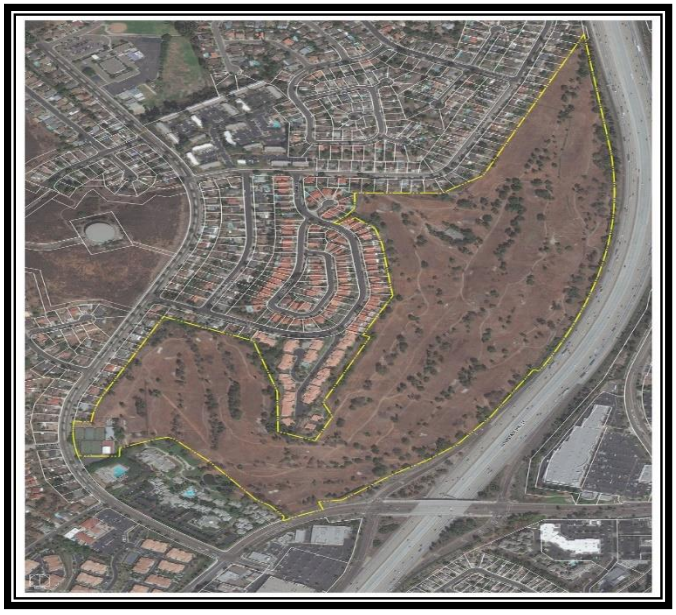
The Junipers Project
Final Environmental Impact Report
SCH No. 2018041032 - Project No. 586670

Appendix K5

Fire Protection Plan

January 2021

THE JUNIPERS
FIRE PROTECTION PLAN



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~~JULY 2019~~JUNEOCTOBER 2020

This final Fire Protection Plan contains textual edits as well as updates to Figures 3, 7, 8, 8A and 9 callout text for terminology consistency and clarification. These changes are for terminology and consistency with report text changes and are clarifying in nature and do not change any conclusions regarding the less than significant findings in the report. The report text has been shown in track changes and the figures have been annotated with “revised” to allow for ease of review and comparison with the Draft Environmental Impact Report Wildland Fire Evacuation Plan here: https://files.ceqanet.opr.ca.gov/142262-2/attachment/izvAVsORgUkpfk61TSxTvsPiCSyCsxVtoItlBEC3TIlIA0CbtO_ARnrbQpUZUyp1QQlJJw1ur9glU7U40.

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EXECUTIVE SUMMARY

This Fire Protection Plan (FPP) has been prepared for the Junipers residential community (project) in west-central San Diego County. This FPP evaluates and identifies the potential fire risk associated with the proposed project's land uses and identifies requirements for water supply, ~~fuel modification and defensible space~~landscapes, access, building ignition and fire resistance, fire protection systems, and wildfire emergency pre-planning, among other pertinent fire protection criteria. The purpose of this plan is to generate and memorialize the fire safety requirements of the San Diego Fire-Rescue Department (SDFRD) along with project-specific measures based on the site, its intended use, and its fire environment.

This document provides analysis of the site's fire environment and its potential impact on the proposed project as well as the project's potential impact on the existing SDFRD fire protection service. This document will be incorporated as a technical appendix of the project's Environmental Impact Report. Requirements and recommendations herein are based on site-specific fire environment analysis and proposed project characteristics and incorporate input from SDFRD, area fire planning documents, site risk analysis, and standard principles of fire protection planning.

As described in this FPP, the project will meet or exceed all applicable Code requirements. The recommendations and conditions provided herein are also consistent with the lessons learned from After Fire Action Reports from numerous fires occurring over the last 20 years, including the 2003, 2007, and 2010 San Diego County Fires.

As determined during the analysis of this site and its fire environment, the Junipers project site, in its current condition, as an abandoned golf course, is considered to include characteristics that, under favorable conditions, have the potential to facilitate fire spread. Under extreme conditions, wildfires on the site as is could burn erratically and aggressively and result in significant ember production. **Once the project is built, on-site fire potential will be lower than its current condition due to conversion of vegetative fuels to managed landscapes and ignition-resistant structures.**

It is important to note that the fire safety requirements that will be implemented on this site, include: ignition-resistant construction standards; minimum requirements for water supply; fire apparatus access; ~~fuel modification and defensible spaces~~landscapes; interior fire sprinklers; and 5 minute or less fire response travel times. These project Features are integrated into code requirements and internal SDFRD guidelines which are based upon the results of post-fire assessments, similar to the After Action Reports that are now prepared after large fire events. When it became clear that specifics of how homes were built, how fire and embers ignited homes, what effects ~~fuel modification~~landscapes had on structure ignition, how fast firefighters could respond, and how much (and how reliable) water was available, the Fire and Building codes were revised appropriately.

SDFRD and San Diego County now boast some of the most restrictive codes for building within Wildland-urban interface[1] (WUI) areas that focus on preventing structure ignition. At the Junipers site, there is no wildland area directly adjacent (Black Mountain Open Space Park is 300+ feet away), so the primary concern would be related to ~~from heat, flame, and~~ burning embers.

The developed portion of this property is proposed for improvements that include construction of up to 536 residential dwelling units. The entire site has been designed with fire protection as a key objective. The site improvements are designed to facilitate emergency apparatus and personnel access throughout the site. On-site driveway and road improvements with fire engine turnouts and turnarounds provide access to within 150 feet of all sides of every building. Water availability and flow will be consistent with SDFRD requirements including fire flow and hydrant distribution. These features along with the ignition resistance of all buildings, interior sprinklers, and pre-planning, training, and awareness will collectively assist responding firefighters through prevention, protection and suppression capabilities.

As detailed in this FPP, the project site's fire protection system will include a redundant layering of protection methods that have proven to reduce overall fire risk. The requirements and recommendations included herein are performance based and site specific based on the project's unique characteristics rather than a prescriptive, one-size-fits-all approach. The fire protection system is designed to reduce the wildfire risk on the site, to minimize risks associated with typical uses, and aid the responding firefighters during an emergency. No singular measure is intended to be relied upon for the site's fire protection, but rather, a system of fire protection measures, methods, and features combine to result in enhanced fire safety, reduced fire potential, and a prepared community.

Based on the results of this FPP's analysis and findings, the following FPP implementation measures will be provided by the Junipers project as part of the proposed development plan. These measures are discussed in more detail throughout this FPP.

1. Preparation of a Construction Fire Prevention Plan detailing the important construction phase restrictions and fire safety requirements that will be implemented to reduce risk of ignitions and pre-plans for responding to an unlikely ignition.
2. Project buildings will be constructed of ignition-resistant construction materials based on the latest Building and Fire Codes.
3. Drought-tolerant and fire resistive landscaping per City of San Diego landscape guidelines will be provided throughout the residential development.

[1] The wildland-urban interface is land located between the undeveloped, natural land and developed, urban areas. https://www.insuranceopedia.com/definition.

4. Fire apparatus access roads will be provided throughout the community and will vary in width and configuration, but will all provide at least the minimum required unobstructed travel lanes, lengths, turnouts, turnarounds, and clearances.
5. Water capacity and delivery provide for a reliable water source for operations and during emergencies requiring extended fire flow.
6. Project-specific and larger neighborhood evacuation plans have been prepared and would be part of the project and community outreach and ongoing education.
7. The Community HOA will include an outreach and educational role to coordinate with SDFRD and the local Fire Safe Council, oversee landscape committee enforcement of fire safe landscaping, ensure fire safety measures detailed in this FPP have been implemented, and educate residents on and prepare community-wide "Ready, Set, Go!" plans.

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1 INTRODUCTION

This Fire Protection Plan (FPP) has been prepared for the Junipers project. 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. Additionally, this plan ~~generates and memorializes~~documents the fire safety requirements of the Fire Authority Having Jurisdiction (FAHJ), which is the San Diego Fire-Rescue Department (SDFRD). Requirements and recommendations are based on site-specific project characteristics and incorporate input from the project applicant and the FAHJ.

As part of the assessment, the plan has considered the property location, topography, geology, combustible vegetation (fuel types), climatic conditions, and fire history. The plan addresses water supply, access (including secondary), structural ignitability and fire-resistive building features, fire protection systems and equipment, impacts to existing emergency services, ~~defensible space, and vegetation~~ landscape maintenance and management. The plan identifies and prioritizes areas for hazardous fuel reduction treatments and recommends the types and methods of treatment that will protect one or more at-risk communities and essential infrastructures. The plan recommends measures that property owners will take to reduce the probability of ignition of structures throughout the area addressed by the plan.

The following tasks were performed during completion of this plan:

- Gather site specific climate, terrain, and fuel data;
- Collect site photographs;
- Process and analyze the data using the latest GIS technology;
- Predict fire behavior using scientifically based fire behavior models, comparisons with actual wildfires in similar terrain and fuels, and experienced judgment;
- Analyze and guide design of proposed infrastructure;
- Analyze the existing emergency response capabilities;
- Assess the risk associated with the proposed project and compare those with the current, undeveloped project site; and
- Prepare this FPP detailing how fire risk will be mitigated through a system of ~~fuel modification~~ignition-resistant landscapes, structural ignition resistance enhancements, and fire protection delivery system upgrades.

Field observations were utilized to augment existing digital site data in generating the fire behavior models and formulating the recommendations presented in this FPP. Refer to Appendix A for site photographs of existing site conditions.

1.1 Applicable Codes/Existing Regulations

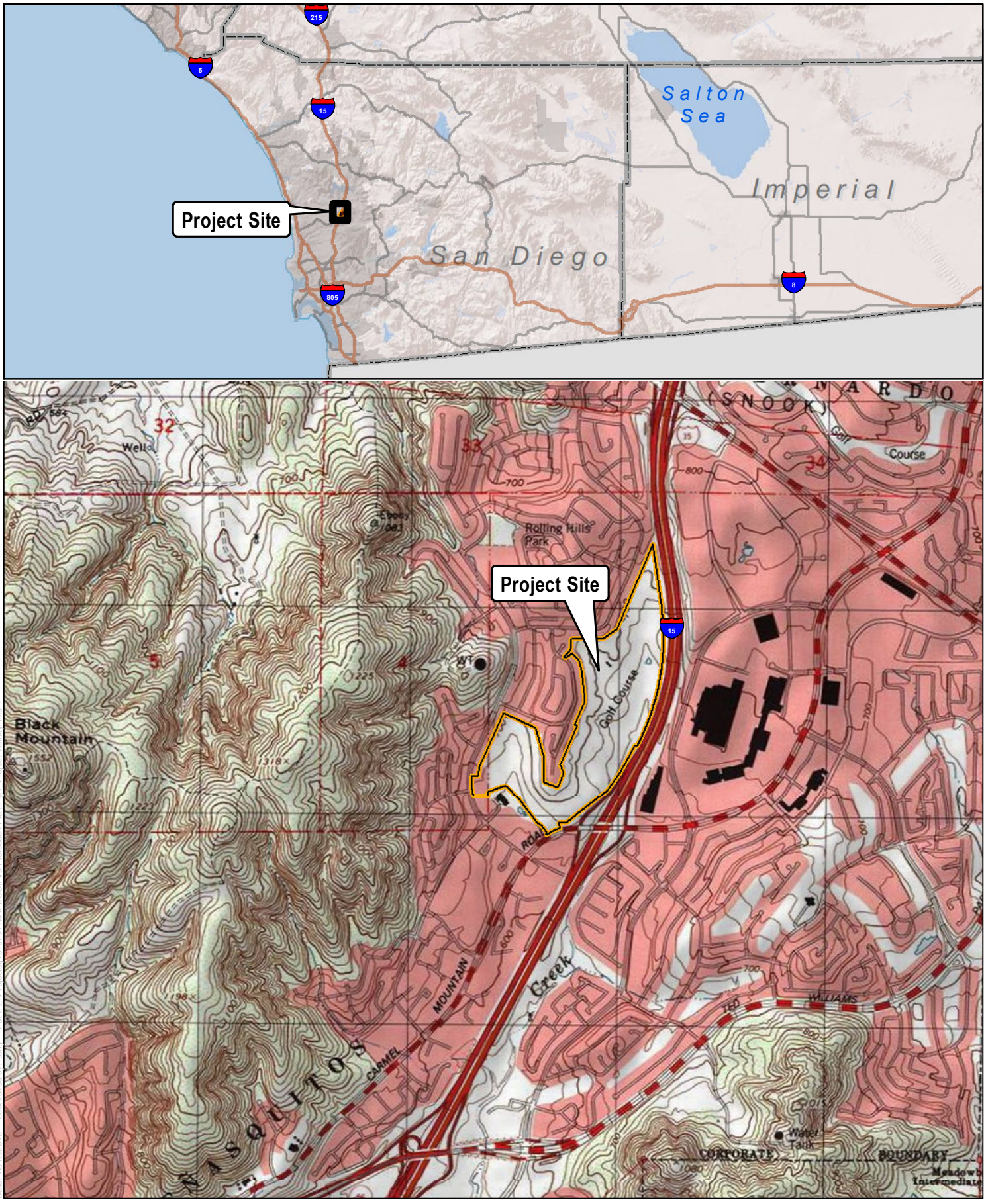
This FPP demonstrates that the Junipers project will be in compliance with applicable portions of Section 142.0412 of the San Diego Municipal Code ~~(Brush Management)~~ and the 2016 California Fire Code. The project will also be consistent with the latest edition of the California Building Code, Chapter 7A, and the latest edition of the California Fire Code, Chapter 49, as adopted by San Diego. Chapter 7A of the California Building Code focuses primarily on preventing ember penetration into homes, a leading cause of structure loss from wildfires. Thus, it is an important component of the requirements of this FPP given the project's location partially within an area statutorily designated a Very High Fire Hazard Severity Zone (VHFHSZ) by the California Department of Forestry and Fire Protection (CAL FIRE) and City of San Diego. Fire hazard designations are based on topography, vegetation, and weather, amongst other factors with more hazardous sites including steep terrain, unmaintained fuels/vegetation, and wildland-urban interface (WUI) locations. However, none of these conditions are found on the Junipers project. As described in this FPP, the project will meet or exceed all applicable code requirements at the time of building permit application.

1.2 Junipers Project Summary

1.2.1 Location

The Junipers project is sited on approximately 112 acres located within the City of San Diego's Rancho Peñasquitos community (Figure 1, Project Location). The site is a former golf course (now abandoned) surrounded by a variety of urbanized land uses including residential, commercial/retail, and freeway. The project site is directly west of Interstate 15 (I-15), east of Peñasquitos Drive, north of Carmel Mountain Road, and south of Camino Del Norte. The City of Poway is approximately 1 mile east of the site, Escondido is approximately 7 miles north, and Rancho Santa Fe is approximately 5 miles west. The site lies within Township 14 South, Range 2 West in Sections 3 and 4 of the Poway, U.S. Geographical Survey 7.5-minute quadrangle. Figure 2 provides the project's site plan, including roads and access points.

The project site is located on the following Assessor Parcel Numbers: 313-011-6, 313-011-7, 313-011-10, and 313-060-01.



SOURCE: USGS 7.5 Minute Series, Poway Quadrangle

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FIGURE 1

Project Location

The Junipers Fire Protection Plan

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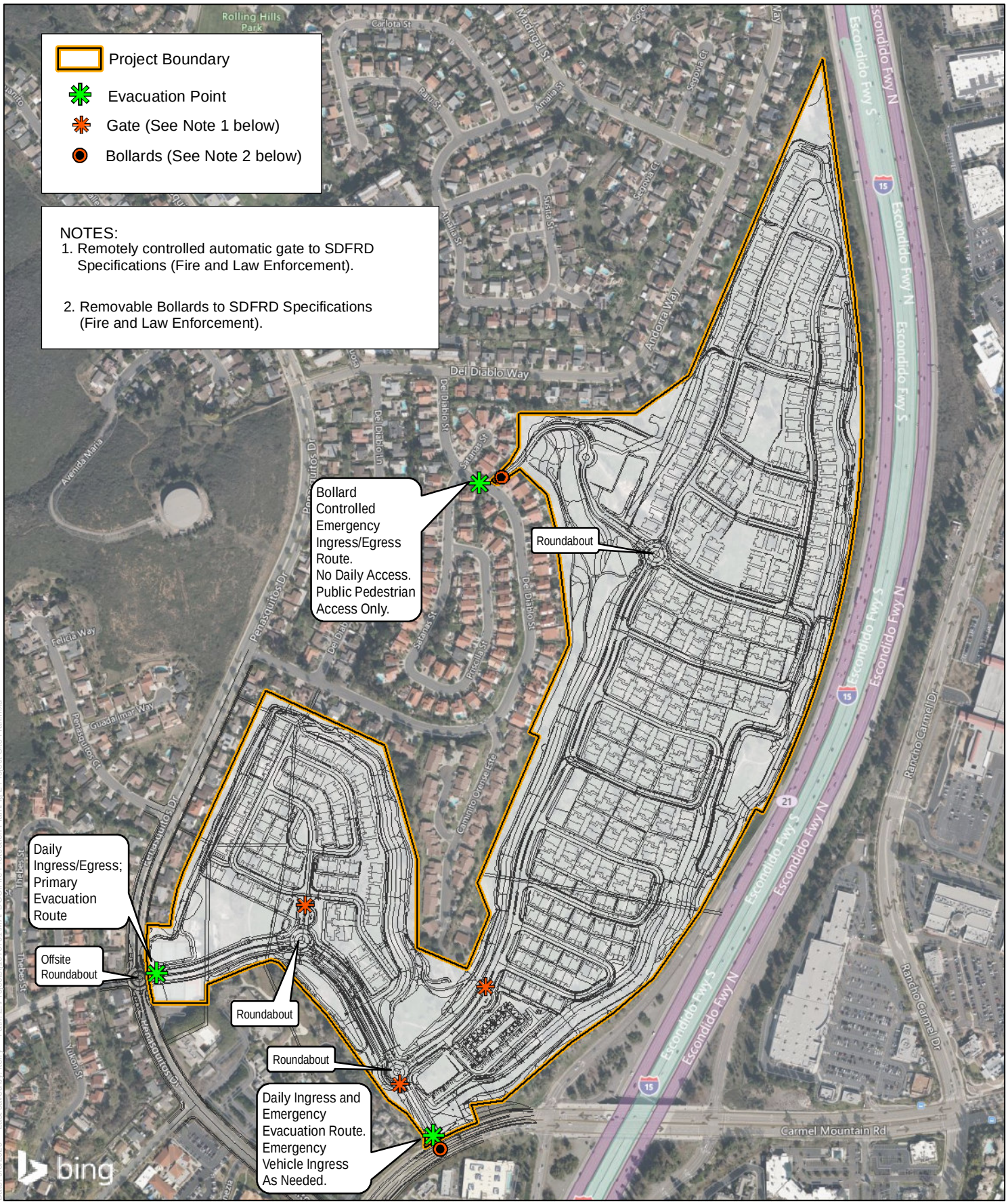

SOURCE: AERIAL- BING MAPPING SERVICE

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0 275 550 Feet

FIGURE 2

Project Site Plan

The Junipers Fire Protection Plan

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1.2.2 Project Description

The proposed project includes the development of up to 536 single family residences, including detached, clusters, apartments, and duplex units. The project proposes the construction of public streets and associated infrastructure; including sewer, storm drains, and water quality/hydro modification basins. The following points highlight the project attributes related to fire protection:

- Wildland ~~urban interface~~ does not occur directly adjacent to the Junipers Site;
- Although not within a WUI area, portions of the project can be considered to be within a WUI ember-cast zone;
- The nearest wildland fuels occur to the west in Black Mountain Open Space Park;
- Urbanization has converted large expanses of native fuels to less flammable landscapes in all directions around the site;
- Fire history indicates wildfires have occurred in the vicinity of the project several times, including a 40,247-acre fire that burned through the site in 1943, prior to the area being developed;
- Potential risk from wildfire based on natural, unmaintained fuels is not associated with this site.

Typical SDFRD 100 feet of BMZ is not required for the Junipers site as there are no immediately adjacent wildland fuels. The Junipers will provide ~~defensible space~~maintained landscapes throughout the project~~, particularly along the I-15 frontage~~. As a project feature, open space lots have been zoned along the entire project perimeter. These open space lots will include ignition-resistant landscapes that receive ongoing vegetation management and maintenance. The riparian mitigation area along the I-15 will include plants with higher internal moisture (based on the re-establishment of a drainage through the mitigation area) and subsequent ignition resistance and will receive removal of dead and dying plant material and trash/debris, as needed. The Project's regulatory specialists working on the project permits have indicated that it is permissible to remove dead or dying plants and invasive plants, and remove trash and debris from this area. It is not permissible to mow, trim, thin or perform any other "maintenance" activities with respect to live native plants. This is a different level of maintenance than would apply to other parts of the site. ~~ensures that there is sufficient space between proposed Project development and the abutting neighboring residential development as a precautionary fire presentation feature.~~ The Junipers project proposes development of a residential community, composed of 455 market rate units (133 Single-Family Dwelling Lots, 186 6-Plex Units, and 136 duplex units) and 81 affordable units, totaling 536 units. The community will be age-qualified, 55 and over. Figure 2 depicts the general lot layout within the project boundary.

1.2.2.1 Additional Amenities

In addition to the residential areas, there will be a community accessible neighborhood park and mobility zone park with various amenities such as open lawn areas, multi-use courts, picnic areas, and children's play areas. A recreation facility, other private parks, and pools would also be present throughout each of the different planning areas to complement the community trails and maintained open space areas.

The project will include an extensive trail system including multiuse pathways and trails through the community. Trails would include existing dirt trails; paved utility access ways; and new soft-surface trails.

2 PROPOSED PROJECT SITE RISK ANALYSIS

2.1 Field Assessment

Dudek conducted a field assessment of the project site on October 18, 2017, in order to confirm/acquire site information, document existing site conditions, and determine potential actions for addressing the protection of the project's structures. While on site, Dudek's Fire Planners assessed the area's topography, natural vegetation and fuel loading, surrounding land use and general susceptibility to wildfire. Among the field tasks that were completed are:

- Vegetation estimates and mapping refinements
- Fuel load analysis
- Topographic features documentation
- Photograph documentation
- Confirmation/verification of hazard assumptions
- Ingress/egress documentation.
- Nearby Fire Station reconnaissance

Field observations were utilized to augment existing site data in generating the fire behavior models and formulating the recommendations detailed in this report.

2.2 Site Characteristics and Fire Environment

Fire environments are dynamic systems and include many types of environmental factors and site characteristics. Fires can occur in any environment where conditions are conducive to ignition and fire movement. Areas of naturally vegetated open space are typically comprised of conditions that may be favorable to wildfire spread. The three major components of fire environment are vegetation (fuels), climate and topography. The state of each of these components and their interactions with each other determines the potential characteristics and behavior of a fire at any given moment. It is important to note that wildland fire may transition to urban fire if structures are receptive to ignition. Structure ignition depends on a variety of factors and can be prevented through a layered system of protective features including fire-resistive landscapes directly adjacent to structure(s), application of known ignition-resistive materials and methods, including ember-resistant openings, and suitable infrastructure for firefighting purposes. Understanding the existing wildland vegetation and urban fuel conditions on and adjacent to the site is necessary to understand the potential for fire within and around the Junipers project.

2.2.1 Topography

The Junipers project site is situated east of Black Mountain Open Space Park, a chain of low mountains generally trending north–south with a variety of east–west trending ridgelines and scattered peaks. The project site is gently to moderately sloped from west to east with flatter areas found on the southwestern corner of the project. Elevations on the site range from 630 feet above mean sea level (AMSL) in the eastern portion of the project to roughly 780 feet AMSL in the west-central portion of the property. The property was previously designed, graded, and used as a golf course and the land retains the managed topography.

2.2.2 Existing/Vicinity Land Use

The project area is currently disturbed, but largely undeveloped. The project site is an abandoned former golf course overgrown with Russian thistle (*Salsola* ssp.), non-native grasses and other invasive weeds. Various species of ornamental trees are scattered along the golf course greens. The property owner currently cuts the weeds and grasses to provide a 100-to 200-foot- wide fuel break adjacent to existing residential developments. Additionally, cart paths, dirt roads and trails provide access throughout the project site. The surrounding land uses (all directions) consist of developed property, including residential development, ~~Elementary S~~school, recreational facility, major freeway (Interstate 15 to the east), Carmel Mountain Road (arterial road to the south), commercial/retail buildings, and Black Mountain Open Space Park to the west beyond the Glens housing development.

2.2.3 Vegetation (Fuels)

The Junipers property supports a variety of vegetation types, none of which are native California habitats. These vegetation communities/land cover types are listed in Table 1 and shown on Figure 3, Vegetation Map. In summary, non-native uplands vegetation communities and land covers present within the project site include developed land, disturbed habitat and ornamental vegetation. A small area has been classified as herbaceous wetlands. The vegetation includes remnants of the golf course landscaping with scattered trees. Dudek arborists performed a field survey and recorded 1,286 trees on the project site (Dudek 2018). The 1,286 trees consist of 35 individual trees species and are believed to be part of the original golf course landscape. Most of the trees were found to be in poor health and structural condition, which is considered typical of un-maintained landscapes, and are proposed for removal. Existing site vegetation could support ignitions and fire spread from the I-15 toward existing Glens residences. Maintenance is provided to minimize this possibility. The photographs in Appendix A display the fuels on the property.

SOURCE: AERIAL- BING MAPPING SERVICE; VEGETATION-HELIX 2016

REVISED FIGURE 3

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0 305 610 Feet

Vegetation Communities/Land Cover Map

The Junipers Fire Protection Plan

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Table 1
Vegetation Communities and Land Cover Types

Vegetation Community / Land Cover Type	Project Site Vegetation Acreage
Concrete-lined drainage	0.003
Developed Land	9.055
Disturbed Habitat	85.293
Herbaceous wetland	0.031
Ornamental	19.560
Total	**114.0**

The site's vegetation fire risk is primarily determined by project-adjacent vegetation within Black Mountain Open Space Park. The growth of vegetation types/fuel models is influenced by aspect (orientation), soil constituents, soil depth, soil moisture, and weather. Off-site fuels within Black Mountain Open Space Park were evaluated for wildfire behavior as they are the nearest wildland fuels that would be subject to wildfire. The primary vegetation types that are found in the park are the chaparral and coastal sage scrub plant communities. The chaparral community occurs on north and east facing slopes of the park. The most common plants found in the chaparral are Lemonade berry (*Rhus integrifolia*), coffeeberry (*Rhamnus californica*), chamise ((*Adenostoma fasciculatum*), manzanita (*Arctostaphylos* ssp.), laurel sumac (*Malosma laurina*), toyon (*Heteromeles arbutifolia*), and California lilac (*Ceanothus* ssp.). The coastal sage scrub plant community is not as dense and is found on the dryer south and west facing slopes of the park. This plant community consists of white sage (*Salvia apiana*), black sage (*Salvia mellifera*), California sagebrush (*Artemisia californica*), and California buckwheat (*Eriogonum fasciculatum*). These vegetation communities correspond to designated fuel models (pre-determined vegetation type, densities, and structural characteristics) for fire behavior modeling purposes. Dudek has classified each of the cover types off-site into fuel models, as discussed further below.

2.2.4 Vegetation Dynamics

Variations in vegetative cover type and species composition have a direct effect on fire behavior. Some plant communities and their associated plant species have increased flammability based on plant physiology (resin content), biological function (flowering, retention of dead plant material), physical structure (bark thickness, leaf size, branching patterns), and overall fuel loading. For example, native shrub species that compose chaparral communities are considered to be less likely to ignite, but would exhibit higher potential hazard (higher intensity heat and flame length) than grass-dominated plant communities (fast moving, but lower intensity) if ignition occurred. The corresponding fuel models for each of these vegetation types are designed to capture these differences. Additionally, vegetative cover influences fire suppression efforts

through its effect on fire behavior. For example, while fires burning in grasslands may exhibit lower flame lengths and heat outputs than those burning in native shrub habitats, fire spread rates in grasslands are often more rapid.

As described, vegetation plays a significant role in fire behavior, and is an important component to the fire behavior models discussed in this report. A critical factor to consider is the dynamic nature of vegetation communities. Fire presence and absence at varying cycles or regimes disrupts plant succession, setting plant communities to an earlier state where less fuel is present for a period of time as the plant community begins its succession again. In summary, high frequency fires tend to convert shrublands to grasslands or maintain grasslands, while fire exclusion tends to convert grasslands to shrublands over time. In general, biomass and associated fuel loading will increase over time, assuming that disturbance (fire, grazing) or fuel reduction efforts are not diligently implemented. It is possible to alter successional pathways for varying plant communities through manual alteration. This concept is a key component in the overall establishment and maintenance of the proposed on site landscaping. This site will consist of irrigated and maintained landscapes that will be subject to regular "disturbance" in the form of maintenance and will not be allowed to accumulate excessive biomass over time, which results in reduced fire ignition, spread rates, and intensity. This is in stark contrast to the non-irrigated combustible condition of the current site condition.

Conditions remote from the project's footprint (within the Black Mountain Open Space Park), where the wildfire threat will exist post-development, are classified as medium to heavy fuel loads due to the dominance of chaparral and coastal sage scrub fuel beds.

2.2.5 Climate

Most of San Diego County, including the project area, is influenced by the Pacific Ocean and frequently under the influence of a seasonal, migratory subtropical high pressure cell known as the "Pacific High" (WRCC 2015a). Wet winters and dry summers with mild seasonal changes characterize the Southern California climate. This climate pattern is occasionally interrupted by extreme periods of hot weather, winter storms, or dry, easterly Santa Ana winds (WRCC 2015a). The average high temperature for the project area is approximately 75.9°F, with average highs in the summer and early fall months (July–October) reaching 88.2°F. The average precipitation for the area is approximately 16.2 inches per year, with the majority of rainfall concentrated in the months of December (2.7 inches), January (3.2 inches), February (3.1 inches), and March (2.7 inches), while smaller amounts of rain are experienced during the other months of the year (WRCC 2015b).

The prevailing wind pattern is from the west (on-shore), but the presence of the Pacific Ocean causes a diurnal wind pattern known as the land/sea breeze system. During the day, winds are from the west–southwest (sea) and at night winds are from the northeast (land), averaging 2 miles per hour (mph). During the summer season, the diurnal winds may average slightly higher

(approximately 16 mph) than the winds during the winter season due to greater pressure gradient forces. Surface winds can also be influenced locally by topography and slope variations. The highest wind velocities are associated with downslope, canyon, and Santa Ana winds.

The project area's climate has a large influence on the fire risk as drying vegetation during the summer months becomes fuel available to advancing flames should an ignition be realized. Typically the highest fire danger is produced by the high-pressure systems that occur in the Great Basin, which result in the Santa Ana winds of Southern California. Sustained wind speeds recorded during recent major fires in San Diego County exceeded 30 mph and may exceed 50 mph during extreme conditions. The Santa Ana wind conditions are a reversal of the prevailing southwesterly winds that usually occur on a region-wide basis during late summer and early fall. Santa Ana winds are warm and dry winds that flow from the higher desert elevations in the north through the mountain passes and canyons. When present, these winds significantly increase the fire risk throughout much of Southern California, including at the project site (Figure 4). As they converge through the canyons, their velocities increase. Consequently, peak velocities are highest at the mouths of canyons and dissipate as they spread across valley floors. Santa Ana winds generally coincide with the regional drought period and the period of highest fire danger.

2.2.6 Fire History

Fire history data provides valuable information regarding fire spread, fire frequency, ignition sources, and vegetation/fuel mosaics across a given landscape. Fire frequency, behavior, and ignition sources are important for fire response and planning purposes. One important use for this information is as a tool for pre-planning. It is advantageous to know which areas may have burned recently and therefore may provide a tactical defense position, what type of fire burned on the site, and how a fire may spread. Figure 5 – the Junipers Fire History Map, presents a graphical view of the project area's recorded fire history. As presented in the exhibit, CAL FIRE has recorded data ~~there have been approximately~~from 54 ~~fires recorded~~ fires occurring in the vicinity of the project since 1910 ~~by CAL FIRE in their FRAP database~~ (FRAP 2015)[2] ~~in the direct vicinity of the Project site~~. These fires, occurring in 1910, 1913, 1919, 1938, 1943, 1944, 1945, 1950, 1958, 1967, 1968, 1970, 1971, 1973, 1974, 1978, 1979, 1980, 1981, 1983, 1984, 1986, 1987, 1988, 1989, 1990, 1993, 1997, 1998, 2000, 2003, 2014~~7~~, and 2017~~4~~ burned within 5 miles of the project Site. One wildfire (1943 Fire; 40,247 acres) in the historical record burned onto the Juniper property. The most notable fire is the 2007 Witch Fire, which burned roughly 2 miles north of the Junipers project site. The San Diego Fire Department (SDFRD) may have data regarding smaller fires (less than 10 acres) that have occurred near the site that are not included in CAL FIRE's dataset.

[2] Based on polygon GIS data from CAL FIRE's Fire and Resource Assessment Program (FRAP), which includes data from CAL FIRE, USDA Forest Service Region 5, BLM, NPS, Contract Counties and other agencies. The data set is a comprehensive fire perimeter GIS layer for public and private lands throughout the state and covers fires 10 acres and greater between 1878–2016.

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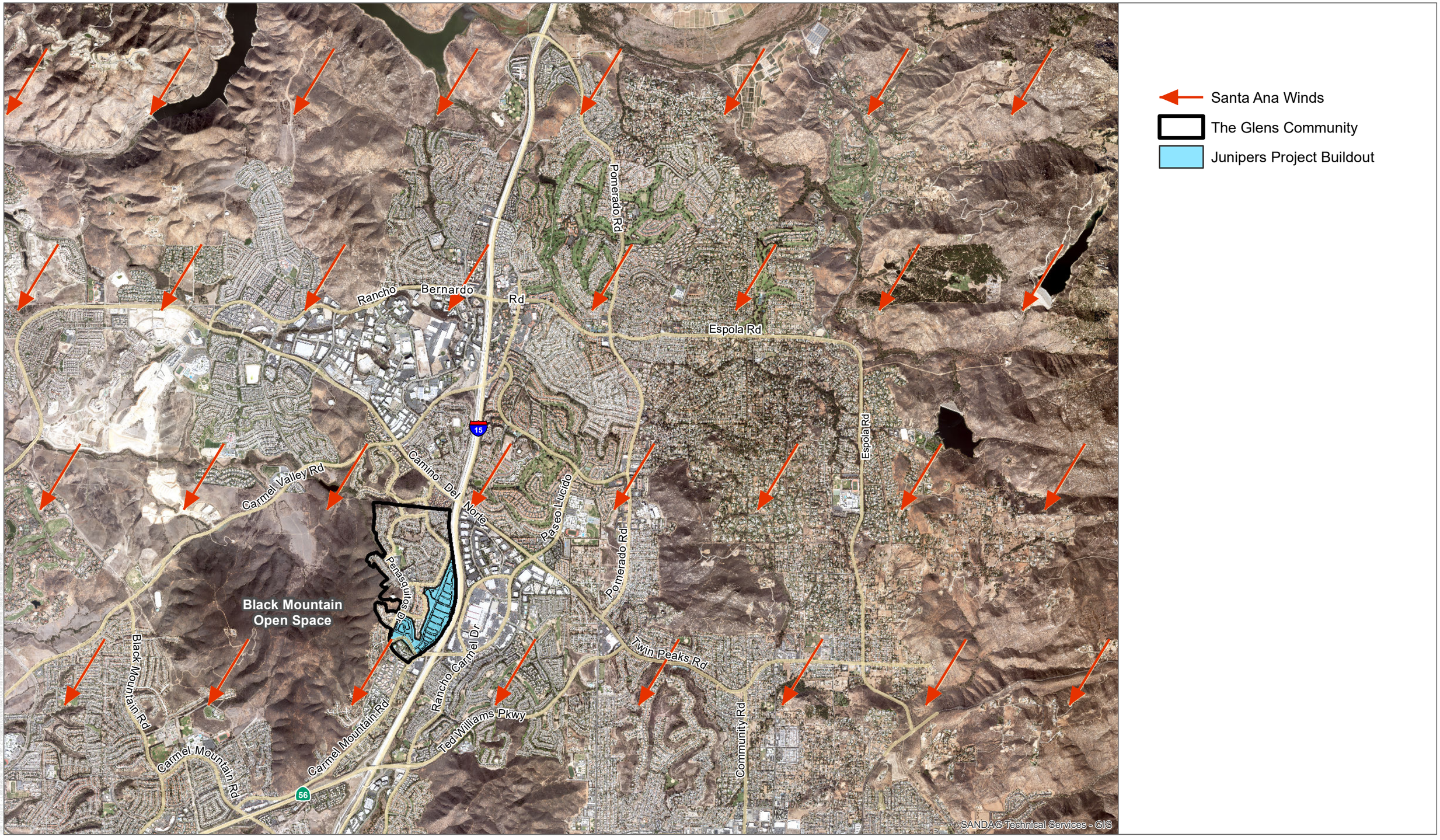

SOURCE: AERIAL-SANDAG IMAGERY 2017

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0 2,000 4,000 Feet

FIGURE 4

Junipers Vicinity Fire Spread and Wind Influence from Extreme Fire Weather Events

The Junipers Fire Protection Plan

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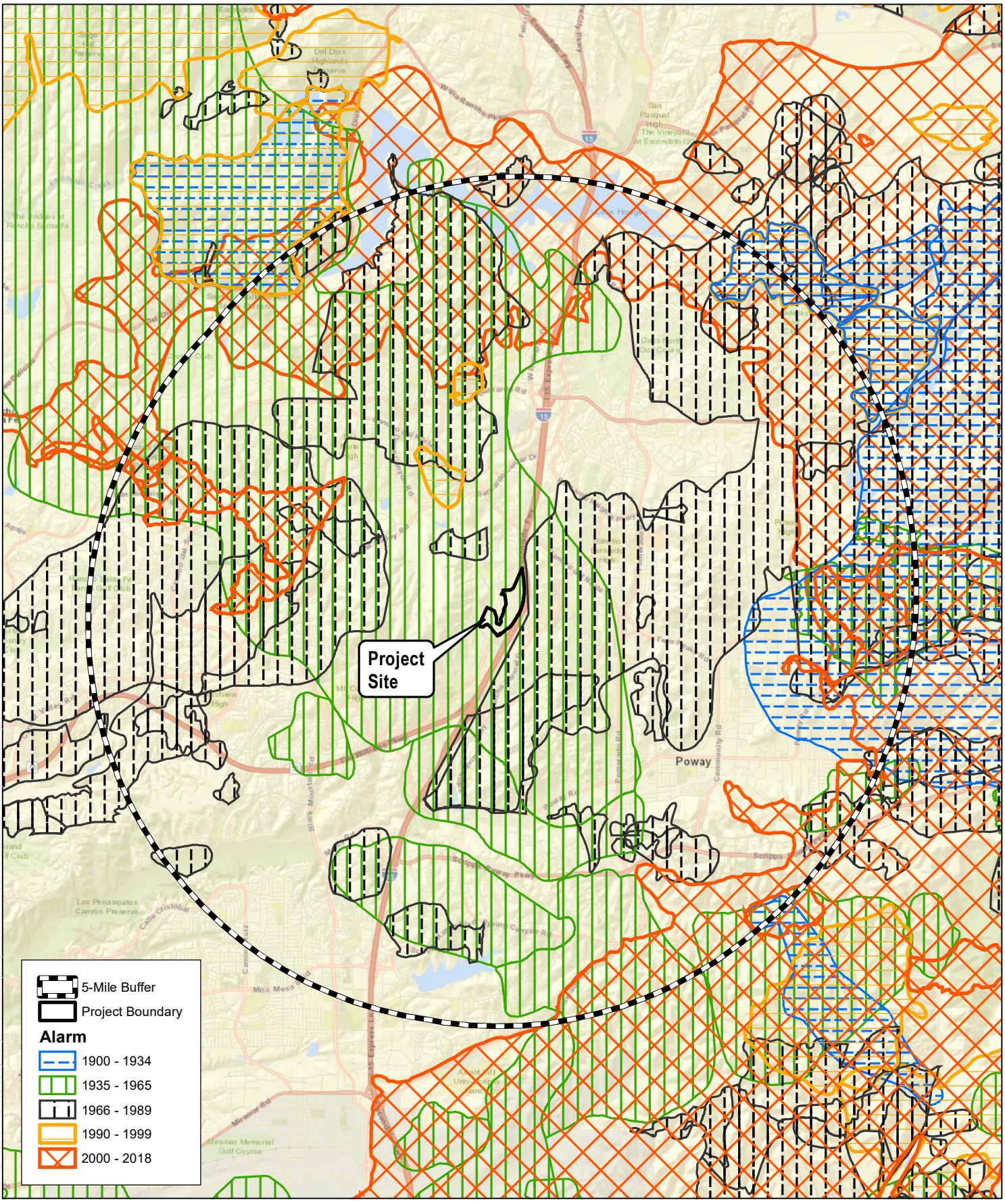

SOURCE: AERIAL- BING MAPPING SERVICE; FIRE DATA-CALFIRE 2017

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FIGURE 5

Fire History Map

The Junipers Fire Protection Plan

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3 DETERMINATION OF PROJECT EFFECTS

FPPs provide an evaluation of the adverse environmental effects a proposed project may have from wildland fire. The FPP must provide mitigation for identified impacts to ensure that development projects do not unnecessarily expose people or structures to a significant loss, injury or death involving wildland fires. Significance is determined by answering the following guidelines:

Would the project expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

The wildland fire risk in the vicinity of the project site has been analyzed and it has been determined that wildfires may occur in wildland areas that are within 1/10 of a mile from a small portion of the project, but would not be significantly increased in frequency, duration, or size with the construction of the project. In fact, the existing site includes numerous potential fire issues including ~~unmaintained~~ vegetation that dries each summer and could facilitate fire spread. All of the on-site vegetation will be converted to lower flammability uses including ignition-resistant buildings and drought-tolerant, fire-resistive landscapes. **The project would include conversion of fuels to maintained urban development with designated ignition-resistant landscaping. As such, the entire site will be converted from readily ignited flashy fuels (weeds and grasses) to ignition-resistant structures and landscape.**

The types of potential ignition sources that currently exist in the area include vehicle and roadway, electrical transmission line, and machinery associated with ~~agricultural operations~~vegetation maintenance and off-site residential neighborhoods. The project would introduce potential ignition sources, but would also include conversion of ignitable fuels to lower flammability landscape and include better access throughout the site, managed and maintained landscapes, more eyes and ears on the ground, and generally a reduction in the receptiveness of the area's landscape to ignition.

Fires from off site would not have continuous fuels across this site and would, therefore, be expected to burn around and/or over the site via spotting. Burning vegetation embers may land on project structures, but are not likely to result in ignition based on ember decay rates and the types of non-combustible and ignition- and ember-resistant materials that will be used on site.

The project would comply with the strictest applicable fire and building codes and would include a layered fire protection system designed to current ignition-resistant building codes and site-specific measures that will result in a project that is less susceptible to wildfire than surrounding landscapes and existing residential developments, and that would facilitate fire fighter and medical aid response.

Would the project result in inadequate emergency access?

Fire access is provided throughout the project and is consistent with the General Plan and San Diego Municipal Code, Chapter 5, Article 5. Fire apparatus access throughout the development will include roads that meet the code requirements for width, grade, clearance, turnouts, and turnarounds. Fire access on the project site will be improved from its current condition, as will resident evacuation with the addition of Street "V", which provides access to Carmel Mountain Road, including to the east, and with the planned improvements of a bollarded emergency evacuation road to Del Diablo Street and also enhancement of the existing bollarded fire access to the north between Andora Way and Corte Raposo. Therefore, the project's access is considered consistent with code requirements and improved from existing conditions.

Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance service ratios, response times or other performance objectives for fire protection?

As detailed in Section 5, the project is conservatively estimated to add 105 calls per year to the SDFRD's existing call load, which considers higher call volumes associated with older age groups. The primary response (first due) would be provided by Station 42, which averaged 1,584 calls in 2016, or roughly 4.3 calls per day. The addition of 105 calls/year (0.29 calls/day) to a station that currently responds to 4.3 daily calls is considered insignificant and the station's capacity to respond to the additional calls is available, as analyzed in Section 5.1.2 of this FPP. The anticipated 4.6 calls per day is below what would be considered a busy station. For perspective, urban fire stations that respond to five calls per day are considered average and 10 calls per day would be considered a busy station; while a suburban station that responds to roughly 8 to 10 calls per day can be considered busy (Hunt 2013).

Would the project have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

The project will be served by San Diego Public Utilities Department. Water and sufficient water supplies will be available to serve the project from existing entitlements and resources. The pressures in the development will remain above 20 psi at 2,500 gallons per minute when meeting the fire requirements for the SDFRD. The measures described in the responses to these significance questions are provided more detail in the following sections.

4 ANTICIPATED FIRE BEHAVIOR MODELING

4.1 Fire Behavior Modeling

Following field data collection efforts and available data analysis, fire behavior modeling was conducted to document the type and intensity of fire that would be expected adjacent to the proposed project given characteristic site features such as topography, vegetation, and weather. The BehavePlus 5.0.5 fire behavior modeling software package was utilized to analyze fire behavior for the wildland fuels along the eastern edge (along I-15) of the property and on the east facing slopes of Black Mountain, which are remote from the western edge of the property. Results are provided below and a more detailed presentation of the BehavePlus analysis, including fuel moisture and weather input variables, is provided in Appendix B.

4.2 BehavePlus Fire Behavior Modeling Effort

Fuel Models are simply tools to help fire experts realistically estimate fire behavior for a vegetation type. Fuel models are selected by their vegetation type, fuel stratum most likely to carry the fire, and depth and compactness of the fuels. Fire behavior modeling was conducted for vegetative types that surround the proposed development. The vegetation types are represented primarily by three fuel models as shown in Table 2. Other fuel models may exist, but not at quantities that significantly influence fire behavior in and around the proposed development. Fuel models were selected from *Standard Fire Behavior Fuel Models: a Comprehensive Set for Use with Rothermel's Surface Fire Spread Model* (Scott and Burgan 2005).

Table 2
Existing Fuel Model Characteristics

Fuel Model Assignment	Vegetation Description	Location	Fuel Bed Depth (Feet)
Gr1	Short, Sparse, Dry Climate Grass	More prevalent on east side of property along I-15 corridor intermixed with ice plant.	<1.0 ft.
SCAL 18	Sagebrush/buckwheat	Fuel type is concentrated on the dryer south and west facing slopes of the Black Mountain Open Space Park.	3.0 ft.
Sh5	High Load Dry Climate Shrub	Fuel type is found on the north and east side of Black Mountain	8.0 ft.

4.3 Fire Behavior Modeling Results

Fire behavior modeling results derived from the BehavePlus modeling efforts are presented in Table 3 and in Figure 6. Four focused analyses (fire scenarios) were completed, each assuming

worst-case fire weather conditions for a fire approaching the project site from the west or east. The adjacent areas were modeled as a Fuel Model Gr4 (Moderate Load grasslands fuel bed) and Fuel Model Sh5 (Chaparral/coastal sage scrub fuel bed). This detailed analysis compared fire behavior outside the proposed development with outputs including flame length (feet), rate of spread (mph), fireline intensity (BTU/ft/s), and spotting distance (miles).

Table 3
BehavePlus Fire Behavior Modeling Results

Fire Scenario	Flame Length (feet)	Spread Rate (mph)	Fireline Intensity (Btu/ft/s)	Spot Fire (miles)
Scenario 1: grass-ice plant fuels on east facing slope, 8% upslope, Peak weather				
Sparse Grass (Gr1)	3.1	0.5	67	0.3
Scenario 2: grass-ice plant fuels on east facing slope, 4% upslope, Peak weather				
Sparse Grass (Gr1)	3.1	0.5	67	0.3
Scenario 3: Mixed chaparral and sage scrub fuels on north/south facing slopes, 25%-30%% downslope; Summer weather				
Chaparral (Sh5)	23.2	2.0	5,296	0.6
Coastal Sage Scrub (SCAL 18)	24.7	1.0	6,060	0.7
Scenario 4: Mixed chaparral and sage scrub and chaparral on north/south facing slopes, 15%-30% downslope; Summer weather				
Chaparral (Sh5)	23.5	2.1	5,403	0.6
Coastal Sage Scrub (SCAL 18)	25.0	1.1	6,205	0.7

Based on results of BehavePlus analysis, wildfires with the most fire intensity will occur during on-shore, wind patterns (summer weather conditions) and are expected to be of moderate severity with flames lengths of 23 to 25 feet and moderate spread rates (approximately 2.0 mph) downslope towards the Glens Community adjacent to the proposed project site. In contrast, a fire approaching the project from the east under Santa Ana winds and burning in grass-ice plant fuels would produce approximately 3-foot flame lengths, fireline intensities under 67 Btu/ft/s, and spread rate of less than 1.0 mph. Even though grass fires can typically ignite or spread quickly, the grass fuel bed within the Caltrans ROW is routinely cut in height to reduce their fire potential. Spotting distances, where airborne embers can ignite new fires downwind of the initial fire, are approximately 0.3 mile (peak weather) and 2.0 miles (summer, on-shore breeze).

It should be noted that the results presented in Table 3 depict values based on inputs to the BehavePlus software package. Minute site changes are not accounted for in this analysis. Model results should be used as a basis for planning only, as actual fire behavior for a given location will be affected by many factors, including unique weather patterns, small-scale topographic variations, or changing vegetation patterns. However, given the site's fire environment discussed previously, the model appears to capture the essence of potential wildfire behavior.

BehavePlus Fire Behavior Inputs

Model Variable	Summer Weather Condition	Peak Weather Condition
Fuel Models	Sh5, SCAL 18	Gr1
1 h fuel moisture	3%	2%
10 h fuel moisture	6%	3%
100 h fuel moisture	8%	5%
Live herbaceous moisture	60%	30%
Live woody moisture	90%	50%
20 ft. wind speed	19 mph	41 mph
Wind direction	225 degrees	45 degrees
Wind adjustment factor (BehavePlus)	0.6	0.4

BehavePlus Fire Behavior Modeling Results

Fire Scenario	Flame Length (feet)	Spread Rate (mph)	Fireline Intensity (Btu/ft/s)	Spot Fire (miles)
Scenario 1: grass-ice plant fuels on east facing slope, 8% upslope, Peak weather				
Sparse Grass (Gr1)	3.1	0.5	67	0.3
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Sparse Grass (Gr1)	3.1	0.5	67	0.3
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Chaparral (Sh5)	23.2	2.0	5,296	0.6
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Chaparral (Sh5)	23.5	2.1	5,403	0.6
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SOURCE: AERIAL- BING MAPPING SERVICE

DUDEK

0 500 1,000 Feet

FIGURE 6

BehavePlus Fire Behavior Modeling

The Junipers Fire Protection Plan

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4.4 Project Area Fire Assessment

Large wildfires have occurred within five miles of the Junipers project site in recorded history. **However, the proposed project site, once developed, would not facilitate wildfire spread, especially given the ignition resistance of the structures and planned landscape.**

The closest wildland fuels are located to the west of the project in the Black Mountain Open Space Park. The terrain slopes up and away from the developed areas west of the Preserve. Additionally, extreme fire weather typically includes Santa Ana winds, which would tend to blow wildfire away from the developed areas of the Glens and the planned Junipers neighborhoods.

Wildfire during a typical weather day where an on-shore wind from the west occurs would not behave as aggressively due to the lower wind speeds, higher humidity, and higher fuel moistures. This type of fire, or a wildfire burning to the east/northeast (Twin Peaks or beyond), could result in embers that are blown onto and over the Junipers project.

Wildland fires are a common natural hazard in most of southern California with a long and extensive history. Southern California landscapes include a diverse range of plant communities, including vast tracts of shrublands. However, these fuel types are not found on the Junipers site nor would they occur following development. Wildfire in this Mediterranean-type ecosystem ultimately affects the structure and functions of vegetation communities (Keeley 1984) and will continue to have a substantial and recurring role (Keeley and Fotheringham 2003). Supporting this are the facts that 1) native landscapes, from forest to grasslands, become highly flammable each fall and 2) the climate of southern California has been characterized by fire climatologists as the worst fire climate in the United States (Keeley 2004) with high winds (Santa Ana) occurring during autumn after a six-month drought period each year. Based on this research, the anticipated growing population of north County , and the region's fire history, it can be anticipated that large wildfires will occur in the open space areas of San Diego County, with the Black Mountain Open Space Park and Twin Peaks, being no exception. However, as described, wildfires in these areas would have limited impact on the Junipers ignition-resistant residences and landscape.

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5 EMERGENCY RESPONSE AND SERVICE

5.1 Fire Facilities

The project is located within the SDFRD jurisdictional response area. SDFRD currently operates 41 active fire stations, four of which are analyzed herein due to their proximity to the Junipers project. Table 4 provides a summary of the SDFRD fire and emergency medical delivery system for Fire Stations 33, 40, 42 and 44.

Table 4
SDFRD Fire and Emergency Medical Response to the Junipers

Fire Station	Address	Staffing	Apparatus
33	16966 Bernardo Center Drive San Diego, CA 92128	4 person engine crew; Paramedic ambulance crew	One Type I, one Type III, one Paramedic ambulance
40	13393 Salmon River Road San Diego, CA 92128	4 person engine crew with Paramedic	One Type I engine, one Type III engine, one Truck, one Light and Air, one Paramedic
42	12119 World Trade Drive San Diego, CA 92128	4 person engine crew	One Engine
44	10011 Black Mountain Road San Diego, CA 92108	4 person engine crew; BC	One Type I and one Truck; one Battalion Unit

The closest station is FS 42, located at 12119 World Trade Drive, which includes one engine staffed with ~~three fire fighters~~ four crew 24-hours per day/seven days per week. FS 40, located at 13393 Salmon River Road, is the next closest station and staffs a ~~minimum of three fire fighters~~ four person crew 24-hours per day/seven days per week and houses an engine, a brush engine, a ladder truck, a light and air unit and a Paramedic. Station 44 is the next closest SDFRD station and is located at 10011 Black Mountain Road. The station staffs a four-person crew on duty, 24-hours per day and houses a fire engine, a ladder truck, and a Battalion Chief unit. Multi-apparatus stations may include multiple engine companies, unless cross-staffing is in place. Station 33 is located at 16966 Bernardo Center Drive and houses a fire engine, a brush engine and a paramedic.

5.1.2 Estimated Calls and Demand for Service from the Project

As presented in Table 5, using 2016 call volume data (SDFRD WebSite: https://www.sandiego.gov/fire/about/firestations), Stations 33, 40, 42 and 44, the four closest stations, ran 2,988, 2,059, 1,584 and 2,219 calls in 2016, averaging 8.2, 5.6, 4.3 and 6.1 calls per day, respectively.

Table 5
SDFRD Call Volume Totals for CY 2016

Response within IA	Engine 33	Engine 40	Engine 42	Engine 44
Medical Aid	2,593	1,692	1,315	1,802
Fire	162	130	101	165
Hazardous Material Response	192	204	148	213
Rescue	27	17	12	24
Public Assists/Others	14	16	8	15
Annual Total Response	**2,988**	**2,059**	**1,584**	**2,219**
Total Calls Per Day	**8.2**	**5.6**	**4.3**	**6.1**

Note.
* An additional Carmel Mountain Ranch Fire Station is planned and funded. The station would be located at Carmel Valley Road and Winecreek Road. This station would be approximately 3.75 miles from the project's primary entrance.

The estimated incident call volume at buildout from the Junipers Project is based on a conservative estimate of the maximum potential number of persons on site at any given time (considered a "worst case" scenario). The project includes up to 536 residential units; a total population of up to 911 people was calculated for the "worst case" scenario based on an average unit occupancy of 1.7 (adjusted down based on the project's age restriction)[3].

The per capita call volume for SDFRD was calculated for 2016 based on a population of 1,337,000 people that generated 154,263 calls. The resulting per capita call volume is 0.115. Applying this per capita call volume to the Junipers estimated maximum population of 911 people, the estimated call volume generation is up to 105 calls per year (roughly 0.29 call per day), 85% of which (131 per year) are expected to be medical-related calls.

Medical calls are the largest component of the SDFRD's call volume, as is typical with most fire agencies. Typical fire departments, especially urban fire department's call volume, includes 80% or more medical-related responses. Although elderly persons may utilize emergency services at higher rates (Blanda 2005), it is assumed that those over 85, which have the highest usage would no longer be living independently within the Junipers housing. Those over 65, which have a higher usage than younger persons, could account for higher call volumes, but the increase is not considered to be substantially higher than the conservative estimate of 105 calls. The utilized per capita call volume utilizes City-wide call volumes and is considered appropriate for application at this site because it includes dense urban city center call volumes, which are also much higher than

[3] Pursuant to the density factor of 3.0 persons per household unit based on the Demographic and Socio Economic Estimates for the RPCP from SANDAG (SANDAG 2018a) the project would increase the area's population by up to 1,608 persons. The project is a multi-family, age-restricted development, however, and therefore a factor of 1.7 persons per household is more appropriate, based on the American Housing Survey (American Association of Retired Persons [AARP], 2011). Therefore, the population for the project's 536 housing units is estimated to be 911 persons.

in suburban neighborhoods. The resulting estimated increase in calls is considered negligible and therefore, no adjustment to the call volume calculations is deemed necessary.

5.2 Response Capability Impact Assessment

The available firefighting and emergency medical resources in the vicinity of the project site include an assortment of fire apparatus and equipment considered fully capable of responding to the type of fires potentially occurring within and adjacent the project.

The Junipers project includes up to 536 new homes and service level requirements. The community is conservatively projected to add up to 105 calls per year (2 calls per week), mostly medical, to SDFRD's response totals. The addition of less than 0.29 call per day is not considered a significant impact. For perspective, Station 42 ran 4.3 calls per day. A busy urban fire station would run 10 or more calls per day. An average station runs about 5 calls per day.

5.3 Emergency Response Travel Time Coverage

In addition to evaluating the call volume generated by the project and its potential for impacts on SDFRD, Dudek also conducted a travel time coverage analysis in order to determine if the project would meet SDFRD's response goal of first-due fire unit arriving within 7 minutes 30 seconds, 90% of the time. The 7 minute 30 seconds total response goal (90% of the time) includes dispatch and turnout time. The travel time goal is 5 minutes and is defined as when the engine's wheels roll to arriving at the site. The City does not currently meet this standard for most stations, but has strategic plans to close gaps through construction of additional fire stations. The average response times[4] of these stations to all calls within their first-in response areas are as follows:

- Station 33: 9 minutes 2 seconds
- Station 40: 8 minutes 24 seconds
- Station 42: 8 minutes 5 seconds
- Station 44: 8 minutes 23 seconds

The Junipers project would be primarily serviced by existing Fire Station 42, located 1.48 miles from the project's primary entrance. The estimated distance to the furthest point in the project would be an additional 1.08 miles, totaling 2.56 miles. Because Station 42 is a four-person engine company (4 firefighters), and the City follows the Occupational Safety and Health Administration two-in and two-out standard, the weight of the initial response is considered sufficient.

[4] Source: San Diego Fire-Rescue Department Standards of Response Cover Review. Citygate. February 22, 2017

Dudek conducted emergency response analysis from existing fire stations to the project to determine potential response coverage. The modeling utilized standard ISO response formula and input variables. Emergency travel time for first arriving engines from each station are provided in Table 6. In addition, and not evaluated, SDFRD has automatic aid partnerships with surrounding fire agencies that will send their closest units into the City if the City's units are committed or not as close as other emergencies. These additional response resources are not analyzed in this FPP, but would include the City of Poway Fire Department and Rancho Santa Fe Fire Protection District.

In summary, initial fire response for the improved portions of the Juniper project area would be provided by SDFRD's Station 42, due to its proximity that enables travel time response within 3 minutes 10 seconds to the project's entrance and within 5 minutes travel to all improved areas. This response travel time is consistent with the City's current goal.

Table 6
The Junipers SDFRD Emergency Response Analysis

San Diego Fire Department Station No.	Total Mileage to Junipers (Primary Entrance/Furthest Structure)	Estimated Response Travel Time	Travel Time to Furthest Structure
		First Arriving	*First Arriving*
33	4.20/5.28	7'47"	9'38"
40	3.93/5.01	7'19"	9'10"
42	1.48/2.56	3'10"	5'0"
44	6.85/7.93	12'17"	14'8"

Note:
Table 6 presents results of response travel time utilized the ISO formula (T=0.65+1.7D) that discounts speed to account for slowing along the response route whereas.

As indicated in Table 6, the first arriving engine from Station 42 would achieve a 3 minutes 10 seconds travel time to the project entrance. Up to an additional 1 minute 50 seconds would be required to respond to the most distant structure from the entrance. However, all of the site's structures can be responded to within 5 minutes travel, conforming to the response goal of 7 minutes 30 seconds, 90% of the time (5 minutes travel + dispatch + turnout).

These response time estimates consider the incorporation of SDFRD-approved roundabouts at Peñasquitos Drive and the project entrance (Janal) and within the Junipers project. Per Federal Highway Administration Publication No. FHWA-14-098:

- Roundabouts are designed for safety and efficiency of all users and can actually improve response times by eliminating/minimizing stops and delays.
- Roundabouts are safer than intersections, even when signals are fitted with preemption devices.

- Emergency vehicles slow down to pass through intersections similarly to slowing down to proceed through a roundabout.
- Roundabouts accommodate larger vehicles and often include rolled curbs and truck aprons for rear wheels

The project's roundabouts have been accepted and all fire issues cleared by City staff. Roundabouts conform to the CFC Section 503 and City FPB Policy A-14-1 "Fire Access Roadways" with an inscribed circle radius of 50' and an inside paved truck apron with rolled curb.

5.4 Impacts and Mitigation

5.4.1 Fire Response

In general, FPPs review if a project is in a ~~high fire hazard severity zone~~VHFHSZ or WUI, and the ramifications of such location. As noted throughout this FPP and shown on previously referenced Figure 1, the Junipers project is separated from natural open space by the existing Glens development and Peñasquitos Drive. ~~This issue, therefore, does not apply to the project, and no WUI-related impact would occur~~The Junipers can be generally defined as within a WUI-influenced area due to airborne ember potential, although it does not share a border with wildland~~f~~. The project is within the ember cast zone from wildland fuels, and appropriate ember resistance has been designed into the Junipers' building requirements.

The Junipers project includes 536 new single- and multi-family housing units and up to 911 people (536 units x 1.7 people per unit). Service level requirements are not impacted by the project based on the additional resources that would be available with the project along with the existing call volume. The requirements described in this FPP are intended to aid fire-fighting personnel and minimize the demand placed on the existing emergency service system.

Cumulative impacts from this type of project can cause fire response service decline and must be analyzed for each project. The Junipers project represents an incremental increase in service demand due to the number of new structures and people living in or using the community. Based on the calculations presented in the preceding sections and the estimated calls per day generated by the project, it is anticipated that the project would have a low impact on the response capability of the existing SDFRD Fire Stations, particularly Station 42, which would be the first due engine.

The potential impacts to the firefighting and response resources and to the residents residing within this area are considered insignificant with respect to wildland fire. The project's inclusion of the most recent fire safety codes and a layered fire protection system, designed to reduce demands placed

on the fire responders while minimizing exposure of humans to potentially harmful fire environments, will result in wildfire exposure levels that are below the significant threshold. The fact that most of the project site has not been placed in a high or very high fire hazard severity zone indicates that SDFRD and CAL FIRE agree that the fuels and terrain present lower risk of wildfire.

Features which are required and are therefore typically not considered mitigation, but that are relatively new code requirements and play a critical role in minimizing structure ignition are ignition-resistant construction including roofs, walls and decks, vent restrictions to exclude ember penetration, interior fire sprinklers, windows (dual pane/tempered), and fuel reduction areas. Although fire agencies do not provide "credit" for these features since they are required in the code, they do provide measureable safety improvements when used and are in the code because they are so effective. Among other features that provide fire protection to the proposed project are:

1. Specialized firefighting apparatus within the SDFRD fleet for wildland and structure fires along with highly trained firefighters;
2. Customized fire-resistive landscaping throughout the site that will be managed and maintained throughout the year;
3. Highly restrictive Fire and Building Codes for both residential and commercial/industrial buildings; and
4. Robust mutual and automatic aid agreements that provide a large arsenal of firefighters, and ground- and aerial- based firefighting apparatus.

6 FIRE SAFETY REQUIREMENTS – INFRASTRUCTURE, BUILDING IGNITION RESISTANCE, AND ~~DEFENSIBLE SPACE~~IGNITION-RESISTANT LANDSCAPES

6.1 Roads

6.1.1 Access Roads

Project area access, including road widths and connectivity, will comply with the requirements of the SDFRD FPB Policy A-14-1 and the CFC Section 503. The Project's on-site roads will be private. Primary access to the Project is off Peñasquitos Drive. ~~Secondary access and emergency~~ Emergency egress is provided directly from/to Carmel Mountain Road via Private Driveway "V". An emergency only access route is also provided to Del Diablo Street. Previously referenced Figure 2 illustrates the Junipers access points. Figures 7, 8 and 8A illustrate Private Driveway "V" and the emergency fire access road (which can be designated for resident evacuation from the Glens by the Fire Department) connecting Andorra Way and Corte Raposo configurations, respectively.

- All fire access and vehicle roadways will be of asphaltic concrete or approved alternative and designed and maintained to support the imposed loads of fire apparatus (not less than 75,000 pounds) that may respond, including: Type I, II, and III engines; ladder trucks; and ambulances. Proposed development footprint roadway improvements will meet City of San Diego Department of Public Works' (DPW) Street Design Standards. Access roads will be ~~at a minimum~~ provided first layer of pavement, so they are useable by fire apparatus, prior to combustible construction occurring.
- Road grades shall not exceed 12 percent for asphalt and 15 percent for concrete.
- Any dead-end roads longer than 150 feet will have approved provisions for fire apparatus turnaround. Fire apparatus turnarounds will include a turning radius of a minimum 50 feet (CGC Section 503.2.7), measured to the inside edge of improved width.
- Roadways and/or driveways will provide fire department access to within 150 feet of all portions of the exterior walls of the first floor of each structure.
- Vertical clearance of vegetation along roadways will be maintained at 13 feet, 6 inches.
- Roundabouts are proposed along Peñasquitos Drive at Janal and at three locations within the project. Note that the cul-de-sac nearest the proposed recreation facility includes a center planting area and resembles a roundabout on the exhibits, but is not a roundabout.
- Fire access roads for each phase will meet proposed project approved fire code requirements and/or mitigated exceptions for maximum allowable dead-end distance, paving, and fuel management prior to combustibles being brought to the development area.

Street parking will be provided on one or both sides of residential collector streets, depending on the location within the project area. Parking is assumed to be 6 to 8 feet in width. Where road widths do not accommodate parking, restrictions will apply, per the DPW Road Modification, and the streets will be posted with signs stating "No Parking; Fire Lane." Street sections are to be reviewed and approved by the City DPW and the City Fire Marshal.

- Roads with a median or center divider will have at least 14 feet unobstructed width on both sides of the center median or divider. Emergency fire truck access points will be provided through the center divider at 1,000-foot intervals, where road segment length allows.
- Developer will provide information illustrating the new roads, in a format acceptable to the SDFRD, to update the SDFRD maps.

6.1.2 Secondary Access

- The project provides secondary access (Private Driveway "V") from Carmel Mountain Road. Emergency egress is also provided in the southern project extents onto Carmel Mountain Road (from Private Driveway "V"), and another emergency only route occurs in the northwest portion of the project, discharging directly to Del Diablo Street.
- Figure 2 ~~, the Project Site Plan,~~ indicates proposed project road circulation and secondary access. Secondary access can be achieved from Carmel Mountain Road and off Del Diablo Street. Private Driveway "V" connects to Carmel Mountain Road and rolled curb median with flexible bollards would be provided to enable emergency managers to direct traffic to the east during an emergency evacuation (previously referenced Figure 8). The location of these entrances satisfies the need for secondary access.
- Dead-end roads and secondary access are provided to the satisfaction of the SDFRD. ~~The longest dead-end road (cul-de-sac) allowed by the CFC and CCR Title 14 varies by phase and lot size minimums. Maximum dead end road length in Junipers Project is 800 feet. No dead-end cul-de-sac lengths in these areas will exceed 800 feet.~~
- Cul-de-sac bulbs are required on dead-end roads in residential areas where roadways serve more than two residences. Cul-de-sacs will be provided with a paved radius of 42 feet to allow for street parking within the cul-de-sac.
- Roadway design features (e.g., speed bumps, humps, speed control dips, planters, and fountains) that could interfere with emergency apparatus response speeds and required unobstructed access road widths will not be installed or allowed to remain on roadways. Traffic calming features (i.e., raised intersections, intersection neck downs, roundabouts and parallel bay parking with landscape pop-outs) are proposed and may be allowed, subject to approval by the City DPW and Fire Marshal.

SOURCE: BASEMAP-SANGIS, 2017

DUDEK

0 35 70 Feet

REVISED FIGURE 7

Street "V" Connection with Carmel Mountain Road

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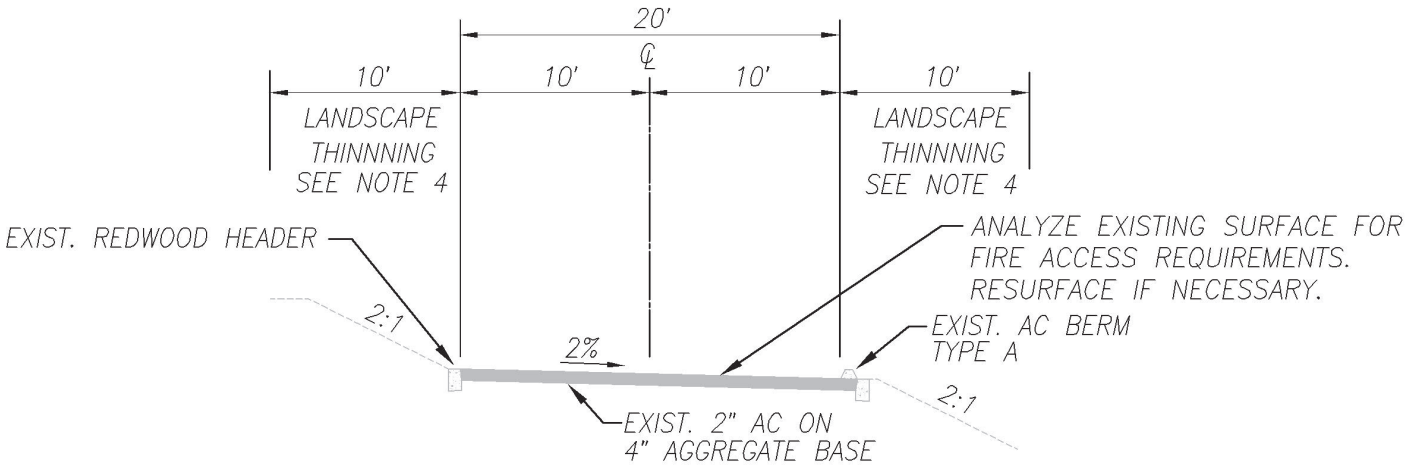


PROPOSED EMERGENCY ACCESS ROAD

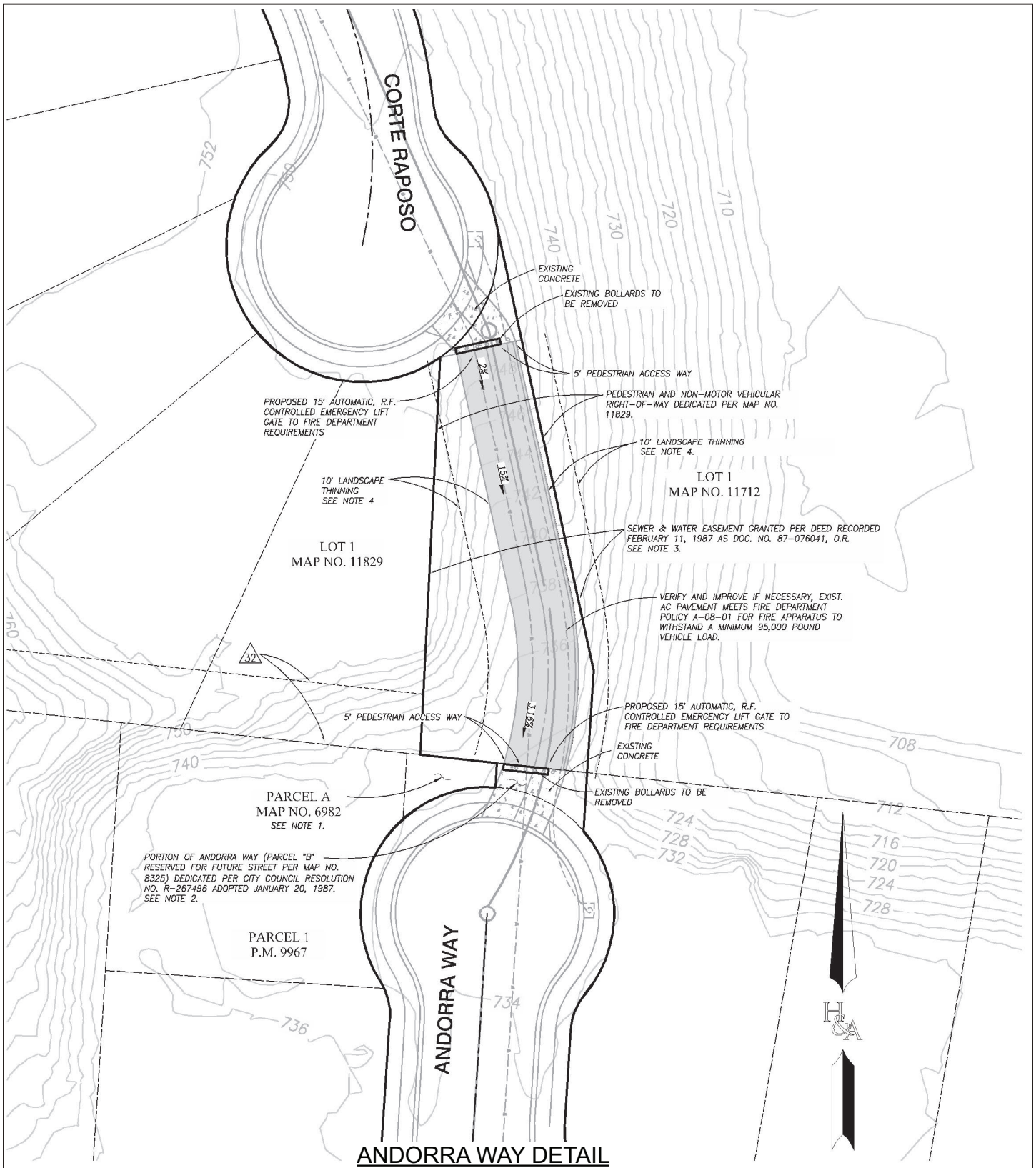
NOT TO SCALE

NOTES

1. PARCEL "A" – MAP NO. 6982
   - PARCEL 6 OF FIDELITY TITLE (989–30014972)
   - NO HOA INTEREST
2. ANDORRA WAY – RIGHT OF WAY
   - RESERVED ON MAP NO. 8352 AND ACCEPTED AS ROW FOR PUBLIC STREET PER RESOLUTION 267496 ADOPTED 1/20/1987.
   - NO HOA INTEREST
3. PEDESTRIAN AND NON–MOTORIZED VEHICULAR RIGHT OF WAY
   - PARCEL 4 OF FIDELITY TITLE (989–30014972)
   - SEWER & WATER EASEMENT GRANTED IN LOCATION OF ROW 2/11/1987
   - PEDESTRIAN AND NON–MOTORIZED VEHICULAR RIGHT OF WAY DEDICATED AND ACCEPTED ON MAP NO. 11829 FILED 6/3/1987
   - UPON VACATION, ROW WOULD LIKELY REVERT TO LOT 1 OF MAP 11829 (APN 313–580–01, JACQUELINE B. TA AND JAMES PHAM)
   - NO HOA INTEREST
   - "EMERGENCY ACCESS RD" PER CITY OF SAN DIEGO DWG. NO. 23588–6–D.
   - **PROPOSED ENTITLEMENTS**
     - JUNIPERS HOA TO BOND FOR REPLACEMENT OF GATES
     - **JUNIPERS HOA TO PROVIDE FINANCIAL RESERVE FOR VEGETATION MAINTENANCE**
4. LANDSCAPE THINNING AREA WITHIN LOT 1 – MAP NO. 11712
   - LANDSCAPE THINNING AREA CROSSES OVER BUILDING RESTRICTED AND DRAINAGE EASEMENTS GRANTED TO THE CITY OF SAN DIEGO PER MAP NO. 11712 AND AN EASEMENT TO SDG&E RECORDED 9/29/1967 AS FILE NO. 149737 SHOWN ON MAP NO. 11712.
   - NO HOA INTEREST
5. ADDITIONAL NOTES
   - **SDFRD TO PERFORM ANNUAL VEGETATION MAINTENANCE. JUNIPERS HOA WILL PROVIDE FINANCIAL RESERVE FOR VEGETATION MANAGEMENT AS NECESSARY.**
   - RECURRING MAINTENANCE WILL BE CITY RESPONSIBILITY ON LOT 1 (MAP NO. 117172). THE JUNIPERS HOA WILL PROVIDE THE MAINTENANCE IF THE OTHER ENTITIES FAIL TO PERFORM.
   - SAN DIEGO FIRE AND RESCUE DEPARTMENT AND/OR SAN DIEGO POLICE DEPARTMENT CONTROLS THESE GATES DURING EMERGENCIES.

REVISED FIGURE 8

Proposed Emergency Access Road Section



ANDORRA WAY DETAIL

32 EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT: IN FAVOR OF: SAN DIEGO GAS AND ELECTRIC COMPANY
PURPOSE: UTILITIES, INGRESS AND EGRESS RECORDING DATE: SEPTEMBER 29, 1967
RECORDING NO: 149737 OF OFFICIAL RECORDS AFFECTS: PORTIONS OF THE LAND, THE EXACT LOCATION OF WHICH CAN BE DETERMINED BY EXAMINATION OF THE ABOVE-MENTIONED INSTRUMENT, WHICH CONTAINS A COMPLETE LEGAL DESCRIPTION OF THE AFFECTED PORTIONS OF SAID LAND.

REVISED
FIGURE 8**A**

DUDEK

Andorra Way Detail

6.2 Gates

Access gates proposed for the project will comply with SDFRD codes and public roads will not be gated. Gates are located within the project as illustrated in previously referenced Figure 2. Gates will comply with SDFRD standards for electric gates and will not represent a dead-end road condition that jeopardizes the dead-end road length requirements for this project.

- Access gates are to be equipped with a KNOX key switch, which overrides all command functions and opens the gate. All proposed gates will be equipped with sensors for detecting emergency vehicle "Opticom" strobe lights and/or sirens from any direction of approach. Strobe detection and key switches will be provided on the interior and exterior of gates. Gates will automatically open when any vehicle approaches via vehicle detection loops.
- Switches may be dual keyed for SDFRD and Law Enforcement access.
- Gate activation devices will be equipped with a battery backup or manual mechanical disconnect in case of power failure.
- Further, gates will be:
    - Wider than the roadway;
    - Inclusive of area lighting;
    - Constructed from non-combustible materials;
    - Inclusive of provisions for manual operation from both sides, if power fails. Gates will have the capability of manual activation from the development side, via contact by a person or a vehicle (including a vehicle detection loop);
    - Located 30 feet from any intersecting road; and
    - Operable by activation with fire truck radio.

6.3 Driveways

Any structure that is 150 feet or more from a common road in the development footprint will have a paved driveway meeting the following specifications:

- Grades less than 15% with surfacing and sub-base consistent with the City of San Diego Parking Design Manual.
- Driveways serving two houses or fewer will be 16 feet wide and unobstructed with a fire apparatus turnaround. Driveways serving more than two houses will be 24 feet wide and unobstructed.

- Driveways in excess of 150 feet will provide hammerhead turnarounds to City Code.
- Driveway gates to comply with Section 6.3.2, above.

Identification of roads and structures will comply with CFC, Section 96.1.505, as follows:

- All structures will be identified by street address numbers at the structure. Numbers will be 4 inches in height, 0.5-inch stroke, and located 6 to 8 feet above grade. Addresses on non-residential buildings will be 6 inches high with 0.5-inch stroke. Address numbers will contrast with background.
- Multiple structures located off common driveways will include posting addresses on structures, on the entrance to individual driveways, and at the entrance to the common driveway for faster emergency response.
- Structures 100 feet or more from a roadway will include numbers at the entrance to the driveway.
- Proposed roads within the project will be named, with the proper signage installed at intersections to the satisfaction of the SDFRD and the DPW.
- Streets will have street names posted on non-combustible street signposts. Letters/numbers will be 4 inches high, reflective, on a 6-inch-high backing. Signage will be 7 feet above grade. There will be street signs at the entrances to the development, all intersections, and elsewhere as needed subject to approval of the Fire Chief.
- Access roads to private lots to be completed and paved prior to lumber drop and prior to the occurrence of combustible construction.

6.4 Structures

6.4.1 Ignition-Resistant Structural Requirements

This section outlines ignition-resistant construction (for all structures) that will meet and in some cases exceed the requirements of the ~~SDFRD~~ City of San Diego Fire and Building Codes. The following construction practices respond to the requirements of the CBC Chapter 7A "Materials and Construction Methods for Exterior Wildfire Exposure" and the CFC, Chapter 49 "Requirement for Wildland-Urban Interface Areas".

While these standards will provide a high level of protection to structures in this development, there is no guarantee of assurance that compliance with these standards will prevent damage or destruction of structures by fire in all cases.

All new structures will be constructed to ignition-resistant standards. Each of the proposed buildings will comply with the enhanced ignition-resistant construction standards of the latest CBC Code (Chapter 7A). These requirements address roofs, eaves, exterior walls, vents, appendages, windows, and doors and result in hardened structures that have been proven to perform at high levels (resist ignition) during the typically short duration of exposure to burning vegetation from wildfires.

6.4.2 Additional Requirements and Recommendations Based on Occupancy Type

Clubhouses or other structures will comply with occupancy requirements of the City of San Diego Fire and Building Codes.

6.5 Fire Protection Systems

6.5.1 Water

The project will be served by City of San Diego Public Utilities Department: Water. Sufficient water supplies will be available to serve the project from existing entitlements and resources. The static water pressure will remain above 20 psi at 2,500 gallons per minute when meeting the fire requirements for the SDFRD.

6.5.2 Fire Hydrants

Hydrants shall be located along fire access roadways as determined by the SDFRD Fire Marshal to meet operational needs, including at intersections, at the beginning radius of cul-de-sacs, and per code details, not further apart than 600 feet (on-center) ~~spacing of fire access roadways, pursuant to the City of San Diego Fire Code~~. Fire hydrants shall be fully operable before combustible materials are brought on site. Hydrants will be consistent with City of San Diego Design Standards (Policy FS-0410) as follows:

- ***Required installations.*** The location, type and number of fire hydrants connected to a water supply capable of delivering the required fire flow shall be provided on the public or private street, or on the site of the premises to be protected or both. Fire hydrants shall be accessible to the fire department apparatus by roads meeting the requirements of Section 503 of the CFC. Fire service laterals, valves, backflow preventers, and meters will be installed on site as required by the SDFRD. All fire department connections shall be installed in accordance with mounting requirements as specified by the SDRFD Fire Marshal.
- ***Location of fire hydrants.*** Hydrants will be in place and serviceable prior to delivery of combustible materials to the site. Fire hydrants shall be located according to engineering

standards and as required by the fire code official using the following criteria and taking into consideration departmental operational needs. Hydrants within project neighborhoods shall be 600 feet apart. Fire engines shall travel no further than 300 feet in any direction to reach a hydrant. Prior to the issuance of building permits, the applicant shall submit to SDRFD plans demonstrating a water system capable of handling the fire flow requirements.

- ***Fire hydrant construction and configuration***. All fire hydrants shall be of bronze construction, including all internal parts except seats. Alternative materials may be used if approved by the SDFRD's Fire Marshal and City of San Diego Public Utilities Department. The stems shall be designed and installed in a manner that will ensure that they will not be projected outward from the main body by internal water pressure due to disassembly. The number and size of fire hydrant outlets shall be at a minimum two 4-inch ports and one 2 ½ -inch port, except R-3. Hydrants protecting R-3 occupancies can have two 2 ½ inch ports and one 4-inch port.
- ***Signing of water sources and fire department connections***. Fire hydrants shall be identified by a reflectorized blue marker and fire department connections shall be identified by a reflectorized green marker, with a minimum dimension of 3 inches, in the center of the travel lane adjacent the water source. Crash posts will be provided where needed in on-site areas where vehicles could strike fire hydrants and will be consistent with Section 312 of the CFC.
- ***Vegetation Clearance***. A 3-foot clear space (free of ornamental landscaping and retaining walls) shall be maintained around the circumference of all fire hydrants.

6.5.3 Fire Sprinklers

All structures will be provided interior fire sprinklers. Automatic internal fire sprinklers shall be in accordance with National Fire Protection Association (NFPA) 13 or 13-D and City of San Diego installation requirements, as appropriate. Actual system design is subject to final building design and the occupancy types in the structure.

6.5.4 Smoke Alarm Systems

All residential units shall have electric-powered, hard-wired smoke detectors and fire alarm systems in compliance with SDFRD Fire Code. Hard-wired smoke alarms are to be equipped with battery backup.

6.6 ~~Defensible Space/Fuel Modification Zones~~ Ignition-Resistant Landscapes

6.6.1 Zones and Permitted Vegetation

As indicated in preceding sections of this FPP, an important component of a fire protection system is the ~~brush management~~landscape area around buildings. ~~Brush Management Zones (BMZ)~~Ignition-resistant landscapes are designed to ~~gradually~~ minimize fire ignition and spread ~~reduce fire intensity and flame lengths from advancing fire by placing thinning zones, restricted vegetation zones, and~~through the incorporation of fire-resistant landscaping throughout the landscaped areas of the site and adjacent to project structures, including use of non-flammable hardscape materials and maintained and irrigated ~~zones~~ landscapesornamental plantings. ~~adjacent to each other on on the perimeter of all structures and adjacent open space areasthroughout the site.~~ Therefore, these ~~modified fuel areas~~landscapes are an important part of the fire protection system designed for this site. The Junipers is not directly adjacent to wildland fuels, so formal ~~BMZs~~ brush management zones (BMZs) are not required by the City. Nonetheless, the project will include fire-resistive landscaping in the site-wide landscaping as an additional fire protection measure because it is within the ember zone of off-site wildland areas (please refer to Figure 9 which illustrates the Junipers' landscape plan). In addition, the biology mitigation area will consist of a relocated drainage to be planted and maintained with wetland habitats. This vegetation will have a relatively high moisture content and maintenance will consist of removal of dead/dying and invasive plants, as well as trash/debris.

6.6.2 ~~Brush Management Zone Requirements~~Landscape Inspections

~~Brush Management Zones are not required on this site. However, the Project will provide site-wide firesafe landscaping using the principles of BMZs.~~ The project would hire a qualified SDFRD-approved 3rd party inspector to provide inspections annually, as detailed in the following sections.

6.6.2.1 Fire-Resistive Landscaping

All developed landscape areas internal to the project will incorporate fire safe concepts ~~meeting the intent of the City's Brush Management policy~~. All ornamental site landscaping is recommended to be planted with drought-tolerant, less flammable plants from the proposed project Landscape Plan (Figure 9), which was prepared by Schmidt Design Group, Inc. Plant species selection will be sensitive to the Prohibited Plant List in Appendix C~~, which does allow some use of these species with restrictions on densities and proximity to nearest structures~~. Automatic irrigation systems will be installed in the landscaped area to maintain hydrated plants without over-watering, allowing for run-off, or attracting nuisance pests. The biology mitigation area along the I-15 will be planted with riparian species that would be of higher internal fuel moistures, with

subsequent ignition resistance. Maintenance of this area will include removal of dead and dying plant material, invasive plants, and trash/debris.

6.6.3 Other Vegetation Management

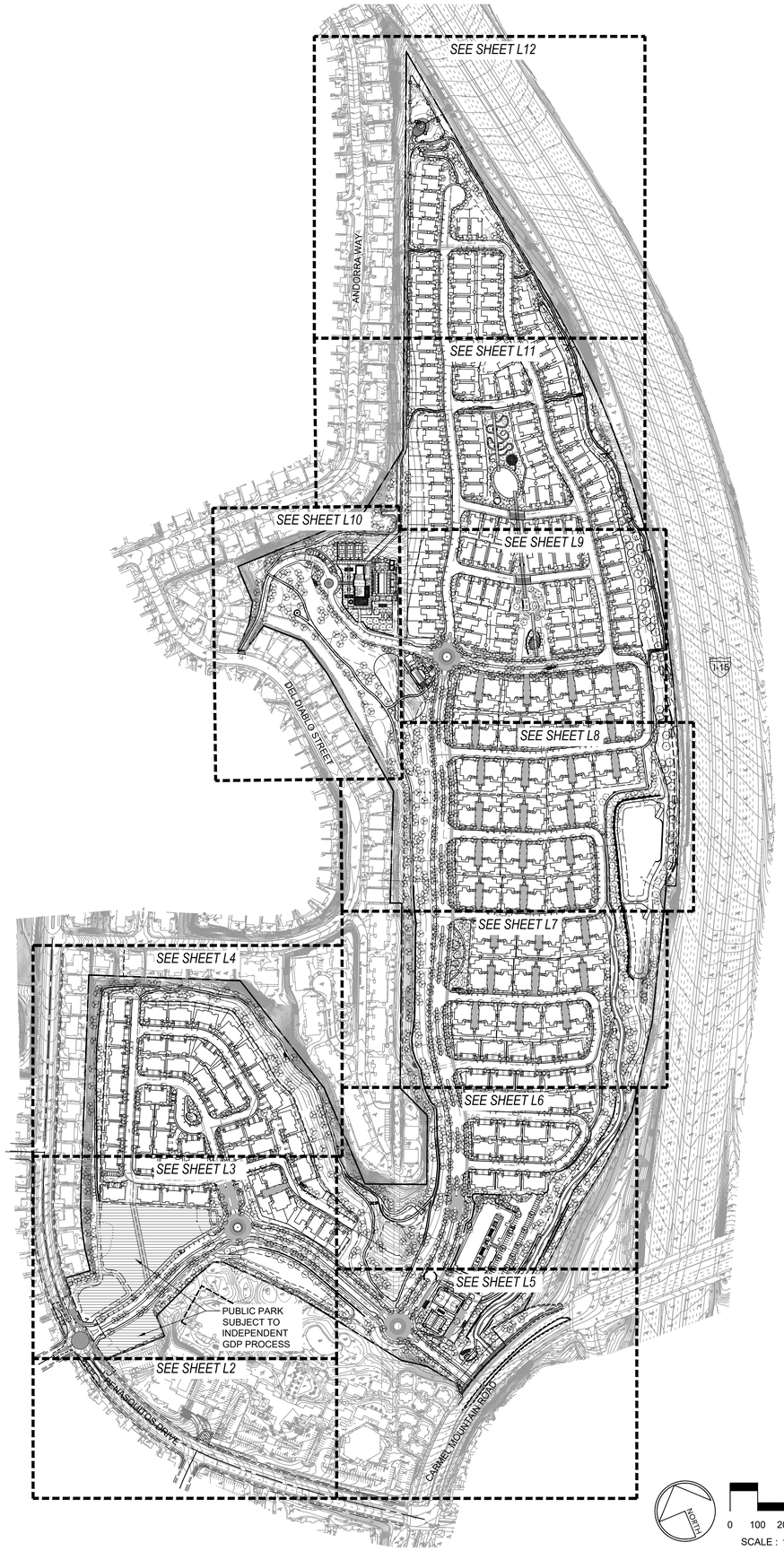
6.6.3.1 Water Detention Basin (if applicable)

Fire-safe vegetation management is recommended within the basin on a yearly basis in accordance with the City's weed abatement standards and in compliance with the following guidelines.

- Groundcovers or shrubs included in the basin shall be low-growing with a maximum height at maturity of 36 inches. Single tree specimens or groupings of two to three trees per grouping of fire-resistive trees or tree form shrubs may exceed this limitation if they are located to reduce the chance of transmitting fire from vegetation to habitable structures and if the vertical distances between the lowest branches of the large trees or tree-form shrubs and the tops of adjacent plants is three times the height of the adjacent plants to reduce the spread of fire through ladder fueling.
- The water detention basin area will be irrigated and maintained.
- Grasses must be thinned and maintained.
- This area shall be maintained annually free of dying and dead vegetation.
- Trees adjacent to the basin's access road shall be maintained at a vertical clearance of 13.5 feet for access into the interior of the basin.

6.6.3.2 Trail Vegetation Management and Response Facilitation

- A 10-foot vegetation modification zone is required on both sides of trails and paths on the perimeter of the property. This 10-foot zone requires removal of invasive, flammable species.
- Invasive grasses must be kept mowed to 4 inches or less.
- Certain trees may be planted if they are not prohibited in this plan.
- Trees will be properly spaced and maintained with no direct path from understory to tree canopy.
- The trails system will be managed and maintained by the HOA.
- The applicant will be required to submit digital mapping that can be incorporated into the SDFRD's Response Map books, as well as appropriate trail marking/signage that correlate with SDFRD Response Map books. The map updates will be provided in a format compatible with current department mapping services. The project will be charged a reasonable fee for updating all response maps. At a minimum, the map updates shall be provided in PDF or a CAD format approved by the FAHJ.



CONCEPT PLANT SCHEDULE

CONCEPTUAL MITIGATION AREA *
-

BIORETENTION - TREES
ALNUS RHOMBIFOLIA / WHITE ALDER - 40' H X 30' W
CERCIS OCCIDENTALIS / WESTERN REDBUD - 15' H X 15' W
PLATANUS RACEMOSA / CALIFORNIA SYCAMORE - 40' H X 40' W
POPULUS FREMONTII / WESTERN COTTONWOOD - 35' H X 35' W
SALIX GOODINGII / GOODING'S WILLOW - 25' H X 25' W

STREETSCAPE - TREES
ARBUTUS X `MARINA` / MARINA STRAWBERRY TREE - 40' H X 30' W
CASSIA LEPTOPHYLLA / GOLD MEDALLION TREE - 25' H X 20' W
CINNAMOMUM CAMPHORA / CAMPHOR TREE - 40' H X 40' W **
CUPANIOPSIS ANACARDIOIDES / CARROT WOOD
JACARANDA MIMOSIFOLIA / JACARANDA - 30' H X 25' W
PLATANUS RACEMOSA / CALIFORNIA SYCAMORE - 40' H X 40' W
PROSOPIS CHILENSIS / THORNLESS CHILEAN MESQUITE - 30' H X 30'
QUERCUS AGRIFOLIA / COAST LIVE OAK - 40' H X 30' W
QUERCUS SUBER / CORK OAK - 40' H X 30' W
TABEBUIA IMPETIGINOSA / PINK TRUMPET TREE - 25' H X 20' W
TIPUANA TIPU / TIPU TREE - 25' H X 25' W

ENHANCED GARDENESQUE - TREES
ARBUTUS X `MARINA` / MARINA STRAWBERRY TREE - 40' H X 30' W
CASSIA LEPTOPHYLLA / GOLD MEDALLION TREE - 25' H X 20' W
CERCIS OCCIDENTALIS / WESTERN REDBUD - 15' H X 15' W
DRACAENA DRACO / DRAGON TREE - 20' H X 20' W
LAGERSTROEMIA INDICA / CREPE MYRTLE - 25' H X 20' W
LYONOTHAMNUS FLORIBUNDUS / CATALINA IRONWOOD - 30' H X 20' W
METROSIDEROS EXCELSA / NEW ZEALAND CHRISTMAS TREE - 25' H X 15'
OLEA EUROPAEA / EUROPEAN OLIVE - 20' H X 20' W
PROSOPIS CHILENSIS / THORNLESS CHILEAN MESQUITE - 30' H X 30'
RHUS LANCEA / AFRICAN SUMAC - 25' H X 25' W
TABEBUIA IMPETIGINOSA / PINK TRUMPET TREE - 25' H X 20' W
TIPUANA TIPU / TIPU TREE - 25' H X 25' W

LOOP TRAIL/ OPEN SPACE - TREES
ARBUTUS X `MARINA` / MARINA STRAWBERRY TREE - 40' H X 30' W
CERCIS OCCIDENTALIS / WESTERN REDBUD - 15' H X 15' W
CHILOPSIS LINEARIS / DESERT WILLOW - 20' H X 15' W
PLATANUS RACEMOSA / CALIFORNIA SYCAMORE - 40' H X 40' W
POPULUS FREMONTII / WESTERN COTTONWOOD - 35' H X 35' W
PROSOPIS CHILENSIS / THORNLESS CHILEAN MESQUITE - 30' H X 30'
QUERCUS AGRIFOLIA / COAST LIVE OAK - 40' H X 30' W
QUERCUS ENGLEMANNII / ENGELMANN OAK - 40' H X 30' W
QUERCUS ILEX / HOLLY OAK - 40' H X 30' W
QUERCUS SUBER / CORK OAK - 40' H X 30' W
RHUS LANCEA / AFRICAN SUMAC - 30' H X 25' W

SPECIMEN ACCENT - TREES
CINNAMOMUM CAMPHORA / CAMPHOR TREE - 40' H X 40' W **
QUERCUS AGRIFOLIA / COAST LIVE OAK - 40' H X 30' W
QUERCUS SUBER / CORK OAK - 40' H X 30' W

ACCENT TREES
ARBUTUS X `MARINA` / ARBUTUS STANDARD
BAUHINIA PURPUREA VARIEGATA / PURPLE ORCHID TREE
CASSIA LEPTOPHYLLA / GOLD MEDALLION TREE
CERCIS OCCIDENTALIS / WESTERN REDBUD
LAGERSTROEMIA INDICA / CRAPE MYRTLE
TABEBUIA IMPETIGINOSA / PINK TRUMPET TREE
TIPUANA TIPU / TIPU TREE

SMALL ACCCENT - TREES
CERCIS OCCIDENTALIS / WESTERN REDBUD - 15' H X 15' W
LAGERSTROEMIA INDICA / CRAPE MYRTLE - 25' H X 20' W
OLEA EUROPAEA / EUROPEAN OLIVE - 20' H X 20' W
RHUS LANCEA / AFRICAN SUMAC - 25' H X 25' W

EXISTING TREE
TO REMAIN
-

SHRUBS AND GROUNDCOVER

CONCEPTUAL MITIGATION AREA - SHRUBS/ GROUNDCOVER
BACCHARIS SCRUB PLANT PALETTE
MULE FAT SCRUB PLANT PALETTE
SOUTHERN WILLOW SCRUB PLANT PALETTE

BIORETENTION - SHRUBS/ GROUNDCOVER
CAREX SPP. / SEDGE - 1' H X 1' W
CHONDROPETALUM TECTORUM / SMALL CAPE RUSH - 2' H X 2' W
ELYMUS TRITICOIDES / BEARDLESS WILD RYE - 1' H X 2' W
IVA HAYESIANA / SAN DIEGO MARSH ELDER - 2' H X 3' W
JUNCUS SPP. / RUSH - 1' H X 1' W
LEYMUS CONDENSATUS `CANYON PRINCE` / NATIVE BLUE RYE - 2' H X 3' W
MAHONIA REPENS / CREEPING MAHONIA - 2' H X 3' W

LOOP TRAIL/ OPEN SPACE - SHRUBS/ GROUNDCOVER
ACHILLEA MILLEFOLIUM / COMMON YARROW - 2' H X 2' W
AGAVE SPP. / AGAVE - 4' H X 4' W
ARTEMISIA CALIFORNICA / CALIFORNIA SAGEBRUSH - 3' H X 3' W
BACCHARIS SPP. / COYOTE BRUSH - 1' H X 3' W
CAREX PRAEGRACILIS / SLENDER SEDGE
DENDROMECON RIGIDA / BUSH POPPY - 6' H X 6' W
ENCELIA CALIFORNICA / CALIFORNIA BRITTLEBUSH - 3' H X 3' W
ERIOGONUM FASCICULATUM / CALIFORNIA BUCKWHEAT - 2' H X 3' W
FICUS PUMILA / CREEPING FIG - VINE
FREMONTODENDRON CALIFORNICUM / CALIFORNIA FLANNEL BUSH - 5' H X 10' W
GALVEZIA SPECIOSA / ISLAND BUSH SNAPDRAGON - 3' H X 3' W
HESPEROYUCCA SPP. / YUCCA - 2' H X 3' W
HETEROMELES ARBUTIFOLIA / TOYON - 5' H X 6' W
IVA HAYESIANA / SAN DIEGO MARSH ELDER - 2' H X 3' W
LEYMUS CONDENSATUS `CANYON PRINCE` / NATIVE BLUE RYE - 2' H X 3' W
LUPINUS SPP. / LUPINE - 3' H X 3' W
MAHONIA REPENS / CREEPING MAHONIA - 2' H X 3' W
MYOPORUM PARVIFOLIUM / TRAILING MYOPORUM - <1' H X SPREADING
OPUNTIA SPP. / PRICKLY PEAR - 5' H X SPREADING
PENSTEMON SPP. / PENSTEMON - 2' H X 3' W
PRUNUS ILICIFOLIA LYONII / CATALINA CHERRY - 20' H X 20' W
RHAMNUS CALIFORNICA `EVE CASE` / CALIFORNIA COFFEEBERRY - 6' H X 6' W
RHUS INTEGRIFOLIA / LEMONADE BERRY - 6' H X 10' W
SPOROBOLUS AIROIDES / ALKALI DROPSEED - 2' H X 2' W
VIBURNUM SUSPENSUM / SANDANKWA VIBURNUM - 8' H X 5' W
VIGUIERA LACINIATA / SAN DIEGO COUNTY VIGUIERA - 2' H X 3' W

STREETSCAPE - SHRUBS/ GROUNDCOVER
AGAVE SPP. / AGAVE - 4' H X 4' W
ALOE SPP. / ALOE - 2' H X 2' W
BACCHARIS PILULARIS `PIGEON POINT` / COYOTE BRUSH - 1' H X 3' W
BOUTELOUA GRACILIS / BLUE GRAMA - 2' H X 2' W
BULBINE FRUTESCENS / STALKED BULBINE - 2' H X 3' W
CISTUS X PURPUREUS / ORCHID ROCKROSE - 4' H X 5' W
DESCHAMPSIA CESPITOSA / TUFTED HAIR GRASS - 2' H X 2' W
DIANELLA TASMANICA `VARIEGATA` / FLAX LILY - 2' H X 3' W
DIETES SPP. / FORTNIGHT LILY - 3' H X 4' W
FESTUCA CALIFORNICA / CALIFORNIA FESCUE - 1' H X 2' W
FICUS PUMILA / CREEPING FIG - VINE
GREVILLEA SPP. / GREVILLEA - 3' H X 5' W
LANTANA SPP. / LANTANA - 2' H X SPREADING
LAVANDULA SPP. / LAVENDER - 2' H X 3' W
LEYMUS CONDENSATUS `CANYON PRINCE` / NATIVE BLUE RYE - 2' H X 3' W
LIRIOPE SPP. / LILY TURF - 1' H X 1' W
LOMANDRA LONGIFOLIA `BREEZE` / DWARF MAT RUSH - 2' H X 3' W
MAHONIA REPENS / CREEPING MAHONIA - 2' H X 3' W
MYOPORUM PARVIFOLIUM / MYOPORUM - <1' H X SPREADING
PHILODENDRON XANADU / XANADU PHILODENDRON - 3' H X 3' W
PHORMIUM SPP. / NEW ZEALAND FLAX - 4' H X 4' W
PITTOSPORUM SPP. / PITTOSPORUM - 10' H X 8' W
RHAMNUS CALIFORNICA `EVE CASE` / CALIFORNIA COFFEEBERRY - 6' H X 6' W
SESLERIA AUTUMNALIS / AUTUMN MOOR GRASS - 2' H X 2' W
WESTRINGIA FRUTICOSA / COAST ROSEMARY - 5' H X 8' W

ENHANCED GARDENESQUE - SHRUBS/ GROUNDCOVER
AGAVE SPP. / AGAVE - 4' H X 4' W
ALOE SPP. / ALOE - 2' H X 2' W
BOUGAINVILLEA SPP. / BOUGAINVILLEA - VINE
BOUTELOUA GRACILIS / BLUE GRAMA - 2' H X 2' W
BULBINE FRUTESCENS / STALKED BULBINE - 2' H X 3' W
CISTUS X PURPUREUS / ORCHID ROCKROSE - 4' H X 5' W
DESCHAMPSIA CESPITOSA / TUFTED HAIR GRASS - 2' H X 2' W
DIANELLA TASMANICA `VARIEGATA` / FLAX LILY - 2' H X 3' W
DIETES SPP. / FORTNIGHT LILY - 3' H X 4' W
GREVILLEA SPP. / GREVILLEA - 3' H X 5' W
LANTANA SPP. / LANTANA - 2' H X SPREADING
LAVANDULA SPP. / LAVENDER - 2' H X 3' W
LEYMUS CONDENSATUS `CANYON PRINCE` / NATIVE BLUE RYE - 2' H X 3' W
LIGUSTRUM JAPONICUM / JAPANESE PRIVET - 8' H X 6' W
LIRIOPE SPP. / LILY TURF - 1' H X 1' W
LOMANDRA LONGIFOLIA `BREEZE` / DWARF MAT RUSH - 2' H X 3' W
PENSTEMON SPP. / PENSTEMON - 2' W X 3' H
PHILODENDRON XANADU / XANADU PHILODENDRON - 3' H X 3' W
PHORMIUM SPP. / NEW ZEALAND FLAX - 4' H X 4' W
PITTOSPORUM SPP. / PITTOSPORUM - 10' H X 8' W
RHAMNUS CALIFORNICA `EVE CASE` / CALIFORNIA COFFEEBERRY - 6' H X 6' W
RHAPHIOLEPIS UMBELLATA / YEDDA HAWTHORN - 4' H X 5' W
SENECIO MANDRALISCAE / BLUE FINGER - 1' H X SPREADING
SESLERIA AUTUMNALIS / AUTUMN MOOR GRASS - 2' H X 2' W
SPOROBOLUS AIROIDES / ALKALI DROPSEED - 2' H X 2' W
WESTRINGIA FRUTICOSA / COAST ROSEMARY - 5' H X 8' W

TURF RECREATION AREA
CYNODON DACTYLON `BULLSEYE` / BULLSEYE BERMUDA GRASS - SOD
TURF TO BE (100%) SOD

AGRICULTURAL USE AREA - FRUITS AND VEGETABLES

* SEE PROJECT FINAL MITIGATION PLAN FOR ON-SITE PLANTING SPECIFICATIONS (TIMING, SPECIES, AND SIZE) WITHIN MITIGATION AREA.

** SPECIES SHALL NOT BE LOCATED WITHIN 50' OF STRUCTURES.

GENERAL NOTES

TREE SIZES: 1-GALLON CONTAINER STOCK (MITIGATION AREA), 15-GALLON (15%), 24" BOX (60%), 36" BOX (20%), 48" BOX (5%). MINIMUM TREE SIZE (OUTSIDE MITIGATION AREA) TO BE 15-GALLON.

SHRUB AND GROUNDCOVER SIZES: SEED (MITIGATION AREA ONLY), 5 GALLON (30%), 1 GALLON (70%)

REVEGETATION AND EROSION CONTROL

1. ALL AREAS TO BE DISTURBED ARE 100' OR GREATER AWAY FROM NATIVE OR NATURALIZED VEGETATION.
2. REVEGETATION OF DISTURBED SLOPES WILL CONSIST OF PLANTS FROM THE PROPOSED PLANT LIST ON THIS SHEET WITHIN 90 DAYS OF THE COMPLETION OF THE PROJECT.

BRUSH MANAGEMENT

BRUSH MANAGEMENT ZONES (BMZS) ARE NOT REQUIRED FOR THE PROJECT BECAUSE THERE IS NO UNMAINTAINED WILDLAND VEGETATION ADJACENT TO THE SITE. DEVELOPMENT SURROUNDS THE SITE ON ALL SIDES. IN CONSIDERATION OF THE PROJECT LOCATION NEAR THE BLACK MOUNTAIN OPEN SPACE AND THE POTENTIAL FOR EMBERS FROM DISTANT WILDFIRES, THE PROJECT INCORPORATES FIRE-RESISTIVE BUILDING MATERIALS AND LANDSCAPE AREAS THROUGHOUT THE DEVELOPMENT. THE PROJECT DESIGN INCLUDES HOA-MANAGED OPEN SPACE LOTS AROUND THE ENTIRE PROJECT PERIMETER. MOST OF THESE WILL CONSIST OF PAVED OR IRRIGATED LANDSCAPED AREAS, WITH IGNITION-RESISTANT LANDSCAPING. THE BIOLOGICAL MITIGATION AREA ADJACENT TO I-15 WILL ALSO INCORPORATE RELATIVELY LOW FUEL SPECIES WITH A HIGH MOISTURE CONTENT (BASED ON THE RE-ESTABLISHMENT OF A DRAINAGE THROUGH THE MITIGATION AREA AND PLANTING OF PRIMARILY WETLAND SPECIES). REQUIRED MAINTENANCE OF THIS AREA WOULD INCLUDE REMOVAL/REPLACEMENT OF DEAD OR DYING PLANTS AND REMOVAL OF NON-VEGETATIVE TRASH/DEBRIS.

MAINTENANCE NOTES

UPON COMPLETION OF PROJECT, THE MAJOR ENTRIES, AMENITY SPACES AND INTERIOR PARKWAYS AND SLOPES, INCLUDING THE RIGHT-OF-WAY TO BE MAINTAINED BY HOME OWNERS ASSOCIATION. ALL REQUIRED LANDSCAPE SHALL BE MAINTAINED CONSISTENT WITH THE LANDSCAPE STANDARDS IN A DISEASE, FREE, AND LITTER FREE CONDITION AT ALL TIMES. PRIVATE REAR AND SIDE YARDS TO BE PRIVATELY MAINTAINED BY HOMEOWNERS. SEVERE PRUNING OR "TOPPING" OF TREES IS NOT PERMITTED. PUBLIC PARK TO BE MAINTAINED BY CITY OF SAN DIEGO.

LANDSCAPE DEVELOPMENT SUMMARY CALCULATIONS

LANDSCAPE AREA: 2,012,198 SF

DESIGN STATEMENT

THE LANDSCAPE DESIGN COMPLIMENTS THE MODERN AGRARIAN ARCHITECTURAL STYLING OF THE COMMUNITY WHILE PROVIDING A SERIES OF OPEN SPACE AMENITIES TO SERVE THE RECREATIONAL NEEDS OF THE RESIDENTS. THE LANDSCAPE EVOLVES FROM A RUSTIC AND NATURALIZED AESTHETIC AT THE PROJECT EDGES TO A DROUGHT TOLERANT GARDENESQUE STYLING IN THE COMMUNITY'S CENTRAL GREEN SPACES. A SOCIAL LOOP TRAIL AND PUBLIC NEIGHBORHOOD PARK ARE ALSO PROVIDED TO SERVE RESIDENTS AND THE GREATER RANCHO PENASQUITOS COMMUNITY. A CONCEPTUAL MITIGATION AREA RUNS ALONG THE NORTH EASTERN EDGE OF THE SITE TO SUPPORT RIPARIAN HABITAT CREATION.

THE PLANT PALETTE IS COMPOSED OF DURABLE AND LOW WATER USE/DROUGHT TOLERANT PLANTS WHICH ARE EASILY MAINTAINED. THE PALETTE IS COMPOSED OF A DIVERSE RANGE OF TEXTURAL AND FLOWERING SPECIES REFLECTIVE OF THE RUSTIC MODERN AGRARIAN ARCHITECTURE. ADDITIONAL SPECIES ARE INCLUDED IN THE PALETTE WHICH DRAW REFERENCE TO THE SURROUNDING RANCHO PENASQUITOS COMMUNITY. TREES, SHRUBS, AND VINES ARE PROPOSED TO SOFTEN ARCHITECTURAL FACADES AND SITE WALLS. TREES WILL ALSO BE USED TO CREATE SHADE AND SCALE THROUGHOUT THE COMMUNITY, INCLUDING AT THE VARIOUS AMENITY SPACES AND SOCIAL LOOP TRAIL.

THE LANDSCAPE TREATMENT ADJACENT TO INTERSTATE 15 UTILIZES PLANT SPECIES INCLUDING VERTICAL EVERGREEN AND DECIDUOUS SCREENING TREES, SMALLER ACCENT SCREENING TREES AND A RANGE OF LARGE SHRUB SPECIES. TREE SPECIES ARE SPACED IN A MANNER THAT ALLOW FOR DISTANT VIEWS OF THE BLACK MOUNTAIN OPEN SPACE WHILE SCREENING THE PROJECT FOREGROUND. THE UNDERSTORY WILL BE ARRANGED IN DENSE, ORGANIC, AND NATURALISTIC MASSES TO SERVE AS A VISUAL SCREEN WHILE CREATING A SOFT EDGE ALONG THE EDGE OF THE INTERSTATE. THIS WILL BE ACCOMPLISHED UTILIZING A PLANT PALETTE CONSISTING OF THE TREE AND SCREENING SPECIES IDENTIFIED IN THE LOOPTRAIL/ OPEN SPACE PLANT PALETTES. IN ADDITION, HABITAT MITIGATION IS INCLUDED ALONG A PORTION OF THE PROJECT ADJACENT TO THE INTERSTATE. THIS MITIGATION AREA INCLUDES SOUTHERN WILLOW SCRUB AND MULE FAT SCRUB HABITATS THAT WILL PROVIDE ADDITIONAL SCREENING OF THE PROJECT AS THE HABITAT MATURES.

WATER-EFFICIENT LANDSCAPE DESIGN

PLANTING DESIGN INTENT

1. THE PLANTING DESIGN SHALL UTILIZE A VARIETY OF MEDITERRANEAN-STYLE, NATIVE, DROUGHT-TOLERANT, AND LOW-FUEL PLANT SPECIES TO CREATE LAYERS OF COLOR AND TEXTURE TO COMPLEMENT THE ARCHITECTURE AND SETTING.
2. PLANT SPECIES SHALL BE SELECTED BASED ON LOCAL CLIMATE SUITABILITY, DISEASE AND PEST RESISTANCE, AND WATER USE AS LISTED IN THE STATE OF CALIFORNIA'S MODEL WATER EFFICIENT LANDSCAPE ORDINANCE PLANT LIST, WUCOLS IV.
3. TURF/LAWN SHALL NOT EXCEED 10% OF THE LANDSCAPE AREA. TURF SPECIES SHALL BE A FESCUE-BLEND TURF GRASS TO MINIMIZE WATER CONSUMPTION.
4. NO PLANT CONSIDERED INVASIVE IN THE REGION AS LISTED BY THE CAL-IPC OR IN THE SAN DIEGO LANDSCAPE STANDARDS SHALL BE USED.
5. THE PLANTING DESIGN SHALL ALLOW FOR THE PLANTS TO REACH THEIR NATURAL, FULL-GROWN SIZE TO ELIMINATE THE NEED FOR EXCESSIVE PRUNING OR HEDGING.
6. PLANTS SHALL BE GROUPED IN HYDROZONES BASED ON WATER USE AND EXPOSURE.
7. TREE LOCATIONS SHALL BE DESIGNED FOR MAXIMUM AESTHETIC EFFECTS AND PASSIVE SOLAR BENEFITS, CREATING SUMMER SHADE AND WINTER SUN EXPOSURE.
8. ALL PLANTING AREAS SHALL RECEIVE A 3-INCH LAYER OF MULCH.
9. STREET TREES SHALL BE 24" BOX SIZE.

LANDSCAPE CONSTRUCTION NOTES

1. PROVIDE THE MINIMUM TREE SEPARATION DISTANCES FROM UTILITY TO TREE:
   - TRAFFIC SIGNAL (STOP SIGN): 20'
   - UNDERGROUND UTILITY LINE (EXCEPT SEWER): 5'
   - SEWER LINE: 10'
   - ABOVE GROUND UTILITY STRUCTURE: 10'
   - DRIVEWAY ENTRIES: 10'
   - INTERSECTIONS: 25'
2. VISIBILITY AREAS LOCATED WITHIN THE PUBLIC RIGHT-OF-WAY SHALL BE KEPT CLEAR OF ANY OBJECTS EXCEEDING 36-INCHES IN HEIGHT, AND PLANT MATERIAL EXCEEDING 24-INCHES IN HEIGHT.
3. NO TREES OR SHRUBS EXCEEDING 3-FEET IN HEIGHT AT MATURITY SHALL BE INSTALLED WITHIN 10' OF ANY SEWER AND 5' OF ANY WATER FACILITIES.
4. ALL TREES WITHIN 5'-0" OF PAVING SHALL HAVE 24" DEEP ROOT BARRIERS.
5. IF ANY REQUIRED LANDSCAPE (INCLUDING EXISTING OR NEW PLANTINGS, HARDSCAPE, LANDSCAPE FEATURES, ETC.) INDICATED ON THE APPROVED CONSTRUCTION DOCUMENTS IS DAMAGED OR REMOVED DURING DEMOLITION OR CONSTRUCTION, THE OWNER SHALL REPAIR AND/OR REPLACE IN KIND AND EQUIVALENT SIZE PER THE APPROVED DOCUMENTS TO THE SATISFACTION OF THE DEVELOPMENT SERVICES DEPARTMENT WITHIN 30 DAYS OF DAMAGE OR FINAL INSPECTION.
6. STABILIZED DECOMPOSED GRANITE SHALL BE USED IN ALL WALKWAYS AND PEDESTRIAN AREAS DESIGNATED AS D.G.. STABILIZED DG IS COMPACTED TO 95% COMPACTION AND STABILIZED WITH A BINDING POLYMER TO CREATE A FIRM AND STABLE SURFACE.
7. SEE CIVIL PLANS, SHEET C23, FOR ADDITIONAL EASEMENT INFORMATION.

REVISED Figure 9

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THE JUNIPERS
SAN DIEGO, CA

OVERALL SITE PLAN AND LANDSCAPE NOTES

JOB NO.	18-307
SCALE	AS SHOWN
DATE	10-28-2020
SHEET NO.	L1

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6.6.3.3 Central Green Spaces, Ball Fields, Park

Fire-safe vegetation management ~~is recommended~~will occur within green spaces, park, and open space areas in compliance with the guidelines in this plan.

- Green spaces, park, and open space areas will be installed by the developer/builder, and managed and maintained by the respective HOAs, master HOA, or facilities maintenance fee depending on how that entity is established.
- Flammable vegetation must be removed and prohibited.
- Grasses must be thinned and maintained annually.
- Types and spacing of trees, plants, and shrubs to comply with the criteria in this plan.
- Plant materials included in the Prohibited Plant List (Appendix I) are prohibited in this area.
- Areas shall be maintained free of downed and dead vegetation.
- Trees to be properly limbed and spaced and not of a prohibited type (identified in this plan).

6.6.3.4 Pre-Construction Structure Locations

- Vegetation management on structure locations will not be required until construction begins, unless it is located within ~~the fuel modification zone~~50 feet of a structure under construction or completed.
- Prior to issuance of a permit for any construction, grading, trenching, or installation of fences, the outermost 50 feet of each structure location (pad) is to be maintained as a Vegetation Management Zone. This entails removal of vegetation as needed.
- The remainder of the Vegetation Management Zones required for the particular lot shall be installed and maintained prior to combustible materials being brought onto any lot under construction.
- Existing flammable vegetation shall be reduced by 100% on vacant lots upon commencement of construction.
- Dead fuel, ladder fuel (fuel which can spread fire from ground to trees), and downed fuel shall be removed and trees/shrubs shall be properly limbed, pruned, and spaced per this plan.

6.6.4 Undesirable Plants

Certain plants are considered to be undesirable in the landscape due to characteristics that make them highly flammable. These characteristics can be physical (structure promotes ignition or combustion) or chemical (volatile chemicals increase flammability or combustion characteristics). The plants

included in the Prohibited Plant List (Appendix C) will not be allowed ~~in locations as directed by Appendix C, including no closer than 50 feet from the nearest structure~~in the project's landscapes.

6.6.5 Site-Wide Area Vegetation Maintenance

All ~~fuel modification area~~ landscape vegetation management shall occur as-needed for fire safety ~~, compliance with the BMZ requirements detailed in this report,~~ and as determined by the SDFRD. The project Homeowner's Association (HOA) shall be responsible for all vegetation management within the water basin and common areas throughout the project site, in compliance with the requirements detailed herein and SDFRD requirements. The HOA shall be responsible for ensuring long-term funding and ongoing compliance with all provisions of this report. The homeowners are responsible for ongoing maintenance in rear yards, from the structure to the rear property line or wall/fence. All homeowners will sign acknowledgement of maintenance requirements and the HOA will include language in the Covenants, Conditions and Restrictions (CC&Rs) outlining these restrictions. The HOA will be responsible for enforcing the landscape maintenance annually and will retain a qualified landscape inspector who will assess the site's landscapes and mitigation area and prepare a report for submittal to the SDFRD.

6.6.6 Annual Landscape Compliance Inspection

The Junipers HOA(s) shall obtain an annual landscape inspection and report from a qualified SDFRD-approved 3rd-party inspector in September of each year certifying that landscape management activities throughout the project site, including allowable removal of dead/dying plants and trash/debris from the mitigation area along I-15, have been performed pursuant to this FPP. This inspection report and certification of compliance with the FPP shall be provided to SDFRD annually by October 1st.

6.6.7 Construction-Phase Vegetation Management

Vegetation management requirements shall be implemented at commencement and throughout the construction phase. Vegetation management shall be performed pursuant to the FAHJ on all building locations prior to the start of work and prior to any import of combustible construction materials. Adequate fuel breaks shall be created around all grading, site work, and other construction activities in areas where there is flammable vegetation.

In addition to the requirements outlined above, the project will comply with the following important risk-reducing vegetation management guidelines:

- All new power lines shall be underground for fire safety during high wind conditions or during fires on a right-of-way that can expose aboveground power lines. Temporary construction power lines may be allowed in areas that have been cleared of combustible vegetation.

- A construction fire prevention plan shall be prepared to minimize the likelihood of ignitions and pre-plan the site's fire prevention, protection and response plan.
- Caution must be used not to cause erosion or ground (including slope) instability or water runoff due to vegetation removal, vegetation management, maintenance, landscaping, or irrigation. No uprooting of treated plants is necessary.

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7 EVACUATION PLAN

An evacuation plan has been prepared for the Glens with the Junipers project that indicates how the project would be anticipated to evacuate during a wildfire emergency. The evacuation plan has been prepared in coordination with SDFRD emergency operations planning documents such that it does not conflict with existing evacuation and operational pre-plans.

Early evacuation for any type of wildfire emergency at the Glens is the preferred method of providing for resident safety, consistent with the SDFRD's current approach for evacuation. As such, the Juniper's Homeowner's Association will formally adopt, practice, and implement a "Ready, Set, Go!" (International Fire Chiefs Association 2013) approach to site evacuation to be distributed to the greater Glens community. The "Ready, Set, Go!" concept is widely known and encouraged by the state of California and most fire agencies, including SDFRD. Pre-planning for emergencies, including wildfire emergencies, focuses on being prepared, having a well-defined plan, minimizing potential for errors, maintaining the site's fire protection systems, and implementing a conservative (evacuate as early as possible) approach to evacuation and site uses during periods of fire weather extremes.

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8 HOMEOWNER'S ASSOCIATION WILDFIRE EDUCATION PROGRAM

The residents of the Junipers project will be provided a proactive educational component disclosing the potential wildfire risk and this report's requirements. The project's Evacuation Plan will also be provided to each residence and regular outreach will be conducted by the HOA regarding evacuation and fire safety. This educational information must include maintaining the landscape and structural components according to the appropriate standards and embracing a "Ready, Set, Go" stance on evacuation.

Resident Registration for Emergency Notifications

It is important to note that all residents are strongly encouraged to register for AlertSanDiego at http://www.readysandiego.org/alertsandiego/. The County of San Diego, in partnership with Blackboard Connect Inc., instituted this regional notification system that is able to send telephone notifications to residents and businesses within San Diego County impacted by, or in danger of being impacted by, an emergency or disaster. This system, called AlertSanDiego, is used by emergency response personnel to notify homes and businesses at risk with information on the event and/or actions (such as evacuation, shelter in place, gas leak, missing person, etc.) they are advised to implement. The system utilizes the region's 9-1-1 database, provided by the local telephone company(ies), and thus is able to contact landline telephones whether listed or unlisted. It is TTY/TDD capable.

Because the system uses the 9-1-1 database, only landline numbers are in the system. If you have a Voice over IP (VoIP) or cellular telephone and would like to be notified over that device, or if you would like an email notification, you must register those telephone numbers and/or email address for use by the system to receive voice, text, and email messages.

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9 CONCLUSION

This FPP has been prepared for the Junipers project. It is submitted in compliance with SDFRD's Fire Code. The recommendations in this document meet fire safety, building design elements, infrastructure, fuel management/modification, and landscaping recommendations of the applicable City codes and SDFRD policies. The recommendations provided in this FPP have been designed specifically for the proposed construction of structures within the vicinity of a fire hazard severity zone on the Junipers project site. The project site's fire protection system includes a redundant layering of protection materials, measures, and methods that have been shown through post-fire damage assessments to reduce risk.

Ignition-resistant landscaping would occur throughout the site. Brush Management is not required on the project's perimeter as there are no wildland fuels directly adjacent to the proposed residences. However, the site's landscaping, including perimeter open spaces, will be maintained throughout each year and an inspection will be funded by the HOA to ensure compliance with this FPP and fire safe plant palettes, planting densities and spacing. The site's susceptibility to wildfire ignitions would be reduced post-project compared to its current condition.

The site improvements are designed to facilitate emergency apparatus and personnel access to all portions of the site. Roads and driveways meeting the code width standards and including fire engine turnouts and turnarounds provide access to within 150 feet of all sides of every building. Water availability and flow via the San Diego Municipal Water District will be consistent with SDFRD requirements including fire flow and hydrant distribution. These features, along with the ignition-resistance of all buildings, the interior sprinklers, and the pre-planning, training and awareness, will assist responding firefighters through prevention, protection and suppression capabilities.

Ultimately, it is the intent of this FPP to recommend the construction of structures that are defensible from wildfire and, in turn, do not represent significant threat of ignition source for adjacent communities. During extreme fire conditions, there are no guarantees that a given structure will not burn. Fire safety measures identified in this report are designed to reduce the likelihood that fire would impinge upon the proposed structures. Wildfires may occur in the area that could damage property or harm persons. However, implementation of the recommendations in this FPP will substantially reduce the risk associated with this project's wildfire hazard vicinity location.

This FPP does not provide a guarantee that all residents and visitors will be safe at all times because of the advanced fire protection features it requires. There are many variables that may influence overall safety. This FPP provides requirements and recommendations for implementation of the

latest fire protection features that have proven to result in reduced wildfire related risk and hazard. Even then, fire can compromise the fire protection features through various, unpredictable ways. The goal is to reduce the likelihood that the system is compromised through implementation of the elements of this FPP and a regular occurring maintenance program.

It is recommended that the Junipers community maintains a conservative approach to fire safety. This approach must include maintaining the landscape and structural components according to the appropriate standards and embracing a "Ready, Set, Go!" stance on evacuation. This project is not labeled a shelter in place community. However, the fire agencies and/or law enforcement officials may, during an emergency, as they would for any new community provided the layers of fire protection as the Junipers, determine that it is safer to temporarily refuge residents on the site than to evacuate. When an evacuation is ordered, it will occur according to pre-established evacuation decision points (as detailed in the Evacuation Plan), or as soon as notice to evacuate is received, which may vary depending on many environmental and other factors. Fire is a dynamic and somewhat unpredictable occurrence and it is important for anyone living ~~at the WUI to~~in areas influenced by wildland fires to educate themselves on practices that will improve safety.

The goal of the fire protection features, both required and those offered above and beyond the codes, provided for the Junipers residential project is to provide the structures with the ability to survive a wildland fire with little intervention of firefighting forces. Preventing ignition to structures results in reduction of the exposure of firefighters and residents to hazards that threaten personal safety. It will also reduce property damage and losses. Mitigating ignition hazards and fire spread potential reduces the threat to structures and can help the fire department optimize the deployment of personnel and apparatus during a wildfire. ~~The analysis in this Fire Protection Plan provides support and justifications for acceptance of a reduced brush management zone for this Project based on the site specific fire environment.~~

10 LIMITATIONS

This FPP does not provide guarantee that residents and visitors will be safe at all times because of the fire protection features it requires. There are many variables that may influence overall safety. This report provides requirements and recommendations for implementation of the latest fire protection features that have proven to result in reduced wildfire related risk and hazard.

For maximum benefit, the developer, contractors, engineers, and architects are responsible for proper implementation of the concepts and requirements set forth in this report. Homeowners are responsible to maintain their structures and lots as required by this report, the applicable fire code and the SDFRD.

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APPENDIX A

Photograph Log

Appendix A – The Junipers Project

Representative Site Photographs

1. Panoramic view of the east edge (red arrow) of project site, located along west side of Interstate 15. The grass-ice plant covered Caltrans ROW presents the fire hazard along this edge of the property. This fuel type was modeled in BehavePlus scenarios #1 & #2.

2. Photograph shows coastal sage scrub fuel type and fuel loading (red arrow) found on south and west facing slopes of Black Mountain Open Space Park. This Project-adjacent fuel type was modeled in BehavePlus scenarios #3 & #4.

3. Photograph shows chaparral fuel type and fuel loading (red arrow) found on north and east facing slopes of the Park. This Project-adjacent fuel type was also modeled in BehavePlus scenarios #3 & #4.

Photographs were taken on October 18, 2017

Appendix A – The Junipers Project

Representative Site Photographs

4. View of grasses, weeds, and ornamental trees growing throughout the project site that used to be a part of the golffairways.

5. Another view facing southwest of vegetation types on the site, none of which are native California habitats.

6. View facing southeast of vegetation, including ornamental trees, grasses, and weeds on the site.

7. Photograph showing one of many dirt roads throughout the project site.

Photographs were taken on October 18, 2017

Appendix A – The Junipers Project

Representative Site Photographs

8. Photograph showing abandoned fairway that is being mowed for 200-foot wide fuel modification zone along west edge of property and adjacent to residential community.

9. Photograph showing another view of fuel modification being conducted along west edge of property.

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Photographs were taken on October 18, 2017

APPENDIX B

Fire Behavior Modeling for the Junipers Project

APPENDIX B
Fire Behavior Modeling for the Junipers Project

BEHAVEPLUS FIRE BEHAVIOR MODELING

Fire behavior modeling has been used by researchers for approximately 50+ years to predict how a fire will move through a given landscape (Linn 2003). The models have had varied complexities and applications throughout the years. One model has become the most widely used as the industry standard for predicting fire behavior on a given landscape. That model, known as "BEHAVE", was developed by the U. S. Government (USDA Forest Service, Rocky Mountain Research Station) and has been in use since 1984. Since that time, it has undergone continued research, improvements, and refinement. The current version, BehavePlus 5.0.5, includes the latest updates incorporating years of research and testing. Numerous studies have been completed testing the validity of the fire behavior models' ability to predict fire behavior given site specific inputs. One of the most successful ways the model has been improved has been through post-wildfire modeling (Brown 1972, Lawson 1972, Sneeuwjagt and Frandsen 1977, Andrews 1980, Brown 1982, Rothermel and Rinehart 1983, Bushey 1985, McAlpine and Xanthopoulos 1989, Grabner, et. al. 1994, Marsden-Smedley and Catchpole 1995, Grabner 1996, Alexander 1998, Grabner et al. 2001, Arca et al. 2005). In this type of study, Behave is used to model fire behavior based on pre-fire conditions in an area that recently burned. Real-world fire behavior, documented during the wildfire, can then be compared to the prediction results of Behave and refinements to the fuel models incorporated, retested, and so on.

Fire behavior modeling includes a high level of analysis and information detail to arrive at reasonably accurate representations of how wildfire would move through available fuels on a given site. Fire behavior calculations are based on site-specific fuel characteristics supported by fire science research that analyzes heat transfer related to specific fire behavior. To objectively predict flame lengths, spread rates, and fireline intensities, the BehavePlus 5.0.5 fire behavior modeling system was applied using predominant fuel characteristics, slope percentages, and two representative fuel models observed on site.

Predicting wildland fire behavior is not an exact science. As such, the movement of a fire will likely never be fully predictable, especially considering the variations in weather and the limits of weather forecasting. Nevertheless, practiced and experienced judgment, coupled with a validated fire behavior modeling system, results in useful and accurate fire prevention planning information.

To be used effectively, the basic assumptions and limitations of BehavePlus must be understood.

- First, it must be realized that the fire model describes fire behavior only in the flaming front. The primary driving force in the predictive calculations is dead fuels less than one-quarter inch in diameter. These are the fine fuels that carry fire. Fuels greater than one inch have little effect while fuels greater than three inches have no effect on fire behavior.

- Second, the model bases calculations and descriptions on a wildfire spreading through surface fuels that are within six feet of the ground and contiguous to the ground. Surface fuels are often classified as grass, brush, litter, or slash.
- Third, the software assumes that weather and topography are uniform. However, because wildfires almost always burn under non-uniform conditions, length of projection period and choice of fuel model must be carefully considered to obtain useful predictions.
- Fourth, the BehavePlus fire behavior computer modeling system was not intended for determining sufficient fuel modification zone widths. However, it does provide the average length of the flames, which is a key element for determining "defensible space" distances for minimizing structure ignition.

Although BehavePlus has some limitations, it can still provide valuable fire behavior predictions which can be used as a tool in the decision-making process. In order to make reliable estimates of fire behavior, one must understand the relationship of fuels to the fire environment and be able to recognize the variations in these fuels. Natural fuels are made up of the various components of vegetation, both live and dead, that occur on a site. The type and quantity will depend upon the soil, climate, geographic features, and the fire history of the site. The major fuel groups of grass, shrub, trees, and slash are defined by their constituent types and quantities of litter and duff layers, dead woody material, grasses and forbs, shrubs, regeneration, and trees. Fire behavior can be predicted largely by analyzing the characteristics of these fuels. Fire behavior is affected by seven principal fuel characteristics: fuel loading, size and shape, compactness, horizontal continuity, vertical arrangement, moisture content, and chemical properties.

The seven fuel characteristics help define the 13 standard fire behavior fuel models (Anderson 1982) and the five custom fuel models developed for Southern California (Weise 1997). According to the model classifications, fuel models used in BehavePlus have been classified into four groups, based upon fuel loading (tons/acre), fuel height, and surface to volume ratio. Observation of the fuels in the field (on site) determines which fuel models should be applied in BehavePlus. The following describes the distribution of fuel models among general vegetation types for the standard 13 fuel models and the custom Southern California fuel models:

- Grasses Fuel Models 1 through 3
- Brush Fuel Models 4 through 7, SCAL 14 through 18
- Timber Fuel Models 8 through 10
- Logging Slash Fuel Models 11 through 13

In addition, the aforementioned fuel characteristics were utilized in the recent development of 40 new fire behavior fuel models (Scott and Burgan 2005) developed for use in BehavePlus modeling efforts. These new models attempt to improve the accuracy of the standard 13 fuel

models outside of severe fire season conditions, and to allow for the simulation of fuel treatment prescriptions. The following describes the distribution of fuel models among general vegetation types for the new 40 fuel models:

- Non-Burnable Models NB1, NB2, NB3, NB8, NB9
- Grass Models GR1 through GR9
- Grass-shrub Models GS1 through GS4
- Shrub Models SH1 through SH9
- Timber-understory Models TU1 through TU5
- Timber litter Models TL1 through TL9
- Slash blowdown Models SB1 through SB4

BehavePlus software was used in the development of the Juniper Project (Proposed Project) Fire Protection Plan (FPP) in order to evaluate potential fire behavior for the Proposed Project site. Existing site conditions were evaluated, and local weather data was incorporated into the BehavePlus modeling runs.

BEHAVEPLUS FUEL MODEL INPUTS

Dudek utilized BehavePlus software to evaluate fire behavior potential for the project site. Four fire scenarios were evaluated, including two summer, onshore weather conditions and two more extreme fall, offshore weather conditions. BehavePlus software requires site-specific variables for surface fire spread analysis, including fuel type, fuel moisture, wind speed, and slope data. The output variables used in this analysis include flame length (feet), rate of spread (feet/minute), fireline intensity (BTU/feet/second), and spotting distance (miles). The following provides a description of the input variables used in processing the BehavePlus models for the Proposed Project site. In addition, data sources are cited and any assumptions made during the modeling process are described.

Vegetation/Fuel Models

To support the fire behavior modeling efforts conducted for this FPP, the different vegetation types observed adjacent to the site were classified into the aforementioned numeric fuel models. Dudek analyzed fire behavior for the fuels along the eastern edge (along I-15) of the property and on the east facing slopes of Black Mountain, which are remote from the western edge of the property. As is customary for this type of analysis, the terrain and fuels directly adjacent to the property are used for determining flame lengths and fire spread. It is these fuels that would have the potential to affect the project's structures from a radiant and convective heat perspective as well as from direct flame impingement. The short, sparse grasses and ice plant along I-15 right-of-way are considered

adjacent to the structures in the development. However, the chaparral-coastal sage scrub fuel beds to the west of the Proposed Project site are separated by the Glens development. All fuels and terrain beyond that distance can produce flying embers that may affect the project, but defenses have been built into the structures to prevent ember penetration. Table 1 provides a description of the three fuel models observed in the vicinity of the site that were subsequently used in the analysis for this project. Modeled areas include the non-native grasslands (Fuel Model Gr1) to the east of the project site. Coastal sage scrub (SCAL 18) and chaparral (Sh5) occur on the east facing slopes on Black Mountain to the west of the site. A total of four fire modeling scenarios were completed for the Project area. These sites were selected based on the strong likelihood of fire approaching from these directions during a Santa Ana wind-driven fire event (fire scenarios 1 and 2) and an on-shore weather pattern (fire scenarios 3 and 4).

Table 1
Existing Fuel Model Characteristics

Fuel Model Assignment	Vegetation Description	Location	Fuel Bed Depth (Feet)
Gr1	Short, Sparse Dry Climate Grass	More prevalent on east side of property along I-15 corridor intermixed with ice plant.	<1.0 ft.
SCAL 18	Sagebrush/buckwheat	Fuel type is concentrated on the dryer south and west facing slopes of the Black Mountain Open Space Park.	3.0 ft.
Sh5	High Load Dry Climate Shrub	Fuel type is found on the north and east side of Black Mountain.	8.0 ft.

Topography

Slope is a measure of angle in degrees from horizontal and can be presented in units of degrees or percent. Slope is important in fire behavior analysis as it affects the exposure of fuel beds. Additionally, fire burning uphill spreads faster than those burning on flat terrain or downhill as uphill vegetation is pre-heated and dried in advance of the flaming front, resulting in faster ignition rates. Slope values ranging from 4% to 30% were measured around the perimeter of the proposed project site from U.S. Geological Survey (USGS) topographic maps.

Weather Analysis

The County of San Diego, Department of Planning and Land Use (County of San Diego 2010) developed guidelines to identify acceptable fire behavior modeling weather inputs for fire conditions during summer months and Santa Ana fire weather patterns. The County analyzed and processed fire weather from Remote Automated Weather Stations (RAWS) between April 15 to December 31 in order to represent the general limits of the fire season. Data provided by the

County's analysis included temperature, relative humidity, and sustained wind speed and is categorized by weather zone, including Maritime, Coastal, Transitional, Interior, and Desert.

As identified in the County's guidelines, Dudek utilized the Fine Dead Fuel Moisture (FDFM) tool within BehavePlus (v. 5.0.5) fire behavior modeling software package to determine potential fuel moisture values to be input into the BehavePlus runs. The temperature, relative humidity, and wind speed data for the Transitional (County of San Diego 2010) weather zone were utilized for this FPP based on the project's location. Reference fuel moistures were calculated in the FDFM tool and were based on site-specific topographic data inputs. Table 2 summarizes the FDFM inputs and the resulting fine dead fuel moisture values.

Table 2
BehavePlus Fine Dead Fuel Moisture Calculation

Variable	Summer Weather (50th Percentile)	Peak Weather (97th Percentile)
Dry Bulb Temperature	90 -109 deg. F	90 -109 deg. F
Relative Humidity	10 - 14 %	5 -9 %
Reference Fuel Moisture	2 %	1 %
Month	May June July	May June July
Time of Day	12:00 - 13:59	12:00 - 13:59
Elevation Difference	Level (within 1,000 ft.)	Level (within 1,000 ft.)
Slope	30% +	30% +
Aspect	East	East
Fuel Shading	Exposed (< and > 50% shading)	Exposed (< and > 50% shading)
Fuel Moisture Correction	1 %	1 %
Fine Dead Fuel Moisture	3 %	2 %

The weather variables presented in Table 3 are based on the calculated FDFM (Table 2) and the wind speed values identified in the County of San Diego standards.

Table 3
Weather Variables From County of San Diego Standards

Variable	Summer Weather (50th Percentile)	Peak Weather (97th Percentile)
1h Moisture	3%	2%
10h Moisture	6%	3%
100h Moisture	8%	5%
Live Herbaceous Moisture	60%	30%
Live Woody Moisture	90%	50%
20-foot Wind Speed	19 mph	41 mph

mph = miles per hour

In addition to the analyzing weather conditions using the County of San Diego's guidelines, an analysis of weather and fuel moisture variables using RAWS data was conducted to determine potential worst-case weather conditions under Summer and Peak scenarios. Data was retrieved from the Camp Elliott RAWS, which is located approximately 9 miles to the south of the project site. The following summarizes the location and available data ranges for the Camp Elliott RAWS:

- Latitude: 32.85917
- Longitude: -117.1056
- Elevation: 539 feet
- Data years: 2007–2016.

The Camp Elliott RAWS data was processed with the FireFamily Plus v. 4.1.0 (FireFamily Plus 2008) software package to determine Summer (50th percentile) and Peak (97th percentile) weather conditions Table 4 summarizes the 50th and 97th percentile weather values derived from the Camp Elliott RAWS data analysis.

Table 4
Weather Variables From Camp Elliott RAWS Analysis

Variable	Summer Weather (50th Percentile)	Peak Weather (97th Percentile)
1h Moisture	8%	2%
10h Moisture	9%	3%
100h Moisture	16%	9%
Live Herbaceous Moisture	-*	-*
Live Woody Moisture	109%	59%
20-foot Wind Speed	4 mph	17 mph

Note:
* Live Herbaceous Moisture values for 50th and 97th percentile weather scenarios were less than 30% and are therefore considered completely cured and accounted for in the dead fuel component of the fuel models.

To conservatively analyze potential fire behavior for the site, the weather variables derived from the County of San Diego standards were used in the fire behavior modeling efforts conducted in support of this FPP as they presented lower fuel moisture values and higher wind speed values. These variables used in the Fire Behavior Modeling are presented in Table 5.

Table 5
Variables Used for Fire Behavior Modeling Efforts

Variable	Summer Weather Condition	Peak Weather Condition (offshore/Santa Ana Condition)
Fuel Models	Sh5, SCAL 18	Gr1
1h Moisture	3%	2%

Table 5
Variables Used for Fire Behavior Modeling Efforts

Variable	Summer Weather Condition	Peak Weather Condition (offshore/Santa Ana Condition)
10h Moisture	6%	3%
100h Moisture	8%	5%
Live Herbaceous Moisture	60%	30%
Live Woody Moisture	90%	50%
20-foot Wind Speed (upslope/downslope)	19 mph	41 mph
Wind Direction	225°	45°
Wind Adjustment Factor (BehavePlus)	0.6	0.4

Fire Modeling Scenarios

Based on slope and fuel conditions, four different fire scenarios were evaluated for the project site, including:

- **Scenario 1:** 97th percentile weather with off-shore wind and a fall fire burning in short, sparse grasses intermixed with ice plant along the eastern edge of the project site. The terrain is relatively flat (8% slope) with potential ignition sources from vehicles travelling on I-15. Fire in this area would be moving slightly uphill toward the Proposed Project.
- **Scenario 2:** 97th percentile weather with off-shore wind and a fall fire burning in short, sparse grasses intermixed with ice plant in gentle terrain (4% slope) along the southeastern edge of the project site. Potential ignition sources could be from vehicles travelling on I-15. Fire in this area would be moving slightly uphill toward the Proposed Project.
- **Scenario 3:** 50th percentile weather with on-shore wind and a summer fire burning in chaparral and sage scrub shrub cover adjacent to the southwestern edge of the project site. This area is steep (up to 30% slope) with potential ignition sources from a wildfire that originates in the Black Mountain Open Space Park to the west of the Proposed Project. Fire in this area would be moving downhill toward the Glens Development before reaching the project site.
- **Scenario 4:** 50th percentile weather with on-shore wind and a summer fire burning in chaparral and sage scrub shrub cover adjacent to the western edge of the project site. This area is moderately steep (15%) to very steep (30% slope) with potential ignition sources from a wildfire that originates in the Black Mountain Open Space Park to the west of the Proposed Project. Fire in this area would be moving downhill toward the Glens Development before reaching the project site.

Fire Behavior Modeling Effort

As mentioned, the BehavePlus fire behavior modeling software package was utilized in evaluating anticipated fire behavior adjacent to the Proposed Project site. Four focused analyses were completed, each assuming worst-case fire weather conditions for a fire approaching the project site from the west and east. Four fire behavior variables were selected as outputs from the BehavePlus analysis conducted for the project site, and include flame length (feet), rate of spread (mph), fireline intensity (BTU/feet/second), and surface fire spotting distance (miles). The aforementioned fire behavior variables are an important component in understanding fire risk and fire agency response capabilities. Flame length, the length of the flame of a spreading surface fire within the flaming front, is measured from midway in the active flaming combustion zone to the average tip of the flames (Andrews, Bevins, and Seli 2008). Fireline intensity is a measure of heat output from the flaming front, and also affects the potential for a surface fire to transition to a crown fire. Fire spread rate represents the speed at which the fire progresses through surface fuels and is another important variable in initial attack and fire suppression efforts (Rothermel and Rinehart 1983). Spotting distance is the distance a firebrand or ember can travel down wind and ignite receptive fuel beds. The information in Table 6 presents an interpretation of the outputs for two fire behavior variables as related to fire suppression efforts. The results of fire behavior modeling efforts are presented in Table 7. Identification of modeling run locations is presented graphically in Figure 5 of the FPP.

As presented in Table 7, wildfire behavior in non-treated chaparral and Coastal sage scrub, presented as a Fuel Models SH5 and SCAL18, respectively, represent the most extreme conditions, varying with different wind speeds. In this case, flame lengths can be expected to reach up to approximately 23 to 25 feet with 19 mph sustained wind speeds. Spread rates range from 1.1 mph to 2.2 mph. Spotting distances, where airborne embers can ignite new fires downwind of the initial fire, range from less than 1.0 mile. Whereas, a grass fire, which was modeled under an off-shore breeze, has a flame length of 3.1 feet with a low rate of spread of less than 1 mph. Spotting distances are approximately 0.3 mile.

Table 6
Fire Suppression Interpretation

Flame Length (ft)	Fireline Intensity (Btu/ft/s)	Interpretations
Under 4 feet	Under 100 BTU/ft/s	Fires can generally be attacked at the head or flanks by persons using hand tools. Hand line should hold the fire.
4 to 8 feet	100-500 BTU/ft/s	Fires are too intense for direct attack on the head by persons using hand tools. Hand line cannot be relied on to hold the fire. Equipment such as dozers, pumpers, and retardant aircraft can be effective.
8 to 11 feet	500-1000 BTU/ft/s	Fires may present serious control problems -- torching out, crowning, and spotting. Control efforts at the fire head will probably be ineffective.

Table 6
Fire Suppression Interpretation

Flame Length (ft)	Fireline Intensity (Btu/ft/s)	Interpretations
Over 11 feet	Over 1000 BTU/ft/s	Crowning, spotting, and major fire runs are probable. Control efforts at head of fire are ineffective.

Table 7
BehavePlus Fire Behavior Modeling Results

Fire Scenario	Flame Length (feet)	Spread Rate (mph)	Fireline Intensity (Btu/ft/s)	Spot Fire (miles)
Scenario 1: grass-ice plant fuels on east facing slope, 8% upslope, Peak weather				
Sparse Grass (Gr1)	3.1	0.5	67	0.3
Scenario 2: grass-ice plant fuels on east facing slope, 4% upslope, Peak weather				
Sparse Grass (Gr1)	3.1	0.5	67	0.3
Scenario 3: Mixed chaparral & sage scrub fuels on north/south facing slopes, 25%-30%% downslope; Summer weather				
Chaparral (Sh5)	23.2	2.0	5,296	0.6
Coastal Sage Scrub (SCAL 18)	24.7	1.0	6,060	0.7
Scenario 4: Mixed chaparral & sage scrub & chaparral on north/south facing slopes, 15%-30% downslope; Summer weather				
Chaparral (Sh5)	23.5	2.1	5,403	0.6
Coastal Sage Scrub (SCAL 18)	25.0	1.1	6,205	0.7

Note:
** It should be noted that the results presented in Table 7 depict values based on inputs to the BehavePlus software. Changes in slope, weather, or pockets of different fuel types are not accounted for in this analysis. Further, this modeling analysis assumes a correlation between the project site vegetation and fuel model characteristics. Model results should be used as a basis for planning only, as actual fire behavior for a given location will be affected by many factors, including unique weather patterns, small-scale topographic variations, or changing vegetation patterns.

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APPENDIX C

Prohibited Plant List

PROHIBITED 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.

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

** San Diego County native species

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