Mitigations

As previously stated, Fuel Modification Zones on properties are areas where vegetation has been removed, planted with alternative landscaping or modified in other ways to increase the likelihood that structures will survive a wildfire, improve defensible space around the structure for firefighting activities and prevent flame contact with the building from spreading fires.

### 5.4.1 – Proposed Mitigations

Defensible Space Mitigations for proposed single family dwellings on the Project Site will require three different overlaying types of Fuel Modification Zones for effective defense against the recognized and potential fire threats imposed on the buildings by the existing and planned environment and constraints.

#### Limited Building Zones

The Developer has proposed Limited Building Zones placed around, or adjacent to, all proposed residential buildings on the eastern side of the Project and on northern lots adjacent to Viejas Spur and extending to the north property line of Lot # 14.

Limited Building Zones (LBZ) are designed to prevent structural fires from spreading into, and igniting, valuable environmental resources in designated Open Space Easements. Environmental regulations do not allow encroachment of buildings or structures into LBZ areas. However, the depth of LBZ areas may be used for fuel modification zone purposes. Figure 5.4.1.a represents the Project proposed Limited Building Zones.

The proposed LBZ on the Project Site are either adjacent to, or included within, the FMZ-2 perimeters of the impacted buildings.

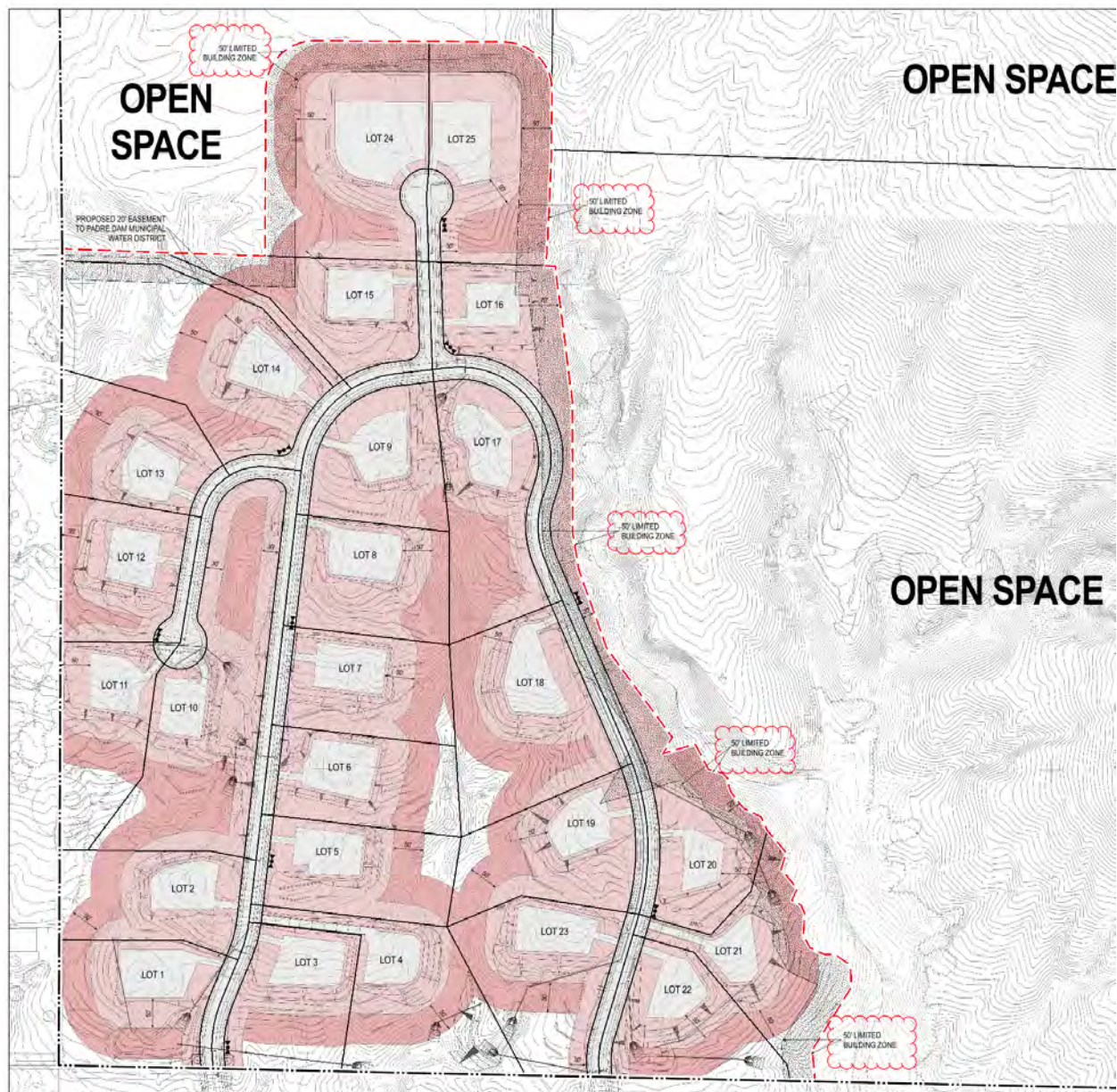


Figure 5.4.1.a – Proposed Limited Building Zones on Project Site, Western Site

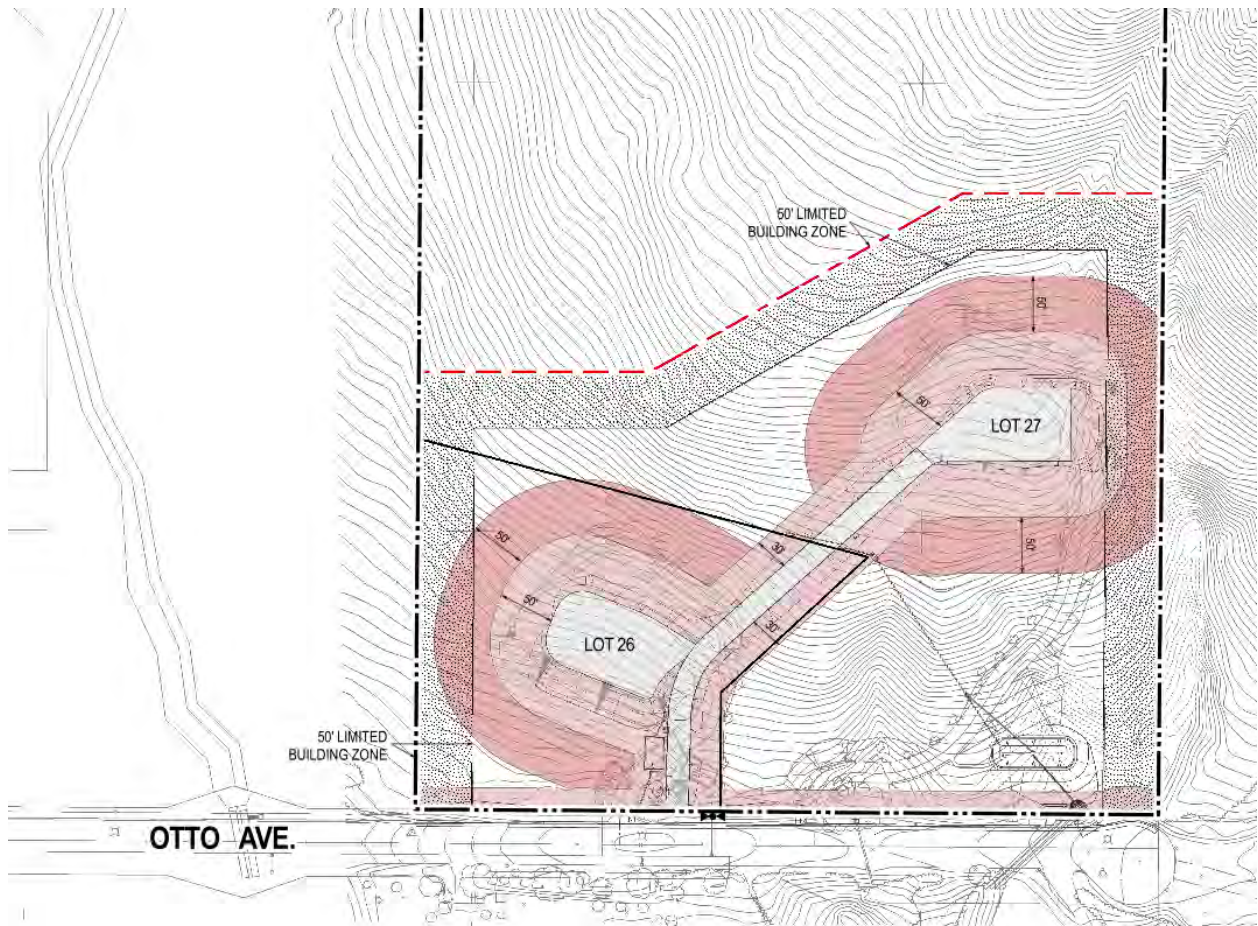


Figure 5.4.1.b – Limited Building Zone, Eastern Project Site

## Alpine Fire District Fuel Management Requirements

The Alpine Fire Marshal has required the following conditions for Defensible Space and Fuel Management:

1. A minimum of one hundred (100') feet of defensible space (or to the property line, whichever is closer) shall be maintained on all parcels.
2. Roadside Defensible Space shall be provided along roadways.
3. Ignitable vegetation shall not be planted within Roadside Defensible Space areas.
4. All trees shall be limbed up eight (8') feet above the ground. This minimum ground to canopy clearance shall be maintained at all times.

## Project Defensible Space Mitigations Provided

An evaluation of the Project Site reveals that numerous parcels may be significantly impacted by the presence of off-site steep slopes, inaccessible terrain, terrain features and the presence of unmanaged vegetative fuels in the existing Open Space parcels adjacent to the north and east sides of the Project Site.

*Finding: The SH-5 Heavy Dry Climate Shrub) vegetation in the Open Space Tracts are not allowed to be disturbed by hand or mechanical means for the purposes of fuel modification and defensible space under the provisions of the MOU existing between the Fish and Game Service and County of San Diego Fire Agencies.*

*Finding: The off-site unmanaged vegetative fuel will continue growing, resulting in additional fuel decadence and increasing amounts of dead and dying vegetative materials in the plant canopies and fuel bed expanse.*

*Finding: BEHAVE fire modeling of the SH-5 shrub fuels indicates that estimated flame lengths of forty-one (41') feet will be produced by the fire front as it moves across the landscape.*

Based on these Findings, it is recommended that the Fuel Modification Zones and Defensible Space areas for the parcels impacted by the Open Space Tracts be provided, as is reasonably necessary and possible, and based on individual parcels constraints, with full 100-foot defensible space zones.

*Finding: In situations involving parcel constraints and flammable vegetation impacts, the County of San Diego has allowed for Defensible Space Alternate Means of Compliance methods. In these cases, fuel modification zone depths are adjusted to provide a minimum of doubled the anticipated flame lengths for off-site vegetation. When 100-foot defensible space cannot be provided, fuel modification zone depths shown to provide a safety zone exceeding a projected doubling of flame lengths has the Same Practical Effect as having the required full depth Fuel Modification Zones.*

*Discussion: BEHAVE fire modeling indicates that Fuel Model SH5, Heavy Dry Climate Shrub, will produce flame lengths of approximately forty-one (41') feet in all of the terrain features on the Project Site. Doubling the estimate flame lengths will result in defensible space depths with a minimum width of eighty-two (82') feet.*

*Finding: All proposed parcels on the Project Site have the capability of providing defensible space zones using the doubled flame length calculation.*

#### 5.4.2 Project Modification Zones and Defensible Space

##### General Specifications for All Parcels

1. All parcels shall provide an in-perpetuity Fuel Modification Zone 1 area, with a minimum depth of fifty (50') feet beginning at the edge of the anticipated building footprint and extending laterally outward for a minimum distance of fifty (50') feet.
2. All parcels shall provide an in-perpetuity Fuel Modification Zone 2 area that extends an additional fifty (50') feet (or to the property line, whichever is closer) from the perimeter boundary of Fuel Modification Zone 1.

3. Each Fuel Modification Zone 2 is designed so that the combined defensible spaces will completely encapsulate the perimeter of all proposed buildings on the Project Site. This will prevent intrusion of wildfire into the Project Site through any unanticipated gaps in defensible space areas where distances between buildings and lots exceeds a depth of 100 feet. The depths of FMZ-2 defensible space may vary to accomplish the needed fire protection for each individual residential lot and the proposed sub-division community as a whole.
4. All driveways shall provide a Roadside Fuel Modification Zone. Driveway Fuel Modification Zones shall have a minimum dimension of thirty (30') on each side of the driveway. Driveway Roadside Fuel Modification Zones shall comply with Fuel Modification Zone 1 requirements. No flammable vegetation shall be planted, or allowed to remain, in the area used for designated Roadside Fuel Modification Zones. Driveway Fuel Modification Zones may be incorporated into the areas designated as parcel Fuel Modification Zone 1. Driveways traversing designated Fuel Modification Zone 2 and non-mitigated parcel areas shall provide in-perpetuity Fuel Modification Zone 1 mitigations for depth and vegetation management.

Roadside Fuel Modification Zones shall be provided along the lengths of all proposed Project streets. Roadside Fuel Modification Zones shall have a minimum depth of thirty (30') feet on each side of the street's right-of-way. Roadside Fuel Modification Zones shall provide in-perpetuity Fuel Modification Zone 1 mitigations. No flammable vegetation shall be planted, or allowed to remain, in any designated Roadside Fuel Modification Zone area.

#### 5.4.2.1 Tree Well Fuel Modification Mitigations

For purposes of erosion control and water savings mitigation, the County of San Diego has mandated the use of "tree wells" spaced at various locations throughout the Project Site and along slopes and proposed roads, streets and driveways.

The following fire protection recommendations are offered to insure that the proposed tree well system does not increase fire and life safety risks due to wildfire spread into the Project Site:

- All trees shall be listed in the County of San Diego Approved Plants for Defensible Space in Fire Prone Areas List
- Trees shall not overhang or form "arches" over or across driveways, roads and streets
- Crowns on mature trees in defensible space areas shall maintain a minimum horizontal separation distance from other trees, with clearances of ten (10') feet for fire resistant trees and thirty (30') feet for non-fire resistive trees.
- Canopies of mature trees shall have a minimum separation clearance distance from buildings and structures of ten (10') feet for fire resistive trees and thirty (30') for non-fire resistive trees.

- Mature trees shall be pruned to remove lower limbs to maintain a vertical separation distance from ground level vegetation below the tree for a minimum distance of eight (8') feet above the surface of the ground beneath the tree.
- Dead wood and litter shall be regularly removed from trees
- Ornamental trees shall be limited to groupings of two (2) to three (3).
- Each grouping of ornamental trees shall have a horizontal separation from other groupings of ornamental trees per the Table below:

**TABLE 4907.3.1  
DISTANCE BETWEEN TREE CANOPIES**

| <b>Distance between Tree Canopies by Percent Slope</b> |                                                                    |
|--------------------------------------------------------|--------------------------------------------------------------------|
| <b>Percent of Slope</b>                                | <b>Required Distances Between Edge of Mature Tree Canopies (1)</b> |
| <b>0 to 20</b>                                         | <b>10 feet</b>                                                     |
| <b>21 to 40</b>                                        | <b>20 feet</b>                                                     |
| <b>41 plus</b>                                         | <b>30 feet</b>                                                     |

*1. Determined from canopy dimensions as described in Sunset Western Garden Book (Current Edition)*

The Tree Well Fuel Modification Mitigations are provided as an Alternate Means of Compliance/Same Practical Effect strategy that will allow the Project to comply with the County's mandate for providing the tree wells along roadways.

*Finding: While not specifically referencing road side defensible space, the current County Consolidated Fire Code allows the planting of isolated and single specimens of different species of plants in locations inside of defensible space areas if these plants do not contribute to the rapid spread of fire to adjacent buildings. The mitigation provisions listed above will provide an alternate means of compliance for any trees planted to fulfil the County mandate for tree wells spaced along roadways. Previous editions of the Consolidated Fire Code allowed isolated and single specimens of different plant species within the road side defensible space zone(s).*



### Limited Building Zone (LBZ)

- 50-ft Setback from Limits of Open Space Easement

## Fuel Management Zones

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### Driveway / Roadside Fuel Modification Zone

- This zone is located 0-30 feet wide of both sides of roadways on-site. The FMZ will be managed to the specification of Zone 1. When the roadside FMZ crosses through FMZ 2 space, FMZ 1 specifications are maintained for the length of the road.



### Fuel Management Zone 1

- Zone 1 begins at the habitable structures exterior walls and extends laterally out to 50 feet from the wall. All flammable vegetation is removed and replaced with either irrigated landscaping and/or fire- and/or drought-resistant plants.



### Fuel Management Zone 2

- Zone 2 begins from the edge of Zone 1, 50 feet from habitable structure, to 100 feet from habitable structure. Vegetation is thinned 50% (removal of half the fuel bed) and remaining plants have their vegetation canopies thinned 50% with removal of all dead and dying material at regular and as needed intervals.

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*Figure 5.4.2.a – Fuel Modification Zone Key*

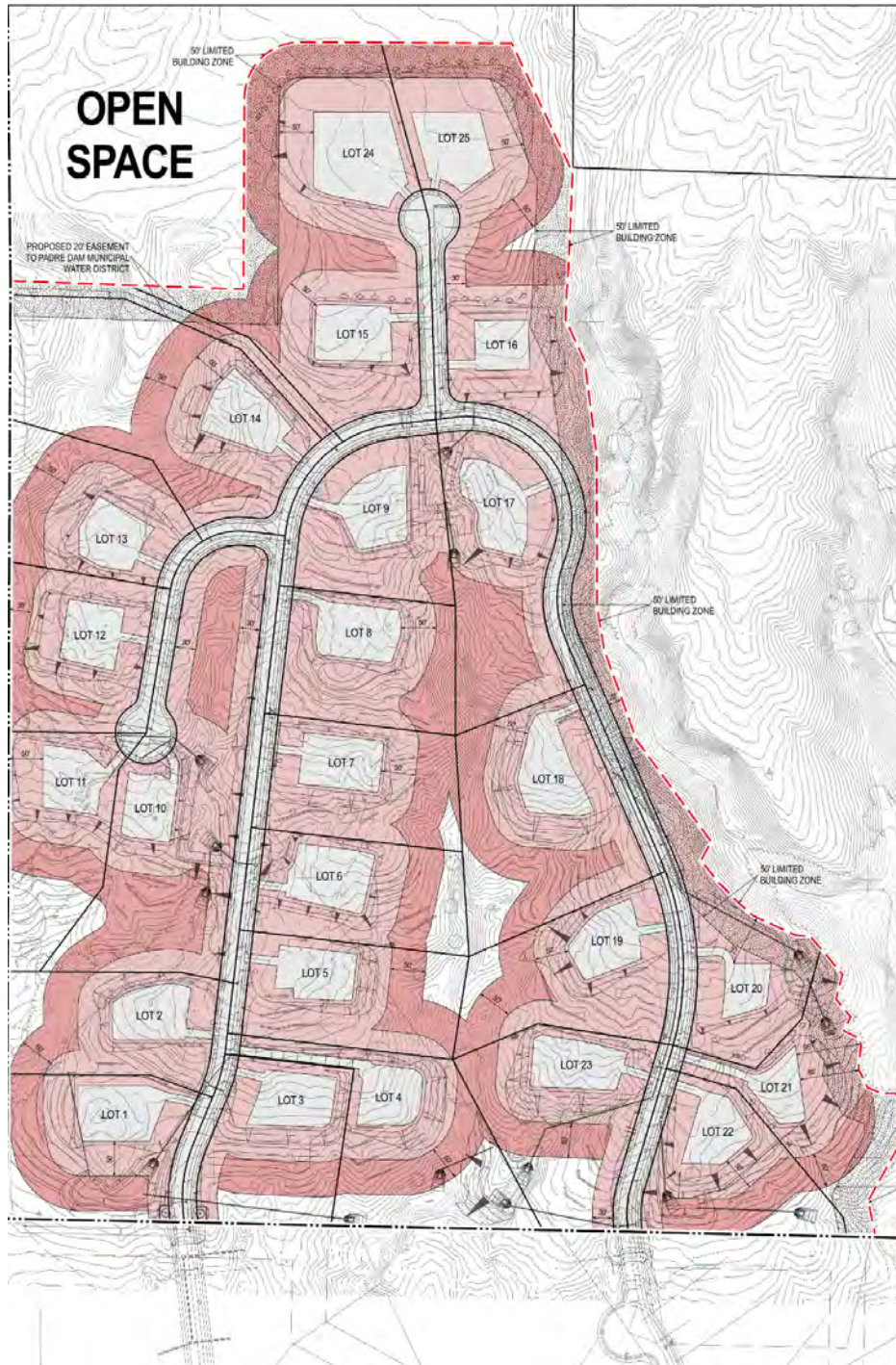


Figure 5.4.2.b Proposed Fuel Modification Zones, Western Site

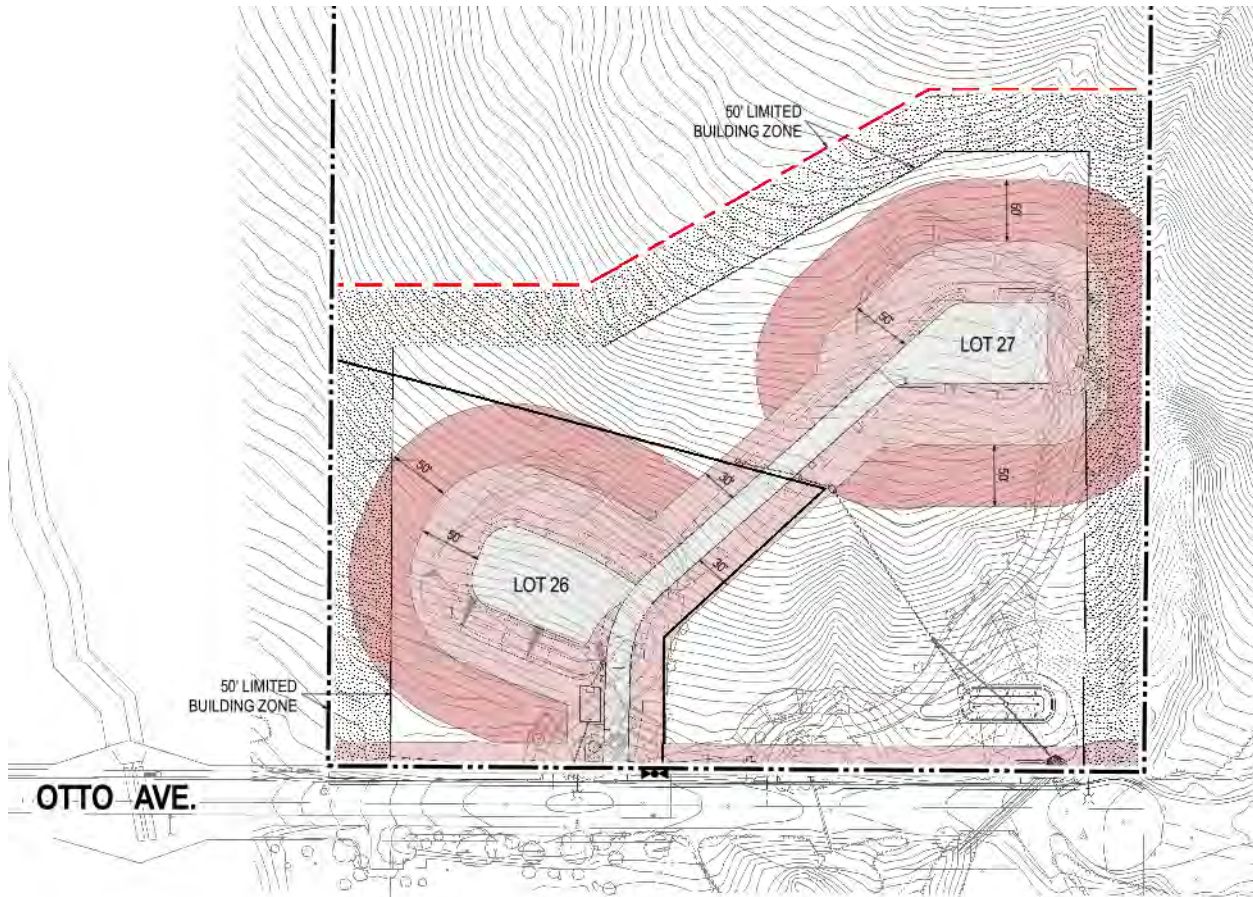


Figure 5.4.2.c Proposed Fuel Modification Zones, Eastern Site

### 5.4.3 Steep Slope and Wetlands/Riparian Open Space Easement Advisories

The Grading Plans submitted to the Fire Protection Consultant identifies several proposed Open Space elements on the Project Site.

There is a wetlands/riparian drainage adjacent to the eastern and southeastern sides of the Project Site. There is an existing designated Wetlands/Riparian Open Space Easement along the center portions of the existing Black Wolf development south of the Project Site.

Existing local (County of San Diego), state and Federal regulations for wetlands areas are highly restrictive and essentially prohibit all mechanical and physical mitigation activities, including clearing and thinning of vegetation for fire protection purposes. These sensitive environmental spaces will be allowed to remain unmanaged in their natural state.

According to the County of San Diego Resource Protection Ordinance, Project Design Elements protecting Steep Slopes must be created in a manner that does not

unnecessarily encroach onto steep slope lands. The *only* encroachments allowed for fire protection on Steep Slope Lands are *clearing and thinning of vegetation* to protect existing or proposed structures. S.D. County RPO, page 13, Section (e) (2) (bb) (iv)

## 5.5 Residential Solar Systems

The County of San Diego routinely requires new land development to provide a minimum of 10% of the roof surface area with permanently installed residential solar panel systems.

The following provides basic information about the impact of solar panel system installations and how they potentially impact Fire Department operations and safety.

### System Identification Markings

PV systems must be provided with identification marking systems. Marking provides emergency responders with appropriate warning and guidance about working around and isolating the solar electric system. Materials used for marking the system components must be weather resistant.

Locations or equipment to be identified:

- Main Service Disconnect
- Direct Current Conduit
- Raceways
- Enclosures
- Cable Assemblies
- Junction Boxes

Marking should be placed on all interior and exterior DC conduit, raceways, enclosures, and cable assemblies, every 10 feet, at turns and above and/or below penetrations and all DC combiner and junction boxes.

### Access, Pathways and Smoke Ventilation

Access and spacing requirements should be observed in order to:

- Ensure access to the roof
- Provide pathways to specific areas of the roof
- Provide for smoke ventilation opportunities area
- Provide emergency egress from the roof

Roof access points are defined as areas:

- where ladders are not placed over window or door openings
- located at strong points of building construction
- locations where there are no conflicts with overhead obstructions

## Residential Systems—Single and Two-Unit Residential Dwellings

### Access/Pathways

- a. Residential Buildings with hip roof layouts: Modules should be located in a manner that provides one (1) three-foot (3') wide clear access pathway from the eave to the ridge on each roof slope where modules are located. The access pathway should be located at a structurally strong location on the building (such as a bearing wall).
- b. Residential Buildings with a single ridge: Modules should be located in a manner that provides two (2) three-foot (3') wide access pathways from the eave to the ridge on each roof slope where modules are located.
- c. Hips and Valleys: Modules should be located no closer than one and one half (1.5) feet to a hip or a valley if modules are to be placed on both sides of a hip or valley. If the modules are to be located on only one side of a hip or valley that is of equal length, then the modules may be placed directly adjacent to the hip or valley.

### Smoke Ventilation

The modules should be located no higher than three feet (3') below the ridge.

## CHAPTER 6 CONCLUSIONS

### 6.1 Significant Impacts Mitigated by Fire Protection Plan Requirements

Due to the severity of impacts from the improper management of wild land areas, the existing laws are stringent and regulate all aspects of wild land fire including building standards, fuel modification, water availability/flow, and access.

#### 6.1.1 Emergency Services

The project site is served by the Alpine Protection District. The Alpine Fire Protection District is an all-hazard fire protection agency that provides services year-round.

The Alpine Fire Protection District is a member of the Heartland Automatic Aid Agreement and San Diego County Fire Mutual Aid Agreement. The Automatic Aid Agreement Supplements Alpine's emergency resources from surrounding career agencies on a closest-engine-basis. Heartland resources responding to wild land fires are assisted by automatic responses from CAL-FIRE and the U.S. Forest Service.

### Structure Fire Alarms

A typical First-Alarm Structure Fire assignment for a fire occurring within the Alpine Fire District would include Alpine Engine 17 (4 personnel), Viejas Engine or Truck 25 (4 personnel, cross-staffing), Lakeside Engine 26 (3 personnel) and Engine 3 (3 personnel), one paramedic unit and one Duty Chief.

Second and Third Alarm assignments will double the First Alarm response for a Second Alarm and triple the First Alarm response for a Third Alarm.

### Vegetation Fire Responses

Three (3) Type I Structure Engines, two (2) Type III Brush Engines, one (1) medic unit  
One Water Tender  
One Battalion/Duty Chief

The Project Site is in State Responsibility Area (SRA). Alpine FPD vegetation fire response levels reflect a standard Heartland Zone Medium Wildland Dispatch response, with resource levels decreased because of the number of CAL-FIRE fire apparatus and equipment concurrently dispatched to all incidents.

### CAL-FIRE Vegetation Fire Responses

Low Wildland – Two (2) Type III engines, one (1) Battalion Chief

Medium Wildland – Four (4) Type III engines, one (1) BC, one (1) bulldozer, two (2) hand crews, two (2) helicopters, one (1) air attack, two (2) air tankers

High Wildland – six (6) Type III engines, one (1) BC, two (2) dozers, four (4) hand crews, three (3) helicopters, one (1) air attack, three (3) air tankers

NOTE: These are basic response levels. Response levels are subject to change based on anticipated weather and fire behavior conditions, staffing patterns for unusual events, and State-wide resource commitments.

*Finding: The fire protection services provided by the District meet or exceed the requirements to reduce the Significant Impact of providing adequate emergency services.*

#### 6.1.1.2 Emergency Response Times

The project is zoned A-70 property and the majority of the proposed residential lots are two (2) or more acres, placing the parcels in the Estate Land Use Category.

Maximum fire travel time for A-70 Estate Residential Land Use Designation for Single Family Dwellings is ten (10) minutes.

| LAND USE CATEGORY | MAXIMUM TRAVEL TIME | LAND USE CATEGORY DEFINED                                                                                                                                                                                         |
|-------------------|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Town              | 5 minutes           | Single-family residential lots of less than two acres, or more intensive uses such as multi-family residential. Includes all industrial development and all commercial development except neighborhood commercial |
| Estate            | 10 minutes          | Single-family residential lots from two to four acres in size. Includes neighborhood commercial development.                                                                                                      |
| Rural             | 20 minutes          | Large lot single-family residential and agricultural development. Lot sizes of greater than four acres.                                                                                                           |

Documentation from the first iteration of the Project Review indicates that the Zoning designation may change to Semi-Rural 1 (SR-1). Depending on a number of variables, SR-1 Zoned lands may have either a five minute or ten-minute Fire Response Time requirement.

*Finding: Project documentation and agency recommendations have determined that the project meets or exceeds the requirements of this Significant Impact.*

#### 6.1.2 Access and Evacuation

The primary road providing emergency access and egress meets the minimum Fire Code width, paving and slope requirements between the project site and an intersection where two directions of egress travel is available.

There are no actual or potential bottlenecks or other constraints between the project site and the above referenced intersection.

Private roads and driveways will be provided with sufficient width to allow simultaneous passage of civilian vehicles and fire apparatus.

Fire Lanes established under the requirements of this Fire Protection Plan will be maintained in perpetuity according to the requirements of Section 22500.1 of the California Vehicle Code, allowing local law enforcement and fire officials the ability to enforce fire lane regulations without restrictions.

*Finding: The Fire Protection Plan provisions for Access and Evacuation will meet or exceed the Significant Impacts in this category.*

### 6.1.3 – Water Supply

The Project will be served by the Padre Dam Municipal Water District.

The Alpine Fire Marshal has required that a minimum of seven (7) new fire hydrants be installed at the Project Site with the capability of flowing a minimum fire flow of 2500 gallons per minute.

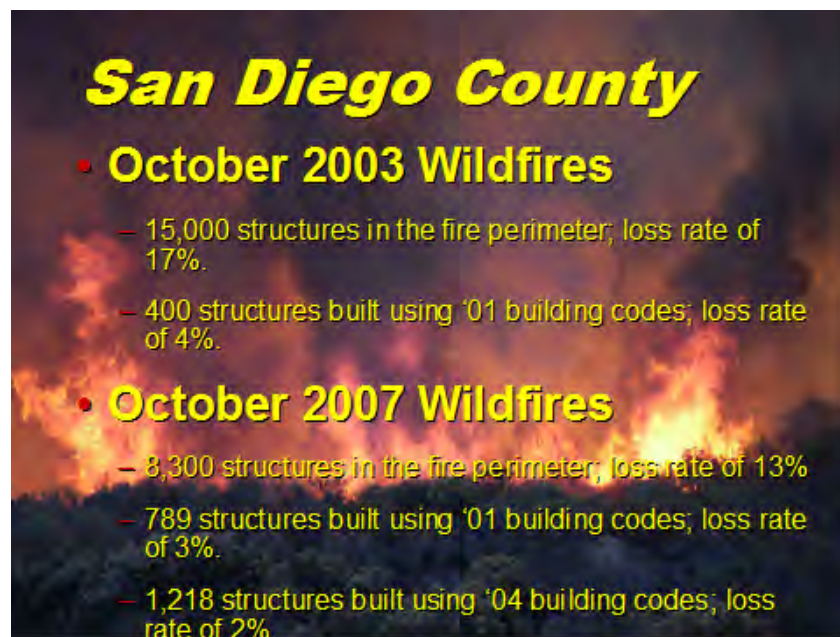
### 6.1.4 – Ignition Resistant Construction

All new buildings and structures erected on the project site will be required to meet the County of San Diego Building Code Chapter 7-A requirements for Wildland Urban Interface Areas and Chapter 7-A requirements of the California Building Code. These requirements mandate the installation of automatic fire sprinkler systems compliant with NFPA Pamphlet 13-D *Installation of Automatic Fire Sprinklers in One and Two Family Dwellings* standards.

Roof composition is an important factor in structural survivability.

One study shows that typical single family dwellings with non-combustible roofs and thirty-three (33) to sixty-six feet of fuel clearance have a 95% chance of survival (Howard, et.al.,1973). A second study in Santa Barbara counted revealed that houses with a non-combustible roof and thirty-three to sixty feet of vegetation clearance had an 86% chance of survival (Foote, 1994).

The proposed single family dwellings in the project will be required to have Class A non-combustible roof decks or assemblies.



The above Power Point slide, from a presentation given by the San Diego County DPLU Fire Marshal's Office, indicates a 96 to 98% survivability rate for buildings erected under Enhanced Fire Resistive Construction/Chapter 7A requirements during actual, extreme fire behavior conditions in similar and more hazardous vegetation types than found on the project site.

*Finding: The building standards proposed by this Fire Protection Plan will provide a reasonable degree of ignition resistant buildings at the project site and reduce the Significant Impact caused by less resistive construction standards.*

### 6.1.5 Defensible Space and Fuel Modifications

Fire behavior, under these mitigations strategies, is expected to significantly diminish when a wildfire encroaches upon the Fuel Modification Zones on the property line exposed to off-site unmanaged vegetative fuels. Vegetation management beyond a structure's immediate vicinity has little effect on house ignitions unless a minimal break of continuous surface fuels is maintained around the perimeter of the house. For this reason, home site protection includes eliminating continuous ground fuels that lead from wild land fuel beds to the house. This can be accomplished with rock landscaping, cement sidewalk, green grass or by removing dried vegetation and tree needles (Jack Cohen, USFS).

In 1997, Cohen conducted full-scale experiments that revealed that a typical Type V-B combustible wall thirty-three feet from a crown fire in 43 foot (13 meter) tall Black Spruce trees. These fires produced flame heights of 20 meters or 65.616 feet. Twenty-meter-long flame heights are produced by a 100 megawatt fire. The walls on the test site only ignited when actually touched by flames. These full-scale fire tests are the basis for the 100-foot-wide Fuel Modification Zones mandated by the County of San Diego.

The off-site Coastal Sage shrub environment on the north and west sides of the project will produce a 3.5502631035 megawatt fire. This heat energy release rate is approximately 3% of the energy produced by Cohen's full scale test fires.

The BEHAVE Fire Modeling calculation for the Project Site indicate that a wild fire moving through Fuel Model 1-GR-1 native and invasive species annual grasses will produce a Fire Line Intensity of 2868 BTU/foot/second. This value can be anecdotally applied to irrigated lawns and used to determine ignition times for residential construction materials by using various formulas and tables.

For example, using the formula:

$$t_{ig} = \pi kpc (T_{ig} - T_o) / 2q_e \quad (\text{National Fire Academy Fire Dynamics pg. 5-3})$$

where

$t_{ig}$  = time to ignition, seconds

kpc = thermal inertia of material

$T_{ig}$  = temperature of ignition source  
 $T_o$  = surface temperature of exposed material  
 $q_e$  = incident heat flux to the material  
 The ignition time of solid materials can be estimated.

For a gypsum based one-hour fire resistive or non-combustible stucco plaster wall (as required by Chapter 7A of the County and California Building Codes) with a surface temperature of 100 degrees (solar exposure), having a kpc of  $5.8 \times 10^5 q_e$  (*Fire Dynamics*, pg. 2-15), exposed to a *continuous* radiative heat source of 1400-degree (760 degrees C) flame front thirty feet (30') away producing 2868 BTUs, *theoretical* ignition time (using CBC Chapter 7-A required fire resistive materials) would be 211 minutes or 3.53 hours.

*Finding: Anecdotal information from the Fire Service indicates that a flame front, under "fire storm conditions" exposes a building to maximum extreme convective and radiant heat and potential direct flame contact for a maximum time period lasting between ten and thirty minutes.*

The BEHAVE Fire Modeling Calculation indicates that non-irrigated Fuel Model 1/GR-1 light fuels under worst case 2003 Cedar Fire Event burning conditions will produce 2868 BTUs, equivalent to 840.324 watts or .840324 kilowatts.

Referring to *Fire Dynamics* Figure 2-5 *Damage Caused by Radiation* below, the calculated fire crossing into the TM-5245-1 Project Site from the adjacent properties, with the potential ignition of landscaped lawns, will not produce sufficient radiant heat to cause significant damage of proposed new single family dwellings.

| Damage Description              | Heat Flux – kW/m <sup>2</sup> |
|---------------------------------|-------------------------------|
| Skin burns                      | 4.7 to 5.0                    |
| Pain threshold                  | 1.5                           |
| Pain at one minute              | 2.1                           |
| Plastic melts                   | 12.0                          |
| Cable insulation degrades       | 18.0 to 20.0                  |
| <i>Piloted ignition occurs:</i> |                               |
| Wood                            | 14.6                          |
| Painted Wood                    | 16.7                          |
| Wood spontaneously ignites      | 33.5                          |

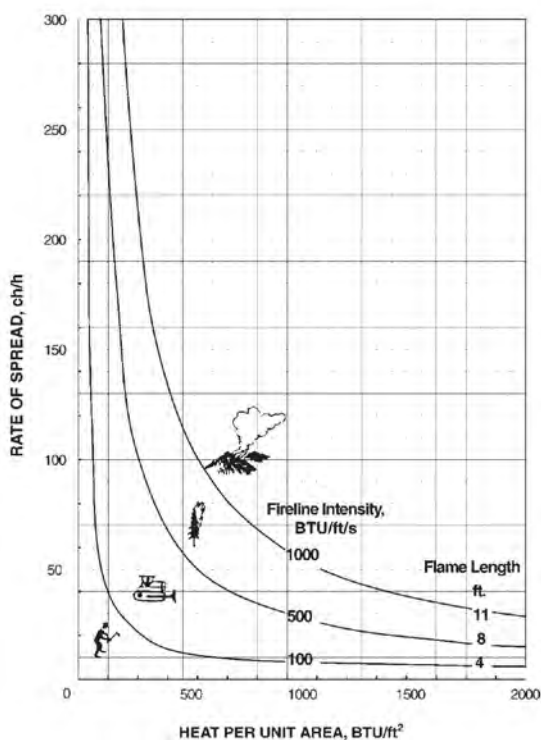
| Type of Heat Exposure | Heat Flux Value         |
|-----------------------|-------------------------|
| Flame Radiation       | 0-200 kW/m <sup>2</sup> |
| Flame Convection      | 10-20 kW/m <sup>2</sup> |
| Hot Gas Convection    | 0-10 kW/m <sup>2</sup>  |
| Hot Gas Radiation     | 0-150 kW/m <sup>2</sup> |

*Table 5.5 Heat Flux Direct Contact Values, NFA Fire Dynamics*

While Fuel Model SH-5 and SH-7 (Coastal Sage shrub) vegetation produce relatively long flame lengths (41.3' for SH-5 and 38' for SH-7) and higher burning intensities (2955 BTU/sq.ft. [SH-7] and 22335 BTU/sq.ft. [SH-5]), fire behavior will change when the flame front transitions into the irrigated grass fuel bed.

Irrigated lawns, as proposed as part of the defensible space guidelines for the project, will have a fuel moisture content of at least 120%. Fuel moisture contents of 120% result in green, non-cured vegetation, with all herbaceous materials remaining in the “live” fuel categories. As a result, grassy fuels with high fuel moistures will produce flame lengths of one (1') or less and have a rate of spread of approximately 5 chains (330 feet) per hour when exposed to a 20 m.p.h. mid-flame wind

*Finding: The fire behavior characteristics of irrigated grass fuels is well within the capabilities of fire suppression forces using non-mechanized firefighting tools to control fires in this vegetation type. The change of burning characteristics and intensity as fire moves across the grassy fuels will provide more opportunities for responding resources to take defensive suppression action at the established Fuel Modification Zones around the TM-5245-1 structures (see the Fire Behavior Characteristics Chart below).*



## CONCLUSIONS:

- This fire protection plan demonstrates compliance with the applicable regulations.
- It will ensure adequate compliance with codes/regulations and significance standards, including required fuel modifications and construction resistive materials.
- The Fire Protection Plan can be incorporated by reference into the project's Final Conditions of Approval and enforced through each proposed structure's Certificate of Occupancy Conditions.

## CHAPTER 7 LIST OF PREPARERS AND PERSONS AND ORGANIZATIONS CONTACTED

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Santee, CA 92071  
619-448-3111

## CHAPTER 8 REFERENCES

*Alpine Community Protection and Evacuation Plan*, Version 1.1, 2006

### National Wildfire Coordinating Group Publications:

*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.

*BEHAVE PLUS: Fire Modeling System Version 5.0.3*, April 5, 2010. Patricia L. Andrews, United States Department of Agriculture - Forest Service, Rocky Mountain Research Station – Fire Sciences Lab, Missoula, Montana and Collin D. Bevins, System for Environmental Management, PO Box 8868, Missoula, Montana, 59807. Web site: <http://fire.org/>

National Wildfire Coordinating Group - *S-290 Intermediate Fire Behavior Manual*

National Wildfire Coordinating Group – *S-390 Introduction to Wildfire Calculations Manual*

*Aids to Determining Fuel Models for Estimating Fire Behavior*, Hal E. Anderson, United States Department of Agriculture Forest Service Intermountain Forest and Range Experiment Station General Technical Report INT-122, April 1982

*Physics-Based Modeling for WUI Fire Spread – Simplified Model Algorithm for Ignition of Structures by Burning Vegetation*, USDA Fire Research Division, NISTIR 7179

### NFPA Publications:

National Fire Protection Association - NFPA 13-D, *Standard for the Installation of Sprinkler Systems in One – and Two-Family Dwellings and Manufactured Homes*, 2010 and 2013 Editions.

National Fire Protection Association - NFPA 1142 *Standard on Water Supplies for Suburban and Rural Fire Fighting*, 2012 Edition.

National Fire Protection Association - NFPA 1144 *Standard for Reducing Structure Ignition Hazards from Wildfire* (2008).

National Fire Protection Association - NFPA 1142, 2008 Edition. Table C.11 (b) Time-Distance Table Using an Average Speed of 35 mph.

National Fire Protection Association Pamphlet 299 *Protection of Life and Property from Wildfire*

## State of California Regulatory Documents

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

California Public Resources Codes sections 4201 through 4204

California Government Code, sections 51175 through 51189.

2013 California Fire Code, CCR Title 24 Part 9, including Local Amendments and Appendices to Chapters 1 & 4 and Appendices B, F & H

*The California State and Local Responsibility Area Fire Hazard Severity Zone Map.*  
California Code of Regulations, Title 24, Part 2 - 2013 *California Building Code*

## Local Codes and Ordinances

San Diego County Fire Code

San Diego County Consolidated Fire Code

Alpine Fire Protection District Ordinance 2016-01

### Other References:

*Introduction to Fire Dynamics, 3<sup>rd</sup> Edition* Douglas Drysdale, 2011

*Structural Design for Fire Safety, 2<sup>nd</sup> Edition*, Andrew Buchanan & Anthony Abu, 2017

APPENDIX A  
COUNTY OF SAN DIEGO APPROVED PLANT LISTS  
SUGGESTED PLANT LIST FOR A DEFENSIBLE SPACE

| BOTANICAL NAME            | COMMON NAME                       | Climate Zone |
|---------------------------|-----------------------------------|--------------|
| <b>TREES</b>              |                                   |              |
| Acer                      |                                   |              |
| platanoides               | Norway Maple                      | M            |
| rubrum                    | Red Maple                         | M            |
| saccharinum               | Silver Maple                      | M            |
| saccharum                 | Sugar Maple                       | M            |
| macrophyllum              | Big Leaf Maple                    | C/ (R)       |
| Alnus rhombifolia         | White Alder                       | C/I/M (R)    |
| Arbutus                   |                                   |              |
| unedo                     | Strawberry Tree                   | All zones    |
| Archontophoenix           |                                   |              |
| cunninghamiana            | King Palm                         | C            |
| Arctostaphylos spp.**     | Manzanita                         | C/I/D        |
| Brahea                    |                                   |              |
| armata                    | Blue Hesper Palm                  | C/D          |
| edulis                    | Guadalupe Palm                    | C/D          |
| Ceratonia siliqua         | Carob                             | C/I/D        |
| Cercidium floridum        | Blue Palo Verde                   | D            |
| Cercis occidentalis**     | Western Redbud                    | C/I/M        |
| Cornus                    |                                   |              |
| nuttallii                 | Mountain Dogwood                  | I/M          |
| stolonifera               | Redtwig Dogwood                   | I/M          |
| Eriobotrya                |                                   | C/I/D        |
| japonica                  | Loquat                            | C            |
| Erythrina caffra          | Kaffirboom Coral Tree             | I/M          |
| Ginkgo biloba "Fairmount" | Fairmount Maidenhair Tree         | I/D/M        |
| Gleditsia triacanthos     | Honey Locust                      |              |
| Juglans                   |                                   | I            |
| californica               | California Walnut                 | C/I          |
| hindsii                   | California Black Walnut           | I/D/M        |
| Lagerstroemia indica      | Crape Myrtle                      | I            |
| Ligustrum lucidum         | Glossy Privet                     | C/I/M        |
| Liquidambar styraciflua   | Sweet Gum                         | I            |
| Liriodendron tulipifera   | Tulip Tree                        |              |
| Lyonothamnus floribundus  |                                   | C            |
| ssp. Asplenifolius        | Fernleaf Catalina Ironwood        | C/I/D        |
| Melaleuca spp.            | Melaleuca                         | C/I          |
| Parkinsonia aculeate      | Mexican Palo Verde                |              |
| Pistacia                  |                                   |              |
| chinensis                 | Chinese Pistache<br>Pistachio Nut | C/I/D        |

|                            |                          |               |
|----------------------------|--------------------------|---------------|
| vera                       | Pistachio Nut            | I             |
| Pittosporum                |                          |               |
| phillyraeoides             | Willow Pittosporum       | C/I/D         |
| viridiflorum               | Cape Pittosporum         | C/I           |
| Platanus                   |                          |               |
| acerifolia                 | London Plane Tree        | All zones     |
| racemosa**                 | California Sycamore      | C/I/M         |
| Populus                    |                          |               |
| alba                       | White Poplar             | D/M           |
| fremontii**                | Western Cottonwood       | I             |
| trichocarpa                | Black Cottonwood         | I/M           |
| Prunus                     |                          |               |
| xblireiana                 | Flowering Plum           | M             |
| caroliniana                | Carolina Laurel Cherry   | C             |
| ilicifolia**               | Hollyleaf Cherry         | C             |
| lyonii**                   | Catalina Cherry          | C             |
| serrulata 'Kwanzan'        | Flowering Cherry         | M             |
| yedoensis 'Akebono'        | Akebono Flowering Cherry | M             |
| Quercus                    |                          |               |
| agrifolia**                | Coast Live Oak           | C/I           |
| engelmannii                | Engelmann Oak            | I             |
| **  suber                  | Cork Oak                 | C/I/D         |
| Rhus                       |                          |               |
| lancea**                   | African Sumac            | C/I/D         |
| Salix spp.**               | Willow                   | All zones (R) |
| Tristania conferta         | Brisbane Box             | C/I           |
| Ulmus                      |                          |               |
| parvifolia                 | Chinese Elm              | I/D           |
| pumila                     | Siberian Elm             | C/M           |
| Umbellularia californica** | California Bay Laurel    | C/I           |

## SHRUBS

|                       |                        |       |
|-----------------------|------------------------|-------|
| Agave                 | Century Plant          | D     |
| americana             | Century Plant          | D     |
| deserti               | Shawis Century Plant   | D     |
| shawii**              |                        |       |
| Amorpha fruticosa**   | False Indigobush       | I     |
| Arbutus               |                        |       |
| menziesii**           | Madrone                | C/I   |
| Arctostaphylos spp.** | Manzanita              | C/I/D |
| Atriplex**            |                        |       |
| canescens             | Hoary Saltbush         | I     |
| lentiformis           | Quail Saltbush         | D     |
| Baccharis**           |                        |       |
| glutinosa             | Mule Fat               | C/I   |
| pilularis             | Coyote Bush            | C/I/D |
| Carissa grandiflora   | Natal Plum             | C/I   |
| Ceanothus spp.**      | California Lilac       | C/I/M |
| Cistus spp.           | Rockrose               | C/I/D |
| Cneoridium dumosum**  | Bushrue                | C     |
| Comarostaphylis**     |                        |       |
| diversifolia          | Summer Holly           | C     |
| Convolvulus cneorum   | Bush Morning Glory     | C/I/M |
| Dalea                 |                        |       |
| orcuttii              | Orcutt's Delea         | D     |
| spinosa**             | Smoke Tree             | I/D   |
| Elaeagnus             |                        |       |
| pungens               | Silverberry            | C/I/M |
| Encelia**             |                        |       |
| californica           | Coast Sunflower        | C/I   |
| farinose              | White Brittlebush      | D/I   |
| Eriobotrya            |                        |       |
| deflexa               | Bronze Loquat          | C/I   |
| Eriophyllum           |                        |       |
| confertiflorum**      | Golden Yarrow          | C/I   |
| staechadifolium       | Lizard Tail            | C     |
| Escallonia spp.       | Escallonia             | C/I   |
| Feijoa sellowiana     | Pineapple Guava        | C/I/D |
| Fouquieria splendens  | Ocotillo               | D     |
| Fremontodendron**     |                        |       |
| californicum          | Flannelbush            | I/M   |
| mexicanum             | Southern Flannelbush   | I     |
| Galvezia              |                        |       |
| juncea                | Baja Bush-Snapdragon   | C     |
| speciosa              | Island Bush-Snapdragon | C     |
| Garrya                |                        |       |
| elliptica             | Coast Silktassel       | C/I   |
| flavescens**          | Ashy Silktassel        | I/M   |

|                         |                           |           |
|-------------------------|---------------------------|-----------|
| Salvia spp.**           | California Wild Rose      | C/I       |
| Sambucus spp.**         | Baja California Wild Rose | C/I       |
| Symphoricarpos mollis** | Sage                      | All Zones |
| Syringa vulgaris        | Elderberry                | C/I/M     |
| Tecomaria capensis      | Creeping Snowberry        | C/I       |
| Teucrium fruticans      | Lilac                     | M         |
| Toxicodendron**         | Cape Honeysuckle          | C/I/D     |
| diversilobum            | Bush Germander            | C/I       |
| Verbena                 |                           |           |
| lilacina                | Poison Oak                | I/M       |
| Xylosma congestum       |                           |           |
| Yucca**                 | Lilac Verbena             | C         |
| schidigera              | Shiny Xylosma             | C/I       |
| whipplei                |                           |           |
|                         | Mojave Yucca              | D         |
|                         | Foothill Yucca            | I         |

|                        |                        |           |
|------------------------|------------------------|-----------|
| <b>VINES</b>           |                        |           |
| Antigonon leptopus     | San Miguel Coral Vine  | C/I       |
| Distictis buccinatoria | Blood-Red Trumpet Vine | C/I/D     |
| Keckiella cordifolia** | Heart-Leaved Penstemon | C/I       |
| Lonicera               |                        |           |
| japonica 'Halliana'    | Hall's Honeysuckle     | All Zones |
| subspicata**           | Chaparral Honeysuckle  | C/I       |
| Solanum                |                        |           |
| jasminoides            | Potato Vine            | C/I/D     |

|                       |                          |           |
|-----------------------|--------------------------|-----------|
| <b>PERENNIALS</b>     |                          |           |
| Coreopsis             |                          |           |
| gigantea              | Giant Coreopsis          | C         |
| grandiflora           | Coreopsis                | All Zones |
| maritima              | Sea Dahlia               | C         |
| verticillata          | Coreopsis                | C/I       |
| Heuchera maxima       | Island Coral Bells       | C/I       |
| Iris douglasiana**    | Douglas Iris             | C/M       |
| Iva hayesiana**       | Poverty Weed             | C/I       |
| Kniphofia uvaria      | Red-Hot Poker            | C/M       |
| Lavandula spp.        | Lavender                 | All Zones |
| Limonium californicum |                          |           |
| var. mexicanum        | Coastal Statice          | C         |
| perezii               | Sea Lavender             | C/I       |
| Oenothera spp.        | Primrose                 | C/I/M     |
| Penstemon spp.**      | Penstemon                | C/I/D     |
| Satureja douglasii    | Yerba Buena              | C/I       |
| Sisyrinchium          |                          |           |
| bellum                | Blue-Eyed Grass          | C/I       |
| californicum          | Golden-Eyed Grass        | C         |
| Solanum               |                          |           |
| xanthii               | Purple Nightshade        | C/I       |
| Zauschneria**         |                          |           |
| californica           | California Fuschia       | C/I       |
| cana                  | Hoary California Fuschia | C/I       |
| 'Catalina'            | Catalina Fuschia         | C/I       |

|                |        |       |
|----------------|--------|-------|
| <b>ANNUALS</b> |        |       |
| Lupinus spp.** | Lupine | C/I/M |

### UNDESIRABLE PLANT LIST

The following species are highly flammable and should be avoided when planting within the first 50 feet adjacent to a structure. The plants listed below are more susceptible to burning, due to rough or peeling bark, production of large amounts of litter, vegetation that contains oils, resin, wax, or pitch, large amounts of dead material in the plant, or plantings with a high dead to live fuel ratio. Many of these species, if existing on the property and adequately maintained (pruning, thinning, irrigation, litter removal, and weeding), may remain as long as the potential for spreading a fire has been reduced or eliminated.

| <b><u>BOTANICAL NAME</u></b>     | <b><u>COMMON NAME</u></b>            |
|----------------------------------|--------------------------------------|
| <u>Abies species</u>             | Fir Trees                            |
| <u>Acacia species</u>            | Acacia (trees, shrubs, groundcovers) |
| <u>Adenostoma sparsifolium**</u> | Red Shanks                           |
| <u>Adenostoma fasciculatum**</u> | Chamise                              |
| <u>Agonis juniperina</u>         | Juniper Myrtle                       |
| <u>Araucaria species</u>         | Monkey Puzzle, Norfolk Island Pine   |
| <u>Artemesia californica**</u>   | California Sagebrush                 |
| <u>Bambusa species</u>           | Bamboo                               |
| <u>Cedrus species</u>            | Cedar                                |
| <u>Chamaecyparis species</u>     | False Cypress                        |
| <u>Coprosma pumila</u>           | Prostrate Coprosma                   |
| <u>Cryptomeria japonica</u>      | Japanese Cryptomeria                 |
| <u>Cupressocyparis leylandii</u> | Leylandii Cypress                    |
| <u>Cupressus forbesii**</u>      | Tecate Cypress                       |
| <u>Cupressus glabra</u>          | Arizona Cypress                      |
| <u>Cupressus sempervirens</u>    | Italian Cypress                      |
| <u>Dodonea viscosa</u>           | Hopseed Bush                         |
| <u>Eriogonum fasciculatum**</u>  | Common Buckwheat                     |
| <u>Eucalyptus species</u>        | Eucalyptus                           |
| <u>Heterotheca grandiflora**</u> | Telegraph Plant                      |
| <u>Juniperus species</u>         | Junipers                             |
| <u>Larix species</u>             | Larch                                |
| <u>Lonicera japonica</u>         | Japanese Honeysuckle                 |
| <u>Miscanthus species</u>        | Eulalia Grass                        |
| <u>Muehlenbergia species**</u>   | Deer Grass                           |
| <u>Palmae species</u>            | Palms                                |
| <u>Picea species</u>             | Spruce Trees                         |
| <u>Pickeringia Montana**</u>     | Chaparral Pea                        |
| <u>Pinus species</u>             | Pines                                |
| <u>Podocarpus species</u>        | Fern Pine                            |
| <u>Pseudotsuga menziesii</u>     | Douglas Fir                          |
| <u>Rosmarinus species</u>        | Rosemary                             |
| <u>Salvia mellifera**</u>        | Black Sage                           |
| <u>Taxodium species</u>          | Cypress                              |
| <u>Taxus species</u>             | Yew                                  |
| <u>Thuja species</u>             | Arborvitae                           |
| <u>Tsuga species</u>             | Hemlock                              |
| <u>Urtica urens**</u>            | Burning Nettle                       |

## APPENDIX B FIRE CODE MINIMUM ACCESS ROAD REQUIREMENTS

All roadways serving this Project shall be a minimum of twenty-four (24) feet improved paved width. Private driveways shall have a minimum improved paved width of sixteen (16') feet.

All roads and driveways shall not exceed 20% grades. Any road or driveway between 15 and 20 percent will be a concrete surface and have a deep broom finish perpendicular to the direction of travel to enhance traction.

All dead-end roads (including driveways) in excess of 150 feet in length shall be provided with approved provisions for the turning around of fire apparatus.

All roads within the development shall be all-weather paved streets capable of supporting fire apparatus weighing up to 75,000 pounds.

All roads shall be provided with the approved paved driving surface prior to construction and/or bringing combustible building products onto each parcel.

Gates Across Roads - There are no entrance gates planned for this residential development. If in the future or at a later date a gate is, the following shall be required:

- Gates shall be automatic
- Gates shall be equipped with approved emergency key-operated switches that overrides all gate command functions and opens the gate(s).
- Gates shall also be equipped with approved emergency tract control-activating strobe light sensor(s) or other devices approved by the Alpine FPD Chief, which will activate the gate on the approach of emergency apparatus.
- Gate opening mechanisms shall be provided with battery back-up or manual mechanical disconnects in the event of power failures.
- Gates shall conform to Alpine FPD requirements and County design requirements DS-17, 18, and 19.

Roads having improved paved width less than thirty-six (36') feet shall be designated Fire Apparatus Access Roads (Fire Lanes). Fire Lanes shall be identified by:

- Red curbs with white stenciled letters plainly visible from a vehicle
- White stenciled letters on red curbs shall state "Fire Lane-No Parking" Fire Lane signs posted in compliance with Section 22500.1 of the California Vehicle Code

## APPENDIX C

### IGNITION RESISTANT CONSTRUCTION & FIRE PROTECTION SYSTEMS

Several pre-cautionary ignition-resistant construction measures will be used to reduce potential ignition of residences from wild land fires firebrands.

All structures shall be built with Class A Roof Assemblies, including a Class A roof covering.

The exterior wall surface materials shall be non-combustible, or an approved alternate, and shall be protected by two inch nominal solid blocking between rafters all roof overhangs or by stucco boxed-in eaves.

Attic or foundation ventilation louvers or ventilation openings shall not exceed 144 square inches per opening and shall be covered with corrosion-resistant metal screening or other approved material that offers equivalent protection. The metal screening shall have mesh openings with a minimum dimension of 1/16" and a maximum dimension of 1/8 inch. Attic ventilation shall also comply with the requirements of the California Building Code (C.B.C.). Attic ventilation openings or ventilation louvers in soffits, eave overhangs, between rafters at eaves, or in other overhanging areas shall not be permitted.

Paper-faced insulation shall be prohibited in attics or ventilated spaces.

All chimney, flue or stovepipe openings will have an approved spark arrester. Spark arrestors shall be installed to be visible for the purposes of inspection and maintenance.

Glass or other transparent, translucent or opaque glazing, including skylights, shall be constructed of tempered glass or multi-layered panels with at least one tempered pane or glass block construction. Exterior glazing shall have a minimum fire-resistance rating of not less than 20 minutes.

All residential structures will have automatic interior fire sprinklers installed according to the National Fire Protection Association (NFPA) 13D-*Standard for the Installation of Automatic Fire Sprinklers in One- and Two-family Homes and Manufactured Homes* and Alpine Fire Protection District standards.

Rain gutters, down spouts and gutter hardware will be constructed from metal or other approved non-combustible material. Gutters will be designed to reduce the accumulation of leaf litter and debris.

The first five feet of fences and other construction (gates, gate posts, fence posts) attached to structures shall be of non-combustible material.

All projections (patio covers, unenclosed roofs and floors, and similar architectural appendages and projections) will be of non-combustible construction, one-hour fire

resistive construction on the underside, or heavy timber construction. When such appendages and projections are attached to exterior fire-resistive walls, they will be constructed to maintain the fire-resistive integrity of the wall.

Exterior balconies and decks will be of non-combustible construction, one-hour fire resistive construction on the underside, or heavy timber construction. Exterior decks shall be completely enclosed from the bottom of the deck surface to ground level and covered with approved non-combustible construction materials.

Exterior doors will be approved non-combustible construction, solid core wood not less than 1-3/8 inches thick (or equivalent) and have a fire resistive rating of not less than 20 minutes.

All vent openings will be provided with 1/16" to 1/8 inch metal mesh or similar non-combustible screens to prevent embers from entering the structure during high wind conditions.

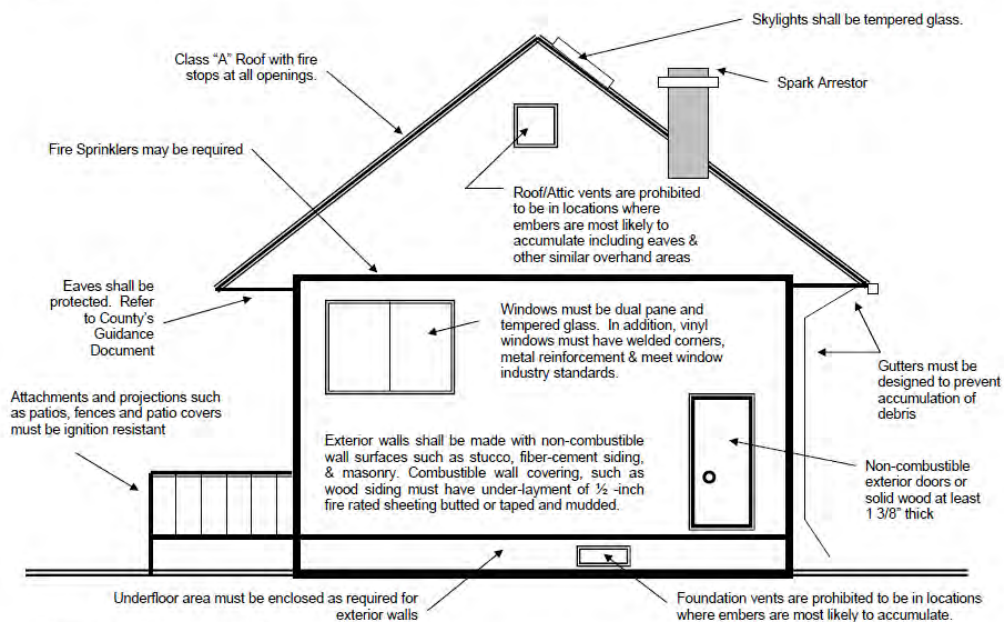
Any damaged or replacement window, siding, roof coverings, and other mitigation measures will meet or exceed the original intent of the fire protection discussed in this Plan.



County of San Diego, Department of Planning and Land Use

## **FIRE RESISTIVE CONSTRUCTION REQUIREMENTS**

**BUILDING DIVISION**



DPLU #662 (5/08)

5201 RUFFIN ROAD, SUITE B, SAN DIEGO, CA 92123 • (858) 565-5920 • (888) 336-7553  
[HTTP://WWW.SDCPLU.ORG](http://www.sdcplu.org)

## APPENDIX D DEFENSIBLE SPACE AND VEGETATION

### Additional Zone 1 Fuel Modification Requirements

All undesirable non-native vegetation (See APPENDIX A) will be removed and replanted with drought tolerant, fire resistant landscaping.

Vegetation may include single or cluster of trimmed fire resistant native and ornamental plants (oaks, sumac, toyon, SEE APPENDIX A.)

Dense plant masses adjacent to the structures and at bases of trees and tree clusters will not be placed in this Zone. Provide low growing, fire resistive, deep rooted, drought tolerant planting to maintain erosion control and soil stability, especially on manufactured slopes.

Native or ornamental trees to be retained within fuel modification zones shall be pruned to maintain a vertical separation of approximately ten (10) feet above underlying shrubs or groundcover. Pruning of the shrubs will minimize the impact of the tree pruning.

Trees and large shrubs over 15 feet in height (oaks, sumac, toyon, etc.) shall be pruned to provide clearance between plants of three (3) times the height of understory plants, or 10 feet, whichever is greater.

Trees may be planted and maintained as individual specimens, or clustered with no more than three (3) trees in a single cluster with a minimum distance between mature canopies of 20 feet. Avoid planting trees directly uphill of one another.

Tree canopies will not be allowed to overhang the roof of any structure; the outer edge of the canopies of mature trees will be a minimum of ten (10) feet from the building eaves, and free of all dead or dying parts.

All the dead material must be pruned out of all vegetation on an annual and as- needed basis by June 1<sup>st</sup> of each year.

Mature heights of new shrub plantings will be a maximum of 36 inches.

Zone 1 Defensible Space is an irrigated landscaping zone. This zone may be irrigated with micro-irrigation when overhead irrigation may cause erosion.

Firewood and combustible material shall not be stored within thirty (30') of buildings and structures, under unenclosed spaces beneath buildings or structures, or on decks or under eaves, canopies or other projections or overhangs.

Highly flammable plant species will be permanently removed from Zone 1 Defensible Space because of their susceptibility to wild land fire. Additionally, certain ornamental plants shall not be planted or allowed to become established within the Zone 1 Defensible Space unless otherwise specified as acceptable in the Recommended Plant List in Appendix A or as approved by the Fire Marshal.

#### Additional Zone 2 Fuel Modification Requirements

If shrubs are located underneath a tree's drip line, the lowest branch shall be at least three times as high as the under story shrubs or 10 feet, whichever is greater.

Large continuous masses of shrubs and understory less than 15 feet in height will be thinned to remove fuel and provide at least ten (10) feet between shrub masses, or individual shrubs. Thinning will reduce the overall canopy coverage of the area a minimum of fifty (50) percent.

Mulches, chips and other small multi-cuttings (cut to less than two inches in diameter and four inches in length) will only be evenly spread over the area no more than 6 inches at least 50 feet from structures. This can be used to prevent grass and weed encroachments within the treated areas. Mulching helps to maintain soil moisture for designated plants, reduces the growth of annual grasses, and minimizes soil erosion.

There is a very high probability that the openings will be dominated with non-native weed or grass species. Therefore, all grasses and weeds are to be mowed or weed-whipped to a four (4) inch stubble height by June 1<sup>st</sup> of each year or when the fuels become cured, whichever occurs first. Any vegetation biomass (debris and trimmings) produced by thinning and pruning shall be removed from the site or converted to mulch by chipping and evenly distributed to a maximum depth of four (4) inches and at kept at least 50 feet from a structure.

#### Additional General Fuel Modification Measures

Brush removal shall be completed prior to commencing any flammable construction.

During construction at least 50 feet of clearance around the structures shall be free of all flammable vegetation as an interim fuel modification zone.

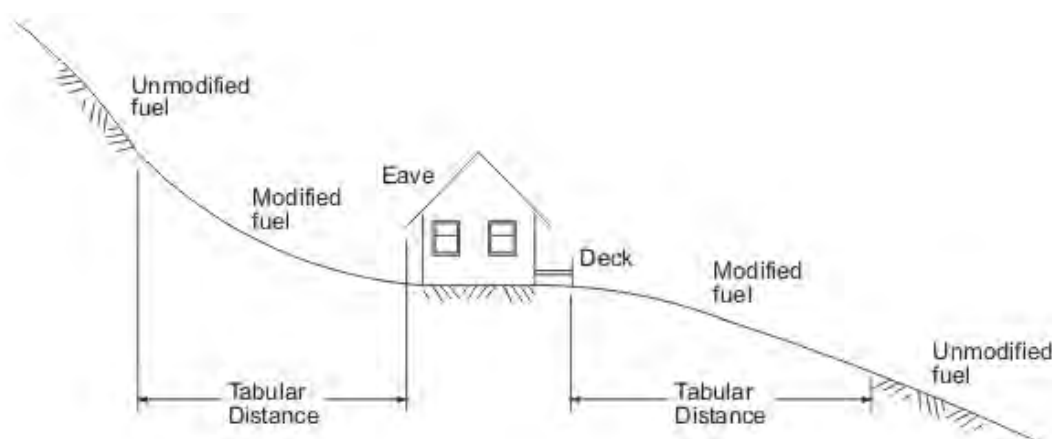
The annual completion of all designated Fuel Modification Treatments will occur prior to June 15<sup>th</sup>.

All individual landscaping plans, including additional structures, will comply with the Fire Protection Plan.

Trees and plants will be planted in accordance with the County of San Diego Approved

Plants for Defensible Space in Fire Prone Areas List or as approved by the Alpine Fire Protection District.

Any disputes of yard landscaping regarding the interpretation of this Fire Protection Plan (FPP) will be decided by the Alpine Fire Marshal. The Fire Marshal's decision will be final and binding on the landowner.



Example of Fuel Modification Zone configuration for 100' depth between structure and unmodified fuel – “tabular distance” is the required lateral distance, without regard to distances produced by slope inclination or declination, from the edge of buildings to the unmanaged vegetative fuel bed.





TM-5245-1 Defensible Space –Fuel Modification Zone Map – Eastern Portion

# APPENDIX "E" ALPINE F.P.D. PROJECT FACILITY AVAILABILITY FORM 399-F



## County of San Diego, Planning & Development Services **PROJECT FACILITY AVAILABILITY** ZONING DIVISION

**ALPINE FIRE**  
*[Signature]*

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |            |                                                                                                                                                                                                                                                                                                                                                                  |  |            |            |  |  |  |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------|------------|--|--|--|--|--|--|
| Please type or use pen                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |            | F                                                                                                                                                                                                                                                                                                                                                                |  |            |            |  |  |  |  |  |  |
| Owner's Name: <u>Viejias Hills LLC / Neal Reynolds</u> Phone: <u>619-247-2805</u><br>PO Box 2010<br>Owner's Mailing Address: _____ Street _____<br>Alpine CA, 91901<br>City _____ State _____ Zip _____                                                                                                                                                                                                                                                                                                                                                                                                   |            | ORG _____<br>ACCT _____<br>ACT _____<br>TASK _____<br>DATE _____ AMT \$ _____<br>DISTRICT CASHIER'S USE ONLY                                                                                                                                                                                                                                                     |  |            |            |  |  |  |  |  |  |
| SECTION 1. PROJECT DESCRIPTION TO BE COMPLETED BY APPLICANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                                                                                                                                                                                                                                                                                                                                                                  |  |            |            |  |  |  |  |  |  |
| A. <input checked="" type="checkbox"/> Major Subdivision (TM) <input type="checkbox"/> Specific Plan or Specific Plan Amendment<br><input type="checkbox"/> Minor Subdivision (TPM) <input type="checkbox"/> Certificate of Compliance:<br><input type="checkbox"/> Boundary Adjustment<br><input type="checkbox"/> Rezone (Reclassification) from _____ to _____ zone.<br><input type="checkbox"/> Major Use Permit (MUP), purpose: _____<br><input type="checkbox"/> Time Extension... Case No. _____<br><input type="checkbox"/> Expired Map... Case No. _____<br><input type="checkbox"/> Other _____ |            | Assessor's Parcel Number(s)<br>(Add extra if necessary)<br><table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%; text-align: center;">404-011-08</td> <td style="width:50%; text-align: center;">404-341-01</td> </tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </table> |  | 404-011-08 | 404-341-01 |  |  |  |  |  |  |
| 404-011-08                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 404-341-01 |                                                                                                                                                                                                                                                                                                                                                                  |  |            |            |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |            |                                                                                                                                                                                                                                                                                                                                                                  |  |            |            |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |            |                                                                                                                                                                                                                                                                                                                                                                  |  |            |            |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |            |                                                                                                                                                                                                                                                                                                                                                                  |  |            |            |  |  |  |  |  |  |
| B. <input checked="" type="checkbox"/> Residential: Total number of dwelling units <u>27</u><br><input type="checkbox"/> Commercial: Gross floor area _____<br><input type="checkbox"/> Industrial: Gross floor area _____<br><input type="checkbox"/> Other: Gross floor area _____                                                                                                                                                                                                                                                                                                                      |            | Thomas Guide, Page <u>1234</u> Grid <u>D-5</u><br>N. side of Otto Ave<br>Project address _____ Street _____<br>Alpine 91901<br>Community Planning Area/Subregion _____ Zip _____                                                                                                                                                                                 |  |            |            |  |  |  |  |  |  |
| C. Total Project acreage <u>181</u> Total lots <u>27</u> Smallest proposed lot <u>1 AC</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |                                                                                                                                                                                                                                                                                                                                                                  |  |            |            |  |  |  |  |  |  |
| OWNER/APPLICANT AGREES TO COMPLETE ALL CONDITIONS REQUIRED BY THE DISTRICT.<br>Applicant's Signature: <u>[Signature]</u> Date: <u>August 30, 2017</u><br>Address: <u>2442 Second Ave, San Diego, CA 92101</u> Phone: <u>951-693-2400</u><br>(On completion of above, present to the district that provides fire protection to complete Section 2 and 3 below.)                                                                                                                                                                                                                                            |            |                                                                                                                                                                                                                                                                                                                                                                  |  |            |            |  |  |  |  |  |  |
| SECTION 2: FACILITY AVAILABILITY TO BE COMPLETED BY DISTRICT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            |                                                                                                                                                                                                                                                                                                                                                                  |  |            |            |  |  |  |  |  |  |
| District Name: <u>ALPINE FIRE PROTECTION DISTRICT</u><br>Indicate the location and distance of the primary fire station that will serve the proposed project:<br><u>1864 TAVERN RD. ALPINE, CA. 91901 DUE SSW OF PROJECT 2.1 MILES.</u>                                                                                                                                                                                                                                                                                                                                                                   |            |                                                                                                                                                                                                                                                                                                                                                                  |  |            |            |  |  |  |  |  |  |
| A. <input checked="" type="checkbox"/> Project is in the District and eligible for service.<br><input type="checkbox"/> Project is not in the District but is within its Sphere of Influence boundary, owner must apply for annexation.<br><input type="checkbox"/> Project is not in the District and not within its Sphere of Influence boundary.<br><input type="checkbox"/> Project is not located entirely within the District and a potential boundary issue exists with the _____ District.                                                                                                        |            |                                                                                                                                                                                                                                                                                                                                                                  |  |            |            |  |  |  |  |  |  |
| B. <input checked="" type="checkbox"/> Based on the capacity and capability of the District's existing and planned facilities, fire protection facilities are currently adequate or will be adequate to serve the proposed project. The expected emergency travel time to the proposed project is _____ minutes.<br><input type="checkbox"/> Fire protection facilities are not expected to be adequate to serve the proposed development within the next five years.                                                                                                                                     |            |                                                                                                                                                                                                                                                                                                                                                                  |  |            |            |  |  |  |  |  |  |
| C. <input checked="" type="checkbox"/> District conditions are attached. Number of sheets attached: _____<br><input type="checkbox"/> District will submit conditions at a later date.                                                                                                                                                                                                                                                                                                                                                                                                                    |            |                                                                                                                                                                                                                                                                                                                                                                  |  |            |            |  |  |  |  |  |  |
| SECTION 3. FUELBREAK REQUIREMENTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            |                                                                                                                                                                                                                                                                                                                                                                  |  |            |            |  |  |  |  |  |  |
| Note: The fuelbreak requirements prescribed by the fire district for the proposed project do not authorize any clearing prior to project approval by Planning & Development Services.                                                                                                                                                                                                                                                                                                                                                                                                                     |            |                                                                                                                                                                                                                                                                                                                                                                  |  |            |            |  |  |  |  |  |  |
| <input checked="" type="checkbox"/> Within the proposed project <u>100'</u> feet of clearing will be required around all structures.<br><input type="checkbox"/> The proposed project is located in a hazardous wildland fire area, and additional fuelbreak requirements may apply. Environmental mitigation requirements should be coordinated with the fire district to ensure that these requirements will not pose fire hazards.                                                                                                                                                                     |            |                                                                                                                                                                                                                                                                                                                                                                  |  |            |            |  |  |  |  |  |  |
| This Project Facility Availability Form is valid until final discretionary action is taken pursuant to the application for the proposed project or until it is withdrawn, unless a shorter expiration date is otherwise noted.                                                                                                                                                                                                                                                                                                                                                                            |            |                                                                                                                                                                                                                                                                                                                                                                  |  |            |            |  |  |  |  |  |  |
| Authorized Signature: <u>[Signature]</u><br>Print Name and Title: <u>JASON MCBROOM F.M.</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            | Phone: <u>619-445-2435</u> Date: <u>8/30/2017</u>                                                                                                                                                                                                                                                                                                                |  |            |            |  |  |  |  |  |  |
| On completion of Section 2 and 3 by the District, applicant is to submit this form with application to:<br>Planning & Development Services - Zoning Counter, 5510 Overland Ave, Suite 110, San Diego, CA 92123                                                                                                                                                                                                                                                                                                                                                                                            |            |                                                                                                                                                                                                                                                                                                                                                                  |  |            |            |  |  |  |  |  |  |



PDS-399F (Rev. 09/21/2012)

APPENDIX "F"  
ALPINE F.P.D. PROJECT CONDITIONS



**ALPINE FIRE PROTECTION DISTRICT**

Date: 8-30-2017

County of San Diego  
Planning and Development Services  
Zoning Counter  
5510 Overland Avenue Suite 110  
San Diego, CA 92123

Dept: Zoning

RE: APN: 404-011-08, 404-341-01  
Project : Viejas Hills LLC/ Neal Reynolds  
Street Name: Blackwolf, Fazlo, Neals Spur  
City, State, Zip: Alpine, Ca. 91901 **TM- 5245**

The Fire District has received the Project Facility Availability Letter and determined that the following conditions shall apply:

1. **Road Dimensions:** All on site roadways shall have an unobstructed improved width of not less than 24 feet. Fire apparatus roads shall have an unobstructed vertical clearance of not less than 13 feet 6 inches.
2. **Surface:** Fire apparatus access roads shall be designed and maintained to support the imposed loads of fire apparatus not less than 75, 000 lbs.
3. **Turning Radius:** The turning radius of a fire apparatus access road shall be a minimum of 36', as measured on the inside edge of the improvement width.
4. **Dead End Road Lengths:** Parcels zoned for less than 1 acre shall not exceed 800 feet without mitigation. Due to re-zoning, some subdivisions may exceed the dead end road lengths and the Fire District will take this into consideration.

Any residential driveway that is in excess of 150 feet in length shall be provided with approved provisions for turning around emergency apparatus. A cul-de-sac shall be provided in residential areas where the access roadway serves more than two structures. The minimum unobstructed paved radius width for a cul-de-sac shall be 36 feet radius in a residential area.

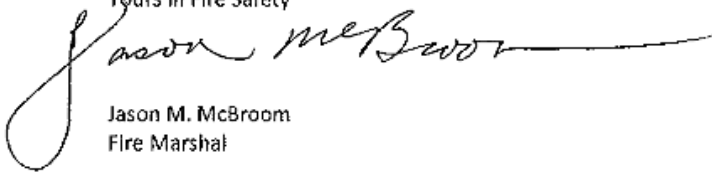
5. **Marking:** shall be provided with "No Parking Fire Lane Designation " by posting signs that are clearly visible from a vehicle and comply

with Section 22500.2 of the California Vehicle Code. These signs shall be placed every 30 feet or as per Fire District requirements at the time of final approval.

6. **Roadway Design Features:** No speed bumps, speed humps, speed control dips, etc. shall be permitted on fire access roadway.
7. **Road Maintenance Agreement:** A road maintenance agreement shall be in place and recorded at the County of San Diego to provide continued road maintenance in perpetuity.
8. **Secondary Access:** Project will have 2 means of access. Blackwolf and Fazio roads.
9. **Water Supply:** Padre Water shall supply and install 8 new fire hydrants to the project. All fire hydrants shall provide a fire flow of 2500GPM @ 20psi residual.
10. **Fire Protection Systems:** All structures shall be equipped with residential fire sprinklers in accordance with the most recent edition of NFPA 13D.
11. **Vegetation Management:** Fuel modification zones shall be maintained to meet the requirements of the Alpine Fire Protection District. A minimum 100 foot defensible space is required to property lines, whichever is closer. Markers shall be installed to open space areas for each parcel to identify the locations of the fuel management zones. All markers shall be non-combustible and permanently installed to the ground. No combustible vegetation shall be planted within the first 20' off of both sides of the sidewalks or roadways. All trees shall be limbed up 6' from the ground and maintained at all times.
12. **Fire Protection Plan:** Full FPP shall be required and approved.
13. **CC&R's:** Shall be established for the maintenance of the fuel modification and PRMA (Private Road Maintenance Agreement).

If you should have questions or comments, feel free to contact me.

Yours in Fire Safety



Jason M. McBroom  
Fire Marshal

cc: James Pine, Deputy Fire Marshal, San Diego County Fire Authority

# APPENDIX "G"

## PADRE DAM MUNICIPAL WATER DISTRICT

### PROJECT FACILITY AVAILABILITY FORM AND CONDITIONS



#### County of San Diego, Planning & Development Services PROJECT FACILITY AVAILABILITY - WATER ZONING DIVISION

*Please type or use pen*

|                                                                                                                                                                                                                |                                                                                                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| <p>Viejas Hills LLC / Neal Reynolds      619-247-2805</p> <p>Owner's Name      Phone</p> <p>PO Box 2010</p> <p>Owner's Mailing Address      Street</p> <p>Alpine, CA 91901</p> <p>City      State      Zip</p> | <p>ORG _____</p> <p>ACCT _____</p> <p>ACT _____</p> <p>TASK _____</p> <p>DATE _____ AMT \$ _____</p> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|

W

DISTRICT CASHIER'S USE ONLY

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#### SECTION 1: PROJECT DESCRIPTION      TO BE COMPLETED BY APPLICANT

A. ☒ Major Subdivision (TM)      ☐ Specific Plan or Specific Plan Amendment  
☐ Minor Subdivision (TPM)      ☐ Certificate of Compliance  
☐ Boundary Adjustment  
☐ Rezone (Reclassification) from \_\_\_\_\_ to \_\_\_\_\_ zone.  
☐ Major Use Permit (MUP), purpose: \_\_\_\_\_  
☐ Time Extension... Case No. \_\_\_\_\_  
☐ Expired Map... Case No. \_\_\_\_\_  
☐ Other \_\_\_\_\_

B. ☒ Residential      Total number of dwelling units 27  
☐ Commercial      Gross floor area \_\_\_\_\_  
☐ Industrial      Gross floor area \_\_\_\_\_  
☐ Other      Gross floor area \_\_\_\_\_

C. ☒ Total Project acreage 181      Total number of lots 27

D. Is the project proposing the use of groundwater? ☐ Yes ☒ No  
Is the project proposing the use of reclaimed water? ☐ Yes ☒ No

|                                                         |            |
|---------------------------------------------------------|------------|
| Assessor's Parcel Number(s)<br>(Add extra if necessary) |            |
| 404-011-08                                              | 404-341-01 |
|                                                         |            |
|                                                         |            |
|                                                         |            |

Thomas Guide Page 1234      Grid D-5  
N. side of Otto Ave.  
Project address \_\_\_\_\_ Street \_\_\_\_\_  
Alpine 91901  
Community Planning Area/Subregion \_\_\_\_\_ Zip \_\_\_\_\_

Owner/Applicant agrees to pay all necessary construction costs, dedicate all district required easements to extend service to the project and COMPLETE ALL CONDITIONS REQUIRED BY THE DISTRICT.

Applicant's Signature: Tom Reynolds      Date: June 1, 2016  
Address: 2442 Second Ave., San Diego CA 92101      Phone: 951-693-2400

(On completion of above, present to the district that provides water protection to complete Section 2 below.)

---

#### SECTION 2: FACILITY AVAILABILITY      TO BE COMPLETED BY DISTRICT

\*\*\*Letter expires 6/7/2017\*\*\*

District Name: PADRE DAM MUNICIPAL WATER DISTRICT      Service area ESA

A. ☒ Project is in the district.  
☐ Project is not in the district but is within its Sphere of Influence boundary, owner must apply for annexation.  
☐ Project is not in the district and is not within its Sphere of Influence boundary.  
☐ The project is not located entirely within the district and a potential boundary issue exists with the \_\_\_\_\_ District.

B. ☒ Facilities to serve the project ☒ ARE ☐ ARE NOT reasonably expected to be available within the next 5 years based on the capital facility plans of the district. Explain in space below or on attached \_\_\_\_\_ (Number of sheets)  
☐ Project will not be served for the following reason(s): \_\_\_\_\_

C. ☒ District conditions are attached. Number of sheets attached: 1  
☐ District has specific water reclamation conditions which are attached. Number of sheets attached: \_\_\_\_\_  
☐ District will submit conditions at a later date.

D. ☐ How far will the pipeline(s) have to be extended to serve the project? \_\_\_\_\_

This Project Facility Availability Form is valid until final discretionary action is taken pursuant to the application for the proposed project or until it is withdrawn, unless a shorter expiration date is otherwise noted.

Authorized Signature: Cheryl Brugman      Print Name: Cheryl Brugman  
Print Title: Engineering Technician      Phone: 619-258-4635      Date: 6/7/2016

**NOTE: THIS DOCUMENT IS NOT A COMMITMENT OF SERVICE OR FACILITIES BY THE DISTRICT**  
On completion of Section 2 and 3 by the District, applicant is to submit this form with application to:  
Planning & Development Services - Zoning Counter, 5510 Overland Ave, Suite 110, San Diego, CA 92125



PDS-399W (Rev. 09/21/2012)

**WATER AVAILABILITY ATTACHMENT  
CONDITIONS OF APPROVAL**PROJECT NAME Reynolds Communities FOR 27 SFD MAP NUMBER 5245

A.P.N.(s) 404-011-08, 404-341-01

**FACILITIES**

Domestic/Irrigation service and fire hydrant requirements may determine if the proposed project will require a water main extension. If a water main extension is necessary, the following will be requirements to proceed with the project. The Developer / Property Owner shall:

- ☒ [ X ] Prepare plans for a Potable Water system according to Padre Dam's Requirements.
- ☒ [ X ] Provide the agreement and securities required by the County / City and/or Padre Dam to install the public water system required for the project.
- ☒ [ X ] Install a Potable Water System per the Padre Dam Rules and Regulations and Standard Specifications.
- ☒ [ X ] Pay for all installation and capacity fees for each meter connection, each lot, or each building. (As determined by project need prior to District providing service or an unconditional commitment letter)
- ☒ [ X ] Install private/public potable water, reclaimed water and sewer lines with the required separation as determined by the Health Department and Padre Dam.

Padre Dam does not require that all lots be connected to the public water system. Alternate sources of water are under the jurisdiction of the County of San Diego, or the City of Santee.

**EASEMENTS**

- ☒ [ X ] Developer shall dedicate to Padre Dam all necessary easements for that portion of the water system which is to be public.
- ☒ [ X ] District will require a 25' wide easement within Lots 14 & 15 (an extension of Heather Lane) that is west of the project.
- ☒ [ X ] District will require a 25' wide easement on the southerly line of lots 1, 3, 4, & 23 along with possible offsite easement that is a westerly extension of easement in Lot 1 to Victoria Drive.
- ☒ [ X ] District will require full road easements over all private streets within the project.
- ☒ [ X ] Easements may be required by Padre Dam to allow for future main extensions to serve property beyond the boundaries of the map/project.

**FACILITY COMMITMENT**

- ☒ [ X ] Adequate water facility commitment shall be committed prior to final project approval/map recordation and shall be available concurrent with project need. Unconditional Facility Commitment form will be signed upon payment of capacity and meter fees.

**SPECIAL CONDITIONS**

- ☒ [ X ] Computer analysis may be required for this project, at developer's expense, to determine project needs.
- ☒ [ X ] Water Quality maintenance throughout this project will be a consideration that must be part of the water system design for this project. Onsite/offsite water line looping may be required.
- ☒ [ X ] Main extension may be required on Otto Avenue to provide water and/ or fire service to lots 26 and 27.

E-33 R- 8-/08

Approved by: Cheryl Brugman

Date: 6/7/2016

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## APPENDIX “H” BEHAVE FIRE MODELING CALCULATIONS

BehavePlus 5.0.5
Mon, Sep 25, 2017 at 12:27:44
Page 1

**Inputs: SURFACE, SIZE, SPOT, IGNITE**

Description Blackwolf East VM

**Fuel/Vegetation, Surface/Understory**

Fuel Model sh5

**Fuel/Vegetation, Overstory**

Downwind Canopy Height ft 6

**Fuel Moisture**

|                          |   |  |    |
|--------------------------|---|--|----|
| 1-h Moisture             | % |  | 1  |
| 10-h Moisture            | % |  | 3  |
| 100-h Moisture           | % |  | 5  |
| Live Herbaceous Moisture | % |  | 30 |
| Live Woody Moisture      | % |  | 50 |

**Weather**

20-ft Wind Speed (upslope) mi/h 30

Wind Adjustment Factor .5

Air Temperature oF 85

Fuel Shading from the Sun % 0

**Terrain**

Slope Steepness % 20

Ridge-to-Valley Elevation Difference ft 371

Ridge-to-Valley Horizontal Distance mi 0.35

Spotting Source Location Mw

**Fire**

Elapsed Time h 1

---

**Run Option Notes**

Maximum reliable effective wind speed limit IS imposed [SURFACE].

Calculations are only for the direction of maximum spread [SURFACE].

Fireline intensity, flame length, and spread distance are always for the direction of the spread calculations [SURFACE].

Wind is blowing upslope [SURFACE].

---

**Output Variables**

Surface Rate of Spread (maximum) (ch/h) [SURFACE]

Heat per Unit Area (Btu/ft<sup>2</sup>) [SURFACE]

(continued on next page)

BEHAVE Modeling – Impacts from West Slope of Viejas Mountain



### Blackwolf East VM

|                                           |                               |
|-------------------------------------------|-------------------------------|
| Surface Rate of Spread (maximum)          | 443.6 ch/h                    |
| Heat per Unit Area                        | 2235 Btu/ft <sup>2</sup>      |
| Fireline Intensity                        | 18173 Btu/ft/s                |
| Flame Length                              | 41.0 ft                       |
| Reaction Intensity                        | 7284 Btu/ft <sup>2</sup> /min |
| Area                                      | 3294.3 ac                     |
| Perimeter                                 | 945 ch                        |
| Length-to-Width Ratio                     | 4.8                           |
| Forward Spread Distance                   | 443.6 ch                      |
| Backing Spread Distance                   | 4.9 ch                        |
| Fire Length                               | 448.5 ch                      |
| Spot Dist from a Wind Driven Surface Fire | 1.6 mi                        |
| Probability of Ignition from a Firebrand  | 100 %                         |



## Inputs: SURFACE, SIZE, SPOT, IGNITE

Description ➤ Blackwolf East Wetlands

## Fuel/Vegetation, Surface/Understory

Fuel Model ➤ tu5

## Fuel/Vegetation, Overstory

Downwind Canopy Height ft ➤ 6

## Fuel Moisture

1-h Moisture % ➤ 1

10-h Moisture % ➤ 3

100-h Moisture % ➤ 5

Live Herbaceous Moisture % ➤ 30

Live Woody Moisture % ➤ 50

## Weather

20-ft Wind Speed (upslope) mi/h ➤ 30

Wind Adjustment Factor ➤ .5

Air Temperature oF ➤ 85

Fuel Shading from the Sun % ➤ 0

## Terrain

Slope Steepness % ➤ 8

Ridge-to-Valley Elevation Difference ft ➤ 40

Ridge-to-Valley Horizontal Distance mi ➤ 0.56

Spotting Source Location ➤ MW

## Fire

Elapsed Time h ➤ 1

## Run Option Notes

Maximum reliable effective wind speed limit IS imposed [SURFACE].

Calculations are only for the direction of maximum spread [SURFACE].

Fireline intensity, flame length, and spread distance are always  
for the direction of the spread calculations [SURFACE].

Wind is blowing upslope [SURFACE].

## Output Variables

Surface Rate of Spread (maximum) (ch/h) [SURFACE]

Heat per Unit Area (Btu/ft<sup>2</sup>) [SURFACE]  
(continued on next page)

BEHAVE Modeling – Impacts from Wetlands on East Side of Project Site



### Blackwolf East Wetlands

|                                           |       |                          |
|-------------------------------------------|-------|--------------------------|
| Surface Rate of Spread (maximum)          | 56.8  | ch/h                     |
| Heat per Unit Area                        | 3365  | Btu/ft <sup>2</sup>      |
| Fireline Intensity                        | 3506  | Btu/ft/s                 |
| Flame Length                              | 19.2  | ft                       |
| Reaction Intensity                        | 10721 | Btu/ft <sup>2</sup> /min |
| Area                                      | 54.5  | ac                       |
| Perimeter                                 | 121   | ch                       |
| Length-to-Width Ratio                     | 4.8   |                          |
| Forward Spread Distance                   | 56.8  | ch                       |
| Backing Spread Distance                   | 0.6   | ch                       |
| Fire Length                               | 57.5  | ch                       |
| Spot Dist from a Wind Driven Surface Fire | 1.0   | mi                       |
| Probability of Ignition from a Firebrand  | 100   | %                        |

**Inputs: SURFACE, SIZE, SPOT, IGNITE**

Description ➡ Blackwolf West

**Fuel/Vegetation, Surface/Understory**

Fuel Model ➡ sh5

**Fuel/Vegetation, Overstory**

Downwind Canopy Height ft ➡ 6

**Fuel Moisture**

1-h Moisture % ➡ 1

10-h Moisture % ➡ 3

100-h Moisture % ➡ 5

Live Herbaceous Moisture % ➡ 30

Live Woody Moisture % ➡ 50

**Weather**

20-ft Wind Speed (upslope) mi/h ➡ 30

Wind Adjustment Factor ➡ .5

Air Temperature oF ➡ 85

Fuel Shading from the Sun % ➡ 0

**Terrain**

Slope Steepness % ➡ 11

Ridge-to-Valley Elevation Difference ft ➡ 259

Ridge-to-Valley Horizontal Distance mi ➡ .43

Spotting Source Location ➡ MW

**Fire**

Elapsed Time h ➡ 1

**Run Option Notes**

Maximum reliable effective wind speed limit IS imposed [SURFACE].

Calculations are only for the direction of maximum spread [SURFACE].

Fireline intensity, flame length, and spread distance are always  
for the direction of the spread calculations [SURFACE].

Wind is blowing upslope [SURFACE].

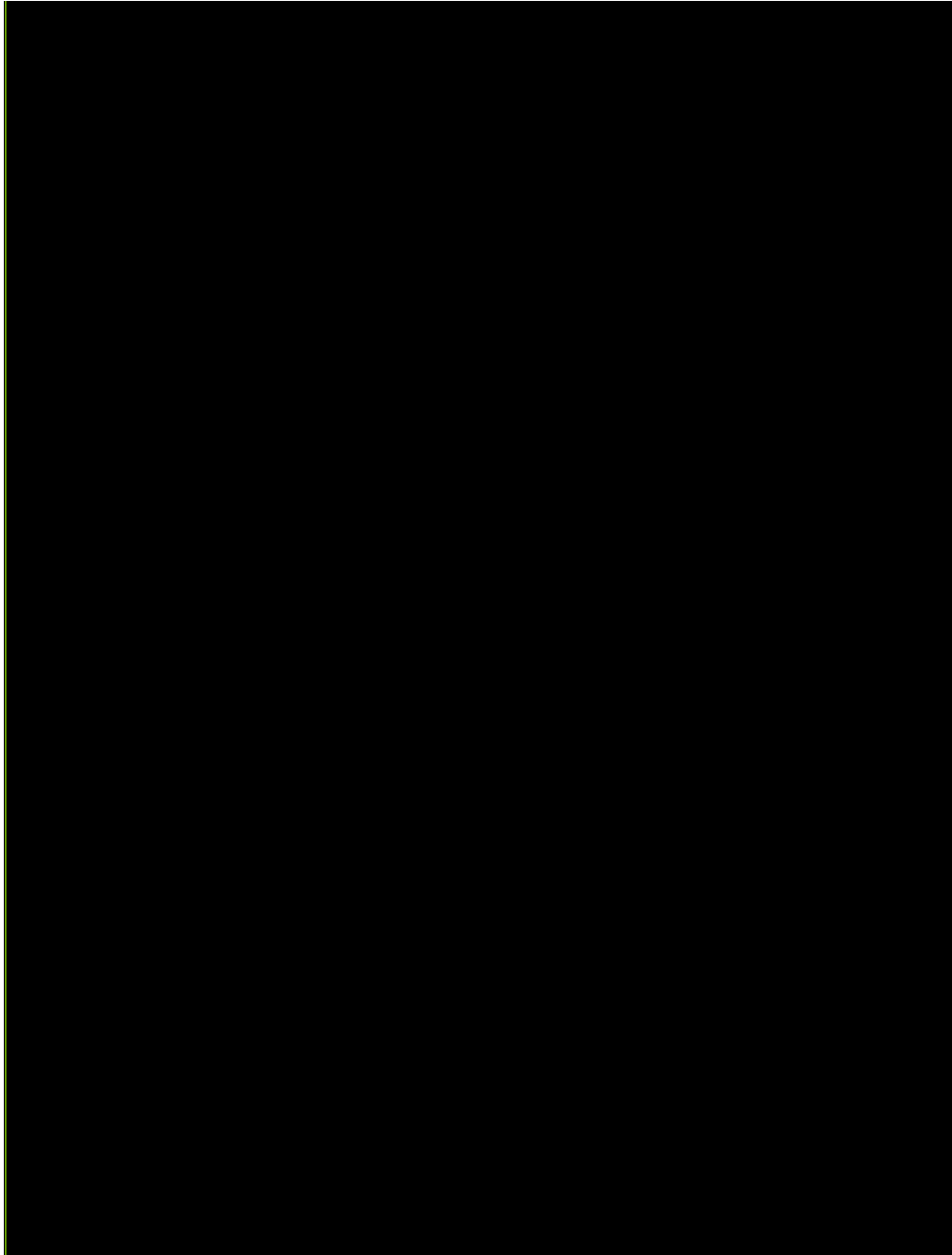
**Output Variables**

Surface Rate of Spread (maximum) (ch/h) [SURFACE]

Heat per Unit Area (Btu/ft<sup>2</sup>) [SURFACE]

(continued on next page)

BEHAVE Modeling – Impact from Off-site Fire, West Side of Project



**APPENDIX I  
EXCERPTS FROM ORIGINAL FIRE PROTECTION PLAN AND  
CONDITIONS**

**APPENDIX I**

**FIRE MANAGEMENT PLAN**

# **SCHIRMER ENGINEERING CORPORATION**

*Fire Protection Engineering ▲ Code Consulting ▲ Risk Control ▲ Security Consulting*

June 25, 2004  
(Revised September 1, 2004)

Via Facsimile: 619-445-2634  
Via Federal Express Priority Overnight

Captain Bob Withers  
Fire Marshal  
Alpine Fire Protection District  
1834 Alpine Boulevard  
Alpine, California 91907-2107  
(619) 445-2635

Re: Viejas Hills Estates  
Blackwolf Drive and Fazio Road  
Alpine, California  
TM 5245 RPL3  
ER 01-15-002  
SEC Project No.: 2004069-000

Dear Captain Withers:

Schirmer Engineering has reviewed the wildland interface exposure as it relates to the Viejas Hills Development in order to determine the minimum required separation distance between the homes and the wildland interface. This letter report presents the findings of our review.

The Viejas Hills Development consists of 27 single family residential lots and one open space lot adjacent to the wildland interface zone in Alpine California (see Appendix A). These dwellings (Group R, Division 3 Occupancies) consist of two plans, A and B. Each dwelling will have an attached garage (Group U, Division 1 Occupancies). The home for Plan A will be 2,896 square feet in floor area. The garage will be 716 square feet in floor area. Plan B will be 3,315 square feet in floor area with a garage of 752 square feet in floor area. All structures will be one story in height of Type V non-rated construction and will be equipped with a residential fire sprinkler system. Selected dwellings will also have a detached structure (casita) to be built at the front of the property. The casita will be 250 square feet in floor area. The project is expected to be completed by Spring 2006.

Water for fire flow will be provided by the Viejas Mountain Reservoir and maintained by the Padre Dam Municipal Water District (PDMWD). Eight-inch pipes will feed the hydrants in a loop system. The PDMWD projects that the hydrants will flow no less than 1,500 gallons per minute at 20 pounds per square inch.

70 BERNARDO PLAZA COURT ▲ SUITE 116 ▲ SAN DIEGO, CA 92128 ▲ PHONE (858) 673-5845 ▲ FAX (858) 673-5849  
[www.schirmereng.com](http://www.schirmereng.com)

Fire department access roads will consist of two streets connected in a loop fashion and designated as Fazio Road and Blackwolf Drive. Both of these roads intersect with Otto Avenue. Otto Avenue is a two lane road, 40 feet in width, and connects to East Victoria Drive. Fazio Road and Blackwolf Drive have a minimum of 24 feet in width. At the intersection of Fazio Road and Blackwolf Drive is a cul de sac designated as Neals Spur. Neals Spur will have a minimum easement radius of 26 feet.

The biological open space on the eastern edge of the project contains mafic southern mixed chaparral and native grasslands. Eighty-one percent of the southern portion of the project site contains slopes 25 percent or higher. A slope calculation was not performed for the northern portion because it is within the Forest Conservation Initiative (FCI) area. Located along the eastern boundary of the property is the Cleveland National Forest.

The County Fire Code, (effective July 23, 2004), requires all persons owning buildings or structures adjoining hazardous fire areas shall maintain an effective fuel modification zone from areas 100 feet from such buildings or structures (Section 16.1). However, the fuel modification zone may be reduced with the approval of the Fire Authority Having Jurisdiction (FAHJ) (Section 16.1, exception 3). Viejas Hills Development is requesting that the fuel modification zone be reduced to 50 feet.

The County Fire Code does not prescribe the allowable fuel modification zone reduction if fire resistive design elements are provided. The intent of these provisions seems to allow the FAHJ to make such determinations.

A letter written by Chief Thomas N. Ace, (Alpine Fire Chief during original project permitting) approved the clearance to be reduced to 50 feet as long as the dwellings meet or exceed fire resistive building design criteria as outlined in his letter to the Department of Planning and Land Use, dated May 28, 2003 (see Appendix B). The requirements set forth by Chief Ace can also be found in Section 26 within the County Code (Fire-Resistive Construction Requirements in the Wildland/Urban Interface Area). To meet or exceed the requirements, Viejas Hills Development will provide the following features:

- All windows and doors with glass shall be double paned.
- Skylights will not be provided.
- Attic and foundation ventilation will comply with the requirements of the Uniform Building Code (UBC) as adopted by the FAHJ.
- Exterior wall surface materials will be non-combustible and applied in accordance with the Uniform Building Code, Table 7-B Rated Fire-Resistive Periods For Various Walls and Partitions, item number 18-1.3. Additionally, exterior walls will be protected with 2-inch nominal solid blocking between rafters at all roof overhangs.
- The underside of all combustible projections, such as eaves, shall be of one-hour fire resistive construction.
- All eaves will be boxed.
- Paper faced insulation will not be used.
- All dwellings shall be equipped with an automatic fire sprinkler system.

- A minimum separation of three (3) feet between the fence line and the dwellings.

To further substantiate the adequacy of the desired fuel modification zone, Schirmer Engineering analyzed the specific fire hazard utilizing the methodology presented in Appendix C of the 2003 International Urban Wildland Interface Code (IUIWIC). Appendix C of the IUIWIC allows one to evaluate conditions specific to a project to establish a fire severity rating. This rating is then used to determine the required fuel modification zone width.

Results of this evaluation, as shown 60 points, indicate the subdivisions should be classified as High Hazard. Fuel modification distance for High Hazard developments is 50 feet, as shown in Table 603.2 of the IUIWIC (Appendix D).

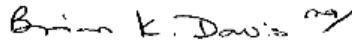
In conclusion, the Viejas Hills development project meets the fire resistive construction criteria as set forth by the FAHJ in order to be permitted a reduction in the defensible zone. A reduction to no less than 50 feet has been confirmed by following the guidelines set forth in the IUIWIC as well as approval by Chief Thomas N. Ace.

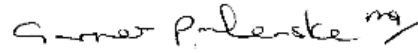
Prepared By:

Reviewed By:

SCHIRMER ENGINEERING CORPORATION

SCHIRMER ENGINEERING CORPORATION



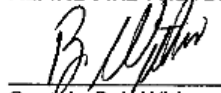


Brian K. Davis, C.F.P.S.  
Fire Protection Consultant

Garner A. Palensko, P.E.  
Vice President/Regional Engineering Manager

Approved by:

ALPINE FIRE PROTECTION DISTRICT

  
Captain Bob Withers  
Fire Marshal

BKD:lc:ma:ko:lc:ma

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## APPENDIX J

### Defensible Space Alternate Means of Compliance

#### Non-Combustible Parcel and Project Perimeter Block Walls

Non-combustible Parcel and Project Perimeter Block Walls are a voluntary, alternate means of compliance mitigation tool used to protect projects from unusual fire exposure problems where other mitigations maybe inadequate.

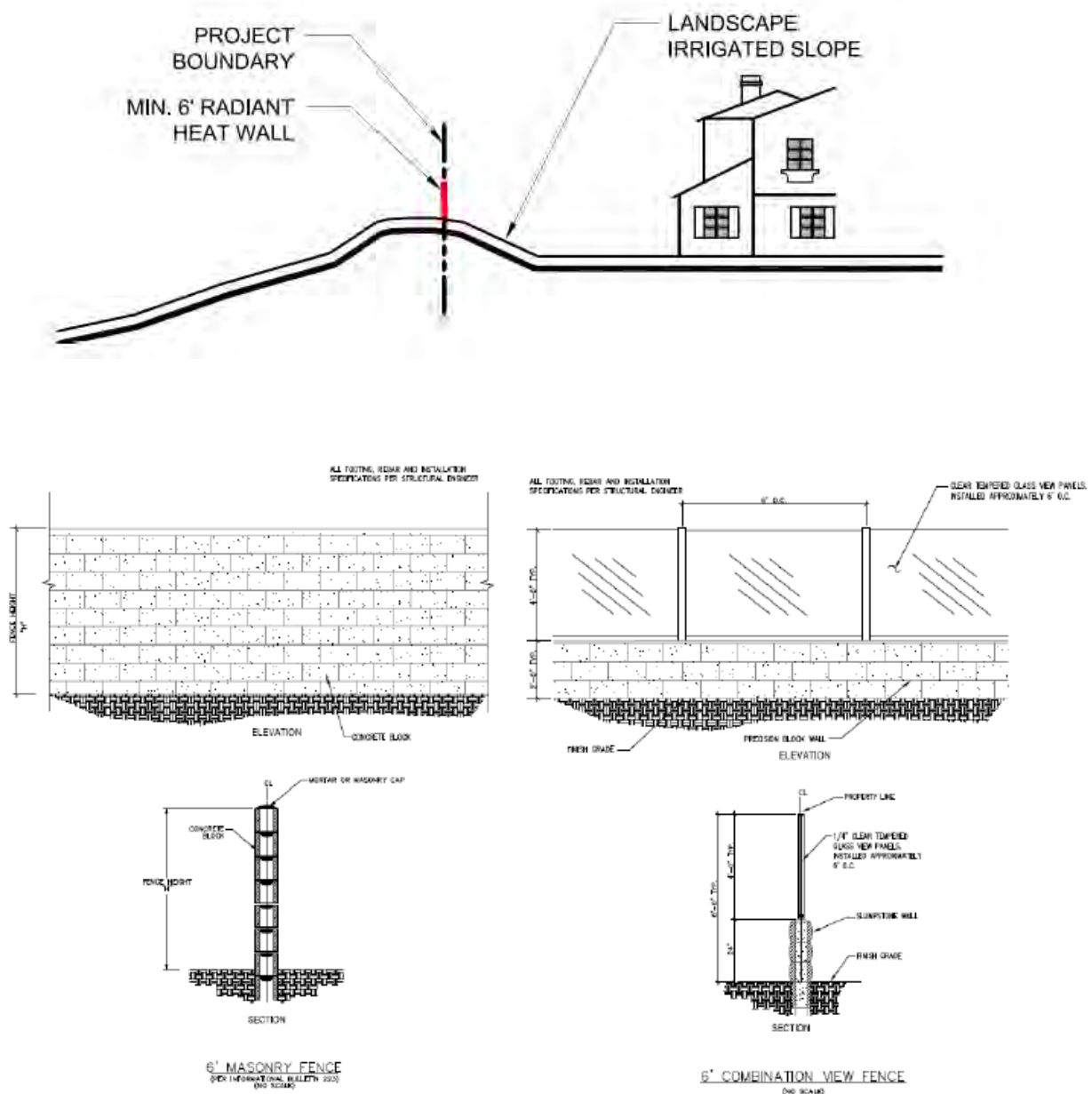
Many jurisdictions in California (i.e. – Riverside County, San Bernardino County, and L.A. County, City of Encinitas) allow, and may require, using concrete block walls for radiant and convective heat protection when fuel modification zones are not possible because of site constraints.

In these cases, the walls are placed between the structure and adjacent, down-slope fuels that are in alignment with typical wind patterns and Santa Ana wind events. Non-combustible

These walls are either solid block walls or tempered glass view panels incorporated into and above block walls, as shown below. When installed, the tempered glass view walls incorporate fire resistive rated panels.



*CMU Block Walls Used as Fire Barrier for Residential Sub-Division*



**Finding:** The Department of Homeland Security, on its Lessons Learned Information Sharing web-site has published a case study in which fire resistive block walls contributed to the successful defense of a home in the 2007 Witch Fire.

The home was located in the Ramona area, in eastern San Diego County. The building was a ranch-style single family dwelling with adobe brick walls, a tiled roof, fire resistive exterior doors and windows. A four foot (4') high adobe wall, approximately thirty (30') from the structure, served as a "fire break".

The Witch Fire burned through the neighborhood on October 21, 2007. Witnesses stated that the flame front and its residual burning in the area lasted for approximately two hours. The structure did not have enclosed eaves and some of the vegetation and trees in the Defensible Space area were not code compliant. The homeowner found cinders on window sills, evidence that the fire resistive dual pane windows prevented the fire from entering the structure. A neighboring building, without benefit of a fire resistive block wall, and built with similar construction methods, burned to the ground.

Fire behavior in the Ramona area (located seventeen miles northwest from the Project) is influenced by similar weather, climate and fuel types than are encountered on the Project Site. Both Coastal Sage and chaparral type fuels are present in Ramona; sage shrub vegetation is classified either as Fuel Model SCAL-18 or SH-5, which have similar fire behavior characteristics as the shrub fuel found at the project site.

During the extreme burning conditions of the 2007 Witch Fire, Fuel Model SH-5 (High Load, Dry climate) shrub fuels exhibited approximate flame lengths of 32.8 feet and a heat release rate of 2235 BTUs/square foot as calculated by the BEHAVE-Plus 5.0.5 Fire Modeling program. Fuel Model SCAL-18 had 32.6-foot flame lengths and a heat release of 4672 BTUs/square foot. Fuel Model 4 Chaparral type vegetation is the worst case wild fire burning conditions identified by the fuel typing system. FM-4 fuels burn with 50.4 flame lengths and release 3667 BTUs/square feet.

The Coastal Sage habitat at the Project Site will duplicate the extreme fire behavior or Heat Release Rates exhibited during extreme Santa Ana conditions and typical of eastern San Diego County wild fires.

*Finding:* Concrete Masonry Unit block walls are a non-combustible construction material which has excellent fire resistive properties. The fire resistive characteristics of concrete block walls are well established by testing and are a function of the types of aggregates used to manufacture the blocks and their thickness. CMU blocks are manufactured with a blend of aggregate types; this condition is discussed by the ICC and the International Building Code by referencing Standard TMS-216.

## FIRE RESISTIVE RATING OF 60% GRAVEL 40% PUMICE AGGREGATE BLEND CMU WALLS

| Nominal Block Width (in.) | Block Cell Treatment |                      |
|---------------------------|----------------------|----------------------|
|                           | Partial Fill Cells   | Solid Fill Cells (1) |
| 4                         | 1 hour               | 1 hour               |
| 6                         | 1 hour               | 4 hours (2)          |
| 8                         | 2 hours              | 4 hours              |
| 10                        | 3 hours              | 4 hours              |
| 12                        | 4 hours (2)          | 4 hours              |

(1) – Cells can be filled with grout, loose fill insulation or aggregate meeting ASTM C-33 or C-331 requirements

(2) – If the aggregate blend is changed to 70-30 to produce a denser architectural unit, the fire rating is decreased to three hours.

At minimum, concrete block walls used to protect structures from radiant and convective heat and direct flame contact have a one-hour fire resistive rating.

A flame front moving across the landscape will encounter the non-combustible wall, which is a barrier and drastic reduction of fuel carrying fire across the landscape. With this sudden lack of available fuel, there will be an immediate reduction of rate of spread and heat production; active and aggressive fire progression will stop and the heat released will be deflected and expended into the atmosphere.

*Finding:* These types of walls have been extremely effective when used at the top of slopes where light and moderate fuels are present. The extreme fire behavior produced by high winds also bends the flame front over so it travels more parallel to the ground. The stronger the wind velocity, the more the flame angle will be and the more effective the radiant/convective heat wall becomes.

**Recommendation:** *If* needed as an Alternate Means of Compliance for any potential Defensible Space and Fuel Modification Zone constraints created by Open Space Easements or Steep Slope Open Space Area(s), or as reasonably required by the Alpine Fire District, the Consultant recommends that either a combined CMU Block Wall with Fire Resistance Rated Glass Panels or a solid CMU Block Fire-Heat Deflection Wall could be installed on the Project Site with the following stipulations:

- The CMU-FR Glass Panel Walls have a minimum height of six (6') feet above the prepared grade surface.
- The CMU-FR Glass Panel Walls should be used on all lots impacted by Steep Slope Easements that cannot be effectively mitigated through the provision of

extended defensible space zones because of natural terrain constraints or inability to insure erosion protection of the slopes.

- The CMU-FR Glass Panel Walls should be used for any lots adjacent to the Wetlands-Riparian Open Space perimeters due to the inability to manage fuels in this area for fire protection purposes.
- The CMU-FR Glass Panel Wall pathway should be erected along the Fuel Modification Zone 1 defensible space outer perimeter border.