CARPINTERIA-SUMMERLAND FIRE PROTECTION DISTRICT

COMMUNITY WILDFIRE PROTECTION PLAN

February 2021

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Executive Summary

This Community Wildfire Protection Plan (CWPP) provides a science and engineering-based assessment of the wildfire threat in the wildland urban interface (WUI) of the Carpinteria-Summerland Fire Protection District in Santa Barbara County, California. This CWPP was developed through a collaborative process involving the Fire District, surrounding fire agencies, county officials, county, state, and federal land management agencies, and community members. It meets the CWPP requirements set forth in the federal Healthy Forests Restoration Act which include:

- Identifying and prioritizing areas for fuel reduction activities
- Stakeholder collaboration
- Addressing structural ignitability

Wildfire poses one of the greatest risks to human life, property, environment, and local economies along this portion of the Central Coast, with the District providing fire services to approximately 17,747 residents and 4,500 structures. Both Carpinteria and Summerland are identified as Communities at Risk by CALFIRE, with approximately 84% of the total land area in the District designated as having a moderate to very high fire hazard severity rating. Santa Barbara County has a long history of large wildfires, with many of these fires burning into the local communities along the Highway 101 corridor of southern Santa Barbara County. While frequent large fires have consumed much of the heavy fuels adjacent to Carpinteria and Summerland, rapid post-fire vegetation recovery and lengthening fire seasons associated with climatic change sets the stage for future wildfires to impact the local communities.

A science and engineering-based hazard, risk and vulnerability assessment was performed using high resolution topography, fuels, weather and values at risk data. The assessment was focused on identifying areas of concern throughout the District and prioritizing areas where wildfire threat and hazard potentials create the greatest risk to the community. Hazard mitigation efforts and other action items were specifically tailored to address the unique issues in the areas of greatest concern (see Sections 5.0 and 6.0).

The Carpinteria-Summerland Fire Protection District, in collaboration with Local, State and Federal partners, will work to reduce wildland fire hazards and associated risks through the use of strategies that include (see Section 6.0):

+ Pre-fire planning.
+ Public education and outreach to promote and implement fire adapted community practices.
+ Vegetation management and fuel reduction at the community level, including the enforcement of defensible space standards on private lands.
+ Reducing structure ignitability by promoting and enforcing building codes, ordinances, and statutes.

This document provides a framework that can be used to identify, prioritize, implement, and monitor hazard and risk reduction activities throughout the District. It is intended to be a living document that will be updated periodically by the CSFPD in collaboration with public and private stakeholders in the District and adjacent fire agencies.

This document is also intended to support the California Fire Plan and CAL FIRE's Unit Strategic Fire Plan. While this CWPP covers the entire District, this plan supports and encourages focused wildfire protection actions at the city, community, and neighborhood scales.

Revision Record Summary

Version	*Date*	*Description of Updates*
0	2013	Original CWPP prepared by CSFPD
1	2021	Quantitative hazard, risk, and vulnerability assessment

Signatures

The 2021 Carpinteria-Summerland Fire Protection District (CSFPD) Community Wildfire Protection Plan (CWPP) was developed in accordance with the Healthy Forests Restoration Act. The plan was developed collaboratively among CSFPD stakeholders including federal, state, local, and private landowners, residents, community groups and neighboring fire agencies. The plan includes a prioritized list of hazardous fuel reduction strategies, addresses measures that community members can take to reduce structural ignitability, as well as provides recommendations on additional studies, policy changes, educational programs and other initiatives that can be undertaken to provide a more holistic wildfire mitigation strategy in all stages of wildfire disaster risk management (i.e. prevention/mitigation, preparedness, response and recover). The undersigned have reviewed the CWPP update and accept this document as the final draft representing 2021.

Carpinteria-Summerland Fire Protection District Chief Date

City of Carpinteria Date

Santa Barbara County Board of Supervisors Date

Santa Barbara County Fire Department Date

Los Padres National Forest (USFS) Date

Montecito Fire Protection District Date

Ventura County Fire Protection District Date

Cal Fire Unit Chief Date

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List of Acronyms

AHJ	Authority Having Jurisdiction
CAL FIRE	California Department of Forestry and Fire Protection
CSFPD	Carpinteria-Summerland Fire Protection District
CWPP	Community Wildfire Protection Plan
FHSZ	Fire Hazard Severity Zone
GIS	Geographic Information System
HFRA	Healthy Forest Restoration Act
HIZ	Home Ignition Zone
LANDFIRE	Landscape Fire and Resource Management Planning Project
LP	Los Padres National Forest
LRA	Local Responsibility Area
MTT	Minimum Travel Time
NFPA	National Fire Protection Association
RAWS	Remote Automated Weather Station
SRA	State Responsibility Area
WFDSS	Wildland Fire Decision Support System
WIMS	Weather Information Management Systems
WUI	Wildland Urban Interface

1.0 Introduction

The Carpinteria-Summerland Fire Protection District (CSFPD) and the surrounding area have an extensive history of large wildfires that have caused substantial impacts to human health and life safety, the built environment, local economies, the natural environment and cultural/historical resources. Impacts from wildfire have also included numerous other short and long-term costs to social capital, human psychology, vulnerable groups and recovery capacities. While government agencies can play an important role in developing and implementing a range of wildfire hazard and risk mitigation activities, programs, and policies, wildfires are not fully preventable. Thus, it is critical that the "whole" community works collectively to build individual and societal capacities to prevent, prepare, respond, and recover from major wildfire incidents. As wildfires are an inevitable part of life in coastal Santa Barbara County, it is not a question of if a wildfire will burn, but when it will burn and how prepared and resilient the whole community is to minimize potential impacts.

The 2021 CSFPD Community Wildfire Protection Plan (CWPP) is the result of a community-wide planning effort to quantify and evaluate the wildfire threat to the District and to develop mitigation strategies that enhance protection of human life safety and the range of community values from wildfire. The updated plan meets the requirements of the 2003 Healthy Forests Restoration Act and positions the District well to obtain state and federal grants for any additional studies and/or implementation activities identified in the action plan. This plan supersedes the original 2013 CWPP by incorporating the latest wildfire science and engineering tools, as well as industry best practices, to holistically mitigate the risks of wildfires in the District.

Fundamental to any CWPP is the engagement and collective action of all community Stakeholders in protecting the things that are of value, addressing the specific challenges of the local context and developing comprehensive risk management strategies that work for the whole community

1.1 PURPOSE OF PLAN

The primary purpose of the Community Wildfire Protection Plan (CWPP) is to minimize the wildfire threat to human life and wellbeing, and reduce the wildfire risk to community values/assets such as residential structures, critical infrastructure, businesses, the natural environment and historic/cultural resources within the CSFPD.

The CWPP provides guidance for future actions of the CSFPD, local residents, businesses, homeowner associations, local community groups and other interested parties in their individual and collective efforts to reduce the potential wildfire threat and associated risks to the communities in the District. Successful implementation and long-term sustainability are subject to available funding, the collective action and will of all community Stakeholders, other CSFPD priorities, collaboration between Stakeholder groups on private and public lands, and environmental review under the California Environmental Quality Act (CEQA).

1.2 GOALS & OBJECTIVES

The Goals and Objectives of the CWPP were developed in collaboration with the (CSFPD) and residents through a combination of working group meetings, open forum workshops and an on-line survey. The goals represent broad-based visions for the CWPP and provide general long-term guidelines to drive the desired end-states for the community. The objectives define strategies or implementation steps to attain the identified goals. They are both specific and measurable and will have defined completion dates as determined by the CSFPD. The goals and objectives for the CSFPD CWPP are summarized in Table 1.

Table 1. Goals & Objectives of the CSFPD 2021 CWPP

Goals	Objectives
Minimize the wildfire threat to life safety	• Assess wildfire hazards and risks within the Planning Area, and utilize these results to set priorities to reduce threat to life safety • Review the existing public alert protocols and evacuation procedures for wildfires and make recommendations for enhancement as necessary • Develop guidelines that address vulnerable populations in consideration of special needs for preparedness, response, pre-planning evacuation and recovery • Evaluate the effectiveness of the existing vegetation treatment plans, development standards and fire codes • Develop fuel treatment methods and strategies for property owners and agencies that provide guidance for adequate defensible space for structures and transportation routes in all types of wildland fuels • Develop a GIS product of existing and proposed vegetation treatments • Improve collective action in reducing wildfire risk through enhancements to community engagement, participation, and education programs
Reduce the wildfire threat to values/assets at risk	• Identify values/assets at risk from wildfire in the Planning Area. • Utilize the wildfire hazard and risk assessments to develop prioritized mitigation strategies to reduce the threat to values/assets. • Identify and promote citizen-based actions, as well as additional CSFPD efforts to support and enhance structure hardening and the development of effective defensible space.
Develop a Community Wildfire Protection Plan (CWPP) that sets priorities to mitigate risks and hazards identified	• Create a CWPP that meets the requirements of the 2003 Healthy Forest Restoration Act and FEMA's Local Hazard Mitigation Plan • Facilitate collaboration between stakeholders, land managers, residents, and the Fire District to address potential wildfire hazards and risks • Identify opportunities to further build community and regional partnerships for the Planning Area • Engage communities and agency leaders using the Core Group members and interested community leaders • Develop a public education strategy to inform the public of the CWPP findings and mitigations • Identify initiatives to support and engage Hispanic communities and other vulnerable groups

Goals	Objectives
Enhance the resiliency of the CWPP to future climate change impacts	• Determine potential impacts of climate change on the local fire environment and how these impacts may influence wildfire hazard and risk in the mid-21st century • Assess future potential climate scenarios for the south-central coastal zone. • Provide recommendations to assist the Fire District in mitigating potential increase in wildfire hazard and risk for the future.
Improve accountability, public trust and efficiency in implementing action items identified in the CWPP	• Establish a plan to monitor and evaluate the City's progress in implementing action items and achieving the goals identified in the CWPP. • Create a method to monitor, track, and document completed action items identified in the CWPP. • Identify responsible individuals for carrying out action items and establish accountability for actions through annual reporting to the Fire District Board of Directors and the Carpinteria City Council.

To help manage the implementation of the action items and achieve the goals identified in the CWPP, a monitoring and evaluation plan has been developed in Chapter 7.0 and Chapter 8.0 of this document.

1.3 DEVELOPMENT TEAM

This section identifies the agencies, parties or other organizations who were either involved and/or provided input into the development of this CWPP. The entities, roles, and responsibilities are indicated in Table 1.

CWPP Development Entities	Roles/Responsibilities
Carpinteria-Summerland Fire Protection District	+ Manage CWPP development and consultants + Grant funding for CWPP + Coordinated Core Working Group and public outreach + Provide guidance and support for CWPP + Distribute media releases about CWPP + Conduct direct outreach + Coordinate with neighboring jurisdictions
Core Working Group • Carpinteria-Summerland Fire District • Santa Barbara County Fire • Los Padres National Forest (USFS) • Carpinteria City • Montecito Fire Protection District	+ Provide general guidance, expertise, and support for CWPP

CWPP Development Entities	Roles/Responsibilities
General Public and Other Interested Parties	+ Attend public outreach workshops + Provide responses to online survey + Provide input on CWPP values, values to protect, areas of concerns, community projects and ongoing grass-roots initiatives
CWPP Consultant: Jensen Hughes	+ Develop CWPP + Facilitate public workshops + Administer online public survey + Provide content for CWPP CSFPD communications

1.4 POLICY & REGULATORY FRAMEWORK

The following codes, standards, policies, and regulations at the federal, state, county, and local levels were adopted in the development of this CWPP. A more detailed summary of these policy and regulatory documents is provided in Appendix B.

Federal

+ Disaster Mitigation Act (2000–present)
+ National Fire Plan (NFP) 2000
+ National Cohesive Wildland Fire Management Strategy (2009)
+ NFPA Standards (NFPA 1, NFPA 1141 to 1144)
+ National Incident Management System (NIMS)

County

+ Multi-Jurisdictional Hazard Mitigation, 2017
+ Santa Barbara Unit Strategic Fire Plan, 2020
+ CA Fire Code Chapter 49
+ Santa Barbara Operational Area Mutual "All Risk" Mutual Aid Plan
+ Santa Barbara Comprehensive Plan
+ Santa Barbara County Code – Chapter 35 – County Land Use & Development Code - 2020
+ Article II - Coastal Zoning Ordinance
+ Article IX - Deciduous Oak Tree Protection and Regeneration Ordinance
+ Santa Barbara County Air Pollution Control District

State

+ California Strategic Fire Plan 2018
+ CAL FIRE Strategic Fire Plan 2019
+ California State Multi-Hazard Mitigation Plan, 2013
+ Public Resource Code: 4125-4137, 4201-4204, 4291, 4292-93, 4296, 4296.5, 4421-4446, 4741
+ California Code of Regulations - 1299.1, 1256
+ California Code of Regulations, Title 24
+ 2019 California Fire Code
+ 2019 California Building Code Chapter 7A
+ 2019 California Residential Code Chapter 3
+ Government Code 51175-51189; 65302.5:
+ California Health and Safety Code: DIVISION 12.
+ California Environmental Quality Act (CEQA)
+ California Civil Code 1103.C.3
+ California Emergency Services Act - Chapter 7, Section 8550-8551 (CESA)
+ California Regional Water Quality Board
+ California Air Resources Board
+ Senate Bills: 160, 167, 190, 465, 560, 670 901, 979, 1260
+ Assembly Bills: 836, 1054, 1877, 1956, 2911

Local

- City of Carpinteria Hazard Mitigation Plan – 2017
- City of Carpinteria Emergency Operations Plan – 2014
- City of Carpinteria General Plan Annual Progress Report – 2019
- CSFPD access standard #1 (rev 07/18)
- Summerland Community Plan – 2017
- Toro Canyon Community Plan – 2004
- Ordinance No. 2020-01 - CSFPD
- Carpinteria California – Code of Ordinances: Title 8 – Health and Safety; Chapter 8.24 – Fire Prevention
- Vegetation Management Plan- Development Standard #6 (rev 7/2018)
- Southern California Edison 2020-2022 Wildfire Mitigation Plan
- Fire Hazard Reduction Burning

1.5 FUNDING FOR CWPP DEVELOPMENT

Funding for the preparation of this CWPP update was made available from a CAL FIRE Community Fire Prevention Grants (Fiscal Year 2018–2019). The grant period started on June 6, 2019 and extends through March 15, 2021. Grant management and reporting is being conducted by CSFPD.

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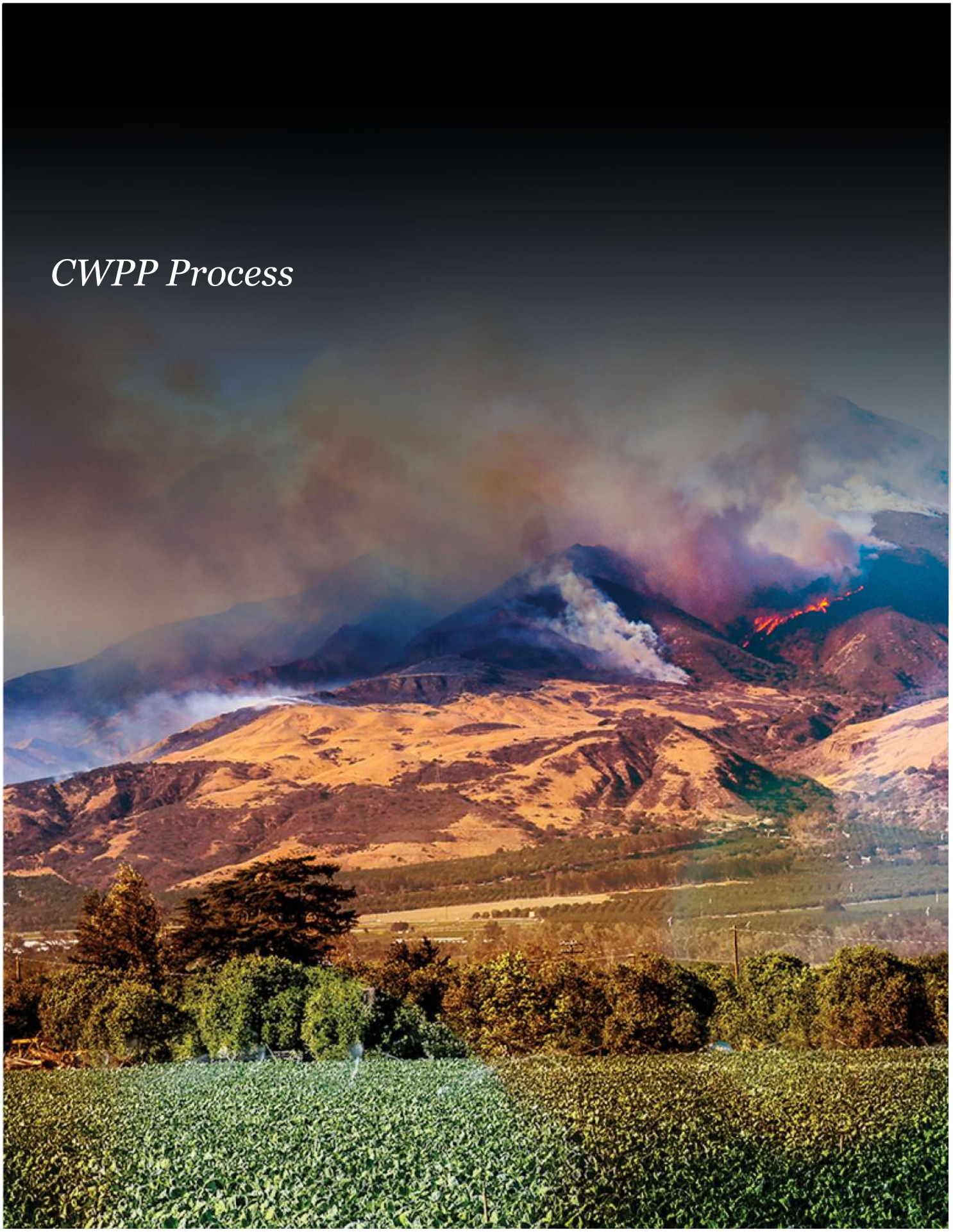
CWPP Process



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2.0 CWPP Process

2.1 COLLABORATIVE APPROACH

The development of a CWPP is a collaborative process by which community stakeholders assess the wildfire threat, define the wildland urban interface (WUI) boundaries, identify community values at risk from wildfire, and then develop solutions to mitigate the wildfire threat and associated risks. The language in the 2003 HFRA provides maximum flexibility for communities to determine the substance and detail of their CWPP action plan and the procedures they use to develop them. The CWPP planning process provides communities the autonomy to develop locally relevant plans that influence where and how federal agencies implement fuel treatment activities on federal land and the distribution of federal funds for projects on non-federal lands.

The CWPP planning process brings together broad and diverse local interests to holistically identify common concerns and values related to public safety, sustainability of environmental and natural resources and long-term resiliency and sustainability of the whole community. The process should provide a positive, solution-oriented environment in which to address the challenges of living in a community at risk to wildfire. Because not all community members will attend workshops or meetings, it is important to provide multiple opportunities in which the whole community can provide input, voice issues and concerns, and participate in the process of developing a CWPP.

As part of the 2003 HFRA, there are three minimum requirements for a CWPP, including:

+ Collaboration – A CWPP must be collaboratively developed. Local and state officials must meaningfully involve federal agencies that manage land in the vicinity of the community, as well as other interested parties (particularly non-governmental stakeholders) that can work collectively to implement and manage wildfire risk mitigation measures and can help build a “culture of resiliency” at an individual and community-level.

+ Prioritized Fuel Reduction – A CWPP must identify and prioritize areas for hazardous fuel reduction treatments on both federal and non-federal land, and recommend the types and methods of treatment that, if completed, would reduce risk to the community.

+ Treatment of Structural Ignitability – A CWPP must recommend measures that homeowners and communities can take to reduce the ignitability of structures throughout the area addressed by the plan.

These three requirements, however, do not preclude the community from developing broader wildfire disaster risk management and capacity building efforts (e.g. evacuation/shelter-in-place planning, community emergency communications, early warning detection systems, post-fire recovery services, etc.)

2.1.1 Convene Community Stakeholders / Interested Parties

A priority for the CSFPD was to engage stakeholders and get broad community participation and engagement in the development of the CWPP. The initial step was to organize workshops to introduce the CWPP planning process, encourage participation, and solicit input from a broad range of community stakeholders. Two workshops were held at the beginning of the CWPP planning process – one in Carpinteria and one in Summerland. Stakeholders were invited to the workshops via phone calls, direct emails, and postings on the district’s website, social media accounts and calendar.

The first workshop took place at the 5315 Foothill Rd (Girl's Inc) in Carpinteria on the evening of January 14, 2020 and the second workshop took place at 100 Innovation Way (QAD) in Summerland on the evening of January 15, 2020. Stakeholders who took part in identifying issues and concerns at this workshop included residents, insurance companies, farmers, homeowner association representatives, CSFPD’s staff, CWPP Core Group, Santa Barbara County Fire Department, Montecito Fire Protection District, Los Padres Forest Watch,

United States Forest Service, and Jensen Hughes. The visual presentation displayed the results of the initial hazard and risk assessments, identified areas of specific concern to the community, gathered input from community members, confirmed CWPP goals and objectives, and provided a forum for reviewing and suggesting changes to the existing WUI map. The goals of CWPP identified at the workshop were:

1) To minimize the risk to life safety from wildfire threat
2) Reduce the risk to values/assets (e.g., critical infrastructure, private property, cultural/historical resources) from wildfire threat
3) Develop an updated CWPP that sets priorities to mitigate identified hazards and risks
4) Identify measures to harden structures
5) Determine potential impacts of climate change on the local fire environment and how these impacts may influence wildfire hazard and risk in the mid-21st century, and
6) Establish a monitoring and evacuation plan to track implementation of action items identified in the CWPP update.

Following the formal presentation, an informal phase of the workshop provided stakeholders with the opportunity to talk with CSFPD on specific topics of interest or concern.

Upon completion of the CWPP development, a presentation was given to the City Council and Board of Directors to review the overall process and recommended action plan for the District in the next 5-10 years. Due to the ongoing COVID pandemic and restrictions on public gatherings, the final presentation to the City Council/Board of Directors was hosted via Zoom to allow the public and other Stakeholders the opportunity to observe and participate in the final presentation.

A summary of all workshop and meeting notes and stakeholder comments are available in Appendix C.

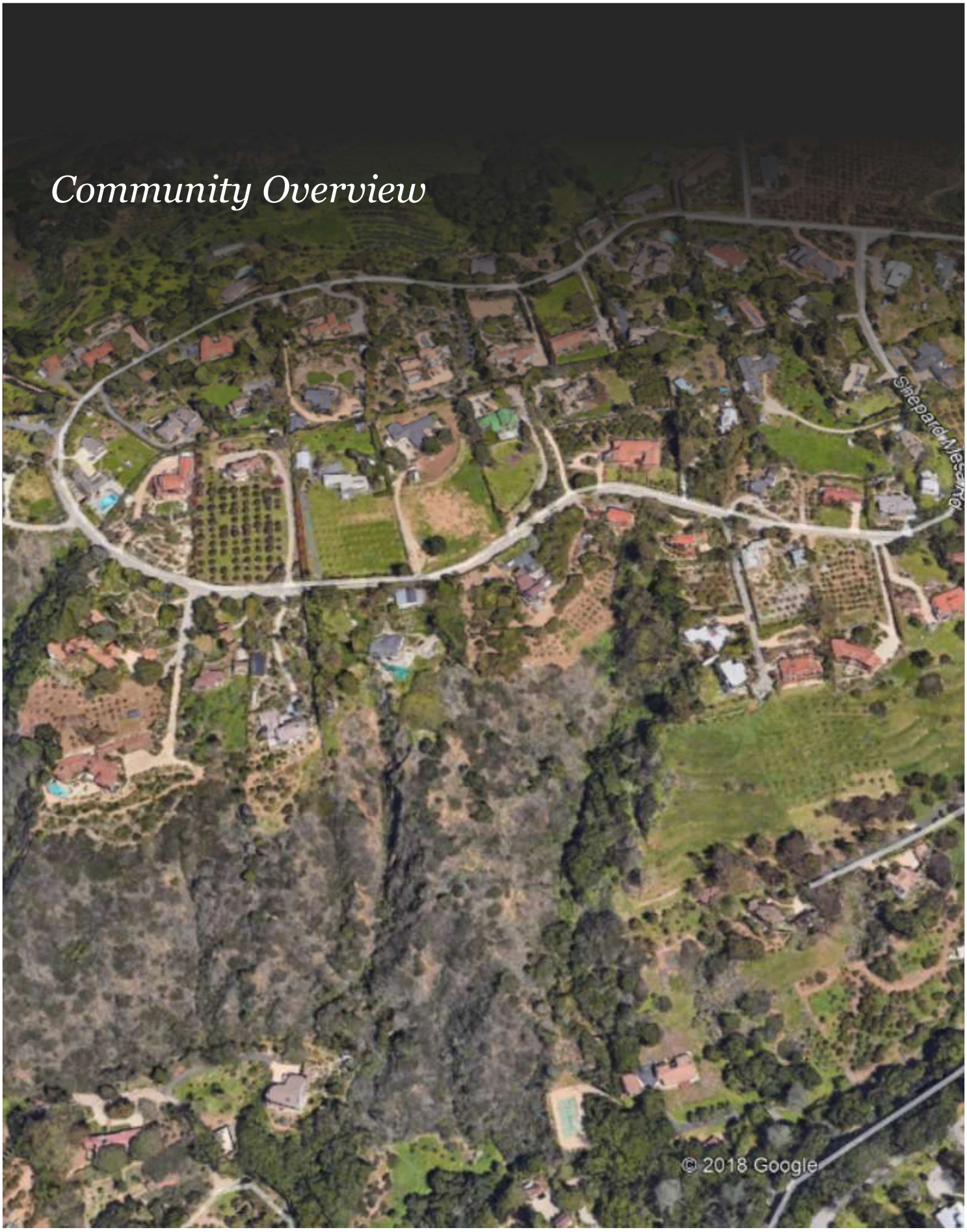
2.1.2 Convene The Core Group

The Core Group refers to a body of representatives from the local jurisdiction and supporting agencies who have the responsibility to monitor the planning process, review the progress and approve the documents produced as the plan is developed. Once this “Core Group” has been satisfied that a complete document captures the issues identified by the public and stakeholders, this group will forward the Plan to the approving officials. The Core Group included representatives from:

+ Carpinteria-Summerland Fire Protection District
+ Santa Barbara County Fire
+ Los Padres National Forest (USFS)
+ Carpinteria City
+ Montecito Fire Protection District

The Fire District was responsible for the membership of the Core Group, all public outreach, stakeholder coordination and the consolidation of the public comments.

Community Overview



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3.0 Community Overview

The CSFPD, comprised of the City of Carpinteria, the community of Summerland and unincorporated lands within Santa Barbara County, is located between the coastal Santa Ynez Mountain Range and the Pacific Ocean, 10 miles south of Santa Barbara, and approximately 90 miles northwest of Los Angeles. See Figure 1. Highway 101, a major north-south state transportation artery runs through the Fire District along the Coastal Plain. The CSFPD's jurisdictional area incorporates approximately 40 square miles and includes an urban coastal city, an unincorporated beach community, vibrant light industrial and agricultural businesses, and an increasing complex WUI. The CSFPD's population as of 2010 is estimated at 20,000 with the City of Carpinteria having about 17,747 inhabitants. The City of Carpinteria and the unincorporated areas of the district offer a wide variety of opportunities for businesses, recreational visitors and people wishing to establish permanent residency in the area.

The CSFPD provides a full range of fire protection services to the community. These services include emergency medical response, structural firefighting, water rescue and wildfire response. The District also offers wildland fire mitigation strategies, including home inspections, fire prevention, community brush chipping, training, and public education. Carpinteria and Summerland are identified by the California State Forester as "Communities at Risk" from wildfire and are located within or adjacent to lands designated by CAL FIRE as High or Very High Fire Hazard Severity Zones.

Geographically, the Santa Ynez Mountain Range dominates the area. The mountain range is arranged in an east-west traverse parallel to the coast. Beyond the coastal plain the landscape rises on more than a gradual gradient into the Santa Ynez range foothills. Rocky terrain and narrow canyons dominate this landscape north of the more developed coastal plain, with a predominant vegetative cover consisting of agricultural lands, native and non-native grasslands, oak woodlands and chaparral. Above the lower slopes of the Santa Ynez Range are the federal lands of the Los Padres National Forest with its steep slopes and narrow canyons providing the backdrop for residents.

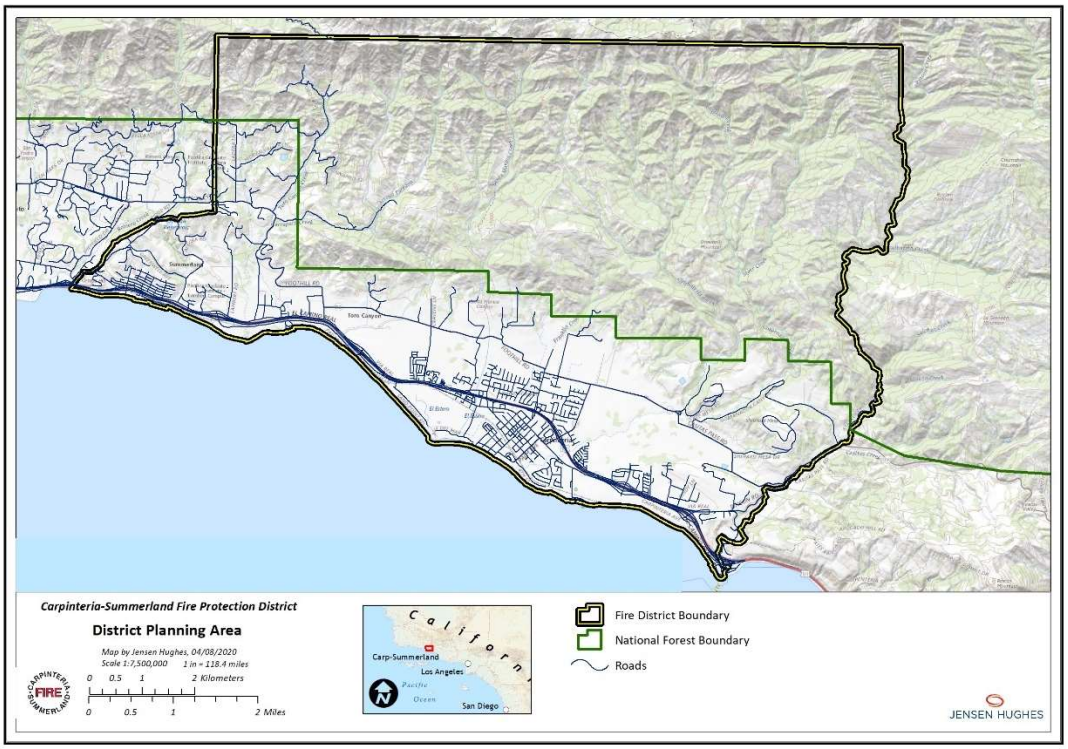

Figure 1. Carpinteria-Summerland Fire District Boundary Map

3.1 FIRE HAZARD SEVERITY ZONES

California State Law (i.e. California Public Resources Code, Sections 4201 through 4204 and Government Code 51175 through 51189) mandates that CAL FIRE identify areas of significant fire hazard throughout the State based on a number of parameters, such as vegetative fuels, terrain, weather, and other relevant factors. These designated areas of significant fire hazard are categorized into three relative degrees of severity: Moderate, High and Very High Fire Hazard Severity Zones (FHSZ). The FHSZs are based on wildfire hazards over a 30- to 50-year period, but do not consider how recent wildfire activity or fuel modification actions have influenced potential fire severity.

While FHSZs do not predict when or where a wildfire will occur, they do identify areas where wildfire hazards could be more severe and therefore of greater concern. These zones are used to identify properties where any new construction would be subject to California Building Code Chapter 7A wildland urban interface safety requirements for various building and site components (e.g. fire resistant materials, vents, decks, windows, defensible space). They must be included in real estate disclosures and are used by local governments to support wildfire risk analysis and hazard mitigation planning. (California State Geoportal, https://gis.data.ca.gov/)

In the District, three (3) categories of FHSZs exist, of which the Very High Fire Hazard Zone (VHFSZ) appears to dominate, in both State Responsibility Areas (SRA) and Local Responsibility Areas (LRA). VHFSZ areas account for approximately 77% of hazard rated lands (See Figure 2). Locations closer to developed urban lands show lower levels of fire severity as the terrain flattens and the continuity of wildland fuels decreases.

Note: The current distribution of FHSZs in the District is based on the adopted 2007/2008 CAL FIRE maps, which only classify FHSZs in LRA and SRA lands. As federal fire agencies do not use the same classification system as CAL FIRE for Federal Responsibility Areas (FRA) lands such as in the Los Padres National Forest, they have not been categorized. CAL FIRE is currently remapping FHSZs for SRA lands and Very High FHSZs in LRA lands and should be ready for adoption in 2020-2021.

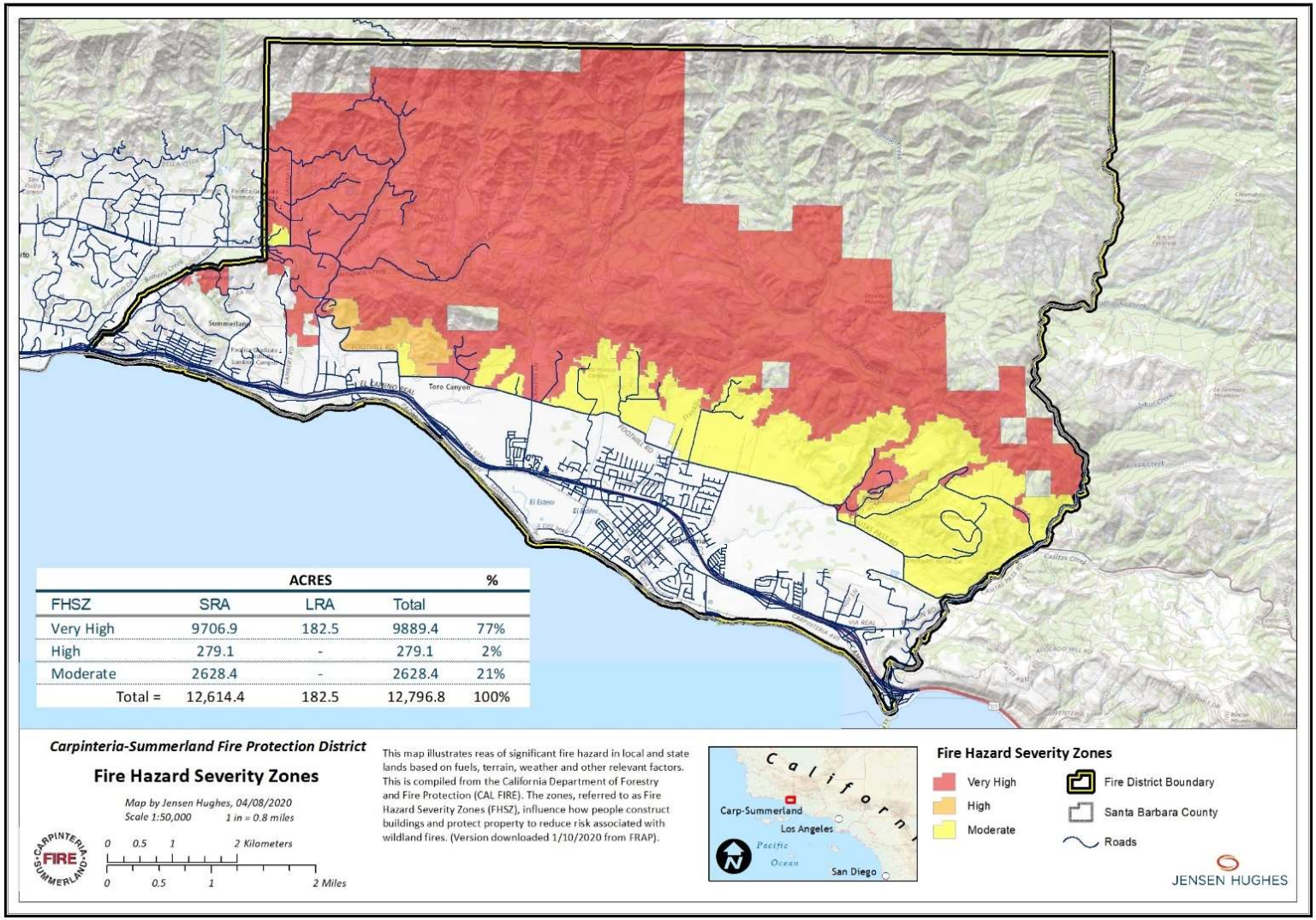

Figure 2. Carpinteria-Summerland Fire Hazard Severity Zones.

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3.2 COMMUNITIES AT RISK

To help protect people and property from potential catastrophic wildfire, the 2000 National Fire Plan (NFP) identified communities in the wildland-urban-interface (WUI) within the vicinity of Federal lands that were at high risk of damage and/or loss from wildfire. These high-risk communities were identified in the Federal Register in 2001 (National Archives and Records Administration Federal Register, 2001). This list was extended by the states in 2003. In California, CAL FIRE has the responsibility of managing this list, and uses three main factors to determine which additional communities are at risk: 1) high fuel hazard, 2) probability of a fire, and 3) proximity of intermingled wildland fuels with urban environments. In addition, Santa Barbara County has further identified local communities-at-risk (CAR).

> The wildland-urban interface (WUI) - The line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels. [NWCG, 2018]

In the District, the following communities are considered “at-risk” whether due to Federal, State or Local designations (See Figure 3):

- Carpinteria
- Summerland
- Gobernador Canyon
- Toro Canyon
- Shepard Mesa

The NFP specifically directs funding for projects designed to reduce wildfire risks to communities and restore ecological health on Federal lands. Carpinteria is designated as a CAR in the Federal Register. Note: The 2013 Carpinteria-Summerland CWPP defined the WUI for the communities. This WUI designation is carried forward in this plan update (See Figure 3).

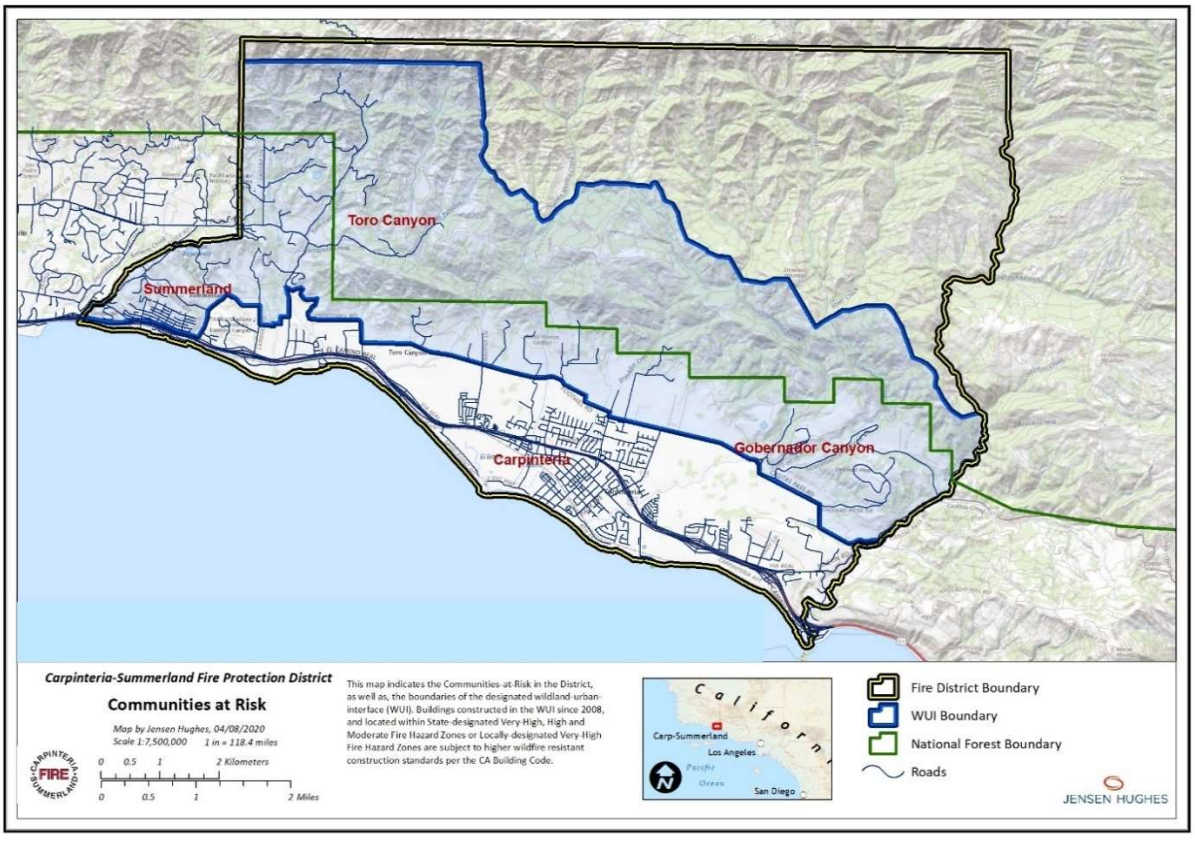

Figure 3. Communities at Risk and Designated WUI in the Planning Area

3.3 VALUES AT RISK

Community values at risk to wildfires are oftentimes defined in terms of life safety, buildings, and critical infrastructure. However, values can also include human health, natural resources, sensitive species, cultural and historical resources, viewscapes and other intangibles (e.g. social capital, community culture). Unique to Carpinteria and Summerland are agricultural resources that represent a significant value to the local economy.

Although not all values can be protected directly through wildfire mitigation measures, actions can be taken to indirectly protect those values by developing strategies that reduce the wildfire threat overall. The challenge for Carpinteria-Summerland is to balance the level of hazard mitigation work required to protect one set of values without compromising others. In public meetings and in a community survey, District stakeholders emphasized the importance of the following values:

- Human Life and Health
- Critical Facilities
- Private Residential Property
- Environment and Natural Resources
- Cultural and Historical Resources
- Local Economy (i.e. Agriculture)

3.3.1 Human Life and Health

The District's highest priority is human life-safety. Historically, large wildfires on the south coast of Santa Barbara County have resulted in an unfortunate number of casualties and injuries to both firefighters and residents, with the recent Thomas Fire having some of the most devastating impacts to public safety in both Carpinteria and Summerland.

The Planning Area presents numerous life safety challenges including:

- Limited public emergency evacuation notification and management
- Lack of identified need and/or locations to shelter-in-place
- Poor egress and access for citizens, firefighters, and law enforcement
- Limited and/or deficient defensible space in certain neighborhoods
- High percentage of existing building stock with deficient structural hardening

Life safety considers both the life and physical well-being of all people in a community.

As described in the current Standards of Coverage Report, the District's semi-rural character, topography and past development practices impedes access and egress for emergency services and efficient evacuation of residents, visitors and businesses. These impediments include narrow winding roads, steep roads, vegetation encroachment into roadways, gates, bridges, addresses not clearly visible from the road systems, and other speed limiting factors such as bulb-outs, speed bumps, unlit roads and intersections, unlit street signage, and limited turnaround capabilities. Fast moving wildfires, such as the 2009 Jesusita and 2008 Tea fires in neighboring communities underscore the need for residents to be prepared to evacuate with clear plans on how they can rapidly access Highway 101, the safest primary east-west evacuation route.

Based on U.S. Census Bureau data, the highest concentrations of individuals are located more centrally in the City of Carpinteria, followed by Toro Canyon and Shepard Mesa areas, which border open wildland space or are intermixed at the wildland-urban-interface. See Figure 4, Population Density Map.

Toro Canyon Road, Toro Canyon Park Road, Torito Road, Shepard's Mesa Road, Cate Mesa Road, and Cravens Lane have limited options for egress with many residences having only a single primary egress route. Additionally, a series of dead-end roads extend north from Highway 192 between Cate Mesa Road and La Mirada Drive. Many of these roads are un-named and single lane. These single lane roads create a potential conflict between incoming emergency equipment and evacuating residents. Many of the structures located along these roads are sited within areas of agricultural development intermixed with wildland fuels and have limited defensible space. These conditions, along with higher concentrations of residents in these areas, can result in roadways that quickly become congested from evacuation traffic and incoming emergency response personnel.

Vulnerable or functional-needs populations have special needs and may have limited capacities to prepare for, respond to, and/or recover from a major wildfire incident. These individuals are also less likely to get involved in wildfire mitigation activities (Ojerio, 2008). As a proxy for the whole District, key demographic and other population statistics for Carpinteria from the 2018 United States Census (U.S. Census Bureau, http://data.census.gov, 10 October 2020) were assessed to identify potential vulnerable populations. This data was as follows:

+ Population of 17,747
+ Population density of approximately 5,172 people per square mile
+ Racial makeup: 77.6% White, 0.3% African American, 1.0% Native American, 2.3% Asian, 0.1% Pacific Islander, 14.9% from other races, and 3.8% from two or more races.
+ An estimated 32.5% of the population speaks Spanish at home.
+ Approximately 10.5% of population have some form of disability (i.e. hearing difficulty at 4.4%, vision difficulty at 1.1%, cognitive difficulty at 3.8%, ambulatory difficulty at 5%, self-care difficulty at 1.7% and independent living difficulty at 4.2%).
+ Vulnerable age groups: 4.6% of population under 5 years; 21.5% of population 65 years and older
+ Poverty: 7.1% of the population live below the poverty line

Vulnerable or functional-needs populations include those who are physically and/or mentally disabled (e.g. blind, cognitive disorders, limited mobility), limited or non-English speaking, culturally isolated, medically or chemically dependent, homeless, deaf and hard-of-hearing, frail or elderly, and children

The statistics for Carpinteria suggest that a segment of the population disabilities may have a range of vulnerabilities in preparing, responding to and/or recovering from a wildfire incident in the District. Age, along with physical and mental restrictions can potentially reduce these individual's capacities to efficiently self-evacuate in a disaster. Limited access to financial resources may also hinder the ability for lower-income populations to invest in emergency preparedness, mitigation measures, as well as recover from losses. Language barriers can present major barriers to effectively communicating the need for emergency notifications, evacuation instructions, and/or support services. In addition, visitors to Carpinteria-Summerland can be particularly vulnerable to wildfire incidents, as they are less likely to be familiar with the risks of wildfires, local response management practices, emergency resources, public communication channels and other support

services. Planning for vulnerable or functional-needs populations is critical to providing a holistic wildfire mitigation preparedness plan that works for the “whole” community.

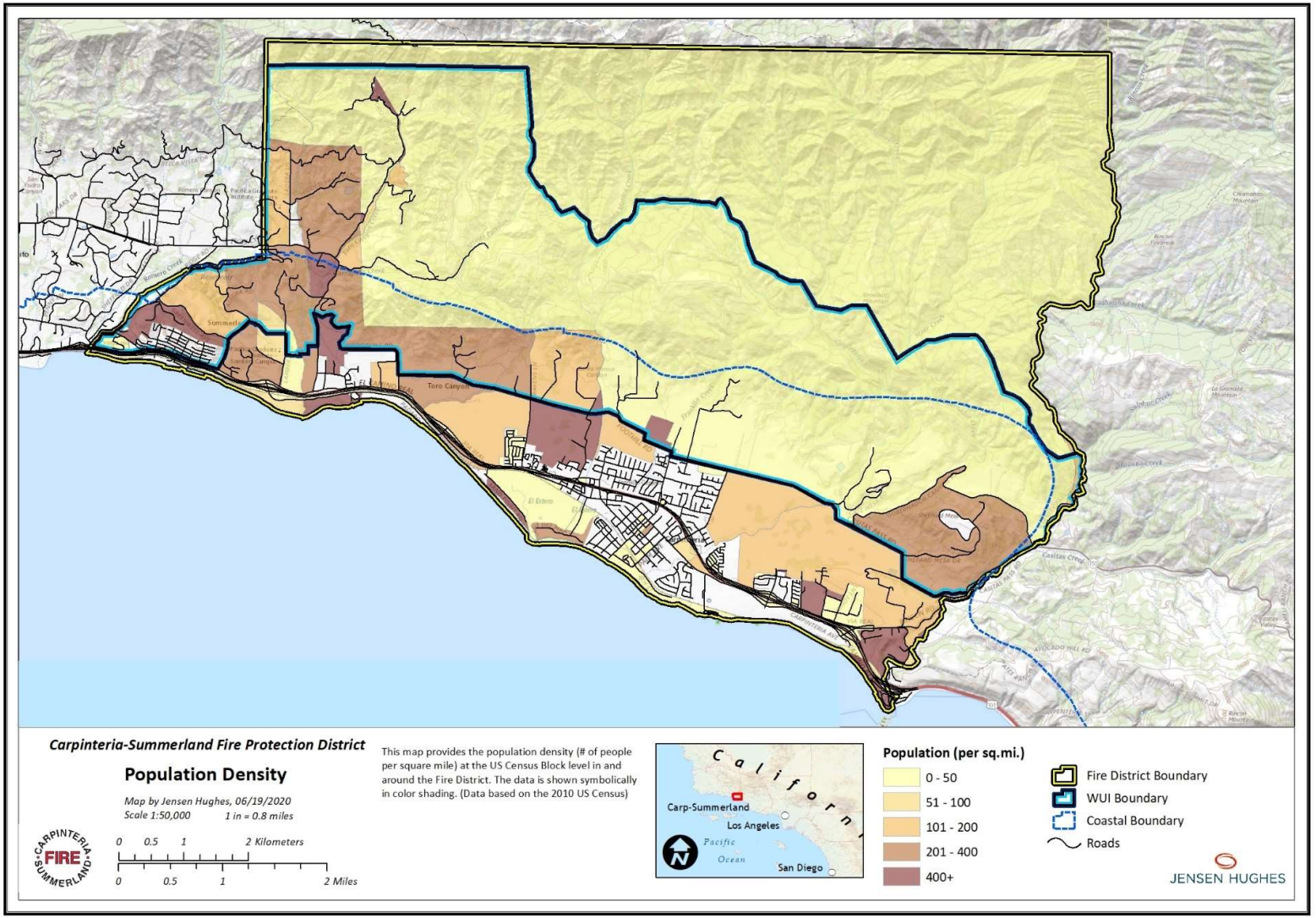

Figure 4. Population Density Map

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3.3.2 Critical Facilities and Infrastructure

Wildfires can cause significant damage to critical infrastructure leading to a potential long-term disruption of public services.

Electrical transmission substations, transmission lines, water district pumping facilities, wastewater treatment, oil and natural gas pipelines and cellular communication facilities comprise just part of the overall critical infrastructure. These major infrastructure improvements are priority locations for hazard reduction and wildfire hardening projects. Wildfire mitigation actions to protect critical infrastructure is often the responsibility of the entity operating these facilities.

The following is a brief description of critical infrastructure identified as part of the CWPP planning process. Figure 5 depicts critical infrastructure in the area within and adjacent to the District.

+ Electrical services – Southern California Edison (SCE) is the service provider for the Planning Area and maintains two substations, one located in Carpinteria near the intersection of Linden and Highway 192; the other, located on the east side of Summerland, north of Via Real. Three major transmission corridors of approximately 24 miles pass through the Fire District. SCE has recently completed reconstruction of the existing 66 kV sub-transmission facilities primarily within existing utility rights-of-way (ROW) between the Santa Clara Substation in Ventura County and the Carpinteria Substation located in the City of Carpinteria (https://www.sce.com/about-us/reliability/upgrading-transmission/santa-barbara, accessed, July, 2020).

+ Water delivery – Carpinteria Valley Water District (CVWD) and Montecito Water District (MWD) are the primary water purveyors for the Planning Area. The CVWD maintains four reservoir's or outflow points within wildland urban interface areas of the community and controls five well locations primarily located outside of the WUI, south of Highway 192 (CVWD, 2018).

+ The MWD provides service to Summerland and Toro Canyon. District facilities that intersect with the Planning Area include three pump stations and three reservoirs (MWD, 2018). These facilities are in the WUI and have wildland vegetation within close proximity. Two water treatment plants are also located within the Planning Area.

+ Wastewater treatment – Both the Carpinteria and Summerland Sanitary Districts provide for treatment of wastewater within the Planning Area. Most of the facilities for these two agencies lie south of Highway 192 and are at limited risk of damage during a wildfire.

+ Pipelines – Two natural gas distribution pipelines pass through the Fire District. One pipeline roughly follows Highway 192, while the second follows Highway 101 through the communities of Carpinteria and Summerland. Both pipelines are subsurface and are not considered at risk from wildfire.

+ Cellular service – Cellular communication has become the primary method used by first responders to alert and inform the public concerning wildfire threats. Numerous cellular towers exist within the WUI portions of the Planning Area. Through partnership with the controlling entities, these communication sites need to be evaluated for wildfire risk mitigation actions (e.g. vegetation maintenance, emergency power supplies) to enhance their resiliency and functional operations during wildfires.

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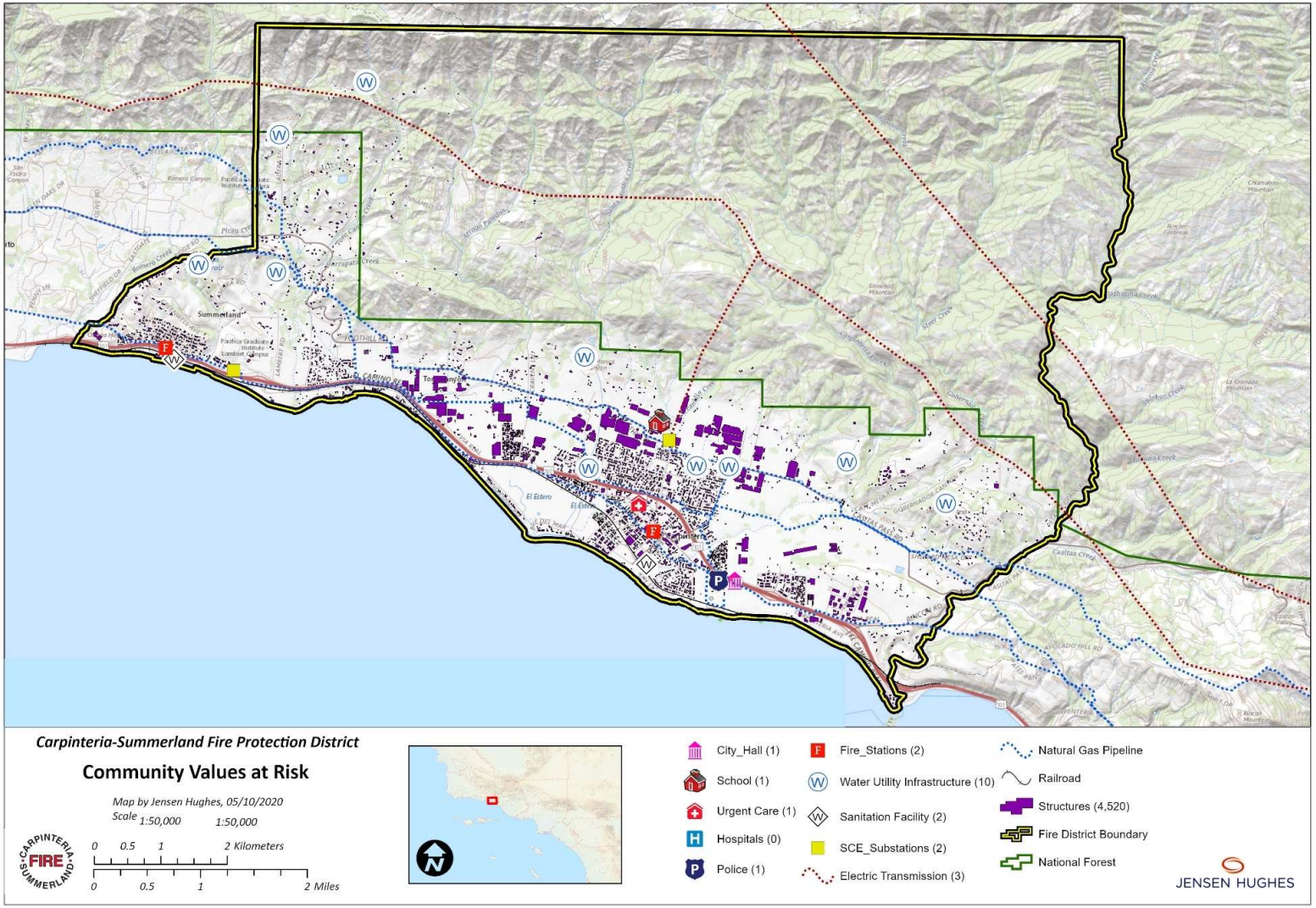

Figure 5. Critical Facilities and Infrastructure Map

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3.3.3 Private Residential Property

Most housing within the Fire District consists of single-family homes on parcels of varying sizes, dimensions and topographic conditions. Housing density increases significantly south of Highway 192 in the City of Carpinteria, and in the commercial and residential areas of Summerland. (See

Figure 6). Approximately 42% of the city of Carpinteria is comprised of residential use. In addition to the more "urban" parts of the district, many residential communities exist and continue to expand into the lower and upper foothills of the Santa Ynez mountains of the wildland-urban-interface (e.g. Toro Canyon and Gobernador Canyon areas).

Many homes within the District, particularly in the foothills of the WUI, are in the multi-million-dollar range and have some the highest values in the State. Median home prices in Summerland are estimated to be approximately $1,543,000, while median home prices in Carpinteria are estimated at $893,000 (www.zillow.com, accessed April 20, 2020). With an estimated 4,250 structures across the Fire District and a history of major wildfire incidents in the area, particularly in the foothills, the potential property value loss based on these median prices could be substantial.

While the greater part of the District is at a risk from wildland fires impacting residential homes, the general terrain of the higher density housing areas (i.e., City of Carpinteria and Summerland community) is considered relatively flat (despite the presence of some rolling hills in Summerland) which may provide some resiliency to wildfires as a significant offshore wind would be required to cause widespread wildfire spread into the community. That said, with the potential range of embers under high wind events, as observed in recent wildfire events, even these relatively flat coastal zones are at risk.

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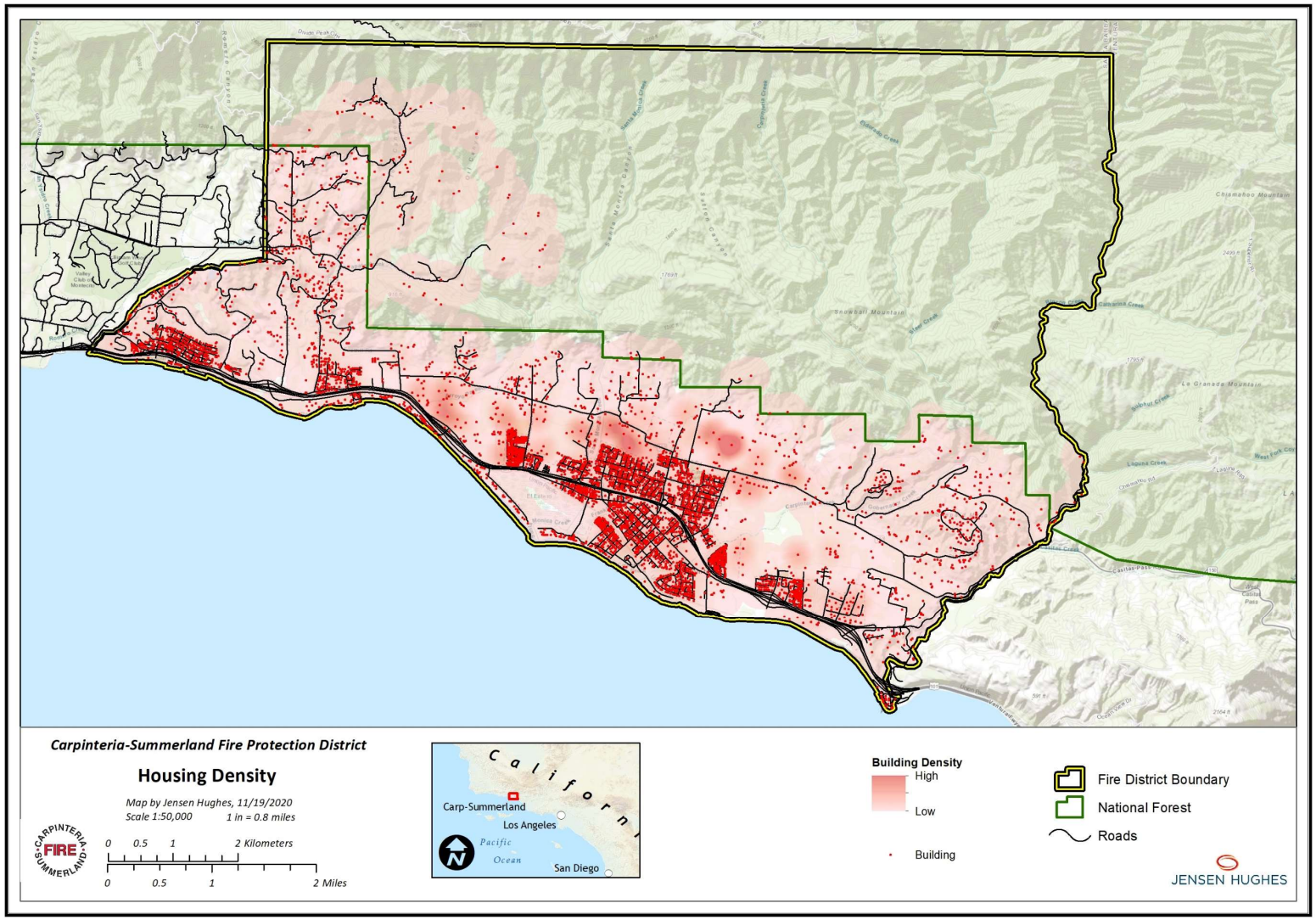

Figure 6. Housing Density Map

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3.3.4 Environmental and Natural Resources

Environmental and natural resources consist of a variety of components including biological resources, historical and cultural resources, air quality, water, recreation, geological and archaeological resources.

The Carpinteria and Summerland areas contain several of these environmental and natural resources that have local, regional, and statewide significance, including developed open space resources and a variety of natural physical resources. Southern Santa Barbara County, in general, contains a rich diversity of plant and wildlife species and habitats, as well as a significant collection of cultural resources, dominated by evidence of the Chumash people who lived along this portion of the California coast dating back at least 11,000 years ago (Fagan, 1996). These physical and biological features teamed with scenic view corridors and historic properties create a complex mix of resource values that can complicate the implementation of wildfire hazard mitigation actions. Several planning documents provide direction for the protection of environmentally sensitive habitats and cultural features, with the Santa Barbara County Coastal Land Use Plan, 2019, serving as the parent document. The Summerland Community Plan, Toro Canyon Plan and the City of Carpinteria General Plan/Coastal Land Use Plan provide more specific information and direction for the respective locations.

> The Conservation Element is a required element of the General Plan, established to address "...the conservation, development, and utilization of natural resources..."
>
> *(California Government Code, Section 65302(d).*

An element of these specific land use plans required by the California Coastal Act, is the preservation of significant habitat resources. These environmentally sensitive habitat areas are defined as "*any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments"* (Coastal Act, Section 30107.5). Section 30240(a) also states that, *"Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas"*. Figure 7 shows the environmentally sensitive habitat areas associated with the Planning Area, as well as federally designated critical habitat for Ventura Marsh Milk Vetch.

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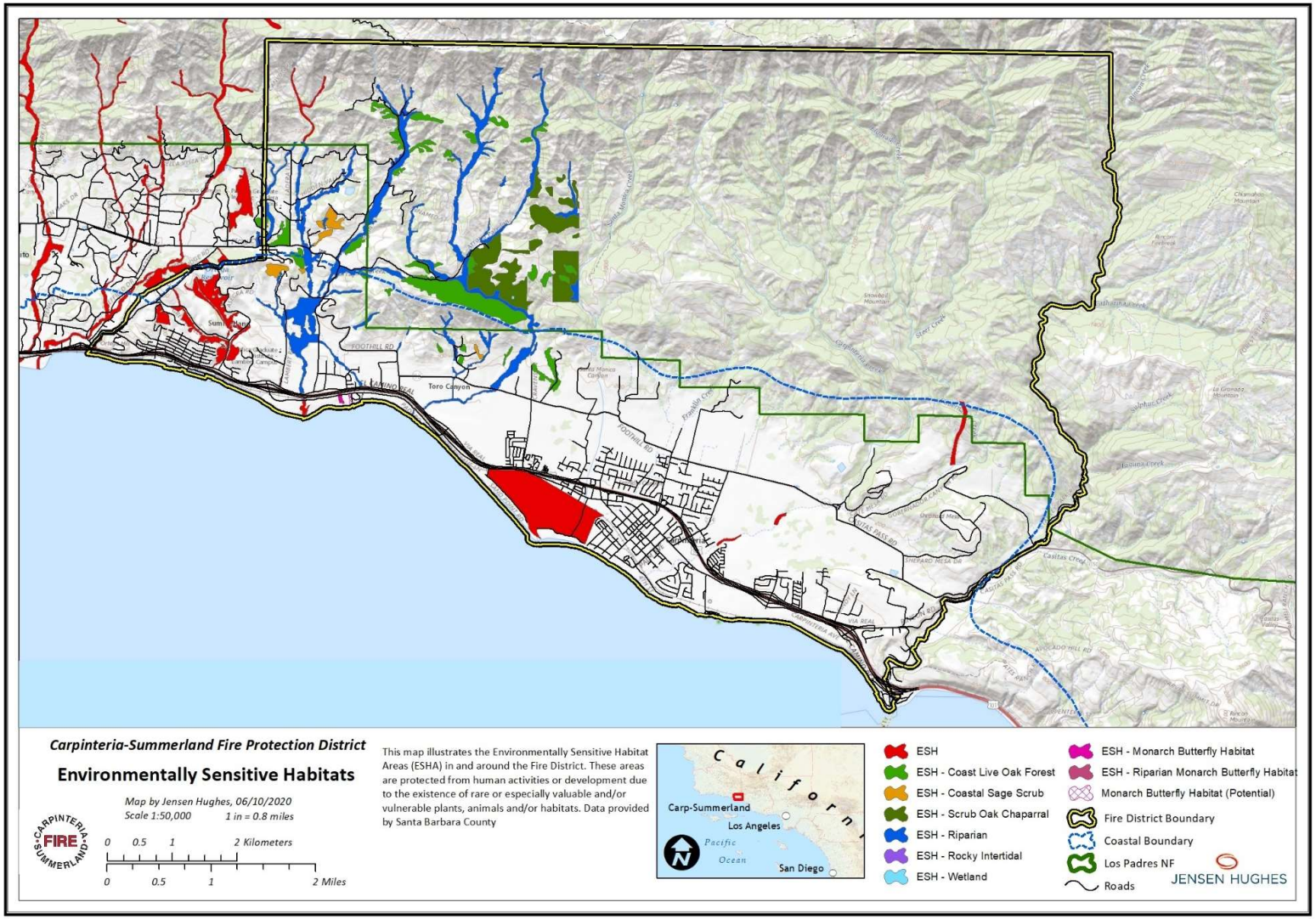

Figure 7. Environmentally Sensitive Habitat Areas

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3.3.5 Cultural and Historical Resources

Given the historically and culturally rich history of the Santa Barbara County coastline, the entire area could be categorized into one large, high density archaeological site (Santa Barbara County Coastal Land Use Plan, 2019). Because native Americans have used this area for up to 7,000 years, many remnants of the Chumash civilization still exist within the Planning Area. Cultural resource sites which are currently known are mapped and on file with the County of Santa Barbara Resource Management Department. Three historic properties, First Oil Well (Summerland), Fleishman House (Lambert Road) and Shepard's Inn (Carpinteria Valley) are also known within the Coastal Zone portion of the Planning Area.

To protect cultural/historical sites, maps of these resources are confidential, but can be made available to Fire District personnel. A small sampling of these sites is listed in Table 2.

Table 2. Representative Sample of Cultural and Historic Resources in the District

Resource	*Zone*
Fenton House #2	High Foothill
Vedanta Temple	High Foothill
Villa Calafia	Foothill
Edgewood	Coastal Interior
Becker House	Coastal
McIntyre House	Coastal
WWI Monument	Coastal
Summerland Presbyterian, Old Methodist Church	Coastal
Summerland Historic District	Coastal
HWY 101 Memorial Oaks	Coastal
Santa Barbara Polo Club	Coastal Interior
Beach Cottage Residence, Thornburgh House	Coastal
Santa's Trading Post	Coastal
Casa Blanca Pool House	Coastal
Carpinteria Cemetery	Coastal Interior
Sunday School Oak	Foothills

3.3.6 Local Economy

The potential short and long-term impact of wildfires can be devastating to finances and economies of the built environment, natural environment, and social capital. The 2017 Thomas fire alone resulted in the loss of over 1,000 structures (36 of which occurred in the District – 17 destroyed, 19 damaged), 281,893 acres burned, 104,607 people displaced and an estimated $2.2 billion in direct financial losses. This does not account for all the long-term indirect financial costs and impacts to local economies (e.g. temporary closures of businesses, loss of tourism), insurance market, power/utility rates and shutoffs, and litigations that are still ongoing and in recovery today. With the buildup of fuels, ongoing development in the area, and effects of climate change, there

is a potential for future wildfires to have an even more devastating impact to short and long-term financial and economic resources in the area.

Agriculture is an important economic component of Carpinteria/Summerland with cultivated lands serving as a vital buffer between community developments and wildland fuels to the north. See Figure 8. These cultivated lands provide a "green" and unique opportunity for connecting with fuels treatments to provide a linear buffer on the fringes of developed communities to the south. While irrigated crops provide a buffer to the community, they are also a value/asset in need of protection during wildfires, as even irrigated crops (e.g., citrus and avocado) can be damaged during wildfires, as was observed in many portions of Ventura and Santa Barbara County during the Thomas Fire. These impacts can have significant short and long term impacts to landowners, businesses, and the local economy.

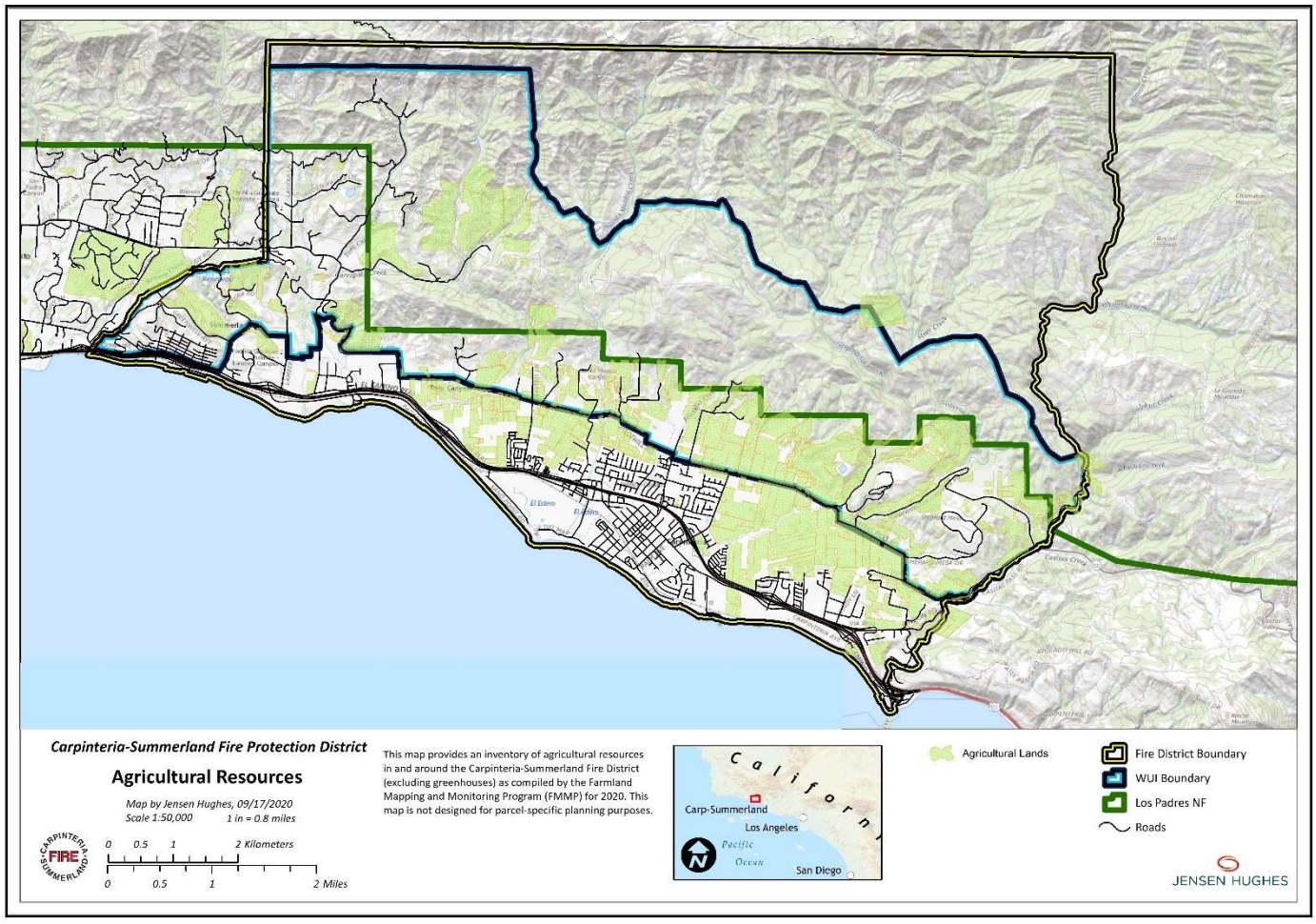


Figure 8. Agricultural lands in the District

Along with cultivated lands, Carpinteria has extensive greenhouse operations, including mixed light use cultivation operations. These operations are clustered along Highway 192 and interfaces with wildland fuels. The greenhouse operations, in general, have adequate defensible space and good access to firefighting equipment, but are susceptible to ignition from ember cast from adjacent wildland vegetation.

3.4 LAND USE / ZONING

As a means of preserving and protecting the District's unique character, a number of community and area plans have been adopted (i.e. City of Carpinteria, Summerland Community Plan and Toro Canyon Community Plan) to focus on key issues pertinent to particular areas within the county. These community plans address land use designations and specific goals, policies, and actions relating to community development. Zones and Allowable Land Uses in Carpinteria-Summerland include Agricultural, Resource Protection, Residential, Commercial and Special Purpose. These land use designations are intended to preserve the existing semi-rural, predominantly large lot, single-family character of the community, while also allowing the development of new housing units on vacant residential lots. These land use and development codes provide for wildfire hazard mitigation activities within the sideboards these codes establish.

The Coastal Land Use Plan classifies and regulates the uses of land, buildings, structures in the coastal zone, and provides for fire prevention activities through thoughtful fuel modification. The Coastal Zone within the District runs along the southern portion of the District (See Figure 9, California Coastal Zone Map).

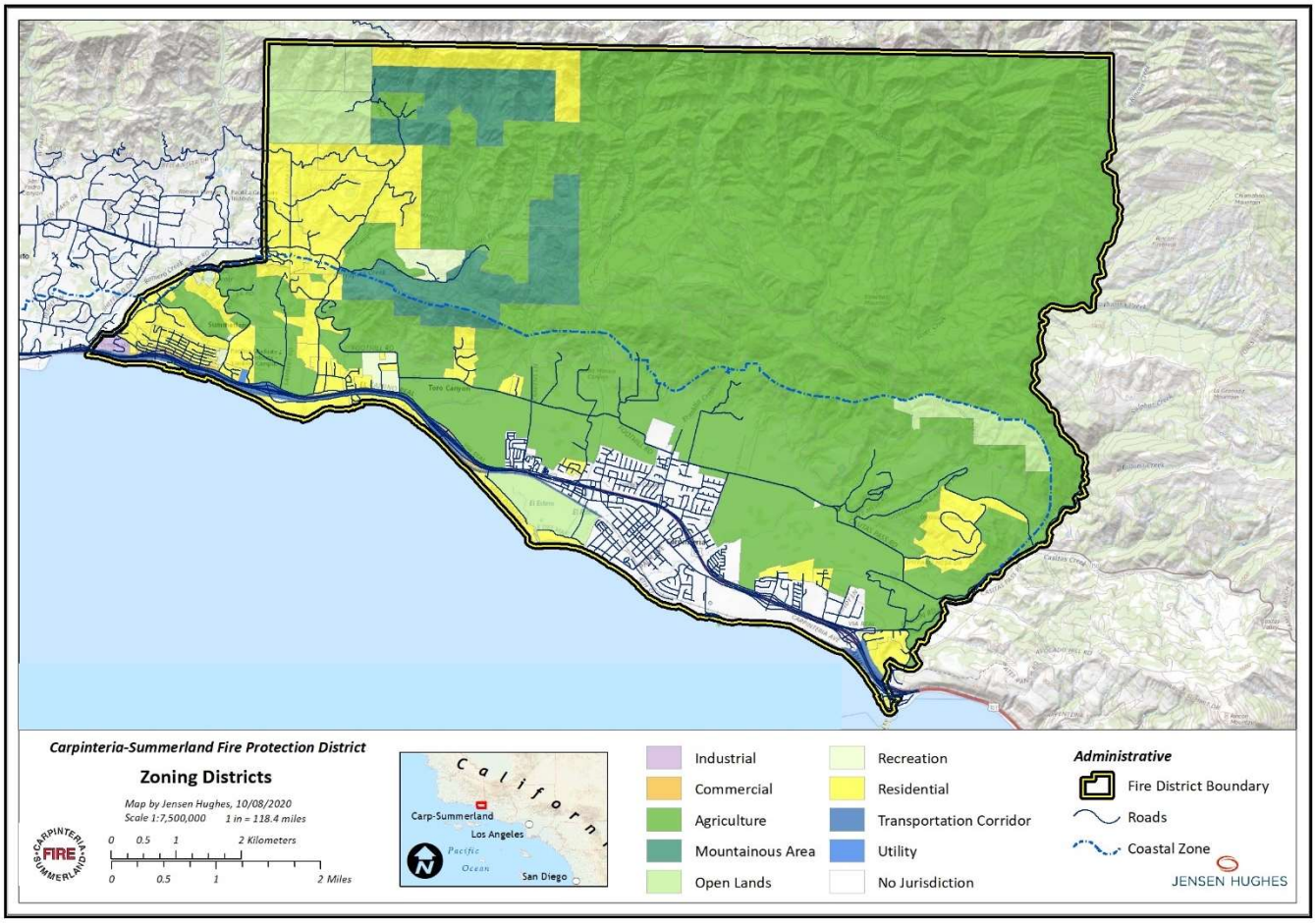


Figure 9. California Coastal Zone and Land Use Map in the District

3.5 FIRE PROTECTION RESPONSIBILITY

Wildland fire protection in the State of California is the responsibility of state, local and/or federal governments. These fire protection responsibility areas represent areas of legal responsibility for fire protection, including State Responsibility Areas (SRA), Federal Responsibility Areas (FRA), and Local Responsibility Areas (LRA).

The CSFPD boundary includes the following areas (Refer to Figure 10 for details):

+ Local Responsibility Areas (LRA)

  These areas are private lands outside of watershed areas designated by the state or lands incorporated into cities. City fire departments, fire protection districts, counties, and CAL FIRE under contract to local governments typically provide fire protection for these areas.

  Important Note: *The Carpinteria-Summerland Fire Protection District is responsible for fire protection of LRA throughout the district boundary.*

  In the event of a wildland fire burning on LRA lands that exceeds the capabilities of the Fire District and automatic aid resources, the District has the ability to muster additional local government fire resources through the California Master Mutual Aid agreement. This agreement provides firefighting support on all types of incidents without reimbursement from the requesting agency. Master Mutual Aid allows Carpinteria/Summerland to leverage additional fire personnel and equipment from nearby fire agencies in California Office of Emergency Services (OES) Region 1.

+ State Responsibility Areas (SRA)

  SRA are the areas where the State of California is financially responsible for the prevention and suppression of wildfires. SRA does not include lands within incorporated city boundaries, fire protection districts, or in federal ownership.

  Important Note: *Most wildland areas of the Fire District are SRA, where CAL FIRE has the jurisdictional responsibility for the suppression of wildfires. The Santa Barbara County Fire Department is contracted by CAL FIRE to perform this service for SRA lands within the Fire District. Santa Barbara County, in conjunction with Ventura County Fire, provide substantial fire resources in the event a wildfire burns or threatens to burn SRA lands. These resources include airtankers, helicopters, crews and dozers, which are not part of the District's complement of fire equipment. The closest Santa Barbara County Station to the District is Station 15 in Santa Barbara. The nearest Ventura County fire station is Station 25 located east of La Conchita.*

+ Federal Responsibility Areas (FRA)

  The primary financial responsibility for wildfires suppression and prevention on federal lands is that of the federal government through the United States Forest Service (USFS), Department of the Interior – Bureau of Land Management, National Park Service, Fish and Wildlife Service, Bureau of Indian Affairs, and Defense Department for military lands.

  Important Note: *The wildlands in the northern portions of the Fire District are Federal Responsibility Areas protected by the United States Forest Service. Because of the threat of a wildfire spreading from these federally controlled lands onto SRA or LRA portions of the Fire District, a Cooperative Fire Protection agreement exists between the District and Forest Service. This agreement allows the District to receive initial attack wildfire suppression support within their mutually agreed to "threat zones". Through this agreement, the District is able to leverage access to aircraft, helicopters, crews and other equipment during*

a wildfire. The nearest Forest Service engines to the District are located on Highway192 in Carpinteria and at Lake Casitas.

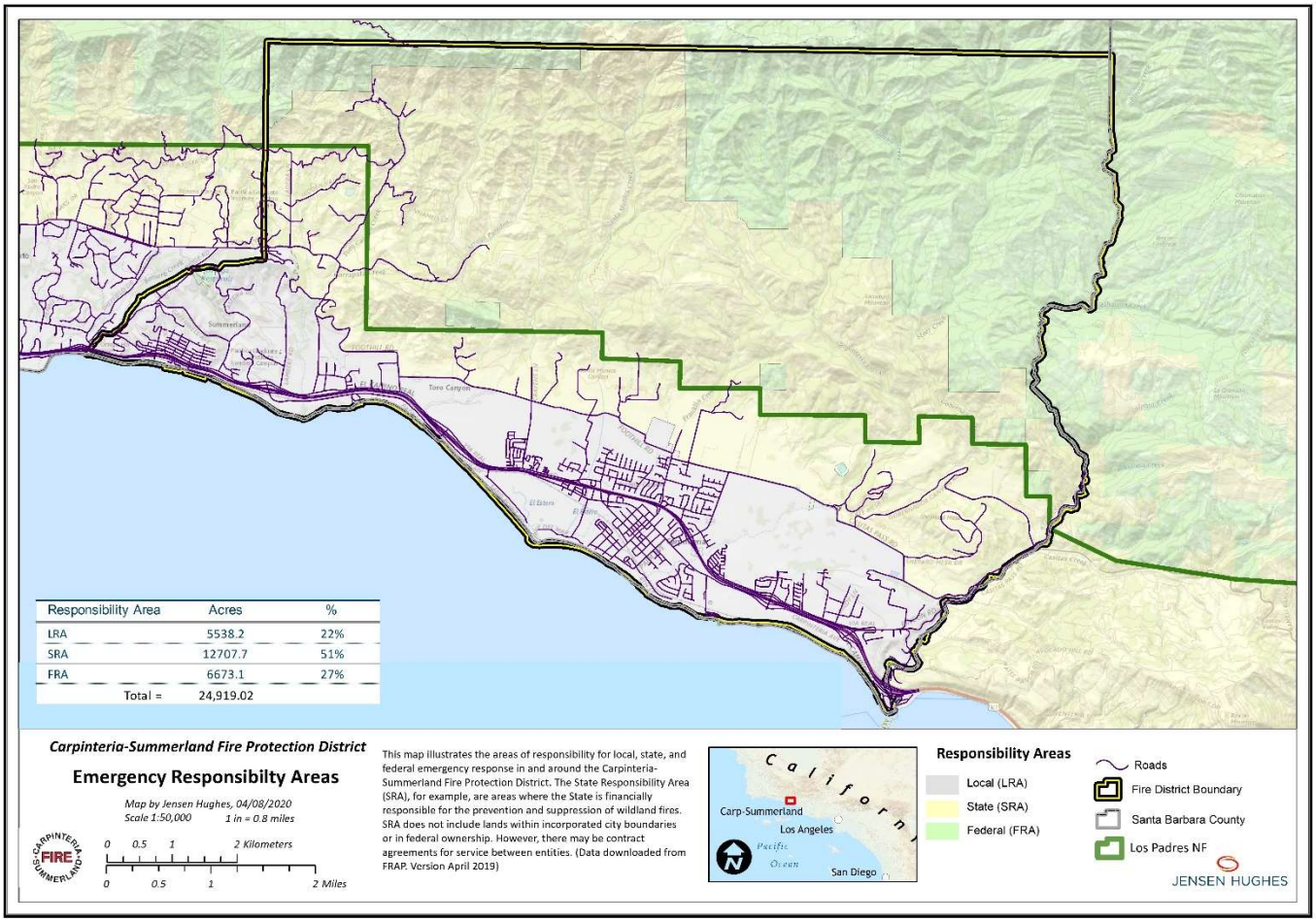


Figure 10. Fire Protection Responsibility Areas in the District

3.5.1 Carpinteria-Summerland Fire Protection District

The lands designated as LRA are under direct protection by the Carpinteria-Summerland Fire Protection District (CSFPD). Organized on June 15, 1934, the District covers 40 square miles from the Pacific Ocean to extreme elevations in the Los Padres National Forest, and from Rincon Creek at the Santa Barbara County/Ventura County line to Ortega Hill. The District is governed by five members of a Board of Directors elected by residents within the District. The Fire Chief carries out the policies and plans of the Fire District Board, directs the activities of District employees, and manages District financial operations in conformity with board-established policies. The District's tax base primarily comes from residential property and development impact fees.

The District provides fire suppression, advanced life support, emergency medical services, arson investigations, homeland security, wildland abatement, technical rescue, and hazardous material response services with 28 emergency response personnel operating from two fire stations, as well as a fire prevention bureau along with administrative support staff. Figure 11 displays the District's organizational chart.

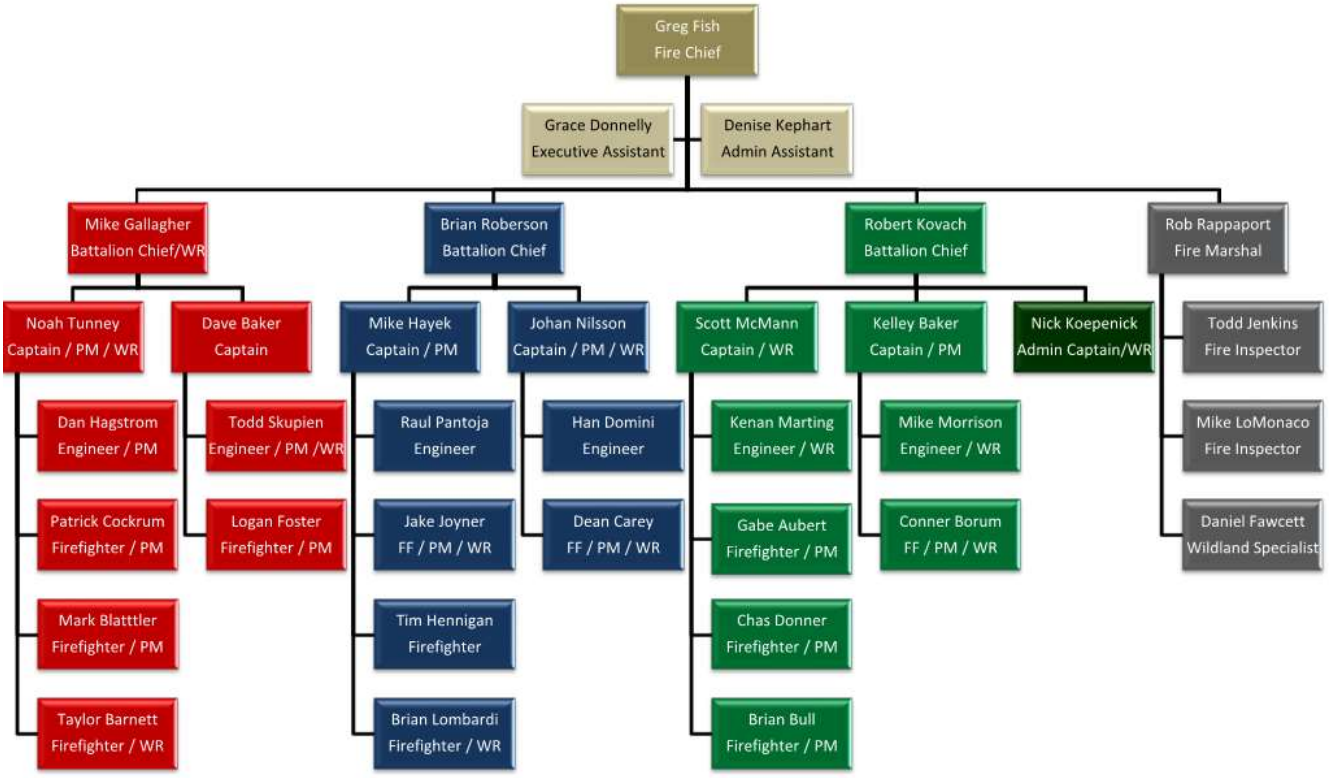


Figure 11. Carpinteria-Summerland Fire District Organizational Chart (Year 2020)

Currently, the District has two fire stations and one administrative building, as follows:

+ Administrative offices – 1140 Eugenia Place, Suite A, Carpinteria
+ Fire Station 1 – 911 Walnut Avenue in Carpinteria
+ Fire Station 2 – 2375 Lillie Avenue in Summerland

Fire equipment available at these fire stations include:

Number of Equipment	Type of Equipment
4	Type I Engine (Structure, Reserve)
2	Type 3 Engine (Brush)
2	Utility pick up with wave runner (Surf rescue)
1	4x4 pick up
1	Step side pick up
3	Command vehicle
1000	Gallons of diesel fuel
500	Gallons of gasoline
2	40 kW propane powered generator
1	Hose drying tower

Montecito Fire Protection District provides contractual dispatch services for the CSFPD.

Since 2019, the District has been working towards building a third fire station in the middle of the District. Multiple studies have supported the need to improve service to the suburban areas along the coastal plain and north of Highway 101, including the 2016 Citygate Standards of Coverage Study and 2014 Diamante Fire Station Location Analysis. Based on these findings, a third station site and plans for development at 101 near Via Real have recently been approved.

3.5.2 Additional Fire Protection / Collaborative Agreements

The District has well established protocols for obtaining support from fire cooperators during an escalating wildfire through automatic and mutual aid agreements with adjoining jurisdictions including the City of Santa Barbara, Santa Barbara County Fire Department, Montecito Fire Protection District and Ventura County Fire Protection District. Additionally, the Los Padres National Forest provides support to the District during mutual aid wildland fires.

The following is a summary of existing agreements and mechanisms through which the District can request assistance for fire suppression operations.

- ***Automatic Aid:*** As a member of California's Office of Emergency Services Region 1, the District has agreements in place with the City of Santa Barbara, Santa Barbara County Fire Department, and Montecito Fire Protection District and VCFD. In addition, a local agreement is in place for automatic aid from the U.S. Forest Service, who will respond to reported vegetation fires within the District boundary. Aircraft consisting of fixed-wing air tankers and rotor-wings (helicopters) from Santa Barbara County and the Los Padres National Forest are part of the automatic aid response, with additional aircraft during high fire response times.

- ***Master Mutual Aid:*** The California Disaster and Civil Defense Master Mutual Aid Agreement between the State of California and each of its counties and incorporated cities create a formal structure for the provision

of mutual aid. Once a local emergency is declared, requests for additional firefighting resources can occur through the Operational Area Fire and Rescue Coordinator. If the emergency persists, additional resources are available from the regional or statewide system.

+ ***California Fire Assistance Agreement:*** This agreement is between the State of California, California Emergency Management Agency (CAL OES), California Department of Forestry and Fire Protection (CAL FIRE), and the five federal fire agencies (e.g., United States Forest Service, National Park Service, Bureau of Land Management, Fish and Wildlife Services, and Bureau of Indian Affairs). It provides the framework for coordinating the use of and reimbursement for local government fire and rescue resources used at wildfire incidents. Mobilization of firefighting resources occurs through the California Fire Assistance Agreement; however, reimbursement of expenses incurred in support of the District may be required.

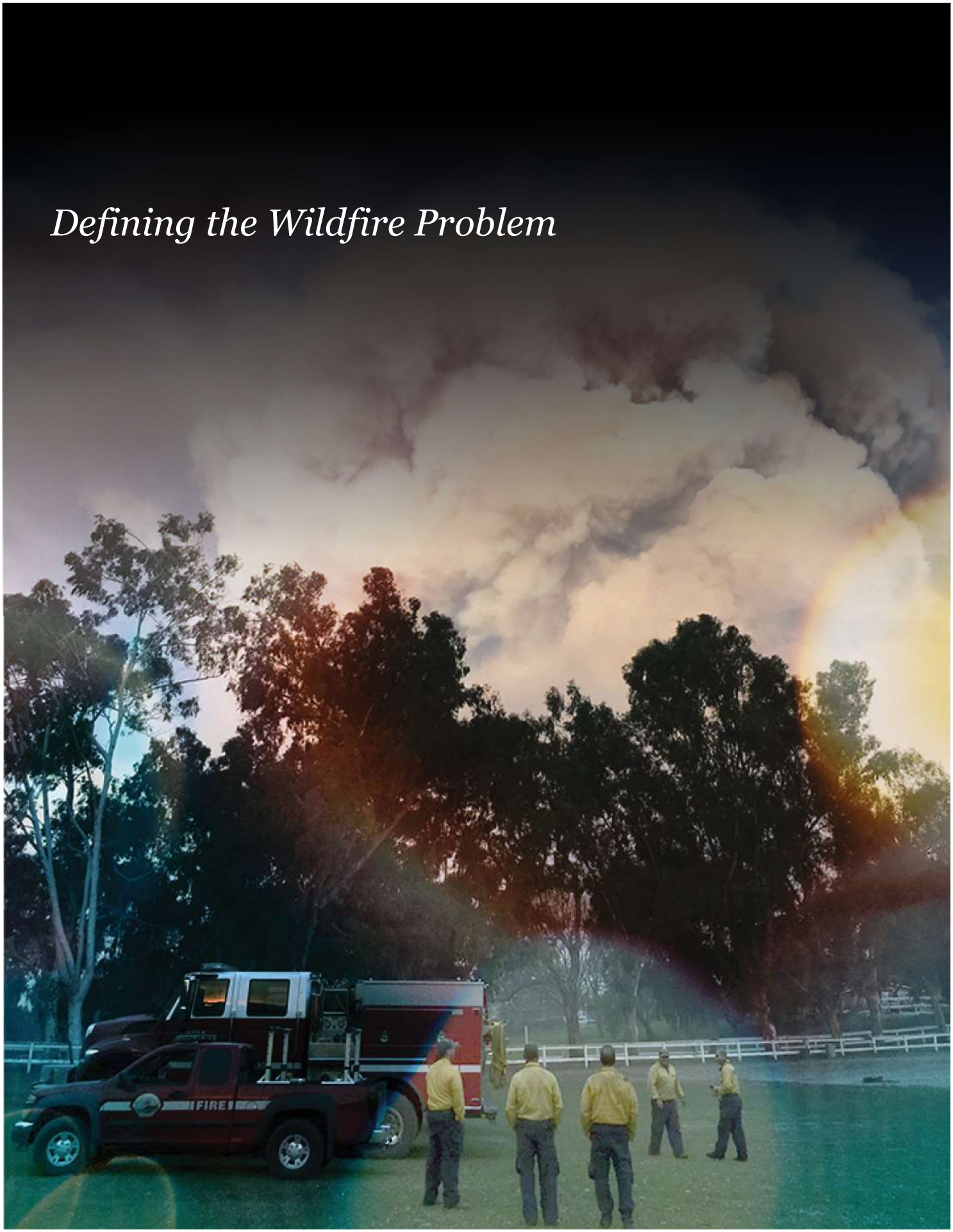
3.5.3 2016 Standards of Coverage Study and Risk Assessment

In 2016, the District retained Citygate Associates, LLC to conduct a community risk assessment, evaluate the District's fire station placement plan, assess the District's headquarters and support functions, and conduct an online community survey. Wildfire was one of ten risks included as part of this report. As it relates to wildfire, Citygate identified that Carpinteria-Summerland has:

+ Personnel that care about their agency and the people they serve
+ The greater part of the District abuts and/or intermingles with high to very high wildland fire risk zones north of Highway 101
+ Effective programs at eliminating dead and decadent vegetation in heavily vegetated areas of the District
+ Need for establishing additional landowner agreements for vegetation removal/modification projects
+ Inadequate response times outside the two main populated zones (i.e. suburban population density areas along the coastal plain and developed areas north of Highway 101)
+ Insufficient personnel and equipment independent of relying on surrounding mutual aid agreements with Santa Barbara County, City of Santa Barbara and Montecito Fire District due to limited District financial resources/revenues.
+ Several areas of the District have insufficient fire water flow (e.g. 6600-7000 block of Gobernador Canyon Road, 2100 block of Foothill Road and Santa Clause Lane), with other areas having no fire hydrants (e.g. properties north of Foothill Rd, properties off Toro Canyon Rd, properties off Hidden Valley Lane and properties off the Toro/Ladera connector).
+ Significant access and egress impediments that can adversely affect emergency response times and evacuations
+ A need for a locally developed evacuation/shelter-in-place plan specific to the District residents and businesses.
+ High risk vulnerability to drought and high wind occurrences
+ Taken aggressive steps to minimize both the occurrence and severity of impacts from wildfire

The CWPP Action items address several of the needs identified in the Standards of Coverage report.

Defining the Wildfire Problem



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4.0 Defining the Wildfire Problem

The nature of the wildfire problem is a product of natural and/or man-made ignition sources, vegetative fuels, topography, and weather. Understanding the wildfire problem requires an understanding of how these factors interact. Each year only a small fraction of wildfires become large enough to result in significant negative impacts. This is due to a combination of conditions favorable to suppression, and the availability of firefighting resources to provide an appropriate response to the fire, especially during the incipient stages of fire development.

To effectively develop a mitigation strategy to address the potential negative effects of a wildfire within the Planning Area requires an understanding of the fire history, fire ecology, climatology, and human interactions with these various facets.

4.1 FIRE ECOLOGY

The Planning Area is characterized as a Mediterranean landscape due to its climate and the native vegetation that dominated prior to European settlement. Temperatures are generally moderate and dominated by maritime influences; winter lows remain above freezing while summer highs are moderated by the effects of a daily onshore breeze and a moisture-laden marine layer (i.e., coastal fog) that forms at the interface of land and sea. High temperatures exceeding 100°F are rare and primarily associated with downslope wind events with strong high-pressure ridges. The average annual rainfall for the Planning Area varies by elevation, from below 20 inches at sea level to nearly 30 inches at higher elevations in the Santa Ynez Mountains; the average for the planning area as a whole is 26 inches. Most precipitation falls in winter and early spring months, with a long seasonal dry period (greater than 6 months) producing an annual climatological drought in the area.

The native vegetation of the Planning Area uplands is chaparral shrublands dominated by three primary species (See Figure 12) : manzanita (Arctostaphylos spp.), chamise (Adenostoma fasciculatum), and California lilac (Ceanothus spp.). Chapparal is a highly fire-adapted species that has high levels of volatile oils in its leaves and stems, making it very flammable, and it usually resprouts quickly after wildfire. In the higher-moisture riparian areas along canyons, these shrubs give way to oak, sycamore, and willow trees, which are more resistant to the adverse impacts of wildfire and will either survive relatively undamaged or resprout following the fire. By contrast, at lower elevations and closer to the coastline, chaparral transitions to a coastal sage scrub community that is dominated by California sagebrush (Artemisia californica). The coastal sage scrub community did not burn as frequently historically, and does not resprout rapidly after fire, instead relying upon seedling recruitment. The coastal sage scrub community has largely been eliminated in Ventura and Santa Barbara counties due to the expansion of urban and suburban development, increases in invasive species displacing native species, and an increase in human-initiated fire frequency facilitating a land cover conversion to more herbaceous species and grasses.

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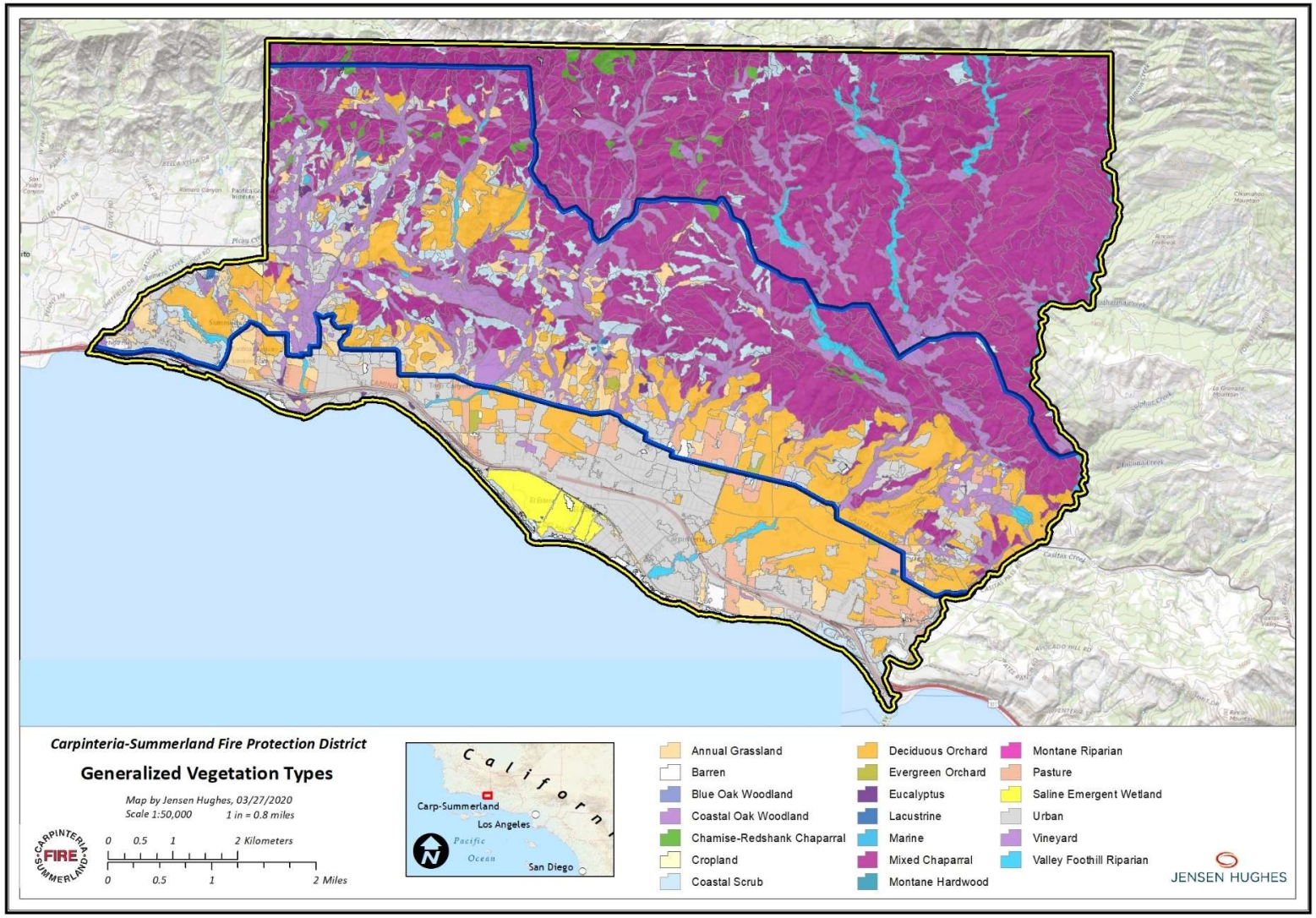

Figure 12. Vegetation across the Planning Area (source: California Wildlife Habitation Scheme)

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Table 3 provides a summary of the vegetation types and percentages that occur within the District boundary.

Table 3. Existing Vegetation Types in the District

Vegetation Type	Acres	Percent of District Area
Annual Grasses and Forbs	897.3	4%
Barren	283.7	1%
Blue Oak Woodland	6.4	0%
Coastal Oak Woodland	2,965.3	12%
Chamise-Redshank Chaparral	179.7	1%
Cropland	7.4	0%
Coastal Scrub	1,182.5	5%
Deciduous Orchard	3,108.0	12%
Evergreen Orchard	42.7	0%
Eucalyptus	58.9	0%
Lacustrine	20.6	0%
Marine	9.9	0%
Mixed Chaparral	11,271.6	45%
Montane Hardwood	5.7	0%
Montane Riparian	5.7	0%
Pastures and Crop Agriculture	709.4	3%
Saline Emergent Wetland	221.7	1%
Urban	3,371.6	14%
Vineyard	112.9	0%
Valley Foothill Riparian	468.5	2%
Total =	***24,929***	***100%***

Chaparral species and oaks have evolutionary characteristics consistent with fire-adapted ecosystems. Some shrub species (e.g., scrub oaks) are obligate resprouters that utilize stored reserves to regenerate from existing stems shortly following the fire event. Thus, they must build up sufficient carbon reserves before the next fire in order for the regenerative machinery to function. Other shrub species are obligate seeders (e.g., some species of ceanothus and manzanita), regenerating only from stored seed bank in the soil or adjacent unburned areas. In the coastal sage scrub community, similar to many sagebrush ecosystems, the seedling recruitment period is generally multiple decades, with an early period of grasses and herbaceous species that later dwindle and die off as shrub canopy crown cover increases and reaches closure. This transition requires many decades between fires to reach late succession and is particularly vulnerable to increased fire frequency.

There is little evidence supporting a frequent (short) fire return interval in the absence of human intervention in this region. Prior to human expansion in the region, ignitions were infrequent due to very limited occurrence of lightning, which occurs primarily at high elevations and must be coupled with downslope winds to carry fires in

lower elevation, shrub-dominated systems. In much of the Planning Area, it is likely that there were relatively few small fires, with most area burned attributed to infrequent very large fires that occurred when a summer lightning ignition held over into autumn and was still combusting at the time of a Santa Ana-Sundowner wind event. However, widespread native settlement patterns by the 15th century increased the number of ignitions drastically. Native burning is well documented, although this likely decreased as Spanish settlement occurred and then gave way to westward American expansion. The dramatic increase in population in the 20th century in the region further altered the natural fire regime of the region by substantially increasing human ignitions both in number and across the seasons. Today, the majority of area burned across the Planning Area is associated with a high number of ignitions producing many small fires each year, and infrequent large fires, the growth of which is supported by high temperatures, low relative humidity, and wind events. The historical fire regime does not support prescribed fire for ecological restoration in the Planning Area.

4.2 FIRE HISTORY

Fire history provides a useful tool for fire prevention and preparedness as it can provide an understanding of fire frequency, fire season, fire behavior and characteristics, major sources of ignition and portions of the landscape that are the most vulnerable.

Fire has been a substantial presence in the Santa Barbara coastal region for thousands of years due in large part to the flammable vegetation, a dry summer and autumn climate, and the high density of ignitions provided primarily by Indigenous peoples of the region prior to Spanish settlement. Following Spanish settlement, the frequency of fire and its uses in the region have varied considerably with settlement patterns and governance policies, but there have always been large, fast-moving, intense fires along the Santa Barbara front. Since the 1950s, the greater Santa Barbara area averaged one large fire per decade while the Planning Area is directly impacted approximately once every three decades – the most recent being the 2017 Thomas Fire. Table 4 provides a list of some of the major wildfire incidents in the District, and graphically in Figure 13.

Table 4. Wildfires within and adjacent to CWPP Project Area

Fire Name	Date	Fire Size (acres)	Structures Destroyed/Damaged	Fatalities/Injuries
Unnamed	June 1917	~20,000	~12	Unknown
Matilija	September 1932	~220,000	--	8
Polo	March 1964	684	unknown	--
Coyote	September 1964	65,338	106	1
Romero	October 1971	14,538	4	4 fatalities, 83 injuries
Toro Park	February 1980	77	--	--
Wheeler 2	July 1985	182,687	56	--
Thomas	December 2017	281,893	1,063	2

Source: *CAL FIRE 2020b; SBCFD 2018; VCFD 2020*

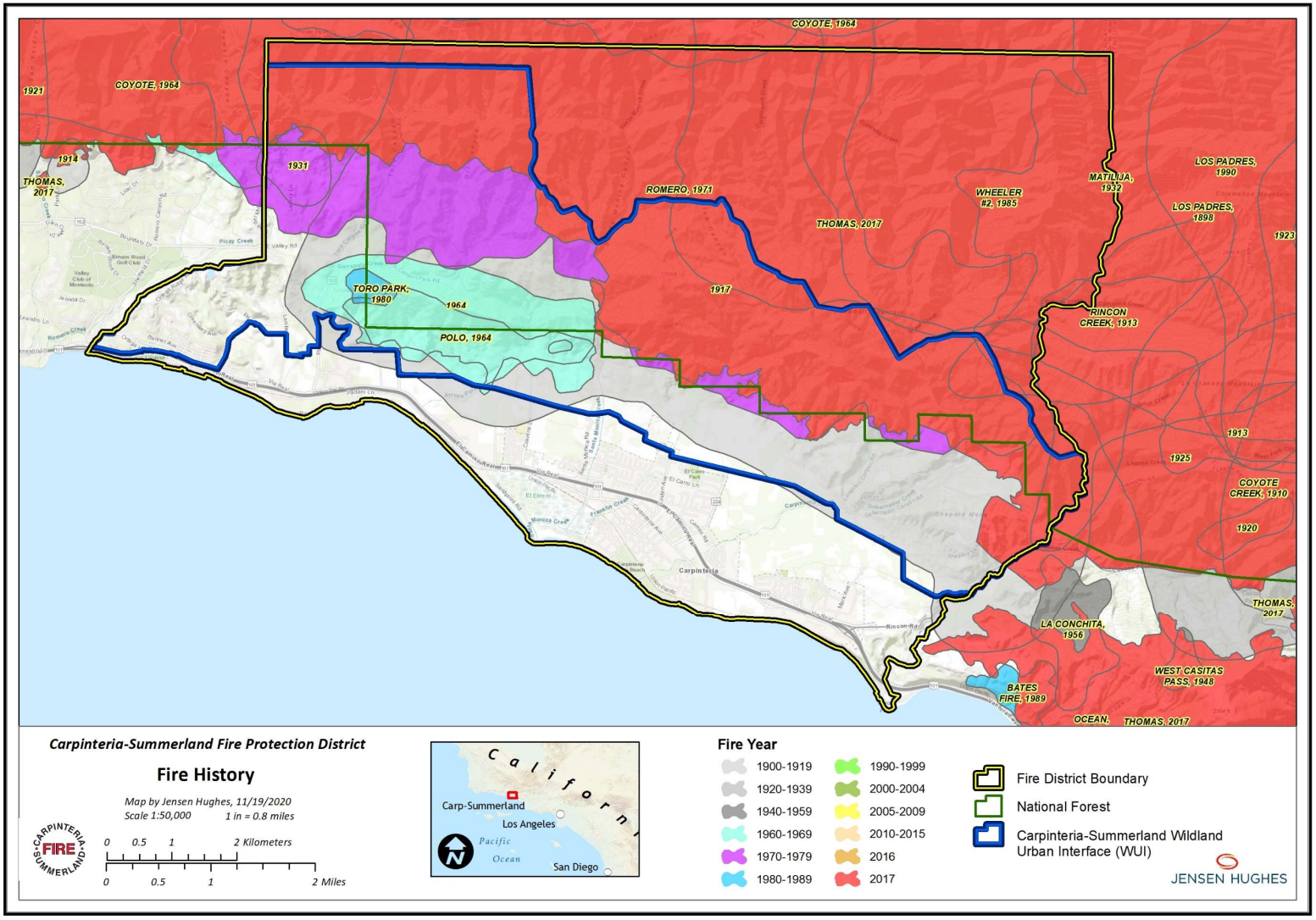

Figure 13. Fire History in the Carpinteria-Summerland Area

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As seen in Figure 13, the 1917 Fire perimeter encompasses nearly the entire planning area, but it occurred at a time when settlement in the region was still relatively sparse and confined to the coast, without the density of houses or the agricultural expansion seen today. It was also overshadowed by another much larger fire to the northeast that razed Ojai and dominated headlines. Both fires occurred during an intense multi-day heat wave, with the Santa Barbara weather station recording 115 °F on June 17. The Carpinteria fire started on Toro Canyon road and burned for a week before rain fell, although there are no reports of damages.

The 1964 Polo Fire reportedly spawned a tornado that touched down briefly, while the 1971 Romero Fire threatened the city for over a week and took the lives of four firefighters. None of these, however, has had the impacts seen in the Planning Area that occurred during the 2017 Thomas Fire.

4.2.1 Thomas Fire

The Thomas Fire ignited under a record Santa Ana wind event the afternoon of December 4, 2017, near Thomas Aquinas College in Ventura County. It grew rapidly to the west and north, surrounding the Ojai Valley and moving along the Santa Ynez range to the west, towards Santa Barbara County. The fire burned into the Carpinteria-Summerland WUI on December 10 and damaged or destroyed 17 structures along Gobernador Canyon and Stanley Park roads. Over the next 48 hours, the fire pressed further west and damaged or destroyed an additional 19 structures in Toro Canyon, an area that was previously burned in both 1917 and 1980. A total of 17 homes in the Planning Area were destroyed during the Thomas Fire, with an additional 4 homes receiving minor damage, and 15 outbuildings damaged or destroyed (per CAL FIRE).

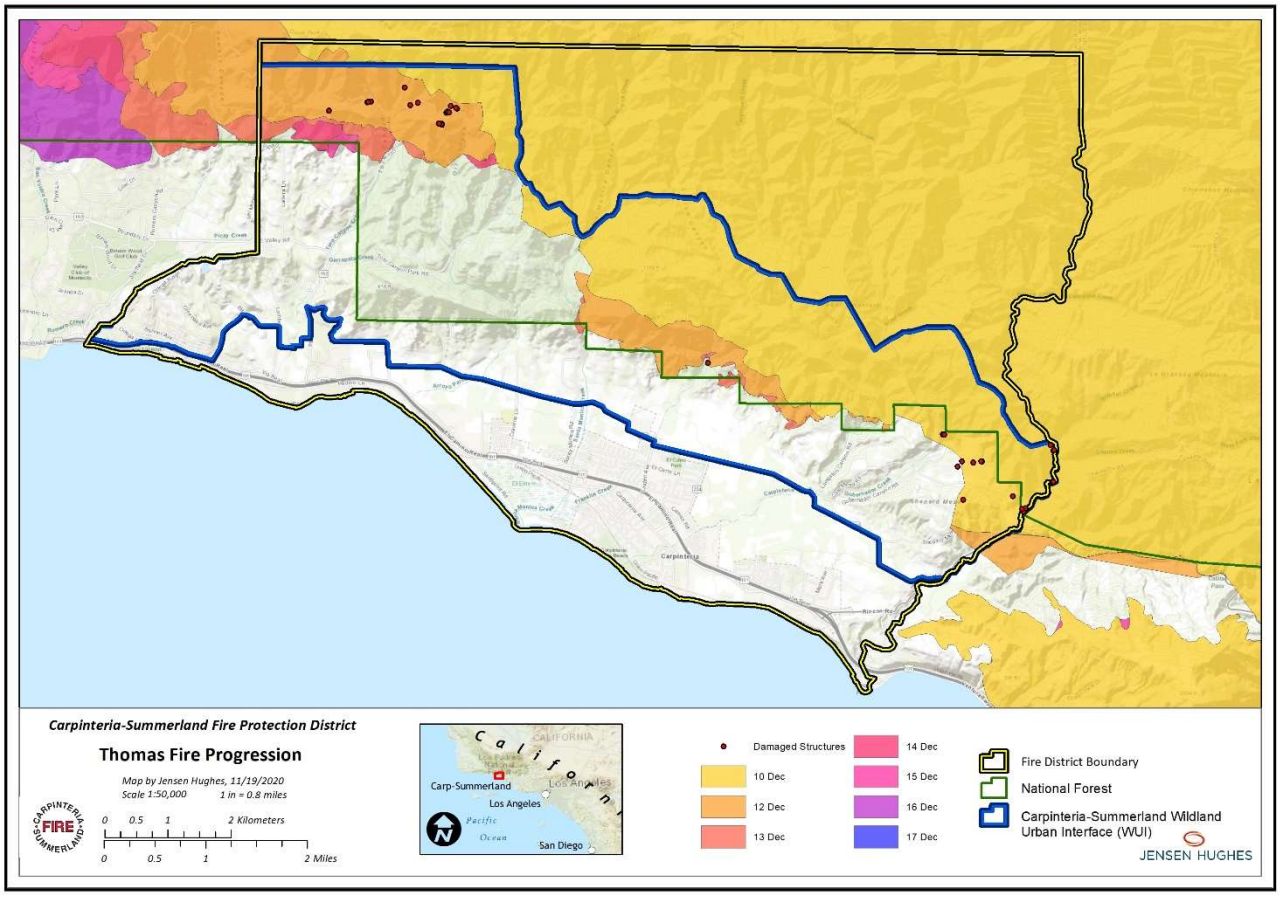

Figure 14. Progression of the 2017 Thomas Fire in the Planning Area, with structures impacted.

The Planning Area sits in a particularly unique location along the Ventura and Santa Barbara county shoreline. Santa Ana winds dominate fire activity further east and south but tend to diminish moving west through the Planning Area (Rolinksi et al. 2016, Kolden and Abatzoglou 2018). Sundowner winds are more localized to the Santa Barbara area and can generate highly erratic fire behavior but tend to diminish moving east through the Planning Area, and less frequently occur concurrent to Santa Anas (Hatchett et al. 2018). Prior destructive fires in the area have been attributed to both types of winds.

While the climatological conditions of the 2017 Thomas Fire were extreme in that autumn rains were delayed and the soil and vegetative fuel moisture were at record lows, the Planning Area benefitted from having several days to prepare for the arrival of the fire. It also benefitted from reduced impact from the Santa Anas as compared to Ojai Valley. Localized downcanyon winds were observed on the key days of fire destruction in the Planning Area during the Thomas Fire; personnel interviewed after the fire described erratic fire behavior in Gobernador Canyon due to both localized winds and dense fuels (Montecito Retrospective Report). These conditions, in combination with narrow, winding, dead-end roads that had insufficient clearance for large fire apparatus, were highlighted as a contrast to the road clearance and fuels reduction work observed by many fire personnel in Montecito.

4.3 VEGETATION AND FUELS

Vegetation is the primary fuel source for wildfires and is the key factor in determining the risk of wildfire hazards. However, in the case of the District, both wildland vegetation and urban fuels can present a hazard particularly at the wildland-urban-interface (WUI). Urban sources of fuel such as combustible structures (e.g. homes, businesses, industrial facilities, outbuildings), combustible non-structural features (e.g. decks, fences, ornamental landscaping), vehicles, fuel tanks, etc., can contribute to the fire environment and significantly influence the fire behavior and overall hazards in the District. However, current wildland fire models are not capable of modelling the ignition, behavior and/or influence of urban-type fuels on overall WUI fire behavior. This is due to limitations in computational resources, large variability and inconsistency in urban fuel loads/characteristics, limits on combustion science for whole structure fire behavior and urban fire spread models, etc. *Note: While wildland fire models are limited to vegetative fuel loads, it is important to highlight that large scale, destructive fires that threaten human life, health, property and the environment (i.e., urban conflagration) require a large-scale initiating event, such as a fire initiating under extreme fire environmental conditions (i.e. high winds, low humidity, dry fuels).* Thus, the potential risk of a large-scale, destructive wildland fire can be linked to the proximate vegetation and associated characteristics.

A detailed description of the vegetative cover and fire ecology within the District is provided in 4.1. This description, however, does not account for the modifications that the 2017 Thomas Fire has had on the vegetative fuels within the boundaries of the Fire District, particularly along Highway 150, Shepard Mesa and Gobernador Canyon Roads. Note: As the fire remained north and east of the primary residential areas of the communities, most of the fuels outside of the fire footprint have remained unmodified. Another unique feature of the local fuels complex is the amount of agricultural and light industrial development north of Carpinteria and Summerland. These lands, while not as extensive on the Summerland side of the Planning Area, provide what has historically proven to be an effective buffer against fire spreading into the more densely populated residential developments of the communities (See Figure 8).

Undeveloped forest lands exist to the north of the Planning Area along the interface with the Los Padres National Forest. The interface between the communities and the forest is a potentially hazardous location during wildfires, as fire intensity is modeled to be greatest at this interface. Much of the fuel north of the communities was consumed in the Thomas Fire and is currently in a state where high intensity wildfire is not expected. However, since ecosystems are not static, vegetation recovery over time will create a fuel complex capable of supporting the type of fire behavior witnessed in 2017.

4.3.1 Fuel Characteristics

The key characteristics of vegetative fuels that affect fire behavior include fuel type, fuel moisture, amount of fuel, chemical properties, horizontal continuity, and vertical arrangement. Understanding fuel models, their effects on fire behavior, and how the models change after the implementation of a fuel treatment can help fire managers design effective wildfire mitigation strategies.

4.3.1.1 Fuel Types/Fuel Models

Fuel types associated with the Planning Area include grasses, shrubs, brush and the ground litter found in forested vegetation types. These fuel types are categorized into specific fuel models which describe the physical properties of the vegetation that support fire.

Grass-shrub and grass dominated fuel types comprise the majority of the local landscape, with woody shrubs and timber litter making up the remainder of the other burnable fuels. Urban development, barren land, agricultural land and water, all considered unburnable in the fire behavior models, comprise nearly 14% of the Fire District. See Table 5 for the % breakdown and Figure 15 for the spatial distribution of vegetative fuels/fuel models across the Fire District.

Table 5. Breakdown of Generalized Fuel Types/Fuel Models within the Fire District

Fuel Model	*Fuel Model Description*	*% of Fire District*
91	Urban	13.00
93	Agricultural	0.44
98	Water	0.39
99	Barren	0.10
101	Short, sparse dry climate grass	1.18
102	Low load dry climate grass	10.97
121	Low load dry climate grass-shrub	3.02
122	Moderate load dry climate grass-shrub	44.16
142	Moderate load dry climate woody shrubs	0.43
147	Very high load dry climate woody shrubs	7.76
163	Moderate load humid climate timber-grass-shrub	0.07
165	Very high load dry climate, heavy forest	0.40
182	Low load broadleaf litter	0.92
183	Moderate load conifer litter	1.86
184	Small, downed logs moderate load of fine litter	9.78
185	High load conifer litter	0.14
186	Moderate load broadleaf litter	4.31
187	Heavy load forest litter	0.96
188	Moderate load long needle pine litter	0.02
189	Very high load broadleaf litter	0.08

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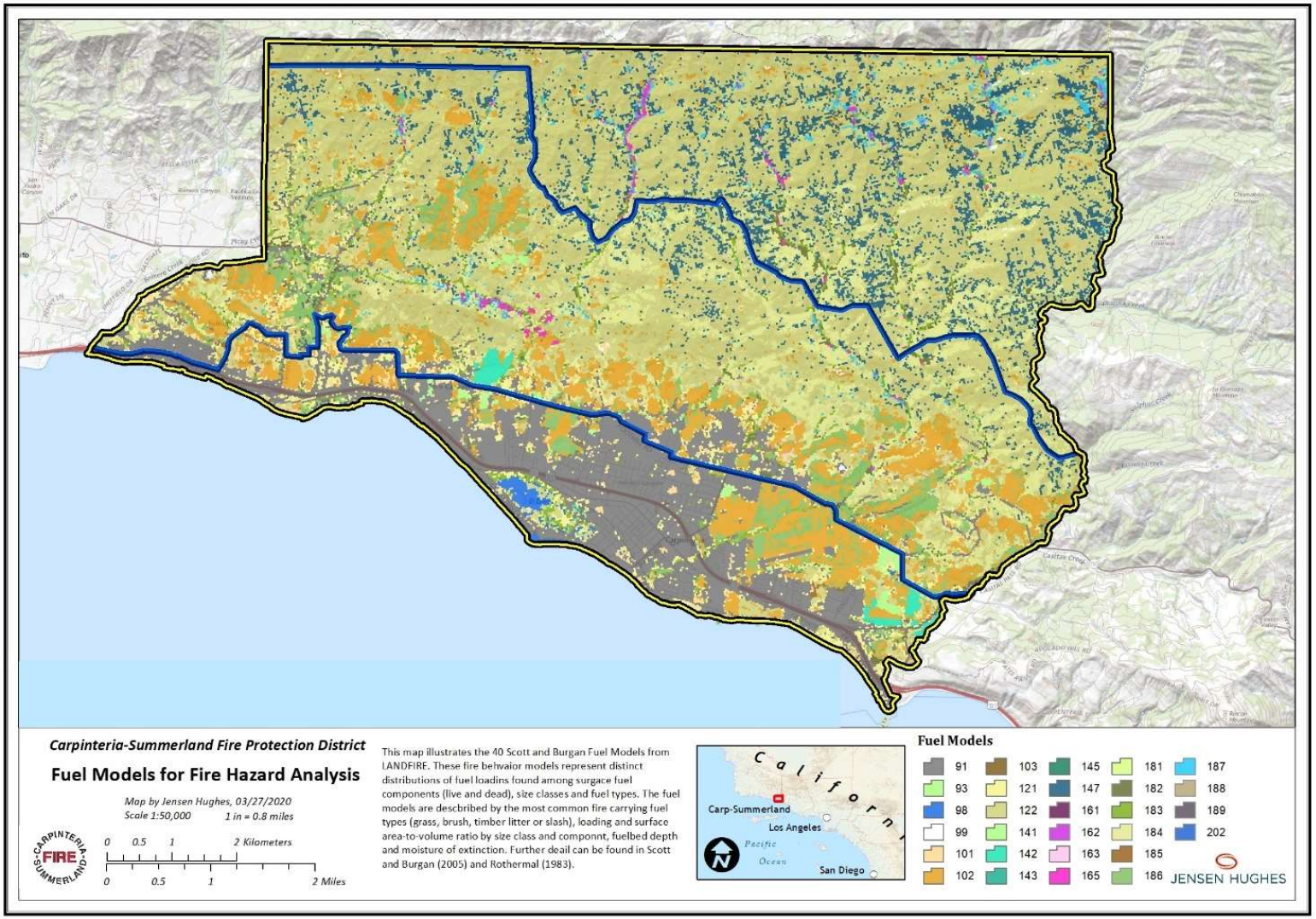

Figure 15. Fuel types/models within the Carpinteria-Summerland Fire District

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4.3.1.2 Fuel Moisture

Fuel moisture is a dynamic variable controlled by seasonal and daily changes in the weather and is an important component influencing wildland fire behavior. Simply stated, vegetation is most flammable when fuel moisture levels are low and less flammable when they are high. Fuel moisture levels will largely determine if a fire will ignite and spread.

The fire environment influences both dead and live fuel moisture. Dead fuels act like a sponge absorbing or giving up moisture to the air and ground which surrounds them. The moisture exchange rate between dead fuels and their surrounding environment varies by the size of the dead fuel particle, with fuels less than ¼ in diameter reaching equilibrium with their surroundings within one-hour. Because of this rapid exchange rate, these smaller size class fuels exert significant control over wildfire burning characteristics, especially in the grass and shrub dominated fuels associated with the Planning Area.

Fire managers use the concept of "timelag" to define how rapidly this exchange of moisture occurs between dead fuel and the surrounding environment. Smaller diameter fuels such as dry grasses exchange moisture quite rapidly. This is why a dry grass field may be covered in dew early on a summer morning, but can burn in a wildfire later that same afternoon. Table 6 displays the rate of exchange of moisture between dead fuel and the environment. Times shown reflect the hours required for 2/3 of the volume of a dead fuel to come into equilibrium with its surrounding environment. Timelag is the time required to reach equilibrium. See Table 6.

Table 6. Dead Fuel Moisture and Timelag Relationship to Fuel Size

Diameter Class	Timelag	Fuel Description
0 – 0.25"	1-hour	Grasses, forbes
0.25 – 1.0"	10-hour	Small sticks and branches
1.0 – 3.0"	100-hour	Larger branches, small logs
3.0" and greater	1000-hour	Large logs

Live fuel moisture is the moisture in living, growing vegetation and is controlled by the internal physiological mechanisms of the vegetation and external influences such as rainfall, drought, aspect, elevation and seasonal drying patterns. Typically, live fuel moistures are highest in the spring through early summer and at their lowest in late summer through early winter when seasonal rains typically begin.

Locally, live fuel moisture sampling is conducted by the Los Padres National Forest at the Laguna Ridge (Casitas) sampling location. Live fuel moisture of 60% or below is a "critical" threshold where live fuels display similar burning characteristics as dead fuels. Figure 16 displays fuel moisture data from Laguna Ridge.

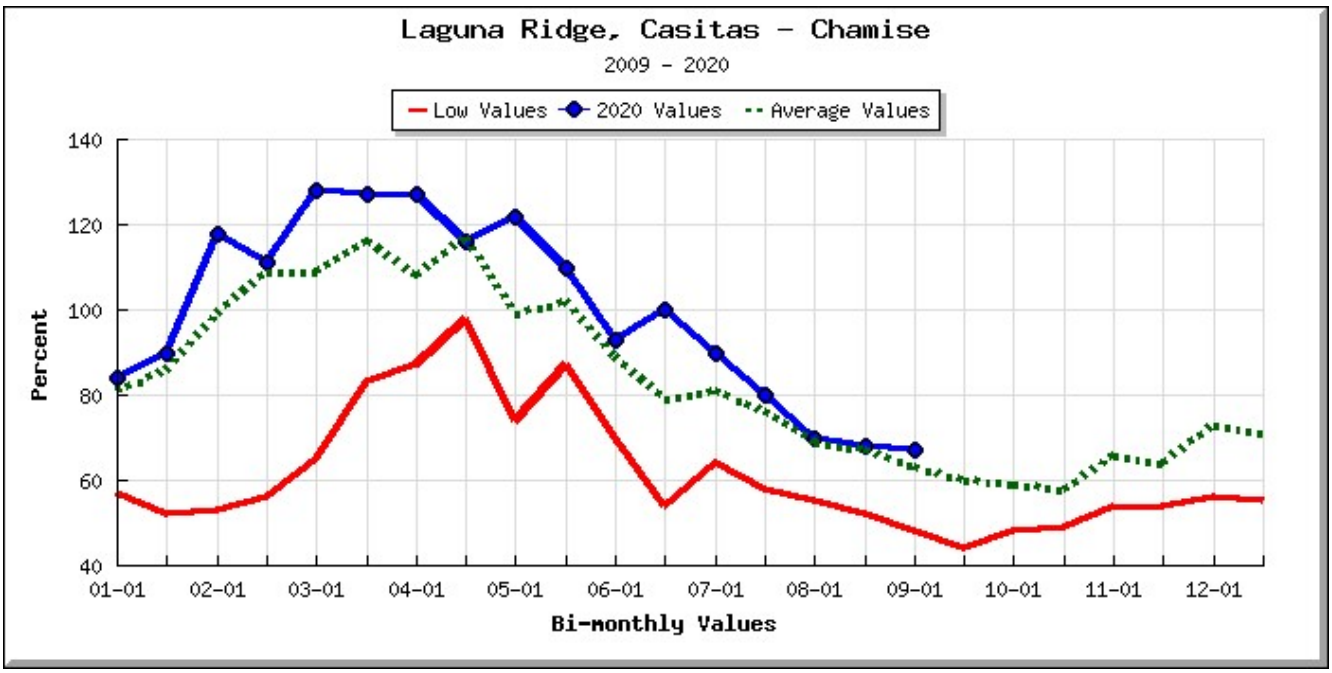

Figure 16. Live fuel moistures in chamise from the Laguna Ridge sample site, 2009 - 2020

4.4 CLIMATE AND CLIMATE CHANGE

The Planning Area has a Mediterranean climate, with 25.7” of annual precipitation falling primarily in the winter and early spring. Average temperatures peak in later summer in the low 80s °F, with a relatively low range between the summer mean high and the winter mean low of approximately 44 °F. See Figure 17. This makes for a moderate maritime climate that occasionally sees extreme temperature and extreme rainfall events.

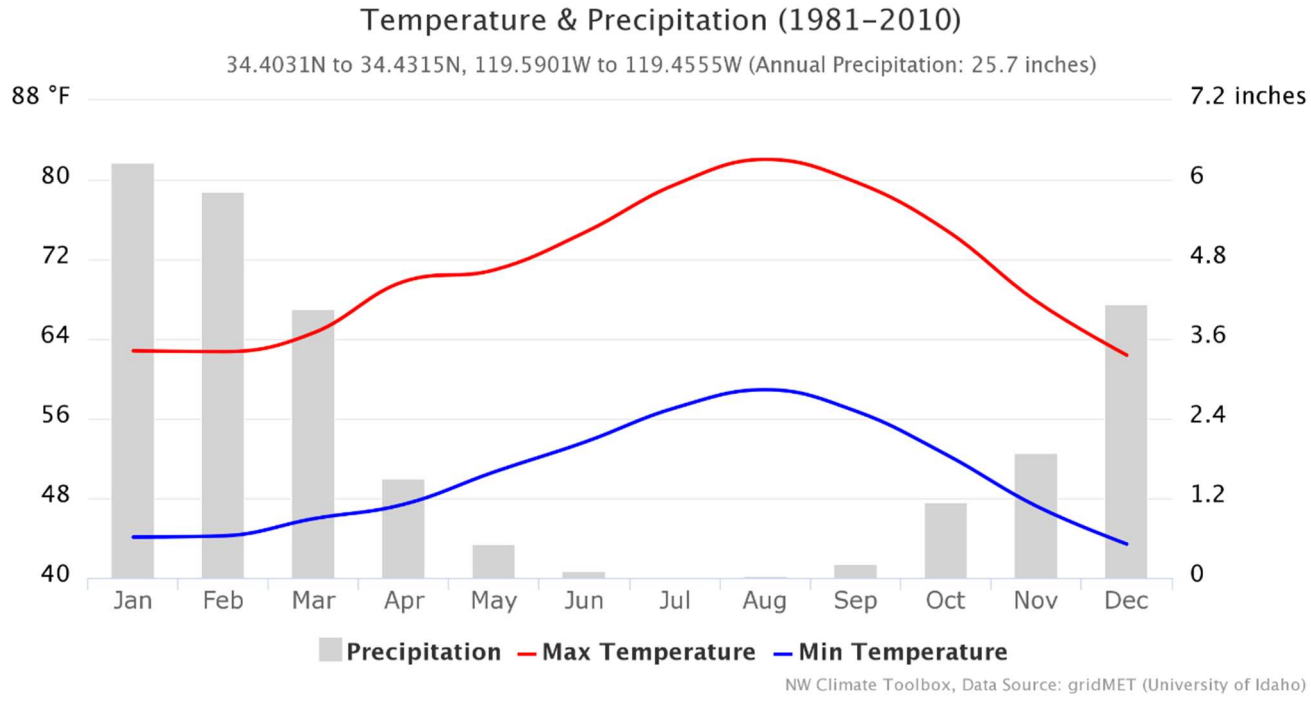

Figure 17. Annual mean climatology over the 1981 – 2010 reporting period for the Planning Area.

While global climate change is often reported as an average rise in temperature (i.e., warming) for the entire planet, the observed changes are highly variable across the globe and even within small countries and states, such as California. Changes in temperature, precipitation, and other meteorological phenomena are also variable both across the seasons of the year, and in terms of the intensity of extreme events. As wildfire tends to occur under extreme conditions in the Planning Area, namely extreme heat events concurrent with abnormally dry fuels, it is critical to understand how climate change specifically impacts both the frequency and intensity of these extreme weather events, as well as how it affects the vegetation fueling the fire.

The south coast of California (as defined in Abatzoglou et al. 2009) has warmed 2.7° F in the last 100 years (Figure 19) with mean temperatures in 2014 and 2015 as the two hottest years for the Planning Area since 1895. The warming has occurred across all four seasons and for both daytime highs and nighttime lows, but the greatest warming are the nighttime lows, particularly in spring, summer, and fall. By contrast, both annual and seasonal precipitation has not changed significantly over the past century (See Figure 19). These trends support anecdotal observation from fire suppression personnel that fires are more active at night now than they have been in the past, which is consistent with reduced nighttime relative humidity recovery.

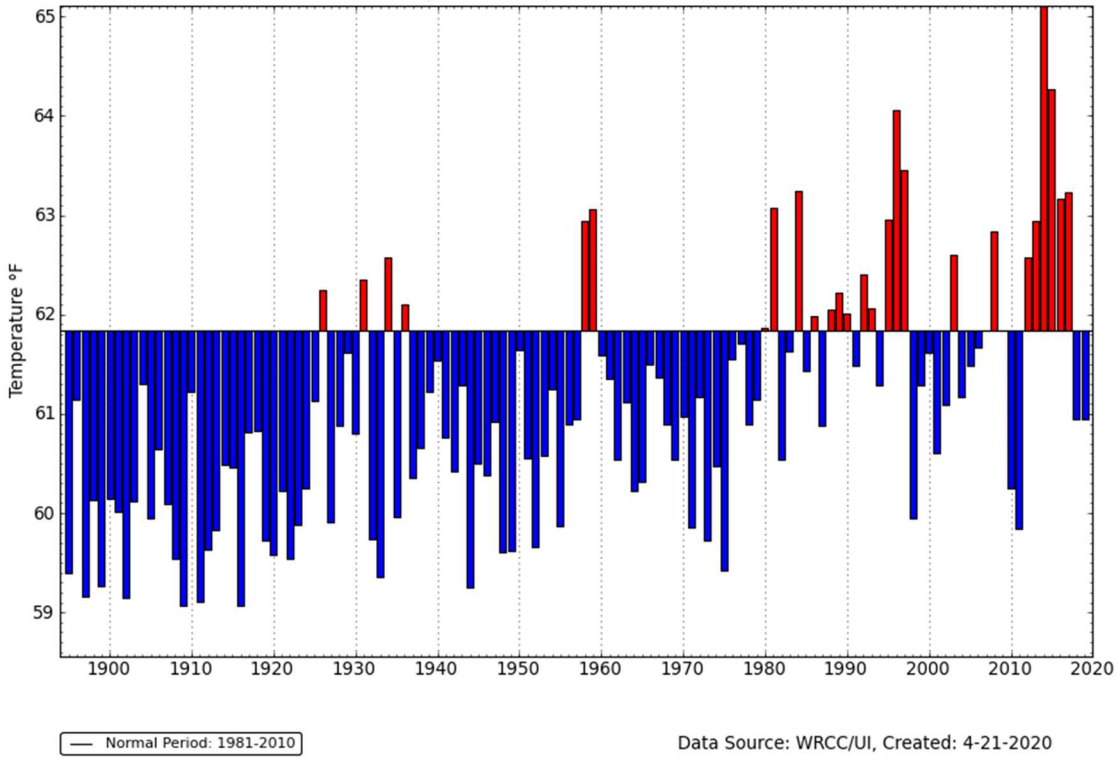

Figure 18. Mean annual temperature for the Planning Area from 1895- present.

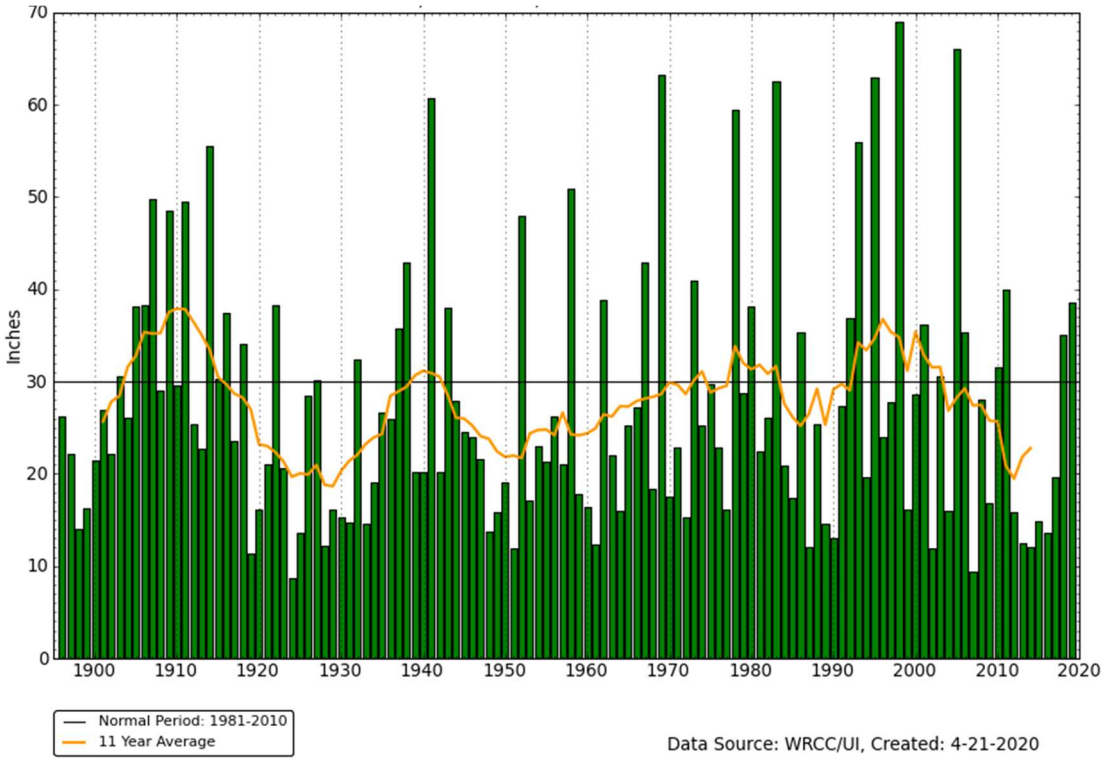

Figure 19. Mean annual water year (Oct. – Sept.) precipitation for the Planning Area from 1895-present. The yellow line represents an 11-year moving average.

This reduced nighttime humidity recovery across spring, summer, and fall seasons is a contributing factor to an observed trend towards increased fire danger, specifically because fuel aridity is higher and fuels are less resistant to fire spread (Abatzoglou and Williams 2016, Goss et al. 2020). When a Santa Ana or Sundowner wind event develops in conjunction with low fuel moisture (i.e., high fuel aridity) there is a greater probability of rapid fire spread and the development of large, longer duration wildfires (Rolinski et al. 2016).

The Planning Area is also impacted by the marine layer, a type of coastal fog that develops during the summer and early autumn due to the strong temperature gradient between the cool ocean waters and the superheated land mass. This layer is difficult to measure, but observations from Burbank and Santa Monica airports over the last 50 years show that it appears to be getting weaker and providing less shade, which increases vegetation aridity on the ground (Williams et al. 2018). Continued ocean warming in the future may further decrease the marine layer, potentially extending the fire season.

Projections of future climate change are modeled based on anthropogenic (i.e., human) emissions of greenhouse gases, but also account for natural climate variability. Increases in fire activity across the western United States have definitively been partially attributed to anthropogenic climate change (Abatzoglou and Williams 2016), so there is high confidence that projections of future climate will have implications for fire.

In the Planning Area, there is a projected temperature increase of an additional 5 to 10° F by 2100, with increases seen across all seasons, and for both maximum and minimum daily temperatures (Figure 20; data from Abatzoglou and Brown 2012)). In contrast to high relative certainty that temperatures will continue to increase, little is known about how climate change will influence precipitation.

Figure 20. Projected change in maximum temperature (daytime highs) and minimum temperature (nighttime lows) through 2100 for the Planning Area.

This combination of even warmer temperatures year-round would facilitate increased large fire probability at all times of the year, but especially during the spring period when Sundowners are most frequent (Figure 21), but vegetation is often too wet to burn (Hatchett et al. 2018). Periods of drier vegetation in the early spring, coinciding with Sundowner wind events, would facilitate more area burned, faster rates of spread, and even more intense fire behavior than has historically been seen during spring fires, such as the 2009 Jesusita Fire. In evaluating the most extreme fire danger days (historic 95th percentile conditions) for both the winter/spring period (Figure 22) and the summer/fall period (Figure 23), fall and winter will see the greatest increase in extreme fire danger days, **with almost a week more extreme fire danger each year by the mid-2050s**.

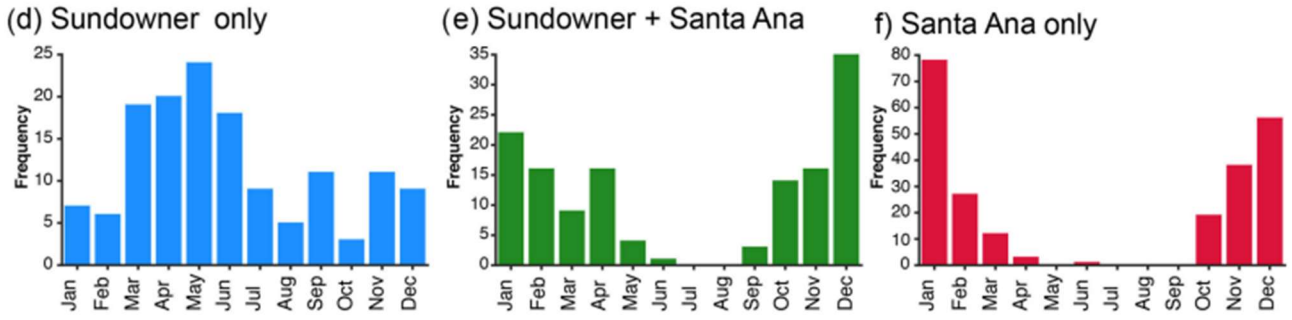

Figure 21. Frequency of Sundowners and Santa Ana wind events by month, from Hatchett et al. (2018).

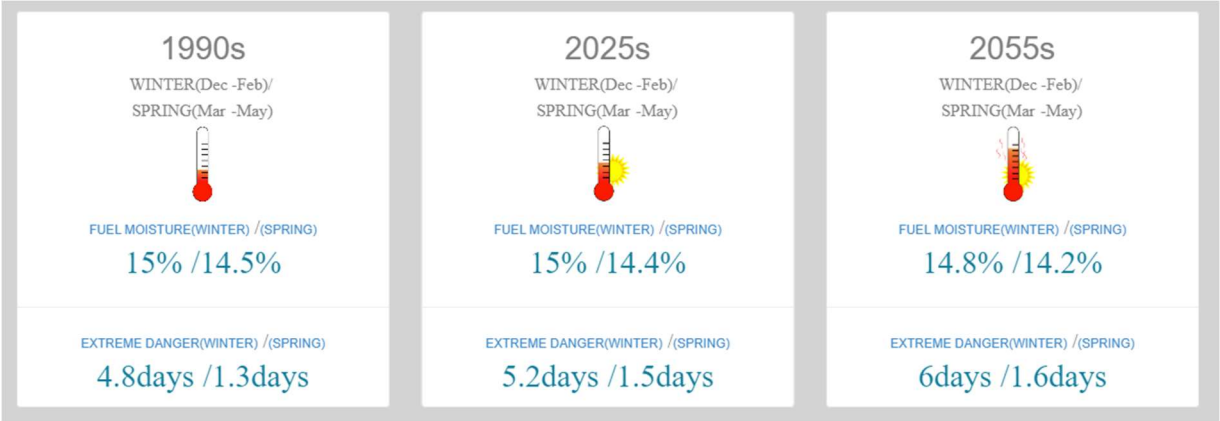

Figure 22. Projected change in average fuel moisture and the average number of days of extreme fire danger for the winter and spring months for Carpinteria based on global climate model outputs.

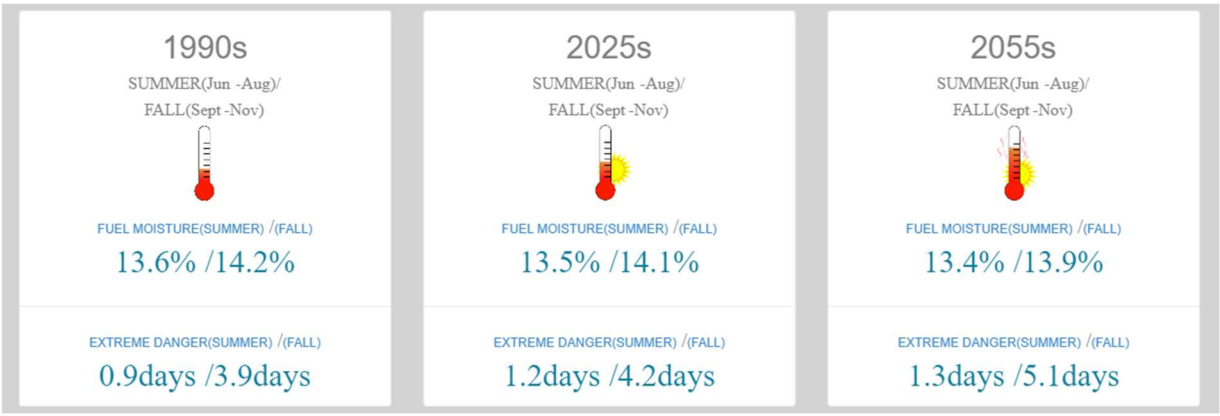

Figure 23. Projected change in average fuel moisture and the average number of days of extreme fire danger for the summer and autumn months for Carpinteria based on global climate model outputs.

The frequency and timing of Sundowner wind events themselves has not been addressed in the context of climate change impacts, as changes in extreme meteorological wind events is one of the most difficult areas of climate change impacts to predict. However, studies projecting changes in Santa Ana wind events have suggested that Santa Ana winds may shift to later in autumn, and potentially become more frequent (Goss et al. 2020). Given that the same atmospheric pressure conditions produce both Sundowners and Santa Ana winds, it is likely that this may also apply to Sundowner potential, thus extending the fire season to later in autumn.

4.4.1 Vegetation Management Strategies in this Context

The considerable body of recent science on fuel treatments and home loss in chaparral shrubland systems points to a need for localized approaches to vegetation management for reducing fire risk. These include:

- Modifying home construction materials to be fire resistant.
- Removing vegetation within 100-feet or more of a structure, dependent upon slope and fuel density.
- Planning localized fuel reduction projects adjacent to homes, critical infrastructure, and roads.
- Developing localized fuel treatment prescriptions to support safe firefighting operations (i.e., creating safe working zones) and facilitate resident evacuation.
- Incorporating vegetation management into policy and zoning codes consistent with the best available science, with flexibility for updates as new science emerges.
- Intensive vegetation treatment in localized critical areas that are regularly maintained and highly accessible (especially during a wildfire event) coupled with focused efforts to increase use of fire-resistant materials for home construction will likely be the most effective strategy for reducing both impacts to life safety and structure loss.

4.5 TOPOGRAPHY

Topography is the configuration of the earth's surface and is the most stable of the elements in the fire environment. Topography, however, does have a significant role in wildland fire behavior as it influences the characteristics of local winds by sheltering areas from the prevailing wind or by channeling wind through prominent canyons and drainages. Factors of topography that affect fire behavior include slope, aspect, terrain features, and elevation with the steepness of slope.

The Carpinteria-Summerland Fire Protection District is located along the east-west trending segment of the California coastline on a low elevation alluvial coastal plain. The coastal plain is relatively flat within the southern portion of the District, but gains elevation rapidly as the Santa Ynez Mountains begin to rise towards the Los Padres National Forest. The primary ridge system above the local communities is defined by the East Camino Cielo Road and the Divide Peak Jeepway. Slopes north of the communities of Carpinteria and Summerland in the Los Padres National Forest routinely exceed 80%.

Seven named drainages pass through the District trending north-south out of the Santa Ynez Mountains (Toro Canyon Creek East and West, Garrapata Creek, Arroyo Paredon Creek, Santa Monica Creek, Franklin Creek, Carpinteria Creek and Rincon Creek) (SBC Flood Control District, 1975). These drainages descend sharply from the ridgetop of the Santa Ynez Mountains before flattening as they pass through the developed portions of the Planning Area. The drainages help define the natural environment of Carpinteria and Summerland, supporting a diverse oak woodland/riparian vegetation mix. However, these drainages also serve as major flow paths for Sundowner and Santa Ana winds, potentially channeling and accelerating these off-shore winds.

The District has a mostly southern aspect with fine scale variation along mesas, creeks, and drainages. This south aspect receives greater amounts of solar radiation than does a north facing slope. South facing slopes usually support lighter, flashier fuels, however, the marine climate of the District overpowers the influence of solar radiation and little difference can be visually noted between fuels that exist on south or north facing slopes. Recent fire disturbance rather than aspect accounts for the majority of the visual difference in vegetation types.

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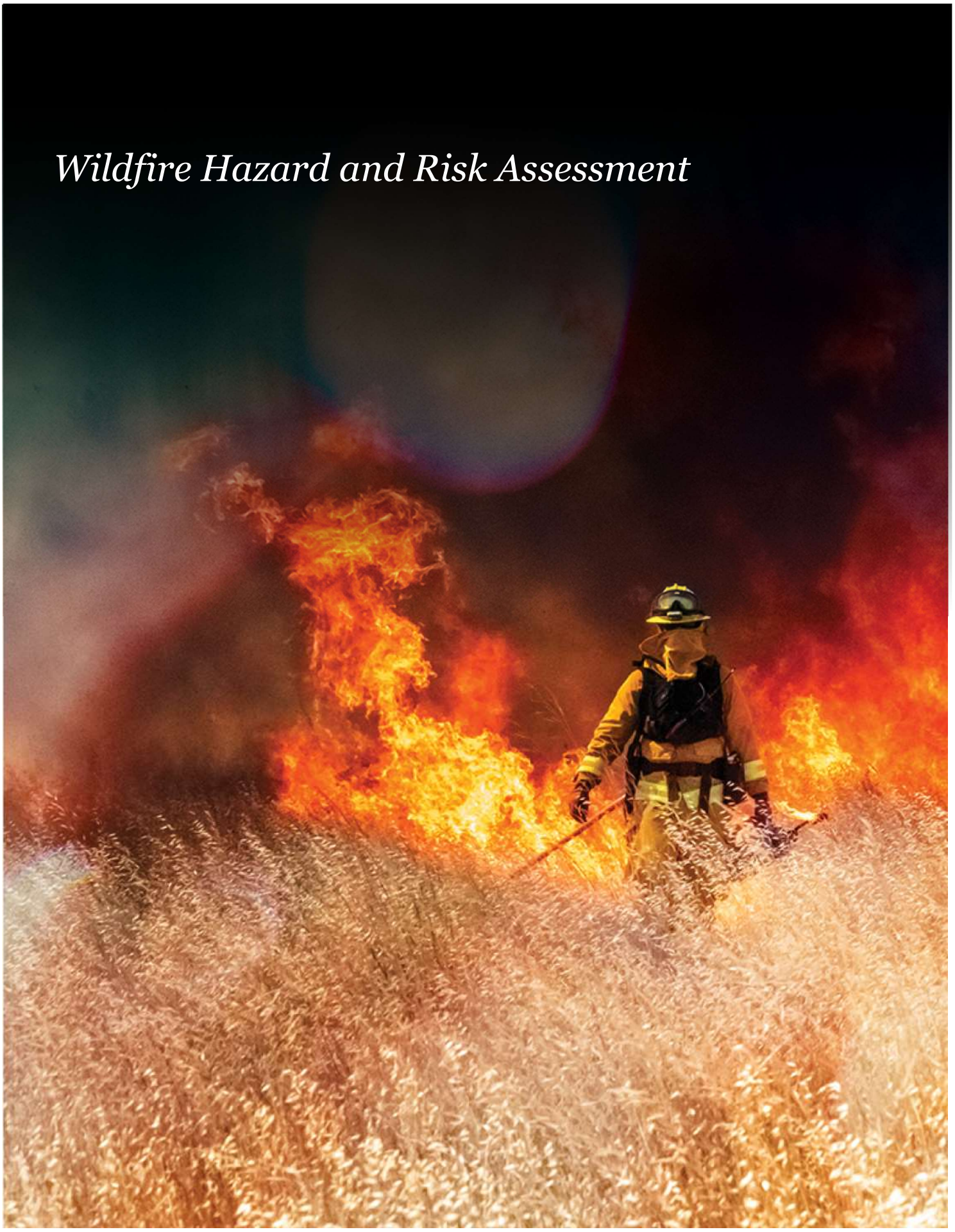
Wildfire Hazard and Risk Assessment



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5.0 Wildfire Hazard and Risk Assessments

Given its high-fire prone environment, a wildfire hazard, risk and vulnerability assessment has been undertaken to help identify and prioritize the most at-risk and vulnerable areas of the District to wildfire threats. The assessment was based on a combination of methods – field visits, wildfire behavior modelling and the latest research analytical tools – that were performed by wildfire behavior specialists and urban fire safety professionals, in collaboration with CSFPD staff and other subject matter experts. The purpose of the assessments is to provide a framework and basis for prioritizing a range of wildfire mitigation strategies across the District.

5.1 OVERVIEW

Historically, the greatest wildfire threat to the District comes from the Los Padres National Forest and SRA lands in the Santa Ynez Mountains above the main populated areas of Carpinteria-Summerland. Continuous chaparral vegetation, steep terrain, and the potential hot and dry weather associated with Sundowner winds can combine to create an extremely hazardous wildfire environment. While this interface with the National Forest is a wildfire threat, there are locations within Carpinteria-Summerland proper that also represent a wildfire hazard to local residents.

Established wildland fire models provided the basis for evaluating the wildfire hazard, defensibility, ember exposure, and fire run damage potential for the communities. These models included FlamMap (Version 6.0), Behave Plus 5.0.4 (Build 305), FARSITE, (Version 4), and FireFamily Plus (Version 4). These models provide the most widely adopted tools for analyzing wildfire potential. Data used in the models came from state and federal sources, including LANDFIRE, Weather Information Management System (WIMS), and the Fire Resource and Assessment Project (FRAP).

5.1.1 Key Input Data

5.1.1.1 Weather Data

The Montecito and Casitas remote automated weather station (RAWS) were chosen as the most representative stations for evaluating historical weather data in support of this assessment. Note: An additional RAWS on the Franklin Trail is also available but was not used for generating weather data for this analysis. Weather records from these stations have continuous weather records dating back to 1996. The Montecito RAWS was used to capture the north wind events (Sundowners), which are the primary driver of large fires in the area. The data for the analysis represents the fall fire season in Carpinteria - Summerland, August 1 through November 30. This time period was selected as the “fire season” since fire danger records indicate that this is the time of year when the maximum Burning Index (BI) derived from the National Fire Danger Rating System (NFDRS) is the highest. Ninety-seventh percentile (97th percentile) weather values – the extreme “worst case” – was used as these conditions have previously resulted in large fires in the District.

5.1.1.2 Wildland Fuel Models

For this analysis, the Scott and Burgan’s Standard Fire Behavior Fuel Models (FBFM) were used to represent the vegetative fuels and expected fire behavior across the District (Scott, Burgan, 2005). As previously described in Section 4.3.1.1, the dominate wildland fuels are “Moderate Load, Dry Climate, Grass-Shrub” and “Low Load Dry Climate Grass”.

However, a major challenge in wildfire assessments is accurate mapping of fuels in order to determine spatial fire hazard and to plan mitigation efforts. The LANDFIRE fuels layer represents the best available data for the Planning Area. The data was spot checked during several field visits and confirmed in discussions with CSFPD staff to validate that data were representative of on-the-ground conditions. The 30-meter resolution of the fuels data available from LANDFIRE is standard for landscape fire analysis and is deemed sufficient to assess overall

wildfire hazard and to make recommendations for mitigating identified hazards. Refer to Section 4.3.1.1 for a list and explanation of the fuel models used in the fire modelling.

5.2 WILDFIRE HAZARD ASSESSMENT

The objective of the Wildfire Hazard Assessment is to identify areas of the District where the severity of a potential fire may overwhelm firefighting suppression efforts and thus warrant various forms of fuel treatment. Wildfire behavior modelling, using FlamMap software, has been performed to assess the potential severity of a wildfire throughout the District, given 97th percentile weather conditions (i.e. 14 mile per hour northeast winds, similar to a Sundowner wind scenario). Based on the analysis, potential flames lengths have been calculated across the District, as seen in Figure 24. Flame lengths are used as a proxy for fire severity as they correlate to the effectiveness of varying degrees of firefighting response capabilities.

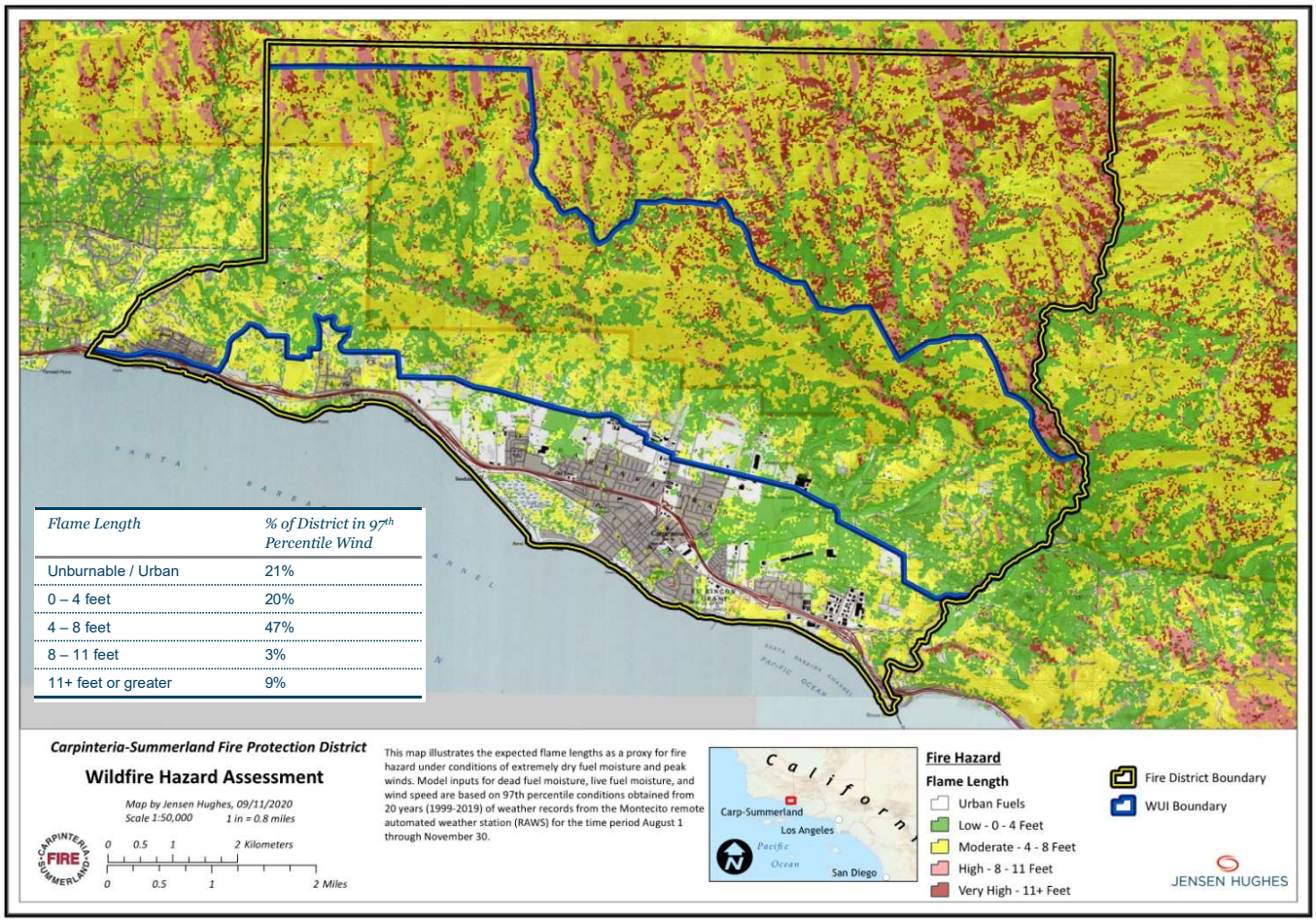


Figure 24. Wildfire Hazard Map (97th percentile conditions, 14 mph NE winds)

As seen in Figure 24, approximately 59% of the District has flame lengths greater than 4 feet. Wildfires burning at these intensities generally cannot be controlled and/or suppressed by ground-based firefighters and are considered extremely hazardous to firefighter and resident life safety. Considerable loss and damage to structures and other values can occur during a wildfire in these areas if left untreated. Table 7 provides a correlation between flame lengths, surface fireline intensity and firefighting abilities. The lowest flame lengths are typically in lighter fuels, such as grasses and oak woodlands where no understory is present. The longest flame lengths typically occur in areas of heavier fuels, such as chaparral and coastal scrub.

Table 7. Fire Behavior Characteristics and Suppression Capability

Flame Lengths (feet)	*Fireline Intensity (BTU/foot/Second)*	*Interpretation*
0-4	0-100	Fires can be generally attacked at the head or flanks by persons using hand tools. Handlines should hold the fire
4-8	100-500	Fires are too intense for direct attack at the head of the fire by persons with hand tools. Handlines cannot be relied upon to hold the fire. Equipment such as dozers, engines and retardant aircraft can be effective.
8-11	500-1,000	Fires may present serious control problems – torching out, crowning and spotting. Control efforts at the head of the fire will probably be ineffective.
11+	1,000+	Crowning, spotting and major fire runs are common. Control efforts at the head of the fire are ineffective.

Caution: These are not guidelines to personnel safety; fires can be dangerous at any level of intensity; Wilson (1977) has shown that most fatalities occur on small fires or isolated sections of large fires. Source: NWCG Fireline Handbook, Appendix B, Fire Behavior, April 2006

In addition to the 97th percentile wind conditions (14 mph), two additional wind scenarios were also evaluated:

(1) Average wind speeds of 28 mph, as observed in the 2008 Tea and 2009 Jesusita fires
(2) Average gusts of 60 mph, as observed in the 2017 Thomas fire

For each condition, the resulting potential flame lengths were calculated and summarized in Figure 25.

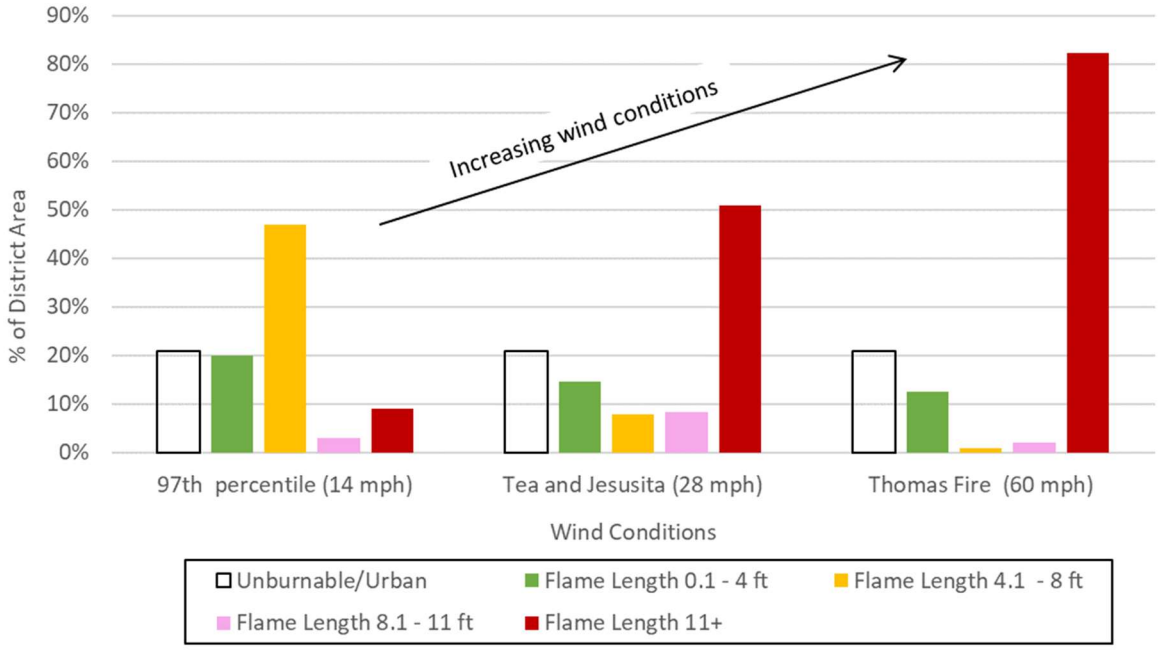


Figure 25. Effect of increasing wind speeds on flame length (~ fire severity)

As seen in Figure 25, anticipated flame lengths dramatically increase with increasing winds. These increases reach a point where fire control across the District becomes extremely difficult, if not impossible, as well as unsafe due to the increased fire intensity.

***IMPORTANT NOTE**: Although there appears to be areas on the hazard map in Figure 24 that are not at risk from a wildfire, this is a reflection of the limitations of the fire model as was previously noted in Section 4.3. In FlamMap, as with other wildfire modelling tools, wildfire behavior is limited to lands with vegetative fuel loads. As developed areas within the city consist mostly of structures and other man-made fuel loads (e.g. infrastructure, ornamental vegetation, propane tanks), the fire behavior model does not account for fire spread in these urban fuels, and thus will show as "unburnable". However, as was evident in the Thomas Fire in 2017, wildfire will spread readily through developed urban areas, particularly under conditions of high wind and low relative humidity.*

5.3 RISK ASSESSMENT

The Fire Spread Probability (FSPro) model – a geospatial probabilistic model – was used to evaluate the wildfire risk within and adjacent to the Planning Area. In FSPro, the probability of fire spreading from an ignition point for a specified time period is calculated based on a combination of a range of historical weather, existing fuel characteristics and potential wildfire energy release for a total of 1,024 fire scenarios. For this assessment, the Casitas RAWS was selected as the most representative location to simulate fall weather and fuel conditions. The Energy Release Components (ERCs) selected for the simulations represent a mix of 90th and 97th percentile levels over the 7-day modeling period.

Three simulations were run to derive the risk assessment. The ignition points for the simulations were selected in consultation with District personnel and were located north of the Planning Area – Ladera Lane, Franklin Trail and Gobernador Canyon. Each ignition point was assigned 1,024 fire simulations and allowed to burn unsuppressed for 7-days for the modeling period, September 30 to October 6. FSPro randomly selects archived wind data for this time period from the Casitas RAWS to support each of the fire simulations.

To develop a relative risk map, the burn probabilities generated from the three FSPro simulations were overlaid to evaluate the probability and the frequency that a single point on the digital landscape burned during any of the simulations. Table 8 presents the scale assumed for defining the relative wildfire risk across the Planning Area. As an example, if a point was found to have burned within the 80-100% probability band in two of the simulations and within the 0.2-19% probability band in the third simulation, this point would have a *"Sum of Points"* of 12, and be classified as a *"Very-High*" risk point on the landscape.

Table 8. Risk Scale based on FSPro Burn Probability Simulations to Identify Relative Wildfire Risk

Burn Probability	Point Value	Sum of Points	Risk Classification
80-100%	5	10-15	Very High
60-79%	4	7-9	High
20-59%	3	4-6	Moderate
0.2-19%	2	> 4	Low
> 0.2%	1		
Did not burn	0		

The results of this assessment are presented in Figure 26, which indicates that the greatest risk of wildland fire lies north of Highway 192 and into the Los Padres National Forest. The western portion of the City of Carpinteria is mostly classified as a High-risk location, while decreasing in areas of higher-density, urban

development. The Summerland area of the District is dominated by Moderate fire risk along Ortega Ridge Road and Greenwell Avenue, with High and Very High-risk areas north of the community in Toro Canyon, Ladera Lane and Viola Road (See Figure 26).

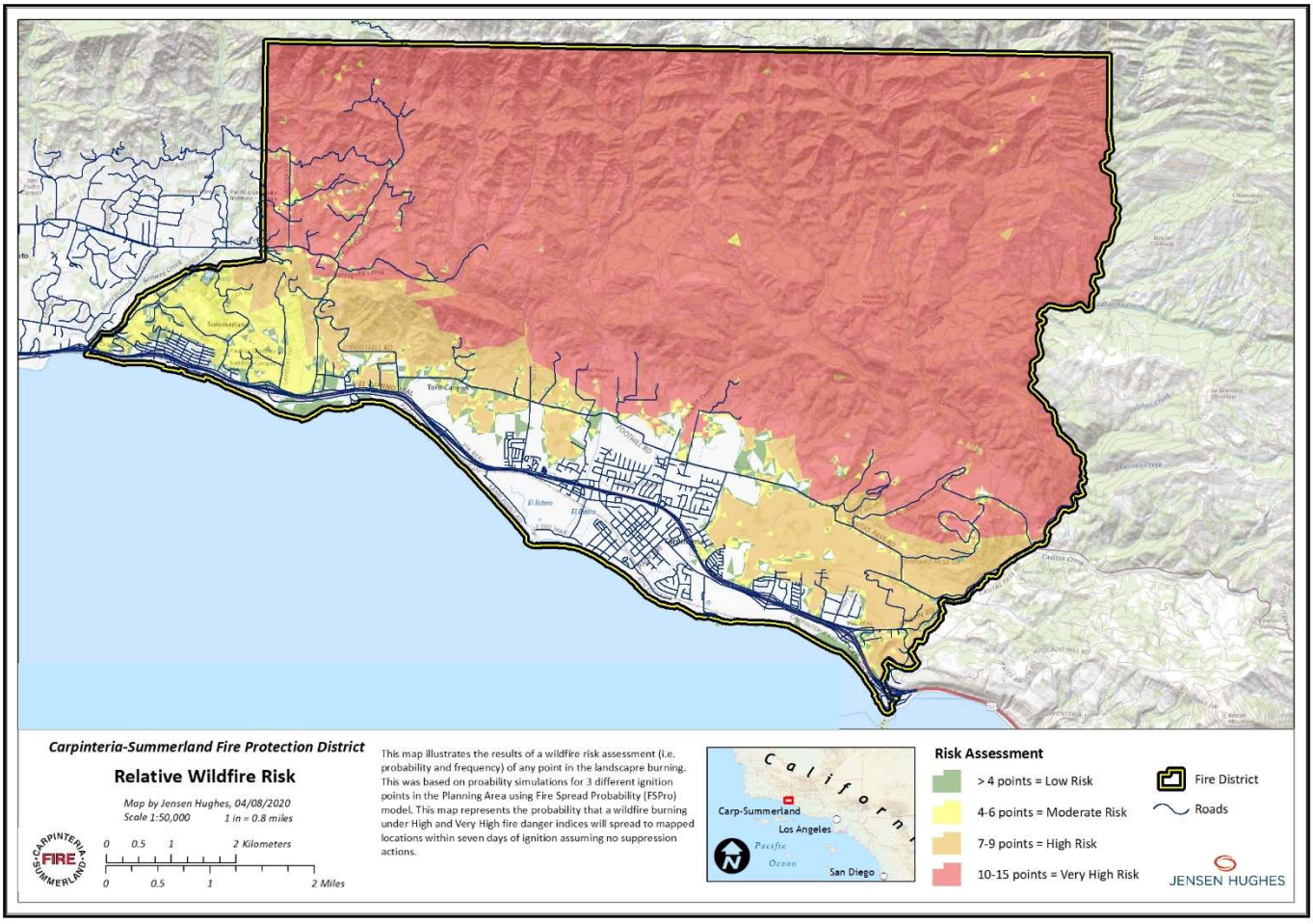


Figure 26. Relative Risk of Wildfire Across the Planning Area.

5.4 WILDFIRE STRUCTURE DEFENSIBILITY

Research studies of structure loss during wildfires have shown that one of the key determinants influencing building survivability is whether firefighters are able to have sufficient operational space to safely defend a structure for wildfire (e.g. direct flaming, embers, or flying debris). In reality, defining the degree to which a structure might be defendable is highly complex and typically requires an onsite inspection of an individual property to assess the range of factors that can influence risk (e.g. site layout, local topography, proximate vegetation, building materials and construction, local landscaping, outbuildings, access, water supplies). The Incident Response Pocket Guide by the National Wildfire Coordinating Group (NWCG) provides a list of broader tactical challenges of fighting fire in the WUI, almost all of which occur in the District (NWCG, 2014). Below is a list of some of these challenges

+ Narrow roads, unknown bridge limits, and septic tank locations
+ Ornamental plants and combustible debris next to structures
+ Poor driveway access and low clearances
+ Limited opportunities to observe the main fire
+ Wooden siding and/or wooden roof materials

- Structural components, such as open vents, eaves, decks, and other ember traps
- Fuel tanks, propane tanks, and hazardous materials
- Powerlines
- Limited water sources or low water flow rates
- Property-owners remaining on-site

For the purpose of this plan, a more generalized approach to defensibility has been adopted to help identify areas of the District where structure defensibility may be challenging. In this analysis, defensibility has been defined as a function of both wildfire hazard (i.e. flame length) and fireline production rate criteria. Fireline production rate is based on how quickly firefighters can establish a fireline given various vegetative fuel types. Generally, grasses and low brush have faster fireline production rates than do heavy brush or timber-based fuel models.

Table 9 summarizes the matrix used to determine how fireline production rates and wildfire hazard combine to create a defensibility potential. The results of the analysis across the District are illustrated in Figure 27. In general, the higher the hazard class and the slower the fireline construction rate, the lower the defensibility. A "Low Defensibility" rating means that the location is considered to be relatively more difficult to defend than a "High Defensibility" rating.

Table 9. Defensibility Matrix

Defensibility Potential			
Wildfire Hazard (i.e. flame length)	**Fireline Production Rate**		
	Slow	Medium	Fast
Low	**Medium**	**High**	**High**
Moderate	**Low**	**Medium**	**Medium**
High	**Low**	**Low**	**Low**
Very High	**Low**	**Low**	**Low**

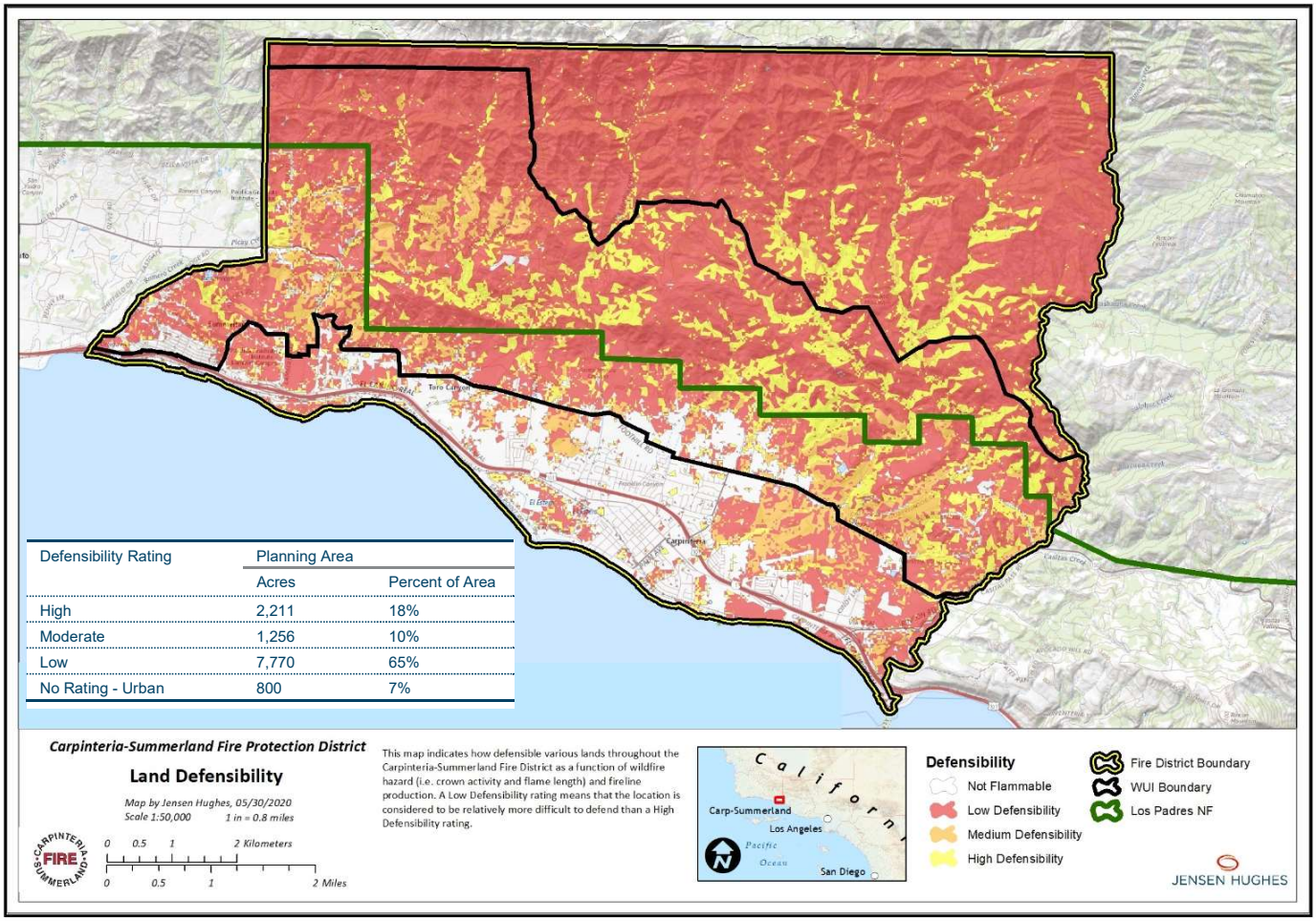


Figure 27. Defensibility rating across Project Area.

***Important Note**: Property owners and other Stakeholders should recognize that locations classified as having "Not Flammable/Non-Combustible" of having a High Potential of being defendable during a wildfire are still at risk of damage or destruction. Past wildfires in the area have damaged and destroyed structures even in more moderate burning conditions. For example, in Gobernador Canyon, where the Defensibility analysis indicates moderate to high defensible, substantial structure loss still occurred in the area. This could have been a result of many other factors such as the extreme conditions of the Thomas Fire (See Section 5.5 Ember analysis), structural hardening deficiencies, overwhelmed firefighting resources, etc. Ultimately, maintaining good defensible space and appropriate structural hardening techniques will provide the best chances for a structure to survive a wildfire than its "Defensibility" classification alone.*

5.5 EMBER EXPOSURE ZONES

Embers constitute one of the greatest threats to homes and other structures as they may be carried for long distances ahead of the main fire front and land in and ignite receptive fuel beds in and around structures. Fire modeling was used to evaluate the potential ember exposure of specific locations given offshore Sundowner winds. Fires not occurring under extreme winds tend to burn at lower fire intensity, leading to fewer firebrands produced and shorter transport distances when compared to stronger offshore winds.

The MAXSPOT output of FlamMap modeled the maximum distances that a firebrand could travel given a 60-mph wind blowing from the northeast (the mean wind speed observed by several local RAWS during historic loss fires). While FlamMap is the best available science for fire modeling, it does have limitations when it comes

to evaluating shrub-dominated systems such as chaparral shrublands. A limitation of this model is that it uses spotting distances from shrubs based on a surface fire and not a crown fire. This limitation underrepresents ember exposure as presented in Figure 28. For this reason, a relative probability scale is utilized to quantify ember exposure; probabilities are relative to each other, but not necessarily a true probability that a location will be exposed to embers during a fire. For example, a 75% probability of exposure to embers is approximately three times more likely to be exposed than a 25% probability location.

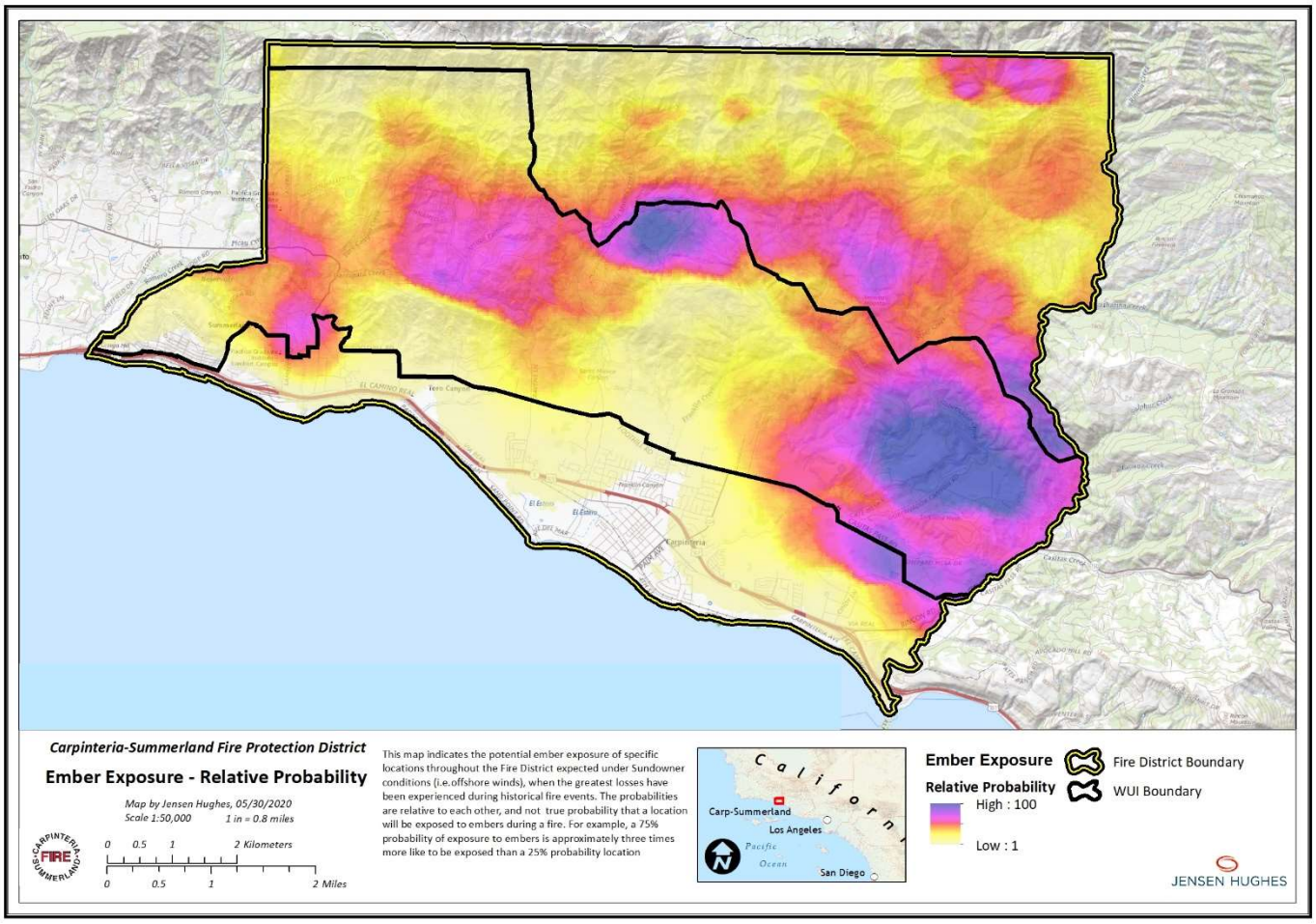


Figure 28. Ember exposure probability across Project Area.

To develop the Ember Exposure map (Figure 28), the maximum spotting distance of each location (i.e. pixel) on the digital landscape was determined from FlamMap using a 60-mph northeast wind and a “dry” fuel moisture scenario (i.e., 3, 4, 5, 30, 60 percent). The spotting distance is how far an ember could travel from the given location (pixel). Using the outputs from FlamMap, each pixel on the landscape was buffered in ArcGIS to represent the maximum spotting distance. For example, a pixel (i.e., ember source location) with a 300-foot MAXSPOT distance was buffered 300 feet in all directions from the center of the pixel. This creates a circle on the digital landscape with a 300-foot radius. When all pixels on the landscape are buffered, the outcome is a series of overlapping circles.

The number of overlapping circles co-located at a point on the landscape is then calculated and evaluated against other points on the landscape to establish the relative intensity of the number of possible ember sources that can provide an ember to that location. This relative intensity is represented by a probability; the range of potential values was normalized to a probability between >0 and <100. This range reflects that no location is

immune to possible ember exposure because of the nature of ember cast, and no location is guaranteed to receive an ember because of the variability and uncertainties of fire. Thus, the probability of a parcel being exposed to embers is from greater than 0% to just less than 100%.

NOTE: It is important to recognize that it only takes a single ember to create a spot fire; therefore, areas characterized by Low Probability of Ember Exposure are still at risk during a wildfire, and mitigation measures can reduce the probability of ignition and spread. However, areas of higher exposure probability are more likely to receive more embers, increasing the potential for ignition.

5.6 SAFE SEPARATION DISTANCE FOR FIREFIGHTING

While the Ember Exposure and Defensibility analyses both give an indication of how safe a location is for firefighters and civilians to defend a structure, it is not a quantitative assessment based on the most current literature focused on wildfire life safety. Defensible space helps separate structures from being ignited by either direct flame contact or radiative and convective heat, but it is not necessarily a true representation of a safe space for firefighters to engage in structure protection.

Key to firefighter safety in a wildfire incident is maintaining an appropriate distance from a wildfire such that thermal injury can be minimized. This distance is referred to as Safe Separation Distance (SSD), where the area that meets the SSD requirements is called a safety zone. The SSD is based on injury thresholds due to direct exposure of the epidermis to thermal radiation. That is, pain due to heat exposure occurs at about 111° F, with first degree burns at 118° F, second degree burns at 131° F, and third degree burns at 162° F (ASTM C1055, 1997). (Note: these temperatures are skin temperature, not air temperature.) As a reference, vegetative fuels ignite at approximately 500° F, with peak burning temperatures exceeding temperatures of 1,800° F.

The SSD analysis has been based on research of post-wildfire injuries and experiments at Missoula Technology and Development Center (Butler 2014), and include slope, burning conditions (to account for factors such as vegetation type, drought, or presence of beetle kill), and wind. (Additional information is available at https://www.firelab.org/project/firefighter-safety).

The equation to calculate SSD is:

$$SSD = 8 * \Delta * Vegetation\ Height$$

Where,

Δ is the slope/wind factor, as determined by Table 10

Table 10. Safe Separation Distance Slope-Wind Factor, Δ (Butler 2014)

Wind (mph)	*Slope-Wind Factor, Δ*				Burning Conditions
	Slope (%)				
	0	**15**	**30**	**>40**	
0	0.8	1	1	2	Low
	1	1	1.5	2	Moderate
	1	1.5	1.5	3	Extreme
10	1.5	2	3	4	Low
	2	2	4	6	Moderate
	2	2.5	5	6	Extreme
>20	2.5	3	4	6	Low
	3	3	5	7	Moderate
	3	4	5	10	Extreme

For example, a 10-mph wind, 15 percent slope, Extreme conditions (97th percentile), and 3-feet tall vegetation would require an SSD of 60 feet (8 x 2.5 x 3 = 60 feet) for a safety zone of 0.25 acres. These distances are estimated for only one firefighter and do not include firefighting equipment.

Note: Vegetation height must either be estimated on site through observations or acquired through remote sensing, with Light Detection and Ranging (Lidar) data. As of June 2017, no known Lidar data has been acquired for the Planning Area. However, the University of California, Santa Barbara (UCSB) has acquired Lidar data in 2009, 2010, and 2011 for the Mission Canyon area of Santa Barbara. Using this data, UCSB developed a Vegetation Height Model at 1-meter spatial resolution (i.e., the pixels are 1-meter by 1-meter square). Data from Mission Canyon serves as a good proxy for the Planning Area since the vegetation type (chaparral and oak woodlands), topography, and general building age distribution and architecture are similar.

Based on the vegetation height model data and County parcel data, SSD across the Mission/Rattlesnake Canyon area was determined for the worst-case scenario. From the results, approximately 38 parcels (<1%) would need an SSD of 100 to 200 feet, 94 parcels (<1%) would need 200 to 300 feet, and 13,292 parcels (99%) would need 300 feet or greater SSD. Figure 29 depicts the number of parcels in each mean SSD class.

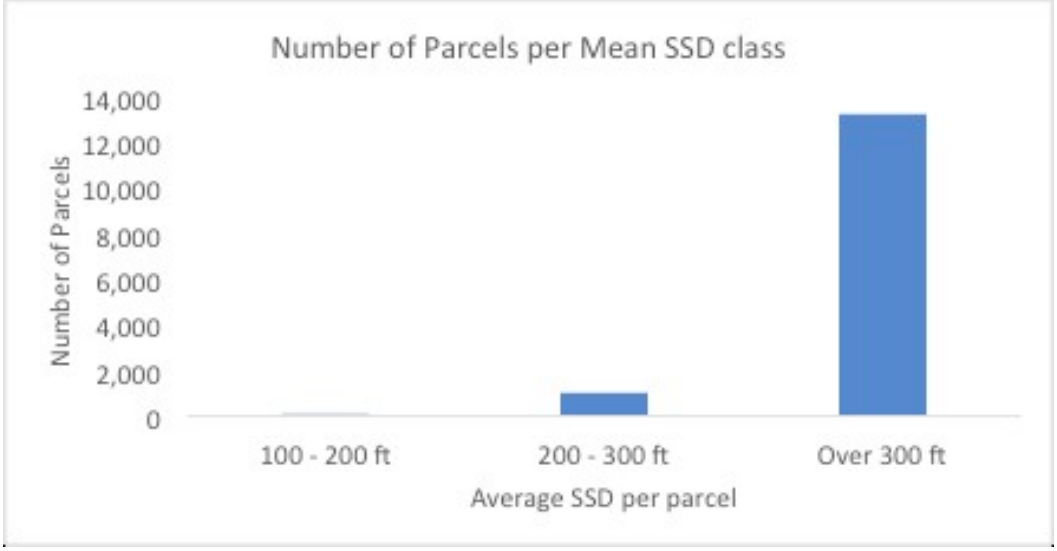


Figure 29. Mean Safe Separation Distances (SSDs) per Parcel in Mission Canyon study

The high SSD values illustrate that under extreme conditions (e.g. Sundowner wind event), it is not considered reasonable or prudent for homeowners or firefighters to try to defend homes from wildfires. Vegetation modification along driveways and roads, along with structural hardening should be considered the main methods for facilitating life safety.

Ultimately, the application of the SSD model in Mission Canyon provides an example of where the State recommended 100-foot defensible space clearance would not appear to provide adequate SSD for firefighters or property owners. This is critical to highlight, as other recent studies have suggested that any clearance greater than 60 feet would not increase the probability of home survival in a wildfire. These studies, however, only considered the role of proximate vegetative cover in relationship to home survival. They did not consider the potential benefit of increased space to facilitate human intervention in defending a home, or the burning conditions at the time of the fire. Thus, they should not be used as guidelines for whether a home can be considered defensible during a fire event.

5.7 FIRE RUN DAMAGE POTENTIAL

Fire damage estimates can be difficult to accurately determine as the variables that influence fire damage are difficult to quantify. These variables can include the availability of firefighting resources, the time of day of the fire, weather conditions, defensible space, building standards and the age of structures. These factors among others will influence the level of damage a community could experience from a wildfire. For this CWPP, a simplified methodology is used to quantify the potential monetary damages which could be anticipated from a wildfire starting within or immediately adjacent to the District. Four specific ignition locations and weather scenarios are used to generalize potential fire damage.

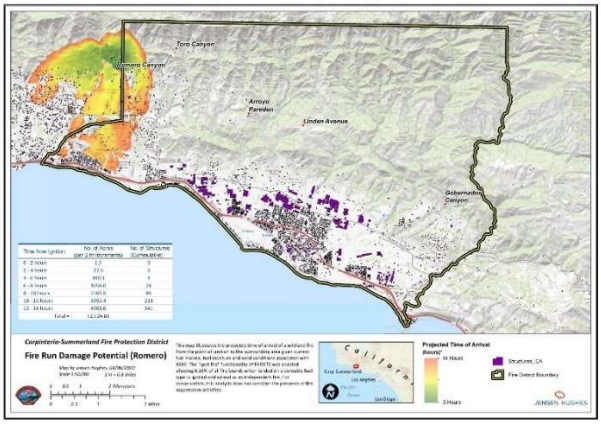
The four ignition locations used in this assessment have their points of origin near:

1. ***Romero Canyon***, north of Bella Vista Drive in the community of Montecito
2. ***Toro Canyon***, north of Viola Lane near the intersection with Toro Canyon Creek
3. ***Arroyo Paredon***, north of Carpinteria along Toro Canyon Park Road
4. ***Gobernador Canyon*** on an east facing slope just below the primary ridgeline.

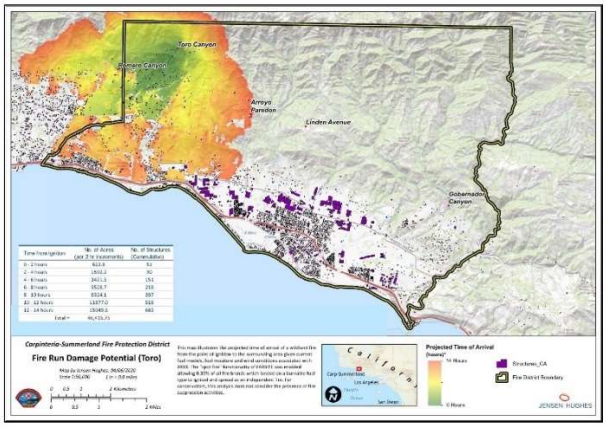
Three weather scenarios were used for the fire modeling simulations using FlamMap.

+ The Romero Canyon simulation used weather data associated with the 2008 Tea Fire in Montecito.
+ The Toro Canyon and Arroyo Paredon simulations used data from the Casitas RAWS between December 4-6, 2017 during the Thomas Fire.
+ The Gobernador Canyon simulation used a generic moderate offshore wind common to the Santa Barbara front country during the fall fire season. Winds used in this simulation were predominately offshore at 15-20 mph.

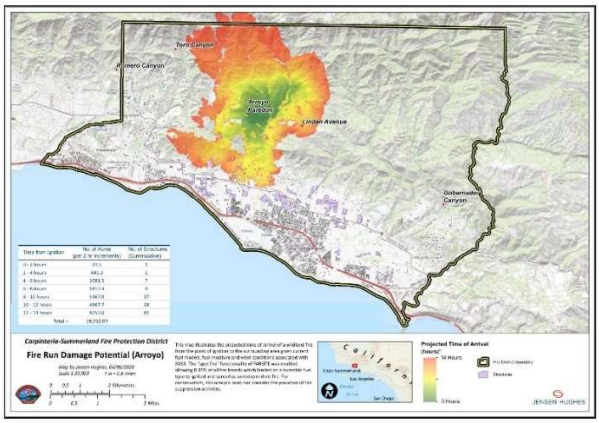
Figure 30 display the spatial extent of the four simulated fires.



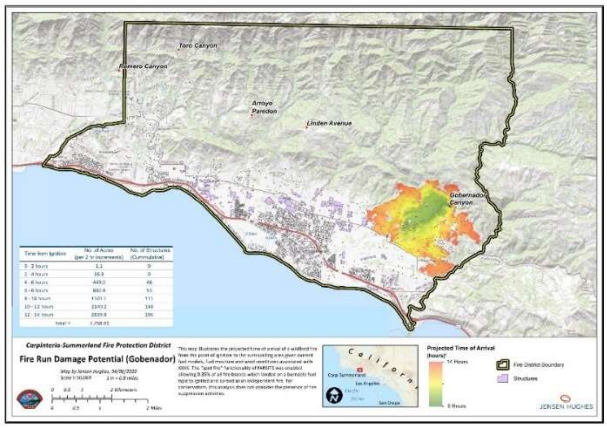
Romero Canyon



Toro Canyon



Arroyo Paredon Canyon



Gobenador Canyon

Figure 30. Fire Run Damage Potential based on Four Representative Ignition Source Locations

To determine a potential fire damage value for each of the four simulated fires, several assumptions were made. These assumptions are as follows:

- Structure data obtained from the District's GIS library is robust and represents only primary residents and businesses. The data does not include locations of outbuildings.
- Structures within the simulated fire perimeter are assumed damaged in the following breakdown:
  - 25% of the structures are destroyed, with a total loss of value.
  - 50% of the structures have partial damage, losing 50% of the structure's value.
  - 25% of the structures are undamaged, with no loss in value.
- The median home price obtained from Zillow for Summerland is assumed to be $1,543,000, while median home prices in Carpinteria are assumed at $893,000. Values used to determine potential structure losses for the Toro Canyon and Romero Canyon ignition points use the Summerland home prices, while the Gobernador and Arroyo Paredon ignition points use the Carpinteria home prices. These values are applied to all structures impacted by the modeled fires (www.zillow.com, accessed April 20, 2020).
- No attempt is made to capture the value of businesses or other non-residential values within the modeled fire perimeters.
- Loss of natural resource value or post-fire damage assessments are not included.
- Fires are unsuppressed during the 14-hour simulation period.

GIS was used to overlay the final perimeters of the modeled fires on the Planning Area.

Table 11 presents the number of structures within the Fire District that would fall within the representative fire perimeters. The table also captures the final fire size of the simulated fires and the potential total financial loss.

Table 11. Estimated Financial Loss Due to Representative Wildfires in the District

Simulation Name	Final Fire Size (acres)	Total Structures within the Fire District	Total Potential Wildfire Damage
Romero Canyon	12,124	173	$133,469,500
Toro Canyon	46,415	512	$395,008,000
Arroyo Paredon	19,752	81	$35,720,000
Gobernador Canyon	7,751	196	$87,514,000

5.8 STRUCTURE VULNERABILITY

From 2004 – 2019, the National Interagency Fire Center (NIFC) estimates that on average approximately 2,593 structures per year are lost due to wildfires across the United States with more than half of these losses as primary residences (www.predictiveservices.nifc.gov/intelligence/intelligence.htm. 4 September 2020). In 2019 alone, wildfire destroyed 569 structures in California.

Research has shown repeatedly that the main reason for structure loss during a wildfire is due to the ignitability of the structure itself, which is not always associated with large, high intensity fires. Low intensity fires can destroy structures that are highly ignitable while structures with low ignitibility can survive high intensity fires (Cohen, 2000).

Wildfires can ignite structures in numerous pathways. These pathways depend on a variety of characteristics found in the WUI, examples include:

+ **Adjacent wildland open space** – fuels, terrain, weather, and fire's influence on itself
+ **Community** – housing density, zoning, separation distance, and physical barriers
+ **Structure** – exterior structure construction material, structure design, site location (e.g., mid-slope, hilltop), structure maintenance, and heat sources (e.g., landscaping, flammable exposures) within 100-200 feet

The risk of a structure's ignition is a direct result of the thermal exposure by wildfire, and the vulnerability or ignitability of the structure (i.e. building materials and construction). Structures ignite in three ways:

+ **Convection** – Is the transfer of heat by the movement of rising hot air or gasses. Convective heat tends to rise – visually observed as flames and smoke columns. Convection lifts firebrands into the sky. Flames can overwhelm a structure by direct flame impingement, which could be a result of inadequate spacing of structures, lack of defensible space, and/or extreme fire behavior.
+ **Radiation** – Heat energy is released in all directions from a burning object (the same way the sun heats the earth). If exposed combustible structural elements reach their ignition temperature, a structure can ignite. Nearby burning structures can radiate heat and ignite other structures in close proximity, moving the fire from structure to structure. The potential for ignition is greatly reduced as space between structure and fuel (e.g., wildland and urban) is increased.
+ **Burning Embers** – Burning embers include flammable material that detach from the main fire front, get carried by strong convection drafts and/or winds to receptive fuel down wind. Wildfires can produce hundreds to thousands of burning embers that can be carried very long distances by winds.

Portions of the CSFPD north of Highway 192 are especially vulnerable to wildfires due to their proximity to wildland vegetation and to the Santa Ynez Mountains/Los Padres National Forest. However, structures well south of Highway 192 are also vulnerable due to firebrands that can be carried downwind up to 1 mile or more into receptive fuels south of the highway. Receptive fuel beds can include ornamental landscaping, dead vegetation, litter, debris build up in rain gutters, mulch beds, etc. Enclaves, islands, and riparian corridors of wildland vegetation, and ornamental vegetation are also interspersed with structures and subdivisions throughout the community. These create significant opportunities for wildfires to ignite, establish, and destroy structures.

Vulnerable portions of a structure that can contribute to ignition during a wildfire include:

+ Roofing – Roof construction and maintenance has been a key factor in structure loss in many fires. It is not just the type of roofing material, but also the design, construction details, the condition of the material, and whether the roof is clear of burnable material (e.g., pine needles and other debris).
+ Garages – Garages with gaps at the top, bottom and edges of doors allow firebrands to enter. Oftentimes garages contain combustible materials that can enhance ignition potential. Garages usually have vents at various locations, especially if they contain gas furnaces or hot water heaters. These vents can be easy entry points for embers.
+ Siding – Combustible siding can provide a pathway for flames to reach vulnerable portions of a structure, such as the eaves or windows. Siding needs a source of ignition, which in many cases includes vegetation, wooden decks, and fences, or stacked firewood or other combustible material in close proximity to a structure. This can provide a heat source that can ignite siding.
+ Vents – Soffit vents in the eaves are an easy entry point for wind-driven burning embers during a wildfire. Attic fires are not easily detected from the outside, and structures have been lost when fire personnel have left the scene unaware that a fire has ignited within the attic.
+ Windows – Unprotected and inadequate windows can be another major entry point for fire. Windows broken by airborne materials or cracked by thermal expansion during a wildfire ignite materials in the structure through radiation, convection, and/or firebrands.
+ Nooks and Crannies – Little grooves, inside corners, and roof valleys all become areas where flammable debris (e.g., pine needles, bird's nests) have collected over time. Burning embers can land on this debris, igniting it. These areas can also be a collection point for multiple embers which creates a larger ignition threat to the underlying material.
+ Crawlspace Vents – If not adequately screened, these areas, not just under a structure but also under decks and other attachments, are difficult to protect. Much like vents in the attic, firebrands enter these areas and combustible material underneath a structure can ignite.
+ Wood Fences – Firefighters have observed that wood fences act as a fuel source that can carry fire to a structure. Fences when attached to homes present a threat to the structure.
+ Wood Decks – Decks act as a source of fuel that is attached or directly adjacent to structures. When ignited by wildfire the radiant and convective heat output can ignite structures. In addition, most decks are adjacent to large windows or glass sliders and the heat from a deck fire can cause the glass to fail allowing the wildfire to enter a structure.

+ Landscape Vegetation/Debris – Flammable landscaping and/or combustible items such as firewood or debris piled in close proximity to the house. As a result, structures are more susceptible to ignition when exposed to significant radiant and convective heat from burning material.

+ Defensible space is the space between a structure and the wildland or neighboring structure that, under normal conditions, creates a sufficient buffer that modifies the spread of a wildfire to a structure. Defensible space can protect a structure from direct flame impingement, radiant heat, and reduce the number of burning embers and is essential for structure survivability during wildfires.

As part of the development of the 2013 CWPP, an assessment of generalized "neighborhood risk" was conducted by the Fire District. The assessment consisted of a relative risk ranking system based on the combination of a variety of factors: fire hazards, structure, access (ingress & egress), infrastructure, wildfire occurrence and topography. The results of this assessment are presented in Table 12. Neighborhood Risk Assessment Survey (2013 CSFPD CWPP).

Table 12. Neighborhood Risk Assessment Survey (2013 CSFPD CWPP)

*NEIGHBORHOOD RISK ASSESSMENT SURVEY **							
Community at Risk:	Fire Hazard Severity Zone	Fire Threat	Survivability				
			Very Good	Good	Average	Poor	Very Poor
West District Toro / Ladera / Hidden Valley, etc	Very High	Moderate to Very High	6.70%	33.30%	20.00%	40.00%	0.00%
Toro Canyon Torito, Toro Canyon Park	Very High	Very High to Extreme	6.30%	31.30%	31.30%	25.00%	6.30%
Foothill Corridor Santa Monica, Cravens, Arriba, Montvalmar, etc	Moderate to Very High	Moderate to High	20.00%	60.00%	20.00%	0.00%	0.00%
Shepard Mesa / Gobernador East of Foothill, Lillingston, Casitas Pass Rd. etc	Moderate to High	Non-fuel (Ag.) to Very High	25.00%	55.00%	5.05%	10.00%	5.00%

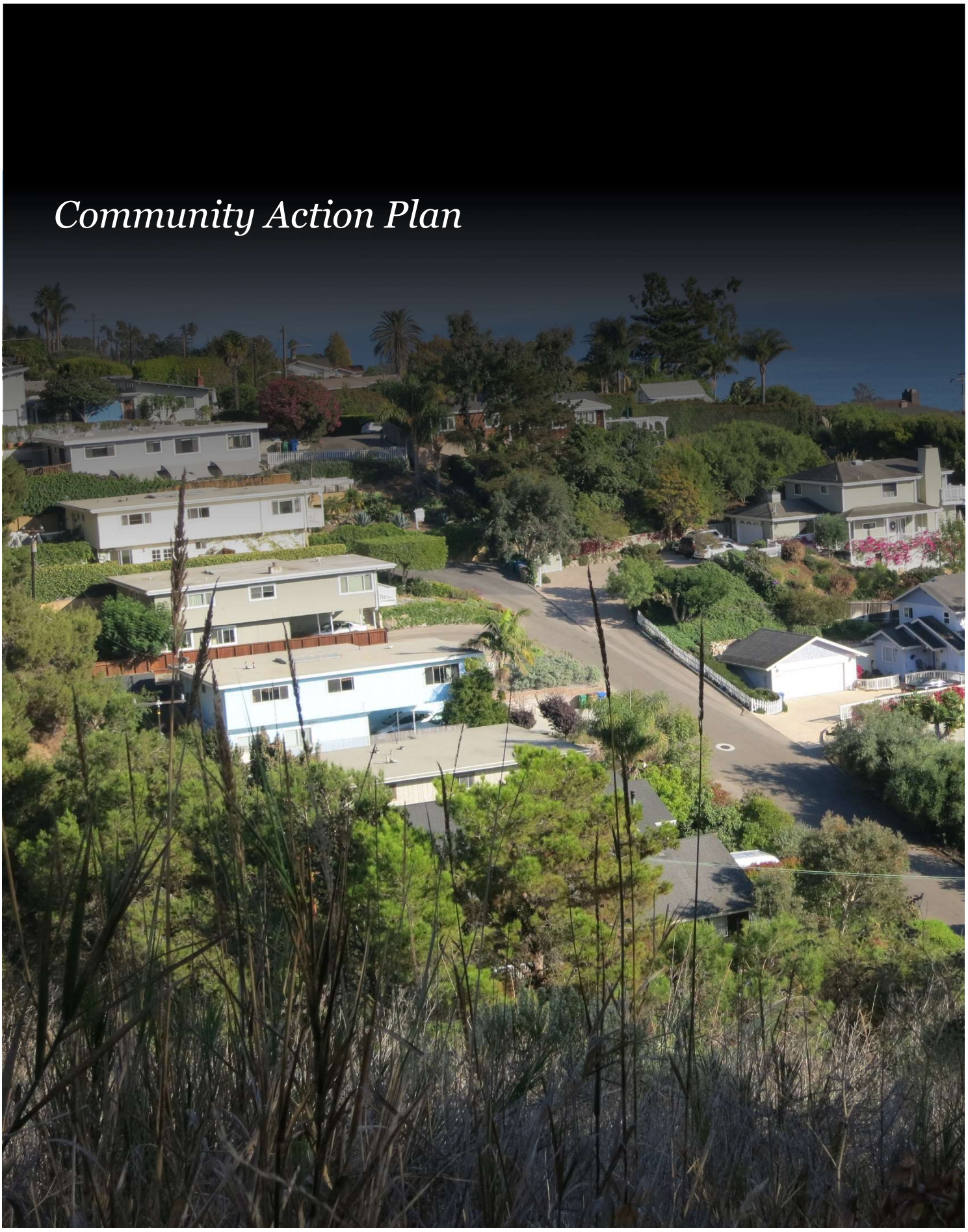
** This data was derived from results of Risk Assessment survey using a numerical ranking to fuel hazards, structure, access (ingress & egress), infrastructure, and wildfire occurrence and topography as the evaluation criteria. The Fire Hazard Severity Zone and Fire Threat data is from CALFIRE*

As indicated in Table 12. Neighborhood Risk Assessment Survey (2013 CSFPD CWPP), the western part of the Fire District – Toro Canyon, Ladera, Torito, East Valley and Hidden Valley – were highlighted as having a relatively high risk to wildfire threats (Carpinteria Summerland Fire Protection District, 2013). While this assessment is not an accurate predictor of the survivability of individual structures, it can be used as a general indicator of the wildfire risk that exists in each community.

Wildfire will continue to threaten the communities within Carpinteria-Summerland despite all efforts to prevent it from occurring. However, stakeholders can and should take proactive measures to mitigate this threat. Current

land use planning, zoning regulations, and codes adopted by the State of California and the CSFPD provide the regulatory basis for preparedness, but these alone will not protect life safety and the district's values.

Community Action Plan



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6.0 Community Action Plan

While wildfires are part of the natural landscape and cannot be completely eliminated, their devastating impacts to community assets, environment, social infrastructure and local economies can be reduced through the collective action of all Stakeholders, both government and non-government. As wildfires have been increasing in frequency, scale and severity over the past two decades, traditional approaches to mitigating wildfire risk alone – e.g. government policies, programs, planning codes, zoning regulations and firefighting operations, vegetation management – are no longer sufficient. The complexity and breadth of impacts highlight the need to take a more comprehensive and proactive approach to managing those risks. Resiliency to wildfires means engaging and collaborating across the "whole" community across all scales and sectors to more holistically build individual and community-level capacities to prevent/mitigate, prepare, respond to and recovery from a wildfire incident.

Based on the results of the analyses described in Chapter 5.0, a Community Action Plan has been developed to help mitigate the hazards and risks of wildfires in the District over the next 5-10 years. The following sections describe a variety of these priority activities and action items including community education, emergency planning, protection of assets, structural hardening, public communication systems, fuels management strategy, and evacuation preparedness.

6.1 COMMUNITY PREPAREDNESS AND PROGRAMS

Community collaboration and engagement is central to any effective emergency preparedness program. The challenge for Carpinteria-Summerland and other communities in the Central Coast is how to engage the "whole" community to effect change at the individual and community level in a locally relevant and sustainable way. Communicating accurate and timely information before, during and after a wildfire is a challenge that these communities are addressing through a variety of programs before an event escalates.

The following is a list of preparedness actions and measures at the District, County and Regional levels.

6.1.1 District | Community Programs

+ **Ready! Set! Go!**

  This program developed was through cooperation of numerous California Fire Service Agencies that includes information for defensible space, home hardening, preparing families, and checklists to help residents prepare before a wildfire effects their community. Available at the District's website at https://www.carpfire.com/ready-set-go-carpinteria-summerland

+ **Fire Danger Ratings**

  Residents can monitor fire danger conditions on the Santa Barbara County Fire department website, https://www.sbcfire.com/fire-danger-status-information. Understanding current fire danger can help residents react appropriately when notified of an emerging fire situation.

+ **Emergency Preparedness | Carpinteria City**

  The emergency preparedness link on the City of Carpinteria website has information for all types of emergencies,https://carpinteria.ca.us/local-info/emergency-preparedness/

  - **Don't Panic Prepare**

Included in Carpinteria's Emergency Preparedness information is a link to 'Don't Panic Prepare'. This is a public education and awareness program designed to increase emergency preparedness at home, work and school for Carpinteria residents. The program features customizable emergency preparedness training.

https://carpinteria.ca.us/wp-content/uploads/2020/03/Dont-Panic-English.pdf

+ **Emergency Preparedness | Community of Summerland**

Wildfire and other emergency information for Summerland is generally combined with Carpinteria City and serviced by the CSFPD. The Summerland fire station receives assistance from both the Carpinteria and Montecito Stations.

+ **Summerland Community Plan – 2016**

The Plan Area totals 907 acres; bordered by Ortega Ridge Road on the west, the Montecito Planning Area on the north, Padaro Lane and the Toro Canyon Planning Area on the east, and the Pacific Ocean on the south. It is situated within the Coastal Zone with the exception of a residential enclave along Ortega Ridge Road which is located in the inland area.

+ **Community Emergency Response Team (CERT)**

Community Emergency Response Training (CERT) a 36-hour course designed for the average citizen so that they can be of help to their neighborhood or business where they work in times of a disaster. Carpinteria CERT is a "Partnership with the City of Carpinteria, the Santa Barbara County Sheriffs, and the Fire District." CSFPD supports and encourages local citizens to participate in and learn essential emergency procedures to enhance emergency response by local public agencies through citizen preparedness. https://carpinteria.ca.us/local-info/emergency-preparedness/cert/. ***Note: September 2020 update – all CERT Training has been cancelled until further notice***

+ **Community Chipping Program**

Unmaintained yards and ornamental vegetation can represent a significant threat to homes and families during a wildfire. The community chipping program proactively assists neighborhoods with their hazard fuels reduction work. Fire District personnel provide help in the chipping equipment operation in a coordinated fashion with different areas designated to receive help at a given timeframe. The chipping takes place after the community members have their fuels/vegetation and cut and ready. There are avenues to assist vulnerable populations in need of help in the clearance step as well. Preseason work to maintain residential and roadside defensible space is imperative.

+ **Fire Safety Trailer Program**

This program focused on 3rd grade students, taught by CSFPD firefighters. This program educates elementary school children about home fire safety and fire prevention, as well as emergency preparedness for disasters.

+ **Are You Prepared?**

This one-page document summarizes important steps for an emergency situation provided by the Carpinteria-Summerland Fire District (https://s3.amazonaws.com/siteninja/site-ninja1-com/1418949940/original/Emergency-vert.jpg

Are You Prepared to Take Action during an Emergency?

During an emergency, local officials are the best source of information when determining whether to evacuate or shelter-in-place. Individuals are encouraged to prepare for emergencies ahead of time to ensure their household is ready to respond when the time comes.

Alerts & Warnings

Alerts and warnings will be issued to the public based upon the immediacy of the threat and time allowed. Alerts and warnings may be issued via the following modes:

- **Reverse 911** Telephone notification system – all landline phone numbers are automatically registered – individuals can register their cell phone numbers at http://sbsheriff.org/reverse911.html
- **Nixle** Individuals can register to receive emergency alerts via text or email from the City of Carpinteria, Santa Barbara County Sheriff's Department, the Carpinteria-Summerland Fire Protection District and other agencies at https://local.nixle.com/agency_search/
- **Local media**
- **Emergency vehicle lights, sirens and loudspeakers**
- **Door-to-door communications**

Evacuation

If individuals are directed to evacuate, officials will determine evacuation routes based on a number of factors related to the incident. Some factors may include the location of the incident, the type of incident and current weather conditions. Because these factors are specific to each incident, is it important to follow direction given by emergency officials. During some emergencies, roadways may be inaccessible or may not be safe. Residents should be prepared to evacuate by alternate means, such as by foot, bike, etc.

Shelter-in-Place

Officials may ask the public to protect themselves by staying inside their homes, cars and offices during an emergency. Incidents involving chemical releases or other hazardous materials could cause a wide range of serious injuries from exposure to vapors, fumes and smoke. Residents should be prepared to stay inside until officials advise that it is safe to go outside.

Preparedness

All residents are encouraged to take steps to increase their personal preparedness before disaster strikes. The following actions are recommended:

- **Make a Plan** Identify how you will get to a safe place, how you will contact members of your household if you are separated, what you will do in different situations, etc.
- **Build a Kit** Assemble an emergency supplies kit that contains a 3-5 day supply of items that may be needed in an emergency, such as water, food, flashlight, batteries, medications, etc.
- **Be Informed** Know what threats and hazards exist in the community and identify appropriate actions you can take before, during and after an emergency.

Remember: *If you have any specialized needs or may require transportation assistance, you should add these elements to your personal emergency plan. Do not rely on outside resources that may not be available. Emergency resources will be available on a priority basis only.*

For more information on personal preparedness, including guides and templates, visit www.Ready.gov or www.ci.carpinteria.ca.us/emergency_preparedness/.

6.1.2 County | Regional Programs

+ **American Red Cross of Central California**

  The Central California Region Chapter of the American Red Cross seeks to help people prevent, prepare for, and respond to natural and human-caused disasters through the immediate mobilization of people and resources and the provision of community, workplace, and school-based training. In addition to disaster relief, the Region delivers Community-Disaster Education, First Aid/CPR, and other types of life-saving health & safety training to thousands of people across our region to help people prevent, prepare, and respond to emergencies. American Red Cross of Central California for Santa Barbara County's website is available at https://www.redcross.org/local/california/central-california/about-us.html and the Santa Barbara County Red Cross Facebook page is available at www.facebook.com/RedcrossSantabarbaraCounty.

+ **Santa Barbara County Office of Emergency Management (SBCOEM)**

  This department is within the County Executive Office and is responsible for emergency planning and coordination for the Santa Barbara Operational Area. OEM is responsible for emergency planning and coordination among the Santa Barbara Operational Area entities.

  OEM has an emergency management plan that addresses natural disasters, technological incidents, and national security emergencies within the Santa Barbara Operational Area. The Plan does not address normal day-to-day emergencies or the well-established and routine procedures used in coping with such emergencies, but the operational concepts reflected in this plan focus on potential large-scale disasters that can generate unique situations requiring unusual emergency responses. A copy of this plan is available at https://www.countyofsb.org/uploadedFiles/ceo/OEM/Docs/OEM_EMP_Final-2013.pdf

+ **Ready**

  Launched in February 2003, Ready is a National public service campaign designed to educate and empower the American people to prepare for, respond to and mitigate emergencies, including natural and man-made disasters. The goal of the campaign is to promote preparedness through public involvement. The program can be found on Carpinteria City's homepage and has a section dedicated specifically to help people prepare for wildfire. https://www.ready.gov/wildfires

+ **Santa Barbara Fire Safe Council**

  The Santa Barbara County Fire Safe Council is a non-profit community organization formed in 1997. The Santa Barbara County Fire Safe Council provides education, evacuation planning, community vegetation management projects, fund raising, and neighborhood assistance. Additional information is available at https://sbfiresafecouncil.org/

+ **Santa Barbara Amateur Radio Emergency Services (ARES)**

  ARES is part of the Amateur Radio Relay League's (ARRL) extensive volunteer field organization dedicated to public service. The Santa Barbara ARES is comprised of local amateur radio operators who volunteer to provide a resource of trained operators for reliable primary or secondary communications links for governmental agencies and non-profit organizations. Every licensed amateur, regardless of membership in the ARRL or any other organization, is eligible for membership in ARES. Additional information is available at www.sbarc.org/ares-net

+ **Equine Assistance and Evacuation**

  The Santa Barbara Equine Assistance and Evacuation Team assists all Santa Barbara County emergency responding agencies and large animal owners in the evacuation, temporary care and sheltering of large animals in time of fire, flood, earthquake and other disasters or accidents. Volunteers are trained and

registered Disaster Service Workers under the Office of Emergency Services in California. SB Equine Evac provides education and demonstrations for many local public events, agencies and organizations. Additional information is available at http://sbequineevac.org/home.

+ **Santa Barbara Humane Society**

Since 1887, the Santa Barbara Human Society has provided service to people and animal populations of Santa Barbara County. The Humane Society occupies a five-acre site midway between Carpinteria and Gaviota, serving the community with a shelter, animal adoption services, a spay and neuter clinic, humane education center, boarding kennels, large animal holding center and corral, and inspection and rescue services. Additional information is available at http://sbhumanesociety.org.

+ **Public Safety Power Shutoff (PSPS)**

During extremely hot, dry and/or windy weather conditions, power companies may need to turn off power to prevent wildfires. Called a Public Safety Power Shutoff (PSPS or "de-energization"), it could last multiple days in many areas. Santa Barbara County has a one-page document that discloses facts and preparation steps - https://383i9m2ggtjr2dk48ocq80at-wpengine.netdna-ssl.com/wp-content/uploads/2019/07/PSPS-Preparedness-Fact-Sheet.en_.pdf

Southern California Edisom (SCE) is the primary power provider for Carpinteria and Summerland. Regarding PSPS they state the following: When there are potentially dangerous weather conditions in fire-prone areas, we may need to call a Public Safety Power Shutoff (PSPS) event. Detailed information regarding the PSPS program and to sign up for PSPS alerts visit https://www.sce.com/wildfire/psps

6.2 AREA NOTIFICATION SYSTEMS

Operational Area (OA) coordination refers to the multi-agency coordination under the California Standardized Emergency Management System (SEMS). Santa Barbara County Office of Emergency Management (SBCOEM) is the OA Coordinator of all agencies, organizations, and political subdivisions within the County's geographic jurisdiction). During an emergency their primary role is to facilitate priority setting, interagency cooperation, and the efficient sharing and flow of information and resources.

In 2019, SBCOEM led the development of a new mass public alert and notification tool to support bilingual emergency messaging. This tool, called the Mass Alerting Generator (MAG), translates content with local Spanish speakers The MAG not only allows SBCOEM Duty Officers and the Sheriff's ECC to alert and warn the public bilingually, but assures that verbiage and terminology is standardized and truly inclusive and culturally competent. This tool has been shared with Operational Area (OA) partners and the Governor's Office of Emergency Services (CalOES) to support bilingual communications statewide and within Santa Barbara County. MAG-generated messages are simple and direct and utilized in the SBCOEM public emergency alert systems.

+ **NIXLE**

The Santa Barbara County Sheriff's Office advises all citizens to take emergency preparedness action by ensuring direct correspondence via the Nixle alert system. Press releases and other important emergency information come directly to people via text or e-mail Sign up instructions are on the County Sherriff website http://www.sbsheriff.org/home/emergency-notifications/

For your convenience, instructions also shown below in colored box:

> For help, reply **HELP** to 888777. To cancel, reply **STOP** to 888777. No charge but Msg & Data rates may apply. Msg freq varies. Info: **nixle.com**. AT&T, T-Mobile®, Sprint, Verizon Wireless & most carriers supported. Support: **support@nixle.com**

+ **Aware and Prepare: Santa Barbara County Sherriff**

With Santa Barbara County's long history of major wildfires, it is vitally important that all community members can be warned and kept informed. The Aware and Prepare system is a tool to provide timely and accurate information to the public. Through Aware and Prepare, members can be alerted by landline, cell phone and email. Every resident of Santa Barbara County should be signed up to receive important Aware and Prepare Emergency Notifications available at the following link: https://www.sbsheriff.org/?s=aware+and+prepare

+ **Red Flag Warning Text Alerts** *(included with Nixle)*

The Santa Barbara County Office of Emergency Management has partnered with local fire officials to create a text messaging system for local residents when a Red Flag Warning is issued in Santa Barbara County. Residents can simply text the word "redflag" to 888777. By receiving the message from emergency officials, residents in the high fire hazard areas can increase their awareness and vigilance.

+ **National Weather Service (NWS)**

The NWS transmits continuous weather information on 162.40, 162.475, and 162.55 MHz frequencies. NWS severe weather broadcasts are preceded with a 1050 Hz tone that activates weather monitor receivers equipped with decoders. The NWS can also access the National Warning System to announce severe weather information.

6.3 SOCIAL MEDIA AND MEDIA PROGRAMS

6.3.1 Social Media

The CSFPD is actively connected with social network programs including Facebook, Twitter and Instagram. Local agencies use social media in an effort to keep stakeholders up to date on events, advisories, and alerts. Table 13 summarizes some of the primary social network links for emergency preparedness in the District and surrounding areas:

Table 13. Social Media and Media Programs

Source	*Weblink*
CSFPD Facebook	https://www.facebook.com/carpfire/
CSFPD Twitter	https://twitter.com/csfpd?lang=en
CSFPD Instagram	https://www.instagram.com/explore/locations/1015524289/carpinteria-summerland-fire-protection-district?hl=es
SB Co. FD Facebook	https://www.facebook.com/Santa-Barbara-County-Fire-Department-114819398545464/

SB Co. FD Twitter	https://twitter.com/sbcountyfire?lang=en
SB Co. Instagram	https://www.instagram.com/santabarbaracountyfire/?hl=en
SB Co. Sherriff Facebook	https://www.facebook.com/santabarbarasheriff/
SB Co. Sherriff Twitter	https://twitter.com/sbsheriff?lang=en
SB Co. Sherriff Instagram	https://www.instagram.com/santabarbaracountysheriff/?hl=en
Summerland CA Facebook	https://m.facebook.com/profile.php?id=108277989193471
City of Carpinteria Facebook	https://www.facebook.com/cityofcarpinteria/
Santa Barbara Co. Facebook	https://www.facebook.com/countyofsb/
Fire Weather Snooper	https://www.weather.gov/lox/fwmV3?wfo=lox&net=1,2

6.3.2 Radio Ready

During an emergency when the power is out and when critical and timely information must get out to the general public, the County Office of Emergency Management will utilize satellite equipment to regularly communicate with designated County radio stations that have generators and can continue to broadcast. The stations below will transmit this information over their airways in English or Spanish.

FM Stations:	AM Stations:
+ 88.3 KCLU NPR (South Coast)	+ 1490 KOSJ (South Coast)
+ 94.1 KOSJ (South Coast)	+ 1290 KZSB (South Coast)
+ 94.5 KSPE SPANISH (Countywide)	+ 1340 KCLU NPR (South Coast)
+ 99.9 KTYD (South Coast)	
+ 101.7 KLITE/KSBL (South Coast & Santa Ynez)	
+ 102.3 KCLU NPR (South Coast)	
+ 107.77 KIST SPANISH (Countywide)	

Even if other forms of communication (such as your television or computer) are inoperable, a hand-crank or battery radio is the most dependable and transportable way to get information. https://readysbc.org/storm-ready/radio-ready/

6.3.3 Public Access Television

The City operates a 24-hour Government Access Television Channel (GATV 21). The City will provide information to citizens via scrolled information on this channel and will direct viewers to tune into other local information sources, as appropriate, for more information.

6.4 PROTECTING VALUES

This section describes actions to enhance protection of the range of values in the CSFPD Planning Area.

6.4.1 Life Safety

The CSFPD's first priority is life safety of residents and first responders, with protection of property (e.g., homes, businesses, historic sites, infrastructure, etc) and the environment as second and third priorities, respectively.

6.4.1.1 Public Safety

As with any natural hazard, minimizing the risk of wildfire threats to human life and public safety necessitates a comprehensive approach from prevention and mitigation, to preparedness, response, and recovery. Collectively, the actions items described in this plan aim to help reduce the potential risk to human life – both in the public and private sectors. As a minimum, individual community members can become aware and actively engaged in understanding the various wildfire hazards and risks that may impact where they live and work, and take the necessary steps to prepare themselves, their homes and their family members to minimize their risk. The educational information and resources provide by the CSFPD and the County are available to aid individuals and community groups in this effort such as "Ready-Set-Go", "Are you Prepared?". See Section 6.1.1.

These informational materials cover the key concepts of fire life-safety for residents:

(1) Prevent ignition – Reducing ignition sources and fire hazards in and around your property

(2) Control ignition – In the event fire occurs, minimize the potential for fire spread and growth (e.g. structural hardening provisions, vegetation management, defensible space)

(3) Notification and Communication – Knowing and being familiar with public notifications systems and their limitations

(4) Evacuation – Be familiar with evacuation routes from your home and/or place of work; be familiar with any publicly available evacuation centers/shelter-in-place facilities (if provided); be prepared using Ready-Set-Go program

Oftentimes in wildfire situations, it is extremely unsafe and/or impossible for firefighters, let alone the general public, to safely defend structures. Therefore, structures and other values must be able to survive on their own. Fighting wildfires and protecting structures is extremely complex and dangerous. In most cases, it is advisable that the general public evacuate when directed to do so.

6.4.1.2 Firefighter Safety

There are many factors that affect the ability of firefighters to protect structures and other community assets. Firefighters arriving on scene quickly perform an assessment or "triage" to determine whether a structure or asset is safely defendable. Prior to engaging in structure protection activities, firefighters look for access and egress issues, whether a structure or improvement has characteristics of vulnerability, hazardous material issues, adequate water sources, adequate defensible space, and whether the defensible space provides them safe operational space. Often, the required 100-feet minimum defensible space may not be sufficient for firefighters to engage in structure defense safely (See Sections 5.4 and 5.6).

Although not tested, guidelines established for wildfire safety zones can enhance safe operational space for firefighters and the public in the WUI. However, the additional element of burning structures and other "non-native" fuels will significantly increase fire intensities that can threaten the life safety of firefighters and the public. An essential question related to firefighter safety is the required safe separation distance (SSD) to prevent thermal injury. SSD should be used as a decision-making tool when undertaking structure defense. Refer to Section 5.6 for details.

Although the assessment in Chapter 5 provides some guidance, an onsite consultation with Fire District personnel is recommended to determine whether the clearance around a structure or other improvement is sufficient to provide a safer working environment. Observations by firefighters along the Santa Barbara Front have indicated that flame lengths exceeding 70-feet can occur, suggesting that defensible space distances greater than 100-feet may be prudent.

6.4.2 Reducing Structure Ignitability

In the event of a major, rapid on-set wildfire, firefighting resources in the District will be quickly overwhelmed. This means that active structure defense by firefighters may not be available for most structures. In some cases, it may not be safe for firefighters to engage in structure protection due to a variety of factors (e.g. intensity of the fire, weather conditions, local topography, access issues, lack of water supplies etc.). Thus, the survivability of a structure in a major wildfire event can depend on the vulnerability of the site and structure-to-structure ignition.

Most actions to reduce the ignition potential of a structure are associated with the structure itself and the surrounding site from 100-200 feet out from the structure. Under some circumstances, reducing fire intensity for life safety will involve extending beyond 200 feet depending on the location of the structure on the terrain, high wind events (e.g., Sundowner winds), vegetation density, and fire behavior. The primary responsibility for protecting a structure lies with the property-owner and is the area within the Home Ignition Zone (HIZ). Refer to Figure 31 for representation of HIZ area.

The HIZ includes the structure itself and everything from the foundation out 100 to 200 feet depending on fire behavior conditions (NFPA, 2015). Within this 200-foot area, there are three zones:

+ Zone 1 – Encompasses the structure and all its attachments (e.g., wooden decks, fences, and patios) for at least 30 feet on all sides. In this area:
  - Ornamental and wildland vegetation should be carefully spaced, low growing, well-watered, and free of resins, oils and waxes that burn easily.
  - Mow regularly and prune trees up six to ten feet from the ground.
  - Create space between tree crowns and trim back any trees that overhang the house.
  - Create a “fire-free” area within five feet of the home, using non-combustible landscaping materials and/or high-moisture-content annuals and perennials.
  - Remove dead vegetation from under deck, combustible piles, and within 10 feet of house.
  - Consider fire-resistant material for patio furniture, etc.
  - Remove firewood and/or stacks or piles of combustible material; they should not be located in this zone.
  - Water vegetation and mulch regularly.
  - Consider drought resistant landscaping.

+ Zone 2 – 30 to 100 feet from the home, and vegetation in this zone should be low growing, well irrigated, and less flammable. In this area, provide the following:
  - Leave 30 feet between clusters of two to three trees, or 20 feet between individual trees.
  - Encourage a mixture of deciduous and coniferous trees.
  - Create breaks in vegetation, such as driveways, gravel walkways, and lawns.
  - Prune trees up six to ten feet from the ground.

+ Zone 3 – 100 to 200 feet from the home. Thinning in this area should occur, although less thinning is required than in Zone 2. In this area, provide the following:
  - Thin vegetation and remove heavy accumulation of combustible growth, ground litter, and debris.
  - Reduce the density of tall trees so canopies are not touching.

Figure 31. Home Ignition Zone (courtesy: www.firewise.org).

Mitigating risks within the HIZ is important but requires a joint effort if a neighbor's residence is closer than the full 200-foot area. Figure 32 depicts neighboring homes with an overlapping HIZ. Whether these property-owners properly maintain their HIZ, their activities or lack of activity can influence the survivability of a neighbor's home. Tight subdivisions that have homes built within 100 to 200 feet of each other can cause an overlap issue. Risk reduction efforts by all neighbors in these areas are beneficial to multiple properties.

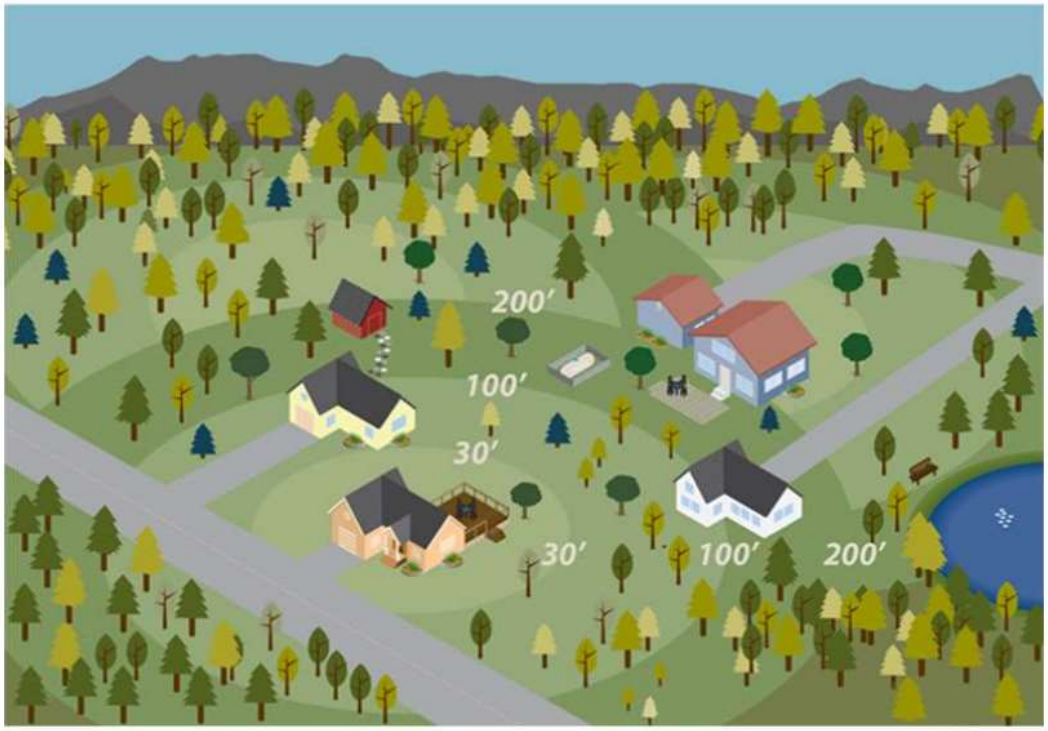

Figure 32. Home Ignition Zone Overlap (courtesy: www.firewise.org).

The HIZ concepts when applied to other improvements in the community can improve their survivability as well. Table 14. Structure Mitigation Actions. delineates mitigation actions that will enhance protection of life safety and improve the survivability of structures in the community:

Table 14. Structure Mitigation Actions.

Structure Component	*Mitigation Actions**
Defensible Space	Carpinteria-Summerland requires 100 feet of defensible space from all sides of any structure but not beyond the property line except when adverse conditions exist. Follow Ordinance 2020-01 and HIZ recommendations and detailed in prescriptive guidelines in Table 24. Select fire resistance plants and non-combustible hardscape for the landscaping. Keep plants located within this area healthy, pruned, and maintained frequently.
Addressing	Address identification shall be Arabic numbers and alphabetical letters and be a minimum 4 inches contrasting with the background.
Roof	Replace wood-shake or shingle roofs with a Class-A material suitable for extreme fire exposure. Plug openings in roofing materials, such as the open ends of barrel tiles, to prevent ember entry and debris accumulation. Regardless of the type of roof, keep it free of bird's nests, fallen leaves, needles and branches.
Chimneys	Screen chimney and stovepipe openings with an approved spark arrestor cap with a 5/8-inch screen.
Eaves	Cover the underside of the eaves with a soffit, or box in the eaves, which will reduce the ember threat. Enclose eaves with fiber cement board or 5/8-inch thick, high-grade plywood. If enclosing the eaves is not possible, fill gaps under open eaves with caulk.
Exterior Siding	Noncombustible siding materials (e.g., stucco, brick, cement board, and steel) are better choices. If using noncombustible siding materials is not feasible, keep siding in good condition and replace materials in poor condition.
Windows and Skylights	Single-pane windows and large windows are particularly vulnerable in older homes built prior to current fire codes. Recommend installing windows that are at least double-glazed and that utilize tempered glass for the exterior pane. The type of window frame (e.g., wood, aluminum, or vinyl) is not as critical; however, vinyl frames can melt in extreme heat and should have metal reinforcements. Keep skylights free of leaves and other debris and remove overhanging branches. If using skylights in the WUI, they must be flat skylights constructed of double-pane glass and must be kept free of vegetation.
Vents	All vent openings should be covered with 1/8-inch or smaller wire mesh. Another option is to install ember-resistant vents. Do not permanently cover vents, as they play a critical role in preventing wood rot. In the WUI, roof gutters shall be provided with the means to prevent accumulation of leaves, needles, and debris.
Rain Gutters	Always keep rain gutters free of bird's nests, leaves, needles, and other debris. Roof gutters shall be provided with a means to prevent accumulation of leaves, needles, and debris. Check and clean them several times during the year.
Decks	Keep all deck materials in good condition. Consider using fire-resistant rated materials or heavy timber construction. Routinely remove combustible debris (e.g., pine needles, leaves, twigs, and weeds) from the gaps between deck boards and under the deck. Enclosing the sides of the deck may reduce this type of maintenance. Do not store combustible material under the deck.
Combustible Items	Keep the porch, deck, and other areas of the home free of flammable materials (e.g., baskets, newspapers, pine needles, and debris). Keep firewood, bales of hay or straw, and other combustible/flammable materials at least 30-feet away from a structure.

Structure Component	Mitigation Actions*
Residential Fire Sprinkler Systems	Required in all new and two-family dwellings and townhouses. Refer to https://www.carpfire.com/carpinteria-fire-department-standards for details of local standards. Annual maintenance service or inspection of these systems is strongly recommended to ensure operability.

**See Ordinance Number 2020-01 for additional information.*

6.4.3 Natural and Cultural Resources

While wildfire mitigation measures to protect life safety, structures, and critical infrastructure may not be designed explicitly to protect natural and/or cultural resources, their overall impact will ultimately help reduce wildfire threats, in general, and thereby indirectly minimize impacts to these other values/assets.

A key aspect of any holistic wildfire mitigation strategy is to design, implement and maintain risk reduction measures that are sustainable and in balance with a breadth of performance objectives. This oftentimes presents complexities when protecting life safety, structures, and critical facilities, along with environmental resources. This is a difficult challenge recognized by many communities, Carpinteria-Summerland included. Striking a balance, in many cases, among competing objectives has no "one-size fits all" approach. The CSFPD realize that the most appropriate approach is to develop and implement a "living" plan that will be monitored and evaluated over time, and flexible enough to make adjustment when/if disproportionate imbalances arise.

The following sections describe the fuels mitigation strategy proposed for the District. Defensible space, roadside fuel treatments, and other area fuel treatments have been developed and integrated into a holistic hazardous fuel mitigation strategy such that impacts to the District's natural and cultural resources are minimized.

6.5 FUELS MITIGATION STRATEGY

Wildfires have been a significant component of the Southern California landscape for centuries, and no amount of manipulation and management of the land will likely eliminate their presence. Focusing fire mitigation efforts on individual structures and communities where social costs are highest has the potential to increase cost savings, promote success in preventing community losses through increased efficiency of firefighting resources, and reduce impacts on native plant communities that serve as a source of biological and genetic floral diversity (Lombardo, 2012). Section 6.4.2 contains specific suggestions for both hardening structures and modifying vegetation within the HIZ to enhance wildfire protection. Fuels mitigation, structural hardening actions, and emergency preparedness activities completed well before a wildfire event will greatly influence the success in protecting life safety and other District values.

This chapter summarizes the fuels treatment strategy for the District and is based on the need to provide enhanced wildfire protection for the community, while also protecting visual, biological and cultural resources. This strategy provides broad direction on where and how to manipulate vegetation to reduce wildfire hazard. While the Fire Protection District plays an important role in fuel mitigation, ***the greatest responsibility for improvements in the protection of the community rests with individual property-owners***. The development of adequate defensible space and structural hardening are common needs in the majority of the locations evaluated for this plan.

6.5.1 Existing Fuel Treatment Activities

The District currently manages a substantial fuel treatment program, with a variety of defensible space and roadside treatments. See Figure 33 and Table 15 for details. The existing program could benefit from more coordinated efforts between property owners and the District, as existing fuel treatments appear to reflect the

priorities of individual entities. A strategic landscape level fuel treatment program addressing overall wildfire risk does not appear to be present. As such, a more strategic and holistic approach to the CSFPD's fuel treatment plan is presented in Section 6.5.2.

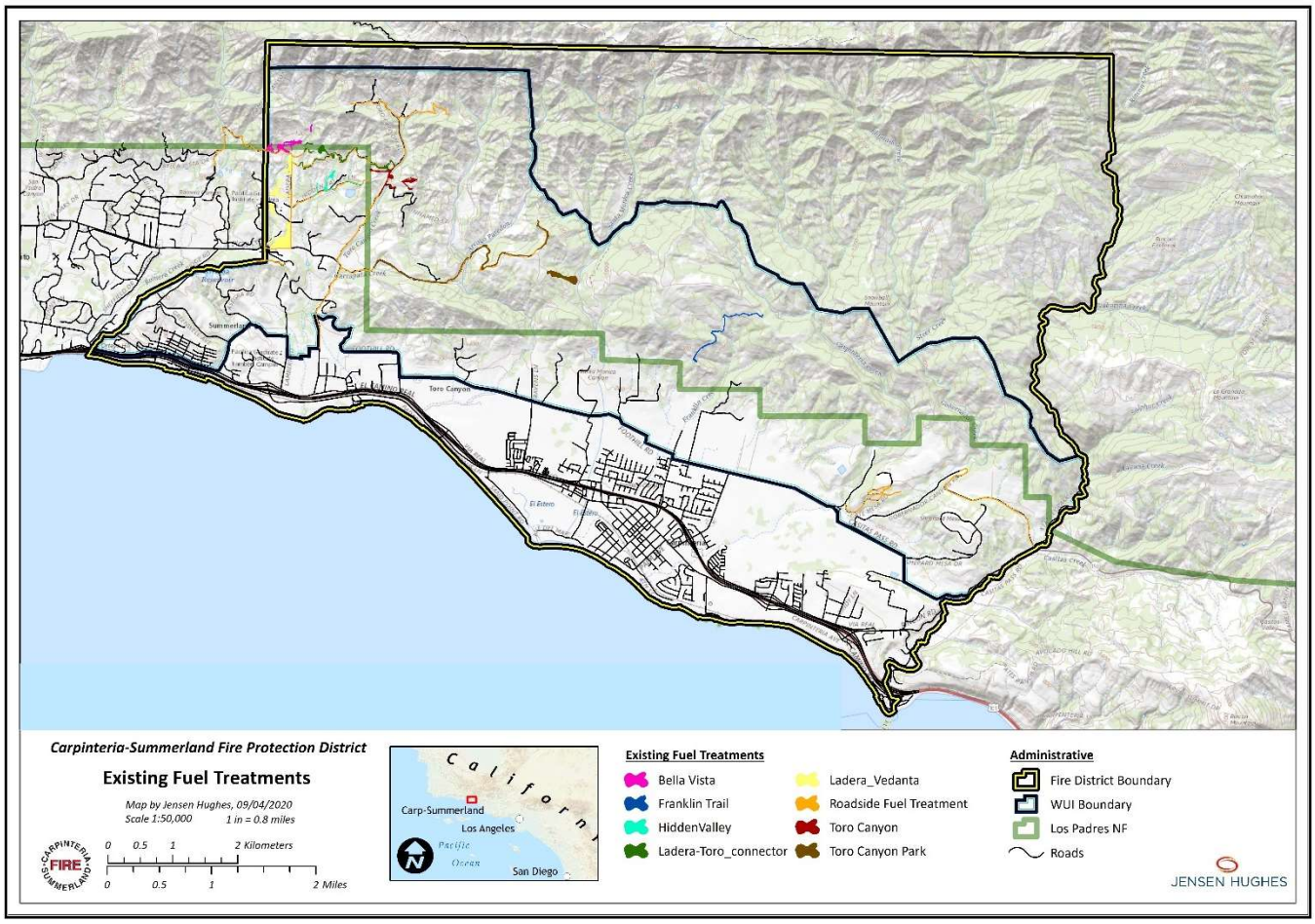

Figure 33. Carpinteria-Summerland's Existing Fuel Treatments

Table 15. Existing Fuel Treatments in the District

Unit Name	Type	Activity	Acres	Miles
Bella Vista	Defensible Space	thinning/chipping	4.8	
Franklin Trail	Roadside	thinning/chipping	6	
Hidden Valley	Defensible Space	thinning/chipping	2	
Ladera-Toro Connector	Roadside	thinning/chipping	1.6	
Ladera-Vedanta	Defensible Space	thinning/chipping	2.9	
Roadside	Roadside	thinning/chipping		14.4
Toro Canyon	Roadside	thinning/chipping	1.5	
Toro Canyon Park	Roadside	thinning/chipping	7.3	
		Totals =	**26.05**	**14.4**

6.5.1.1 Defensible Space

PRC 4291 Defensible Space Regulations requires property owners to clear flammable vegetation within 100 feet of structures on their property. The District requires this work to be completed prior to June 1 annually.

The District has an active inspection program to ensure property owners are complying with these regulations, with the goal of inspecting 100% of all parcels. Compliance with defensible space regulations is characterized as being high by District personnel, however, in a field survey of the District conducted in June 2020, it was not difficult to find non-complying parcels. During inspections, process District employees work with the public to educate them on how to improve their overall wildfire preparedness.

6.5.1.2 Community Chipping Program

The District has an annual program that mechanically chips vegetation created by homeowners as they are completing their defensible space work. In 2020, the program treated debris at approximately 165 parcels within the District. This is a popular program with several neighborhoods having utilized the program every year since its inception. See Figure 34 for locations where chipping occurred in 2019 and 2020.

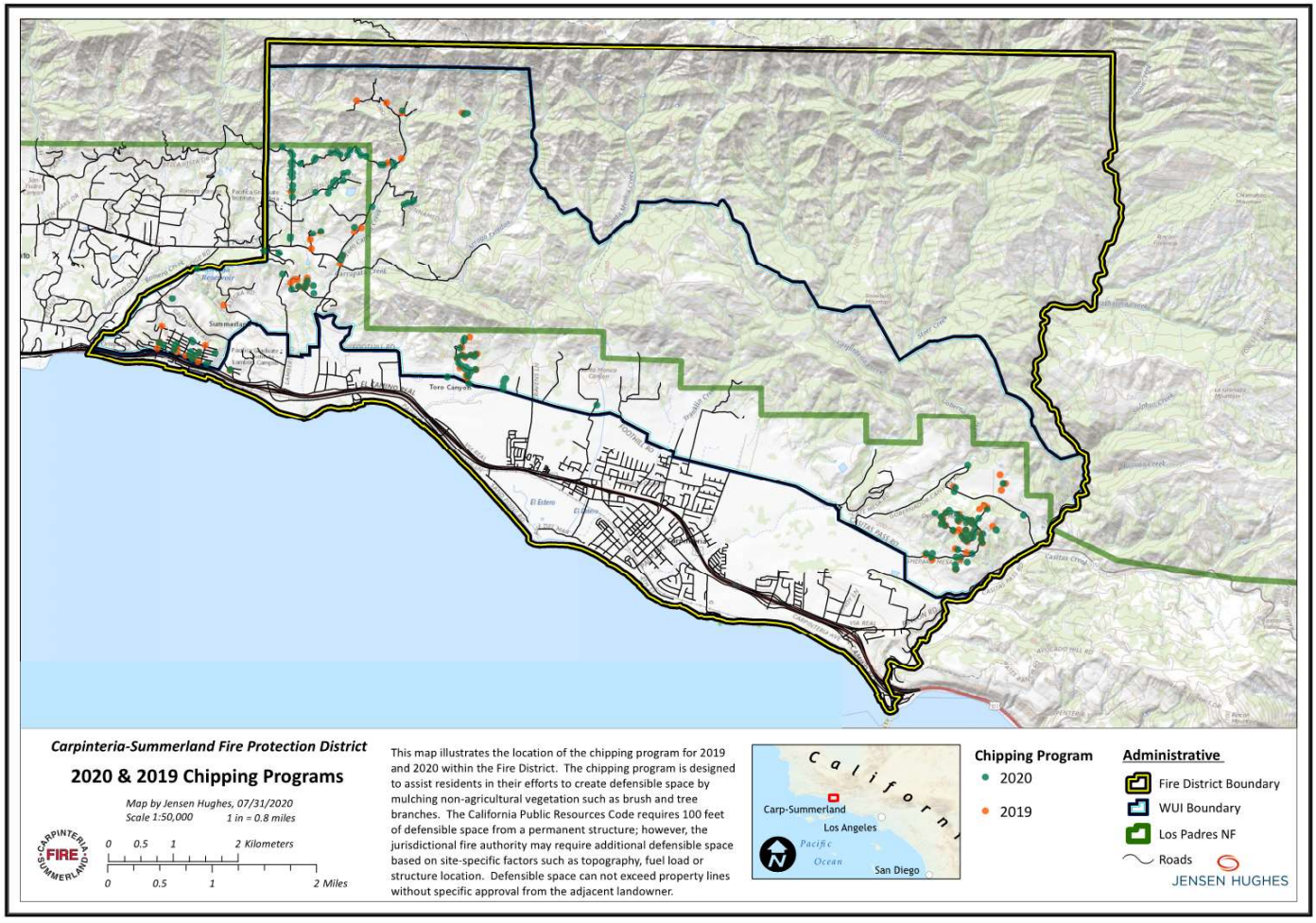

Figure 34. Carpinteria-Summerland's Chipping Program 2019 and 2020.

6.5.1.3 Roadside Fuel Treatments

Roadside fuel treatments are designed to moderate fire intensity adjacent to roads and driveways thereby providing safer operational space for firefighters, improving access/egress for firefighting equipment, and providing safer evacuation routes for residents and visitors during a wildfire event. Roadside or driveway fuel

treatments range from the centerline of a road or driveway up to 100' on either side with "feathered", gradient fuel treatments softening any appearance of vegetated walls. Standards for roadsides incorporate trailheads, reducing highly ignitable fuels in undeveloped parking areas.

Currently, the District has an ongoing program that utilizes contractors to clear roadside vegetation to meet State standards. To help inform a more comprehensive roadside fuel treatment workplan and timeline, an inventory of public/private roads and driveways that do not meet standards for vegetation clearance should be completed. As funding becomes available to treat these areas, they can be performed to the prescriptive standards. See Appendix D for Prescriptive Guidelines and Best Management Practices for Roadside Fuel Treatments.

6.5.1.4 Agricultural Buffers

Much of the City of Carpinteria is buffered along its northern edge by irrigated fields and orchards (See Figure 8). As discussed in Section 3.3.6. These cultivated and/or irrigated lands provide a unique opportunity for connecting with fuel treatments to provide a linear buffer on the fringes of developed communities. In 2017 agricultural areas provided firefighters a tactical advantage when the Thomas Fire burned towards the Carpinteria from the northeast. Ongoing maintenance and land-use planning policies can help retain the inherent fire break characteristics that agricultural lands provide now and into the future.

6.5.2 Proposed Fuel Treatments

Proposed fuel treatment units have been designed to enhance the effectiveness of existing treatments and extend protections to identified values at risk. See Figure 35 and Table 16 for details. This is by no means an exhaustive list, but it provides a starting point for a more strategic fuel treatment network that can expand over time. By developing a public/private network of fuel treatments the District can further reduce the unwanted consequences of wildfire. See Appendix D for Prescriptive Guidelines and Best Management Practices for Fuel Treatments.

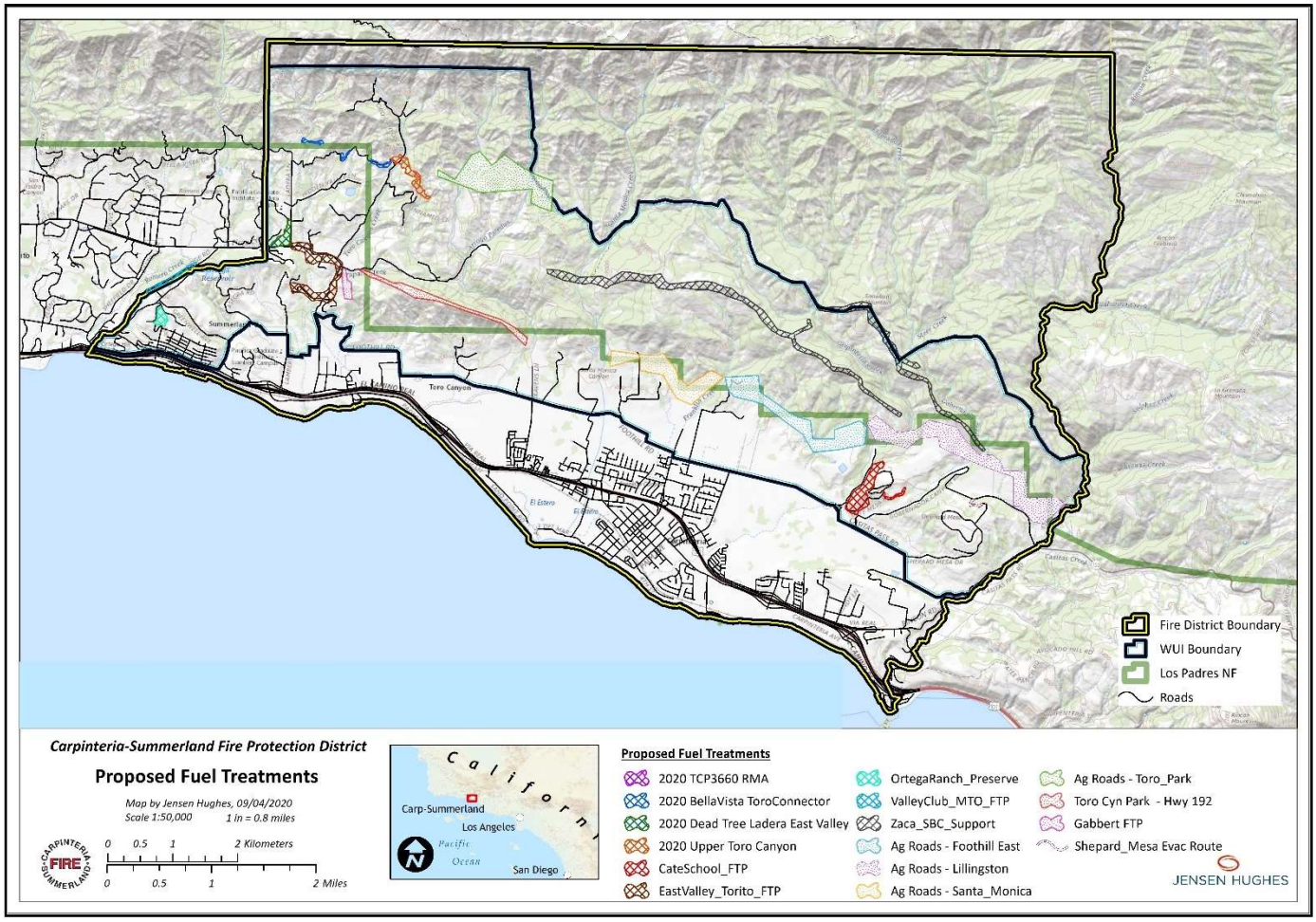

Figure 35. Proposed Fuel Treatments Across the District

Table 16. Proposed fuel treatments

Unit Name	Type	Activity	Acres	Miles
2020 Bella Vista-Toro Connector	Roadside	thinning/chipping	85	
2020 Dead Tree Ladera-East Valley	Defensible Space	thinning/chipping	14	
2020 Upper Toro Canyon	Roadside	thinning/chipping	20	
Cate School FTP Proposed	Defensible Space	thinning/chipping	44	
East Valley-Torito FTP Proposed	Defensible Space	thinning/chipping	77	
Ortega Ranch Preserve FTP Proposed	Defensible Space	thinning/chipping	9	
Valley Club MTO FTP Proposed	Defensible Space	thinning/chipping	10	
Perimeter Agricultural Roads-Foothill East	Roadside	thinning/chipping	143	
Perimeter Agricultural Roads-Lillingston	Roadside	thinning/chipping	209	

Unit Name	Type	Activity	Acres	Miles
Perimeter Agricultural Roads-Santa Monica	Roadside	thinning/chipping	107	
Perimeter Agricultural Roads-Toro Park	Roadside	thinning/chipping	167	
Shepard Mesa Evacuation Route	Roadside	Right of Way		0.3
Toro Cyn Park - Hwy 192	Fuelbreak	thinning/chipping	48	
Gabbert Defensible Space	Defensible Space	thinning/chipping	12	
Zaca SBC Support	Fuelbreak	clearing/mastication	230	
		Totals =	**1,175**	**0.3**

6.5.2.1 Community Defensible Space

Community Defensible Space is where adjacent landowners design and implement fuel treatments to protect groups of homes. Treatments are designed to consider how vegetation and topography affect fire behavior regardless of property boundaries. When combined with structural hardening, the development of Community Defensible Space is the best practice to reduce damage and loss from wildfire within the District.

The combination of topography and vegetation can often make it difficult to protect structures with only 100 foot of clearance. Depending on site specific conditions, upwards of 200 to 300 feet of clearance may be needed to adequately protect homes from a wildfire. Refer to Figure 32 in the HIZ/Structural hardening section for graphic representation of the concept. It is recommended that the Fire Protection District use a combination of public education, site visits and grant funding to promote the idea of Community Defensible Space, with the Shepard Mesa neighborhood being a good candidate for a demonstration project that would show how this concept could be applied at a neighborhood level. The residents of Shephards Mesa are actively creating defensible space on their individual properties and participate annually in the Community Chipping Program, which indicates a willingness to collaborate towards improving the protection of the neighborhood from fire. The District should consider undertaking a site survey to identify parcels that could benefit from the development of Community Defensible Space, which could be used as an example of the concept for other willing areas of the District.

6.5.2.2 Maintenance of Perimeter Agricultural Roads

The private road system that supports the agricultural lands along the northern edge of Carpinteria was utilized tactically during the 2017 Thomas Fire. In some locations these roads were effective as a fireline. Mapping and maintaining these roads for firefighting access and as tactical control points would be beneficial in keeping large fires from entering the City. The Fire Protection District should explore forming a road association or developing an MOU with the landowners to achieve this goal.

The formation of a road association can provide a way for the District and landowners to formally manage these roads in an organized and cost-effective manner, while also providing liability protection for association members. See Appendix D for Prescriptive Guidelines and Best Management Practices for Roadside Fuel Treatments.

6.5.2.3 Fuelbreaks

Fuelbreaks are strategically placed landscape vegetation treatments that provide a potential control point for wildfires. Santa Barbara County Fire has expressed an interest in working with the District on segments of SRA land. Potential maintenance and improvement projects include

+ Contingency firelines which were built on private lands during the 2007 Zaca Fire.
+ The major ridgeline that runs east/west between Toro Canyon Park Road and Highway 192.

6.5.3 Prioritization of Fuel Treatments

To assure the continued viability of past hazard mitigation efforts, ***maintenance of existing fuel treatments should be the top priority for the District***. Without maintenance, these treatments will decrease in both magnitude and effectiveness, eventually blending back into the landscape. Only through reoccurring maintenance will these fuel treatment projects remain viable wildfire mitigations features for the community. The amount of annual vegetation growth will determine the frequency of fuel treatment maintenance. A second level priority for work is the implementation of roadside fuel treatments that promote safe access and egress for residents and emergency personnel. Roadside right-of-ways managed by other agencies (e.g. Caltrans) should be identified and transmitted to agency representatives to assure that required vegetation management of roadways occur. By holding jurisdictional agencies accountable for right-of-way management, District funds can be directed toward other important work.

New fuel treatment recommendations identified in this plan are not prioritized individually but have instead been grouped within the District's existing Pre-Attack Zones (PAZ) as seen in Figure 36.

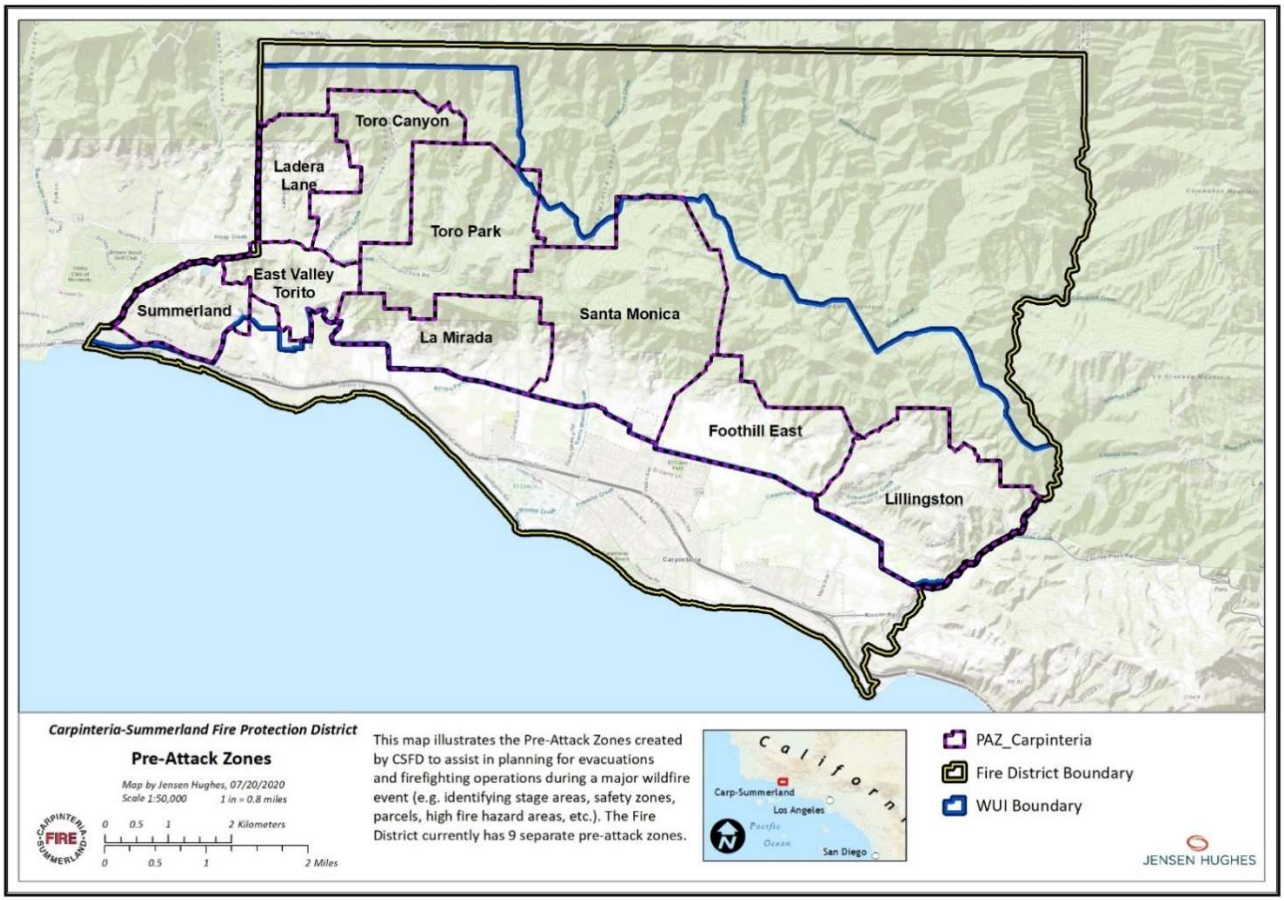

Figure 36. Existing Subdivision of the District into Pre-Attack Zones (PAZs)

The PAZs are prioritized for work based on the level of Very High and High fire hazard identified in the hazard assessment presented earlier in the CWPP. The PAZ with the greatest percentage of Very High and High hazard is considered the priority area for treatment. Treatment priorities do not consider other social/political/environmental drivers which could affect which areas or new projects are implemented.

Table 17. Vegetation Management Priorities by Pre-Attack Zones

	Pre-Attack Zone	Acres	Priority
Santa Monica	Very High – 11+ ft.	132.32	1
	High – 08-11 ft.	45.15	
	Moderate – 04-08 ft.	1160.23	
	Low – 0-04 ft.	581.12	
	Urban Fuels	115.2	
	Total =	***2034.02***	
Toro Park	Very High – 11+ ft.	60.71	2
	High – 08-11 ft.	57.16	
	Moderate – 04-08 ft.	678.75	
	Low – 0-04 ft.	495.49	
	Urban Fuels	20.24	
	Total =	***1312.35***	
Toro Canyon	Very High – 11+ ft.	47.37	3
	High – 08-11 ft.	48.26	
	Moderate – 04-08 ft.	563.1	
	Low – 0-04 ft.	220.62	
	Urban Fuels	25.35	
	Total =	***904.7***	
Lillingston	Very High – 11+ ft.	12.01	4
	High – 08-11 ft.	31.58	
	Moderate – 04-08 ft.	499.05	
	Low – 0-04 ft.	765.04	
	Urban Fuels	92.96	
	Total =	***1400.64***	
La Mirada	Very High – 11+ ft.	20.91	5
	High – 08-11 ft.	13.34	
	Moderate – 04-08 ft.	476.81	
	Low – 0-04 ft.	322.47	
	Urban Fuels	73.39	
	Total =	***906.92***	
Ladera Lane	Very High – 11+ ft.	14.9	6
	High – 08-11 ft.	12.01	
	Moderate – 04-08 ft.	376.74	
	Low – 0-04 ft.	163.46	

	Urban Fuels	27.35	
	Total =	***594.46***	
Foothill East	Very High – 11+ ft.	3.11	7
	High – 08-11 ft.	12.45	
	Moderate – 04-08 ft.	209.72	
	Low – 0-04 ft.	491.94	
	Urban Fuels	213.72	
	Total =	***930.94***	
East Valley Torito	Very High – 11+ ft.	0.89	8
	High – 08-11 ft.	2.45	
	Moderate – 04-08 ft.	159.23	
	Low – 0-04 ft.	272.21	
	Urban Fuels	43.59	
	Total =	***478.37***	
Summerland	Very High – 11+ ft.	0.22	9
	High – 08-11 ft.	1.56	
	Moderate – 04-08 ft.	246.41	
	Low – 0-04 ft.	141.89	
	Urban Fuels	151.12	
	Total =	***540.2***	

6.5.4 Fuel Treatments and Firefighter Safety

Fuel treatments have the potential to modify fire behavior by changing the structure, loading or continuity of an existing fuel complex. How much a treatment influences the fire behavior is primarily a function of the intensity of the treatment. More intense treatments, where large volumes of vegetation are treated and where the vertical structure of the fuel complex is disturbed to a significant extent, will have greater effects on the potential fire behavior than less intense treatments. However, even relatively minor changes to a fuel complex can have impacts on fire behavior.

To judge the effectiveness of a potential fuel treatment in promoting public and firefighter safety, assumptions need to be made concerning how the treatment will change the fuel structure and therefore expected fire behavior. Evaluating the change in fire behavior associated with a fuel treatment is not an exact science and requires professional judgement be used to evaluate the changes. In this CWPP, GIS was used to determine the existing fuel models within the Planning Area and professional judgement of Fire Behavior Analysts was used to identify the likely post-treatment fuel models. Table 18 summarizes the changes in fuel models.

The pre-treatment and post-treatment expected flame lengths for each fuel model within the Planning Area is also displayed in Table 18 and was obtained by using a consistent set of environmental parameters in the fire behavior model BEHAVE 5.0. The change in flame length between existing and post-treatment conditions can be used for evaluating how fuel treatment can influence public and firefighter safety.

Table 18. Impact of Fuel Treatments on Fire Severity

Existing Fuel Model	*Existing Model Number*	*Post-treatment Fuel Model*	*Post- treatment Model Number*	*Existing Condition Flame Length**	*Post Treatment Flame Length**
Short, Sparse Dry Climate Grass	101	Short, Sparse Dry Climate Grass	101	2.2	2.2
Low Load, Dry Climate Grass	102	Short, Sparse Dry Climate Grass	101	6.6	2.2
Low Load, Very Course Humid Climate Grass	103	Short, Sparse Dry Climate Grass	101		2.2
Low Load, Dry Climate Grass-Shrub	121	Low Load, Dry Climate Grass	141	4.8	1.0
Moderate Load, Dry Climate Grass-Shrub	122	Low Load, Dry Climate Grass-Shrub	121	7.0	4.8
Low Load, Dry Climate Shrub	141	Low Load, Dry Climate Shrub	141		
Moderate Load Dry Climate Shrub	142	Low Load Dry Climate Shrub	141	6.1	1.0
Moderate Load, Humid Climate Shrub	143	Moderate Load, Humid Climate Shrub	143	3.3	3.3
High Load, Dry Climate Shrub	145	Moderate Load, Dry Climate Shrub	142	18.9	6.1
Very High Load, Dry Climate Shrub	147	Moderate Load Dry Climate Shrub	142	16.5	6.1
Low Load Dry Climate Timber-Grass-Shrub	161	Low Load Dry Climate Timber-Grass-Shrub	161	2.7	2.7
Moderate Load Humid Climate Timber-Shrub	162	Moderate Load Broadleaf Litter	186	5.1	3.9
Moderate Load Humid Climate Timber-Grass-Shrub	163	Moderate Load Broadleaf Litter	186	10.9	3.9
Very High Load, Dry Climate Timber-Shrub	165	Low Load Dry Climate Timber-Grass-Shrub	161	9.4	2.4
Low Load Compact Conifer Litter	181	Low Load Compact Timber Litter	181	0.7	0.7
Low Load Broadleaf Litter	182	Low Load Broadleaf Litter	182	1.1	1.1

Moderate Load Conifer Litter	183	Low Load Compact Conifer Litter	181	1.3	0.7
Small, downed logs	184	Moderate Load Conifer Litter	183	1.8	1.3
High Load Conifer Litter	185	High Load Conifer Litter	183	2.8	1.3
Moderate Load Broadleaf Litter	186	Low Load Broadleaf Litter	182	3.5	1.1
Large Downed Logs	187	Small, downed logs	184	4.4	1.8
Long-Needle Litter	188	Moderate Load Conifer Litter	183	9.7	1.3
Very High Load Broadleaf Litter	189	Low Load Broadleaf Litter	186	15.5	3.5
Low Load Activity Fuel	202	Low Load Activity Fuel	201	8.7	4.4
** The consistent environmental parameters used in BEHAVE 5.0 to obtain the flame length output from the model are: Slope = 20%, Mid-flame Wind = 7 mph, Dead Fuel moistures = 4%, 5%, 6%, Live herbaceous fuel moisture = 30%, Live woody fuel moisture = 77%*					

The change in expected fire behavior from implementing fuel treatments can also be displayed spatially using landscape data from the LANDFIRE program and FlamMap, a fire behavior modeling program, to evaluate fire characteristics. Using LANDFIRE data in FlamMap requires that the existing fuel data be modified to represent post-treatment fuel conditions. Given that this CWPP does not specifically define where fuel treatments will be placed, or to what intensity they will be implemented, only an example of this spatially explicit methodology is presented to show how this process can be used to evaluate the changes in fire behavior characteristics from a fuel treatments.

The example looks at the potential flame length changes should every pixel of the LANDFIRE fuel layer within the Cate School proposed fuel treatment project be modified by a fuel treatment. The changes to the fuel models found in Table 18 are applied to all pixels within the proposed treatment area. Figure 37 spatially displays how fire behavior is changed, while Table 19 summarizes the results.

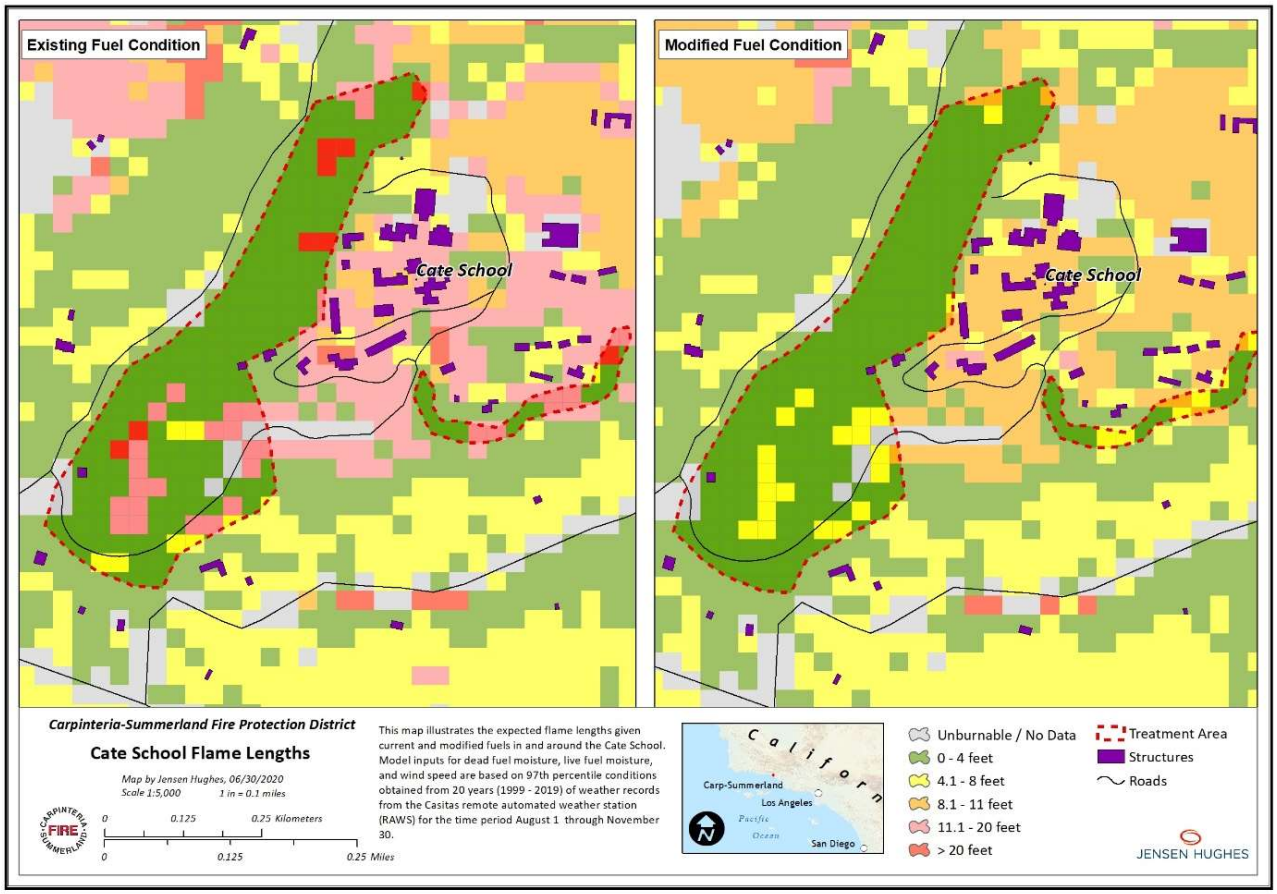

Figure 37. Changes to modelled flame lengths based on potential fuel treatments near Cate School

Table 19. Summary of changes to modeled flame lengths due to potential fuel treatments at Cate School

Flame Length	Existing Fuel Condition	Modified Fuel Condition
No data/Unburnable	4%	4%
0.1 - 4 feet	74%	82%
4.1 - 8 feet	3%	12%
8.1 - 11 feet	0%	2%
11.1 - 20 feet	5%	0%
20.1 feet and greater	4%	0%

6.6 EVACUATION

Carpinteria-Summerland presents challenges for evacuation due to the transportation system within and adjacent to the District. When faced with the onset of a rapidly spreading wildfire, evacuation of residents can quickly become problematic as road systems become overwhelmed with public and emergency response vehicles. The District has significant access and egress impediments that can adversely affect emergency response times and evacuations such as road characteristics (narrow, winding and/or steep), vegetation encroachment on roads, gates, bridges, addresses not clearly visible from the property access point, speed-reducing features such as bulb-outs, roundabouts, and speed bumps, unlit roads and intersections, and unlit street signage.

In 2016, the District developed an evacuation plan with defined evacuation zones. A map of those zones is provided in Figure 38. To help understand the transit system capacities, weaknesses and need to designate shelter-in-place locations, a transportation/traffic analysis in emergency wildfire conditions should be undertaken. This analysis should be coupled with an evacuation field drill to identify additional physical, social behavioral, operational, communications and management challenges requiring improvement to provide for the safe and efficient execution of an evacuation order.

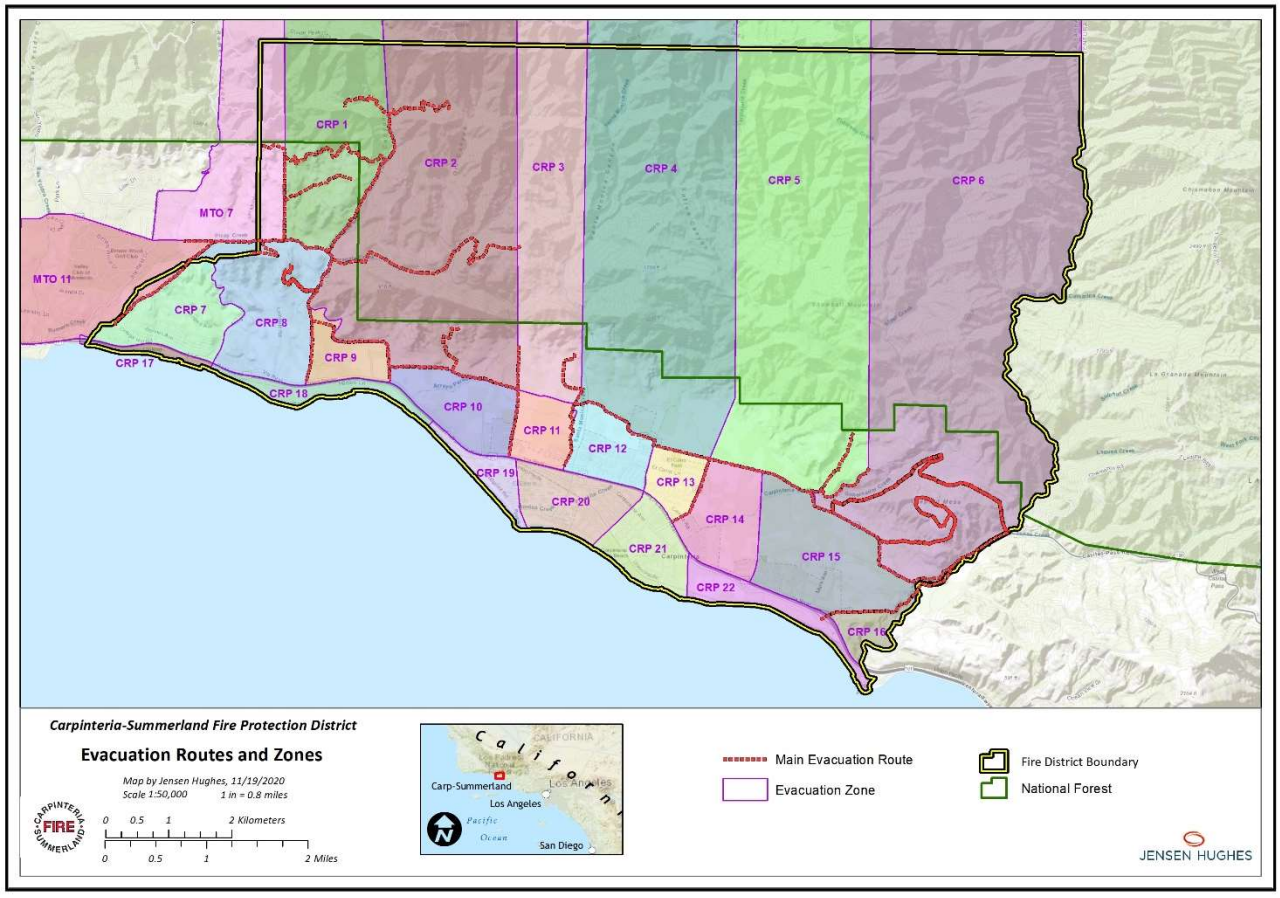

Figure 38. Carpinteria-Summerland's Emergency Evacuation Zones

6.6.1 During a Wildfire Event

The Santa Barbara County Sheriff's Department is the jurisdictional authority for ordering an evacuation. This decision is made in consultation with the Carpinteria-Summerland Fire Protection District and the assigned Incident Commander for the emergency. California law authorizes law enforcement to restrict access to any

area where a menace to public health or safety exists due to a calamity such as flood, storm, fire, earthquake, explosion, accident, or other disaster. Refusal to comply is a misdemeanor (Penal Code 409.5).

In 2010, the CSFPD developed a Public Alert and Notification Plan that determined no single notification system would accomplish 100 percent of public notification to prepare for or alert individuals adequately during an emergency event. In the event of a wildfire emergency that requires evacuation, the Sheriff's Department and Carpinteria-Summerland Fire Protection District will employ all communication methods to attempt to notify and alert individuals, including:

- Reverse 911
- COMLabs Emergency Warning System and HomeALERT Receivers
- NIXLE
- Emergency Alert System (EAS) supported by the National Weather Service broadcast
- Radio and television announcements
- Door-to-door notifications
- Social media, such as Twitter and Facebook

6.6.2 Potential Evacuation Routes

The District has identified evacuation routes (See Figure 38, Carpinteria-Summerland Evacuation Plan) that offer individuals pre-planned options for rapid egress from areas threatened by a wildfire.

Important Note: *The evacuation map provides preferred evacuation routes, but potential fire behavior and road conditions may necessitate changes. It is recommended that everyone in the community become familiar with the preferred evacuation routes and identify potential alternatives should fire behavior and/or road conditions require a change.*

6.6.3 Potential Evacuation Issues

The following outlines a few issues that may be encountered with evacuation and should be considered by the emergency operations planning staff responsible for evacuation planning:

- Residents and business-owners likely do not have established preparedness plans.
- Residents and business-owners may choose not to evacuate but rather to stay and defend their homes/businesses or decide to shelter-in- place until the fire danger passes. These residents and business-owners can put their life safety at risk as well as that of emergency personnel.
- Individuals often delay their evacuation with the intent of defending their property, or to shelter in place, or are slow to leave their homes due to packing personal items and thereby jeopardizing their life safety.
- Latest research in social behaviors in wildfire evacuations indicate that people tend to take multiple vehicles when fleeing their homes. This can introduce additional demands on the transit networks, and should be considered as part of an evacuation management plan
- Vulnerable populations and/or individuals with limited mobility may be less likely to respond to, cope with, or recover from wildfire. Age and/or physical and mental limitations can restrict mobility making it more difficult to evacuate in a disaster. Language issues can result in communication barriers to evacuation and support services. Additionally, visitors and non-permanent residents in Carpinteria-Summerland are likely unfamiliar with the wildfire threat, the extent of their exposure, and appropriate evacuation routes that can make them more vulnerable during an evacuation.
- Evacuating pets, service animals, and large animals pose significant problems since panicked animals behave unpredictably and may refuse to respond to normal handling approaches.

6.7 FIRE SUPPRESSION RESOURCE CAPABILITY

6.7.1 Suppression Capabilities

The ability to muster a timely and robust response to a wildland fire can influence the eventual impacts of that fire on a community. The Carpinteria/Summerland Fire Protection District has multiple jurisdictional responsibilities besides wildland fire suppression, including emergency medical services, structure fire suppression, hazardous materials incidents, water rescue, inspection and permitting and code enforcement. In fiscal year 2014/2015 wildland fire responses represented only 0.64% of District's total emergency response workload (Citygate Associates, LLC, 2016), but many of these consisted of mutual aid fires that extended multiple days. This was an increase over even a lower level of wildland fire responses the previous two years.

6.7.2 Available Resources

The Fire District staffs a total of two agency-owned type 1 engines daily with a minimum of three firefighters, and a rescue squad staffed with two firefighters. A minimum of one Chief Officer is on duty daily to provide operational oversight bringing the total available number of firefighters on duty to nine under normal staffing plans. During times of high wildfire danger, engines can be staffed with additional personnel.

A typical first alarm wildland fire response from the District includes five engines and a Chief Officer (CSFPD units) including automatic aid from Santa Barbara City, plus 3 extra from Mutual Aid. While the District can muster a first alarm response, the location of the fire may be such that fire equipment from an adjoining agency is positioned closer to the reported fire location. In these situations, the District uses automatic aid agreements with Montecito Fire Protection District, Ventura County Fire Department, and the United States Forest Service to augment its initial attack fire response. The most recent standards of coverage report noted that the District is not able to have an Effective Response Force of three engines on scene within 8-minutes of a reported fire, as mutual aid equipment is located some distance from the District (Citygate, LLC, volume 2, 2016). Refer to Section 3.5 for more details.

6.7.2.1 Agreements – Automatic Aid

These agreements with nearby fire agencies allow the District to assure that the closest available fire resource is dispatched to a reported wildland fire. Currently the District has automatic aid agreements with the Montecito Fire Protection District, Ventura County Fire Protection District, Santa Barbara City Fire, SBCFD and the United States Forest Service.

+ ***Master Mutual Aid*** - Managed by CAL OES, the California Disaster and Civil Defense Master Mutual Aid Agreement of 1950 allows local governments to request assistance from other signatories to the Agreement without having to reimburse the supporting departments. This agreement is "reciprocal", in that the District, as a signatory, would not receive reimbursement from other local government departments who might receive support during their time of need.

+ ***Assistance by Hire*** – Where agreements do not exist for firefighting resources, requests for these resources can be placed by field Incident Commanders through the unified ordering point of the incident. These requests will be relayed to the OES Operational Area to be filled, then escalated to the OES Coordinator at the Southern California Coordination Center if the Operational Area cannot meet the needs of fire commanders. The equipment ordered under "assistance by hire" will be paid for by the requesting fire agency, or the cost of the equipment may be shared in a Cost Share Agreement with other jurisdictionally involved fire agencies.

+ ***The Fire Management Assistance Grant (FMAG)*** - Managed through the Federal Emergency Management Agency (FEMA), FMAG provides reimbursement to local government agencies for costs they

may incur during a wildfire emergency. CAL OES will process FMAG requests for local governments that must meet specific criteria in order to qualify for this cost reimbursement. As a rule of thumb, FMAG will cover 75% of local government costs incurred during a wildfire emergency.

6.8 FISCAL RESOURCES AND CONSTRAINTS

Fiscal resources and budgetary constraints may make it difficult for the District to implement the recommendations found in this plan, while also attempting to maintain existing fuel treatments and bring on-line new prosed treatments. Establishing local priorities for available staffing and funding while still seeking additional funding sources will allow CSFPD to continue enhancing wildfire protection for the residents of the District.

6.8.1 Potential Grant Funding Sources

The following identifies several grant sources which may be available to the District:

- ***Fire Service Grants and Funding (AFG)***

  Provides direct assistance on a competitive basis to fire departments of a State or tribal nation for protecting the health and safety of the public and firefighting personnel against fire and fire-related hazards.

- ***Assistance to Firefighters Grant Program (AFGP)***

  Through the Federal Emergency Management Agency's Assistance to Firefighters Grant Program (AFGP), career and volunteer fire departments and other eligible organizations can receive funding through three different grants to enhance a fire department organization's ability to protect the health and safety of the public first responders and to increase or maintain the number of trained, "front-line" firefighters available in communities.

  - ***Staffing for Adequate Fire & Emergency Response Grant (SAFER)***

    The Staffing for Adequate Fire and Emergency Response Grant (SAFER) was created to provide funding directly to fire departments and volunteer firefighter interest organizations to help them increase or maintain the number of trained, "front line" firefighters available in their communities. The goal of SAFER is to enhance the local fire departments' abilities to comply with staffing, response and operational standards established by the National Fire Protection Association (NFPA 1710 and/or NFPA 1720).

  - ***Fire Prevention & Safety Grants (FP&S)***

    The Fire Prevention and Safety (FP&S) Grants are part of the Assistance to Firefighters Grants (AFG) and support projects that enhance the safety of the public and firefighters from fire and related hazards. The primary goal of this grant program is to reduce injury and prevent death among high-risk populations. In 2005, Congress reauthorized funding for FP&S and expanded the eligible uses of funds to include Firefighter Safety Research and Development.

- ***Building Resilient Infrastructure and Communities (BRIC)***

  Authorized by Section 203 of the Stafford Act, Building Resilient Infrastructure and Communities (BRIC) will support states, local communities, tribes and territories as they undertake hazard mitigation projects, reducing the risks they face from disasters and natural hazards. BRIC is a new FEMA pre-disaster hazard mitigation program that replaces the existing Pre-Disaster Mitigation (PDM) program. The BRIC program aims to categorically shift the federal focus away from reactive disaster spending and toward research-supported, proactive investment in community resilience. FEMA anticipates BRIC funding projects that

demonstrate innovative approaches to partnerships, such as shared funding mechanisms, and/or project design.

+ ***CAL FIRE Grant Program(s)***

CAL FIRE offers a number of grant opportunities that can be used to fund various action items and initiatives developed as part of this CWPP. A full description of these grants can be found here: https://www.fire.ca.gov/grants/

- *California Climate Investments (CCI) Forest Health Program*
- *California Climate Investments (CCI) Urban & Community Forestry Grant Program*
- *California Climate Investments (CCI) Fire Prevention*
- *California Forest Improvement Program (CFIP)*
- *Volunteer Fire Assistance*

+ ***California Fire Safe Council, USFS State Fire Assistance (SFA) Grant Program***

Funding is provided through a master grant to California Fire Safe Council (CFSC) by the U.S. Forest Service to administer the Grants Clearinghouse program, with CFSC issuing sub-awards to successful applicants to support fire risk reduction activities by landowners in at-risk communities to restore and maintain resilient landscapes and create fire adapted communities. Funds should be utilized in the following categories: Hazardous fuels reduction and maintenance projects on non-federal land; Community Wildfire Protection Plans (CWPP) and other community hazard mitigation and planning; and Prevention and mitigation education and outreach opportunities for landowners and residents in at-risk communities

+ ***Sustainable Transportation Planning Grants***

The California Department of Transportation (Caltrans) provides two planning grant programs that could be used to support any transit system wildfire evacuation studies and/or evacuation planning.

- ***Sustainable Communities Grants*** – to encourage local and regional planning that furthers state goals, including, but not limited to, the goals and best practices cited in the Regional Transportation Plan Guidelines adopted by the California Transportation Commission.
- ***Strategic Partnerships Grants*** – to identify and address statewide, interregional, or regional transportation deficiencies on the State highway system in partnership with Caltrans. A sub-category funds transit-focused planning projects that address multimodal transportation deficiencies.

+ ***CAL OES Hazard Mitigation Grant Program (HMGP)***

Hazard Mitigation Grant Program (HMGP) funds plans and projects that reduce the effects of future natural disasters. In California, these funds are administered by the Cal OES HMGP Unit. Eligible sub-applicants include state agencies, local governments, special districts, and some private non-profits.

7.0 Monitoring

A CWPP's strength depends on collaboration, its relevance, and its ability to guide actions on the ground. This CWPP provides a foundation to guide the community in wildfire protection activities based on input from stakeholders, current policy, a science-based wildfire assessment, and the development of mitigation strategies.

This CWPP provides for continued multi-agency collaboration and cooperation for fire protection planning efforts in the Carpinteria-Summerland Fire Protection District. Effective monitoring of wildfire planning efforts provides important opportunities to evaluate the overall success of this plan in reducing wildfire risk. This plan should not end with its adoption, but should evolve through collaborative planning, implementation, monitoring and adapting strategies based on lessons learned.

The Fire Chief has the responsibility to conduct a review of this plan at a minimum of 5-year intervals to ensure its relevance. Significant changes in policy, budget, and/or environmental conditions may require a more frequent review.

The Action Plan is developed as a "tear out" and has a simple monitoring system built within it. Individual actions can be assigned a responsible individual, target completion date and status update. The Action Plan should be reviewed and updated annually. As new practices and projects are identified they can be added to this plan.

7.1 FUEL TREATMENT MONITORING AND MAINTENANCE

Monitoring of fuel treatments is the only way to know if activities on the ground are resulting in the goals of a more resilient landscape and the increased safety of people and property. Committing to a monitoring plan can lead to more effective fuels management program by providing an understanding of how treatments effect wildland fire spread or protect local values at risk.

Monitoring information should be used to:

+ Review the efficacy and cost effectiveness of a treatment.
+ Identify if modifications to particular treatment prescriptions are required.
+ Collect information regarding species response to treatments.
+ Provide information on what happens should a wildfire moves through a treatment.

There are essentially three phases of a monitoring plan: short-, medium-and long-term. Short-term monitoring addresses the immediate results of a treatment, while longer-term monitoring can provide information about the effectiveness, longevity or environmental effects of a treatment.

The Colorado Forest Restoration Institute has developed simple guidelines for photo monitoring https://cfri.colostate.edu/wp-content/uploads/sites/22/2018/10/2018-Simple-Plot-Protocol.pdf, (pages 11-13), which can be applied to any treatment unit, but which are most appropriate when applied to treatment which have some spatial extent.

8.0 CWPP Recommendations

The following tables are a consolidated list of priorities and recommendations that identify actions that the Fire District should consider in their efforts to reduce the wildfire threat to community assets. These items were developed from results of the public survey, wildfire assessments, public workshops, Core Group meetings, existing reports, and documents. This list of actionable items is intended to assist with decision-making, project tracking, accountability, and planning outcomes for this Plan.

The first table, Table 20, consists of action items that are applicable community wide. They focus on tasks such as developing partnerships, improving communication, educating the public, and code enforcement.

The second table, Table 21, contains site specific actions which have been identified by pre-attack zone using the existing CSFPD Pre-Attack Plan. A Pre-Attack Plan is a systematic approach for collecting, recording, and evaluating pre-fire management intelligence data for a given planning unit. The plan is designed for field-use and targeted to be a comprehensive source for incident commanders during the initial attack phase, as well as extended attack phases of suppression operations.

The CSFPD Pre-attack Plan identifies nine pre-attack zones (PAZ) as seen in Figure 36, which individually map ingress and egress roads, structures, and other values at risks as well as identifying assets to assist firefighters such as water supply locations, drop points and fuelbreaks.

Table 20. Community-Wide Actions

Community Wide Actions					
Objective	Action	Number	Responsible Official	Target Date	Status
A. Improve Coordination & Tracking Some public and private entities are currently taking actions to reduce wildfire intensity and provide greater community protection; however, the lack of a centralized point of contact for the Fire District or data management protocols has led to what is believed to be an	Establish working relationship with Santa Barbara County Fire, Montecito Fire Protection District and the U.S. Forest Service to collect fuel treatment information on SRA, FRA and adjacent jurisdictions to create a clearer picture of all hazard reduction work within and adjacent to the district	A-1	Wildland Specialist	Ongoing	

incomplete picture of all ongoing fuel treatment activities.	Establish a working relationship with non-fire agencies and private entities to collect hazard reduction spatial data. Outreach should include at a minimum: • CAL Trans • Santa Barbara County Public Works, Transportation Division • Southern California Edison • Cate School • Pacifica Institute • City of Carpinteria Public Works • Homeowner Associations • Santa Barbara County Parks • The Land Trust for Santa Barbara County	A-2	Wildland Specialist & GIS Staff	Ongoing	
B. Improve Evacuation Routes Fuel treatments adjacent to roads can reduce fire behavior along important travel routes.	Work to develop agreements with jurisdictional agencies and private landowners to establish fuel treatment zones along identified major evacuation routes.	B-1	Wildland Specialist & City Attorney & Fire District's Attorney		
	Identify jurisdictional agencies with Right-of-Way maintenance requirements and coordinate annual maintenance of the ROWs District-wide	B-2	Wildland Specialist	Annually	
	Research the establishment of local "Roads Associations" which would be used to develop alternative evacuation routes through multiple properties for neighborhoods with limited egress options	B-3	Wildland Specialist & City Attorney& Fire District's Attorney		
	Investigate the efficiency and public support for the use of herbicides to treat invasive species, along evacuation route rights-of-way.	B-4	Wildland Specialist		

	Work with relevant evacuation and transportation authorities in Santa Barbara County to conduct a wildfire evacuation analysis	B-5	Fire District, Police and Sheriff's Departments		
	Investigate methods for publicly identifying evacuation routes in Very-High/High Fire Hazard areas	B-6	Fire District		
C. Educate the Public on How to Mitigate Risk and Damage from Wildfire A challenge for all communities is how to generate interest and maximize awareness of the wildfire threat and encourage participation in preparing for a wildfire at an individual and community level. Public education is critical to community preparedness and citizens need to know where to obtain accurate information before an event occurs.	Provide community and/or homeowner/neighborhood training classes on wildfire preparedness	C-1	Wildland Specialist	Ongoing	
	Maintain and expand a voluntary inspection program where residents can request assistance from the Fire District personnel to provide more detailed information on home hardening techniques, defensible space, and fire safe landscaping.	C2	Fire District	Ongoing	
	Redesign CSFPD website to better organize wildfire prevention tab. Consider renaming to "Wildfire Safety". Include information on defensible space, fire safe landscaping, structural hardening components, WUI building construction requirements, Red Flag Warning Program, evacuation planning, post-fire rehabilitation and post-fire effects on flooding and soil erosion. Centralize information to allow users to obtain information from a single location.	C-3	Fire District Webmaster		

	Create a document with graphics, which clearly explains defensible space requirements found in PRC 4291 and Fire District specific requirements. Have information available on the website and as a handout. Include topics such as • Community Defensible Space • Mulch Free Zones adjacent to structures to reduce flammability	C-4	Wildland Specialist		
D. Improve Wildfire Preparedness Wildfire preparedness involves a range of actions that include the coordination of multiple governmental agencies and non-governmental organizations. Creating connectivity between agencies and organizations can strengthen the community's response to a significant wildfire.	Research the potential to develop an "Agricultural Pass" program to allow Ranch Managers or essential agricultural workers to pass through roadblocks so that agricultural resources can be maintained, and critical agricultural water sources can remain viable	D-1	City Attorney & Fire Chief & Fire District's Attorney		
	Work towards the development of a third CSFPD Station to decrease initial attack response times District wide as recommended in the current Standards of Coverage Study	D-2	Fire Chief		
	Develop a program to identify and address evacuation vulnerable populations within the District	D-3	Wildland Specialist & Santa Barbra County Public Health		

	Investigate the potential to use interconnecting "ranch roads" north of the community to assure fire suppression equipment can access wildfire prior to it entering more densely developed areas of the District. Look to develop a "Roads Association" for road maintenance if feasible.	D-4	Wildland Specialist		
	Explore developing a local ordinance for the Fire District that provides minimum standards for Community Defensible Space, a practice where adjacent landowners design and implement fuel treatments in critical zones to protect groups of structures. This would also include providing educational opportunities to better inform residents on the benefits of this practice, as well as, exploring opportunities to provide financial assistance for implementation.	D-5	Fire Chief and City Attorney		
E. Increase Structural Hardening The 2019 California Building Code and amendments requires new development and properties completing alterations to meet WUI Fire Area construction standards; however, there are still a large percentage of structures within the WUI Fire Areas built prior to 2008 WUI building construction standards that are vulnerable to loss from wildfire. The cost of retrofitting existing structures with wildfire safety improvements can be significant, but retrofitting structures combined with adequate defensible space will make a difference in whether a structure survives a wildfire.	Research Senate Bill 465 to determine if the Fire District's WUI Fire Areas are eligible for PACE program financing to help property owners retrofit existing non-conforming structures to current WUI building construction requirements	E-1	Wildland Specialist		
	Seek grant funding opportunities that may be available to property owners to help retrofit existing non-conforming structures to current WUI building construction standards.	E-2	Wildland Specialist		
	Research opportunities to incentivize property-owners to harden structures through tax breaks, cost sharing and/or insurance incentives	E-3	Wildland Specialist		

	Update and clarify language in the current on-line version of "Vegetation Management Plan – Development Standard #6". Consider providing an example plan to show the level of detail expected of submitted VMPs	E-4	Wildland Specialist		
	Explore efforts with Southern California Edison to develop public/private partnerships which educate the public and fund structural hardening activities. Examples may include • Inventory of homes that would benefit from structural hardening • Homeowner self-assessments • Demonstration projects focused on structural hardening	E-5	Wildland Specialist		
F. Treat Vegetation to Reduce Wildfire Hazard Treatment of vegetation within the wildland urban interface can reduce the risk of loss and damage from wildfire. The greatest responsibility for the protection of improvements in the community rests with the individual property-owner through the development of adequate defensible space.	Coordinate with Santa Barbara County Fire, U.S. Forest Service and Montecito Fire Protection District to determine the viability of maintaining existing fire breaks from the Zaca and Thomas fires as part of a community defense network above Carpinteria-Summerland	F-1	Wildland Specialist		
	Coordinate with landowners concerning the interest in implementing proposed fuels treatment projects that exist within the District GIS database. Where landowners are interested, develop an MOU for the implementation of the work pending available funding and staffing	F-2	Wildland Specialist		
	Seek funding to expand the existing successful chipping program into new neighborhoods	F-3	Wildland Specialist		

	Look for opportunities for connecting fuel treatments to agricultural lands in order to create a barrier to fire spread above the communities	F-4	Wildland Specialist		
G. Improve Enforcement of Defensible Space Standards Defensible Space, Home Ignition Zone concepts and Fire District codes outlined in Section 6.4.2, Reducing Structure Ignitability when applied to the community will increase structure survivability.	Within the Wildland Urban Interface enforce California Public Resources Code 4291 requirements for defensible space. Continue existing inspection program that focuses on property-owner education for the initial two years prior to enforcement. Target 50% of properties in the WUI for annual inspections.	G-1	Fire Chief		
	Encourage development of Community Defensible Space where adjacent landowners design and implement fuel treatments to protect groups of homes. Treatments consider how vegetation and topography affects fire behavior regardless of property boundaries.	G-2	Wildland Specialist		
	Investigate opportunities to incentivize the removal of undesired non-native species within Defensible Space management zones. The City of Santa Barbara maintains an extensive list of plants which could be targeted for removal in High Fire Hazard Severity Areas	G-3	Wildland Specialist		
	Consider requiring incorporation of “High Fire Hazard Area Landscape Requirements” similar to those found in City of Santa Barbara Ordinance #5920	G-4	Fire Chief		
	Develop fire safe landscape standards to ensure compliance with defensible space requirements within the WUI Fire Areas.	G-5	Wildland Specialist		

	Utilize Senate Bill 190 to support the development of the defensible space enforcement program.	G-6	Wildland Specialist		
	Develop a staffing plan to support defensible space enforcement and seek funding to implement the plan	G-7	Wildland Specialist		

Table 21. Actions by Pre-Attack Zones

Actions by Pre-Attack Zone					
1. Summerland Pre-attack Zone					
Objective	Action	Tracking Number	Responsible Official	Target Date	Status
Maintain primary evacuation routes in a condition that facilitates the egress of residents and improves access and tactical options for firefighters.	Identify and work with the jurisdictional authority to maintain vegetation along Greenwell Avenue, Asegra Road and Hunt Road in a condition that reduces potential fire intensity	S-1	Wildland Specialist		
Facilitate the establishment of Community Defensible Space	Seek funding to continue and expand the existing neighborhood chipping program in higher density neighborhoods of Summerland south of Greenwell Avenue.	S-2	Wildland Specialist		
	Work with willing property owners along the northwest side of Ortega Ridge Road to facilitate the expansion of defensible space beyond the required 100'. Seek opportunities where adjacent landowners can connect treated areas to develop a community level defensible space program.	S-3	Wildland Specialist		
	Seek funding and work with willing property owners to maintain or remove non-native pines immediately behind the structures north of Whitney Avenue.	S-4	Wildland Specialist		
Create and maintain landscape level fuel treatment to better protect the community from wildfire	Continue to partner with Montecito Fire Protection District to implement a fuel treatment project northwest of Ortega Ridge Road above Romero Creek	S-5	Wildland Specialist		

Protect Critical Infra-structure	Coordinate with Southern California Edison and Montecito Water District to assure that adequate access and defensible space is maintained around water facilities, transmission and distribution lines, substations and future battery storage facilities.	S-6	Wildland Specialist, SCE & Montecito Water District		
2. Ladera Lane Pre-attack Zone					
Objective	Action	Tracking Number	Responsible Official	Target Date	Status
Maintain primary evacuation routes in a condition that facilitates the egress of residents and improves access and tactical options for firefighters.	Identify and work with the jurisdictional authority to maintain vegetation along Ladera Lane, Hidden Valley Road, Viola Lane, Bella Vista and East Valley Road in a condition that reduces potential fire intensity	LL-1	Wildland Specialist		
	Work with Santa Barbara County Department of Public Works to establish clear road signage off Ladera Canyon Road. Unnamed or unsigned road junctions create potential structure defense and evacuation notification issues.	LL-2	Wildland Specialist & Public Works Department		
	Perform inspections working north to south within the zone to identify “long driveways” that do not meet standards for fire equipment access. Work with property owners to reduce fuel loading along the drives and assure that required vertical clearance exists.	LL-3	Fire District		
	Maintain existing roadside fuel treatments, Ladera-Toro Connector, Bella Vista and Hidden Valley. Look for opportunities to create depth with the fuel treatments by establishing additional treated areas between road switchbacks. Property owner approval would be required for this additional work.	LL-4	Wildland Specialist		

Facilitate the establishment of Community Defensible Space	Seek funding to continue and expand the existing neighborhood chipping program along Ladera Lane, East Valley Road, Hidden Valley and Viola Lane.	LL-5	Wildland Specialist		
	Work with willing property owners along Viola Lane and on the long driveways off the north end of Ladera Lane to expand "defensible space" treatments on their property. The objective is to create a modified fuel zone above the community between Ladera Lane and Toro Canyon. Seek funding or provide incentives for willing participants.	LL-6	Wildland Specialist		
Create and maintain landscape level fuel treatment to better protect the community from wildfire	Continue to partner with Montecito Fire Protection District to integrate fuel treatment projects along Bella Vista Road and Ladera Lane.	LL-7	Wildland Specialist		
	As funding allows, maintain existing Ladera-Vedanta fuel treatment and implement Ladera/East Valley dead tree removal project.	LL-8	Wildland Specialist		
	Establish contact with Land Trust of Santa Barbara County concerning implementing fuel treatment actions on the Cima del Mundo Conservation Easement. Project design should include protection and enhancement of sensitive environmental habitats as well as fire hazard mitigation.	LL-9	Wildland Specialist		
Protect Critical Infra-structure	Work with Montecito Water District to assure that adequate access and defensible space is maintained around their treatment facility and reservoir off of Bella Vista Road	LL-10	Montecito Water District & Wildland Specialist		
3. East Valley - Torito Pre-attack Zone					
Objective	Action	Tracking Number	Responsible Official	Target Date	Status

Maintain primary evacuation routes in a condition that facilitates the egress of residents and improves access and tactical options for firefighters.	Identify and work with the jurisdictional authority to maintain vegetation along Freehaven and Torito Roads in a condition that reduces potential fire intensity.	EVT-1	Wildland Specialist		
	Assure that annual clearance of vegetation near the two wooden road bridges on Torito Road to limit the potential of damage during a wildfire.	EVT-2	Wildland Specialist & Public Works Department		
	Establish contact with interested residents on Torito Road concerning the formation of an "association" to maintain roadside vegetation.	EVT-3	Wildland Specialist		
	Work with Santa Barbara County Public Works to establish road names and signage for unnamed roads east of Highway 192.	EVT-4			
Facilitate the establishment of Community Defensible Space	Seek funding to continue and expand the existing neighborhood chipping program within the PAZ.	EVT-5	Wildland Specialist		
	Work with willing property owners along Torito, Freehaven, and east of Highway 192 to facilitate the expansion of defensible space beyond the required 100' to develop a community level defensible space program.	EVT-6	Wildland Specialist		
	Seek funding and work with willing property owners to remove non-native pines, eucalyptus, acacia and other undesirable tree and shrub species within higher density neighborhoods of Torito Road, Freehaven Drive and Macadamia Lane.	EVT-7	Wildland Specialist		
Create and maintain landscape level fuel treatment to better	Continue to seek funding for existing proposed roadside fuel treatments along Torito and East Valley	EVT-8	Wildland Specialist		

protect the community from wildfire	Contact large parcel owner (155-140-003) regarding willingness to support the expansion of defensible space east of the structures along Highway 192 between Toro Canyon Park Road on the north and agricultural lands to the south. Utilize existing road system to provide fuel treatment depth	EVT-9	Wildland Specialist		
4. Toro Canyon Pre-attack Zone					
Objective	Action	Tracking Number	Responsible Official	Target Date	Status
Increase citizen awareness of fire risk and the need to prepare for wildfire events.	Work with property owners along Upper Toro Canyon Road, Romero Canyon Road to assist in development of site-specific evacuation plans. Assist in the identification of potential Temporary Refuge Areas should the need arise to shelter in place during a wildfire. Assure that domestic/landscape/agricultural personnel commonly working at these properties are accounted for.	TC-1	Wildland Specialist & Montecito Wildland Specialist		
	Contact property owners on Upper Toro Canyon Road and Romero Canyon Road to identify water sources and pumping infra-structure. Update pre-attack maps to reflect this information.	TC-2	Wildland Specialist		
Maintain primary evacuation routes in a condition that facilitates the egress of residents and improves access and tactical options for firefighters.	Identify and work with the jurisdictional authority to maintain vegetation along Toro Canyon Road right-of-way in a condition that reduces potential fire intensity.	TC-3	Wildland Specialist		
	Continue to seek funding for existing and proposed roadside fuel treatments along Upper Toro Canyon, Bella Vista and Viola Roads.	TC-4	Wildland Specialist		

	Work with Santa Barbara County Public Works to establish road signage for Viola Road off of Toro Canyon Road. Establish road names and signage for unnamed roads east of Toro Canyon Road between Vista Linda and Viola Road.	TC-5	Wildland Specialist		
Facilitate the establishment of Community Defensible Space	Seek funding and work with willing property owners to remove non-native pines, eucalyptus, acacia and other undesirable tree and shrub species within higher density neighborhood of Vista Linda and Lower Toro Canyon Roads	TC-6	Wildland Specialist		
	Seek funding to continue and improve the existing neighborhood chipping program within the Pre-attack zone, especially along Lower Toro Canyon Road and the Vista Linda neighborhood. Advertise widely that No Agricultural Waste will be chipped.	TC-7	Wildland Specialist		
Protect critical infra-structure	Coordinate with Southern California Edison field representatives to assure that inspection and maintenance of transmission and distribution lines in Toro Canyon are maintained to CPUC standards.	TC-8	Wildland Specialist & SCE	Annually	
	Work with Montecito Water District to assure the Buell pump station and Doulton Treatment facility are defensible during a wildfire.	TC-9	Montecito Water District & Wildland Specialist		
5. La Mirada Pre-attack Zone					
Objective	Action	Tracking Number	Responsible Official	Target Date	Status
Maintain primary evacuation routes in a condition that facilitates the egress of residents	Establish an MOU with the jurisdictional roads agency to maintain vegetation within established right-of-ways of Arriba, La Mirada, Paquita Drive and Ocean Oaks Road.	LM-1	Wildland Specialist		

and improves access and tactical options for firefighters.	Work with property owners with structures accessed on long driveways from Arriba Road, Ocean Oaks and Cravens Lane to assure that adequate clearance is established and maintained to allow for fire equipment access	LM-2	Wildland Specialist		
Facilitate the establishment of Community Defensible Space	Seek funding to expand and improve the existing neighborhood chipping program to Ocean Oaks Road and Craven Lane. Publicize widely that "No Agricultural Waste" will be treated.	LM-3	Wildland Specialist		
	Work with willing property owners to facilitate the expansion of defensible space beyond the required 100' and seek opportunities where adjacent landowners can connect treated areas to develop a community level defensible space program	LM-4	Wildland Specialist		
Create and maintain landscape level fuels treatment to better protect the community from wildfire	Develop the ridgetop fuels treatment running east-west from the agricultural lands at the top of Cravens Lane to the structures on the long driveway south of Toro Canyon Park Road identified as "planned" on both the Toro Park and La Mirada PAZ maps. Private landowner, and Forest Service agreements will need to be established.	LM-5	Wildland Specialist		
6. Toro Park Pre-attack Zone					
Objective	Action	Tracking Number	Responsible Official	Target Date	Status
Maintain primary evacuation routes in a condition that facilitates the egress of residents	Establish an MOU with the jurisdictional roads agency to maintain vegetation within established right-of-ways of Toro Canyon Park Road.	TP-1	Wildland Specialist & City Attorney		

and improves access and tactical options for firefighters.	Work with property owners with structures accessed on long driveways and private roads from Toro Canyon Park Road to assure that adequate clearance is established and maintained to allow for fire equipment access	TP-2	Wildland Specialist		
Facilitate the establishment of Community Defensible Space	Seek funding to expand and improve the existing neighborhood chipping program to homeowners within the Toro Park PAZ.	TP-3	Wildland Specialist		
Create and maintain landscape level fuels treatment to better protect the community from wildfire	Develop the ridgetop fuels treatment running east-west from the agricultural lands at the top of Cravens Lane to the structures on the long driveway south of Toro Canyon Park Road. It is identified as “planned” on both the Toro Park and La Mirada PAZ maps. Private landowner, and Forest Service agreements will need to be established.	TP-4	Wildland Specialist		
	Form road associations with landowners to identify and fund maintenance of existing private agriculture road systems. These roads would be used for fire fighter access and as strategic fire control points. Opportunities exist along the northern and eastern edge of the PAZ.	TP-5	Wildland Specialist		
Protect critical infra-structure	Coordinate with Southern California Edison to assure that inspection and maintenance of transmission and distribution lines along the northern edge of the PAZ are maintained to CPUC standards.	TP-6	Wildland Specialist & SCE	Annually	
7. Santa Monica Pre-attack Zone					
Objective	Action	Tracking Number	Responsible Official	Target Date	Status
Maintain primary evacuation routes in a condition that facilitates the egress of residents	Establish an MOU with the jurisdictional roads agency to maintain vegetation within established right-of-ways of Santa Monica Road.	SM-1	Wildland Specialist & City Attorney		

and improves access and tactical options for firefighters.	Work with property owners with structures accessed by long driveways and private roads from Foothill Road to assure that adequate clearance is established and maintained to allow for fire equipment access	SM-2	Wildland Specialist		
Facilitate the establishment of Community Defensible Space	Seek funding to expand and improve the existing neighborhood chipping program for residents within the PAZ.	SM-3	Wildland Specialist		
	Work with willing property owners to facilitate the expansion of defensible space beyond the required 100'. Seek opportunities where adjacent landowners can connect treated areas to develop a community level defensible space program.	SM-4	Wildland Specialist		
Create and maintain landscape level fuels treatment to better protect the community from wildfire	Develop and maintain the proposed ridgetop fuel treatment that utilizes 2007 Zaca firelines. It is located along the ridgeline south of Carpinteria Creek on the northern edge of the PAZ.	SM-5	Wildland Specialist		
	Form road associations with landowners to identify and fund maintenance of existing private agriculture road systems. These roads would be used for fire fighter access and as strategic fire control points. Opportunities exist along the northern edge of the PAZ	SM-6	Wildland Specialist		
Protect critical infra-structure	Contact Southern California Edison field representatives to assure that inspection and maintenance of transmission and distribution lines along the northern and eastern edge of the PAZ are maintained to CPUC standards.	SM-7	Wildland Specialist	Annually	
	Work with Carpinteria Valley Water District to assure the Rancho Monte Alegra Water Tank is defensible during a wildfire.	SM-8	Wildland Specialist& Water District	Annually	
8. Foothill East Pre-attack Zone					

Objective	Action	Tracking Number	Responsible Official	Target Date	Status
Maintain primary evacuation routes in a condition that facilitates the egress of residents and improves access and tactical options for firefighters.	Work with property owners with structures accessed on long driveways and private roads from Foothill and Casitas Pass Roads to assure that adequate clearance is established and maintained to allow for fire equipment access	FH-1	Wildland Specialist		
Create and maintain landscape level fuels treatment to better protect the community from wildfire	Develop and maintain the proposed ridgetop fuel treatment that utilizes 2007 Zaca firelines. It is located along the divide south of Carpinteria Creek on the northern edge of the PAZ.	FH-2	Wildland Specialist		
	Form road associations with landowners to identify and fund maintenance of existing private agriculture road systems. These roads would be used for fire fighter access and as strategic fire control points. Opportunities exist along the northern edge of the PAZ.	FH-3	Wildland Specialist		
Protect critical infra-structure	Work with Carpinteria Valley Water District to assure infrastructure at Foothill Reservoir is defensible during a wildfire.	FH-4	Wildland Specialist & Water District		
9. Lillingston Pre-attack Zone					
Objective	Action	Tracking Number	Responsible Official	Target Date	Status
Maintain primary evacuation routes in a condition that facilitates the egress of residents and improves access and tactical options for firefighters.	Establish an MOU with the jurisdictional roads agency to maintain vegetation within established right-of-ways of Shepard Mesa, Gobernador Canyon, Cate Mesa and Lillingston Canyon Roads.	L-1	City Attorney & Fire Chief		
	Work with willing property owners to identify and develop an evacuation route across private property that links Shepard Mesa Lane to Gobernador Canyon Road	L-2	Wildland Specialist & City Attorney		

Facilitate the establishment of Community Defensible Space	Seek funding to continue and expand the existing neighborhood chipping program along Shepard Mesa Road and with other residents within the PAZ.	L-3	Wildland Specialist		
	Work with willing property owners to facilitate the expansion of defensible space beyond the required 100'. Seek opportunities where adjacent landowners can connect treated areas to develop a community level defensible space program in the Shepard Mesa neighborhood and Cate School.	L-4	Wildland Specialist		
	Seek funding and work with willing property owners to remove non-native pines, eucalyptus, acacia and other undesirable tree and shrub species within high density neighborhood of Shepard Mesa.	L-5	Wildland Specialist		
Create and maintain landscape level fuels treatment to better protect the community from wildfire	Develop and maintain the proposed ridgetop fuel treatment that utilizes 2007 Zaca firelines. It is located along the divide between Gobernador and Carpinteria Creeks	L-6	Wildland Specialist		
	Form road associations with landowners to identify and fund maintenance of existing private agriculture road systems. These roads would be used for fire fighter access and as strategic fire control points. Opportunities exist along the northern edge of the PAZ.	L-7	Wildland Specialist		
Protect critical infra-structure	Coordinate with Southern California Edison to assure that inspection and maintenance of transmission and distribution lines along the northeastern edge of the PAZ are maintained to CPUC standards.	L-8	Wildland Specialist		
	Work with Carpinteria Valley Water District to assure the Shepard Mesa Water Tank is defensible during a wildfire.	L-9	Wildland Specialist & Water District		

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Appendices
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Appendix A. *Glossary*

The following provides terms or words found in or relating to this plan (additional terms are available at http://www.nwcg.gov/glossary):

- ***1-Hour Timelag Fuels (a.k.a., one-hour fuels):*** Fuels consisting of dead herbaceous plants and roundwood less than about ¼ inch (6.4 mm) in diameter. Also included is the uppermost layer of needles or leaves on the forest floor.
- ***10-Hour Timelag Fuels (a.k.a. ten-hour fuels):*** Dead fuels consisting of roundwood ¼ to l inch (0.6 to 2.5 cm) in diameter and, very roughly, the layer of litter extending from immediately below the surface to ¾ inch (1.9 cm) below the surface.
- ***100-Hour Timelag Fuels (a.k.a., hundred-hour fuels):*** Dead fuels consisting of roundwood in the size range of 1 to 3 inches (2.5 to 7.6 cm) in diameter and very roughly the layer of litter extending from approximately ¾ of an inch (1.9 cm) to 4 inches (10 cm) below the surface.
- ***1,000-Hour Timelag Fuels (a.k.a., thousand-hour fuels):*** Dead fuels consisting of roundwood 3 to 8 inches in diameter and the layer of the forest floor more than 4 inches below the surface.
- ***Active Crown Fire:*** A fire in which a solid flame develops in the crowns of trees, but the surface and crown phases advance as a linked unit dependent on each other.
- ***Aspect:*** Direction a slope faces.
- ***Canopy Spacing:*** The distance from the edge of one tree canopy to another. Crown spacing varies from open (with 10 feet or more of space between tree canopies) to closed (where trees may be growing in very close proximity with little space between them).
- ***Crown Fire:*** A fire that advances from top to top of trees or shrubs more or less independent of a surface fire. Crown fires are sometimes classed as running or dependent to distinguish the degree of independence from the surface fire.
- ***Dead Fuels***: Fuels with no living tissue in which moisture content is governed almost entirely by atmospheric moisture (relative humidity and precipitation), dry-bulb temperature, and solar radiation.
- ***Direct Attack:*** A method of fire suppression where actions are taken directly along the fire's edge. In a direct attack, burning fuel is treated directly, by wetting, smothering, or chemically quenching the fire or by physically separating burning from unburned fuel.
- ***Fire Apparatus Access Roads -*** The means for emergency apparatus to access a facility or structure for emergency purposes. Roadways must extend to within 150 feet of all portions of the exterior of the first floor of any structure and must meet specified criteria for width, pavement characteristics, roadway gradient, turning radius, etc. Fire apparatus access roads are also referred to as fire lanes.
- ***Fire Behavior:*** The manner in which a fire reacts to the influences of fuel, weather, and topography.
- ***Fire Frequency:*** Temporal fire occurrence described as a number of fires occurring within a defined area within a given time period.
- ***Fire Intensity:*** A general term relating to the heat energy released by a fire.
- ***Fire Lane Identification -*** Signs or curb markings that allow fire apparatus access roads to be readily recognized so that they will remain unobstructed and available for emergency use at all times.

- ***Fire Potential:*** The likelihood of a wildland fire event measured in terms of anticipated occurrence of fire(s) and management's capability to respond. Fire potential is influenced by a sum of factors that includes fuel conditions (fuel dryness and/or other inputs), ignition triggers, significant weather triggers, and resource capability.
- ***Fire Regime:*** The characterization of fire's role in a particular ecosystem, usually characteristic of particular vegetation and climatic regime, and typically a combination of fire return interval and fire intensity (i.e., high frequency, low intensity/low frequency, high intensity).
- ***Fire Return Interval:*** The length of time between fires on a particular area of land
- ***Fire Weather:*** Weather conditions that influence fire ignition, behavior, and suppression.
- ***Flame Length:*** The distance from the base to the tip of the flaming front. Flame length is directly correlated with fire intensity.
- ***Flaming Front:*** The zone of a moving fire where combustion is primarily flaming. Behind this flaming zone combustion is primarily glowing. Light fuels typically have a shallow flaming front, whereas heavy fuels have a deeper front.
- ***Fuel:*** Any combustible material, which includes but is not limited to living or dead vegetation, human-built structures, and chemicals that will ignite and burn.
- ***Fuelbed:*** An array of fuels usually constructed with specific loading, depth, and particle size to meet experimental requirements; also, commonly used to describe the fuel composition.
- ***Fuel Loading:*** The amount of fuel present expressed quantitatively in terms of weight of fuel per unit area.
- ***Fuel Model:*** Mathematical descriptions of fuel properties (e.g., fuel load and fuel depth) that are used as inputs to calculations of fire danger indices and fire behavior potential***.***
- ***Fuel Moisture Content:*** The quantity of moisture in fuels expressed as a percentage of the weight when thoroughly dried at 212 degrees Fahrenheit.
- ***Fuel Type:*** An identifiable association of fuel elements of a distinctive plant species, form, size, arrangement, or other characteristics that will cause a predictable rate of fire spread or difficulty of control under specified weather conditions.
- ***Gates and Barriers*** - Devices that restrict pedestrian and vehicle ingress and egress to and from a facility.
- ***Gate and Barrier Locks*** - Devices that are installed on gates and barriers to secure a property or facility.
- ***Goals:*** A goal is a broad statement of what you wish to accomplish, an indication of program intentions.
- ***Ground Fire:*** Fire that consumes the organic material beneath the surface litter ground, such as a peat fire.
- ***Hose Pull*** - The effective distance (150 feet is standard) that firefighters can drag a hose from fire apparatus to attack a fire. Hose pull is measured along a simulated path of travel accounting for obstructions and not "as the crow flies."
- ***Intensity:*** The level of heat radiated from the active flaming front of a fire, measured in British thermal units (BTUs) per foot.
- ***Ladder Fuels:*** Fuels that provide vertical continuity between strata, thereby allowing fire to carry from surface fuels into the crowns of trees or shrubs with relative ease. Ladder fuels help initiate and ensure the continuation of crowning.

- ***Local Responsibility Area (LRA)*** – Land where a city/county has primary financial responsibility for the prevention and suppression of wildland fires. LRA land is generally located within city boundaries.
- ***Live Fuels:*** Living plants, such as trees, grasses, and shrubs, in which the seasonal moisture content cycle is controlled largely by internal physiological mechanisms, rather than by external weather influences.
- ***Mid-flame Windspeed:*** The speed of the wind measured at the midpoint of the flames, considered to be most representative of the speed of the wind that is affecting fire behavior.
- ***Objectives:*** They contribute to the fulfillment of specified goals and are measurable, defined, and specific.
- ***Passive Crown Fire:*** Also called torching or candling. A fire in the crowns of trees in which single trees or groups of trees torch, ignited by the passing front of the fire.
- ***Safety Zone:*** A preplanned area of sufficient size and suitable location in the wildland expected to prevent injury to fire personnel without using fire shelters.
- ***Red Flag Warning:*** Term used by fire weather forecasters to alert forecast users to an ongoing or imminent critical fire weather pattern.
- ***Riparian:*** Situated or taking place along or near the bank of a watercourse.
- ***Spotting:*** Refers to the behavior of a fire producing sparks or embers that are carried by the wind and start new fires beyond the zone of direct ignition by the main fire***.***
- ***State Responsibility Area (SRA) –*** Land where the State of California (i.e. CALFIRE) has primary financial responsibility for the prevention and suppression of wildland fires. All SRA land is located within County unincorporated areas; SRA does not include lands within city boundaries or in federal ownership
- ***Strategy:*** The general plan or direction selected to accomplish incident objectives.
- ***Surface Fire:*** Fire that burns loose debris on the surface, which includes dead branches, leaves, and low vegetation.
- ***Surface Fuels:*** Fuels lying on or near the surface of the ground, consisting of leaf and needle litter, dead branch material, downed logs, bark, tree cones, and low stature living plants.
- ***Topography:*** Referred to as “terrain.” The term also refers to parameters of the “lay of the land” that influence fire behavior and spread. Key elements are slope (in percent), aspect (the direction a slope faces), elevation, and specific terrain features such as canyons, saddles, “chimneys,” and chutes.
- ***Understory:*** Term for the area of a forest which grows at the lowest height level below the forest canopy. Plants in the understory consist of a mixture of seedlings and saplings of canopy trees together with understory shrubs and herbs.
- ***Values at Risk:*** People, property, ecological elements, and other human and other intrinsic values within the City. Values at Risk are identified by stakeholders as important to the way of life in the City and are particularly susceptible to damage from undesirable fire outcomes.
- ***Very High Fire Hazard Severity Zone (VHFHSZ)*** – A designated area in which the type and condition of vegetation, topography, fire history, and other relevant factors increase the possibility of uncontrollable wildland fire. Structures within a VHFHSZ require special construction features to protect against wildfire hazards; please consult with the local building department and refer to CBC Chapter 7A for specific requirements
- ***Wildland Fire Environment:*** The surrounding conditions, influences, and modifying forces of fuels, topography, and weather that determine wildfire behavior.

- ***Wildfire Risk Area*** – Land that is covered with vegetation, which is so situated or is of such an inaccessible location that a fire originating upon it would present an abnormally difficult job of suppression or would result in great or unusual damage through fire, or such areas designated by the fire code official. For purposes of this document, Wildfire Risk Area includes Very High Fire Hazard Severity Zones (see above), Wildland-Urban Interfaces (WUI), and similarly hazardous areas

Appendix B. *Relevant Federal, State and Local Regulations & Policies*

This appendix provides a detailed list and summary of the federal, state, county, and city level policies and regulations that pertain to this CWPP.

B.1 FEDERAL LEVEL POLICY

+ ***Disaster Mitigation Act (2000–present)***

  Section 104 of the Disaster Mitigation Act of 2000 (Public Law 106-390) enacted Section 322 - Mitigation Planning of the Robert T. Stafford Disaster Relief and Emergency Assistance Act - that created incentives for state and local entities to coordinate hazard mitigation planning and implementation efforts, and is an important source of funding for fuels mitigation efforts through federal hazard mitigation grants.

+ ***National Incident Management System (NIMS)***

  NIMS provides a systematic, proactive approach to guide government agencies, nongovernmental organizations, and the private sector to work together to prevent, respond to, recover from, and mitigate the effects of incidents, regardless of cause, size, location, or complexity, in order to reduce the loss of life and property and harm to the environment. The NIMS improves a community's ability to prepare for and respond to potential incidents and hazard scenarios.

+ ***National Fire Plan (NFP) 2000***

  In 2000 dry climatic conditions resulted in a historic number of wildland fires within the United States (mainly the Western U.S.) It is estimated that 7.2 million acres, nearly double the 10-year average burned. Costs in damages including fire suppression activities were approximately 2.1 billion dollars. Congressional direction called for substantial new appropriations for wildland fire management. This resulted in action plans, interagency strategies, and the Western Governor's Association's, "A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment - A 10-Year Comprehensive Strategy - Implementation Plan". This collectively became known as the National Fire Plan. This plan places a priority on collaborative work within communities to reduce their risk from large-scale wildfires.

+ ***National Cohesive Wildland Fire Management Strategy (2009)***

  The National Cohesive Wildland Fire Management Strategy is a strategic push to work collaboratively among all stakeholders and across all landscapes, using best science, to make meaningful progress towards the three goals: resilient landscapes, fire adapted communities, and safe and effective wildfire response. Its vision is to safely and effectively extinguish wildfire when needed; use wildfire where allowable; manage our natural resources; and as a nation, to live with wildland fire.

+ ***National Fire Protection Association***

  The NFPA maintains numerous codes and standards that provide direction on development in the WUI including:

  - NFPA 1, Fire Code, Chapter 17
  - NFPA 1141, Standard for Fire Protection Infrastructure for Land Development in Suburban and Rural Areas
  - NFPA 1142, Standard on Water Supplies for Suburban and Rural Fire Fighting
  - NFPA 1143, Standard for Wildland Fire Management

- NFPA 1144, Standard for Reducing Structure Ignition Hazards from Wildland

B.2 STATE LEVEL POLICY

+ ***California Strategic Fire Plan 2018***

The Strategic Fire Plan is one of the preeminent policies specified by the Board of Forestry and Fire Protection's (Board). The Board has adopted these Plans since the 1930s and periodically updates them to reflect current and anticipated needs. Over time, as the environmental, social, and economic landscape of California's wildlands has changed, the Board has evolved the Strategic Fire Plan to better respond to these changes and to provide CAL FIRE with appropriate guidance "…for adequate statewide fire protection of state responsibility areas" (PRC § 4130). This 2018 Plan reflects CAL FIRE's focus on (1) fire prevention and suppression activities to protect lives, property, and ecosystem services, and (2) natural resource management to maintain the state's forests as a resilient carbon sink to meet California's climate change goals and to serve as important habitat for adaptation and mitigation.

+ ***CAL FIRE Strategic Fire Plan 2019***

This plan reinforces the Goals supporting the CAL FIRE Mission, Vision, and Values. The following Goals are equally important, and all will be acted on simultaneously: 1. Improve core capabilities. 2. Enhance internal operations. 3. Ensure health and safety. 4. Build an engaged, motivated and innovative workforce. These goals meet California Department of Forestry and Fire Protection mission which serves and safeguards the people and protects the property and resources of California.

+ ***California State Multi-Hazard Mitigation Plan (Version 2013; update in progress)***

The purpose of the State Multi-Hazard Mitigation Plan (SHMP) is to significantly reduce deaths, injuries, and other losses attributed to both natural and human-caused hazards in California. The SHMP provides guidance for hazard mitigation activities emphasizing partnerships among local, state, and federal agencies as well as the private sector.

+ ***Public Resource Code Sections 4125-4137 – Fire Protection Responsibilities***

This policy defines suppression and prevention roles and responsibilities of agencies within and across administrative boundaries. Fire protection responsibility area designations directly correlate to specific financial responsibility for wildfire prevention and suppression actions. Area mutual aid agreements and assistance agreements are reviewed on a regular (annual) basis, to ensure accuracy in updates and procedures.

+ ***Public Resource Code Sections 4201-4204 – Fire Hazard Severity Zones***

Requires CAL FIRE to classify lands within State Responsibility Areas in accordance with the severity of fire hazard present for the purpose of identifying measures to be taken to slow wildfire rates of spread and to reduce the potential intensity of uncontrolled fires that threaten to destroy resources, life, or property. These measures are part of an overall strategy to implement community adaptability in the wildfire environment.

+ ***Public Resources Code Section 4291 and California Code of Regulations (CCR) 1299.1***

A state law, effective in January 2019, this section requires 100-foot defensible space clearance around homes and structures for wildfire protection, but not beyond the property line. The code applies to all lands that have flammable vegetation. The regulations include several requirements for how the vegetation surrounding buildings and structures should be managed to create defensible space.

+ ***Public Resources Code 4292-93, 4296 and 14 CCR 1256: Fire Prevention for Electrical Utilities***

These statutes and regulations address the vegetation clearance standards for electrical utilities. They include the standards for clearing around energy lines and conductors such as power line hardware and power poles. These regulations are critical to wildland fire safety because of the substantial number of power lines in wildlands, the historic source of fire ignitions associated with power lines, and the extensive damage that results from wildfires caused by power lines in severe wind conditions.

+ ***Public Resource Code Section 4296.5 – Board of Directors– CCR 1290 Railroad Right-Of-Ways***

Established in 1999, this code empowers the Board Director to adopt regulations establishing fire prevention and hazard reduction standards that any Railroad Corporation or person owning a Railroad in this state must abide by. The resulting formulated PRC 4296.5 regulations are found in the California Code of Regulations (CCR's), Title 14; Article 2; Sections 1290 through 1295.

+ ***Public Resource Code Section 4421-4446 – Prohibited Activities***

This series of codes specifies the prohibited human actions regarding setting fire or causing fire to be set to any forest, brush, or other flammable material which is on any land that is not his own, or under his legal control, without the permission of the owner, lessee, or agent of the owner or lessee of the land. Proper burn permitting needs are identified. Prohibited actions involving use of noncompliant industrial and/or mechanical equipment is also cited.

+ ***Public Resources Code 4741 - Wildland Fire Prevention and Vegetation Management***

In accordance with policies established by The Board, CAL FIRE shall assist local governments in preventing future wildland fire and vegetation management problems by making its wildland fire prevention and vegetation management expertise available to local governments to the extent possible within the department's budgetary limitations. Department of Forestry recommendations shall be advisory in nature and local governments shall not be required to follow such recommendations.

+ ***California Code of Regulations Title 24***

California's building regulations and standards are contained within Title 24 of the California Code of Regulations (CCR) published by the California Building Standards Commission. These are regulations passed by California agencies charged with enforcing the state's various laws and requirements for builders and property owners. Title 24 includes all regulations for how buildings are designed and constructed and are intended to ensure the maximum structural integrity and safety of private and public buildings. It contains requirements for the structural, mechanical, electrical and plumbing systems, and requires measures for energy conservation, green design, construction and maintenance, fire and life safety, and accessibility.

The County of Santa Barbara's (County) green building program was established in 1994 by implementing the County Comprehensive Plan's Energy Element Policy 2.1: Voluntarily Going Beyond State Building Energy Standards. Throughout the years, the program has been amended a number of times to incorporate new energy-efficient strategies and be consistent with Title 24.

+ ***2019 California Fire Code***

This code establishes regulations affecting or relating to structures, processes, premises and safeguards regarding residences and historic buildings. The code includes: 1) hazards of fire and explosion arising from the storage, handling or use of structures, materials or devices; 2) conditions hazardous to life, property or public welfare in the occupancy of structures or premises; 3) fire hazards in the structure or on the premises from occupancy or operation; 4) matters related to the construction, extension, repair,

alteration or removal of fire suppression or alarm systems; and 5) conditions affecting the safety of fire fighters and emergency responders during emergency operations.

+ ***California Building Code 2019 Chapter 7A (includes section 705A – roofing)***

  Establishes minimum standards for the protection of life and property by increasing the ability of a building located in any FHSZ within SRA or any WUI Fire Area to resist the intrusion of flames or burning embers projected by a vegetation fire and contributes to a systematic reduction in conflagration losses.

+ ***California Residential Code 2019 Chapter 3 Building Planning, Section R337 Material and Construction Methods for Exterior Wildfire Exposure***

  Establishes minimum standards for the protection of life and property by increasing the ability of a building located in any Fire Hazard Severity Zone within State Responsibility Areas or any Wildland-Urban Interface Fire Area to resist the intrusion of flame or burning embers projected by a vegetation fire and contributes to a systematic reduction in conflagration losses.

+ ***California Building Code 2019 Chapter 7A***

  California Code of Regulations Title 14, 1270.04 (relates to PRC 4290)

  This subchapter specifies the following directives: (a) local jurisdictions shall provide the Board Director with notice of applications for building permits, tentative parcel maps, tentative maps, and use permits for construction or development within a SRA, (b) the Board of Directors shall review and make fire protection recommendations on applicable construction or development permits or maps provided by the local jurisdiction, and (c) the local jurisdiction shall ensure that the applicable sections of this subchapter become a condition of approval of any applicable construction or development permit or map.

+ ***Government Code 51175-51189: Chapter 6.8 - Very High Fire Hazard Severity Zones***

  This code defines Very High Fire Hazard Severity Zones (VHFHSZ) and designates lands considered by the State to be a very high fire hazard. The purpose of this chapter is to classify lands in the state in accordance with whether a very high fire hazard is present so that public officials are able to identify measures that will retard the rate of spread, and reduce the potential intensity, of uncontrolled fires that threaten to destroy resources, life, or property, and to require that those measures be taken. For more detail and a discussion regarding wildland fire hazard severity in general and VHFHSZ's specifically, see Section 5.1.

+ ***Government Code 51189: WUI Building Standards (referenced from Ch. 6.8 in paragraph above, for emphasis)***

  This code directs the Office of the State Fire Marshal to create building standards for wildland fire resistance. The code includes measures that increase the likelihood of a structure withstanding intrusion by fire (such as building design and construction requirements that use fire-resistant building materials) and provides protection of structure projections (such as porches, decks, balconies and eaves) and structure openings (such as attics, eave vents, and windows). For more detail and further discussion on WUI building standards, see Section 5.4.

+ ***Government Code 65302.5: General Plan Fire Safety Element Review***

  This statute requires the Board to provide recommendations to a local jurisdiction's General Plan fire safety element at the time that the General Plan is amended. While not a direct and binding fire prevention requirement for individuals, General Plans that adopt the Board's recommendations will include goals and policies that provide for contemporary fire prevention standards for the jurisdiction.

+ ***California Health and Safety Code: DIVISION 12. Fires and Fire Protection; Chapter 1 Liability in Relation to Fires; Section 13000***

  Every person is guilty of a misdemeanor who allows a fire kindled or attended by him to escape from his control or to spread to the lands of any person other than the builder of the fire without using every reasonable and proper precaution to prevent the fire from escaping.

+ ***California Environmental Quality Act (CEQA)***

  The 1970 CEQA has evolved into one of the most prominent components of community planning in California. It requires state and local agencies to follow a protocol of analysis and public disclosure of environmental impacts in proposed projects and to include feasible measures to mitigate those impacts. Any proposed hazardous fuel treatment project recommended in this CWPP must comply with CEQA regulations.

+ ***Senate Bill 979: Water Quality, Supply, and Infrastructure Improvement Act of 2014: Protecting Rivers, Lakes, Streams, Coastal Waters, and Watersheds***

  This Act is a useful reference during planning and implementation of fuel treatment projects to reduce wildfire risk, because it can help to ensure those projects account for the protection and restoration of California's rivers, lakes, streams and watersheds, protect watersheds tributary to water storage facilities, and promote watershed health. It also determines priorities for water security, climate, and drought preparation.

+ ***California Civil Code 1103.C.3 : Law Governing Natural Hazard Disclosure***

  This code deals with the Transfer of Real Property and the Disclosure of Natural and Environmental Hazards: Article (3) states "A transferor of real property that is located within a very high fire hazard severity zone, designated pursuant to Section 51178 of the Government Code, shall disclose to any prospective transferee the fact that the property is located within a very high fire hazard severity zone and is subject to the requirements of Section 51182 of the Government Code". Details go on to include information regarding property transferor, information regarding agency, county assessor and map documentation.

+ ***California Emergency Services Act - Chapter 7, Section 8550-8551 (CESA)***

  The CESA ensures preparations within California will be adequate to deal with natural, manmade, or war-caused emergencies. It declares it necessary to give the Governor, chief executives and governing bodies of political subdivisions of the state emergency powers to provide for state assistance in the organization and maintenance of emergency programs The Act created the Office of Emergency Services, within the office of the Governor, and gave it the powers and duties to (1) provide for the assignment of functions to state entities to be performed during an emergency and for the coordination and direction of the emergency actions of those entities; (2) provide for the rendering of mutual aid by the state government and all its departments and agencies and by the political subdivisions of the state in carrying out the purposes of this chapter; and (3) authorizes the establishment of organizations and directing actions necessary to protect the health and safety and preserve the lives and property of the people of the state.

  It further declared the purpose of Chapter 7 and the policy of the state that all emergency services functions of the state be coordinated, as far as possible, with the comparable functions of its political subdivisions, of the federal government including its various departments and agencies, of other states, and of private agencies of every type, to the end that the most effective use may be made of all manpower, resources, and facilities for dealing with any emergency that may occur.

+ ***California Regional Water Quality Board***

The California State Water Resources Control Board (Board) has jurisdiction throughout California. Created by the State Legislature in 1967, the Board protects water quality by setting statewide policy, coordinating and supporting the Regional Water Board efforts, and reviewing petitions that contest Regional Board actions. There are nine regional water quality control boards that exercise rulemaking and regulatory activities by basins. (All proposed mitigation projects must adhere to CEQA regulations in planning and implementation phases. Primary concerns associated with wildland fire hazard mitigation actions involve addressing project design/engineering to reduce potential slope erosion or excess runoff during rain events.

+ ***California Air Resources Board***

The California Air Resources Board is responsible to reduce air pollution and protect public health. Their role is to set the state's air quality standards at levels to protect public health, identify and measure pollutants, research the cause and effect of air pollution problems and potential solutions, develop and adopt specific rules and regulations needed to achieve healthful air quality and lead California's efforts to reduce climate-changing emissions through measures that promote a more energy-efficient and resilient economy.

+ ***AB 1956 - Fire Prevention Activities. Local Assistance Grant Program. Chapter 632, 2018***

The measure establishes a local assistance grant program through CAL FIRE to improve fire prevention in California and ensure that fire prevention activities happen year-round. This bill also requires local agencies, resource conservation districts, fire safety councils, the California Conservation Corps, certified local conservation corps, University of California (UC) Cooperative Extension, Native American tribes, and qualified nonprofit organizations to be eligible for grants.

+ ***AB 2911 - Fire Safety. Chapter 641, 2018***

Measure makes changes to fire safety planning efforts, defensible space requirements, and electrical transmission or distribution lines' vegetation clearance requirements with the intent to improve the fire safety of California communities. Specifically, this measure:

- Requires a local agency to transmit a copy of its adopted ordinance designating very high fire hazard severity (VHFHS) zones to the Board of Forestry and Fire Protection (Board);
- Removes exemptions from requirement that a local agency designate, by ordinance, very high fire hazard severity zones in its jurisdiction within 120 days of receiving recommendations from the director of CAL FIRE;
- Requires the State Fire Marshal (SFM), in consultation with CAL FIRE and the Director of Housing and Community Development (HCD) to recommend building standards that provide for comprehensive site and structure fire risk reduction to protect structures from fire risk;
- Requires the SFM, in consultation with CAL FIRE and HCD to develop a list of low-cost retrofits that provide for comprehensive site and structure fire risk reduction to protect structures from fire risk;
- Requires CAL FIRE to incorporate the list in its fire prevention education and outreach efforts;
- Requires, before July 1, 2020, the Office of Planning and Research to update the guidance document entitled "Fire Hazard Planning General Plan Technical Advice Series" and update not less than once every eight years;
- Authorizes the Board, within 15 days of receipt of notification that its fire prevention recommendations will not be accepted by the local government, to request a consultation, prior to approval of the draft element or amendment, conducted in person, electronically, or by phone;

- Requires on or before July 1, 2021, and every five years thereafter, the Board, in consultation with the SFM, to survey local governments to identify existing subdivisions in SRA or VHFHS zones without a secondary egress route that are at significant fire risk; and
- Authorizes owners of any electrical transmission or distribution line to traverse land as necessary, regardless of land ownership or permission from the owner, after providing notice and an opportunity to be heard to the land owner, to prune trees to maintain and to abate, by pruning or removal, any hazardous, dead, rotten, diseased, or structurally defective live trees.

+ ***SB 465 - Property Assessed Clean Energy Program. Wildfire Safety Improvements. Chapter 837, 2018***

Measure expands, until January 1, 2029, Property Assessed Clean Energy (PACE) financing to allow cities and counties in very high fire hazard severity zones to authorize contractual assessments for property owners to finance wildfire safety improvements. Eligible wildfire safety improvements are improvements identified by CAL FIRE that can be fixed to an existing residential, commercial, industrial, agricultural or other building or structure, including ember-resistant roofs, dual-paned windows, driveways, and various ignition-resistant products such as walls, decks, and patio covers. This measure outlines a procedure to be taken by the local agency before PACE financing can be used for wildfire improvements.

+ ***SB 901 - Wildfires. Chapter 626, 2018***

Measure provides numerous changes concerning wildfire prevention and recovery. These include changes to: forest management and fuel reduction; mutual aid; wildfire mitigation planning by electric utilities; cost recovery for wildfire-related damages; funding opportunities from the Greenhouse Gas Reduction Fund (GGRF) for forest health; fire prevention and fuel reduction projects; a $200 million annual appropriation for forest health and fire prevention programs; and comprehensive streamlining of landscape and forestry management practices to enhance fire prevention activities.

+ ***SB 1260 - Fire Prevention and Protection. Prescribed Burns. Chapter 624, 2018***

This measure is an omnibus fire prevention and forestry management bill with the intent of promoting long-term forest health and wildfire resiliency. It makes various changes related to local fire planning, prescribed fire requirements, and broader fire prevention efforts.

+ ***AB 1877 - Office of Emergency Services. Communications. Notifications. Translation. Chapter 630, 2018***

Measure requires the California Office of Emergency Services (CalOES) and the governing body of each political subdivision of the state to translate to the public any emergency communication into the most commonly spoken language other than English in the impacted county or counties. The measure authorizes CalOES to require a city, county, or city and county to translate emergency notifications as a condition of approving its application to receive any voluntary grant funds in connection to emergency management performance.

+ ***AB 1956 - Fire Prevention Activities. Local Assistance Grant Program. Chapter 632, 2018***

Measure establishes a local assistance grant program through CAL FIRE to improve fire prevention in California and ensure that fire prevention activities happen year-round. This bill also requires local agencies, resource conservation districts, fire safety councils, the California Conservation Corps, certified local conservation corps, University of California (UC) Cooperative Extension, Native American tribes, and qualified nonprofit organizations to be eligible for grants.

+ ***AB 836 -Wildfire Smoke Clean Air Centers for Vulnerable Populations Incentive Pilot Program. Chapter 393, 2019***

  Measure establishes the Wildfire Smoke Clean Air Centers for Vulnerable Populations Incentive Pilot Program. The grant program creates a network of clean air centers by providing funding to public facilities for smoke-protective filtration systems. The grant program prioritizes applications for projects located in a documented high smoke exposure area to mitigate the adverse public health impacts that result from wildfires and other smoke events. This measure sunsets on January 1, 2025.

+ ***SB 167 - Electrical Corporations. Wildfire Mitigation Plans. Chapter 403, 2019***

  Measure requires each electrical corporation, as part of submitting their wildfire mitigation plans to the CPUC, to additionally include the impacts on customers who are receiving medical baseline allowances as part of their protocols related to mitigating the public safety impacts of disabling reclosers and deenergizing portions of the electrical distribution system.

+ ***SB 560 - Wildfire Mitigation Plans. Deenergizing of Electrical Lines. Notifications. Mobile Telephony Service Providers. Chapter 410, 2019***

  Measure requires public and private utilities to notify all public safety offices, critical first responders, health care facilities, and operators of telecommunications infrastructure with premises within the footprint of potential deenergization for a given event. This measure also requires telecommunications providers to designate points of contact within the company to receive notifications from public and private utilities in anticipation of possible deenergization events and to notify stakeholders, such as public safety offices and emergency response offices, about the impacts to communications capabilities during such events.

+ ***SB 160 - Emergency Services. Cultural Competence. Chapter 402, 2019***

  Measure requires cities and counties to integrate cultural competency in the next regular update to their emergency plan. It requires city and county local emergency managers to incorporate cultural competence into emergency plans, upon its next update, and at a minimum, describe how all cultural populations within its jurisdiction are served by emergency notifications, evacuations, sheltering, mitigation, prevention, planning, and preparedness. It requires cities and counties, when updating emergency plans, to provide a forum for community engagement in geographically diverse locations to engage with culturally diverse communities.

+ ***SB 190 - Fire Safety. Building Standards. Defensible Space Program. Chapter 404, 2019***

  Measure requires the SFM to develop both a model defensible space program and a WUI Fire Safety Building Standards Compliance training manual. It requires the SFM; to develop a model defensible space program for use by a city or county in the enforcement of existing defensible space provisions in law and consult with representatives from local, state, and federal fire services, local governments, building officials, utility companies, the building industry, and the environmental community. If a defensible space program is adopted, the local agency for enforcement of this program must have the authority to recover the actual cost of abatement and must have the authority to place it as a special assessment or lien on the property. In addition, it requires the SFM to develop, and update on a regular basis, a WUI products handbook listing products and construction systems that comply with the WUI Fire Safety building standards for: Exterior wall siding and sheathing; Exterior windows; Under eaves, including eave and cornice vents; Decking; Treated lumber and ignition-resistant materials; and Wood shakes and shingles roofing materials.

+ ***SB 670 -Telecommunications. Community Isolation Outage. Notification. Chapter 412, 2019***

Measure requires telecommunications providers to notify the Governor's Office of Emergency Services (CalOES) whenever there is an outage limiting the ability for customers to make 911 calls or receive emergency notifications within 60 minutes of discovering the outage. It also requires CalOES to notify the affected county office(s) of emergency services, the sheriff of any county, and any public safety answering point affected by the outage.

+ ***AB 1054 – Chapter 79 - Public utilities: wildfires and employee protection.***
    - Existing law authorizes the commission, in a proceeding on an application by an electrical corporation to recover costs and expenses arising from a catastrophic wildfire occurring on or after January 1, 2019, to allow cost recovery if the costs and expenses are just and reasonable, after consideration of the conduct of the utility, including consideration of specified factors.
    - This bill would establish the California Wildfire Safety Advisory Board consisting of 7 members appointed by the Governor, Speaker of the Assembly, and Senate Committee on Rules, as provided, who would serve 4-year staggered terms. The bill would require the board, among other actions, to advise and make recommendations related to wildfire safety to the Wildfire Safety Division or, on and after July 1, 2021, the Office of Energy Infrastructure Safety, as established pursuant to AB 111 or SB 111 of the 2019–20 Regular Session.

B.3 COUNTY LEVEL POLICY AND REGULATIONS

+ ***Office of Emergency Management – Multi-Jurisdictional Hazard Mitigation Plan - 2017***

This plan is a tool for stakeholders to increase public awareness of local natural and human-made hazards and risks, while providing information about options and resources available to reduce risks by hazard mitigation measures. The emphasis of the Plan is on the assessment of identified risks, identifying mitigation measures for existing exposures, and ensuring critical infrastructure are capable of surviving a disaster

+ ***Santa Barbara Unit Strategic Fire Plan - 2020***

The 2020 Santa Barbara County Unit Strategic Fire Plan is developed with the Santa Barbara County Fire Department's Mission Statement in mind and intended to serve as a collaborative local planning document. The Santa Barbara County Strategic Fire Plan tiers under the 2018 California Strategic Fire Plan and the 2019 CAL FIRE Strategic Plan to identify goals and objectives to minimize wildland fire risk to county watersheds, communities, firefighters, the public and various other local assets.

The Santa Barbara Unit Fire Plan is intended to convey management direction from the County Fire Chief, involve and educate stakeholders on the wildfire environment, establish strategic priorities for wildfire prevention and suppression projects and programs into a single unified plan, and be a living document that will adapt to changing conditions and be updated on a regular basis.

+ ***CA Fire Code Chapter 49 as amended by County of Santa Barbara in Chapter 15 County code:***

Establishes defensible space around structures as one of the most powerful tools for preventing fire hazards and is therefore required by both County regulations and State law. The California Fire Code Chapter 49 as amended by the County of Santa Barbara through Chapter 15 of the County Code defines defensible space as: "*The area surrounding a structure or building where basic wildfire protection practices are implemented, providing the key point of defense from an approaching wildfire or escaping structure fire. The area is characterized by the establishment and maintenance of fuel modification measures.*"

+ ***Santa Barbara Operational Area Mutual "All Risk" Mutual Aid Plan***

To provide, in an expedient manner, fire, rescue, emergency medical services, hazardous materials, urban search and rescue or other expertise in the form of resources and qualified personnel as would be necessary to manage a major incident or disaster that would exceed the capabilities of a single agency. Santa Barbara County is located in California Mutual Aid Region I, which includes San Luis Obispo, Ventura, Los Angeles, Orange, and Santa Barbara counties. Each county is required to have a Mutual Aid Plan that outlines procedures, policies, resources, and personnel information. This Plan assists local, state, and federal fire agencies in preparing for a major emergency.

+ ***Santa Barbara Comprehensive Plan***

A comprehensive, long-term plan mandated by California state planning law for the physical development of a city or county. Various elements of the plan are mandated, including land use, circulation, open space, conservation, housing, safety, and noise. The objective of this plan was to analyze regional resources and environmental constraints in order to be able to identify and rank opportunities for urban development, agricultural expansion, and recreational activities. Areas to be preserved because of environmental hazards, ecological communities, or scenic value also were evaluated. Additional elements in Santa Barbara County include groundwater resources, oak tree protection, air quality, and coastal land use. Carpinteria and Summerland resides in the South Coast study area of this plan.

+ ***Santa Barbara County Code – Chapter 35 – County Land Use & Development Code - 2020***

The Santa Barbara County Land Use and Development Code, hereafter referred to as the "Development Code," constitutes a portion of Chapter 35 of the Santa Barbara County Code. This Development Code carries out the policies of the Santa Barbara County Comprehensive Plan by classifying and regulating the uses of land and structures within the County, consistent with the Comprehensive Plan. This Development Code is adopted to protect and to promote the public health, safety, comfort, convenience, prosperity, and general welfare of residents, and businesses in the County.

+ ***Article II - Coastal Zoning Ordinance***

This ordinance is applicable to the unincorporated coastal zone and implements the Coastal Land Use Plan by classifying and regulating the uses of land, buildings, and structures in the coastal zone.

+ ***Article IX - Deciduous Oak Tree Protection and Regeneration Ordinance***

This ordinance addresses deciduous oak tree removal in the inland rural areas if such removal is not associated with development that requires a permit under Section 35-1 and Section 35-2 of Chapter 35 of the County Code or Ordinance 661.

+ ***Santa Barbara County Air Pollution Control District***

In 1970, the California Legislature passed a law that gave local governments primary responsibility for controlling air pollution from all sources except motor vehicles. In response, the Santa Barbara County Board of Supervisors formed the Air Pollution Control District (APCD). The staff includes meteorologists, engineers, environmental scientists, planners, inspectors, and administrative personnel. There are 3 primary department divisions, Engineering, Compliance and Planning – working to meet the needs and demands of countywide tasks and procedures, while maintaining acceptable air quality levels.

B.4 CITY | COMMUNITY LEVEL POLICY

+ ***City of Carpinteria Hazard Mitigation Plan - 2017***

The Federal Emergency Management Agency (FEMA) requires local governments to provide and maintain a hazard mitigation plan. Public Law 106-390, Section 322, commonly known as the Disaster Mitigation Act of 2000 (DMA 2000), and the associated Interim Final Rule, 44 CFR Parts 201 and 206, published in the Federal Register on February 26, 2002 establishes planning and funding criteria for states and local communities.

The 2017 City of Carpinteria Hazard Mitigation Plan is a comprehensive document that evaluates natural, technological, and human caused disaster impacts on the public and local government. It also identifies resources and capabilities and proposes mitigation actions or projects to reduce future impacts. The Hazard Mitigation Plan identifies potential hazards that could impact the City and assists emergency management staff with response planning, exercise development, public education, awareness programs and other emergency management functions.

+ ***City of Carpinteria Emergency Operations Plan – 2014***

The Emergency Operations Plan (EOP) for the City of Carpinteria addresses the planned response to extraordinary emergency situations associated with natural disasters, technological and intentional incidents, and national security emergencies in or affecting the City. This plan does not address normal, day-to-day emergencies or the well-established and routine procedures used in coping with such emergencies. Instead, the operational concepts reflected in this plan focus on potential large-scale disasters which can generate unique situations requiring expanded emergency responses. Effective response requires that the City of Carpinteria Emergency Operations Center (EOC) staff remember to communicate, collaborate, coordinate, and cooperate with each other and with the field responders and other jurisdictions.

+ ***City of Carpinteria General Plan Annual Progress Report – 2019***

Safety Element: The Safety Element contains a description of those natural and human-induced environmental effects that may constitute risk to the public. City policies minimize the potential risks and reduce the loss of life, property and the economic and social dislocations resulting from natural hazards. The Element identifies several issues related to natural hazards including seismically induced hazards, slope stability hazards, soil hazards, flood hazards, fire hazards and hazardous materials.

+ ***Summerland Community Plan – 2017***

By definition in State Law, a "community plan" is a part of the Comprehensive Plan of a city or county which applies to a defined geographic portion of the total area included in a Comprehensive Plan. This Community Plan also includes (by reference) all of the relevant policies of the elements of the County's Comprehensive Plan, which includes the County's Coastal Land Use Plan.

+ ***Toro Canyon Community Plan***

The Toro Canyon Plan (Plan) updates the 1980/81 Santa Barbara County Comprehensive Plan and Local Coastal Program (LCP) for the urban, rural and semi-rural areas and neighborhoods of Toro Canyon by addressing local issues and protecting the unique character of the area.

+ ***Ordinance No. 2020-01 - Carpinteria-Summerland Fire Protection***

An ordinance of the Governing Board of the Carpinteria-Summerland Fire Protection District adopting by reference and amending the 2019 California Fire Code and appendix chapters and appendix standards prescribing regulations governing conditions hazardous to life and property from fire, hazardous materials or explosion; adopting by reference the Carpinteria-Summerland Fire Protection District development standards; providing for the issuance of permits for hazardous uses or operations; establishing a Bureau or Fire Prevention and providing officers therefore and defining their powers and

duties within the District; amending section R313 of the 2019 California Residential Code and repealing Ordinance Nos. 2017-01 and 2017-03.

+ ***Carpinteria California – Code of Ordinances: Title 8 – Health and Safety; Chapter 8.24 – Fire Prevention***

  For statutory provisions on fire protection generally, see Health and Saf. Code § 13000 et seq.; for provisions on fireworks, see Health and Saf. Code § 12500 et seq.; for provisions on high explosives, see Health and Saf. Code § 12000 et seq. 8.24.010 - City inclusion in Carpinteria-Summerland Fire Protection District. The city is included within the Carpinteria-Summerland Fire Protection District, state of California.

+ ***Vegetation Management Plan- Development Standard #6 (rev 7/2018)***

  The Vegetation Management Plan also known as the Fuel Management Plan is required in the Carpinteria-Summerland Fire Protection District - High Fire Hazard Area. For the purposes of this standard, the High Fire Hazard Area may be modified from time to time to reflect current conditions affecting the community from the threat of Wildland fires. The Vegetation Management Plan may also be required in other plan areas of the Carpinteria-Summerland Fire Protection District if deemed necessary by the Fire Chief or his designee.

+ ***Southern California Edison 2020-2022 Wildfire Mitigation Plan***

  The 2020-2022 plan includes infrastructure hardening, vegetation management, detailed inspections and remediations, and situational awareness. SCE's WMP also emphasizes Public Safety Power Shutoff (PSPS) resilience and community engagement, particularly for under-represented groups and our access and functional needs (AFN) customers.

  The primary objective of SCE's WMP is to protect public safety, and includes an actionable, measurable, and adaptive plan for 2020 through 2022 to reduce the risk of potential wildfire causing ignitions associated with SCE's electrical infrastructure in High Fire Risk Areas (HFRA) through enhanced system hardening, situational awareness, and operational practices.

+ ***Fire Hazard Reduction Burning (Permits Required)***

  Permit burning is allowed within State Responsibility Areas (SRA) and Local Responsibility Areas (LRA) within the jurisdiction of the CSFPD. Burning is allowed when the department has transitioned to Low Fire Season Preparedness Level based on predicted weather patterns and local fuel moisture levels**. Agricultural burning is allowed under certain controlled conditions during high fire season**. Please note: these permits are issued for burn piles only and are not intended for the burning of standing vegetation.

  The burning of cuttings from trees, vines or bushes that have been cut specifically for the purpose of reducing a potential fire hazard. Fire Hazard Reduction Burning is restricted to "high" and "very high" fire hazard severity zones as delineated in the Fire Hazard Severity Zone maps.

Appendix C. *Firefighting Capacity and Fire Behavior Correlation*

Evaluating the effectiveness of firefighting resources against wildfire is a complex matter. On the same wildland fire there are locations where firefighters can be successful in defending structures or securing portions of the fire's perimeter, while at the same moment in time firefighters elsewhere on the fire are being over matched by the intensity and rate of spread of the fire. Elements such as the alignment of the fire spread (head or flanking fire versus backing fire) can significantly change the fireline intensity faced by firefighters. Other elements which can influence firefighter success include assess, topography, the ability to secure a safe operational space, and the availability of aerial resources to support ground operations.

A common standard used to evaluate the potential of firefighting resources to succeed on the fire ground are fire suppression interpretations based on flame length found in the Wildland Fire Incident Management Field Guide (NWCG, 2014). Generally, these interpretations evaluate what type of firefighting resources would be required to successfully suppress the head of a wildland fire based on the observed fire length (Table 22). Since flame lengths can be directly related to potential firefighting success, these breakpoints are used for classifying modeled fire behavior throughout the CWPP.

Table 22. Suppression capabilities based on flame lengths found at the flaming front of a wildfire

Flame Lengths (feet)	Fireline Intensity (BTU/foot/Second)	Interpretation
0-4	0-100	Fires can be generally attacked at the head or flanks by persons using hand tools. Handlines should hold the fire
4-8	100-500	Fires are too intense for direct attack at the head of the fire by persons with hand tools. Handlines cannot be relied upon to hold the fire. Equipment such as dozers, engines and retardant aircraft can be effective.
8-11	500-1,000	Fires may present serious control problems – torching out, crowning and spotting. Control efforts at the head of the fire will probably be ineffective.
11+	1,000+	Crowning, spotting and major fire runs are common. Control efforts at the head of the fire are ineffective.

Caution: These are not guidelines to personnel safety; fires can be dangerous at any level of intensity; Wilson (1977) has shown that most fatalities occur on small fires or isolated sections of large fires. Source: NWCG Fireline Handbook, Appendix B, Fire Behavior, April 2006

The classifications in Table 22 provide insights into resource capabilities but can be misinterpreted if applied out of context. For example, 8-foot flame lengths can be successfully suppressed by engine crews using hose lays, if they are able to approach the fire from a direction where convective and radiant heat are focused away from the firefighter. The same 8-foot flame length will likely overwhelm firefighters positioned in a manner where they are receiving large portions of the heat flux from the fire. This can be the case where firefighters are performing structure defense or attempting a frontal assault on the advancing fire front. It has been found that convective energy transferred by wind gusts, fire whirls, or air turbulence can significantly increase the total heat transfer to the firefighter and increase the required safety zone size necessary to engage the fire (Butler, Cohen, 1998).

Appendix D. *Fuel Treatment Prescriptive Guidelines and Techniques*

This appendix provides fuel treatment prescriptions and guidelines to assist the District and property-owners in implementing fuel treatments. This prescriptive guidance incorporates fire behavior assessment factors and best management practices (BMPs) for achievable wildfire hazard mitigation actions. Understanding and working within BMP standards will help minimize impacts to surrounding natural resources.

Fuel treatment prescriptions vary from high to low intensity. The level of intensity is determined by the vegetation type, topography, and may be limited by sensitive habitats, historical and cultural sites, soil or watercourses, and proximity to structures, and roads. The intensity of treatment is measured by the amount of vegetation modification required to meet site-specific mitigation goals (e.g., high intensity treatments generally remove a greater volume of vegetation than do low intensity treatments). The goal of these fuel treatment prescriptions is to reduce fire behavior, thereby reducing the wildfire impacts on community assets.

D.1 ROADSIDE FUEL TREATMENT PRESCRIPTIVE GUIDELINES

The following table describes the intensity levels for roadside and driveway fuel treatments:

Table 23. Roadside Fuel Treatment Prescriptive Guidelines

Location → / Fuel Type ↓	Primary Zone (A) (10' minimum; up to 50') (distance varies with terrain & accessibility)	Secondary Zone (B) (50' – 100') (distance varies with terrain & accessibility)
Grass/ Forbs	Reduce fuel depth to less than 2-inch.	Treatment may not be needed.
Surface dead/down material (primarily correlated with tree and chaparral overstory)	Remove all large (>3-inches diameter) dead/down material.	Remove up to 75 percent of >3" diameter dead/down material.
Chaparral/Shrub	Remove all chaparral/shrub vegetation within this zone. Retain the root system to provide for soil stabilization	Remove up to 75 percent of chaparral vegetation. Widely spaced small pockets or clumps of chaparral/shrubs are permitted. Pockets/clumps of chaparral remaining should be healthy, early seral stage plants limbed to 1/3 height of chaparral/shrub crown. Chipped or masticated material may be "blown" back onto the slope where feasible to enhance soil coverage.
Trees Overstory (without chaparral/shrub understory)	Prune all trees to 6-feet or ½ of the live crown height, whichever is less. Remove dead standing snags and branches extending over roadways to a minimum height of 13 feet 6 inches. Thin/remove smaller trees leaving larger trees	Same treatment as Zone A, with the exception of overstory spacing. Overstory canopy should provide shading of the surface to limit potential development of grass or shrub understory vegetation.

	(6-inch DBH) with a minimum crown spacing of 10-feet min.	
Trees Overstory (with chaparral/shrub understory)	Thinning specifications, same as Trees Overstory (without understory), but remove all understory chaparral/shrubs below trees in this zone.	Remove all chaparral/shrubs from the understory of the tree canopy. Where crown cover allows, ensure shading of the surface to limit potential development of grass or shrub understory vegetation.

D.2 VEGETATION/FUEL TREATMENT PRESCRIPTIVE GUIDELINES

The following table describes prescriptive guidelines for the District's Vegetation Management HIZ.

Table 24. Vegetation Management Prescriptive Guidelines

Location →	**Primary Defense Zone (A)** (0 – 30' from a structure)	**Fuel Reduction Zone (B)** (30' – 100' from a structure)	**Fuel Reduction Zone (C)** (100' and greater from a structure)
Fuel Type ↓	*Based on California Public Resources Code 4291 and HIZ Recommendations*		*Based on Firefighter Safety*
Grass/ Forbs	Reduce fuel depth to 2-inches maximum.	Reduce grass height to 4" or less. Longer grass in discontinuous open areas is acceptable.	Treatment may not be needed.
Surface Dead/Down Material	Remove all dead/down materials.	Reduce dead/down flammable material to < 3" depth; and < 5 tons/acre, non-contiguous isolated logs acceptable.	Reduce heavier pockets of dead/down flammable material to < 5" depth; < 5-7 tons/acre in isolated logs acceptable.
Chaparral/ Shrub	Remove all but individual specimen chaparral plants. Individual ornamental/native shrubs should be spaced at a minimum 2x shrub height.	Remove up to 75 percent of chaparral vegetation. Allow for intermittent small pockets or clumps of chaparral/shrub vegetation. Pockets and clumps of chaparral remaining should be healthy, all dead material removed and limbed to 1/3 height of chaparral crown.	Less intensive chaparral/shrub vegetation removal with up to 30 foot for spacing of pockets and clumps of chaparral and shrubs. The remaining pockets and clumps of chaparral should be healthy, all dead material removed, early seral plant stage; and limbed.
Trees Overstory (without chaparral/shrub understory)	Thin smaller trees leaving larger trees (>than 6-inches DBH) at 10-20 ft crown spacing (based on slope, tree size and type); limb/prune lower branches 6-feet above grade level, or lower 1/3 of tree height on smaller trees. Remove dead standing snags.	Thin smaller trees leaving larger trees (> than 6-inches DBH) at approximately 10 foot crown spacing (based on slope, tree size and type); limb/prune lower branches 6-feet up, or lower 1/3 of tree height on smaller trees; remove all broken limbs and dead material.	Limb and prune lower branches of larger trees up to 6-feet and remove all broken limbs and dead material.
Trees Overstory (with chaparral/shrub understory)	Thinning specifications: the same as Overstory without Chaparral /shrub understory Zone A.	Thinning specifications are the same as Trees Overstory without Chaparral/shrub understory (Zone B).	Thinning specifications are the same as Trees Overstory without chaparral/shrub understory in Zone C.

	Understory: remove chaparral/shrub; limb/prune healthy ornamental shrubs to 1/3 of shrub height, maintain spacing between shrubs.	Understory: occasional less dense chaparral/shrub or small tree clump in openings is acceptable.	Understory specifications are the same as Chaparral/shrub in Zone C except the pockets and clumps are limited to tree openings (non-canopy).

D.3 IMPLEMENTATION GUIDELINES FOR FUEL TREATMENTS

The following describes possible restrictions to implement fuel treatments:

Noxious Weeds

+ To limit the spread and establishment of invasive plant species (e.g., noxious weeds) into project areas, all off-road equipment used during project implementation will be washed free of invasive exotic weeds and seeds before entering project areas. If any equipment works in an area where weeds occur, it will be washed to remove weed propagules prior to entering other work locations.
+ All equipment staging areas and burn pile areas will be located away from known areas with noxious weed occurrences and outside of riparian habitat area.

Cultural Resources

+ Any known cultural resources within the proposed treatment area will be protected. If any sensitive cultural resources are found, work will stop, and a qualified Archaeologist will be notified.

Soil and Watershed

+ Every effort should be made to minimize damage to the soil surface in order to reduce potential for erosion and sediment transport due to project implementation activities.
+ No mechanical equipment use on slopes greater than 30 percent with following exception: Mastication can occur on slopes greater than 30 percent where the equipment is operating on slopes less than 30 percent and accessing steeper slopes with a boom arm.
+ Chipped or masticated material may be “blown” back onto the slope where feasible to enhance soil coverage.

Tree Removal

+ All live tree removal will be in compliance with the 2016 California Fire Code CSFPD Fire Code Chapter 49 and the California Public Resources Code and Government Code. Actions must comply or be permitted by local area vegetation management ordinances.

Sudden Oak Disease Prevention

A plant disease known as Sudden Oak Disease (SOD) is threatening coastal forests in California and Oregon. Currently, this disease is found in 16 California coastal counties from Monterey to Humboldt; the cause is a pathogen, *Phytophthora ramorum*. These counties are under State and federal quarantine regulations. Although Santa Barbara County is not amongst the identified counties, it is relatively close in proximity to affected counties. Therefore, vegetation management practices should include guidance for preventative SOD measures. Following are helpful references (English and Spanish):

+ https://www.suddenoakdeath.org/wp-content/uploads/2014/12/recreation-11-08-with-new-2014-map.pdf
+ https://www.suddenoakdeath.org/wp-content/uploads/2010/08/Spanish-Fact-Sheet-.pdf

D.4 RECOMMENDED BEST MANAGEMENT PRACTICES (BMP'S)

+ CEQA may be required prior to implementation of all site-specific projects.
+ Shrubs will vary in size randomly scattered across the project area. Chipped material should not exceed 4-inches in depth.
+ If slash piling is an option, piles must be small in size (4' x 4' x 4'); pile location must be pre-designated and must meet CEQA and local area policy.
+ Boundaries between treatment levels will maintain free-form shapes and feathered edges that replicate natural patterns; avoid straight lines by scalloping and feathering along edges of vegetation. The feathering of edges includes undulating edges horizontally and diverse heights of the brush retained on site.
+ Precautions will be taken to prevent scarring of trees or retained shrubs by equipment.
+ Signs should be posted warning the public of potential hazards during fuel treatment activities.
+ Environmentally Sensitive Habitat Areas (ESHA) including, but not limited to riparian areas and wetlands, will be marked on the project area maps (Figure 7).
+ Known landslide and unstable areas should be avoided for safety reasons and because vegetation treatment activities may result in increased potential for mass wasting and erosion.
+ Heavy equipment should not work on slopes greater than 30%. Movement of any heavy equipment across slopes should be minimized. Heavy equipment will not be used in riparian areas.
+ When operating equipment off of roadways the use of rubber tracked equipment, with a low ground pressure coefficient, is preferred.
+ When treating herbaceous/grass fuels; mowing or weed whipping is the preferred over discing to limit soil disturbance.
+ Standard BMPs to protect streams and stream courses include the following (NOTE: site specific BMPs are to be delineated in project planning stage):
  - Activities within the riparian zone of any stream or top of bank, whichever is further from water course, shall be subject to a designated setback zone. This distance should be identified, mapped and flagged prior to project implementation work.
  - Location and method of stream course crossing should be identified prior to fuel reduction activities to protect the stream course. Required approvals should be obtained from the jurisdictional agencies prior to commence of project activity.
  - Project generated vegetation debris shall be removed from the stream course.
  - Water bars and other erosion control structures will be located where necessary to limit erosion and associated run-off causing sediment movement into stream courses.
+ No servicing or refueling of equipment will occur on site. Operators must remove residues, waste oil, engine coolants, and other harmful materials from all worksites. Spill containment will be established prior to any on-site servicing or refueling, even in approved on-site service locations.

D.5 FUEL TREATMENT TECHNIQUES

Fuel treatments typically fall into four treatment categories – mechanical, manual, prescribed fire (pile burning), and biological. The fuel treatment strategy for the District may involve all of these treatment types with the use of pile burning being the most complex implementation category. The following are brief descriptions of the more common fuel treatment methods:

D.5.1 Mechanical

This method is generally associated with larger fuel treatment areas where the cost of contracting industrial mowers or masticators can be offset by rapidly treating large portions of the landscape. Mechanical treatments can also be effective for linear treatments such as roadsides.

Mechanical treatments, such as mowing and mastication, do not reduce hazardous fuels but rearrange them into a less flammable configuration. Both methods of treatment take vertically oriented fuels and rearrange them into horizontally oriented fuels through the process of cutting and chipping the standing vegetation.

D.5.2 Manual

This process utilizes human labor to manually cut and remove or rearrange fuel. Thinning, dropping dead standing trees, pruning and clearing of vegetation is the most common treatment. Fuels treated manually are either chipped into a less flammable state (similar to mastication), then removed from the site by a vehicle or piled for burning at a later date when weather conditions preclude fire from spreading across the landscape. Generally, manual fuel treatments are more precise than mechanical treatments and often are less likely to have significant impact on visual, cultural, or biological resources.

D.5.3 Pile Burning

Pile burning under appropriate weather conditions can rapidly eliminate fuel after manual or mechanical treatment activities. Pile burning is a cost-effective way to address the elimination of hazardous fuel but requires permitting from air regulators and CSFPD. As with any prescribed fire, there is risk of a potential escape from a burning or smoldering pile moving into nearby vegetation. Risk can be mitigated through careful pre-planning steps and adherence to the permitting process for prescribed burning operations and smoke management.

D.5.4 Biological

Biological treatments use grazing animals to consume hazardous fuel. Typically, animals are indiscriminate eaters, however, they prefer younger soft vegetation and will often eat non-target vegetation (e.g., ornamental vegetation) if not properly contained within the treatment area. The animal of choice for grazing within communities are typically goats. Some issues associated with using animals include an increased risk of spreading invasive species when not maintained on a weed free diet prior to placement, soil disturbance within the confined treatment area, potential odor impacts and noise within residential areas. Another consideration is the effect of animal waste on nearby waterways and ESHAs.

D.6 FUEL TREATMENT IMPLEMENTATION TIMING

The treatment of hazardous fuels as proposed in this CWPP are not of the type or magnitude that could have a negative effect on species response from the various plant communities associated within the Planning Area. Typically, only the use of prescribed fire, mastication or crushing to eliminate standing chaparral requires a consideration of how individual species will recover following a treatment. Species response to prescribed fire often is related to the seasonality of the treatment. Lower intensity spring-time prescribed fires when used to eliminate chaparral vegetation has been found to favor the recovery of sprouting chaparral species over those that require a recovery response from seeds stored in the soil. Over time, the continued use of low intensity fire can shift the species composition of a chaparral stand (Beyers, Wakeman, 1997).

+ **Herbaceous vegetation/Grass** – Herbaceous fuels are most effectively treated following curing of the individual plants. When cured, these grass-like fuels have dispersed their seeds helping to assure their continued presences as part of the landscape. Treating herbaceous fuels after they have cured also minimizes regrowth following treatment. When looking to eliminate non-native herbaceous fuels, treating this vegetation before it has set seed will, over time, help to reduce the abundance of a species on the landscape. Herbicides can also be effective in killing targeted non-native species before they sow their seed. However, the use of herbicides on public lands can be controversial and require an impact analysis following California Environmental Quality Act (CEQA) or National Environmental Protection Act (NEPA) protocols.

+ **Oaks** – The most widely recommended time to prune oak species is during July or August, when the trees are not normally growing, and when the dry weather is less likely to support pathogens that may attack the wounds. As much as possible, avoid pruning large limbs as this exposes the tree to possible infection and can take many years to recover (https://calscape.org/Quercus-agrifolia-(Coast-Live-Oak)), accessed July 24,2020

  Santa Barbara County has several existing oak tree ordinances which can impact the treatment of native oaks on unincorporated lands of the County. Specific direction regarding oak tree maintenance can be found in a variety of County and City planning documents. Property owners are counseled to contact the jurisdictional planning authority prior to undertaking any oak tree maintenance or removal to fully understand site specific regulations. The following is a sample of existing oak tree ordinances germane to the Planning Area.

  - Santa Barbara County Board of Supervisors as Ordinance No. 4490 – Addresses deciduous oaks outside of the coastal zone but excluding the environmentally sensitive areas overlay of Toro Canyon.
  - Santa Barbara County Article II Coastal Ordinance - Section 35-97.18 Development Standards for Native Plant Community Habitats. Ordinance is relevant to oak tree removal.
  - Toro Canyon Community Plan – DevStd-FIRE-TC-3.2 - Fuel breaks shall not result in the removal of protected healthy oaks, to the maximum extent feasible. Within fuel breaks, treatment of oak trees shall be limited to limbing the branches up to a height of eight (8) feet, removing dead materials, and mowing the understory.
  - City of Carpinteria - Policy OSC-7a. The standard states that oak trees, because they are particularly sensitive to environmental conditions, should be protected. The element also recommends that an oak tree ordinance should be developed that would include provisions for the design and siting of structures to minimize the impact of grading and other development. However, no specific municipal code related to oak trees has been developed by the City.

+ **Chaparral** – Treatments surrounding chaparral species traditionally focus on thinning dense stands of the vegetation or removing brush species to meet defensible space requirements of PRC 4291. Hand removal of chapparal is not time sensitive regarding species response, as most chaparral species will sprout from the underground root ball. To eliminate chaparral species from a treatment zone, the use of herbicides to kill

regrowth or grubbing out the root ball is required. Both treatments required attention over time to fully eliminate chaparral from the desired area.

Chapter 9a of the Santa Barbara County Code defines brush removal requirements for southeasterly Coastal Area and Coastal Zone. Two key exceptions to the general code are the:

- Removal or destruction of vegetation on a parcel if limited to an area or areas not exceeding a total of five acres within any twelve-month period.
-
- Removal or destruction of vegetation, performed, caused to be performed or required to be performed, by a fire prevention agency having jurisdiction under chapter 15 of this Code or otherwise, including, but not limited to, weed abatement, clearance around a building or structure, fuel breaks and fire breaks.

+ **Agricultural waste/pile burning** – Both agricultural burning and fire hazard reduction burning are permitted on State Responsibility Areas (SRA) and Local Responsibility Areas (LRA) within the Fire District. Santa Barbara County Fire is the jurisdictional agency for issuing burn permits. Burning must be conducted during the declared "Low" fire season and must meet the strict standard of CSFPD. The Fire District has the authority to cancel burn permits issued by County Fire at the discretion of the Fire Marshal. More information concerning open burning can be found at: https://www.carpfire.com/carpinteria-fire-department-standards

Appendix E. *Public Workshop*

The following is a sample agenda provided as part of the 1st and 2nd public workshops held in Carpinteria and Summerland. A copy of the full presentation can be provided upon request from the CSFPD.

JENSEN HUGHES
Advancing the Science of Safety

Agenda

Meeting Title:	Carpinteria-Summerland CWPP Update Public Workshop
Date/Time	January 14, 2020 / 6:30 to 8:30 p.m.
Meeting Location:	5315 Foothill Rd (Girl's Inc) in Carpinteria
Project	Update of Carpinteria-Summerland Fire Protection District CWPP
Distribution:	All Stakeholders

Item #		*Who*
1	Welcome and Introduction	JH & CSFD
2	Purpose of the CWPP Update	JH
3	An Overview of the CWPP Process + Plan Requirements and Potential Outcomes + Collaborative Approach + Basic Hazard and Risk Assessments + Areas of Wildfire Concerns + Goals and Objectives + Public Engagement	JH
4	How This Evening Works + Review of Presentation Materials + Input into Goals and Objectives + Community Values and Assets + Issue Identification	JH
5	Questions and Answers	ALL
6	Adjourn	CSFD

Appendix F. *Results of Public Survey*

1. General information

How many years have you been a resident in Carpinteria-Summerland and/or surrounding areas?	
Less than 1 year	0
1-2 years	1
3-7 years	2
8+ years	20
In which neighborhood do you currently live?	
Ladera Lane	3
Carpinteria	1
Casitas Pass Road	1
Foothill Road	3
La Mirada	3
Macadamia Lane	2
Montecito	1
Sandpiper	1
Seacoast Village	1
Shepard Mesa	1
Summerland	1
Toro Canyon	4

2. Household Demographics

What best describes your current residence?	
Permanent Residence	18
Seasonal or vacation residence	2
Second home	1
Ranch	1
How many people currently inhabit your residence	
1	2
2-3	17
4-5	1
6 or more	1

Resident Demographics			
Age & Gender	*Male*	*Female*	*Unspecified*
Over 65 years	8	10	1
60-65 years	3	5	1
50-59 years	3	1	1
40-49 years		2	
30-39 years	3	1	1
21-29 years			1
18-20 years		2	1
6-17 years		1	
TOTAL	17	22	6
Highest Level of School Completed			
Less than high school degree		3	
High school degree or equivalent		2	
Bachelor degree	5	9	
Graduate degree	8	4	
TOTAL	13	18	

What is your household's primary language of communication?	
English	19
Spanish	1
Do any household members have a disability or impairment?	
Mobility and/or physical impairment (e.g. upper/lower limb disability	2
Vision disability (e.g. blindness, ocular trauma)	1
Hearing disability (complete or partial)	2
Cognitive or learning disabilities (e.g. dyslexia, speech disorders)	1
What is your approximate annual household income	
Between $50,000 and $74,999	3
Between $100,000 and $149,999	1
Between $150,000 and $199,999	2
Over $200,000	7
N/A	4

How many pets currently inhabit your residence?	
0	3
1-2	13
3-4	4
5+	1
How many large animals currently reside on or near your property?	
0	18
1-2	1
3-4	1
5 or more	1
How many vehicles does your household currently have for functional use?	
1	3
2	9
3 or more	10

3. Physical Housing Characteristics

Which best describes the housing in which you live?	
A single-family house detached from any other house	14
A single-family house with detached guest house	3
A single-family house attached to one or more houses	1
A mobile home	1
Approximately when was your residence first built?	
1927 to 1939	1
1940 to 1959	2
1960 to 1979	2
1980 to 1999	12
2000 to 2008	2
2009 or later	1
Is this house, apartment, mobile home or alternate accomodation -	
Owned by you or someone in your household with a mortgage or loan?	14
Owned by you or someone in your household free and clear (without a mortgage or loan)?	6

What is the main structural material of your residence?	
Light-timber frame construction	12
Concrete, stone, masonry, brick	8
Heavy-timber frame construction	6
Steel	1
What are the surfaces of the exterior walls of your residence primarily constructed of?	
Stucco, Gypsum board, Fiber-cement siding	11
Timber siding, plywood panels, clapboard siding, engineered wood siding	7
Brick, masonry, concrete, stone veneer or siding	3
Glass walls	3
Concrete blocks	2
What type of construction materials is your roof covering primarily made of?	
Composite shingles/tiles	9
Clay, concrete or slate tile	5
Membrane roof (e.g. neoprene, EPDM or rubber roofing, PVC, chlorinate polyethylene sheets, polymer-modified bitumens)	4
Mineral-impregnated asphalt (rolled or felt)	1
Don't Know	1
What type of windows and/or glass doors do you have?	
Double or triple pane floating glass	8
Single pane floating glass	7
Heat strengthened, laminated glass (i.e. "safety glass"), tempered/tempered-laminated glass	4
Don't know	1

Have you made any upgrades or improvements to your residence to increase its resilience to fire?	
Vegetation management (e.g. remove dead debris from roof, gutters, above/below decking, cover or relocate wood piles away from home, near-home landscaping, remove mulching within 5ft of home)	15
Roof improvements (e.g. change to non-combustible or ignition resistant materials, seal any voids/openings)	6
Vent improvements (e.g. install ember resistant vents or 1/8" metal mesh)	5
Exterior wall improvements (e.g. replace combustible wall siding with non-combustible or ignition resistant siding, seal gaps around windows/doors)	2
Window improvements (e.g. install tempered or laminated glass)	2
Deck improvements (e.g. ignition resistant walking surface)	1
Rooftop sprinklers	1
None	1
If you haven't be able to provided improvements to your residence, what are/have been the barriers or constraints?	
Financial	3
Have provided other fire protection measures for the structure (roof sprinklers)	1

Have you taken any measures to provide defensible space around your residence for firefighters to safely operate? Defensible space (per Public Resources Code 4291 or Government Code 51175 - 51189) is the area around a structure that is free of flammable plants and objects.	
Thin out and remove additional vegetation 30-100 feet from the structure	14
Remove all flammable vegetation (e.g. mulch, fire-prone plants, dead vegetative debris, weed abatement) or other combustibles (e.g. furniture, wood piles) within 30 feet of any structure	12
If you have been unable to maintain a defensible space around your residence, what are the barriers or constraints?	
Financial	3
Homeowners Association requirements	2
Unable to access to locations where brush accumulates	1

4. Wildland Fire Experiences - Emergency Communications and Evacuation

How many wildland fires have you experienced (where you and/or your home were threatened) in your lifetime?	*1-3*	*4+*
	17	3

During the most recent wildland fire event (e.g. Thomas Fire), how did you receive information regarding details of the emergency event?	
	Number of Responses
Government managed social media accounts (e.g.SBCountyOEM, CSFPD)	13
TV or radio (e.g. news)	12
Official government websites (e.g. ReadySBC.org)	10
Reverse 911 (e.g. via mobile device, email, or	7
Door-to-door by Emergency Responders (e.g. fire department, police, sheriff)	7
A neighbor, friend or family member notified me	6
Nixle, Pulse-Alert or similar	5
Citizen managed social media accounts on Twitter, Facebook (e.g. Ventura County Fires Info)	5
I never received any information	0

During the most recent severe wildland fire event (e.g. Thomas Fire) did you evacuate either voluntarily or under mandatory order?	
Yes	*15*
No	*5*

If you elected to stay at your residence, why did you choose to do so?	
Was prepared if the fire shifted, but didn't need to leave	2
Felt prepared with fire protection equipment	1
Wanted to protect home/property	2

If you evacuated, how were you notified to evacuate?	
	Number of Responses
Door-to-door by Emergency Responders (e.g. fire department, police, sheriff)	4
Emergency Alert System, EAS (e.g. TV, radio)	3
Official government web page (e.g. ReadySBC.org)	3
Reverse 911 (e.g. via mobile device, email, or landline)	3
A neighbor, friend or family member notified me	2
Other - left before evacuation warning	1

	Yes	No
If given a warning to evacuate from emergency responders or other government agencies/services, do you feel that you were given sufficient time?	18	0
When given a warning to evacuate, do you feel you were given sufficient information on how, where and/or what to do to evacuate?	13	3

If you evacuated, what mode(s) of transportation did you and/or your household members use	
Personal vehicles (e.g. automobile, truck, motorhome, motorcycle)	15
If you evacuated, where was your immediate destination of safety during the last wildland fire emergency?	
A hotel, airbnb or similar type of accommodation	3
Another family member, relative or friend's house	9
A second home	3

If you evacuated, approximately how much time did it take from the moment you got in your car to the point you were able to exit your neighborhood (i.e. get to a primary road/highway)?		
0 - 30 min	13	
1 - 3 hours	2	
If you evacuated, approximately how much time did it take before you felt like you were out-of-danger?		
0 - 30 min	5	
30 - 60 min	1	
I never felt in danger.	8	

If you evacuated, how many personal vehicles did your household use to reach a place of safety?		
1	3	
2	8	
3	3	
4 or more	1	

If you evacuated, what sort of challenges (if any) did you experience in trying to get to a place of relative safety?	
I didn't experience any challenges	11
Poor visibility	4
Fear, shock	2
Too much traffic	1
Intense heat and flames	1

5. Wildfire Risk Perception and Values

	Number of Responses				
	A great deal	*A lot*	*A moderate amount*	*A little*	*None at all*
Prior to the 2017 Thomas Fire how concerned were you and/or your household about the threat of wildfire in Carpinteria-Summerland?	6	6	5	1	1
After the 2017 Thomas Fire how concerned are you abut the future threat of wildfires in Carpinteria-Summerland?	5	7	5	2	0

Please rank each of the following community assets/values in order of importance for protecting from wildfire threats with #1 being the most important to #6 being the least important						
	Number of responses					
	1st	*2nd*	*3rd*	*4th*	*5th*	*6th*
Human Life and Health	18	1				
Critical Facilities (e.g. roads, hospitals, police stations, evacuation centers, fire fighting stations)	1	11	5			
Private Residential Property		5	10		2	
Environment and Natural Resources			1	9	4	3
Cultural and Historical Resources			1	6	7	3
Local Economy				2	4	11

Evaluate current wildfire risk mitigation policies by the Fire District and/or Other Agencies in terms of the following statements:					
	Number of Responses				
	Agree	*Somewhat agree*	*Neither agree or disagree*	*Somewhat disagree*	*Disagree*
Current wildfire risk mitigation priorities (i.e. life safety and property protection) are reasonable	10	2	2	1	
Current wildfire risk mitigation priorities overemphasize protection of life-safety	1		4	1	10
Current wildfire risk mitigation priorities overemphasize protection of private property	1		3	1	9
Current wildfire risk mitigation priorities overemphasize protection of ecological values	1	3	6		4
Current wildfire risk mitigation practices overemphasize suppression	1	1	4		7
Current wildfire risk mitigation practices overemphasize fuel treatments and vegetation management	1		4		7
Ecological values should be given equal weight to private property values when deciding how to mitigate wildfire risk	1	3	1	4	5
Ecological values should be given equal weight to critical facility values (e.g. hospitals, police/fire stations, medical facilities, emergency centers, primary roadways/bridges, water treatment plants, etc.)	1	1	2	4	7

6. Public Education

Evaluate current wildfire public educational resources provided by the Fire District in terms of the following statements:					
	Number of Responses				
	Agree	*Somewhat agree*	*Neither agree or disagree*	*Somewhat disagree*	*Disagree*
Educational resources for structural hardening are adequate.	3	5	2	1	1
Educational resources for preparing a Personal/Family Wildfire Action Plan are adequate	9	3	2	1	
Educational resources for creating defensible space (e.g. weed abatement, spacing, desirable plant list, firewise landscaping) are adequate	11	2	1	2	
Educational resources for evacuation preparedness and planning are adequate	6	4	2	1	
Educational resources for receiving emergency communications are adequate	8	3	1	1	
Educational resources on Red Flag Warning days are adequate	5	3	3	1	1
Educational resources on Public Safety Power Shutoffs are adequate	5	3	2	1	3

What additional public educational resources and/or programs (if any) would be of value to you, your household and/or the community (e.g. online YouTube videos, school programs, training/seminar classes)?	
Online seminars or videos	3
Mailers with information	1
Fireman coming door to door to assess defensible space	1

7. Policy changes for increasing wildfire resiliency

How likely or unlikely are you to support the following policy/legal changes aimed at increasing wildfire resiliency? (WUI = wildland urban interface)					
	Number of Responses				
	Very Likely	*Likely*	*Neutral*	*Unlikely*	*Very Unlikely*
New developments (e.g. residential subdivisions, commercial businesses) in the WUI to submit an evacuation plan	9	5	2		
Primary and secondary evacuation routes to be cleared of encroaching vegetation	11	3	2	1	1
Annual evacuation drills	5	2	5	3	2
Retro-active law requiring existing residences in the WUI be upgraded to current WUI building code standards if major retrofits and/or upgrades are performed	1	2	7	4	3
Local ordinance requiring defensible space for a distance of 100 feet for all properties within WUI areas	3	5	4	2	4
Community Chipping Program	10	2	4		
Local policy to review firewise landscaping review for new developments and large landscape remodels with the WUI area	6	9	2		1
Use of vegetation management projects (e.g. fuelbreaks, fuel treatments) in City, County and State lands to reduce rate of fire spread and provide defensible space	9	5	2	1	1
Use of mechanical methods such as dozers or masticators for vegetation management (e.g road side fuel treatments, fire access roads, fuel breaks)	11	2	5		
Use of prescribed grazing methods (e.g. goats, sheep) for vegetation management	13	4	1		
Use of prescribed cut and pile burning for vegetation management	8	6	2	3	
Use of hand cutting and chipping for vegetation management	11	2	4		1
Use of natural based herbicides for vegetation management (i.e. maintain fuel treated areas or reduce invasive species)	5	4	4	3	1

8. Risk perception and needs

What are your main concerns regarding wildland fire hazards/risks for your home and community?	
Other properties not cleaning dead brush	5
Wind-borne embers	2
Single exits leaving neighborhoods	2
Given adequate time to get out	2
Lack of affordable insurance	1
Have your concerns about these wildfire risks led you to take precautions, if so what are they?	
Made changes to prevent brush accumulation on property	4
Made changes to the structure (upgrading exterior siding, providing barricade fire foam)	2
Made landscape changes regarding plant types to reduce threat	1
Installed active systems (portable sprinkler system for roof)	1
Had fire department assessment for property and neighboring properties	1

Did you feel prepared for the most recent Thomas fire?	
Yes	11
No	1
Partially	1
During the Thomas fire, did you feel like you received enough information from city/county agencies regarding the status of the fire and what measures/steps you needed to take to remain safe?	
Yes	11
No	2
Were there services and/or needs that weren't met during the Thomas fire or could be improved for future wildland fire emergencies?	
Carpinteria itself was not prepared with an evacuation center	
Masks were not provided in all locations	
More police presence to immediately close off streets to non-residents and prevent robbery	
Difficult to get information on the status of their homes	