APPENDIX 3.1.1-3

Wildland Fire Evacuation Plan

DRAFT

WILDLAND FIRE EVACUATION PLAN
for
Otay Ranch
Village 14 and Planning Areas 16/19

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1 QUICK REFERENCE – WILDLAND FIRE EVACUATION PLAN

NOTE: Pages 1 through 3 are to be the focus of the homeowner's evacuation educational outreach efforts. These pages will be available on the community's homeowners' association (HOA) website. The remainder of this evacuation plan provides more detailed analysis and background information, including this plan's consistency with standard San Diego County Office of Emergency Services (OES) evacuation planning and the existing Jamul Community Protection Plan (JCPP) Evacuation Plan.

Evacuation is a process by which people are moved from a place where there is immediate or anticipated danger, to a safer place, and offered temporary shelter facilities. When the threat passes, evacuees are able to return to their normal activities or to make suitable alternative arrangements.

Figure 1 indicates the emergency evacuation routes available to the Otay Ranch Village 14 and Planning Areas 16/19 (Proposed Project) community. The figure highlights the community's interior roads, primary access points and primary roads, and major traffic corridors leading to off-site areas.

The available evacuation routes for the residents and guests of the Proposed Project community are as follows:

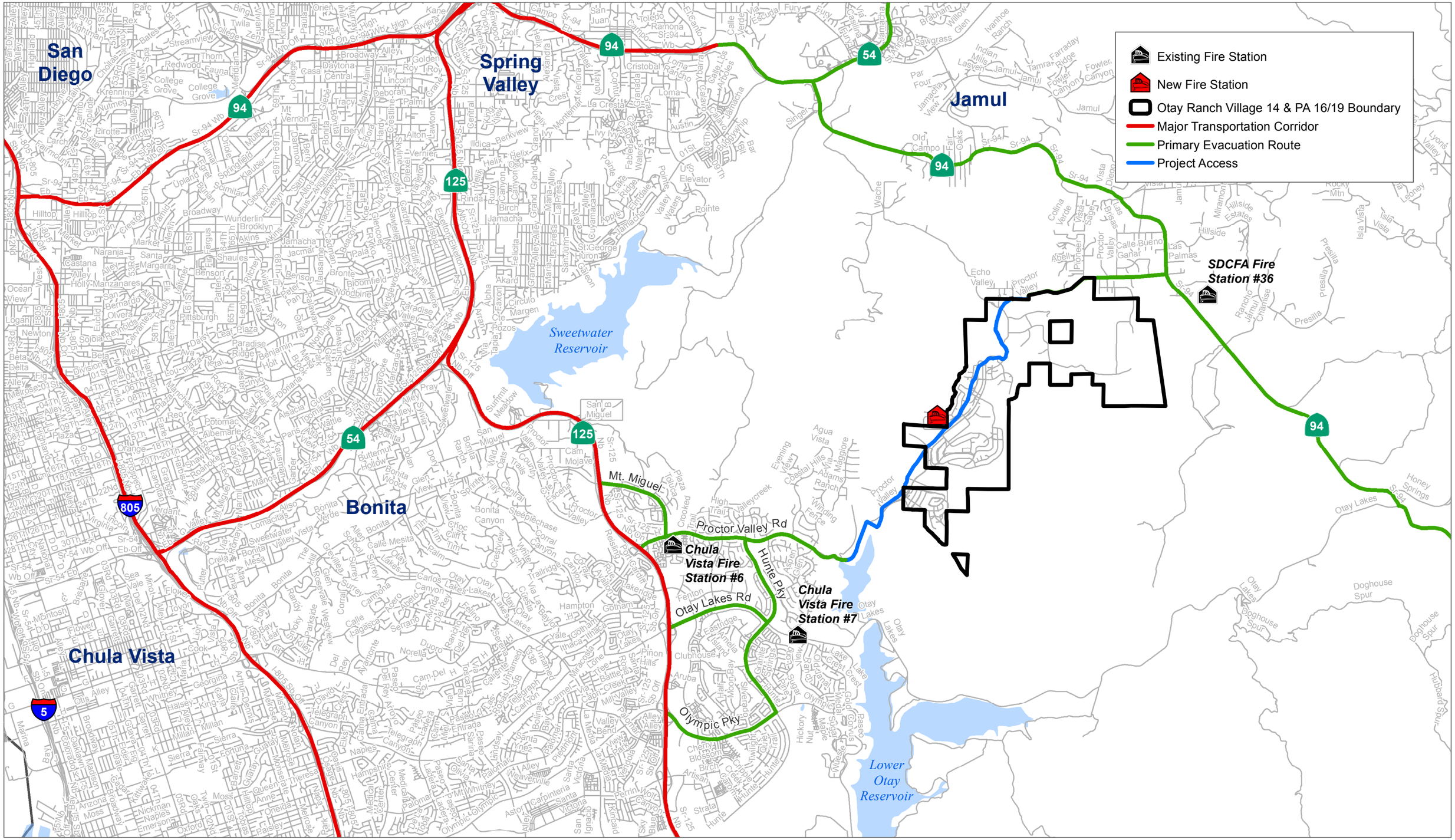
1. **Egress to the south (and west) via Proctor Valley Road** – This is the primary Village 14 access road and connects with East H Street, which offers travel options to the west and south on State Route (SR) 125 into Chula Vista or to the north on SR-125 into Bonita and SR-54. SR-54 also provides travel options to the north towards Lemon Grove-Spring Valley or southwest toward National City. Likely neighborhoods using this access during an evacuation include: southern and central portions of Village 14, unless threat is to the east/northeast of the Proposed Project, in which case, all evacuations would occur to the south (and west).
2. **Egress to the north on Proctor Valley Road** – This secondary access road provides a route to Campo Road (SR-94) in Jamul, at which point travel to the north into Rancho San Diego/Casa de Oro or south to Dulzura/Campo is possible. Likely neighborhoods using this access road during an evacuation are northern portion of Otay Ranch Village 14 and Planning Areas 16/19, unless threat is to the east/northeast of the Proposed Project.

The Proposed Project community residents would be strongly encouraged to register with Reverse 911 and Alert San Diego. Further, residents would be encouraged to form volunteer Neighborhood Emergency Response Teams with Community Emergency Response Team (CERT) experience. In addition, the community HOA would organize annual evacuation public

outreach as well as maintain a fire safe page on the community website, including this Emergency Evacuation Plan and links to important citizen preparedness information.

This Wildland Fire Evacuation Plan is prepared specifically for the Proposed Project community and focuses on wildland fire evacuations, although many of the concepts and protocols are applicable to other emergency situations. Ultimately, this plan would be used by the HOA to educate community residents as to their evacuation responsibilities and recommended approach during wildfires and other similar emergencies.

It must be recognized that wildfire and other emergencies are often fluid events and that the need for evacuations are typically determined by on-scene first responders or by a collaboration between first responders and designated emergency response teams, including OES and the Incident Command (IC) established for larger emergency events. As such, and consistent with all emergency evacuation plans, this emergency evacuation plan is to be considered a tool that supports existing pre-plans and provides for citizens who are familiar with the evacuation protocol, but is subservient to emergency event-specific directives provided by agencies managing the event.



SOURCE: SANDAG, 2017

DUDEK

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FIGURE 1

Fire Evacuation Map

Otay Ranch Village 14 and Planning Areas 16/19 Wildland Fire Evacuation Plan

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2 BACKGROUND

This Proposed Project Wildland Fire Evacuation Plan was prepared based on the Unified San Diego County Emergency Services Organization and County of San Diego Operational Area (OA) Emergency Operations Plan (EOP) – Evacuation Annex. It also incorporates key information from the JCPP (Jamul Disaster Team 2006), Evacuation Plan Appendix.

To establish a framework for implementing well-coordinated evacuations, the County of San Diego OES developed an Evacuation Annex as part of the area EOP (County of San Diego 2014). Large-scale evacuations are complex, multijurisdictional efforts that require coordination between many agencies and organizations. Emergency services and other public safety organizations play key roles in ensuring that an evacuation is effective, efficient, and safe.

Evacuation during a wildfire is not necessarily directed by the fire agency, except in specific areas where fire personnel may enact evacuations on scene. The San Diego County Sheriff's Department, California Highway Patrol (CHP), and other cooperating law enforcement agencies have primary responsibility for evacuations. These agencies work closely within the unified IC system, with the county OES, and responding fire department personnel who assess fire behavior and spread, which should ultimately guide evacuation decisions. To that end, San Diego County Fire Authority (SDCFA), law enforcement, Public Works, Planning, Emergency Services Departments, and California Department of Transportation (Caltrans), amongst others, have worked with a county pre-fire mitigation task force to address wildland fire evacuation planning for San Diego County.

Every evacuation scenario includes some level of unique challenges, constraints, and fluid conditions that require interpretation, fast decision making, and alternatives. For example, one roadway incident that results in blockage of evacuating vehicles may require short-term or long-term changes to the evacuation process. Risk is considered high when evacuees are evacuating late and fire encroachment is imminent. This hypothetical scenario highlights the importance of continuing to train responding agencies, model various scenarios, educate the public, provide contingency plans, and take a very conservative approach to evacuation decision timelines.

Equally as important, the evacuation procedures should be regularly updated with lessons learned from actual evacuation events, as they were following the 2003, 2007, and 2014 San Diego County fires. The authors of this evacuation plan recommend that occasional updates, especially following lessons learned from actual incidents, as new technologies become available that would aid in the evacuation process, and as changing landscapes and development patterns occur within and adjacent the Project Area that may impact how evacuation is accomplished. At the time of this plan's preparation, there is no encompassing emergency evacuation plan

available for the Proctor Valley region. There is a JCPP prepared by the Jamul Disaster Team in coordination with the County of San Diego (County of San Diego 2006) that provides a community risk assessment and an evacuation plan.

This Proposed Project Wildland Fire Evacuation Plan is consistent with JCPP Evacuation Plan and San Diego County evacuation planning standards and can be integrated into a regional evacuation plan when and if the area officials and stakeholders (California Department of Forestry and Fire Protection (CAL FIRE), SDCFA, OES, San Diego Sheriff's Department (SDSD), and others) complete one.

As demonstrated during large and localized evacuations occurring throughout San Diego County over the last 15 years, an important component to successful evacuation is early assessment of the situation and early notification via managed evacuation declarations. San Diego County utilizes early warning and informational programs to help with these important factors. Among the methods available to citizens for emergency information are radio, television, social media/internet, neighborhood patrol car, and Aerial Support to Regional Enforcement Agencies helicopter (as available) public address notifications, and Reverse 911.

3 SAN DIEGO COUNTY EVACUATION PLANNING SUMMARY

This Wildland Fire Evacuation Plan incorporates concepts and protocols practiced throughout San Diego County. The San Diego County Evacuation Annex (County of San Diego 2014) follows basic protocols set forth in the County's Operation Area EOP and the California Master Mutual Aid Agreement, which dictate who is responsible for an evacuation effort and how regional resources will be requested and coordinated.

First responders are responsible for determining initial protective actions before emergency operation centers (EOCs) and emergency management personnel have an opportunity to convene and gain situational awareness. Initial protective actions are shared/communicated to local EOCs and necessary support agencies as soon as possible to ensure an effective, coordinated evacuation.

During an evacuation effort, the designated County Evacuation Coordinator is the Sheriff, who is also the Law Enforcement Coordinator. The Evacuation Coordinator would be assisted by other law enforcement and support agencies. Law enforcement agencies, highway/road/street departments, and public and private transportation providers would conduct evacuation operations. Procurement, regulation, and allocation of resources would be accomplished by those designated. Evacuation operations would be conducted by the following agencies:

- County of SDSD
- Fire and Rescue
- County Health and Human Services Agency
- Department of Animal Services (DAS)
- Department of Planning and Development Services
- Department of Environmental Health
- Department of General Services
- Department of Public Works
- Department of Agriculture, Weights, and Measures
- Department of Parks and Recreation

The following information has been largely taken verbatim from the San Diego County Evacuation Annex.

3.1 Evacuation Objectives

The overall objectives of emergency evacuation operations and notifications are to:

- Expedite the movement of persons from hazardous areas;
- Institute access control measures to prevent unauthorized persons from entering vacated, or partially vacated areas;
- Provide for evacuation to appropriate transportation points, evacuation points, and shelters;
- Provide adequate means of transportation for persons with disabilities, the elderly, other persons with access and functional needs, and persons without vehicles;
- Provide for the procurement, allocation, and use of necessary transportation and law enforcement resources by means of mutual aid or other agreements;
- Control evacuation traffic;
- Account for the needs of individuals with household pets and service animals prior to, during, and following a major disaster or emergency;
- Provide initial notification, ongoing, and re-entry communications to the public through the Joint Information Center (JIC); and
- Assure the safe re-entry of the evacuated persons.

The San Diego Sheriff's Department (SDSD) is the lead agency for evacuations of the unincorporated areas of San Diego County, including the Proposed Project. The SDSD, as part of a Unified Command, assesses and evaluates the need for evacuations, and orders evacuations according to established procedures. Additionally, as part of the Unified Command, the SDSD identifies available and appropriate evacuation routes and coordinate evacuation traffic management with the California Department of Transportation (Caltrans), the California Highway Patrol (CHP), other supporting agencies, and jurisdictions.

The decision to evacuate an area is not made lightly and there is a significant impact to public safety and the economy. The following process describes how emergency evacuation decisions are coordinated, allowing emergency managers and other supporting response organizations to make collaborative decisions.

3.2 Evacuation Coordination Process

1. If the emergency only impacts a local jurisdiction, the decision to evacuate will be made at the local jurisdiction level with regional collaboration considerations.
    a. Based on the information gathered, local jurisdictions will generally make the determination on whether to evacuate communities as the need arises, on a case-by-case scenario basis.

b. The decision to evacuate will depend entirely upon the nature, scope, and severity of the emergency; the number of people affected; and what actions are necessary to protect the public.

c. Local jurisdictions may activate their Emergency Operations Center (EOC) and conduct evacuations according to procedures outline in their Emergency Operations Plan (EOP).

d. The EOC may make recommendations on whether a jurisdiction should evacuate and may help coordinate the evacuation effort.

e. The Evacuation Annex is automatically activated when an incident occurs requiring an evacuation effort that impacts two or more jurisdictions.

f. The EOC will coordinate with fire, law enforcement, public health, and other relevant support agencies to obtain recommendations on protective actions.

g. The EOC will coordinate with jurisdictional emergency management personnel and other public safety personnel. The Policy Group within the EOC will coordinate will other officials from jurisdictions within the San Diego County Operational Area (OA) to identify command decisions, including:

    i. Gaining regional situational awareness

    ii. Determining response status

    iii. Reviewing status of initial protective actions

    iv. Considering additional protective actions

    v. Evaluating public information needs

    vi. Determining next steps

    vii. Establishing a regular time to share updates

h. The EOC will coordinate emergency public information to citizens in accordance with established procedures.

i. The EOC may support coordinating the evacuation response according to the EOP, including:

    i. Providing transportation for those who need assistance

    ii. Provide support for people with disabilities and other access and functional needs

iii. Coordinate and communicate with the private sector, community groups, and faith based organizations to utilize their services and resources available to support the response

iv. Providing shelter for evacuees

3.3 Evacuation Response Operations

An evacuation of any area requires significant coordination among numerous public, private, and community/non-profit organizations. Wildfire evacuations would typically allow time for responders to conduct evacuation notification in advance of an immediate threat to life safety, giving residents time to gather belongings and make arrangements for evacuation. On the other hand, other threats, including wildfires igniting nearby, may occur with little or no notice and certain evacuation response operations would not be feasible (e.g., establishing contra flow requires between 24 to 72 hours to be implemented; a no-notice event would not allow for contra flow to be established). Evacuation assistance of specific segments of the population may also not be feasible.

3.3.1 Evacuation Points and Shelters

When the SDSD implements an evacuation order, they coordinate with the responding fire agency, the EOC, and others to decide on a location to use as a temporary evacuation point (TEP). The SDSD Dispatch Center would utilize the AlertSanDiego system to direct evacuees to the established TEP or shelter. These evacuation points would serve as temporary safe zones for evacuees and would provide basic needs such as food, water, and restrooms. The JCPP indicates the following shelters and assembly areas that can provide at least short-term refuge:

- Jamul Primary School*
- SDCFA Fire Station 36
- Rancho San Diego Shopping Center Parking Lot*
- Thousand Trails

**Denotes classification as a Primary Shelter/Assembly Area*

Other refuge sites are available within urbanized areas of Chula Vista, El Cajon, Rancho San Diego, and developed communities primarily to the west of the Proposed Project.

If there are residents unable to evacuate and need transportation assistance to get to a TEP or shelter, the SDSD may establish transportation points to collect and transport people without transportation resources to evacuation points. These points should be large, well-known sites

such as shopping centers, libraries, and schools. Transportation should be accessible to all populations, including people with disabilities and other access and functional needs.

The Pets Evacuation and Transportation Standards Act of 2006 amends the Stafford Act and requires evacuation plans to take into account the needs of individuals with household pets and service animals, prior to, during, and following a major disaster or emergency.

The San Diego County DAS has plans in place to transport and shelter pets in a disaster under Annex O of the OA EOP, including the Animal Control Mutual Aid Agreement. Animal Control Officers, the San Diego Humane Society, and private animal care shelters would assist in the rescue, transport, and sheltering of small and large animals. In addition, potential volunteer resources and private groups should be identified and tracked in WebEOC. Only non-emergency resources and personnel, such as public and private animal services agencies, would be used to rescue and transport animals during an evacuation effort.

In most cases, DAS and the OA EOC would coordinate and attempt to co-locate animal shelters with people shelters.

3.3.2 Shelter-in-Place

Sheltering-in-place is the practice of going or remaining indoors during or following an emergency event. This procedure is recommended if there is little time for the public to react to an incident and it is safer for the public to stay indoors for a short time rather than travel outdoors. Sheltering-in-place also has many advantages because it can be implemented immediately, allowing people to remain in their familiar surroundings and providing individuals with everyday necessities such as telephone, radio, television, food, and clothing. However, the amount of time people can stay sheltered-in-place is dependent upon availability of food, water, medical care, utilities, and access to accurate and reliable information.

The decision on whether to evacuate or shelter-in-place is carefully considered with the timing and nature of the incident (County of San Diego 2014). Sheltering-in-place is the preferred method of protection for people that are not directly impacted or in the direct path of a hazard. This would reduce congestion and transportation demand on the major transportation routes for those that have been directed to evacuate by police or fire personnel. Like most new master planned communities incorporating ignition-resistant construction, wide fuel modification zones (FMZs), and providing defensibility throughout, responding fire and law enforcement personnel would be able to direct residents to temporarily refuge in their homes at portions of the Project Area, in the rare situation where that alternative is determined to be safer than evacuating.

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4 VILLAGE 14 AND PLANNING AREAS 16/19 EVACUATION ROAD NETWORK

Wildfire emergencies that would be most likely to include an evacuation of the Project Area would be large wildfires approaching from the north, northeast, or east. These fires are often wind driven and occur during declared red flag warning days where low humidity and high winds facilitate fire ignition and spread. If a fire starts in the backcountry (East County) and is fanned by these fire weather conditions, an early evacuation of the area may occur as many as 24 hours prior to actual threatening conditions. Fires occurring on typical weather days, even fires igniting off the SR-125, have been very successfully controlled at small sizes within minutes of ignition and would not typically trigger a need to evacuate the Project Area. Partial evacuation of some neighborhoods could be an option in these cases.

If a wildfire ignited closer to the Proposed Area during weather that facilitates fire spread and where multiple hours are not available for evacuation, a different evacuation approach would need to be explored. It is preferred to evacuate long before a wildfire is near, and in fact, history indicates that most human fatalities from wildfires are due to late evacuations when they are overtaken on roads. Therefore, it is prudent to consider a contingency option. For example, if a wildfire is anticipated to encroach upon the community in a timeframe that is shorter than would be required to evacuate all residents, then options available to responding fire and law enforcement personnel should include (1) partial relocation where residents in perimeter homes on the north/northeast/east edge are temporarily relocated to internal areas or to the Village center (public safety, school and multi-use lots), (2) individual neighborhood relocations where residents, such as from homes in Planning Areas 16/19, are temporarily relocated to the Village Core or south to Chula Vista, and (3) temporary refuge where residents are instructed to remain in their homes while firefighters perform their structure protection function. This approach is consistent with San Diego County's (County of San Diego 2014) evacuation approach, which states "Due to the nature of the threats requiring an evacuation, there may be insufficient time to perform an early evacuation of the area and shelter-in-place instructions may need to be provided." Although not a shelter-in-place community, the structures in the Proposed Project would be ignition resistant, defensible, and designed to require minimal firefighting resources for protection, which enables these contingency options that may not be available to other area communities.

As evidenced by mass evacuations in San Diego County and elsewhere, even with roadways that are designed to the code requirements, it may not be possible or necessary to move large numbers of persons at the same time. Road infrastructure throughout the United States, including San Diego County, is not designed to accommodate a short-notice, mass evacuation. The need for evacuation plans, pre-planning, and tiered or targeted and staggered evacuations becomes

very important for improving evacuation effectiveness. Among the most important factors for successful evacuations in urban settings is control of intersections downstream of the evacuation area. If intersections are controlled by law enforcement, barricades, signal control, or other means, potential backups and slowed evacuations can be minimized. Another important aspect of successful evacuation is a managed and phased evacuation declaration. Evacuating in phases, based on vulnerability, location, or other factors, enables the subsequent traffic surges on major roadway to be smoothed over a longer time frame and can be planned to result in traffic levels that flow better than when mass evacuations include large evacuation areas at the same time.

This plan defers to law enforcement and OES to appropriately phase evacuations and to consider the vulnerability of communities when making decisions. For example, the Proposed Project community would offer its residents a high level of fire safety on site (refer to the Village 14 and Planning Areas 16/19 – Fire Protection Plan prepared by Dudek (Appendix 3.1.1-2)) along with options for properly equipped and trained firefighter safety zones (within the Village 14 neighborhoods) and temporary resident on-site refuge (within their well-protected homes) as a contingency, as discussed further in this plan.

The Proposed Project's planned community interior road network and the existing regional road system that it interconnects provide multidirectional primary and secondary emergency evacuation routes consistent with, or exceeding, most communities in this area. Consistent with County of San Diego evacuation planning annex (2014), major ground transportation corridors in the area would be used as primary evacuation routes during an evacuation effort. The road systems were evaluated to determine the best routes for fire response equipment and "probable" evacuation routes for relocating people to designated safety areas. The primary roadways that would be used for evacuation from the Proposed Project are Proctor Valley Road towards the City of Chula Vista and Melody Road towards Jamul. These roads provide access to major traffic corridors, including indirectly to SR-125 to the south and SR-94 to the north and east.

During an emergency evacuation from the Proposed Project community, the primary and secondary roadways may be providing citizen egress while responding emergency vehicles are inbound. Because the roadways are all designed to meet or exceed County of San Diego Consolidated Fire Code requirements—including 12-foot-wide, unobstructed travel lanes, adequate parking, 28-foot inside radius, grade maximums, signals at intersections, and roadside FMZs—potential conflicts that reduce the roadway efficiency for smooth evacuations are minimized.

The community's primary evacuation routes are accessed through a series of internal neighborhood roadways, which connect with the primary ingress/egress roads that intersect off-site primary and major evacuation routes. Based on the existing road network, the community can evacuate once off site to the north, south, east, or west depending on the nature of the emergency.

Depending on the nature of the emergency requiring evacuation, it is anticipated that the Proposed Project community traffic would exit the area via Proctor Valley Road to the north or south as follows (Figure 1):

- In the southern and central portion of the community – Proctor Valley Road, the Proposed Project's primary access, provides access to other primary evacuation routes (i.e., East H Street or Otay Lakes Road via Hunte Parkway) that intersect with SR-125 on-ramps.
- In the northern portion of the community – Proctor Valley Road connects with Campo Road (SR-94) via Melody Road.

4.1 Evacuation Route Determination

Fire and law enforcement officials would identify evacuation points before evacuation routes are announced to the public. Evacuation routes are determined based on the location and extent of the incident and include as many pre-designated transportation routes as possible.

4.2 Roadway Capacities and Maximum Evacuation Time Estimate

Roadway capacity represents the maximum number of vehicles that can reasonably be accommodated on a road. Roadway capacity is typically measured in vehicles per hour and can fluctuate based on the number of available lanes, number of traffic signals, construction activity, accidents, and obstructions as well as positively by traffic control measures. The post-project conditions for existing roads are provided in Table 1. The Proposed Project includes improvements to vehicle capacity through road widening, paving, and related improvements.

Each roadway classification has a different capacity based on level of service, with freeways and highways having the highest capacities. Based on traffic engineer estimates (Chen Ryan Associates 2017) and using peak numbers and a conservative estimate, roads that would be the most likely available to the Proposed Project's residents and their hourly capacities are presented in Table 1.

Table 1
Otay Ranch Village 14 and Planning Areas 16/19 Roadway and Freeway Vehicle Capacities

Roadway	Segment	Roadway and Freeway Capacity*				
		East	*West*	*North*	*South*	*Total*
Proctor Valley Road	SR-94 to Proposed Project northern boundary	1,800	1,800	—	—	3,600
Proctor Valley Road	Proposed Project northern boundary to Proposed Project southern boundary	—	—	1,900	1,900	3,800
Proctor Valley Road	Proposed Project southern boundary to SR-125	4,800	4,700	—	—	9,500
Olympic Parkway	Hunte Parkway to SR-125	5,100	4,600	—	—	9,700
Otay Lakes Road	Hunte Parkway to SR-125	5,100	5,000	—	—	10,100
Hunte Parkway	Proctor Valley Road to Eastlake Parkway	3,900	3,100	—	—	7,000
Mount Miguel Road	Proctor Valley Road to SR-125	8,200	5,100	—	—	13,300
SR-94	Lyon Valley Road to Melody Road	—	—	1,900	1,900	3,800
I-805	South of SR-54	—	—	10,500	10,500	21,000
SR-125	South of SR-54	—	—	4,200	4,200	8,400
SR-54	I-805 to SR-125	8,100	8,100	—	—	16,200

* These roadway capacities include consideration of key chokepoints. This evacuation plan does not rely solely on these capacities for determining the time needed to evacuate. Impedances and other delays are anticipated by adding buffer time to the total calculated evacuation times.

Using these averages, the length of time it would take for an area to evacuate can be estimated by dividing the number of vehicles that need to evacuate by the total roadway capacity (and adding an additional safety buffer). Based on the Proposed Project's estimated 1,119 residential units, and assuming 2.2 cars per household (Board of Forestry and Fire Protection 2016), during an evacuation, it is calculated that up to 2,462 vehicles could be evacuating in a major incident that required full evacuation of the community. Although this is a conservative estimate, as that number may be lower, as some families would likely drive in one vehicle versus in multiple vehicles and depending on the time of day, many of these vehicles may already be off site, such as if a fire occurred during typical work hours.

The potential amount of time needed to evacuate the Proposed Project, based on the planned roadway improvements, was calculated based on the following factors: (1) the internal roadway capacities and (2) available egress routes on Proctor Valley Road and its connector roads, with two scenarios: estimated 70% of vehicles (1,723) using Proctor Valley Road to the south and 30% (739) using Proctor Valley Road to the north, and a second scenario where all vehicles use Proctor Valley Road to the south. The lowest capacity roadway encountered on the route was given priority and was the determining factor for the utilized vehicle capacity and accounting for slower speeds during some evacuations.

Evacuation Scenario 1 – 70% of Proposed Project evacuating vehicles travel south (and west) on Proctor Valley Road to Chula Vista and 30% travel north (and east) on Proctor Valley Road to El Cajon area.

Based on the factors and assumptions previously detailed regarding neighborhood evacuation routes, and incorporating standard pre-evacuation timeframes (Figure 2), it is estimated that the 1,723 vehicles anticipated to use Proctor Valley Road south (minimum capacity of 1,900 vehicles/hour) to the improved Proctor Valley Road with four total lanes (4,700 vehicles/hour), to SR-125 (4,200 vehicles/hour), can be evacuated to urban Chula Vista within a 1-hour travel time and up to 1.5 hours of evacuation mobilization time. The total evacuation time is approximately 3 hours, including a safety factor to allow for potential impedances/delays of an additional 45 minutes. Simultaneous evacuation of the estimated 739 vehicles via Proctor Valley Road north (minimum capacity of 1,800 vehicles/hour) to SR-94 (1,900 vehicles/hour) and into developed areas of El Cajon would require approximately 30 to 45 minutes travel time. Allowing up to 90 minutes for evacuation mobilization (Figure 2) results in approximately 2 hours required for complete evacuation plus a safety buffer of 30 minutes resulting in a 2.5 hour timeframe.

Therefore, under Scenario 1, it is conservatively estimated that the community can be completely evacuated within approximately 2.5 to 3 hours once notification has been provided (up to 45 minutes after evacuation notifications completed). The timeframe may be longer if traffic flow is

not maintained and may be double or more if a region-wide evacuation is declared that does not enable pre-planned traffic management measures. Traffic flow is a priority during evacuation events and phased evacuations are important to reduce the number of vehicles accessing roadways at the same time.

Scenario 2 – 100% of the Proposed Project's vehicles travel south (and west) on Proctor Valley Road into Chula Vista.

The following estimate is based on the factors and assumptions previously detailed regarding neighborhood evacuation routes, and incorporating standard pre-evacuation timeframes (Figure 2). It is estimated that the 2,462 vehicles anticipated to use Proctor Valley Road south (minimum capacity of 1,900 vehicles/hour) to the improved Proctor Valley Road with four total lanes (4,700 vehicles/hour), to SR-125 (4,200 vehicles/hour), can be evacuated to urban Chula Vista within 75 minutes travel time. Additional mobilization time could require up to an additional 45 minutes. An additional time buffer is added to the evacuation timeframe to allow for impedances that may occur. In this case, adding 50% more time, or up to 45 minutes is considered appropriate.

Therefore, under Scenario 2, it is conservatively estimated that the community can be completely evacuated to the south (and west) within 2.5 hours once notification has been provided (up to 45 minutes after evacuation notifications completed), or just over 3 hours with mobilization. The timeframe may be longer if traffic flow is not maintained, and may be double or more if a region-wide evacuation is declared that does not enable pre-planned traffic management measures. Traffic flow is a priority during evacuation events, and phased evacuations are important to reduce the number of vehicles accessing roadways at the same time.

Evacuation Time Discussion

Evacuation time of 2.5 to nearly 3 hours is considered acceptable for this type of community and is aided by the multiple ingress/egress points and the major road improvements to existing roads that would occur with the Project Area. This evacuation timeframe would be accommodated during large, wind-driven wildfires from the east/northeast where advance notice allows appropriate evacuation order timing/phasing. Wildfires originating closer to the community could allow significantly less time for evacuation than would be required, and the Proposed Project offers decision makers contingency options, including evacuating or relocating a portion of the community (much lower number of vehicles and faster evacuation time, proportional to the vehicle total being relocated).

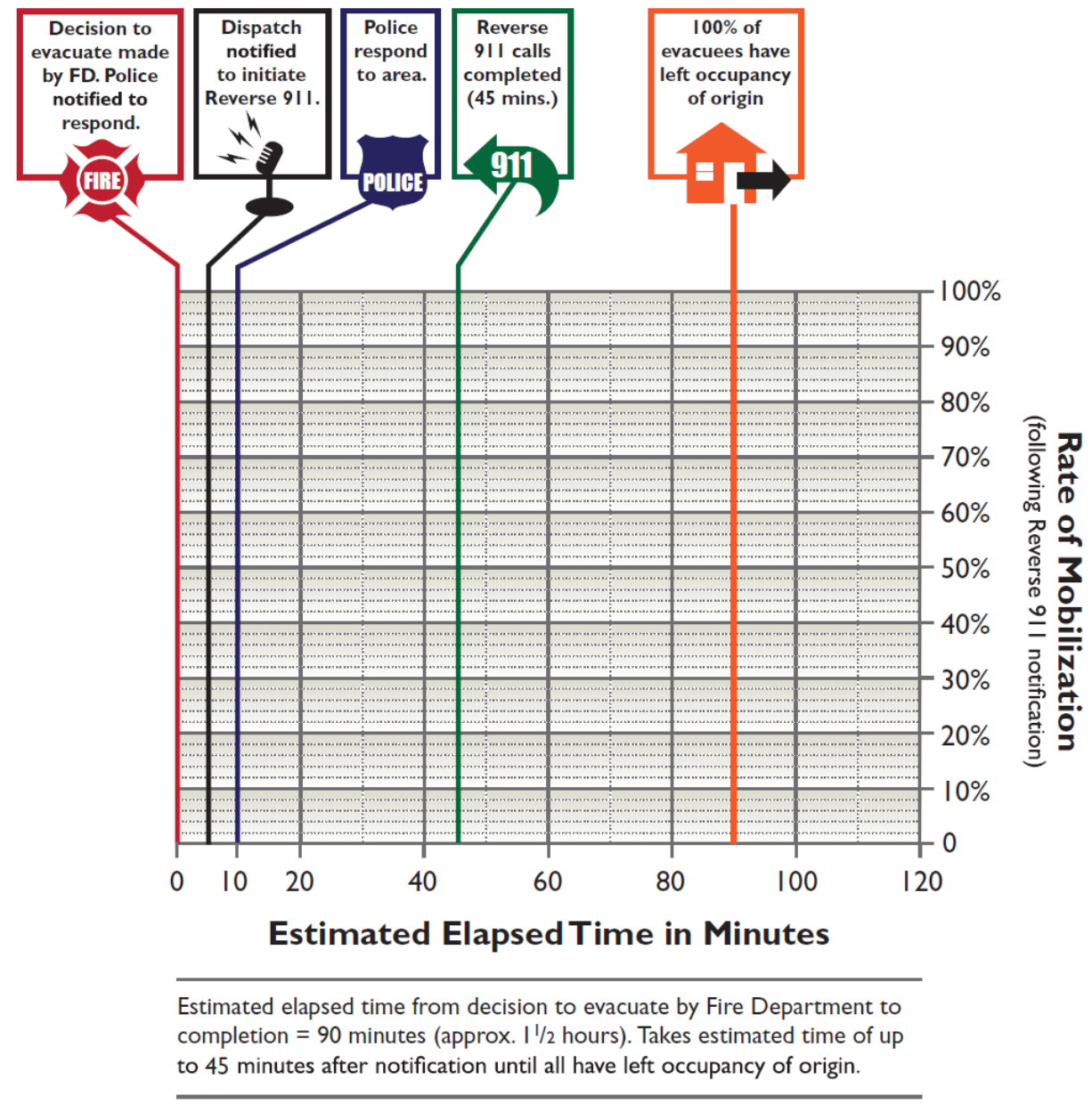

Figure 2

Evacuation Component Time Frame Estimates

Source: Hunt Research Associates

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5 VILLAGE 14 AND PLANNING AREAS 16/19 RESIDENT WILDFIRE/EVACUATION AWARENESS

The Proposed Project community HOA would be active in its outreach to residents regarding fire safety and general evacuation procedures. There are aspects of fire safety and evacuation that require a significant level of awareness by the residents and emergency services to reduce and/or avoid problems with an effective evacuation. Mitigating potential impediments to successful evacuations requires focused and repeated information through a strong educational outreach program. The community HOA would engage residents and coordinate with local fire agencies for fire safety awareness through a variety of methods.

This evacuation plan would be provided to each homeowner/HOA member as well as being accessible on the HOA website. Annual reminder notices would be provided to each homeowner encouraging them to review the plan and be familiar with community evacuation protocols. The HOA would coordinate with local fire agencies to hold an annual fire safety and evacuation preparedness informational meeting and important fire and evacuation information would be reviewed. One focus of these meetings and of the HOA's annual message would be on the importance of each resident to prepare and be familiar with their own "Ready, Set, Go!" evacuation plan. The "Ready, Set, Go!" program is defined at http://www.readysandiego.org/Resources/wildfire_preparedness_guide.pdf, and information about preparing an individual Action Plan is provided in Appendix A of this document.

The focus of the "Ready, Set, Go!" program is on public awareness and preparedness, especially for those living in the wildland/urban interface (WUI) areas. The program is designed to incorporate the local fire protection agency as part of the training and education process in order to ensure that evacuation preparedness information is disseminated to those subject to the potential impact from a wildfire. There are three components to the program, described below.

"READY" – Preparing for the Fire Threat: Take personal responsibility and prepare long before the threat of a wildfire so you and your home are ready when a wildfire occurs. Create defensible space by clearing brush away from your home as detailed in the Proposed Project's FPP (Appendix 3.1.1-2). Use only fire-resistant landscaping and maintain the ignition resistance of your home. Assemble emergency supplies and belongings in a safe spot. Confirm you are registered for Reverse 911, AlertSanDiego, and Community alert system. Make sure all residents residing within the home understand the plan, procedures, and escape routes.

"SET" – Situational Awareness When a Fire Starts: If a wildfire occurs and there is potential for it to threaten your area, pack your vehicle with your emergency items. Stay aware of the

latest news from local media and your local fire department for updated information on the fire. If you are uncomfortable, leave the area.

"GO!" – Leave Early!: Following your Action Plan provides you with knowledge of the situation and how you would approach evacuation. Leaving early, well before a wildfire is threatening your community, provides you with the least delay and results in a situation where, if a majority of neighbors also leave early, firefighters are now able to better maneuver, protect, and defend structures; evacuate other residents who couldn't leave early; and focus on citizen safety.

"READY SET GO!" is predicated on the fact that being unprepared and attempting to flee an impending fire late (such as when the fire is physically close to your community) is dangerous and exacerbates an already confusing situation. This Proposed Project Wildland Fire Evacuation Plan provides key information that can be integrated into the individual action plans, including the best available routes for them to use in the event of an emergency evacuation.

Situation awareness requires a reliable information source. One of the most effective public notification methods is Reverse 911. The San Diego OES operates the Reverse 911 notification system that provides a recorded message over land line telephone systems relating to evacuation notices. In addition, OES operates a program known as "Alert San Diego" that has the capability to send emergency notifications over both land lines as well as to cell phones and via text messages. It is up to individual residents to register their cell phones for "Alert San Diego". The registration of cell phones can be done on line at www.ReadySanDiego.com. In addition, the San Diego Emergency Alert System is county wide and broadcasts emergency information via two radio stations KOGO AM 600 and KLSD AM 1360.

As part of the Proposed Project's resident fire awareness and evacuation readiness program, information would be delivered in a variety of methods. The HOA would be responsible to provide and distribute to each homeowner a complete copy of the Fire Protection Plan and this Wildland Fire Evacuation Plan, including materials from the "Ready, Set, Go!" program. The HOA is also responsible for ensuring the distribution of copies of the aforementioned materials to those individuals that purchase properties for re-sales and to the management of multifamily residential and other non-residential properties. The management of multifamily residential units that do not have individual unit ownership would be responsible for conducting informational sessions regarding the fire safety measures and evacuation plan details and would be responsible for making copies of the evacuation plans available for each unit. Management of the commercial properties would be responsible for the dissemination of the evacuation plan information to their employees.

As part of the approval of this Proposed Project, it shall be binding on the HOA to actively participate as a partner with the SDCFA to assist with the coordination and distribution of fire safety information they develop.

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6 VILLAGE 14 AND PLANNING AREAS 16/19 EVACUATION PROCEDURES

It is estimated that the minimum amount of time needed to move the Proposed Project's population to urbanized and/or designated evacuation areas may require in excess of 1 hour to evacuate and up to 3 or more hours under varying constraints that may occur during an evacuation. This does not include additional allowances for the time needed to detect and report a fire; for fire response and on-site intelligence; for phone, patrols, and aerial based notifications; and for notifying special needs citizens.

Wolshon and Marchive (2007) simulated traffic flow conditions in the WUI under a range of evacuation notice lead times and housing densities. To safely evacuate more people, they recommended that emergency managers (1) provide more lead time to evacuees and (2) control traffic levels during evacuations so that fewer vehicles are trying to exit at the same time.

Wildfire emergency response procedures would vary depending on the type of wildfire and the available time in which decision makers (i.e., IC, SDCFA, CAL FIRE, SDSD, and/or County Office of Emergency Management) can assess the situation and determine the best course of action. Based on the community, its road network, and the related fire environment, the primary type of evacuation envisioned is an orderly, pre-planned evacuation process where people are evacuated from the Project Area to more urban areas further from an encroaching wildfire (likely to urban areas south (and west) or north (and west)) well before fire threatens. This type of evacuation must include a conservative approach to evacuating (i.e., when ignitions occur and weather is such that fires may spread rapidly, evacuations should be triggered on a conservative threshold that includes time allowances for unforeseen, but possible, events that would slow the evacuation process).

Evacuation is considered by many to offer the highest level of life protection to the public, but it can result in evacuees being placed in harm's way if the time available for evacuation is insufficient (Cova et al. 2011). An example of this type of evacuation, which is highly undesirable from a public safety perspective, is an evacuation that occurs when fire ignites close to vulnerable communities. The Proposed Project would not be considered a vulnerable community; however, there are vulnerable communities within the region. This type of situation is inherently dangerous because there is generally a higher threat to persons who are in a vehicle on a road when fire is burning in the immediate area than in a well-defended, ignition-resistant home. Conditions may become so poor that the vehicle drives off the road or crashes into another vehicle, and flames and heat overcome the occupants. A vehicle offers little shelter from a wildfire if the vehicle is situated near burning vegetation or catches fire itself. This type of evacuation must be considered a very undesirable situation by law and fire officials in all but the

rarest situations where late evacuation may be safer than seeking temporary refuge in a structure (e.g., when there are no nearby structures, the structure(s) is/are already on fire, or when there is no other form of refuge).

The third potential type of evacuation is a hybrid of the first two. In cases where evacuation is in process and changing conditions result in a situation that is considered unsafe to continue evacuation, it may be advisable to direct evacuees to pre-planned temporary refuge locations, including their own home if it is ignition resistant and defensible, such as those at the Proposed Project. As with the second type of evacuation previously discussed, this situation is considered highly undesirable, but the evacuation pre-planning must consider these potential scenarios and prepare decision makers at the IC level and at the field level for enacting a contingency to evacuation when conditions dictate.

Indications from past fires and related evacuations, in San Diego County and throughout Southern California, which have experienced increasingly more frequent and larger fires, are that evacuations are largely successful, even with a generally unprepared populace. It then stands to reason that an informed and prepared populace would minimize the potential evacuation issues and related risk to levels considered acceptable from a community perspective.

Evacuation orders or notifications are often triggered based on established and pre-determined model buffers, which are based on topography, fuel, moisture content of the fuels, and wind direction. Evacuations are initiated when a wildfire reaches or crosses one of these pre-determined buffers. Evacuations can also be very fluid. The IC, law enforcement, and county OES would jointly enact evacuations based on fire behavior.

6.1 FlamMap Fire Behavior and Progression Analysis

The following wildfire ignition scenarios were modeled using FlamMap. A detailed description of the inputs and model are provided in Appendix B.

Otay Ranch Village 14 and Planning Areas 16/19 Evacuation – Ignition off SR-94, northeast of the Project: Santa Ana Wind Conditions

When compared to fire spread modeling and the time various fire ignitions would reach the Project Area, a threshold of evacuation versus contingency options is delineated. As depicted in Appendix C, FlamMap Fire Behavior Modeling – Fall Fire Arrival Time – Campo Road Ignition, which illustrates fire spread rates and progression during extreme fire weather (high wind, low humidity) and an ignition along roads or WUI areas north or northeast of the Project Area, fire could reach the northeastern development area within 1 hour. Within approximately 3 hours, wildfire may reach the remaining portions of the Project Area. These estimates are based on

current conditions and would be different post-project development, which would include landscapes that would not burn consistently with wildland fuels. Fire would be expected to burn around the developed areas and FMZs with a slower spread rate and patchy burn with lower flame lengths and intensity. The purpose of providing scenario examples is to indicate potential time of arrival from various ignition points.

Because the arrival time of a fire originating along the SR-94 is approximately 1 hour for the northern portion of the Project Area, and considering it may take up to 3 hours or more (depending on conditions) for a complete evacuation of Proposed Project residents, it is likely that under extreme conditions, if a fire ignites along the SR-94 near where depicted Appendix C, that first responders would direct evacuation of the northern neighborhoods as quickly as possible and utilizing Proctor Valley Road toward Village 14. Residents would enact their "Ready, Set, Go!" personal action plans and initiate evacuation. This would allow for sufficient time to move northerly residents out of the area to designated evacuation points (likely within Chula Vista). This scenario would require the movement of an estimated 275 vehicles or less, which can be accommodated in an estimated 15 to 30 minutes, providing a potential time buffer in this approach. In extreme conditions relocation of Planning Areas 16/19 residents into the Village 14 developed areas may be an appropriate contingency instead of moving them into Chula Vista, particularly if traffic is not allowing normal travel speeds or if the fire is spotting and threatens southerly evacuation.

Evacuation of the community would likely continue, as conditions allow and are necessitated, with the more southerly neighborhoods evacuating to off-site areas in Chula Vista if considered necessary and safe by emergency management personnel. However, if at any time fire is anticipated to threaten evacuation routes, incident managers should evaluate evacuation contingencies, including moving people to the Village Core, the on-site school, the public safety site, or temporarily refuging some or all remaining residents in their homes for the short duration that active wildfire would burn adjacent the site's FMZs. Fire ignitions closer to the Project Area would likely include a shorter available timeframe for evacuations, so contingency options may be implemented on a faster timeline.

Otay Ranch Village 14 and Planning Areas 16/19 Evacuation – Ignition off Proctor Valley Road, North of the Project; Typical Summer Weather Conditions

As depicted in Appendix D, FlamMap Fire Behavior Modeling – Fall Fire Arrival Time – Whispering Meadows Lane Ignition, which illustrates fire spread rates and progression during extreme fire weather (high wind, low humidity) and an ignition off Proctor Valley Road, at the Project Area's northern boundary, fire could reach Planning Areas 16/19 within 15 minutes and the southwestern-most portion of the proposed development area within approximately 3 hours. These

estimates are based on current conditions and would be different for the post-project development, which would include landscapes that would not burn consistently with wildland fuels. Fire would be expected to burn around the developed areas and FMZs with a slower spread rate and patchy burn with even lower flame lengths and intensity.

Because the arrival time of a fire originating to the north of the Project Area along Proctor Valley Road during extreme fire weather is within minutes to the FMZs of Planning Areas 16/19, and considering it may take up to 3 hours or more (depending on conditions) for a complete evacuation, and 15 to 30 minutes for Planning Areas 16/19 evacuation, the following likely evacuation scenarios are considered:

1. Planning Areas 16/19 residents would likely have three options available, and responding fire fighters would help direct residents on the safest approach:
    a. Enact their personal "Ready, Set, Go"! personal action plan, and evacuate southward to Chula Vista.
    b. Enact their personal "Ready, Set, Go"! personal action plan, and evacuate southward on Proctor Valley Road to the developed areas of Village 14.
    c. If roadways are not clear or fire is threatening, seek temporary refuge in their ignition-resistant, defensible homes.

Depending on fire spread and control, the Village 14 areas may not need to be evacuated. This type of fire is not wind-driven and is burning in fuels with higher moisture levels and would allow more options than a fire during high winds and low humidity.

Otay Ranch Village 14 and Planning Areas 16/19 Evacuation – Ignition along Proctor Valley Road South of the Project – Typical Summer Weather Conditions

As depicted in Appendix E, FlamMap Fire Behavior Modeling – Summer Fire Arrival Time – Lower Proctor Valley Road Ignition, which illustrates fire spread rates and progression during typical Summer weather conditions (on-shore winds and average humidity) and an ignition off Proctor Valley Road approximately 0.75 miles south of the southernmost portions of Village 14, fire could reach the Project Area's outer FMZs within approximately 10 hours. Models indicate it would require up to 24 hours for the fire to spread to the outer FMZs of the Village Core. These estimates are based on current conditions and would be different for the post-project development, which would include landscapes that would not burn consistently with wildland fuels. Fire would be expected to burn around the developed areas and FMZs with a slower spread rate and patchy burn with even lower flame lengths and intensity.

Because the arrival time of a fire originating along the Proctor Valley Road south of the Project Area several hours for the southernmost portion of the Project Area, and considering it may take up to 3 hours or more (depending on conditions) for a complete evacuation of Proposed Project residents, it is likely that under these non-extreme fire conditions, that first responders may not immediately call for evacuations of the community. If conditions changed and the fire became more aggressive, evacuations may be initiated to the north on Proctor Valley Road to SR-94 and into urban areas and designated safety zones.

Evacuation of the community would likely continue, as conditions allow and are necessitated. However, if at any time fire is anticipated to threaten evacuation routes, incident managers would evaluate evacuation contingencies, including temporarily refuging people on site.

6.2 Village 14 and Planning Areas 16/19 Evacuation Baseline

For purposes of this Wildland Fire Evacuation Plan, the first and most logical choice for all of the residents and guests within the boundaries of the Proposed Project community is to adhere to the principals and practices of the "Ready, Set, Go!" program previously mentioned in this document. As part of this program, it is imperative that each household develop a plan that is clearly understood by all family members and participates in the educational and training programs sponsored by the Proposed Project's HOA and the SDCFA. In addition, it is imperative that the "Ready, Set, Go!" program information be reviewed on a routine basis along with the accompanying maps illustrating evacuation routes, TEPs, and pre-identified evacuation points. It must be kept in mind that conditions may arise that would dictate a different evacuation route than the normal roads used on a daily basis.

Residents are urged to evacuate as soon as they are notified to do so or earlier if they feel uncomfortable. Directions on evacuation routes would be provided in most cases, but when not provided, residents of the Proposed Project would proceed according to known available routes away from the encroaching fire. Depending on the type of emergency and the resulting evacuation, it could take as long as 2 hours or more to complete a community-wide evacuation, based on nationally recognized road capacity standards and competing use of the roads by residents from other areas.

The available evacuation routes for the residents and guests of the Proposed Project are as follows (Figure 1):

1. **Egress to the west via Proctor Valley Road** – This is the primary Village 14 access road and connects with East H Street, which offers travel options to the west and south on SR 125 into Chula Vista or to the north on SR 125 into Bonita and SR-54. SR-54 further

provides travel options to the north towards Lemon Grove-Spring Valley or southwest towards National City. Likely neighborhoods using this access during an evacuation include southern and central portions of Village 14, unless the threat is from the north (and east), where all of the community may be advised to use southerly route.

2. **Egress to the north on Proctor Valley Road** – This secondary access road provides a route to Campo Road (SR-94) in Jamul at which point, travel to the north into Rancho San Diego-Casa de Oro or south to Dulzura/Campo is possible. Likely neighborhoods using this access road during an evacuation are northern and central portions of Village 14 and all of Planning Areas 16/19, unless the threat is from the north (and east), where all of the community may be advised to use southerly route.

Note: This evacuation plan would require adjustment and continued coordination by the Proposed Project's HOA and/or developer and fire/law enforcement agencies during each of the construction phases. With each phase, the evacuation routes may be subject to changes with the addition of both primary and secondary evacuation routes.

6.3 Civilian and Firefighter Evacuation Contingency

As of this document's preparation, no community in California has been directed to shelter-in-place during a wildland fire. Even the communities in Rancho Santa Fe, California, which are designed and touted as shelter-in-place communities, were evacuated during the 2007 Witch Creek Fire. This is not to say that people have not successfully sheltered-in-place during wildfire, where there are numerous examples of people sheltering in their homes, in hardened structures, in community buildings, in swimming pools, and in cleared or ignition resistant landscape open air areas. The preference would always be early evacuation following the "Ready, Set, Go!" model, but there exists the potential for unforeseen civilian evacuation issues, and having a contingency plan would provide direction in these situations that may result in saved lives.

Potential problems during wildfire evacuation from the Proposed Project include:

- Fires that prevent safe passage along planned evacuation routes
- Inadequate time to safely evacuate
- Fire evacuations during rush hour traffic or when large events are occurring
- Blocked traffic due to accidents or fallen tree(s) or power pole(s)
- The need to move individuals who are unable to evacuate

It is recommended that local law enforcement and fire agencies conduct concerted pre-planning efforts focusing on evacuation contingency planning for civilian populations when it is considered safer to temporary seek a safer refuge than evacuation.

6.3.1 Safety Zones

The International Fire Service Training Association (Fundamentals of Wildland Fire Fighting, 3rd Edition) defines safety zones as areas mostly devoid of fuel, which are large enough to assure that flames and/or dangerous levels of radiant heat would not reach the personnel occupying them. Areas of bare ground, burned over areas, paved areas, and bodies of water can all be used as safety zones. The size of the area needed for a safety zone is determined by fuel types, its location on slopes, and its relation to topographic features (chutes and saddles) as well as observed fire behavior. Safety zones should never be located in topographic saddles, chutes, or gullies. High winds, steep slopes, or heavy fuel loads may increase the area needed for a safety zone.

The National Wildland Fire Coordinating Groups (NWFCG), Glossary of Wildland Fire Terminology, provides the following definitions for safety zone and escape routes:

> *Safety Zone*. An area cleared of flammable materials used for escape in the event the line is outflanked or in case a spot fire causes fuels outside the control line to render the line unsafe. In firing operations, crews progress so as to maintain a safety zone close at hand allowing the fuels inside the control line to be consumed before going ahead. Safety zones may also be constructed as integral parts of fuelbreaks; they are greatly enlarged areas, which can be used with relative safety by firefighters and their equipment in the event of blowup in the vicinity.

According to NWFCG, safety zone(s):

- Must be survivable without a fire shelter
- Can include moving back into a clean burn
- May take advantage of natural features (rock areas, water, meadows)
- Can include Constructed sites (clear-cuts, roads, helispots)
- Are scouted for size and hazards
- Consider the topographic location (larger if upslope)
- Should be larger if downwind
- Should not include heavy fuels
- May need to be adjusted based on site-specific fire behavior

The definition for a safety zone includes provisions for separation distance between the firefighter and the flames of at least four times the maximum continuous flame height. Distance separation is the radius from the center of the safety zone to the nearest fuels. For example, considering worst-case 34-foot-tall flame lengths that may be possible adjacent this site (Appendix 3.1.1-2), then a 136-foot separation would be required, and potentially more if there were site-specific features that would result in more aggressive fire behavior. To provide 136 feet in all directions, a minimum 0.5 acres is considered necessary for a safety zone to be considered appropriate for one three-person engine crew during an extreme weather fire.

If one considers the ignition-resistant and maintained landscaping within each of the Proposed Project's neighborhoods, along with the adjacent 100-foot-wide FMZ and Chapter 7A of California Building Code compliant structures and setbacks, each neighborhood's interior roads, but particularly the Village 14 neighborhoods, would provide safety zones available to responding firefighters. The Village 14 neighborhoods as safety zones can be part of county's pre-planning efforts, although during the fire, the identified safety zones may not be feasible due to distance, location, fire behavior, etc.

Identification of potential safety zones is for example purposes and would require additional focused study by SDCFA and other fire and law enforcement agencies.

6.3.2 Temporary Firefighter Refuge Areas

Firescope California (Firefighting Resources of Southern California Organized for Potential Emergencies) was formed by legislative action to form a partnership between all facets of local, rural, and metropolitan fire departments, CAL FIRE, and federal fire agencies. Firescope defines a contingency plan when it is not possible to retreat to a safety zone. This contingency includes establishment of firefighter temporary refuge areas (TRAs), which are defined as:

> A preplanned area where firefighters can immediately take refuge for temporary shelter and short-term relief without using a fire shelter in the event that emergency egress to an established Safety Zone is compromised.

Examples of a TRA may include the lee side of a structure, inside of a structure, large lawn or parking areas, or cab of fire engine, amongst others. Differences between a TRA and a safety zone is that TRA's are closer to the immediate firefighting area, are considered a contingency to being able to get to a safety zone, do not include a requirement for a large area set back four times the flame lengths of adjacent fuels, and cannot be feasibly pre-planned until firefighters arrive on-scene and size up the situation.

Firescope appropriately notes that although safety zones and viable escape routes shall always be identified in the WUI environment, they may not be immediately available should the fire

behavior increase unexpectedly. Often a TRA is more accessible in the WUI environment. A TRA would provide temporary shelter and short-term relief from an approaching fire without the use of a fire shelter and allow the responders to develop an alternate plan to safely survive the increase in fire behavior.

TRAs are pre-planned areas (planned shortly after firefighters arrive on scene) where firefighters may take refuge and temporary shelter for short-term thermal relief, without using a fire shelter in the event that escape routes to an established safety zone are compromised. The major difference between a TRA and a safety zone is that a TRA requires another planned tactical action (i.e., TRAs cannot be considered the final action, but must include self-defense and a move out of the area when the fire threat subsides). A TRA should be available and identified on site at a defended structure. TRAs are NOT a substitute for a safety zone. TRA pre-planning is difficult, at best, because they are very site and fire behavior specific. For the Proposed Project community, TRAs would likely include navigating into any of the neighborhoods within the more densely developed Village 14 where firefighters would be separated from the unmaintained wildland fuels by wide areas including 100-foot-wide FMZs maintained landscapes, ignition-resistant residences, and wide roads that offer numerous opportunities for TRA.

The entire developed portions of the Village 14 neighborhoods, but especially the interior areas of neighborhoods, are considered TRAs. This is an important concept because it offers last-resort, temporary refuge of firefighters, and in a worst-case condition, residents. This approach would be consistent with Firescope California (2013), which indicates that firefighters must determine if a safe evacuation is appropriate and, if not, to identify safe refuge for those who cannot be evacuated, including civilians.

Each of the site's residences that can be considered for TRA include the following features:

- Ignition-resistant construction
- 100-foot-wide FMZ around perimeter of Project Area
- Annual inspections by third-party FMZ inspectors
- Wide roadways with fire hydrants
- Maintained landscapes and roadside fuel modification
- Ember resistant vents
- Interior fire sprinklers

Because there is the possibility that evacuation of the Project Area may be less safe than temporarily refuging on site such as during a fast-moving, wind-driven fire that ignites nearby,

including temporary refuge within residences, at the Village Center, or elsewhere on site is considered a contingency plan for the Proposed Project. This concept is considered a component of the "Ready, Set, Go!" model as it provides a broader level of "readiness" should the ability to execute an early evacuation be negated by fire, road congestion, or other unforeseen issues. Note: This approach would be considered a last-resort contingency during wildfire with the primary focus being on early evacuation. The decision for evacuation or temporarily refuging on site would be made by responding law enforcement and/or fire personnel.

6.4 Social Aspects of Wildfire Evacuation

Orderly movement of people is the result of planning, training, education, and awareness, all of which are promoted in San Diego County. Evacuation has been the standard term used for emergency movement of people and implies imminent or threatening danger. The term in this Wildland Fire Evacuation Plan, and under the "Ready, Set, Go!" concept, indicates that there is a perceived threat to persons and movement out of the area is necessary but would occur according to a pre-planned and practiced protocol, reducing the potential for panic.

Citizen reactions may vary during an evacuation event, although several studies indicate that orderly movement during wildfire and other emergencies is not typically unmanageable. Evacuation can be made even less problematic through diligent public education and emergency personnel training and familiarity. Social science research literature indicates that reactions to warnings follow certain behavior patterns that are defined by people's perceptions (Aguirre 1994; Drabek 1991; Fitzpatrick and Mileti 1994; Gordon 2006; Collins 2004) and are not unpredictable. In summary, warnings received from credible sources by people who are aware (or have been made aware) of the potential risk have the effect of an orderly decision process that typically results in successful evacuation. This success is heightened when evacuations are not foreign to residents (Quarentelli and Dynes 1977; Lindell and Perry 2004) as would occur within the Project Area. Further, in all but the rarest circumstances, evacuees would be receiving information from credible sources during an evacuation. Further, it would be anticipated that law enforcement and/or fire personnel would be on site to help direct traffic and would be viewed by evacuees as knowledgeable and credible. The importance of training these personnel cannot be understated and annual education and training regarding fire safety and evacuation events would be essential for successful future evacuations.

6.4.1 Evacuation of Special Populations

Vogt (1990 and 1991) defines special populations as those groups of people who, because of their special situations or needs, require different planning strategies from those of the general population. Special needs populations include those in institutions or special facilities, those with

disabilities in homes, those who need care, children, and others who cannot provide for their own evacuation if necessitated. The special needs population is concentrated in facilities but is also widespread in terms of facility locations and those who live in residences. Special needs populations in the Proposed Project include the hearing or visually impaired, foreign speaking, visitors passing through the area, temporary visitors such as day workers, students at the potential elementary school site, and the non-ambulatory confined to residences either temporarily or permanently.

Tourists and temporary visitors may not have knowledge of the area's fire hazard, they may not know how to react in a fire emergency, and they may not understand what they are being told to do. Conversely, this segment of the population would typically be easier to evacuate quickly as they have no possession or pets that they would need to prepare. They can get in their cars and be directed out of the area.

The reasons why special needs populations may fail to respond to warnings to take protective actions is that they may require special transportation while others require different types of warnings or technologies to receive a warning. Some groups must rely on caregivers to hear the warning and respond.

Village 14 and Planning Areas 16/19 Approach

The Proposed Project community would provide information to residents regarding notifying county OES and Health and Human Services of special needs residents so that accommodations for their notification (Accessible AlertSanDiego, CERT programs, or other), transportation, or other special requirements can be provided during an emergency evacuation.

6.4.2 Animal Evacuations

Animal evacuations present a host of challenges that may affect the overall successful movement of people and their possessions out of harm's way. For example, livestock owners do not always have the means to load and trailer their livestock out of the area. Further, most wildfire evacuation relief shelters or commercial lodging facilities do not allow people to bring in pets or other animals. Sorensen and Vogt (2006) indicate that an issue receiving increasing attention is what evacuees do with pets or other animals such as livestock when they leave their homes and whether having pets or animals impacts their decision to evacuate.

The Proposed Project may accommodate livestock on site within the larger lots in Planning Areas 16/19. In addition, the trails and trail access points could conceivably include horses during an evacuation notice. Household pets would be a common occurrence.

Village 14 and Planning Areas 16/19 Approach

- Develop a strong outreach program for large animal and pet owners so they understand their responsibilities and that they would not likely be allowed re-entry once evacuated.
- Develop a registration for owners of animals who cannot evacuate them without assistance so that volunteer organizations or individuals, can provide resources.
- Notice horse owners and those who utilize the Proposed Project trailheads of the fire dangers and encourage them through trailhead signage to register with Alert San Diego evacuate and evacuate when given notice.

6.4.3 Re-Entry Procedures

An important component of evacuations is the citizen re-entry process. Guidance and procedures to ensure a coordinated, safe, and orderly re-entry into impacted communities following an incident is provided in the County of San Diego Re-Entry Protocol.

Re-entry would be initiated by the IC/Unified Command of the Incident Management Team, with the support of the Director of Emergency Services, the OA EOC Director, and the Operations Section Chief at the OA EOC. In most cases, the OA EOC would remain activated until full re-entry is complete. In the event that the OA EOC has been deactivated, the IC or the Liaison Officer of the Incident Management Team would initiate re-entry procedures.

The IC would designate a Re-Entry Coordinator and the Operations Section Chief of the OA EOC would coordinate with and support the re-entry coordinator. The Re-Entry Coordinator is responsible for coordinating the re-entry procedures with all involved agencies and ensuring effective communication.

The impacted areas must be thoroughly investigated to ensure it is safe for residents to return and normal operations have been restored.

The public would be notified of the re-entry status through the notification measures previously mentioned in this annex, including SDCountyEmergency.com, SDEmergency App for smart phones, emergency broadcast radio, television, press releases, informational phone lines such as 2-1-1, community briefings, and informational updates at shelters.

Once evacuees are permitted to return, it is important that procedures are established to properly identify residents and critical support personnel, as well as ensure the legitimacy of contractors, insurance adjustors, and other personnel. Re-entry points should be staffed by law enforcement personnel.

7 LIMITATIONS

This Wildland Fire Evacuation Plan has been developed based on wildfire and evacuation standards and the San Diego County Evacuation Annex (County of San Diego 2014) and is specifically intended as a guide for evacuations for the Proposed Project. This plan provides basic evacuation information that would familiarize the Proposed Project's residents with the evacuation route options that may be available to them during an emergency. However, because emergencies requiring evacuation have many variables and must be evaluated on a case-by-case basis, this plan shall be subservient to real-time law enforcement and fire personnel/agencies' decision making and direction during an emergency requiring evacuation.

This Wildland Fire Evacuation Plan promotes the "Ready, Set, Go!" model, adopted by County OES, CAL FIRE, and many fire agencies statewide, including SDCFA. The goal is to raise agency and citizen awareness of potential evacuation issues and get a majority of the public "Ready" by taking a proactive stance on preparedness, training drills, and visitor education, and evacuation planning efforts. The Proposed Project populace would be "Set" by closely monitoring the situation whenever fire weather occurs and/or when wildland fire occurs, and elevating pre-planned protocol activities and situation awareness. Lastly, officials would implement the plan and mandate that populations "Go" by executing pre-planned evacuation procedures in a conservative manner (i.e., evacuation would occur based on conservative decision points, as proposed in this evacuation plan). The preferred alternative would always be early evacuation. However, there may be instances when evacuation is not possible, is not considered safe, or is not an option based on changing conditions. For example, should a fire occur and make evacuation from the Project Area ill advised, a contingency plan for residents would be available. This contingency would include moving people to pre-designated TRAs until it is safe to evacuate or the threat has been mitigated.

Ultimately, it is the intent of this Wildland Fire Evacuation Plan to guide the implementation of evacuation procedures such that the process of evacuating people from the Project Area is facilitated in an efficient manner and according to a pre-defined, evacuation protocol as well as providing a contingency option of temporarily refuging, if evacuation is considered less safe. Residents of the Proposed Project would be aware of this evacuation plan as the HOA would post it on its website and provide reminders to residents on at least an annual basis. This educational outreach would result in a populace that understands the potential for evacuations and the routes and options that may be presented to them.

During extreme fire weather conditions, there are no guarantees that a given structure would not burn or that evacuations would be successful all of the time. Wildfires may occur in the area that could damage property or harm persons. However, successful implementation of the procedures

outlined in this Wildland Fire Evacuation Plan would provide for an informed populace regarding evacuations. The Proposed Project is designed specifically to be resistant to wildfire ignition and perform as a fire-adapted project, offering fire and law officials additional options for resident safety than are available from less defensible communities.

This Wildland Fire Evacuation Plan does not provide a guarantee that all persons would be safe at all times because of the procedures discussed. There are many variables that may influence overall safety. This plan provides a summary for implementation of standard evacuation protocols, project provided roadway enhancements, and public outreach, which should result in reduced wildfire related risk and hazard. Even then, fire can compromise the procedures through various, unpredictable ways. The goal is to reduce the likelihood that the system is compromised through implementation of the elements of this plan and regular occurring program maintenance and updates.

It is recommended that the evacuation process is carried out with a conservative approach to fire safety. This approach must include maintaining the Proposed Project's fuel modification landscape, infrastructural, and ignition-resistant construction components according to the appropriate standards and embracing a "Ready, Set, Go!" stance on evacuation. Accordingly, evacuation of the wildfire areas should occur according to pre-established evacuation decision points, or as soon as they receive notice to evacuate, 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 educate themselves on practices that would improve safety.

8 REFERENCES

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APPENDIX A

"Ready, Set, Go!"
Personal Wildland Fire Action Guide

READY, SET, GO!

YOUR PERSONAL WILDLAND FIRE ACTION GUIDE

THE NOBLEST MOTIVE IS THE PUBLIC GOOD
COUNTY OF SAN DIEGO
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READY, SET, GO!

OFFICE OF EMERGENCY SERVICES
OES
COUNTY OF SAN DIEGO

READY, SET, GO!

Wildland Fire Action Guide

Saving Lives and Property
through Advance Planning

Fire is a constant threat in San Diego County, and drought, high temperatures in the summer and fall, combined with seasonal Santa Ana winds can lead to explosive fire growth.

In San Diego County, first responders are busy year-round fighting fires. When large fires threaten our community, local, state, federal, tribal, military and other agencies work together to save lives, protect property, and help those impacted by the disaster.

First responders can't do it alone though. Residents, especially those in the Wildland Urban Interface, play a critical role in being prepared for wildfires before, during, and after the next one strikes.

This guide has been modeled off of the Ready, Set, Go! program that is used locally, throughout California, and across the nation. This version is customized for San Diego County, with important local tips and information.

Use this guide to get "Ready" by making your home hardened against wildfire by using defensible space and smart fire resistant building and design choices. Create and practice a family disaster plan that includes storing essentials like food and water supplies, knowing how you'll meet up or communicate with each other, where you can safely evacuate to, and other important information.

Visit ReadySanDiego.org to register with AlertSanDiego to receive emergency alerts via email, text, cell and landline phones, and download the SD Emergency App to get the latest emergency updates delivered to your Android/iOS devices.

Be "Set" and prepared to leave when in danger by monitoring local media, viewing disaster updates on SDCountyEmergency.com, talking with 2-1-1 San Diego, and taking important steps to harden your home even further when you decide to evacuate.

Finally, be able to "Go" and go early, both to keep you and your family safe, and to make it easier for first responders to get into your community.

This guide is a great place to start as you take action to protect your family home, and community.

Tony Mecham, County Fire Chief

INSIDE

Photos courtesy of CAL FIRE, FEMA and ©Kevin Pack/K.E. Photography

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Living in the Wildland Urban Interface and the Ember Zone

Ready, Set, Go! begins with a house that firefighters can defend

Defensible Space Works!

If you live next to a naturally vegetated area, often called the Wildland Urban Interface, provide firefighters with 100 feet of defensible space to protect your home. The buffer zone you create by removing weeds, brush and thinning vegetation helps keep the fire away from your home and reduces the risk from flying embers. Firewise Communities and your local fire department's brush management guidelines provide valuable guidance on property enhancements.

A home within one mile of a natural area is in the Ember Zone. Wind-driven embers can attack your home. You and your home must be prepared well before a fire occurs. Ember fires can destroy homes or neighborhoods far from the actual flame front of the wildland fire.

What is Defensible Space?

Defensible space is the required space between a structure and the wildland area that, under normal conditions, creates a sufficient buffer to slow or halt the spread of wildland fire to a structure. It protects the home from igniting due to direct flame or radiant heat. Defensible space is essential for structure survivability during wildland fire conditions. For more information about defensible space zones and preparedness techniques within each, visit ReadySanDiego.org/wildland-fire

ZONE ONE

Zone One extends 50 feet from your home.

- Must be permanently irrigated to maintain green and healthy plants.
- Is primarily low-growing plant material, with the exception of trees. Plants shall be low-fuel and fire-resistive.
- Trim tree canopies regularly to remove dead wood and keep branches a minimum of 10 feet from structures, chimney outlets and other trees.
- Remove leaf litter (dry leaves/pine needles) from yard, roof and rain gutters.
- Relocate woodpiles and other combustible materials into Zone Two.
- Remove combustible material and vegetation from around and under decks.
- Remove or prune vegetation near windows.
- Remove “ladder fuels” (low-level vegetation that would allow the fire to spread from the ground to the tree canopy). Create a separation between low-level vegetation and tree branches by reducing the height of the vegetation and/or trimming low branches.

ZONE TWO

Zone Two extends 50 to 100 feet from your home.

- Minimize the chance of fire jumping from plant to plant by removing dead material and removing or thinning vegetation seasonally. The minimum spacing between vegetation is three times the dimension of the plant.
- There should be no permanent irrigation in Zone Two.
- Remove “ladder fuels.”
- Cut or mow annual grass down to a maximum height of 4 inches.
- Trim tree canopies regularly to keep branches a minimum of 10 feet from other trees.

What is a Hardened Home?

Construction materials and the quality of the defensible space surrounding a home are what gives it the best chance to survive a wildland fire. Embers from a wildland fire can find the weak link in your home's fire protection scheme and gain the upper hand because of a small, overlooked or seemingly inconsequential factor. However, there are measures you can take to safeguard your home from wildland fire. While you may not be able to accomplish all the measures listed below, each will increase your home's, and possibly your family's, safety and survival during a wildland fire.

ROOFS

Roofs are the most vulnerable surface where embers land because they can lodge and start a fire. Roof valleys, open ends of barrel tiles and rain gutters are all points of entry.

EAVES

Embers can gather under open eaves and ignite exposed wood or other combustible material.

VENTS

Embers can enter the attic or other concealed spaces through vents and ignite combustible materials. Vents in eaves and cornices are particularly vulnerable, as are any unscreened vents.

WALLS

Combustible siding or other combustible or overlapping materials provide surfaces or crevices for embers to nestle and ignite.

WINDOWS and DOORS

Embers can enter through open windows and gaps in doors, including garage doors. Plants or combustible storage near windows can ignite from embers and generate heat that can break windows and/or melt combustible frames.

BALCONIES and DECKS

Embers can collect in or on combustible surfaces or the undersides of decks and balconies, ignite the material and enter the home through walls or windows.

To harden your home further, consider protecting your home with a residential fire sprinkler system. In addition to extinguishing a fire started by an ember that enters your home, it also protects you and your family year-round from any fire that may start in your home.

Tour a Wildland Fire Prepared Home

Home Site and Yard: Ensure you have at least a 100-foot radius of defensible space (thinned vegetation) around your home. Note that even more clearance may be needed for homes in severe hazard areas. This means looking beyond what you own to determine the impact a common slope or neighbors' yard will have on your property during a wildland fire.

Cut and remove dry weeds and grass before noon when temperatures are cooler to reduce the chance of sparking a fire.

Landscape with fire-resistant plants that have a high moisture content and are low-growing.

Keep woodpiles, propane tanks and combustible materials away from your home and other structures such as garages, barns and sheds.

Ensure that trees are far away from power lines.

Inside: Keep working fire extinguishers on hand. Install smoke alarms and carbon monoxide detectors on each level of your home and near bedrooms. Test them monthly and change the batteries twice a year.

Address: Make sure your address is clearly visible from the road.

Roof: Your roof is the most vulnerable part of your home because it can easily catch fire from wind-blown embers. Homes with wood-shake or shingle roofs are at high risk of being destroyed during a wildland fire.

Build your roof or re-roof with fire-resistant materials such as composition, metal or tile. Block any spaces between roof decking and covering to prevent ember intrusion.

Clear pine needles, leaves and other debris from your roof and gutters.

Cut any tree branches within ten feet of your roof.

Vents: Vents on homes are particularly vulnerable to flying embers.

All vent openings should be covered with ⅛ inch metal mesh. Do not use fiberglass or plastic mesh because they can melt and burn.

Attic vents in eaves or cornices should be baffled or otherwise protected to prevent ember intrusion (mesh is not enough).

Windows: Heat from a wildland fire can cause windows to break even before the home ignites. This allows burning embers to enter and start internal fires. Single-paned and large windows are particularly vulnerable.

Install dual-paned windows with the exterior pane of tempered glass to reduce the chance of breakage in a fire.

Limit the size and number of windows in your home that face large areas of vegetation.

Walls: Wood products, such as boards, panels or shingles, are common siding materials. However, they are combustible and not good choices for fire-prone areas.

Build or remodel with fire-resistant building materials, such as brick, cement-fiber board, masonry or stucco.

Be sure to extend materials from foundation to roof.

Garage: Have a fire extinguisher and tools such as a shovel, rake, bucket and hoe available for fire emergencies.

Install a solid door with self-closing hinges between living areas and the garage. Install weather stripping around and under door to prevent ember intrusion.

Store all combustibles and flammable liquids away from ignition sources.

Driveways and Access Roads: Driveways should be designed to allow fire and emergency vehicles and equipment to reach your house.

Access roads should have a minimum 10-foot clearance on either side of the traveled section of the roadway and should allow for two-way traffic.

Ensure that all gates open inward and are wide enough to accommodate emergency equipment.

Trim trees and shrubs overhanging the road to a minimum of 13½ feet to allow emergency vehicles to pass.

Non-Combustible Fencing: Make sure to use non-combustible fencing to protect your home during a wildland fire.

Non-Combustible Boxed In Eaves: Box in eaves with non-combustible materials to prevent accumulation of embers.

Raingutters: Screen or enclose rain gutters to prevent accumulation of plant debris.

Water Supply: Have multiple garden hoses that are long enough to reach any area of your home and other structures on your property.

If you have a pool or well, consider a pump.

Chimney: Cover your chimney and stovepipe outlets with a non-flammable screen of ½ inch wire mesh or smaller to prevent embers from escaping and igniting a fire.

Make sure that your chimney is at least 10 feet away from any tree branches.

Decks and Balconies: Decks, balconies, and other floor projections and attachments must be of one – or a combination – of the following:

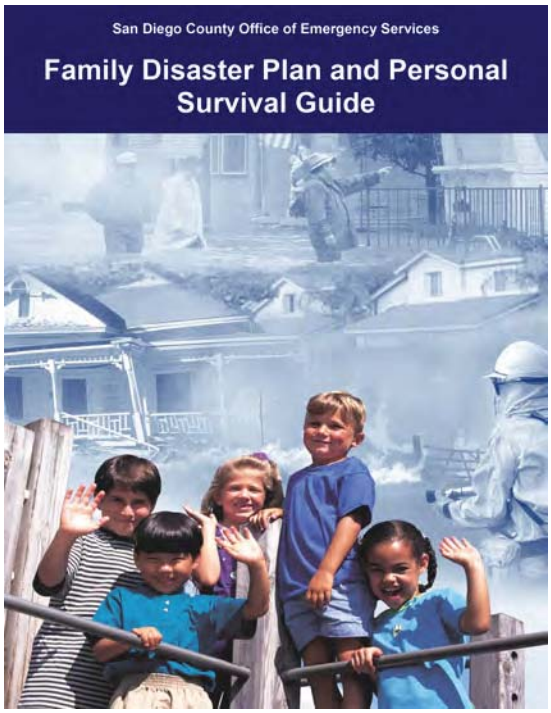
- non-combustible construction (e.g., concrete, metal)
- protected by one-hour fire-resistive material (e.g., stucco, cement-fiber board, ceramic tile, deck surface listed by approved evaluation service as one-hour-rated or Class A roof covering)
- approved fire-retardant treated materials (factory-applied fire retardant, pressure-treated lumber, listed for exterior use, installed per listing)
- heavy timber construction (minimum 4x8 joists, 4x10 or 6x8 beams, 3x ledgers, and 6x6 columns/posts)
- alternative decking materials per County Building Code 92.1.709A.1.4

READY, SET, GO!

Create Your Own Action Guide

Now that you've done everything you can to protect your house, its time to prepare your family. Your **Wildland Fire Action Guide** must be prepared well in advance of a fire. Include *all* members of your household. Use these checklists to help you gain a situational awareness of the threat and to prepare your Wildland Fire Action Guide. For more information on property and home preparedness before a fire threat, review the preparedness checklist on the Firewise Communities website, www.firewise.org

Ready – Preparing for the Fire Threat



For a more extensive survival guide, please visit: ReadySanDiego.org/make-a-plan

- ☐ Create an in-depth family disaster plan at ReadySanDiego.org
- ☐ Register to receive emergency notifications on phone, cell, text, and email for your area. Sign up at AlertSanDiego.org
- ☐ Have fire extinguishers on hand
- ☐ Ensure that your family knows the location of your utility shut-off controls
- ☐ Plan and practice several different evacuation routes
- ☐ Designate an emergency meeting location
- ☐ Assemble an emergency supply kit (water, food, medicine)
- ☐ Maintain a list of emergency contact numbers
- ☐ Have a portable radio

San Diego County

All the information in your hands when you need it! Get the SD Emergency App for Android and iOS!

2-1-1 SAN DIEGO DISASTERRESPONSE

Find out how to volunteer, and get the most up-to-date disaster information! Call 2-1-1

ReadySanDiego.org
Prepare. Plan. Stay Informed.

Visit ReadySanDiego.org for all your preparedness needs! Get a plan, get the app, get informed!

Set – Situational Awareness when a Fire Starts

- [ ] Alert family and neighbors
- [ ] Ensure that you have your emergency supply kit
- [ ] Stay tuned to media, visit: SDCountyEmergency.com
- [ ] Close all windows and doors, leaving them unlocked
- [ ] Remove flammable window shades and curtains
- [ ] Move furniture to the center of the room
- [ ] Turn off pilot lights and air conditioning
- [ ] Leave inside and outside lights on so firefighters can see your house through smoke
- [ ] Bring patio furniture, children's toys, etc. inside
- [ ] Turn off propane tanks and other gas at the meter
- [ ] Don't leave sprinklers on or water running
- [ ] Back your car into the driveway to facilitate a quick departure

- [ ] Cover attic and ground vents with pre-cut plywood or commercial covers
- [ ] Call 2-1-1 for all non-emergency inquiries or visit: 211SanDiego.org

IF YOU ARE TRAPPED: SURVIVAL TIPS

- [ ] Call 9-1-1
- [ ] Remain inside your home until the fire passes
- [ ] Shelter away from outside walls
- [ ] Bring garden hoses inside the house so embers don't destroy them
- [ ] Patrol inside your home for spot fires and extinguish any you find
- [ ] Wear long sleeves and long pants made of natural fibers such as cotton
- [ ] Stay hydrated
- [ ] Ensure you can exit the home if it catches fire (remember if it is hot inside the house, it is four to five times hotter outside)
- [ ] Fill sinks and tubs for an emergency water supply
- [ ] Place wet towels under doors to keep smoke and embers out
- [ ] After the fire has passed, check your home and roof. Extinguish any fires, sparks or embers
- [ ] Check inside the attic for hidden embers
- [ ] If there are fires that you cannot extinguish with a small amount of water or in a short period of time, call 9-1-1

Go – Leave Early

By leaving early, you give your family the best chance of surviving a wildland fire. You also help firefighters by keeping roads clear of congestion.

WHEN TO LEAVE

Do not wait to be advised to leave if there is a possible threat to your home or evacuation route. Leave early enough to avoid being caught in fire, smoke or road congestion. If you are advised to leave by local authorities, do not hesitate!

MEETING LOCATION

Travel to a predetermined location. It should be a low-risk area, such as a well-prepared neighbor or relative's house, a shelter or motel, etc.

HOW TO GET THERE

Know several travel routes out of your community in case one route is blocked by the fire or by emergency vehicles.

WHAT TO TAKE

Take your emergency supply kit containing your prepared family and pet's necessary items.

The County of San Diego Office of Emergency Services has a free, printable, All Hazards Family Disaster Plan and Survival Guide at: ReadySanDiego.org/make-a-plan

Here is a brief checklist to get your emergency supply kit started.

- ☐ Three-day supply of water (one gallon per person per day)
- ☐ Non-perishable food for all family members and pets (three-day supply)
- ☐ First aid kit
- ☐ Flashlight, battery-powered radio, and extra batteries
- ☐ An extra set of car keys, credit cards and cash or traveler's checks
- ☐ Sanitation supplies
- ☐ Extra eyeglasses or contact lenses
- ☐ Important family documents and contact numbers
- ☐ Map marked with evacuation routes
- ☐ Prescriptions or special medications
- ☐ Family photos, valuable and other irreplaceable items that are easy to carry
- ☐ Personal computers, hard drives, disks and flash drivers
- ☐ Chargers for electronic communication devices

Note: Keep a pair of old shoes and a flashlight handy in case of a sudden evacuation at night.

Why can't I immediately return home?

Although a fire has been contained or extinguished there are post-hazard concerns that must be addressed before re-entry into the impacted area(s) may be permitted. Priorities for re-entry include:

1. Safety
2. Security
3. Damage Assessment
4. Restoration of Services
5. Communication of Information

The impacted areas must be thoroughly investigated to ensure it is safe for residents to return and that services have been restored. You will be notified of the re-entry status through: *emergency broadcast radio, television, internet www.SDCountyEmergency.com, 2-1-1, community briefings, and informational updates at shelters.*

Returning Home

After a disaster, **DO NOT attempt to return to your home or cross any barriers or caution tape without permission from law enforcement officials**. When returning home, be cautious in your neighborhood and watch out for:

- Emergency personnel still operating in the area.
- Power lines lying on the ground.
- Small fires that may flare up without warning.
- Ash pits, which are holes filled with hot ash created by burned trees.
- Damaged buildings or debris (including glass, nails, etc.)
- Charred power poles and trees that may be unstable and fall.

Take the following precautions when attempting to enter your house:

POWER:

If a person or piece of equipment comes in contact with an electric line, or if a line is down or broken.

- ☐ **Call 9-1-1**.
- ☐ If you see an electrical fire, fight it with a dry CO(2) extinguisher.
- ☐ If possible, shut off the power.
- ☐ **Don't touch the person or any equipment involved**. The line may still be energized and dangerous.
- ☐ Freeing someone from energized power lines or equipment should only be attempted by a qualified SDG&E employee or a trained rescuer such as a fire fighter.
- ☐ Always assume that power lines are energized.
- ☐ Do not smoke or attempt to light anything. Use a **flashlight instead**.

GAS:

- ☐ Check to see if your gas utility is working properly. If you smell gas, leave your home immediately, and call (24/7) SDG&E at 1-800-411-7343.
- ☐ **DO NOT** light a match, candle, or cigarette.
- ☐ **DO NOT** turn electrical devices on or off, including light switches.
- ☐ **DO NOT** start an engine or use any device, including a telephone, which could cause a spark.
- ☐ **DO NOT** attempt to control the leak or repair the damaged pipe or meter. Do not use or turn off any equipment that could cause a spark.

- ☐ Check for burning embers on roofs, gutters, porches, attic, crawlspace, and throughout your property for several days after a wildfire.

- ☐ Check for any structural damage before entering your home. If you are uncertain, have your home professionally inspected before returning.

- ☐ Do not smoke or attempt to light anything as there could be flammables or leaking gases. Use a flashlight instead.

- ☐ Open windows and doors to allow airflow, which will help dry out of any water damage areas.

San Diego Gas & Electric can be reached at 1-800-411-7343 or SDGE.com/customer-service/contact-us
For more information on damage assessment visit the County's Recovery page at SDCountyRecovery.com.

Fire Action Guide

Out of Area Contact: _____ **Phone #:** _____

Work: _____ **School:** _____ **Other:** _____

Evacuation Routes: _____

_____

_____

Meeting Location: _____ **Location of Supply Kit:** _____

Information: SDCountyEmergency.com 211SanDiego.org SD Emergency App

You can create a more in-depth plan for free at: ReadySanDiego.org/make-a-plan

READY, SET, GO!

Safety Checklist

Tips To Improve Family and Property Survival During A Wildland Fire

Home	Yes	No
1. Does your home have a metal, composition, tile or other non-combustible roof with capped ends and covered fascia?	☐	☐
2. Are the rain gutters and roof free of leaves, needles and branches?	☐	☐
3. Are all vent openings screened with 1/8 inch non-combustible, corrosion-resistant metal mesh?	☐	☐
4. Are approved spark arrestors on chimneys?	☐	☐
5. Does the house have non-combustible siding material?	☐	☐
6. Are the eaves "boxed in" and the decks enclosed?	☐	☐
7. Are the windows dual-paned or tempered glass?	☐	☐
8. Are decks, porches and similar areas made of non-combustible material and are they free of easily combustible material?	☐	☐
9. Is all firewood at least 30 feet from the house?	☐	☐

Defensible Space	Yes	No
1. Has dead vegetation been removed from the defensible space zones around your home? (Consider adding distance due to slope of property.)	☐	☐
2. Is the required separation between shrubs maintained?	☐	☐
3. Have ladder fuels been removed?	☐	☐
4. Is there a clean and green area extending at least 50 feet from the house?	☐	☐
5. Is there a non-combustible area within five feet of the house?	☐	☐
6. Is the required separation between trees and crowns maintained?	☐	☐

Emergency Access	Yes	No
1. Is the home address plainly legible and visible from the street?	☐	☐
2. Are trees and shrubs overhanging the street trimmed to 15½ feet?	☐	☐
3. If your home has a long driveway, does it have a suitable turnaround area?	☐	☐

ReadySanDiego.org
Prepare. Plan. Stay Informed.

Insurance Institute for Business & Home Safety

APPENDIX B

FlamMapFire Behavior and Progression Analysis

APPENDIX B
FlamMap Fire Behavior and Progression Analysis

FLAMMAP FIRE BEHAVIOR AND PROGRESSION MODELING

The FlamMap software package was used to evaluate regional fire behavior in order to inform the relocation/evacuation recommendations included in this plan. FlamMap utilizes the same fire spread equations built into the BehavePlus software package, but allows for a geographical presentation of fire behavior outputs as it applies the calculations to each pixel in the associated GIS landscape (Finney 1998). The analysis conducted for this plan utilized FlamMap's Minimum Travel Time tool in order to evaluate the amount of time necessary for a fire to reach the project site. The following sections discuss the methods, inputs, and results of the FlamMap analysis.

MODELING INPUTS

FlamMap software requires a minimum of five separate input files that represent field conditions in the analysis area, including elevation, slope, aspect, fuel model, and canopy cover. Each of these data files was obtained from the LANDFIRE (Landscape Fire and Resource Management Planning Tools) data distribution site. LANDFIRE is shared program between the wildland fire management programs of the U.S. Department of Agriculture Forest Service and U.S. Department of the Interior and provides landscape-scale, GIS data layers, including those representing elevation, slope, aspect, fuel model, and canopy cover.

The FlamMap analysis area encompassed approximately 149,104 acres (233 square miles), centered on the project site. The LANDFIRE data set (Landscape file) was downloaded in the NAD 83, UTM, Zone 11N coordinate system and had a ground resolution of 30 meters. In addition to the Landscape file, wind and weather data were incorporated into the model inputs.

The Minimum Travel Time (MTT) tool in the FlamMap software package is a two-dimensional fire growth model which calculates fire growth based on calculated fire spread rates from an ignition source (point, line, or polygon). The MTT tool uses fire spread rates to find minimum travel paths between data cells in the GIS landscape, with an output data file representing the number of minutes for a wildfire to reach a particular location from the ignition source. As FlamMap provides a static representation of fire behavior, modeling using the MTT tool holds wind and weather inputs constant over the modeling period.

Five FlamMap runs were completed using the MTT tool in FlamMap to represent two distinct weather scenarios with different ignition locations. Three runs represented a fire approaching the project site from the north or northeast during a Santa Ana wind event (97^{th} percentile weather condition), with different ignition locations. Two runs represented a fire approaching the project site from the southwest during a typical on-shore weather pattern (50^{th} percentile weather condition), with different ignition locations. The following paragraphs provide descriptions of the

inputs used in processing the FlamMap models. In addition, data sources are cited and any assumptions made during the modeling process are described.

Elevation

The elevation data file represents units of meters above mean sea level (AMSL). Elevations in the FlamMap analysis area range from 14 to 1,140 meters (46 to 3,740 feet) AMSL. Elevation data is a required input file for FlamMap runs and are necessary for adiabatic adjustment of temperature and humidity and for conversion of fire spread between horizontal and slope distances.

Slope

The slope data file represents values in degrees of inclination from horizontal. Slope values in the FlamMap analysis area range from 0–111%. The slope input file is necessary for computing slope effects on fire spread and solar radiance. 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.

Aspect

The aspect data file represents values in azimuth degrees. Aspect values are important in determining the solar exposure of grid cells.

Fuel Model

The seven fuel characteristics help define the 13 standard fire behavior fuel models (Anderson 1982) and the more recent custom fuel models developed for Southern California (Weise and Regelbrugge 1997). According to the model classifications, fuel models used for fire behavior modeling (BehavePlus, FlamMap, FARSITE) have been classified into four groups, based upon fuel loading (tons/acre), fuel height, and surface-to-volume ratio. 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 the BehavePlus, FlamMap, and FARSITE modeling systems. These new models attempt to improve the accuracy of the 13 standard 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 40 new 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

Fuel model assignments were derived from the acquired LANDFIRE data set, which was based on the 40 Scott and Burgan (2005) models and represents distinct distributions of fuel loading found among surface fuel components (live and dead), size classes, and fuel types. The fuel models included in the FlamMap analysis area are presented in Table 1.

Table 1
Fuel Models in FlamMap Analysis Area

Fuel Model	Description	Area (acreage)	Coverage Percentage
NB1	Urban/Developed	27,074	18.2%
NB3	Agricultural	34	0.0%
NB8	Open Water	1,283	0.9%
NB9	Bare Ground	1,109	0.7%
GR1	Short, Sparse Dry Climate Grass	4,266	2.9%
GR2	Low Load, Dry Climate Grass	13,333	8.9%
GS1	Low Load, Dry Climate Grass-Shrub	8,504	5.7%
GS2	Moderate Load, Dry Climate Grass-Shrub	68,178	45.7%
SH2	Moderate Load Dry Climate Shrub	1,997	1.3%
SH5	High Load, Dry Climate Shrub	2	0.0%
SH7	Very High Load, Dry Climate Shrub	18,102	12.1%
TU2	Moderate Load Humid Climate Timber-Shrub	261	0.2%
TU5	Very High Load, Dry Climate Timber-Shrub	68	0.0%
TL3	Moderate Load Conifer Litter	645	0.4%
TL4	Small Down Logs	129	0.1%

Table 1
Fuel Models in FlamMap Analysis Area

Fuel Model	Description	Area (acreage)	Coverage Percentage
TL6	Moderate Load Broadleaf Litter	4,109	2.8%
TL7	Large Downed Logs	9	0.0%
	Total:	**149,104**	**100.0%**

Canopy Cover

Canopy cover is necessary for computing shading and wind reduction factors for all fuel models. Canopy cover is measured as the horizontal fraction of the ground that is covered directly overhead by tree canopy. Crown closure refers to the ecological condition of relative tree crown density. Stands can be said to be "closed" to recruitment of canopy trees but still only have 40% or 50% canopy cover. Coverage units for this analysis are in percent cover.

Wind and Fuel Moisture

In order to evaluate specific wind and fuel moisture variables for the analysis area, data from the San Miguel Remote Automated Weather Station (RAWS) was analyzed. The San Miguel RAWS is the closest RAWS, located approximately 3.2 miles due northwest of the Project site, in a similar inland position and estimated to include consistent weather conditions as the Project area. The location and available data range for the San Miguel station is:

- San Miguel RAWS
    - Latitude: 32.68611
    - Longitude: -116.97833
    - Elevation: 425 feet
    - Data years: 2002 to 2010

Utilizing the FireFamily Plus v. 4.0.2 (FireFamily Plus 2008)[1] software package, data from the San Miguel RAWS was processed and analyzed to determine 50th (typical) and 97th (extreme) percentile wind and fuel moisture conditions to be used in the fire behavior modeling efforts conducted for the analysis area. Fuel moisture information derived from FireFamily Plus analysis was used to create a 50^{th} and 97^{th} percentile fuel moisture file for use in the FlamMap runs.

As noted, two separate wind scenarios were analyzed and incorporated into the model runs: summer fire (50th percentile values from June 1 to August 31) with 8 mph on-shore winds, and fall fire (97th

[1] http://www.firelab.org/project/firefamilyplus

percentile values from September 1 to November 30) with 40 mph sustained winds. Table 2 summarizes the wind and fuel moisture input variables used for the FlamMap analysis.

Table 2
BehavePlus Fire Behavior Model Variables

Variable	Summer Weather (Onshore Flow) 50th Percentile	Fall Weather (Offshore Flow) 97th Percentile
1h Moisture	8%	2%
10h Moisture	10%	3%
100h Moisture	15%	7%
Live Herbaceous Moisture	90%	60%
Live Woody Moisture	122%	92%
20-ft Wind Speed	8 mph	40 mph
Wind Direction	220 degrees	40 degrees

Ignition Locations

Ignition locations were selected by scenario, as described below:

1. For the models analyzing a potential Santa Ana wind-driven fire approaching the project site from the northeast (Peak weather condition), three different ignition locations were evaluated:
    a. Scenario 1: An ignition line along Campo Road (between Peaceful Valley Ranch Road and Daley Ranch Truck Trail). Ignition along Campo Road was selected to model vehicle-originated fires and a linear ignition source was selected to better determine the time for a fire to reach the project site should an ignition occur within these sections of roadway.
    b. Scenario 2: An ignition line along Proctor Valley Road (between Echo Valley Road and Valley Knolls Road). Ignition along Proctor Valley Road was selected to model vehicle-originated fires and a linear ignition source was selected to better determine the time for a fire to reach the project site should an ignition occur within these sections of roadway.
    c. Scenario 3: An ignition point at the end of Whispering Meadows Lane, selected to model an equipment-originated fire along the wildland-urban interface.
2. For the models analyzing a potential fire approaching the site from the west-southwest during typical on-shore weather patterns (Summer weather condition), two different points were used:
    a. Scenario 4: An ignition along Proctor Valley Road, southwest of the project site (Lower Proctor Valley Road), near the north end of Upper Otay Reservoir. This point was selected to model a fire originating from off-road vehicle use.

b. Scenario 5: An ignition along Proctor Valley Road, west of the project site (Mid Proctor Valley Road). This point was selected to model a fire originating from a vehicle.

Other Model Inputs

In addition to the aforementioned inputs, the following inputs were included in the FlamMap runs:

- **Simulation Time:** The model simulation time was set at 5 hours (300 minutes) for fall runs and 24 hours (1,440 minutes) for summer runs. This duration was sufficient to allow modeled fires to reach the project site.
- **Resolution:** The calculation resolution was set at 30 meters, the same resolution as the base data files (e.g., elevation, fuels).
- **Spot Probability:** The spotting probability was set at 5% and the spotting delay set at 2 minutes.
- **Wind Vectors:** Wind vectors were modeled within the FlamMap runs using WindNinja tool embedded in the FlamMap software. WindNinja models the effect of topography on wind speed and direction generates wind vector files for use in the modeling runs. The grid resolution for the WindNinja analysis was set at 30 meters.

5.2.2.2 Modeling Results

The output files generated for each of the FlamMap runs are the result of the analysis using the Minimum Travel Time tool and represent fire Arrival Time. Specifically, one grid file was generated for each run (two Summer and three Peak) representing the time necessary for a fire to reach a particular location (Arrival Time), considering modeling inputs and ignition location(s). Maps depicting the Arrival Time grids for all scenarios are included in Figures C-1 through C-5. The Arrival Time results vary depending on the scenario analyzed.

For the models analyzing fires during Peak (Santa Ana) wind and weather conditions, arrival time to the proposed development area varies depending on ignition location. Scenario 1 (ignition on Campo Road) results in a fire reaching the northeastern-most development area within 1 hour, and the southwestern-most development area within 5 hours. Scenario 2 (ignition on Proctor Valley Road) results in a fire reaching the northeastern-most development area within 1 hour, and the southwestern-most development area within 3 hours. Scenario 3 (ignition at the end of Whispering Meadows Lane) results in a fire reaching the northeastern-most development area within 2 hours, and the southwestern-most development area within 4 hours. For the models analyzing fires during Summer (On-Shore) wind and weather conditions, arrival time to the

project boundary is approximately 4 hours from the nearest ignition location (Scenario 5, ignition along Proctor Valley Road).

The FlamMap modeling results are based on the data inputs presented herein. FlamMap calculates fire growth across the landscape assuming independence of fire behavior between neighboring cells in the landscape and holds the wind and fuel moisture inputs constant for the duration of the modeling run. Therefore, the FlamMap results presented in this FPP provide a conservative estimate of the amount of time necessary for a fire to reach the project site as the model does not consider changes to wind speed, wind direction, or fuel moisture influenced by terrain, time of day, or changes in regional weather patterns.

REFERENCES

Anderson, Hal E. 1982. Aids to Determining Fuel Models for Estimating Fire Behavior. USDA Forest Service Gen. Tech. Report INT-122. Intermountain Forest and Range Experiment Station, Ogden, Utah.

Scott, Joe H., and Robert E. Burgan. 2005. Standard fire behavior fuel models: a comprehensive set for use with Rothermel's surface fire spread model. Gen. Tech. Rep. RMRS-GTR-153. Fort Collins, Colorado: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 72 p.

Weise, D.R., and J. Regelbrugge. 1997. Recent chaparral fuel modeling efforts. Prescribed Fire and Effects Research Unit, Riverside Fire Laboratory, Pacific Southwest Research Station. 5p.

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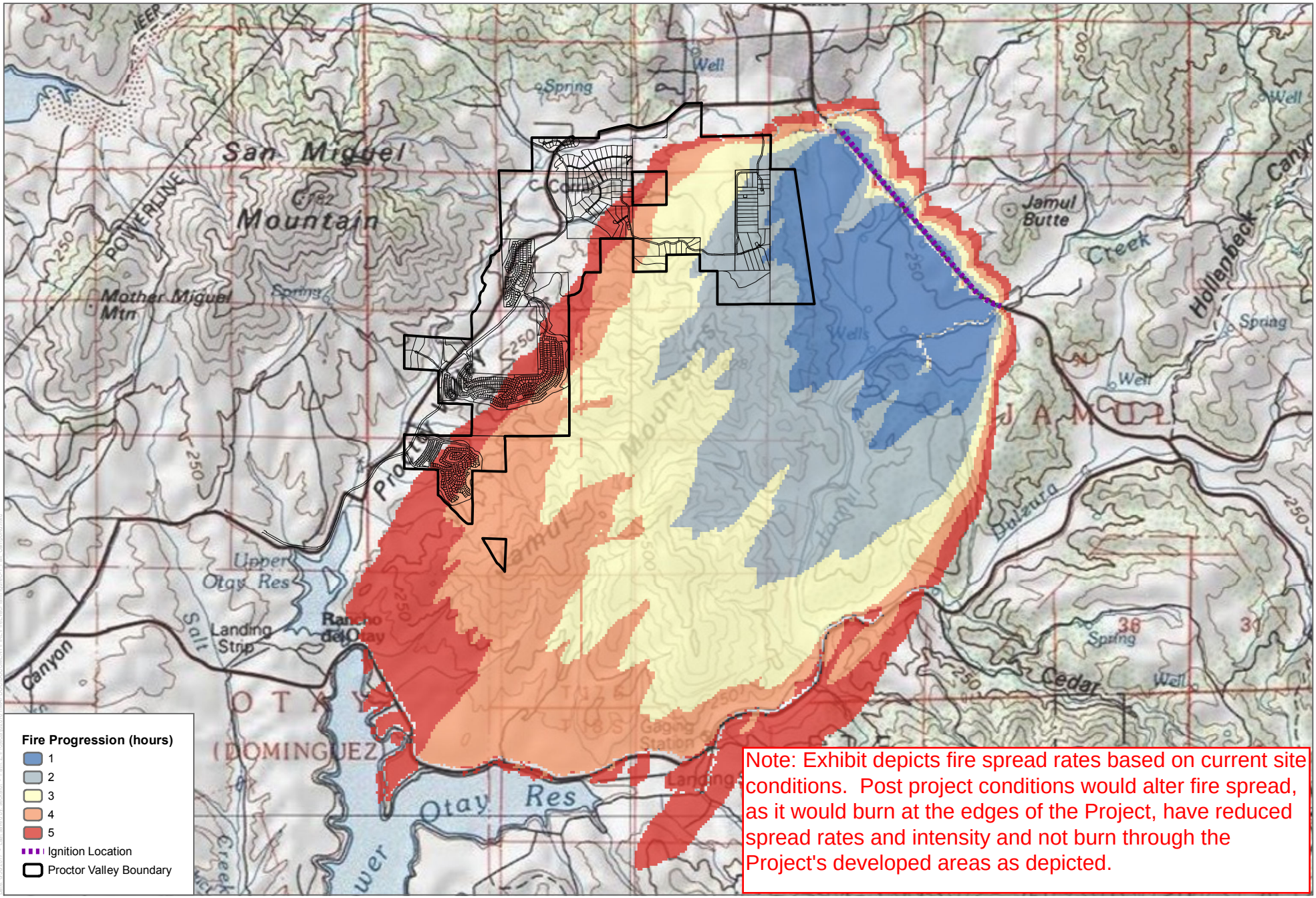
APPENDIX C

Wildfire Progression Model – Ignition Off State Route 94 Northeast of the Otay Ranch Village 14 and Planning Areas 16/19



SOURCE: USGS 2017; Dudek 2017

DUDEK

0 2,550 5,100 Feet

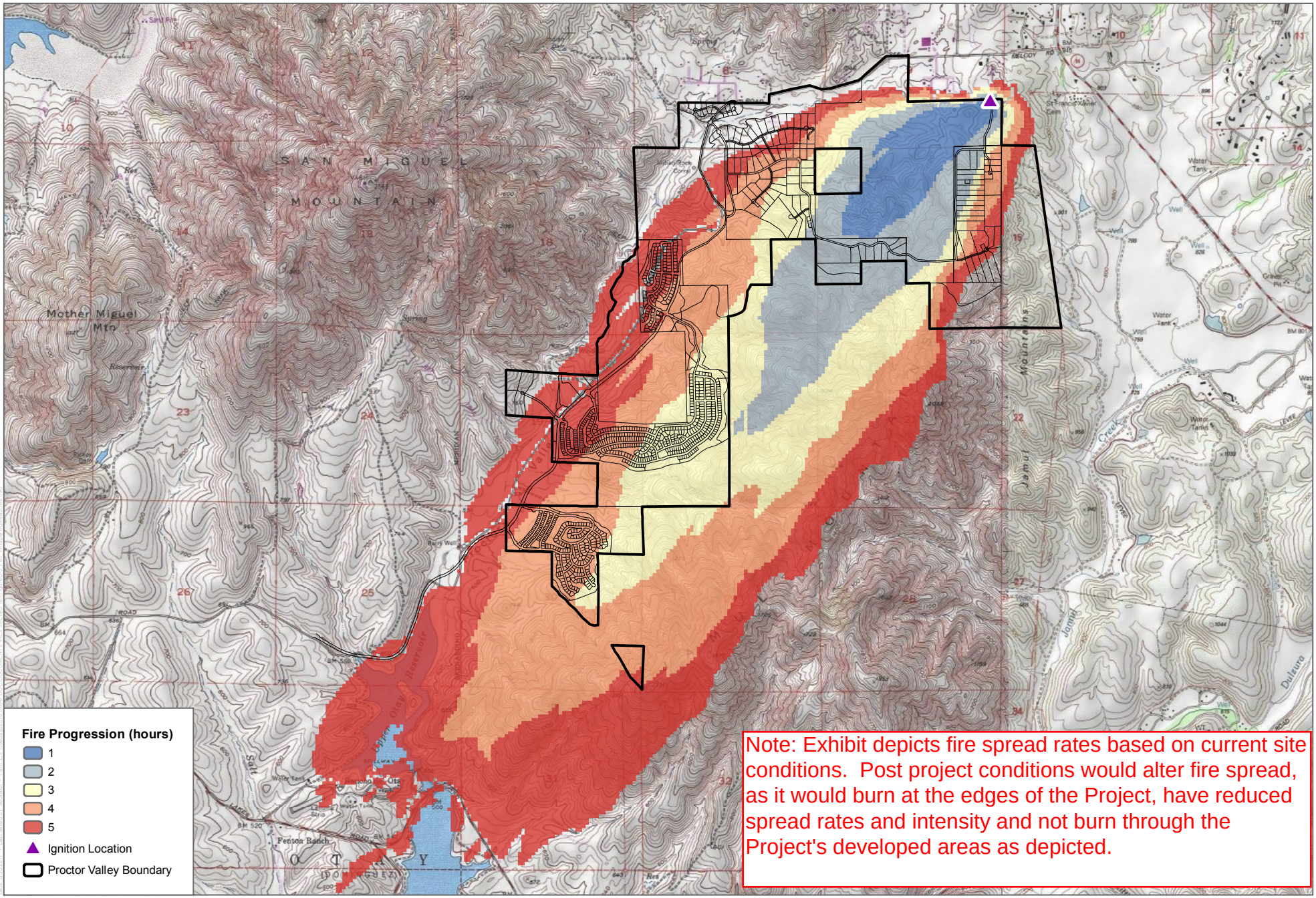
Appendix C

FlamMap Fire Behavior Modeling - Fall Fire Arrival Time - Campo Road Ignition

Wildland Fire Evacuation Plan - Otay Ranch Village 14 and Planning Areas 16/19

APPENDIX D

Wildfire Progression Model – Ignition Off Proctor Valley Road Directly North of Planning Areas 16/19



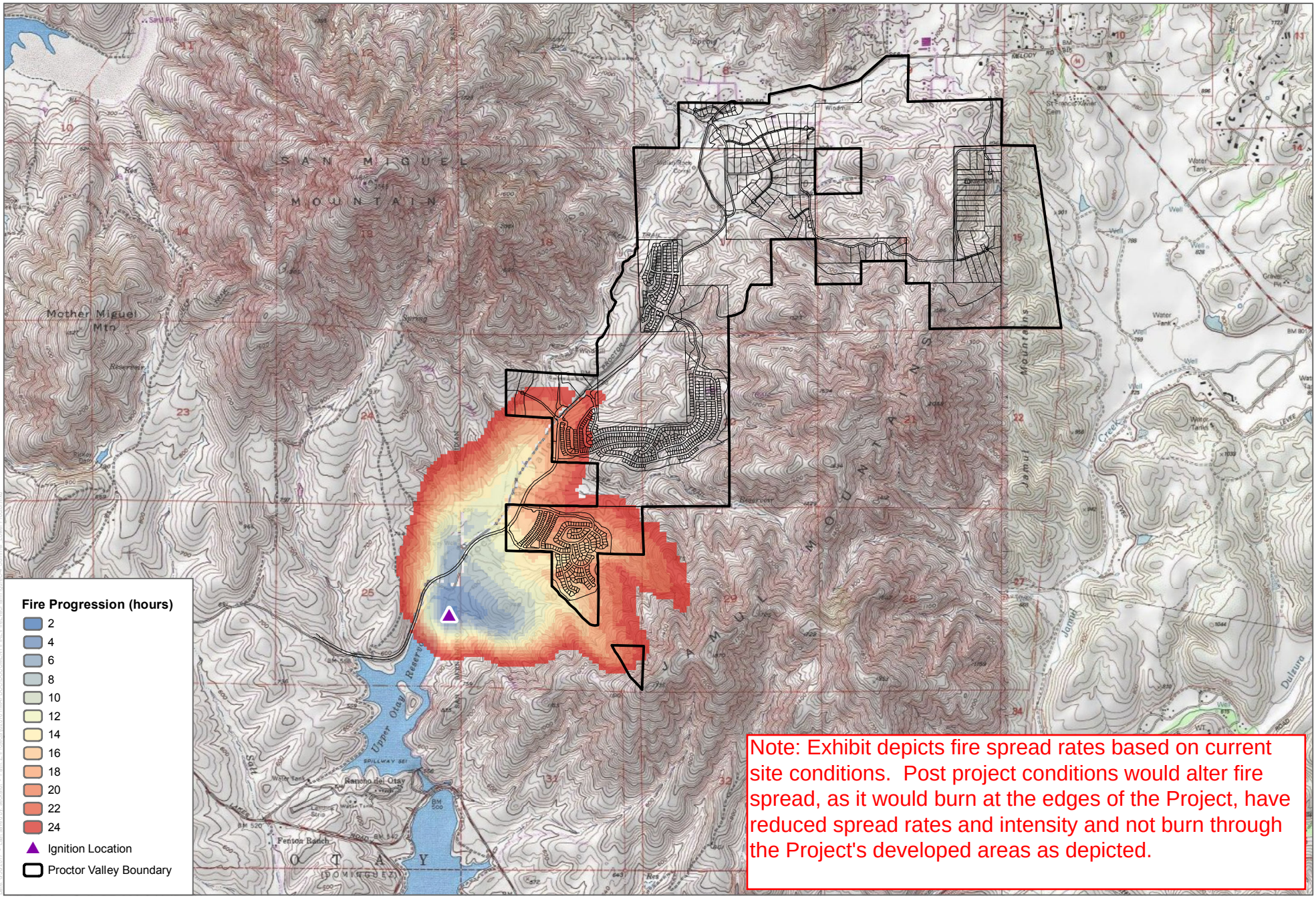
SOURCE: USGS 2017; Dudek 2017

Appendix D

FlamMap Fire Behavior Modeling - Fall Fire Arrival Time - Whispering Meadows Lane Ignition

APPENDIX E

Wildfire Progression Model – Ignition Off Proctor Valley Road, south of Otay Ranch Village 14 and Planning Areas 16/19



SOURCE: USGS 2017; Dudek 2017

DUDEK

0 1,900 3,800 Feet

Appendix E

FlamMap Fire Behavior Modeling - Summer Fire Arrival Time - Lower Proctor Valley Road Ignition