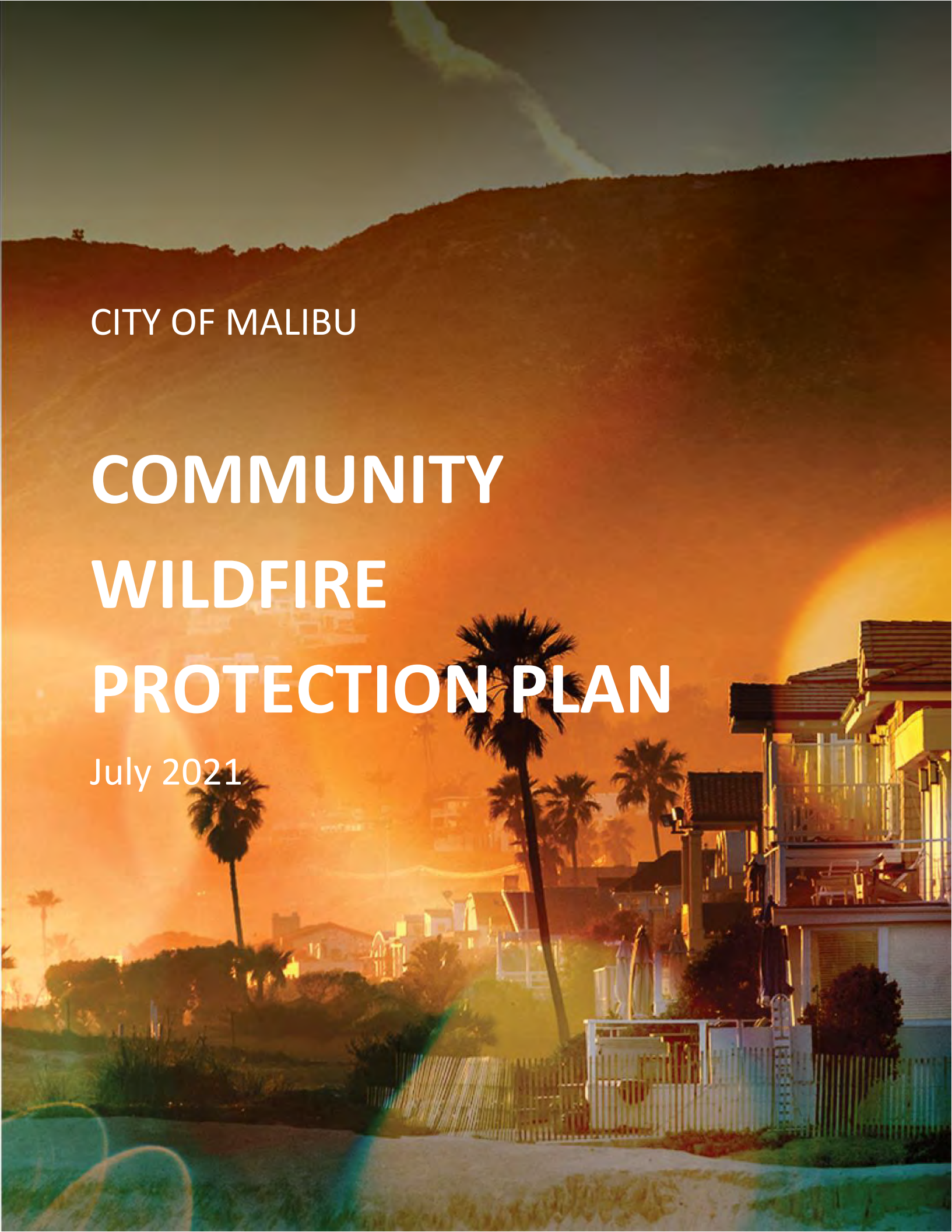

CITY OF MALIBU

COMMUNITY WILDFIRE PROTECTION PLAN

July 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 City of Malibu in Los Angeles County, California. This CWPP was developed through a collaborative process involving city officials, Los Angeles County Fire Department, surrounding fire agencies, county officials, county-, state-, and federal-land management agencies, HOAs and other 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 21-mile stretch of the Los Angeles County Coastline. City of Malibu, with its 12,846 residents and rugged terrain, is identified as a Community at Risk by CAL FIRE, with approximately 100% of the total land area in the Planning Area designated as having a very high fire hazard severity rating. Los Angeles County has a long history of large wildfires, with many of these fires burning into the local communities along the Highway 1 corridor of southern Ventura and Los Angeles Counties. While frequent large fires have consumed much of the heavy fuels adjacent to Malibu and the Santa Monica Mountains, 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 Planning Area 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 City of Malibu, 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 Planning Area. It is intended to be a living document that will be updated periodically by the City in collaboration with public and private stakeholders in the Planning Area and adjacent fire agencies.

This document is also intended to support the California Fire Plan and Los Angeles County Fire Department 2017-2021 Strategic Fire Plan “Act. Action. Accomplish”. While this CWPP covers the entire Planning Area, this plan supports and encourages focused wildfire protection actions at the community and neighborhood scales.

Revision Record Summary

Version	Date	Description of Updates
0	01/2021	Draft CWPP prepared by Jensen Hughes
1	07/2021	Final CWPP incorporating last set of Stakeholder comments
2	07/2021	Final CWPP incorporating City of Malibu edits

Signatures

The 2021 City of Malibu Community Wildfire Protection Plan (CWPP) was developed in accordance with the Healthy Forests Restoration Act. The plan was developed collaboratively among City of Malibu stakeholders including Los Angeles County Fire Department, city officials, federal-, state-, local-, and private-landowners, residents, community groups and neighboring fire agencies. The plan includes a prioritized list of hazardous fuel reduction strategies, measures that community members can take to reduce structural ignitability, as well as 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.

City of Malibu, Mayor Paul Grisanti Date

City of Malibu, Interim City Manager, Steve McClary Date

Los Angeles County Fire Department, Chief Daryl Osby Date

Los Angeles County Board of Supervisors (District 3) Date

Los Angeles County Forestry Chief, Ron Durbin Date

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List of Acronyms

AHJ	Authority Having Jurisdiction
BMP	Best Management Practices
CAL FIRE	California Department of Forestry and Fire Protection
CAR	Communities at Risk
CEQA	California Environmental Quality Act
CERT	Community Emergency Response Team
COM	City of Malibu
CWPP	Community Wildfire Protection Plan
ESHA	Environmentally Sensitive Habitat Areas
FHSZ	Fire Hazard Severity Zone
GIS	Geographic Information System
HFRA	Healthy Forest Restoration Act
HIZ	Home Ignition Zone
LACoFD	Los Angeles County Fire Department
LANDFIRE	Landscape Fire and Resource Management Planning Project
LRA	Local Responsibility Area
MTT	Minimum Travel Time
NFP	National Fire Plan
NFPA	National Fire Protection Association
NIMS	National Incident Management System
PCH	Pacific Coast Highway
RAWS	Remoted Automated Weather Station
SMM	Santa Monica Mountains
SRA	State Responsibility Area
WFDSS	Wildland Fire Decision Support System
WIMS	Weather Information Management Systems
WUI	Wildland Urban Interface

1.0 Introduction

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

> 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 Planning Area.

The CWPP provides guidance for future actions of City officials, Los Angeles County Fire Department (LACoFD), local residents, businesses, homeowner associations, local community groups and other interested parties in their individual and collective efforts to reduce the potential wildfire threat to the communities in the Planning Area. Successful implementation and long-term sustainability are subject to available funding, the collective action and will of all community Stakeholders, other City/LACoFD/County 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 City/LACoFD and residents through a combination of City/LACoFD 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 City/LACoFD. The goals and objectives for the City of Malibu CWPP are summarized in Table 1.

Table 1. Goals & Objectives of the Malibu 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 that enhance structure hardening and the development of effective defensible space. • Identify strategies to reduce structure ignitibility while protecting the environmental integrity with Environmentally Sensitive Habitat Areas (ESHAs) and the coastal zone.
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, the City of Malibu and LACoFD 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 vulnerable groups

Goals	Objectives
Enhance the resiliency of the City 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 City/LACoFD in mitigating potential increase in wildfire hazard+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 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 roles, and responsibilities are indicated in the table below.

CWPP Development Entities	Roles/Responsibilities
City of Malibu, Office of Public Safety	+ 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 • Malibu Public Safety Commission • City of Malibu, Office of Public Safety • Los Angeles County Fire Department	+ Provide general guidance, expertise, and support for CWPP
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 Development Entities	Roles/Responsibilities
CWPP Consultant: Jensen Hughes	+ Develop CWPP + Facilitate public workshops + Administer online public survey + Provide content for CWPP City of Malibu communications

1.4 POLICY & REGULATORY FRAMEWORK

The following codes, standards, policies, and regulations at the federal, state and local levels were adopted in the development of this CWPP. A more detailed summary of these policies and regulations are 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

+ Los Angeles County All-Hazard Mitigation Plan, 2014
+ Los Angeles County Fire Department. "Act. Action. Accomplish" 2017-2021 Strategic Plan
+ Los Angeles County Fire Department, Overview Booklet, 2020.
+ Los Angeles County General Plan 2035
+ Los Angeles County Regional Planning, SEA Ordinance Implementation Guide, 2020
+ Los Angeles County, Planning and Zoning, Title 22
+ Los Angeles County Fire Code: Chapter 49 Section 4907.1, 4908
+ South Coast Air Quality Management 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 Malibu Local Coastal Program – 2002
+ City of Malibu Municipal Code – 2020
+ City of Malibu General Plan – 1995
+ City of Malibu Emergency Operations Plan – 2018
+ Las Virgenes Malibu Council of Government Multi-Jurisdictional Hazard Mitigation Plan – 2018
+ City of Malibu Mass Evacuation Plan – 2020
+ Southern California Edison 2020-2022 Wildfire Mitigation Plan

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 City of Malibu.

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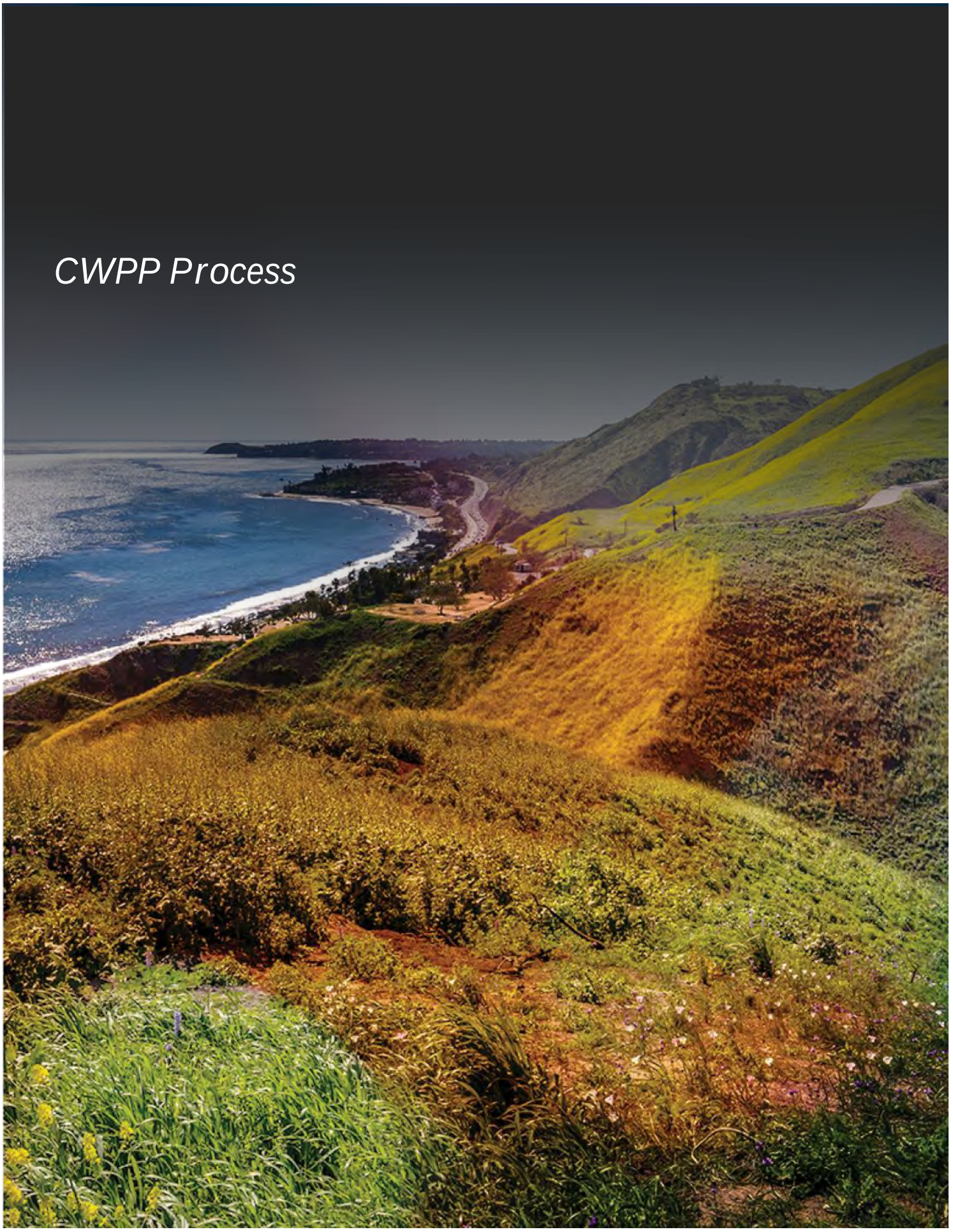
CWPP Process



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2.0 CWPP Process

2.1 COLLABORATIVE APPROACH

The development of a CWPP is a collaborative process where community stakeholders assess the wildfire threat, define the wildland urban interface (WUI) boundaries, identify community values at risk, and ultimately develop prioritized mitigation measures and actions to increase community resilience to wildfire threats. 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.

In the development of a CWPP, the more inclusive the group and the greater the diversity of interests involved, the more likely the plan will represent the community as a whole. These three basic 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 City of Malibu Collaborative Approach

The City led the creation of a public outreach strategy to help inform and engage the community and other key stakeholders in the development of this Plan. Outreach efforts focused on residents and agencies within the City, but also included stakeholders outside of the City that could help identify issues and provide solutions to the wildfire problem.

Outreach efforts by the City included:

- General information and other references regarding the CWPP planning process, workshops, and plan status on the City’s Fire Safety webpage

- Social media, including the City's Twitter and Facebook pages
- A community-based survey
- Stakeholder outreach by the City's Wildland Fire Liaison
- Newspaper articles concerning the ongoing development of the CWPP
- Hosting community workshops for interested publics
- Wildfire preparedness outreach events with local community groups (e.g., Malibu CERT, Volunteers on Patrol, Arson Watch etc.)
- Preparation of a new Emergency Survival Guide

2.1.2 Convene Community Stakeholders / Interested Parties

A priority for the City of Malibu was to 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 – February 20th and 22nd 2020 – at Malibu City Hall located at 23825 Stuart Ranch Road. Stakeholders were invited to the workshops via public announcements on the City's website, social media accounts and calendar, as well as direct communications with key stakeholders and community groups. ***Note: Due to the onset of the Coronavirus pandemic, subsequent interactions with community groups were limited to small gatherings, video and/or teleconferences***.

The range of stakeholders who took part in the initial workshops included local residents, insurance industry representatives, homeowner association representatives, City officials, Los Angeles County Fire Department, business owners and other interested parties. In addition to learning about and providing feedback on the CWPP process, participants also had the opportunity to exam the results of initial wildfire hazard and risk assessments, identify areas of specific concern, provide feedback on what worked and didn't work during the Woolsey fire and confirm CWPP goals and objectives. The goals of the CWPP identified at the workshop are summarized in Table 1. Following the formal presentation, an informal phase of the workshop provided stakeholders with the opportunity to talk with the City, LACoFD representatives and the Consultants on specific topics of interest or concern.

Upon completion of the CWPP development, a final workshop was held on March 10, 2021 to review the overall process and recommended action plan for the City in the next 5-10 years. Due to the ongoing COVID pandemic and restrictions on public gatherings, the final workshop was hosted via Zoom to allow the public and other Stakeholders the opportunity to observe and participate in the final presentation. Smaller presentations were also given to the City Council, Public Safety Commission and Office of Public Safety staff.

A summary of all workshops, meeting notes and stakeholder comments are available in Appendix E and F.

2.1.3 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" is satisfied that the CWPP document captures the issues identified by the public and other key stakeholders, this group will forward the Plan to the approving officials. The Core Group included representatives from:

+ City of Malibu, Public Safety Commission
+ City of Malibu, Office of Public Safety
+ Los Angeles County Fire Department (LACoFD)

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

2.1.4 Agency and Community Organization Stakeholder Coordination

Due to the impacts of the Coronavirus, stakeholder coordination occurred primarily through phone interview with agencies and key individuals. Through these interviews, agency representatives and individuals were able to provide key input into the development of this Plan. Stakeholder coordination was led by the City's Wildland Fire Liaison, who provided the Consultant with a list of individuals deemed most involved and knowledgeable concerning wildland fire policies, issues, concerns and mitigation strategies. The following agencies, groups and individuals provided input as part of stakeholder outreach:

- Mountains Recreation Conservation Authority
- Santa Monica Mountains Conservancy
- California State Parks
- Resource Conservation District of the Santa Monica Mountains
- National Park Service
- Los Angeles County Fire Department
- Big Rock Mesa Homeowners Association
- Big Rock Street Teams
- Horizon Hills Fire Safe Council
- Mikke Pierson, Councilmember, City of Malibu
- Jane Kagon, Rambla Pacifica
- Scott Dittrich, Rambla Pacifica
- Rick Mullen, Ramirez Canyon
- Chris Frost, Paradise Cove

2.1.5 Community Survey

An on-line survey was developed to solicit input from stakeholders that were unable to attend the public workshops. Survey questions focused on nine topic areas relating to wildfire protection and public safety. The survey opened February 18, 2020 and remained open until June 21, 2020.

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Community Overview

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3.0 Community Overview

The City of Malibu, in southwest Los Angeles County, is an incorporated city located along a 21-mile stretch of the Pacific coastline approximately 30 miles west of Downtown Los Angeles. See Figure 1. The City is generally bounded by Topanga Canyon on the east, the Santa Monica Mountains to the north, Ventura County to the west and the Pacific Ocean to the south. The Pacific Coast Highway (PCH or State Route 1), a major east-west state transportation artery, runs along the southern border of the City, with State Route 23, Kanan-Dume (County Route 9) and Malibu-Las Virgenes (County Route 1) providing access through the Santa Monica Mountains to the North.

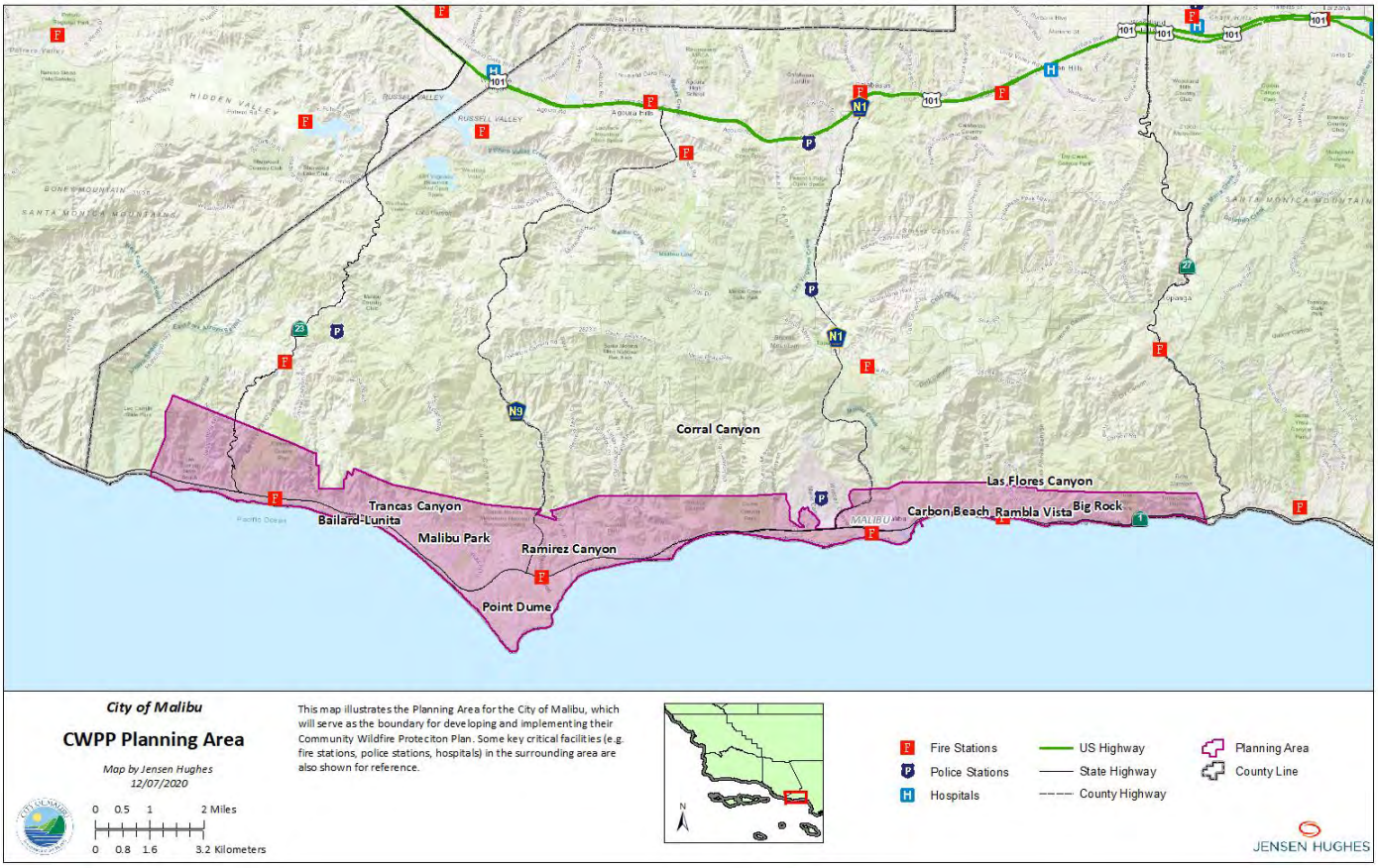

Figure 1. City of Malibu CWPP Planning Area

The City's Planning Area is approximately 19.3 square miles (12,352 acres) of predominantly rural residential and recreational land-use designations, with limited commercial development near the Civic Center and Point Dume areas. The City has an estimated population of 12,645 according to 2010 U.S. Census data, with an additional ~6,000 people just outside City limits in "unincorporated Malibu". This coastal area has relatively low housing and population density, with most residents living within a half mile to a few hundred yards of the Pacific Ocean and PCH, with numerous additional unincorporated residents living up narrow canyons. While population may be relatively limited, transit infrastructure for access/egress is limited by the rugged terrain of the Santa Monica Mountains, the proximity of the Pacific Ocean and capacity constraints downstream into West Los Angeles and the City of Santa Monica. This can present several challenges during a major wildfire event, not only for firefighters and other first responders performing emergency services, but also for residents and visitors evacuating or seeking refuge. The difficult terrain can also present emergency communication challenges for first responders, residents and visiting populations, as well limited water supply capacities.

Malibu and neighboring, unincorporated communities have a history of frequent and significant wildfires (e.g. 2018 Woolsey fire, 1993 Old Topanga fire) impacting both wildland and wildland urban interface (WUI) areas, causing significant physical, social, economic and environmental losses. The City is identified by the California State Forester as “Communities at Risk” from wildfire and is located within and adjacent to lands designated by CAL FIRE as Very High Fire Hazard Severity Zones. The environmental conditions that make Malibu vulnerable to fire, also make it vulnerable to flash floods and mudslides.

Geographically, the Santa Monica Mountain Range dominates the area. The mountain range is arranged in an east-west traverse parallel to the coast. Beyond the immediate coastal plain the landscape of the Santa Monica Mountain range is geologically complex and characterized by steep, rugged mountain slopes and canyons. Elevations range from sea level to more than 3,000 feet. The range is described as a “botanical island” in L.A.’s urban corridor, the slopes that run straight down to the Pacific have predominant vegetative cover consisting of chaparral, coastal sage, springtime wildflowers, and oak and sycamore forests.

3.1 FIRE HAZARD SEVERITY ZONES

Fire Hazard Severity Zones (FHSZs) are geographic areas of significant fire hazard in both State and Local lands as identified by CAL FIRE per California Public Resources Code, Sections 4201 through 4204 and Government Code 51175 through 51189. These areas of significant fire hazard are identified based on a number of parameters, such as vegetative fuels, terrain, weather, and other relevant factors and are categorized into three relative degrees of severity: Moderate, High and Very High FHSZs for State Responsibility Areas (SRAs) or Very High FHSZs for Local Responsibility Areas (LRAs). 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 may occur, they do identify areas where wildfire hazards could be more severe and of greater concern. As such, the zones identify locations where increased wildfire safety provisions for various building and site components (e.g., fire resistant materials, vents, decks, windows, defensible space wildland-urban-interface safety requirements) would be required for all new construction per California Building Code Chapter 7A. The zone designations must also 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/)

The entire City is located in a classified LRA Very High Fire Severity Zone (VHFSZ), while also surrounded by SRA Very High Fire Severity Zone. 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.

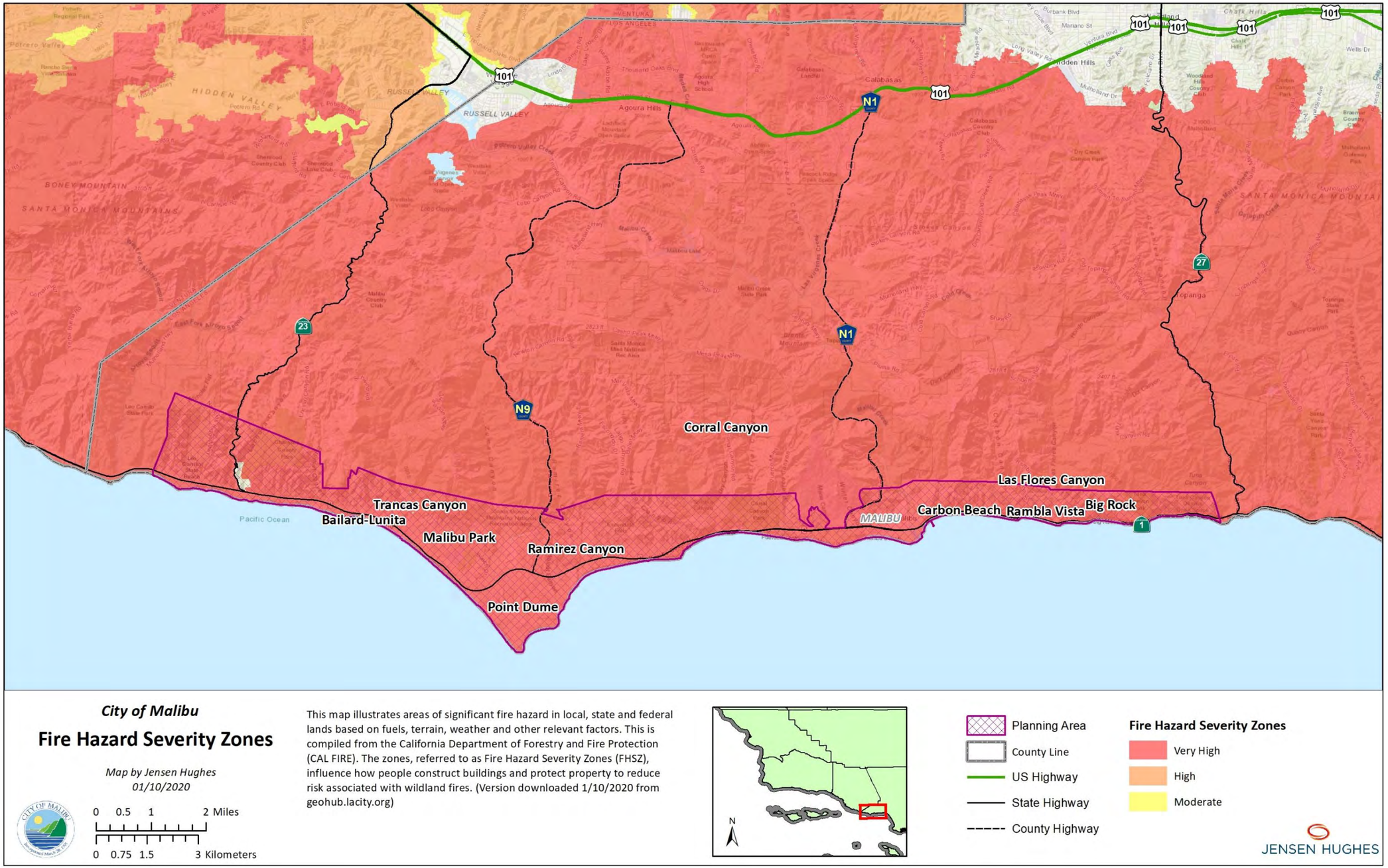

Figure 2. City of Malibu and Surround Areas Fire Hazard Severity Zones.

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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.

> 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 Malibu and nearby unincorporated County lands, the following communities are considered “at-risk” whether due to Federal, State or Local designations (See Figure 3):

- Malibu
- Point Dume
- Malibu Vista (neighboring community)
- Malibu Bowl (neighboring community)

The NFP specifically directs funding for projects designed to reduce wildfire risks to communities and restore ecological health on Federal lands. While Malibu and Point Dume are not designated as “Communities at Risk” (CAR) in the Federal Register, they are designated on the CAL FIRE register. Note: The entire City of Malibu is in a very high fire hazard severity zone, and thus the WUI will be defined by the whole planning area. While the WUI could be extended into the surrounding communities outside the planning area, those areas would be outside the jurisdiction of the City and therefore not within in their span of control. See Figure 3.

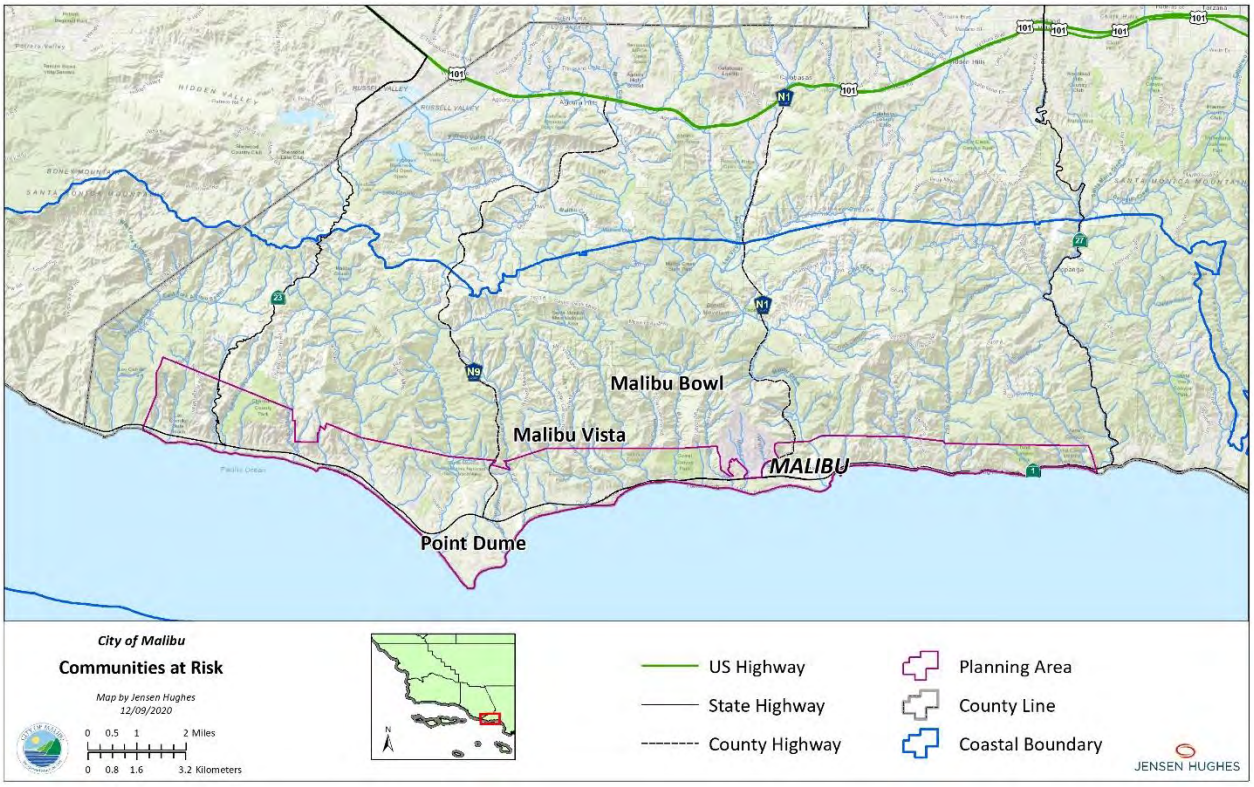

Figure 3. Communities at Risk in and around Malibu

3.3 VALUES AT RISK

Malibu is a destination location for both locals and tourists with its miles of public beaches, the variety of trailheads into the Santa Monica Mountains, retail shopping and dining opportunities and a widely respected university and research facility. Attempts to capture all of the City's many measurable and intrinsic values is difficult, therefore this Plan only considers values that can be most compromised by wildfire.

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, livelihood). 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 Malibu 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, City stakeholders emphasized the importance of the following values (listed in order of importance):

- Human Life and Health
- Private Property
- Critical Facilities and Infrastructure
- Environment and Natural Resources
- Cultural and Historical Resources
- Local Economy

3.3.1 Human Life and Health

The City's highest priority is human life-safety. Historically, large wildfires in Malibu and Los Angeles County have resulted in an unfortunate number of casualties and injuries to both firefighters and residents, with the recent 2018 Woolsey Fire having some of the most devastating impacts to public safety and property in and around Malibu.

The Planning Area presents numerous life safety challenges including:

- Emergency evacuation and management
- Difficult and potentially congested travel routes for use during evacuations
- 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.

The city of Malibu's topography and past development practices impedes access and egress for emergency services and efficient evacuation of residents, tourists and other visitors. 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 unlit roads and intersections, unlit street signage, and limited turnaround capabilities. The recent and fast-moving 2018 Woolsey Fire, underscores the need for residents to be prepared to evacuate with clear plans on how they can rapidly access Highway 1/ PCH, the safest primary east-west evacuation route, as well as local city and County transportation boards in managing downstream transit capacities and controls.

Based on U.S. Census Bureau data, the highest concentrations of individuals are located in Western Malibu (e.g., Trancas Canyon, Malibu Park and Point Dume) followed by Eastern Malibu (e.g., Big Rock Mesa, Rambla Vista), both of which border open wildland space or are intermixed at the wildland-urban-interface. See Figure 4, Population Density Map.

Many neighborhoods in Malibu have limited options for egress with many residences having only a single primary egress route (e.g., Ramirez Canyon, Trancas Canyon, Corral Canyon, Ramblas Pacifico, Big Rock). The existing residential road system is often narrow, creating a potential conflict between incoming emergency equipment and evacuating residents. Many of the structures located along these roads are intermixed with wildland and ornamental fuels and have limited defensible space. These conditions, along with the higher concentrations of residents in these areas, can result in roadways that may become congested from evacuation traffic and incoming emergency response personnel.

Vulnerable or functional-needs populations may have limited capacities to prepare for, respond to, and/or recover from a major wildfire incident, and are also less likely to get involved in wildfire mitigation activities (Ojerio, 2008). As a proxy for the whole City, key demographic and other population statistics for Malibu 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 12,645
- Population density of approximately 639.1 people per square mile
- An estimated 13.5% of the population speaks a language other than English at home.
- Approximately 11.8% of population have some form of disability (i.e., hearing difficulty at 4.0%, vision difficulty at 1.0%, cognitive difficulty at 5.0%, ambulatory difficulty at 4.9%, self-care difficulty at 2.8% and independent living difficulty at 5.4%).
- Vulnerable age groups: 2.3% of population under 5 years; 24.2% of population 65 years and older
- Poverty: 7.9% 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 Malibu suggest that a segment of the population may have a range of vulnerabilities in preparing, responding to and/or recovering from a wildfire incident that impacts the City. 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 (particularly day-laborers as observed in recent wildfires) can present major barriers to effectively communicating the need for emergency notifications, evacuation instructions, and/or support services. In addition, visitors to Malibu 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.

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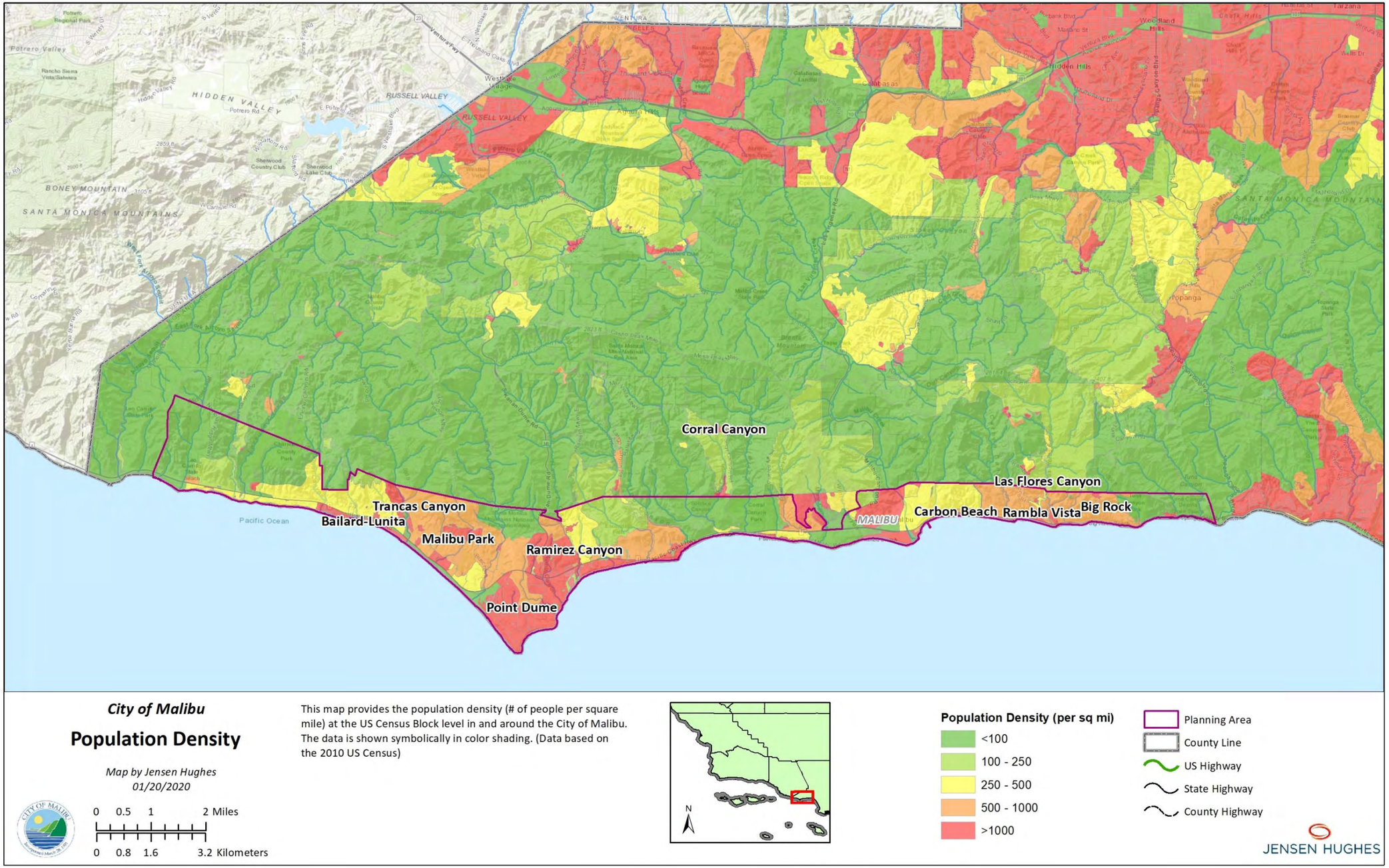

Figure 4. Population Density Map

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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 services, water facilities, wastewater treatment, transportation and police/fire stations comprise just part of the overall critical infrastructure. These major facilities and infrastructure 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 or services.

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 Planning Area.

+ Electrical services – Southern California Edison (SCE) is the service provider for the Planning Area and maintains two substations, one located in Latigo and the other in Tapia. While no high voltage transmission lines exist within the Planning Area, major transmission corridors pass through the Santa Monica Mountains north of the City. The two City substations are connected to SCE defined "sub-transmission line" identified as 66kV lines (SEC ArcGIS web-viewer, accessed 12/11/2020).

+ Water delivery – Domestic water for City residents is supplied by County Waterworks District No. 29 from the Metropolitan Water District of Southern California. During recent wildfires, the water distribution system has become unserviceable in portions of the City. This has driven local neighborhoods to invest in portable generators to help provide a more resilient power source to help sustain water systems for fire suppression operations https://library.municode.com/ca/los_angeles_county/codes/code_of_ordinances?nodeId=TIT20UT_DIV1WA_CH20.16DECO.

  The Los Angeles County Fire Department has recently adopted new water supply requirements for the issuance of final approval. New construction projects will not receive final approval unless they can show adequate fire flow capacity. Additionally, the Fire Department will no longer accept onsite water tanks to be used as a primary source of water for fire-fighting purposes.

+ Wastewater treatment – There is no municipal sewer service or wastewater treatment facilities in the City of Malibu. All properties in the City are currently served by individual onsite wastewater treatment systems, with the exception of those served by five small package treatment plants within the City – Latigo Bay Shores, Point Dume, Trancas Canyon, Malibu Mesa, and Maison de Ville.

+ Pipelines – Two natural gas distribution pipelines pass north of the City through the Santa Monica Mountains. Both pipelines are subsurface and are not considered at risk from wildfire.

+ Cellular service – Cellular communication is limited throughout the City of Malibu and surrounding communities in the Santa Monica Mountains. Several cellular towers exist in the Santa Monica Mountains, with several repeaters within the City Planning Area. However, due to the steep topography and numerous canyons throughout the area, cell communication is currently considered unreliable as a primary method for first responders to alert and inform the public concerning wildfire threats. Alternative methods of communication will need to be evaluated for wildfire risk mitigation actions and public notification during wildfires.

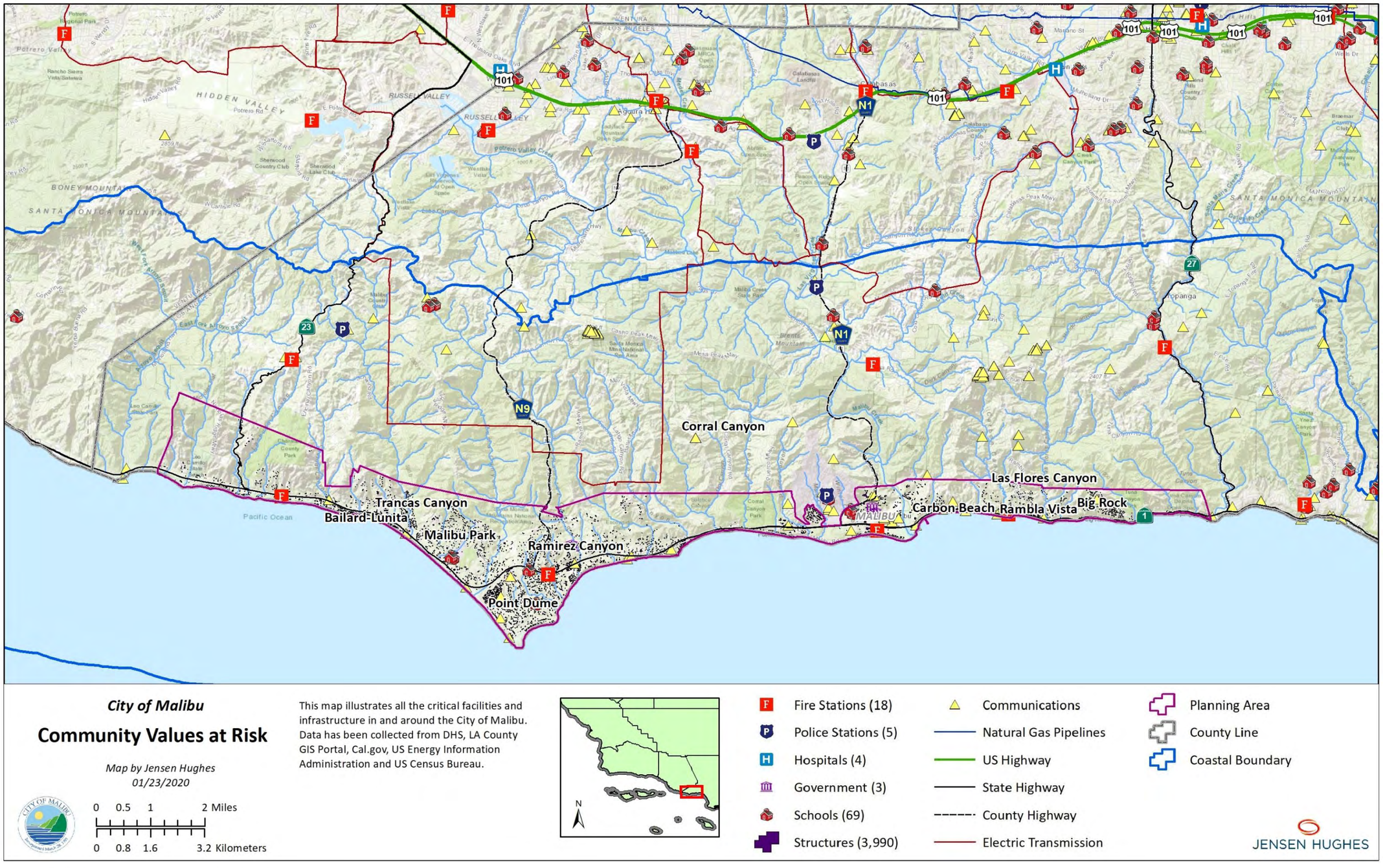
+ Transportation – Transportation and the movement of individuals to safety ahead of a wildfire is a great challenge for City, County and State governments. State Route 1 (PCH) is the principal evacuation route for residents of Malibu and provides east/west egress in the event of a wildfire. Unfortunately, eastbound travel on PCH into the West Los Angeles has limited capacity and resulted in significant congestion during

evacuations in previous fires. Coordination with the Cities of Los Angeles and Santa Monica and the multiple jurisdictional law enforcement agencies is necessary to better execute future evacuations.

Several north/south travel routes through the Santa Monica Mountains, including Malibu Canyon Road, Kanan Dume Road and Decker Road provide travel routes out of Malibu. Unfortunately, most major wildfires in the area have approached Malibu through one or several of these canyon roads, making them unsafe and/or unpassable during a wildfire.

The City is also challenged with a series of narrow canyon roads with poor inter-connectivity. Several neighborhoods have only a single primary egress route, which have historically been congested and/or blocked with traffic for those attempting to access PCH.

Protecting the viability of road systems in the Planning Area is critical to the safety of the public and emergency responders. The maintenance of roadside rights-of-way and prevention of neighborhood landscape vegetation from encroaching onto the road networks will be imperative for the resiliency of not only protecting the physical transportation network, but also the capacity to provide access and egress for the first responders and the public during a major wildfire event.



City of Malibu

Community Values at Risk

Map by Jensen Hughes
01/23/2020

0 0.5 1 2 Miles
0 0.8 1.6 3.2 Kilometers

This map illustrates all the critical facilities and infrastructure in and around the City of Malibu. Data has been collected from DHS, LA County GIS Portal, Cal.gov, US Energy Information Administration and US Census Bureau.

- Fire Stations (18)
- Police Stations (5)
- Hospitals (4)
- Government (3)
- Schools (69)
- Structures (3,990)
- Communications
- Natural Gas Pipelines
- US Highway
- State Highway
- County Highway
- Electric Transmission
- Planning Area
- County Line
- Coastal Boundary

JENSEN HUGHES

Figure 5. Critical Facilities and Infrastructure Map

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3.3.3 Private Residential Property, Commercial Businesses and Schools

Most housing in the City consists of single-family detached homes on parcels of varying sizes, dimensions, and topographic conditions. Single-family homes comprise about 78% of all residential dwellings, with multi-family units comprising about 15%, and mobile home units about 8%. As of 2012, the City has approximately 6,868 total housing units.

The majority of housing is concentrated in pockets of communities along the coastline (e.g., Trancas Canyon, Malibu Park, Point Dume, Ramirez Canyon, Rambla Vista, Big Rock, and near Pepperdine). In general, housing density is highest along Highway 1, with a distinct eastern and western Malibu division. In addition to residential properties within the City boundaries, several residential communities exist and expand into the lower and upper slopes/canyons of the Santa Monica Mountains in close proximity to Malibu. Although not technically part of Malibu, these communities share identity and connection to City assets and resources.

Most homes within the City's boundaries are in the multi-million-dollar range and have some the highest values in the Country. Median home prices are estimated to be approximately $3,291,802 for 2020 (www.zillow.com, accessed December 1, 2020). With an estimated 6,868 structures as of 2012 (per CAL FIRE) across the City, all of which are located in Very High Fire Hazard Severity Zones with a history of reoccurring wildfires, the potential property value loss is substantial.

In addition to housing, the City also has about 184.9 acres of commercial land uses, which account for less than 2% of all land uses (Malibu General Plan, 1995). The portion of Pacific Coast Highway west of Carbon Canyon Road through the Civic Center represents the commercial core of the City and includes retail, office, mixed-use and assembly spaces. There are scattered pockets of stand-alone commercial uses along the north and south sides of Pacific Coast Highway throughout the City, such as that found at Trancas Canyon Road. There are two commercial recreational uses located within the City, Malibu Racquet Club and the Malibu Riding and Tennis Club.

In many cases, the commercial developments north of PCH are immediately adjacent to wildland vegetation, making it susceptible to direct flame impingement and ember cast during a wildfire. As with residential developments, all commercial development lies within the designated Very High Fire Hazard Severity Zone.

Three public elementary schools, one public high school and four private K-12 schools are located within the Planning Area. Pepperdine, a private university with a total enrollment of approximately 9,552 students in 2020, does not technically fall within the Planning Area, but is directly adjacent too and is served by the Malibu communities. When in session, the student body, faculty and staff can increase the City's population by 75%, which will need to be considered as part of any wildfire preparedness plan.

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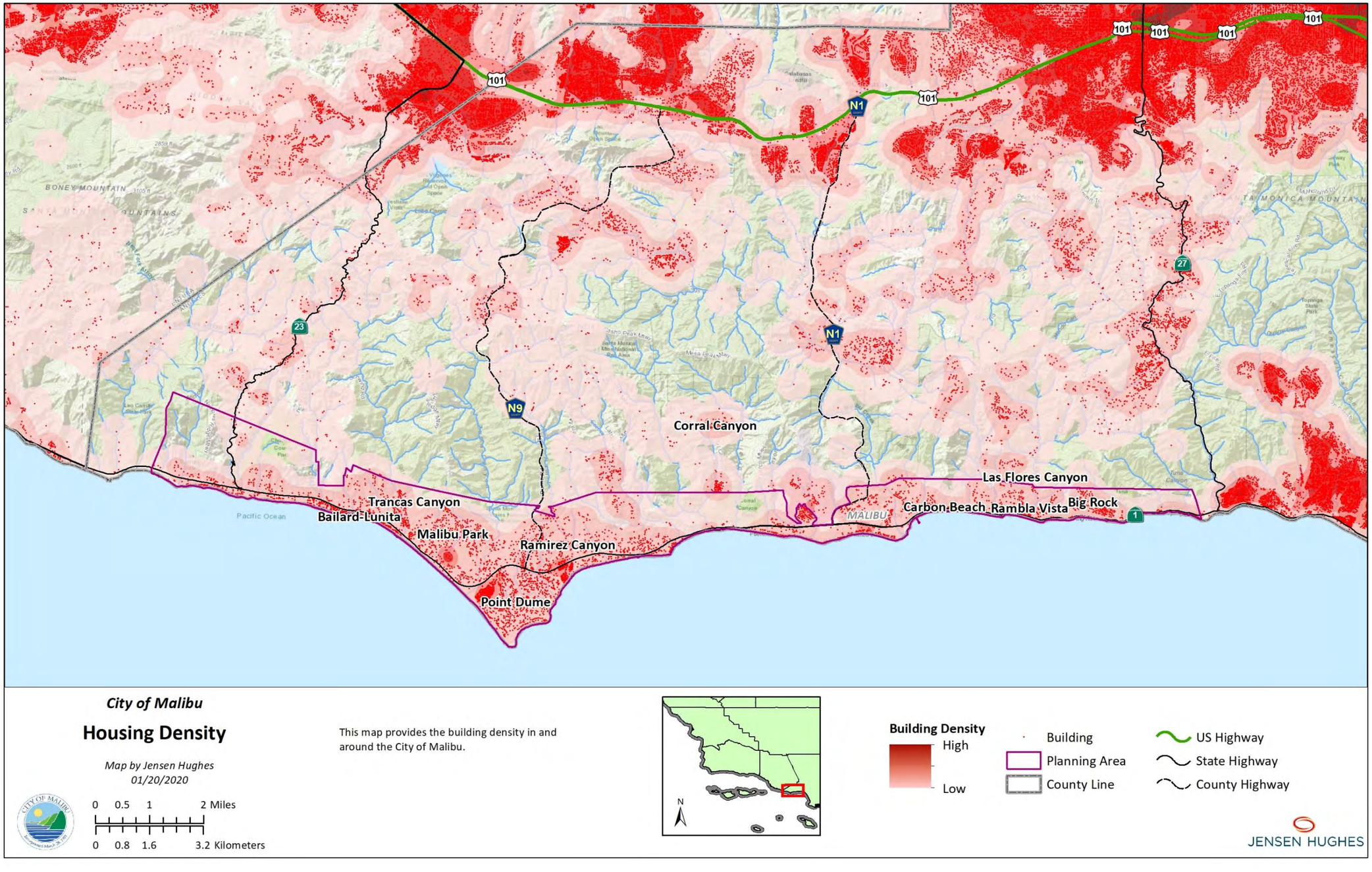

Figure 6. Housing Density Map

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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 City of Malibu and surrounding areas contain all of these environmental and natural resources that have local, regional, and statewide significance, including sensitive habitats, wildlife corridors and habitat, open space resources and a variety of natural physical resources. These physical and biological features include scenic view corridors which are unique resources in Malibu that are of high priority for protection as an integral part of the implementation of wildfire hazard mitigation. Several planning documents provide direction for the protection of environmentally sensitive habitats and cultural features. The Coastal Implementation Plan defines the purpose of the environmentally sensitive habitat overlay zone (ESHA) as to protect and preserve areas 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 easily be disturbed or degraded by human activities and development*. The environmentally sensitive habitat overlay zone shall extend not only over an ESHA area itself but shall also include buffers necessary to ensure continued protection of the habitat areas.

> 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).*

The City is comprised of seven major categories of terrestrial vegetation communities, including: (a) Chaparrals; (b) Coastal Sage Scrub; (c) Oak Woodland and Forest; (d) Riparian Scrubs, Woodlands, and Forest; (e) Coastal Dune Scrub; (f) Freshwater Marsh; and (g) Coastal Brackish Marsh. These major vegetation types have been further classified as discrete plant communities that generally share characteristic species and have similar physiographic site characteristics (Holland, Terrestrial Natural Communities of California; California Department of Fish and Game; 1986). The Planning Area also supports a rich and diverse fauna of mammals, reptiles, amphibians, birds and invertebrates. Sufficient intact wildland habitat still remains throughout the Santa Monica Mountains to support almost the entire complement of wildlife native to the Santa Monica Mountains, including large mammals such as the mountain lion, bobcat, coyote and deer.

Section 3.2.7.2 of the General Plan, provides a list of federally and state listed Rare, Threatened, Endangered, Sensitive and Candidate species within the Planning Area. This list, while dated, provides insight into the biological diversity of the area. Additional habitat protection is provided through the City's native tree protection ordinance which applies to those areas containing one or more native oak (*Quercus spp*), California Walnut (*Juglans californica*), Western Sycamore (*Platanus racemosa*), Alder (*Alnus rhombifolia*), or Toyon (*Heteromeles arbutifolia*) tree (Ord. 303 § 3, 2007).

Figure 7 provides a generalized overview of ESHA within and adjacent to the Planning Area. Residents and stakeholders are strongly encouraged to contact the City regarding permitted fire mitigation actions within designated ESHA areas.

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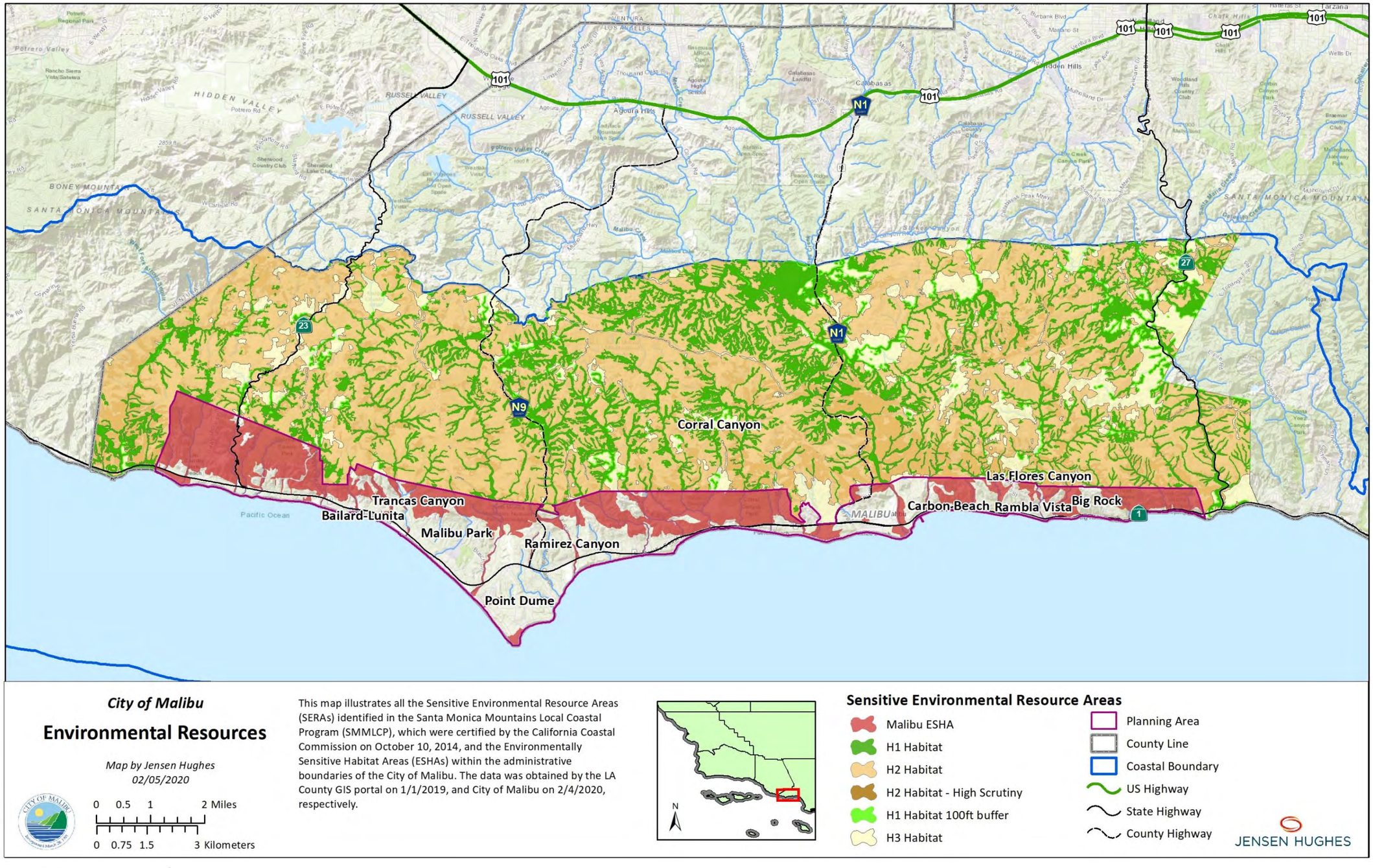

Figure 7. Environmentally Sensitive Habitat Areas

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3.3.5 Cultural and Historical Resources

Given the historically and culturally rich history of the Los Angeles County coastline, the entire area could be categorized into one large, high density archaeological site 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 Los Angeles Resource Management Department. Two historic properties, Adamson and Stevens House are known within the City Planning Area.

To protect cultural/historical sites, maps of these resources are confidential. A small sampling of these sites is listed in Table 2.

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

Resource	*Zone*
Adamson House	Eastern Malibu
Stevens House	Eastern Malibu

3.3.6 Scenic Views and Visual Quality

The Santa Monica Mountains provide the stunning backdrop for the community of Malibu. The Malibu General Plan identifies 22 scenic elements within the greater Coastal Implementation Plan area, however only the Little Dume Cove Bluffs exists within the City's administrative boundary.

The protection and enhancement of visual quality and the biological diversity provided by the greater Santa Monica Mountains is a desired outcome of this CWPP. Native vegetation composition, an important visual element of the area, has been changed over time by the frequent return of wildfire. This is especially true within the footprint of the recent Woolsey Fire, which is currently dominated by non-native grasses and resprouting chaparral species. A long fire free period will be needed for vegetation to recover to pre-European settlement conditions, however if past fire history is a harbinger of the future, an extended fire free period is unlikely.

Some visual effects of recent fire suppression actions are still present on the landscape due construction of firelines with mechanical equipment. These features, if not maintained or reused during future fires, should blend back into the natural backdrop of the community over time.

While an aesthetic component of Malibu, several non-native tree species such as pines, eucalyptus, pepper trees and acacia are prevalent throughout the community but are generally considered promoters of wildfire spread and ember production. The Woolsey Fire killed many of these trees, leaving many burned "skeletons" across the fire area. This is particularly true in drainages where small eucalyptus groves had become established. While some of these dead trees will eventually rot and fall, most (in the meantime) will contribute a localized build-up of surface fuel primed to support future wildfires. Removal of non-native species and establishment of native California oaks could promote both visual quality and fire resilience in the local community.

3.3.7 Recreation

According to the Malibu General Plan, there are 1,869.9 acres of open space including regional and local parks, beach parks, and public open space used for recreation. Chapter 2.0 of the Recreation and Open Space Element of the General Plan provides a list of existing public recreational facilities within and in some cases adjacent to the City.

Trailheads accessing a variety of public lands can be found in the City. Solstice Canyon, Escondido Falls, Point Dume Cove and Zuma Canyon are highly used by residents and visitors. The Mountains Recreation Conservation Authority (MRCA), Santa Monica Mountains Conservancy and Santa Monica Mountains National Recreation Area (SMMNRA) all have trail connectors within the Planning Area. When reopened for public use, the Charmlee Natural Area also provides a series of trails for public use.

3.3.8 Local Economy

The potential short and long-term impact of wildfires can be devastating to finances and economies in the built environment, natural environment, and social capitol.

The 2018 Woolsey fire alone resulted in over 1,500 structures lost (670 of which occurred in the Malibu City limits), 96,949 acres burned, more than 250,000 people displaced, three casualties, and an estimated $4.3 billion in insured financial losses, making it the third-costliest wildfire in the United States (Insurance Information Institute, 2020). 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, ongoing litigations and displaced residents, human psychology and government trust 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.

3.4 LAND USE / ZONING

As a means of preserving and protecting the City's unique character, a number of community and area plans have been adopted (e.g., 1995 Malibu General Plan, 2002 City of Malibu Local Coastal Program Land Use Plan) to focus on key issues pertinent to particular areas within the City and Coastal Zone. These community plans address land use designations, distributions, locations, and extent, as well as specific goals, policies, and actions relating to community development. Zones and Allowable Land Uses in Malibu include primarily Residential and Recreational/Open/Vacant with Commercial areas limited to small neighborhood-serving and visitor-serving uses interspersed throughout the City with primary locations in Las Flores, Civic Center, Point Dume and Trancas areas. These land use designations are intended to preserve the existing rural, predominantly single-family residential character of the community, protect natural resources and minimize overburdening of local infrastructure, while also allowing for reasonable residential and commercial development where within the local geological (e.g., steep hillsides, unstable soil and subsurface conditions, extreme fire hazards) and land use density constraints. These land use and development codes provide for some wildfire hazard mitigation activities within the implementation activities these codes establish. These are augmented by Las Virgenes-Malibu Council of Governments Multi-Jurisdictional Hazard Mitigation Plan 2018.

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 entire city is within the Coastal Zone (See Figure 8, Land Use and California Coastal Zone Map).

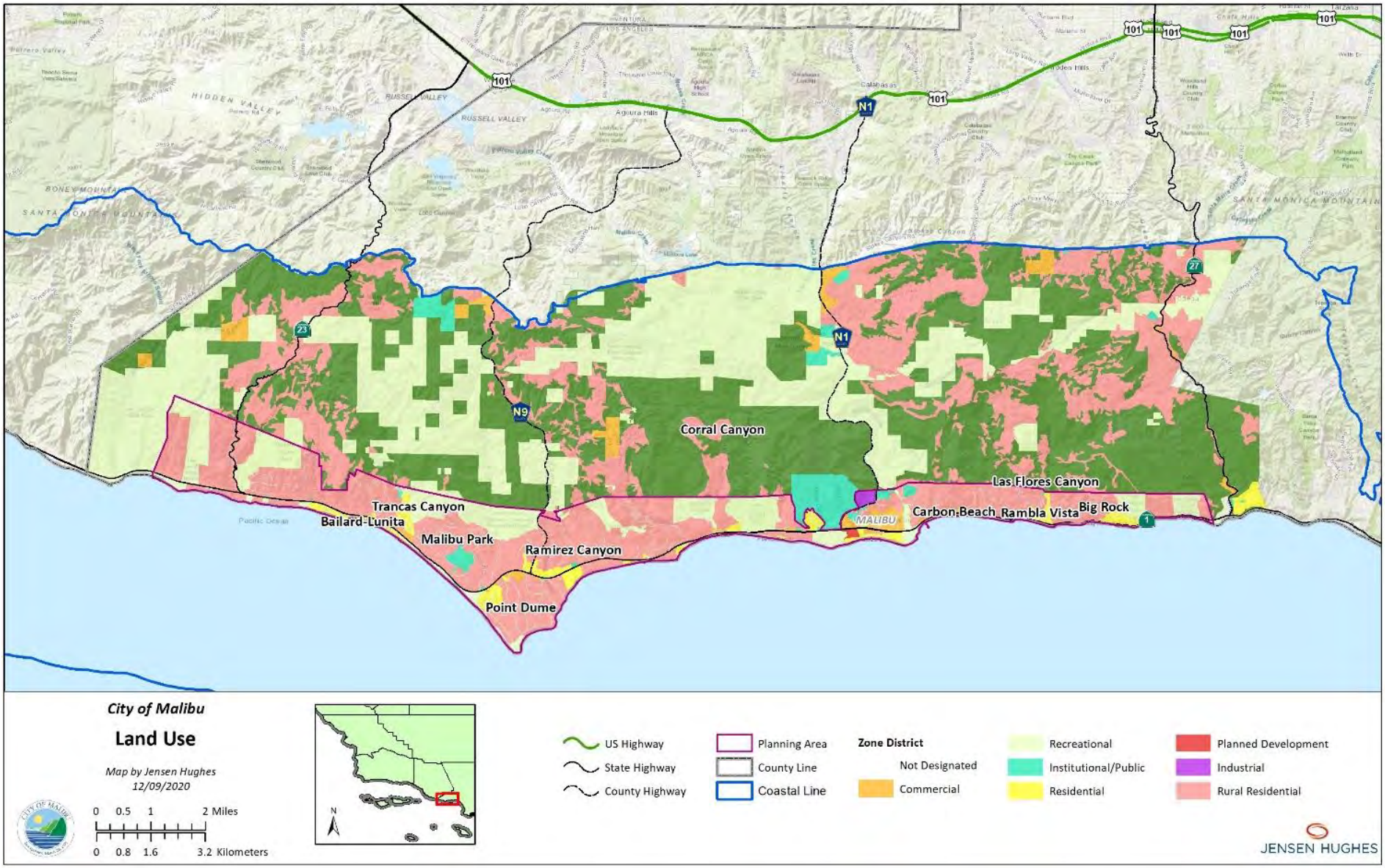

Figure 8. California Coastal Zone and Land Use Map in Malibu and Surrounding Areas

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 City of Malibu administrative boundary includes the following areas (Refer to Figure 9 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 wildland fire protection for these areas.

  Important Note: *The majority of the lands within the City are classified Local Responsibility Areas (LRA) for wildland fire suppression responsibility. Los Angeles County Fire Department (LACoFD) is the fire agency with suppression responsibility as they are contracted as the City fire department. In the event of a wildland fire, LACoFD has the capabilities to muster a first alarm response which generally includes five engines, two crews, dozer, water tender and a helicopter. The amount of initial attack equipment dispatched to a reported fire can easily double under augmented staffing plans or if the reported fire occurs within a mutual threat zone of a fire cooperator. Master Mutual Aid can also allow the County to leverage additional fire personnel and equipment from nearby fire agencies in California Office of Emergency Services (OES) Region 1, Los Angeles County Operational Area B.*

+ State Responsibility Areas (SRA)

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

  Important Note: *CAL FIRE jurisdictional responsibility exists to a lesser degree within the City, with SRA lands primarily located west of Kanan Dume Road and east of Encinal Canyon Road. The LACoFD is also contracted by CAL FIRE to perform wildfire suppression services for SRA lands within the City. LACoFD, in conjunction with Ventura County Fire, the CAL FIRE contract fire agency for Ventura County, are also able to provide substantial fire resources when a wildfire burns or threatens to burn SRA lands. These resources include engines, helicopters, crews and dozers, which can augment existing LACoFD equipment. The nearest Ventura County Fire station to Malibu is located west of Leo Carrillo State Beach on Pacific Coast Highway.*

+ 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: *Some wildlands located just north of the City are Federal Protection Areas, particularly in Trancas, Zuma and Solstice Canyons. These locations are the protection responsibility of the National Park Service. Because a wildfire spreading from these federally controlled lands represents a threat to burn SRA or LRA lands, a Cooperative Fire Protection Agreement exist between the Los Angeles County Fire and the National Park Service. This agreement provides for initial attack wildfire suppression support within a mutually agreed to "threat zone". Through this agreement, County Fire is again able to leverage access to*

aircraft, helicopters, crews and other federal fire resources during a wildfire. The nearest National Park Service engine to the City is located at King Gillette Ranch near Malibu Canyon Road and Mulholland Highway.

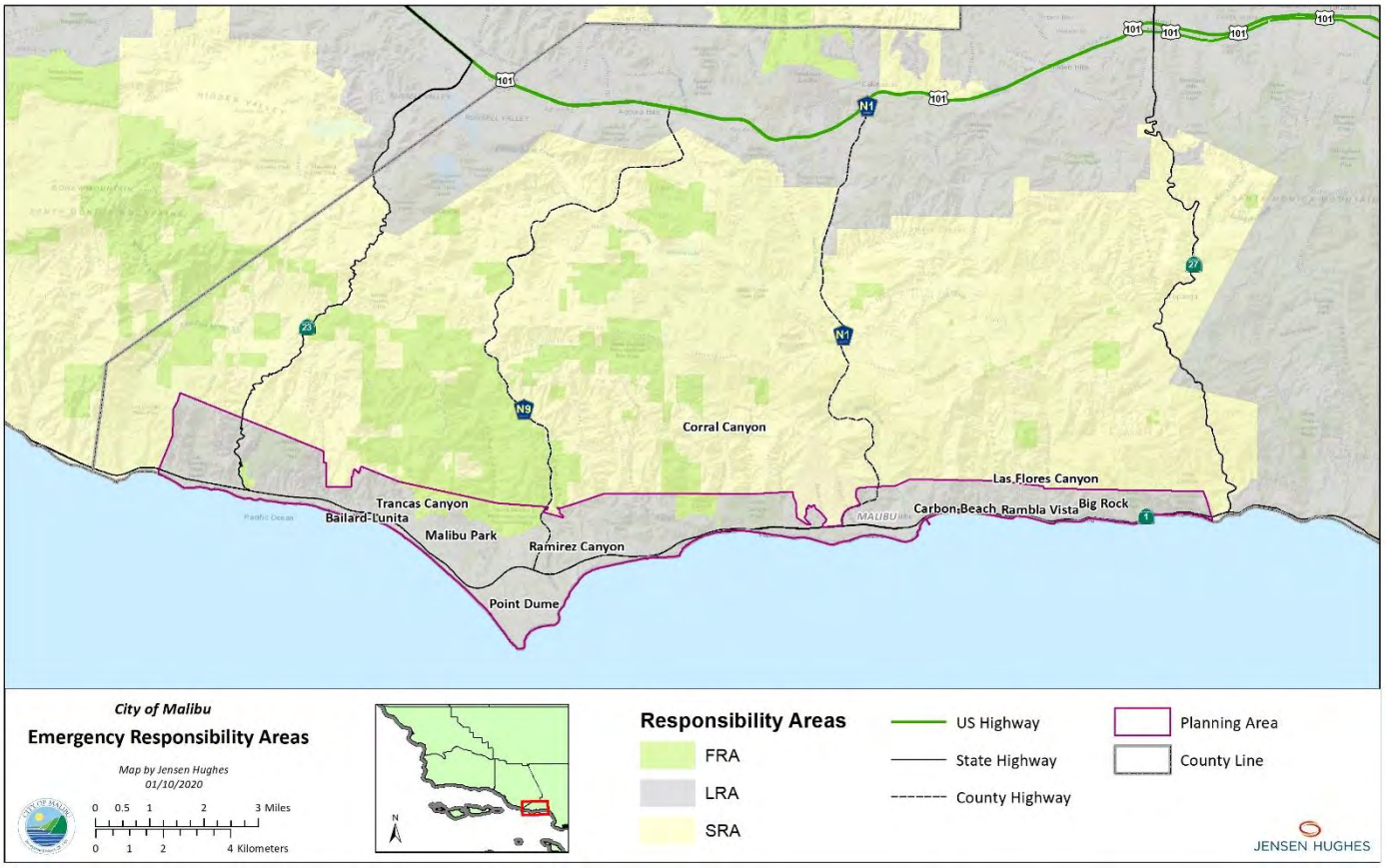

Figure 9. Fire Protection Responsibility Areas in and around Malibu

3.5.1 Los Angeles County Fire Department

Fire services within the City of Malibu and the unincorporated Los Angeles County areas around Malibu are provided by the Los Angeles County Fire Department (LACoFD) through four local fire stations. The LACoFD is governed by five members of a Board of Supervisors elected by residents within the supervisorial district, of which Malibu resides in District 3. As part its function, LACoFD provide a full range of fire protection services including emergency medical services, fire suppression, advanced life support, natural resource management services and programs (e.g., brush clearance, vegetation management, allowable plants list, fire danger, etc.), home inspections, fire prevention, community outreach, hazardous materials response, technical rescue, inspection, permitting and code enforcement. In addition to incorporated and unincorporated Malibu, LACoFD provide fire protection and life safety services to over 4 million residents residing in 59 cities and other unincorporated areas of Los Angeles County.

In 2017, the Department responded to approximately 394,000 incidents, comprising of a combination of fire, emergency medical, and other emergency response calls county-wide. Of those calls, 8,315 were fire incidents, of which 724 were wildland fires, representing 8.7% of the total fire calls. Wildland fire responses represented only 0.18% of Department's total emergency response workload that year. Refer to the 2019 Statistical Summary for three years of data on LACoFD's activities, staffing and other resources across the County.

To fulfill the range of services across the County, LACoFD operates out of 175 fire stations with over 5,900 emergency responders and business professionals. This includes an Air & Wildland division, as well as a Forestry division. Figure 10 displays the County's organizational chart.

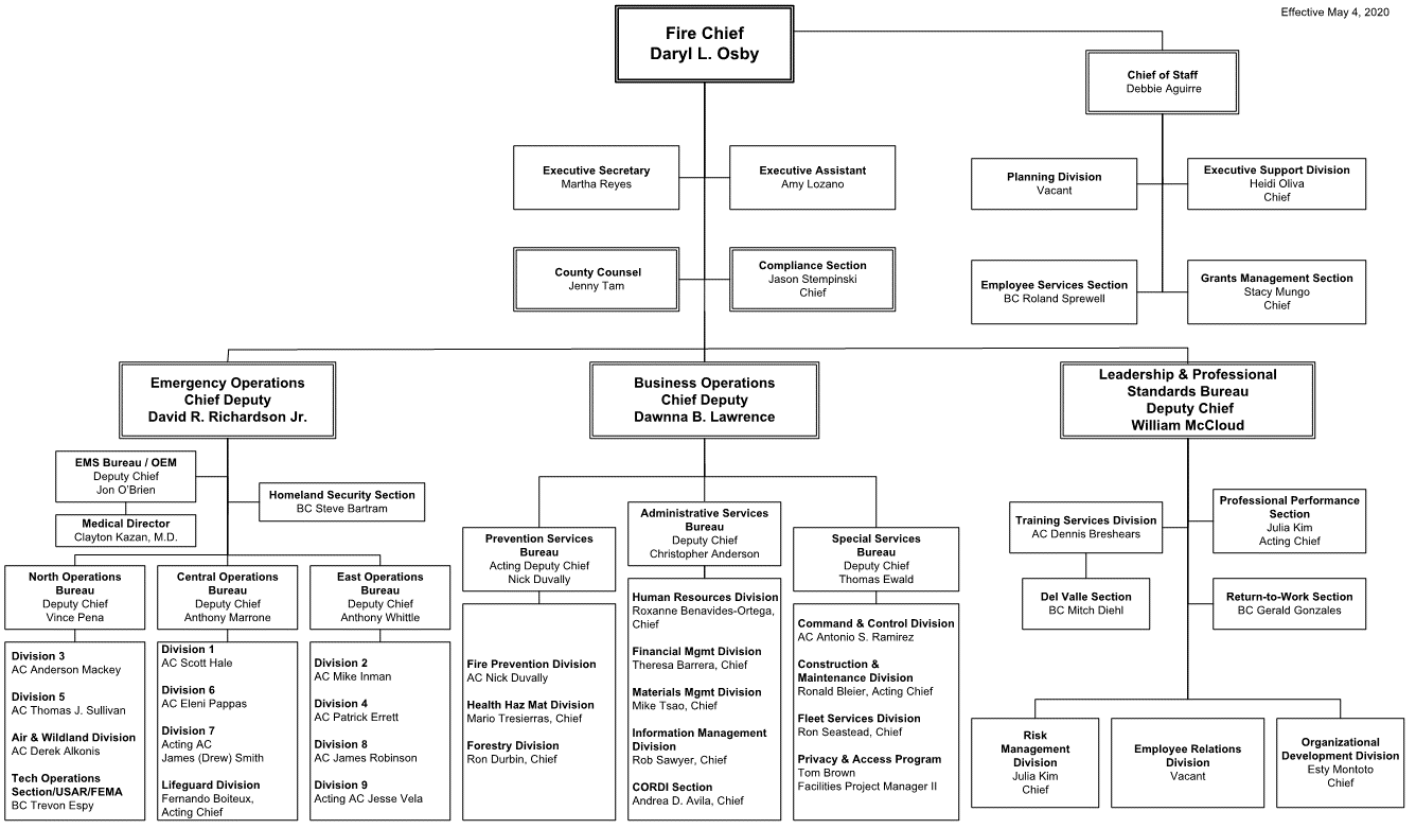

Figure 10. Los Angeles County Fire Department Organizational Chart (Year 2020)

Currently, LACoFD has four fire stations locally serving the City of Malibu, as follows:

- Fire Station 70 – 3970 Carbon Canyon Rd (+1 310-456-2513)
- Fire Station 71 – 28722 Pacific Coast Hwy (+1 310-457-2578)
- Fire Station 88 – 23720 Malibu Rd (+1 310-456-2812)
- Fire Station 99 – 32550 Pacific Coast Hwy (+1 310- 457-3706)

While fire and life safety support services are provided out of these stations locally, Malibu is located in one of the most firefighting resource dense areas of the nation. County Fire staffs 179 engines, 10 fire dozers, 9 fire suppression camps and a large array of aircraft, including eight water dropping helicopters, a Skycrane helitanker, and two CL-415 Super Scoopers (seasonal lease). The Department maintains agreements with Ventura County Fire, Los Angeles City Fire, Orange County Fire, San Bernardino Fire, San Luis Obispo County Fire and other state and federal fire agencies to assure that the closest available fire resources are dispatched to the report of a wildland fire. The sheer size of LACoFD allows for reinforcements to be rapidly deployed using not only departmental resources, but also those of cooperating fire agencies.

Fire equipment available across the County include, but are not limited to:

Number of Equipment	Type of Equipment
231	Type I Engine (Structure protection + Reserves)
5	Type III Engine (OES, Wildland)
39	Type VI (Wildland)
43	Truck companies (Light Forces and Quints + Reserves)
112	Paramedic units
21	Command vehicles
9	Helicopters
9	Fire suppression crews
10	Dozers
1	Fuel tender
9	Heli-tenders
19	Heavy Equipment
1	Helistop for refueling and water refilling via 36,000 gallons of self-replenishing tank and fire hydrants

In addition to the four local fire stations, there are an additional 14 stations in the immediate area. See Figure 5. For additional information on LACoFD's goals, strategies and implementation projects for fire and life safety refer to the 2017-2021 Strategic Plan, "Act. Action. Accomplish".

3.5.2 Additional Fire Protection / Collaborative Agreements

The LACoFD 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 Los Angeles Fire Department, Santa Barbara County Fire Department, San Luis Obispo County Fire Department, San Bernardino County Fire Department, Orange County Fire Authority and Ventura County Fire Department. Additionally, CAL FIRE and federal fire agencies provide support to the LACoFD during wildland fires.

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

- ***Automatic Aid:*** These agreements with nearby fire agencies assure that the closest available fire resource is dispatched to a reported wildland fire. Currently County Fire maintains a multitude of automatic aid agreements. Locally pertinent agreements exist with Los Angeles City Fire Department, Ventura County Fire and the National Park Service.
- ***Master Mutual Aid:*** Managed by California Emergency Management Agency (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 County Fire, as a signatory, would not receive reimbursement from other local government departments who might receive their support during a time of need.
- ***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 County may be required.

+ ***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 fill or 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 cost they may incur during a wildfire emergency. CAL OES will process FMAG requests for local government who must meet specific criteria in order to qualify for this cost reimbursement. As a rule of thumb, FMAG will cover 75% of local government cost incur during a wildfire emergency.

3.5.3 City of Malibu, Office of Public Safety

Since 2019, the City of Malibu has on-staff, a full-time fire safety liaison who monitors current fire conditions in the City, reporting weekly to the City Manager and Public Safety Manager. The City's Fire Safety Liaison also provides a range of community outreach and public education services such as structure hardening and home ignition zone assessments, coordinating wildfire mitigation programs (e.g., Community Wildfire Protection Plan development and coordination), and interfaces with other fire cooperators and emergency response agencies in the area.

To schedule an appointment, email FireSafety@malibucity.org, call 310-456-2489, ext. 387 or visit https://www.malibucity.org/952/Fire-Safety

3.5.4 2019 After Action Review of Woolsey Fire Incident

In 2019, Los Angeles County retained Citygate Associates, LLC to conduct an After-Action Review of the 2018 Woolsey fire incident. The purpose of this review included: the creation of an official report on actions, a fact-based response to questions/concerns raised by the public, response agencies and other Stakeholders, identification of areas of success and weaknesses in service, and analysis of resources, agreements, and systems.

Following FEMA's AAR principles for major disasters, Citygate identified a range of observations, statements for historical record and analytical conclusions. Approximately 155 findings were identified as part of this study across several thematic areas: (1) Incident-wide response findings (2) Agency responses (i.e. Firefighting, County Sheriff's, County EOC activation, County Public Works, LA County Department of Animal Care and Control) (3) Infrastructure (4) Public Communications (5) Evacuation and (6) Repopulation and (7) Transition to Recovery.

Some of the findings included:

- Residents who elected to stay and defend impacted the ability of fire units to engage in structure defense efforts, as well as, further stretching first responder resources due to enormous volume of 9-1-1 calls for help or wellness checks.
- Several critical infrastructure sites were compromised by the fire, such as cellular voice/data affecting public notifications and emergency communications / technology (e.g., web-based maps).
- There was no single, all-encompassing method to communicate with all residents. Varying social media platforms and critical infrastructure damage created obstacles for public notification/information.
- LA County Fire educates and trains the public regarding evacuation practices using the Ready! Set! Go! program, but the public lacks similar knowledge of repopulation challenges.
- Public participation in structural hardening efforts on existing buildings is not uniform. There is a lack of public participation in maintenance of defensible space and structure/property.

Several of the needs identified in the After-Action Report were evaluated and considered in the development of the CWPP Action items (See Section 6.0).

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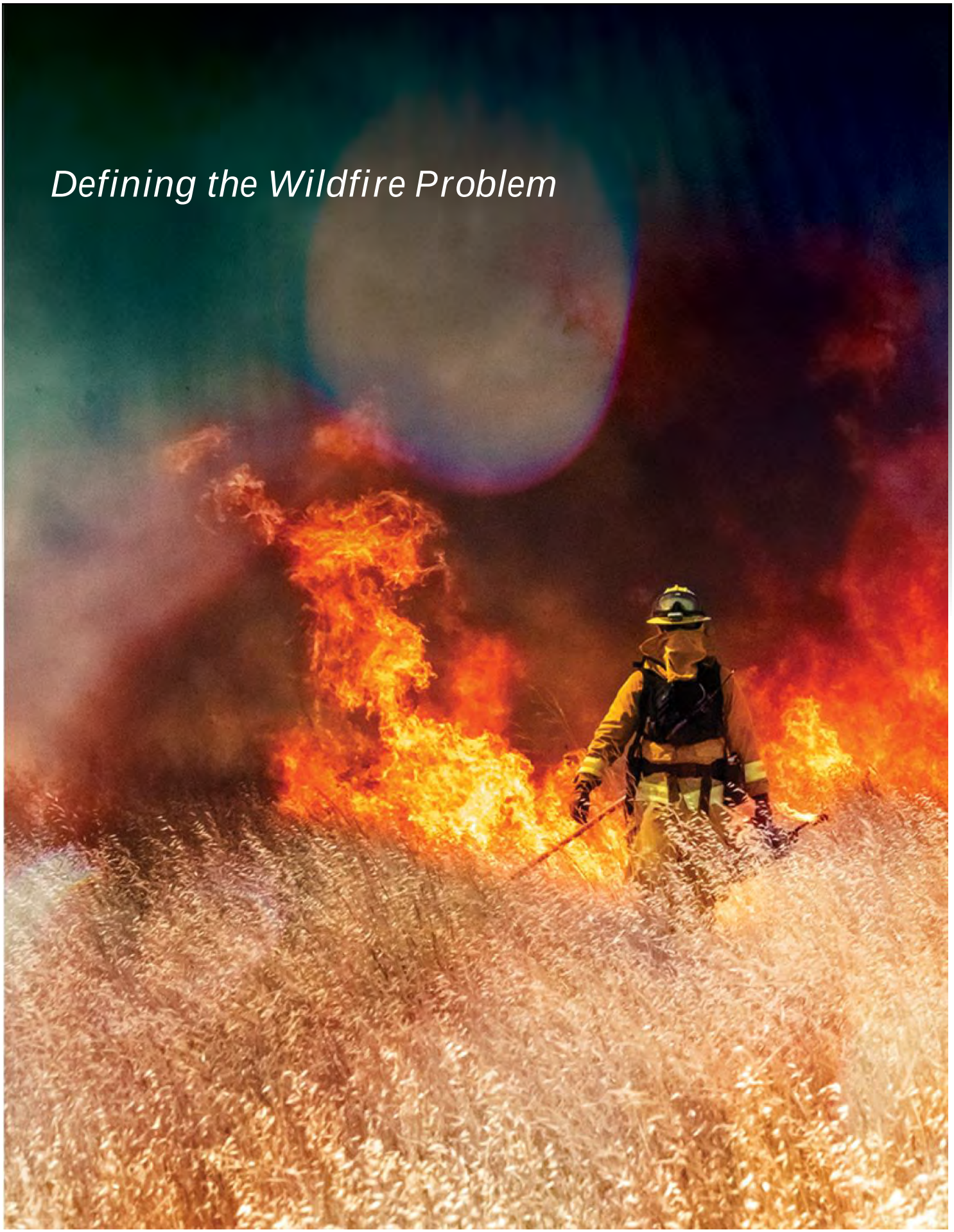
Defining the Wildfire Problem



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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. These low percentages can be attributed to a combination of favorable environmental conditions and availability of firefighting resources to effectively respond to fire incidents, 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 coastal 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 is 14.9 inches and is slightly higher at higher elevations in the Santa Monica Mountains. 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 is chaparral shrublands dominated by three primary species (See Figure 11): 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, these shrubs give way to valley and coastal live oak woodlands, 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 around Malibu and outside the Santa Monica Mountains National Recreation Area 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. The loss of native coastal salt marsh and native grasslands in the Planning Area is also a function of these factors.

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

Table 3. Existing Vegetation Types in the City

Vegetation Type	Acres	Percent of City Area
Annual Grassland	51486.1	6.04%
Barren	12486.0	1.46%
Blue Oak Woodland	12.6	0.00%
Coastal Oak Woodland	21837.4	2.56%
Cropland	10410.8	1.22%
Coastal Scrub	74558.4	8.75%
Deciduous Orchard	352.2	0.04%
Evergreen Orchard	461.1	0.05%
Eucalyptus	92.1	0.01%
Lacustrine	6199.1	0.73%
Mixed Chaparral	138596.5	16.26%
Montane Hardwood	74.1	0.01%
Montane Riparian	10.9	0.00%
Pasture	406.1	0.05%
Perennial Grassland	61.6	0.01%
Saline Emergent Wetland	36.1	0.00%
Urban	530986.1	62.29%
Vineyard	92.0	0.01%
Valley Oak Woodland	1206.5	0.14%
Valley Foothill Riparian	3125.9	0.37%
Total =	***852,492***	***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.

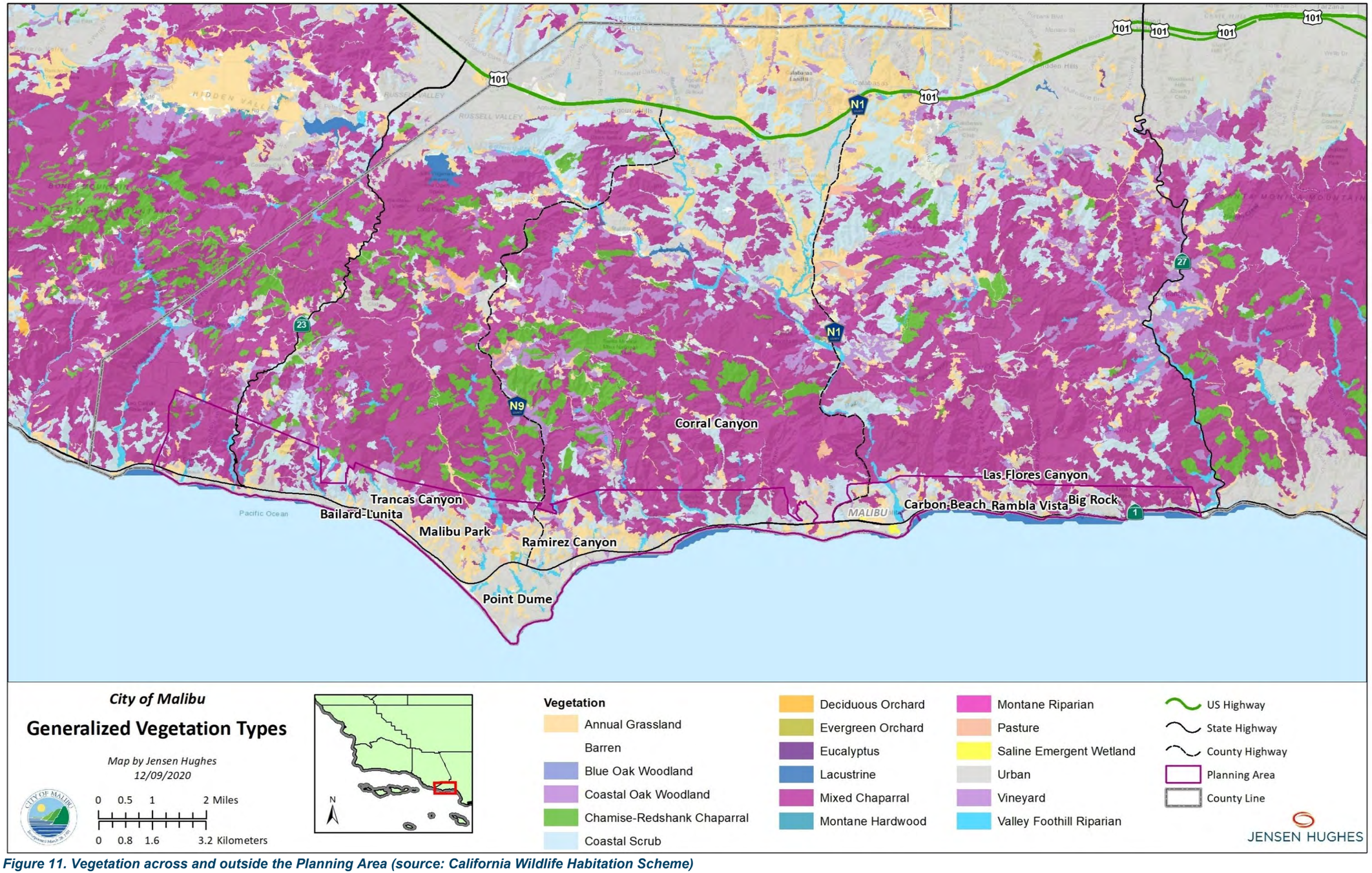

Figure 11. Vegetation across and outside the Planning Area (source: California Wildlife Habitation Scheme)

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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 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. 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.

Today, Malibu and the Santa Monica Mountains NRA, including the Planning Area, have the highest frequency Fire Return Interval of anywhere in Southern California (Kolden and Abatzoglou 2018), dominated by infrequent, large fires that grow rapidly under high temperatures, low relative humidity, and Santa Ana wind events in autumn. The Planning Area has almost no history of summer wildfires due to the presence of the marine layer in summer. Since the 1920s, the portion of the Planning Area from Central Malibu east to Pepperdine University has experienced at least one major wildfire every decade, while the western portion of the Planning Area has been burned on average every 15-20 years. Very large fires have been less frequent, with the 2018 Woolsey fire easily surpassing all historical fires as the largest and most destructive fire ever to directly impact Malibu. See Table 4 and Figure 12.

Table 4. Wildfires within and adjacent to CWPP Planning Area

Fire Name	Date	Fire Size (acres)	Structures Destroyed/Damaged	Fatalities/Injuries
Potrero	1930	8,783	--	--
Malibu	10/23/1935	28,195	--	--
Topanga	11/23/1938	14,532	350	--
Las Flores	10/20/1942	5,841	--	--
Woodland Hills	11/6/1943	14,919	--	--
Hume	12/27/1956	2,194	--	--
Sherwood-Zuma (Newton)	12/28/1956	35,170	100	1
Liberty	12/2/1958	18,120	100+	--
Co. Fire 123158	12/31/1958	5,116	--	--
Latigo	10/30/1967	2,869	--	--
Wright	9/25/1970	28,202	103	10
Trippet	9/6/1973	12,298	--	--
Kanan	10/23/1978	25,589	230	2
Dayton Canyon	10/9/1982	43,097	74	--
Decker	10/14/1985	6,567	6	
Piuma	1985	5,390		
Green Meadows	10/26/1993	38,479		
Old Topanga	11/2/1993	16,468	369	3
Calabasas	10/21/1996	12,513	10	
Canyon	10/21/2007	3,839	6	
Corral	11/24/2007	4,708		
Woolsey	11/8/2018	96,949	1,643	3

Source: *CAL FIRE 2020b*

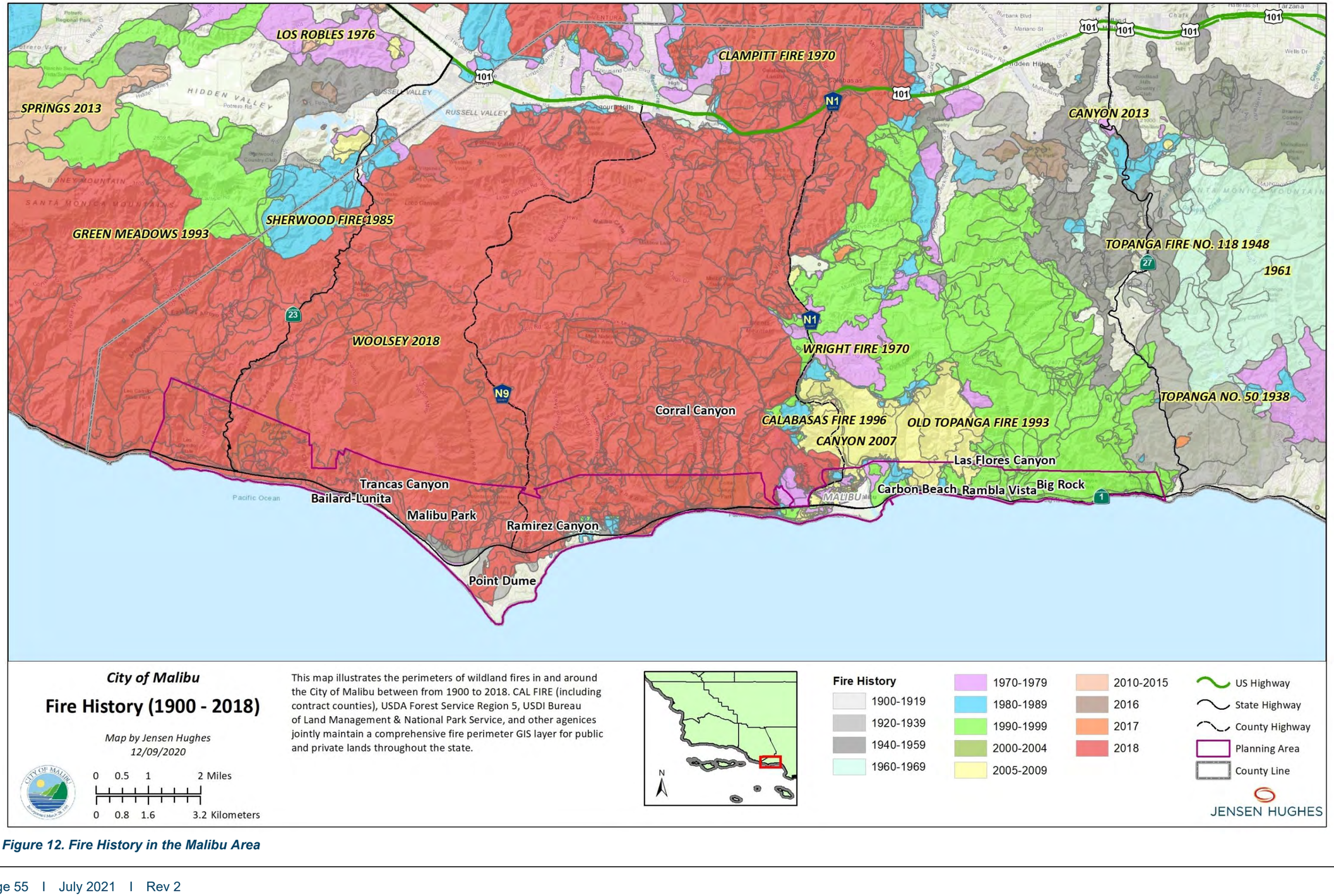

Figure 12. Fire History in the Malibu Area

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4.2.1 2018 Woolsey Fire

The Woolsey Fire ignited in the early afternoon (~2:20 p.m.) during a Santa Ana wind event on November 8, 2018, in the Simi Hills, approximately 15 miles northeast of Malibu. The ignition was ultimately attributed to malfunctioning Southern California Edison electrical equipment. While any fire igniting in the steep and brushy terrain of the region under Santa Ana winds has the potential to spread very rapidly, the timing of the Woolsey Fire ignition was ultimately a more critical component to its rapid growth. The morning of November 8th saw the ignition of the Camp Fire in Butte County – the most devastating fire in California history – which resulted in substantial first responder resources from southern California to be preoccupied in fighting that fire up north. By 2pm, the Hill Fire near Camarillo/Thousand Oaks ignited, which engaged many of the remaining first responders for initial attack on that incident. When the Woolsey Fire began 15-20 minutes later, most available firefighter resources were either detained up north for the Camp Fire or at the Hill fire further west in Ventura County. This "resource drawdown" reduced the ability of the remaining firefighters to effectively suppress and/or control the Woolsey fire during the first afternoon and evening. This was particularly acute due to the lack of availability of air attack resources, as extreme fire behavior and inaccessible terrain made direct attack on the ground highly unsafe for firefighters. The majority of the fire burned the next day when it crossed the 12-lane US Highway 101 freeway and burned rapidly across the rugged Santa Monica mountains and down into Malibu (See Figure 13). Most of the structures consumed by the fire were lost on the second day of the incident.

While Malibu and the Santa Monica mountains have historically experienced many large fires, the Woolsey Fire was exceptional in terms of both its size, and the observed extreme fire behavior that contributed to very rapid, very dangerous uncontrolled spread. Thus, the Woolsey Fire demonstrated both the potential for extreme fire behavior under very dry, hot Santa Ana winds, and also how such extreme behavior can be mitigated to safely shelter-in-place given the challenges of evacuating along the narrow Highway 1.

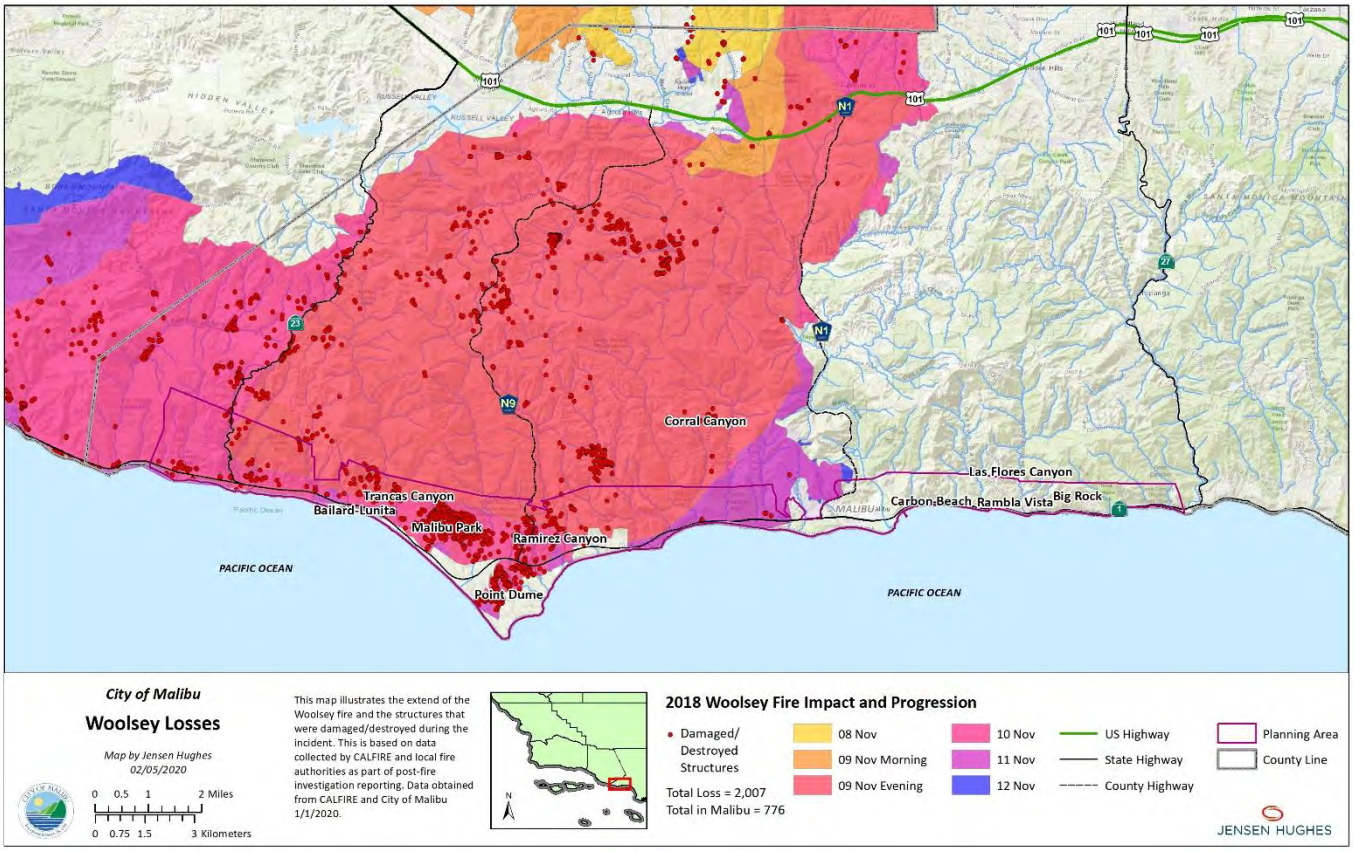

Figure 13. Progression of the 2018 Woolsey Fire in the Planning Area, with structures impacted.

4.3 VEGETATION AND FUELS

Vegetation is the primary fuel source for wildfires, and along with weather, is a key factor in determining the risk of wildfire hazards. However, in the case of the Planning Area, both wildland vegetation and urban fuels present a hazard. 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 Planning Area. Locally the abundance of non-native trees and shrubs used as landscaping vegetation and screening has a negative effect on the overall wildland fire environment. 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 fire ecology and Pre-Woolsey fire within the Planning Area is provided in Section 4.1. This description, however, does not account for the modifications to fuels across the central and western portions of the City from Malibu Canyon Road west to the City limits that occurred from the 2018 Woolsey Fire. Note: While most of the wildland vegetation within the perimeter of the Woolsey Fire was consumed, ornamental vegetation associated with residential developments was untouched by fire in many locations.

Fire frequency on the local landscape has changed the fuels complex from what would under a more normal fire regime support coastal chaparral vegetation, to a complex dominated by grass and grass-shrub fuels. Fire regime condition class can be used to understand the level of departure of native vegetation from its "historic norms". Recent work completed by the Santa Monica Mountains National Recreation Area shows that the City has experienced more frequent fire than would be considered the historic mean fire return interval. The negative effect on condition class has been exasperated by the Woolsey Fire. See Figure 14.

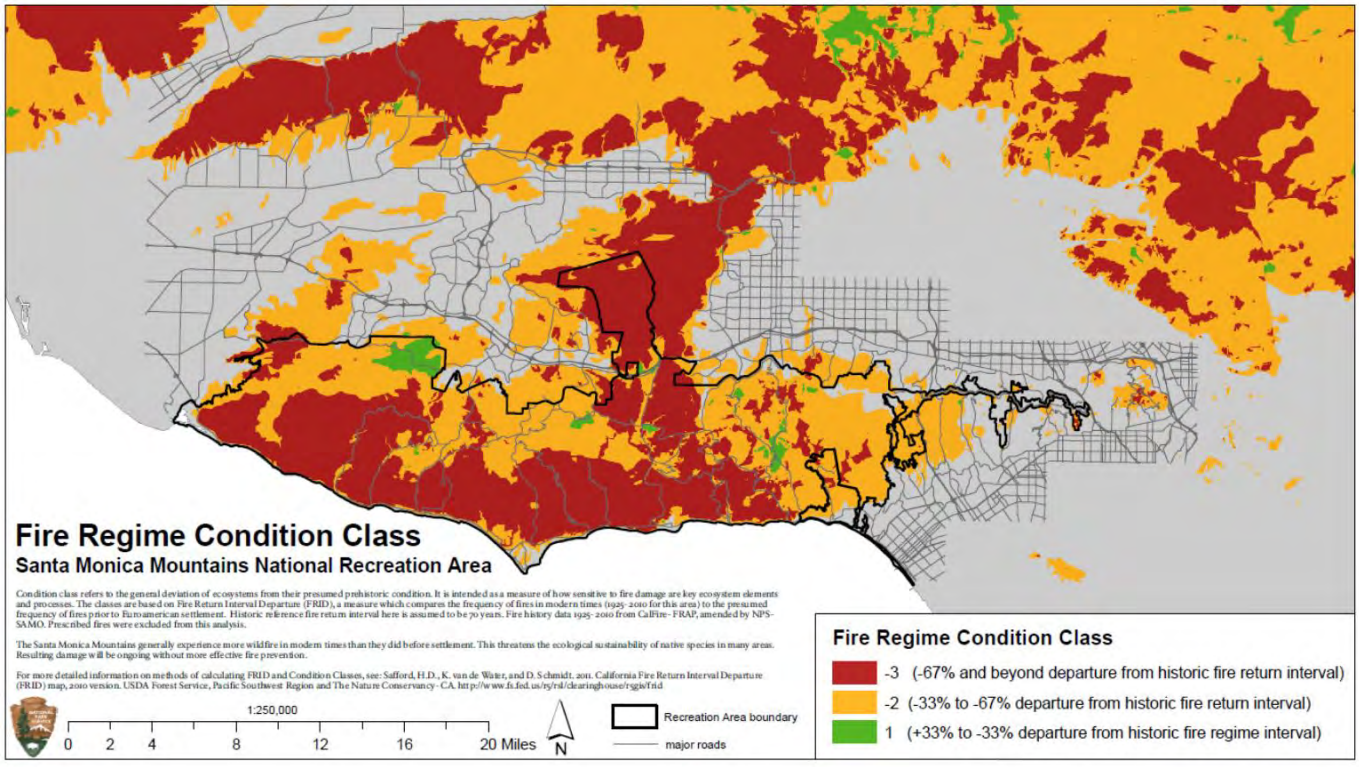

Figure 14. Fire Regime Condition Class from Santa Monica Mountains National Recreation Area in 2016.

Undeveloped wildlands exist to the north of the Planning Area along the interface with the City. With a patchwork of agency and private ownership no singular direction for the management of this vegetation exists. It

is at the interface with these wildland fuels north of the City where fires driven by offshore winds creates the greatest risk of structure damage or loss during a wildfire. Much of the Planning Area was burned during the Woolsey Fire, with the fire footprint currently supporting grass dominated fuels which, while burning rapidly, do not support the fire intensity generated in chaparral dominated fuel beds. 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 2018.

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 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. Figure 15 shows the spatial distribution of the fuel models across the City. This fuel model coverage was modified to reflect the changes in the fuel bed due to the Woolsey Fire.

The post-Woolsey Fire fuel bed is comprised more heavily of grass dominated fuel types which is reflective of the burn area being set back to an early seral stage of plant succession. Urban development, barren land and water, all considered unburnable in the fire behavior models, comprise approximately 30% of the Planning Area. Table 5 shows the percentage of fuel model coverage in the Planning Area pre- and post-Woolsey Fire.

Table 5. Breakdown of Generalized Fuel Types/Fuel Models within the Planning Area (pre- and post-Woolsey Fire)

Fuel Model	*Fuel Model Description*	*% of Planning Area (2016, Pre-Woolsey)*	*% of Planning Area (2020, Post-Woolsey)*
91	Urban	28.85%	28.17%
98	Water	0.40%	0.40%
99	Barren	1.28%	1.50%
101	Short, sparse dry climate grass	5.16%	8.23%
102	Low load dry climate grass	4.60%	35.97%
104	Moderate load dry climate grass	-	0.04%
121	Low load dry climate grass-shrub	16.36%	8.05%
122	Moderate load dry climate grass-shrub	37.29%	5.06%
142	Moderate load dry climate woody shrubs	0.02%	0.01%
147	Very high load dry climate woody shrubs	0.31%	0.37%
161	Moderate load timber grass shrub	-	0.01%
163	Moderate load humid climate timber-grass-shrub	0.06%	-

Fuel Model	Fuel Model Description	% of Planning Area (2016, Pre-Woolsey)	% of Planning Area (2020, Post-Woolsey)
182	Low load broadleaf litter	0.43%	10.37%
183	Moderate load conifer litter	1.63%	1.84%
184	Small, downed logs moderate load of fine litter	0.19%	0.19%
185	High load conifer litter	0.65%	-
186	Moderate load broadleaf litter	1.94%	-
187	Heavy load forest litter	0.11%	-
188	Moderate load long needle pine litter	0.07%	-
189	Very high load broadleaf litter	0.06%	-

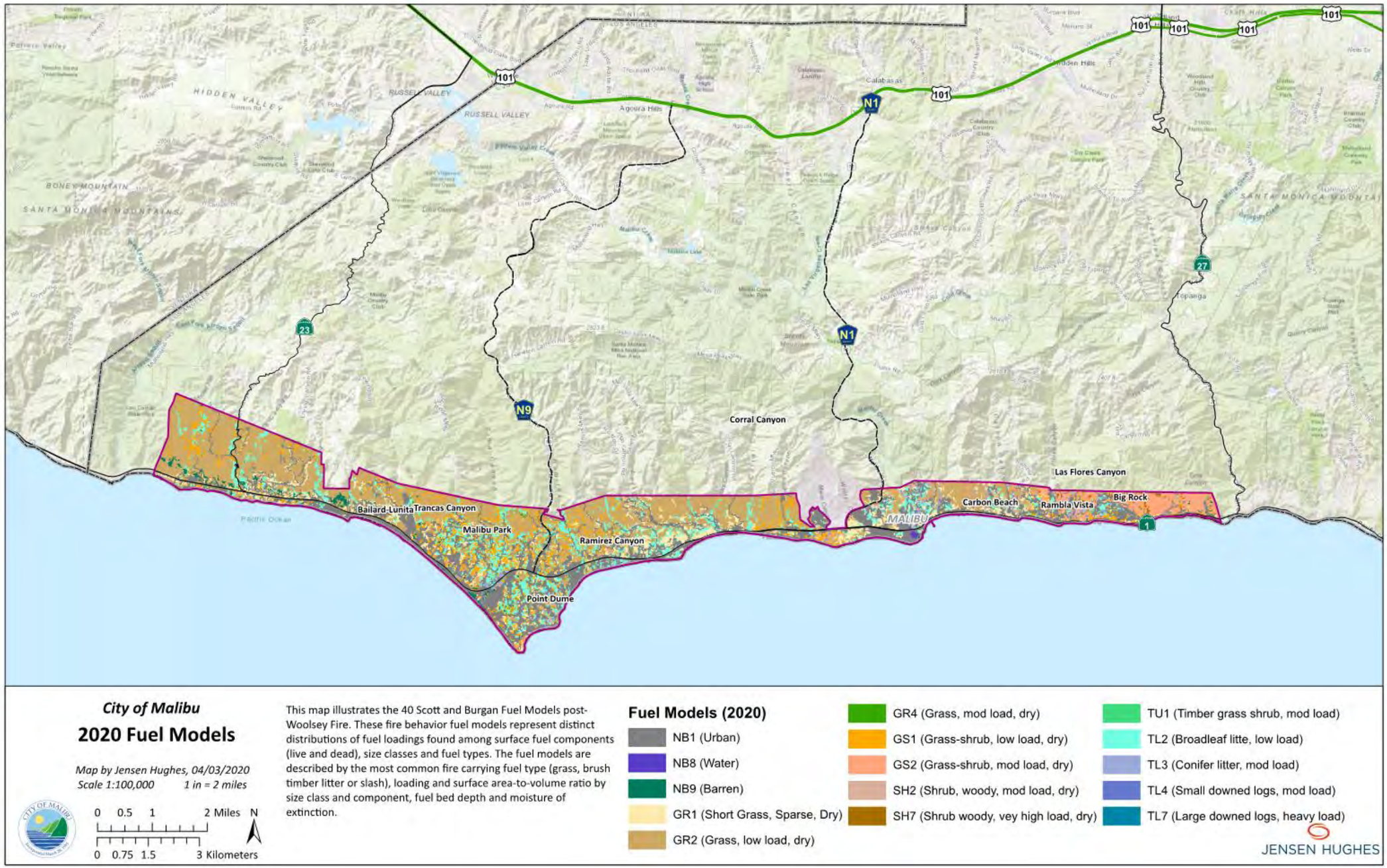

Figure 15. Fuel types/models within the Planning Area.

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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.

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 Forestry Division of the Los Angeles County Fire Department at the Stunt Road (Calabasas) 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 Stunt Road. Local live fuel moisture information can be tracked at https://www.fire.lacounty.gov/forestry-division/fire-weather-report/

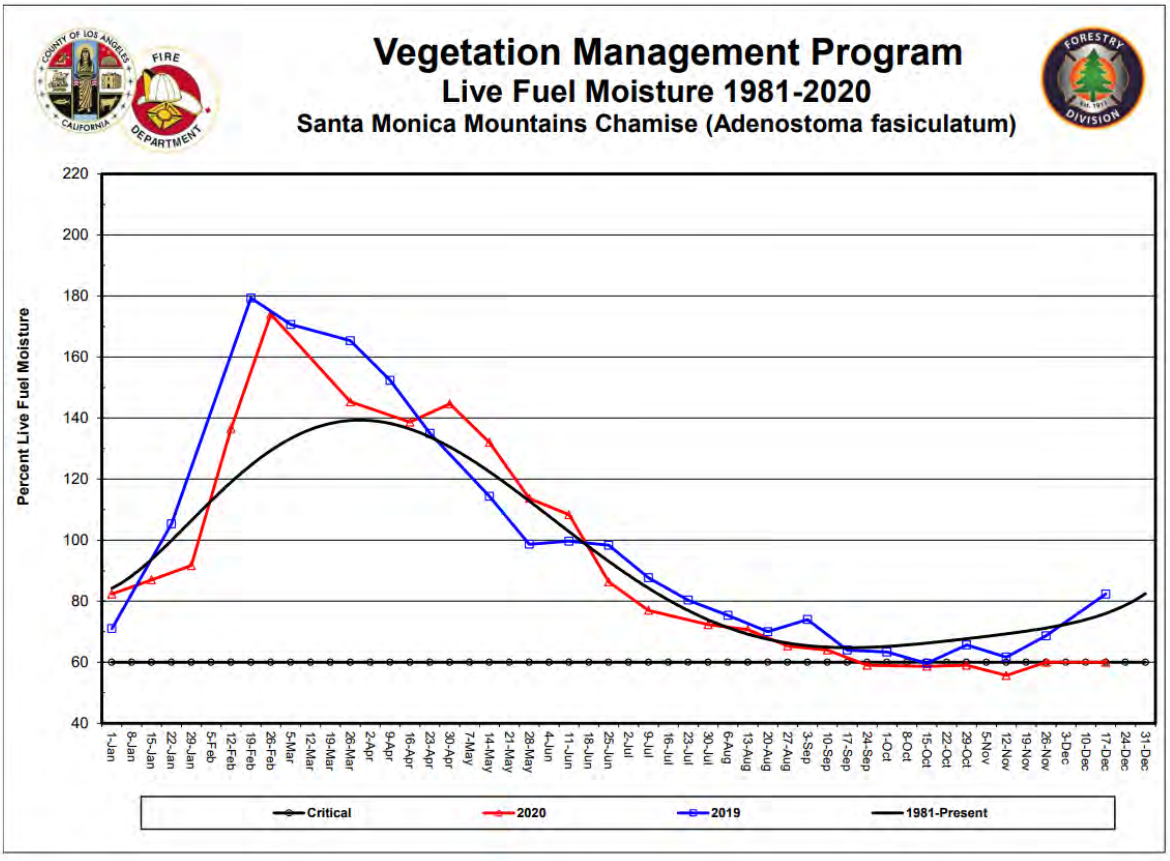

Figure 16. Live fuel moistures in chamise from the Stunt Road sample site, 2006 – 2020

4.4 CLIMATE AND CLIMATE CHANGE

The Planning Area has a Mediterranean climate, with 18.16" of annual precipitation falling primarily in the winter and early spring months. Average temperatures peak in later summer in the high 70s °F, with a relatively low range between the summer mean high and the winter mean low of approximately 48 °F. See Figure 17. This makes for a moderate maritime climate that occasionally sees extreme temperature and extreme rainfall events. Extreme temperatures, such as the all-time record high of 115°F, occur primarily during autumn, and always associated with offshore wind events.

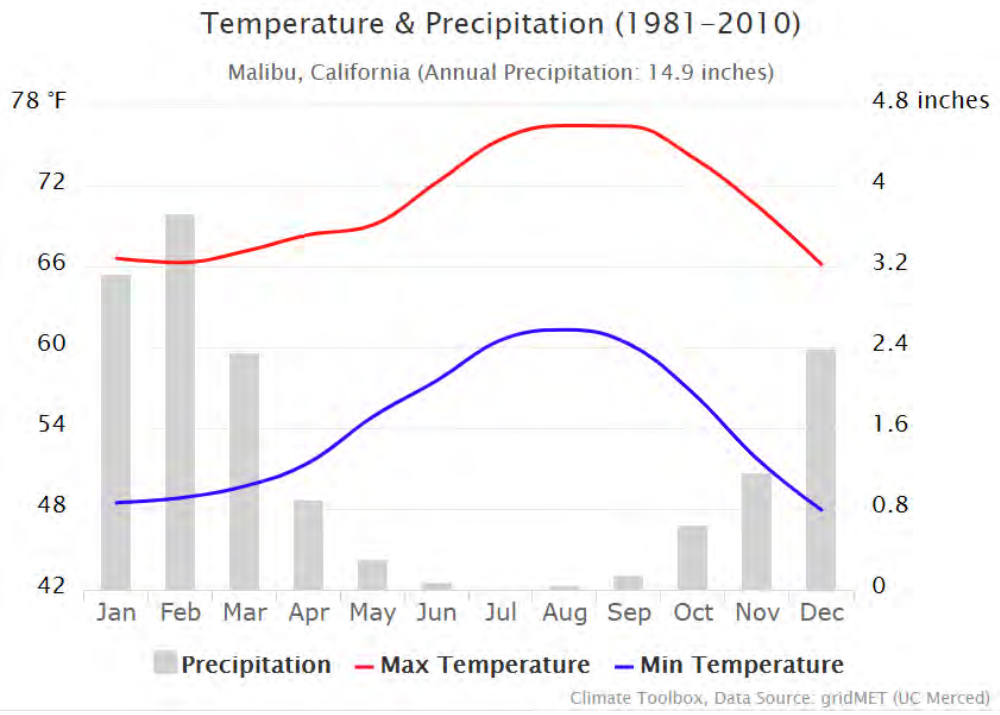

Figure 17. Annual mean climatology over the 1981 – 2010 reporting period for the Planning Area.

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 (See Figure 18) 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.

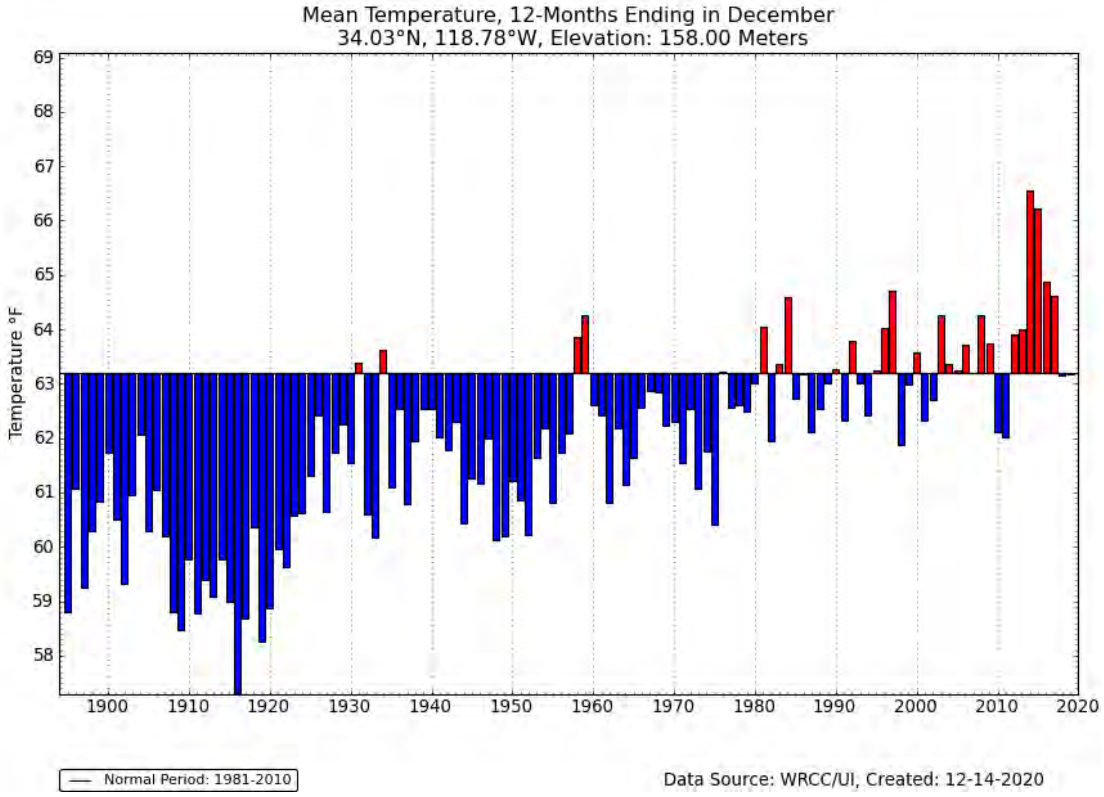

Figure 18. Mean annual temperature for the Planning Area from 1895- present.

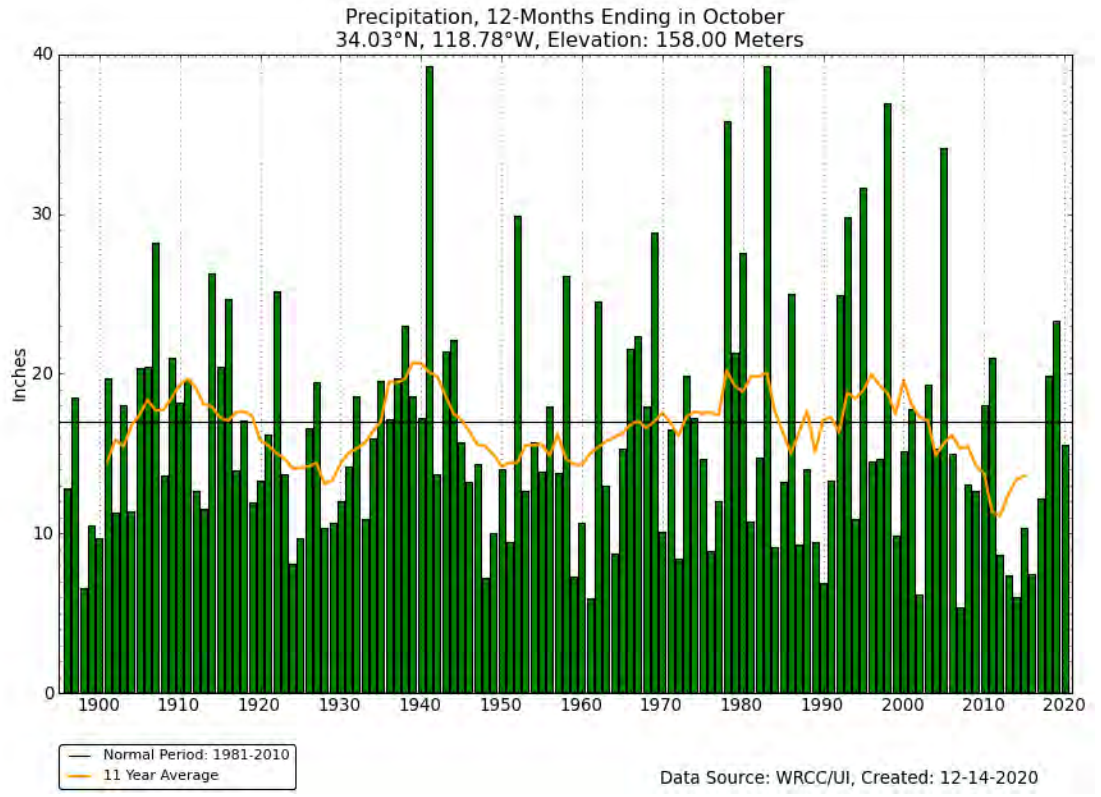

Figure 19. Mean annual water year (Oct. – Sept.) precipitation for the Planning Area from 1895-present. The yellow line represents an 11-year moving average.

This reduced nighttime humidity recovery, particularly during the fall season, is a contributing factor to an observed trend towards increased minimum day-time temperatures as a proxy for fire danger (See Figure 20). This is specifically due to the fact that fuel aridity is higher, rendering fuels 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).

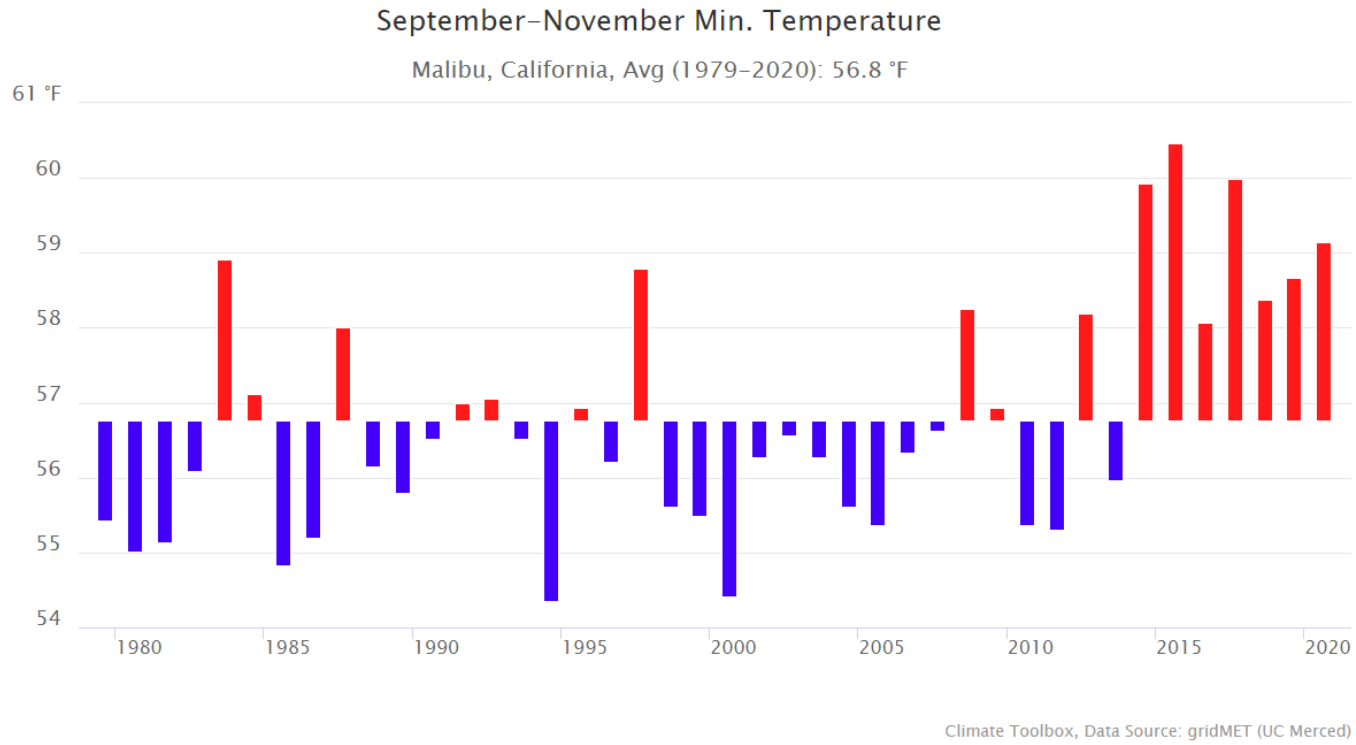

Figure 20. Increasing trends in minimum temperatures during the fall season (Sept. – Nov.) for the Planning Area from 1979-present. The increases/decreases in minimum temperature against the 20-year average serves as a proxy for fire danger.

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, potential 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 been definitively attributed to anthropogenic climate change (Abatzoglou and Williams 2016), so there is high confidence that projections of future climate will have implications for fire (i.e., these trends aren't just part of Earth's natural climate variability).

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 21). In contrast to high relative certainty that temperatures will continue to increase, little is known about how climate change will influence precipitation.

Figure 21. 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 **winter** when Santa Ana winds are most frequent. Periods of drier vegetation later into autumn and winter, coinciding with the strongest Santa Ana wind events, would facilitate more area burned, faster rates of spread, and even more intense fire behavior than has historically been seen – this scenario is consistent with what was observed during the Woolsey 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. 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).

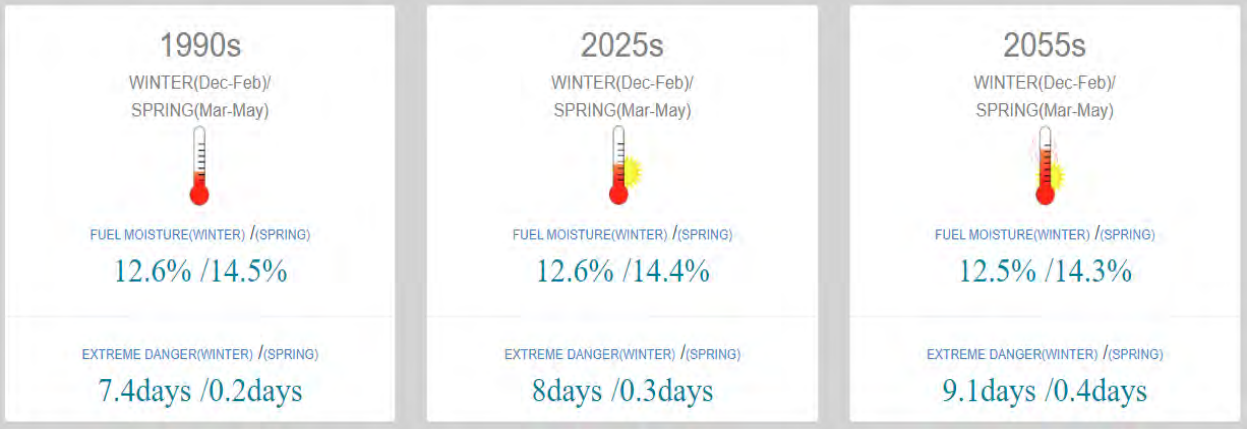

Figure 22. Projected change in average fuel moisture and the average number of days of extreme fire danger for the winter and spring months for Malibu based on global climate model outputs.

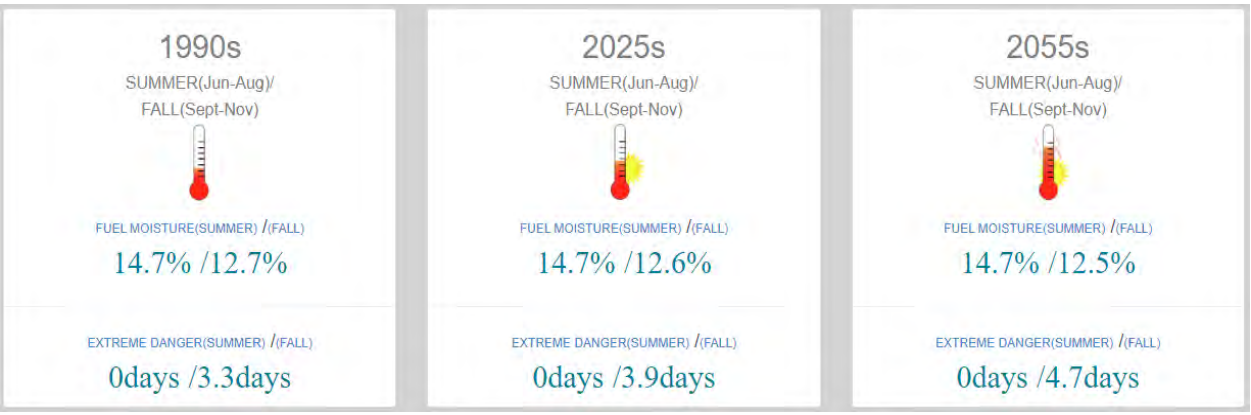

Figure 23. Projected change in average fuel moisture and the average number of days of extreme fire danger for the summer and autumn months for Malibu based on global climate model outputs.

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.
- Modifying 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 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 being the most influential on fire behavior.

Malibu is located along the east-west trending segment of the California coastline on a narrow alluvial coastal plain below the Santa Monica Mountains. The primary ridge system above the City is roughly defined by the Backbone Trail system of the Santa Monica Mountains National Recreation Area (SMMNRA). The ridge system separates the Conejo and San Fernando Valleys from the coastal communities. Slopes leading to the primary ridge routinely exceed 80%.

Several major canyons terminate in the City as they trend north-south out of the Santa Monica Mountains. These drainages descend sharply from the ridgetop before flattening as they pass through the developed portions of the Planning Area. The canyons help define the natural environment of Malibu, supporting a diverse oak woodland/riparian vegetation mix. However, these canyons also serve as major flow paths for Santa Ana winds, potentially channeling and accelerating these offshore winds.

The Planning Area has a mostly southern aspect with fine scale variation along mesas, creeks, and drainages. Southern aspects receive greater amounts of solar radiation than do north facing slopes, with these southern aspects usually supporting lighter, flashier fuels. However, the level of fire disturbance found in the local area washes out some of this natural variation between south and north aspects as the vegetation is routinely reset to an early seral stage of ecological development, which features grass and grass-shrub dominated fuel types.

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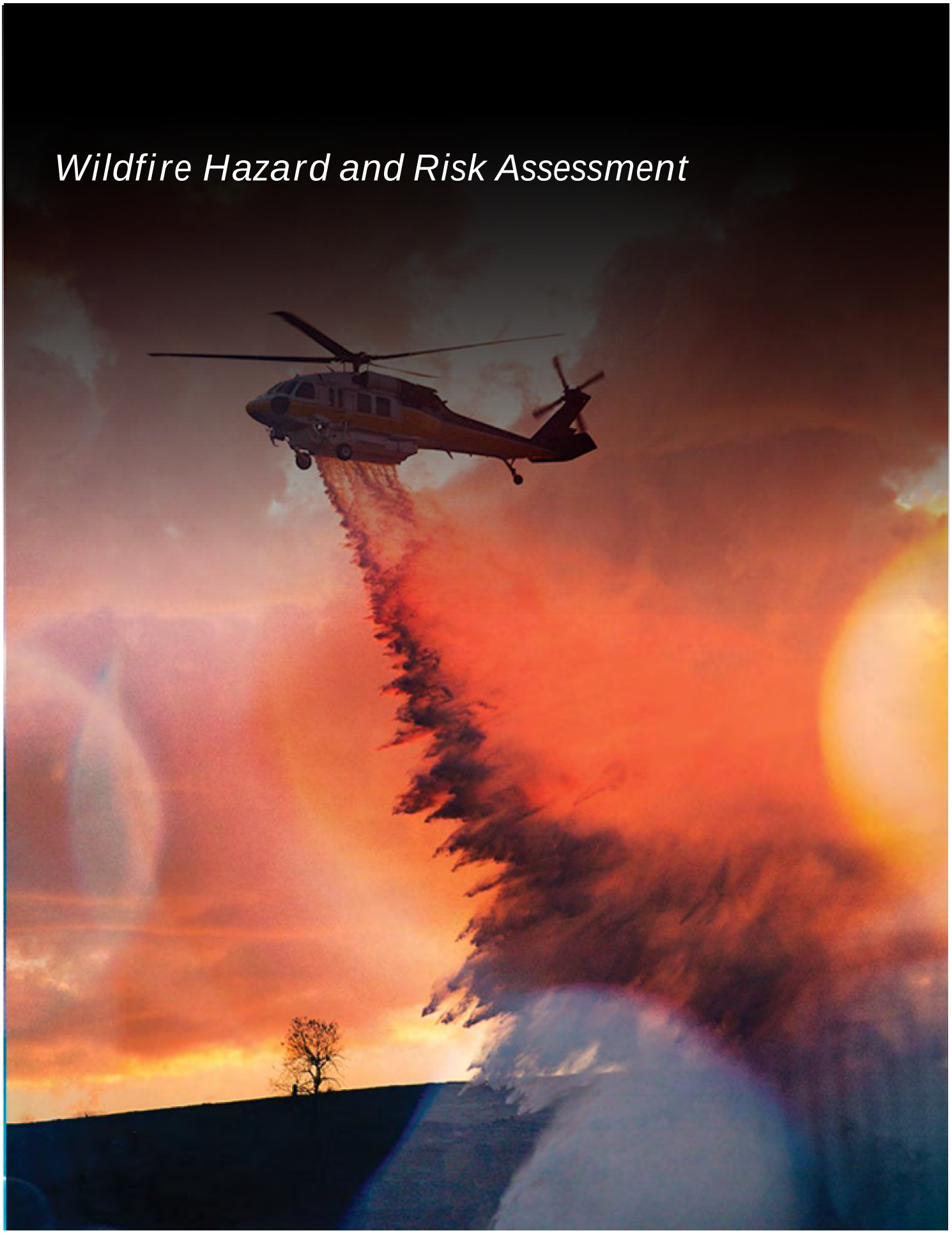
Wildfire Hazard and Risk Assessment



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5.0 Wildfire Hazard and Risk Assessments

Given its highly-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 Planning Area. 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 City/LACoFD 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 Planning Area.

5.1 OVERVIEW

Historically, the greatest wildfire threat to Malibu comes from fires originating in the Santa Monica Mountains and/or along the Highway 101 corridor north of the main populated areas of the Malibu coastline. Continuous chaparral vegetation, steep terrain, and the potential hot and dry weather associated with Santa Ana winds can combine to create an extremely hazardous wildfire environment. While this interface with the Santa Monica Mountains is a wildfire threat, there are locations within Malibu 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 are 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

Weather is the most variable element of the wildland fire environment. Important components of fire weather that influence fire behavior are temperature, relative humidity, precipitation, wind, and atmospheric stability. All of these elements have the potential to enhance or retard wildfire spread and intensity.

Situated in the coastal zone, local weather patterns are greatly influenced by the Pacific Ocean. Fog is common on the lower slopes of the City throughout the spring and early summer, lessening in depth and duration in late summer and fall. Based on data from 20 years of weather records (1999-2019) from the Malibu Hills Remote Automated Weather Station (RAWS), August is the warmest month of the year, with an average maximum temperature of 82.8°F. While this represents the average summertime high temperature, this RAWS located 5.9 miles northwest of the Civic Center at an elevation of 1,750 feet, reported a temperature of 115°F in June 1999. Locally, the coldest month of the year is February with an average minimum temperature of 50.0°F.

The annual average precipitation at the RAWS is 18.16 inches, with most of the precipitation occurring between November and April. February is historically the wettest month of the year with rainfall averaging 3.76 inches. The mean annual average wind speed at the recording station is 5.6 mph (Figure 24), with south/southeast the dominant wind directions. This data represents the average annual wind speed, however strong offshore winds associated with Santa Ana weather events are the primary drivers of large wildfires on this portion of the Coast. Wind gusts of 68 mph were recorded at this location during the Woolsey Fire.

Figure 24 shows the dominate wind direction and wind speed for a portion of the important fall Santa Ana season.

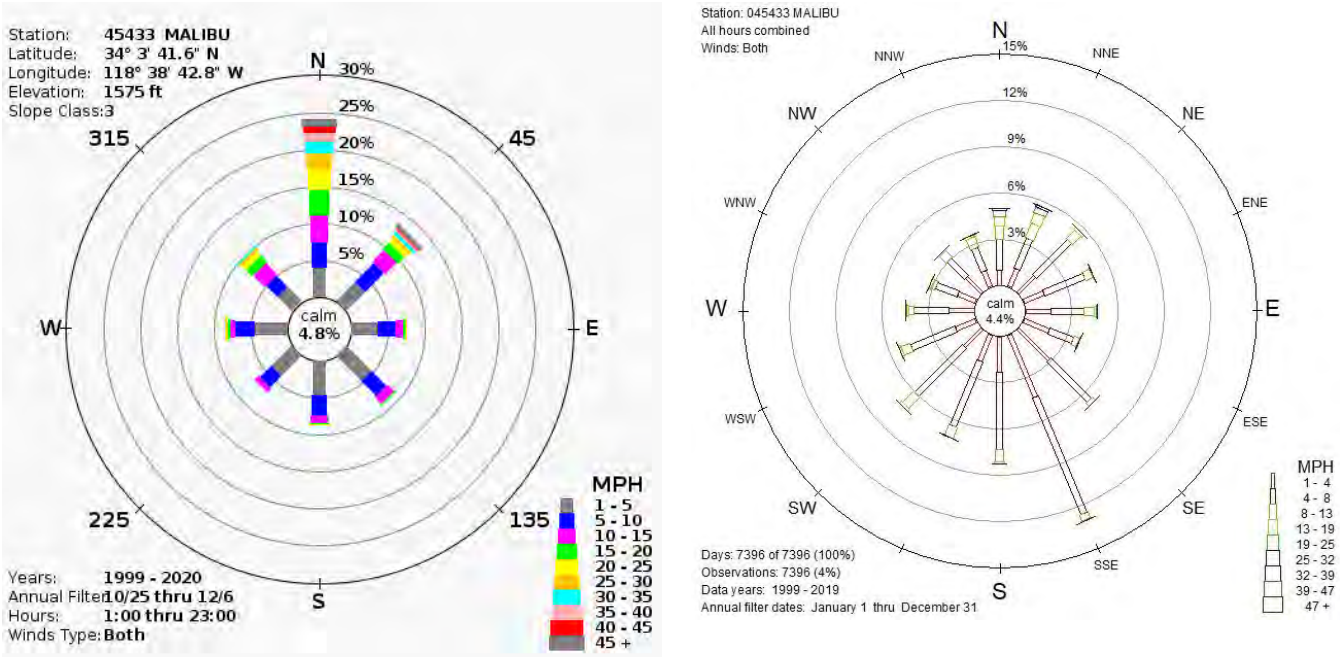


Figure 24. Historical wind data during Santa Ana conditions (left) and averaged annually(right)

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 Planning Area (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".

Note: 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 (which reflect landcover conditions pre-2014). To provide the most up-to-date fuels layer, the data from LANDFIRE was modified to reflect post-Woolsey Fire conditions. This data was spot checked during several field visits and confirmed in discussions with LACoFD and City 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 within the City that are prone to severe fire conditions, and to use this as the basis for designing and prioritizing fuel treatments. Using FlamMap – a fire behavior prediction model – the potential severity of a wildfire was calculated under 97th percentile weather conditions (i.e. extreme conditions) consisting of 17 mile per hour northeast winds throughout the Planning Area. Two scenarios were evaluated using: (1) vegetation conditions that existed prior to the 2018 Woolsey fire and (2) vegetation that currently exist post-Woolsey fire. *Note: The pre- and post-Woolsey fire vegetation consists primarily of grass and shrubs, in which fire spreads readily at moderate to high intensity levels*. As a proxy for potential fire severity, flames lengths have been calculated across the Planning Area for both scenarios, as seen

in Figure 25 and Figure 26. Flame lengths have been correlated to the effectiveness of varying firefighting response capabilities.

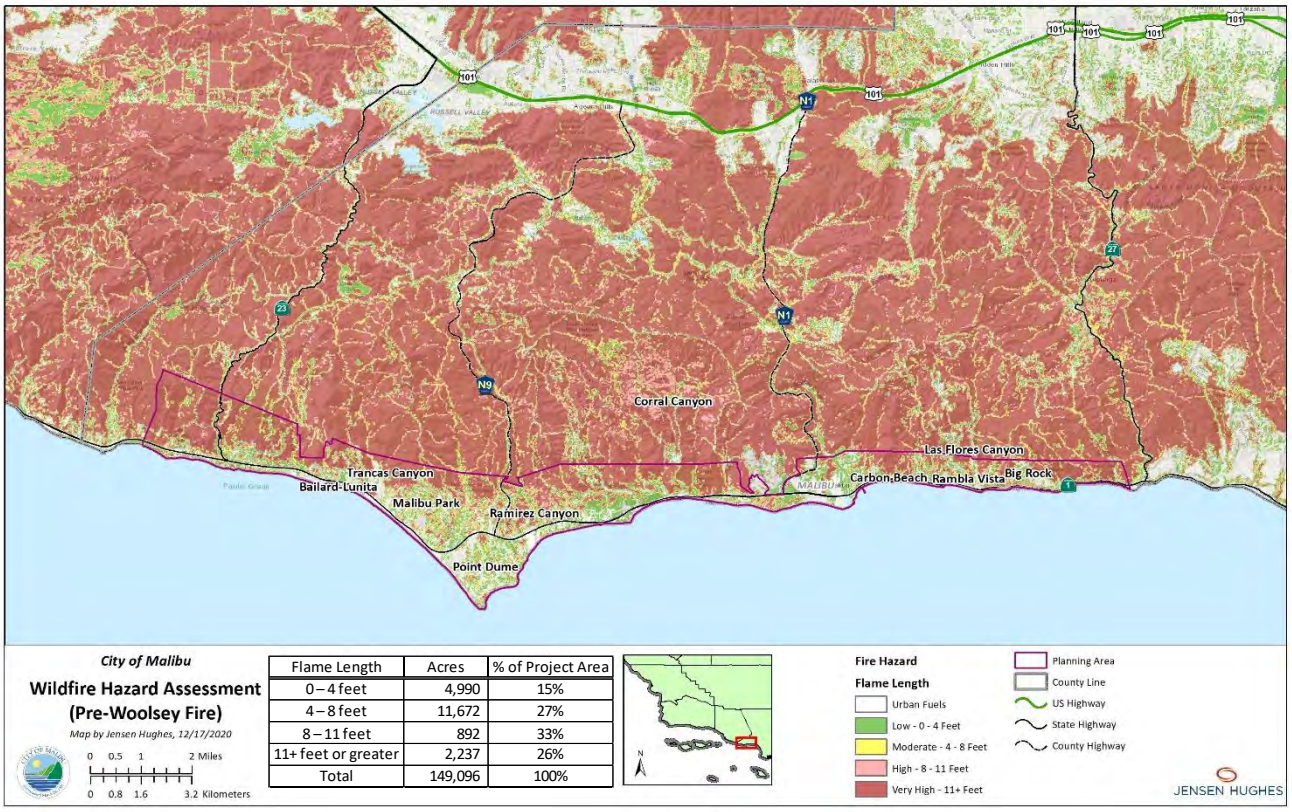


Figure 25. Wildfire Hazard Map (97th percentile conditions, 17 mph NE winds, pre-Woolsey conditions)

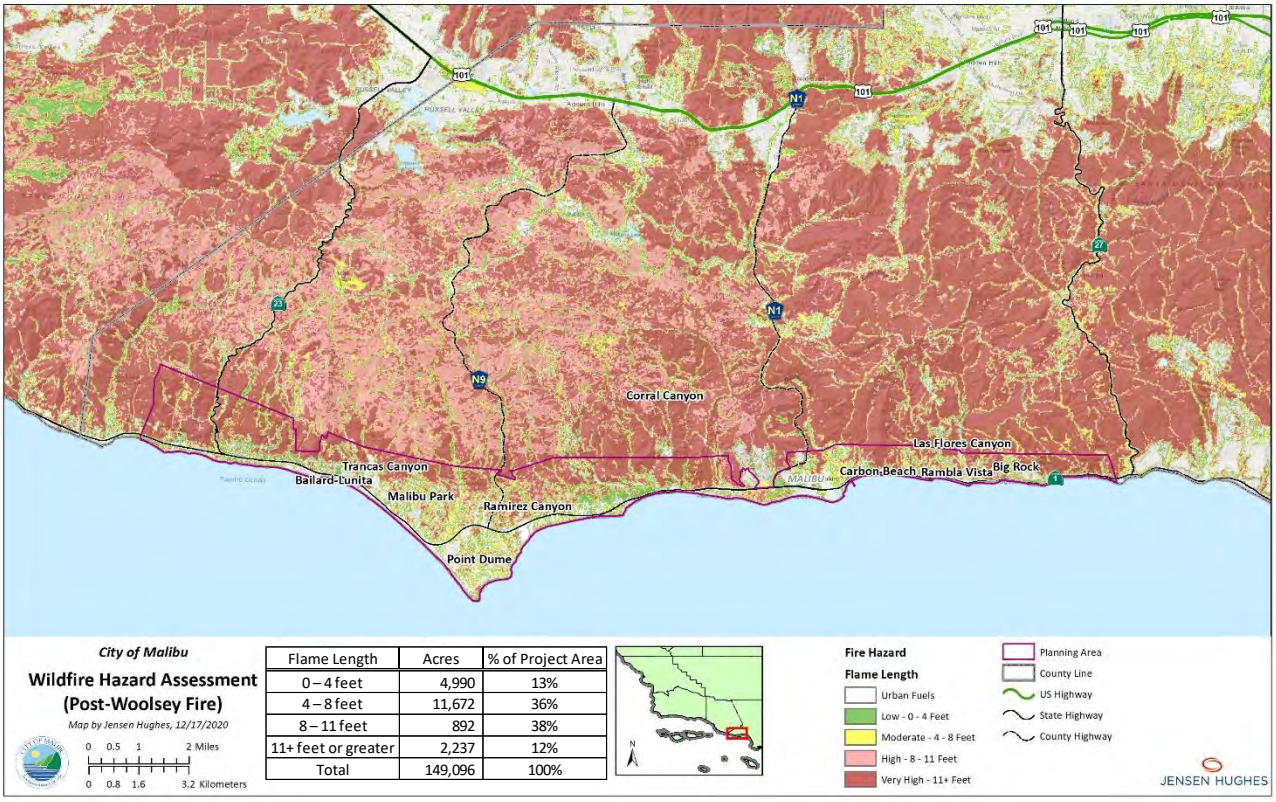


Figure 26. Wildfire Hazard Map (97th percentile conditions, 17 mph NE winds, post-Woolsey conditions)

Figure 27 compares potential flame lengths for pre- and post-Woolsey vegetative conditions. This data shows that post-Woolsey fire flame lengths in the 11 foot plus category decrease by approximately 50% while flame lengths in the 4.1 to 8 foot and 8.1-to-11-foot categories increase. This is due to fire removing decadent chaparral and grass and grass-shrub fuels reoccupying the site.

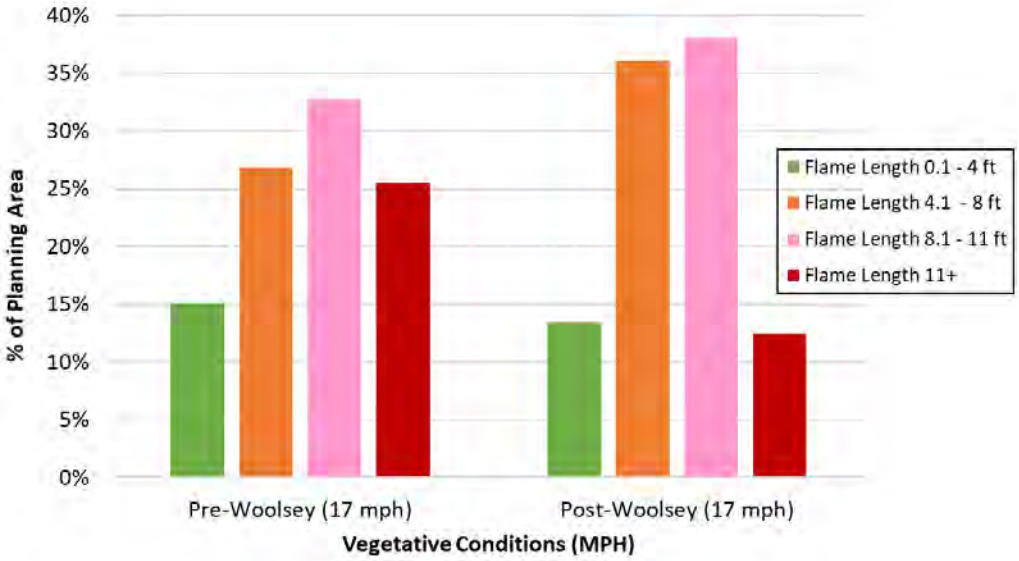


Figure 27. Effect on flame length (~ fire severity) in Post-Woolsey vegetative conditions

Wildfires burning at these intensities generally cannot be controlled and/or suppressed by ground-based firefighters and are considered extremely hazardous to firefighter and life safety. Considerable loss and damage

to structures and other values can occur during a wildfire under these types of burning conditions. Table 6 provides the 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 6. 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

***IMPORTANT NOTE**: Although there appears to be areas on the hazard maps in Figure 25 and* Figure 26 *that are not at risk from a wildfire, this is a reflection of the limitations of the fire model as noted in Section 4.3. With FlamMap and 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 Woolsey Fire in 2018, wildfire will spread readily through developed urban areas, particularly under conditions of high wind and low relative humidity.*

5.3 RISK ASSESSMENT

For the purposes of this Plan, the risk of a wildfire occurring within and immediately adjacent to the Planning Area has been based on an evaluation of fire frequency across the landscape during the time period 1925 – 2018. To develop the risk map, a relative risk scale was developed based on the number of times fire burned a particular area (Table 7). Where a point was found to have burned nine or more times since 1925, relative risk is classified as *Very-High*". Figure 28 illustrates the relative risk for Malibu and surrounding areas.

Table 7. Relative Risk Scale based on Fire Frequency (1926 – 2018)

Frequency of Fire	Risk Classification
9-11	Very High
6-8	High
3-5	Moderate
< 3	Low

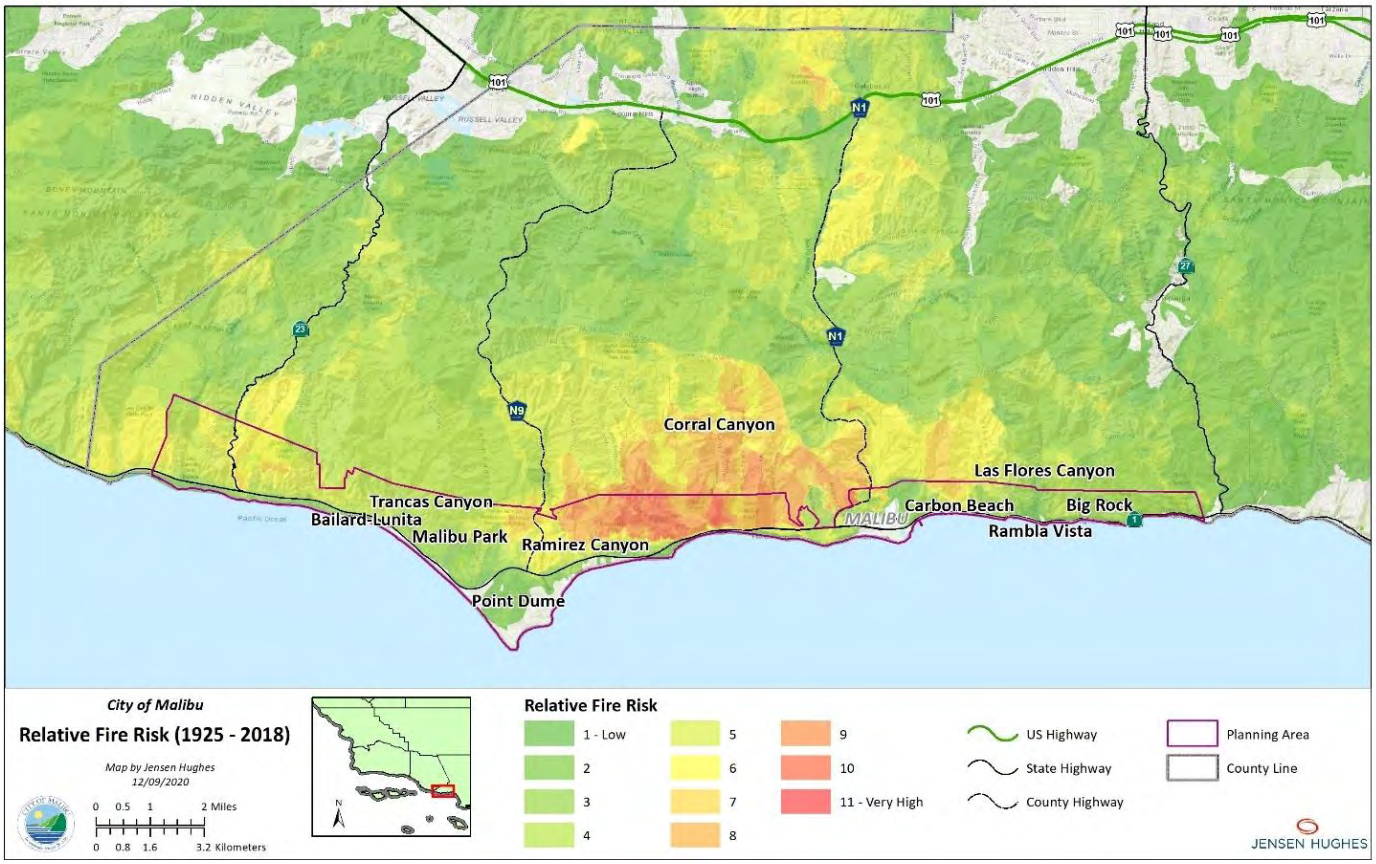


Figure 28. Relative Risk of Wildfire Across the Planning Area.

As seen in the figure, wildfire has been a common occurrence in Malibu through the years and if history is to serve as a guide, it is not a matter of if Malibu will see another significant wildfire in the coming years, but rather when and what portions of the City will be impacted.

In terms of the number of wildfires which have occurred on the local landscape, the area between Kanan Dume Road and Malibu Canyon Road has burned more frequently than other portions of the City, having burned up to 11 times during the analysis period. This may indicate that the canyons leading into the City within this geographic area tend to funnel Santa Ana winds to a greater extent than other locations, or it may reflect that ignitions have occurred in locations that lead to fire spread through this area. Regardless of the reason, this portion of the City has the highest fire frequency and is therefore classified as the area at greatest possible risk of a future wildfire.

Only a few locations within the Planning Area have never seen wildfire, however it is a mistake to assume that these areas are without risk of being involved in future wildfires. These unburned locations are generally associated with developed landscapes, where vegetation that supports wildfire spread has been significantly modified over the years. While these areas may not have a fuel complex that will support wildfire spread, ember-cast into these locations places residences and businesses at risk, particularly during times where offshore winds drive embers from a wildfire north of PCH into the community. It was the ember cast from the Woolsey fire that led to the fire crossing Highway 101 and eventually running into Malibu and across PCH, impacting local neighborhoods, particularly Malibu Park and Point Dume (Figure 13).

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 City (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 City 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 8 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 City are illustrated in Figure 29. 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. LACoFD maintains detailed Structure Defense maps to aid firefighters in understanding the structure defense needs of preplanned areas within the City.

Table 8. 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

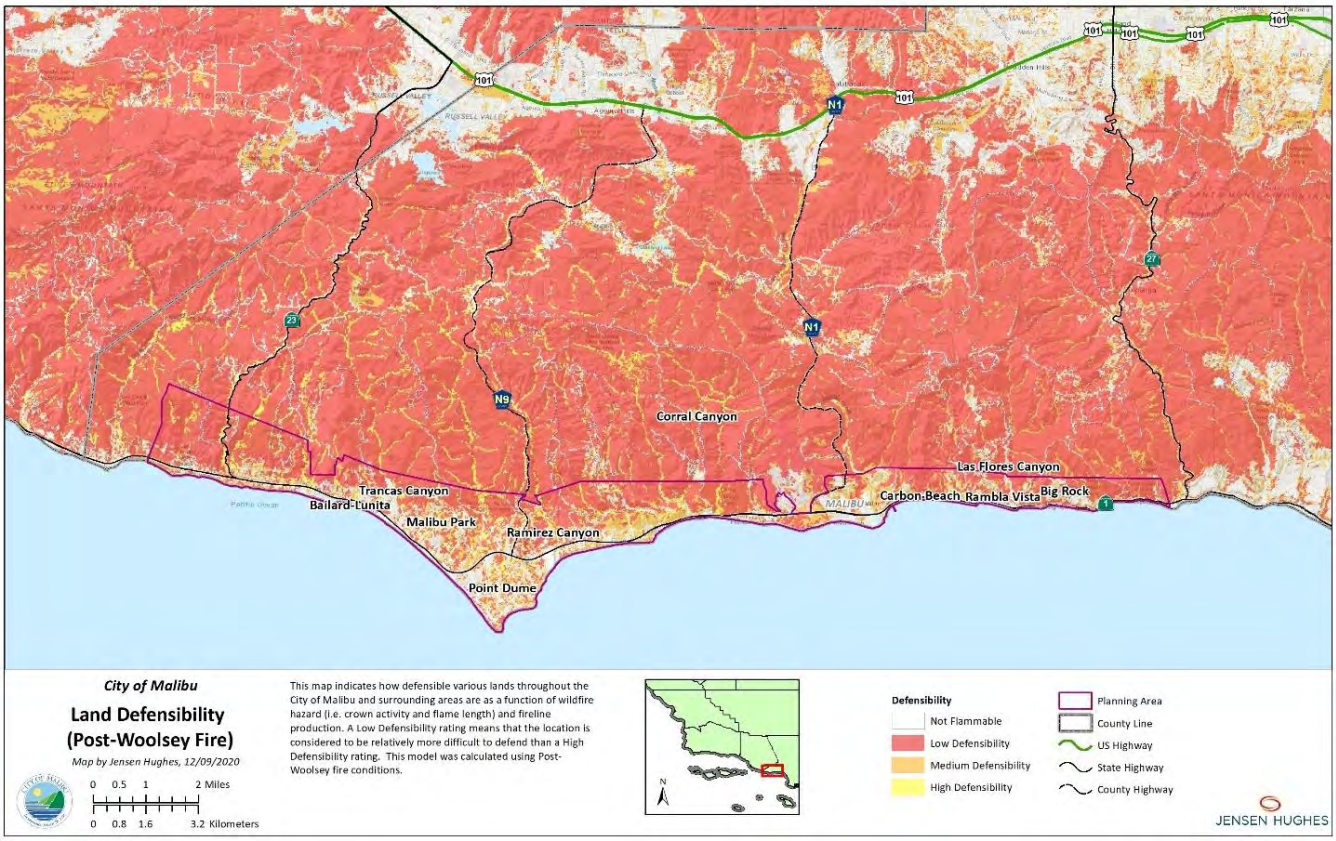


Figure 29. Defensibility rating across the City post-Woolsey conditions

***Important Note**: Property owners and other Stakeholders should recognize that locations classified as having "Not Flammable/Non-Combustible" and a High Defensibility rating 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 Malibu Park, where the Defensibility analysis indicates moderate to high defensible, substantial structure loss still occurred in the area during the Woolsey fire. This could have been a result of many other factors such as the extreme conditions of the Woolsey 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 Santa Ana 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 30. 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.

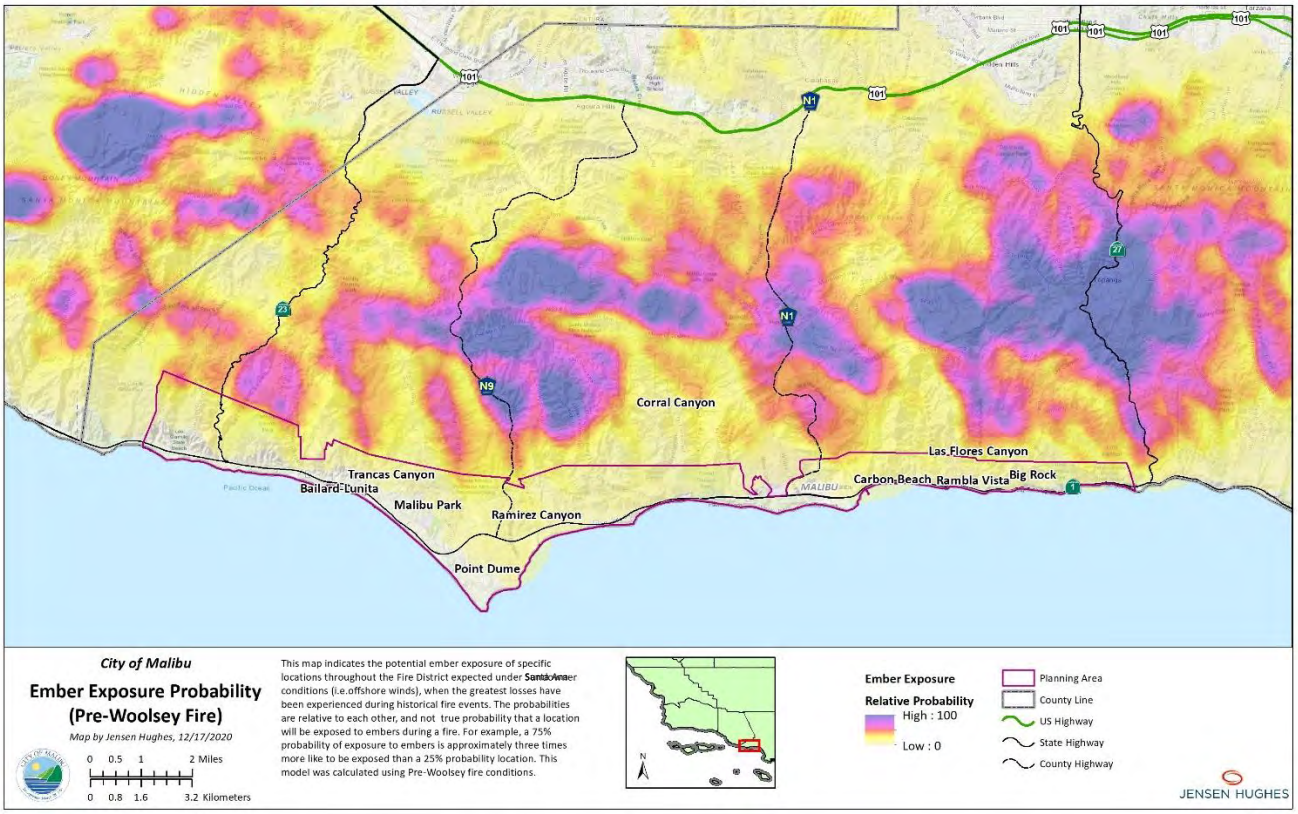


Figure 30. Ember exposure probability across Project Area.

To develop the Ember Exposure maps (Figure 30), 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 FIRE RUN DAMAGE POTENTIAL

Wildfire damage estimates can be difficult to accurately determine as the variables that influence fire damage are difficult to quantify with certainty. These variables can include the availability of firefighting resources, the time of day of the fire, weather conditions, defensible space, structural hardening provisions, vegetation management, community layout and the age/condition of structures. All of these factors, among others, will influence the level of damage a community could experience from a wildfire. For this Plan, 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 City. Two specific ignition locations and weather scenarios are used to generalize potential fire damage.

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

1. ***Zuma Ridge Motorway***, just north of Malibu Park
2. ***Serra Road,*** just at the City limits and intersection of Serra Road and Palm Canyon Lane

The fires were modeled using FARSITE (a fire growth simulation modeling system) given post-Woolsey vegetative conditions and weather data recorded at the Malibu RAWS during the 2018 Woolsey Fire. Note: post-Woolsey vegetation conditions are presented as they reflect the potential consequences of a fire occurring in the next 5-10 years. Figure 31 and Figure 32 display the spatial extent and damage potential of the two simulated fire locations.

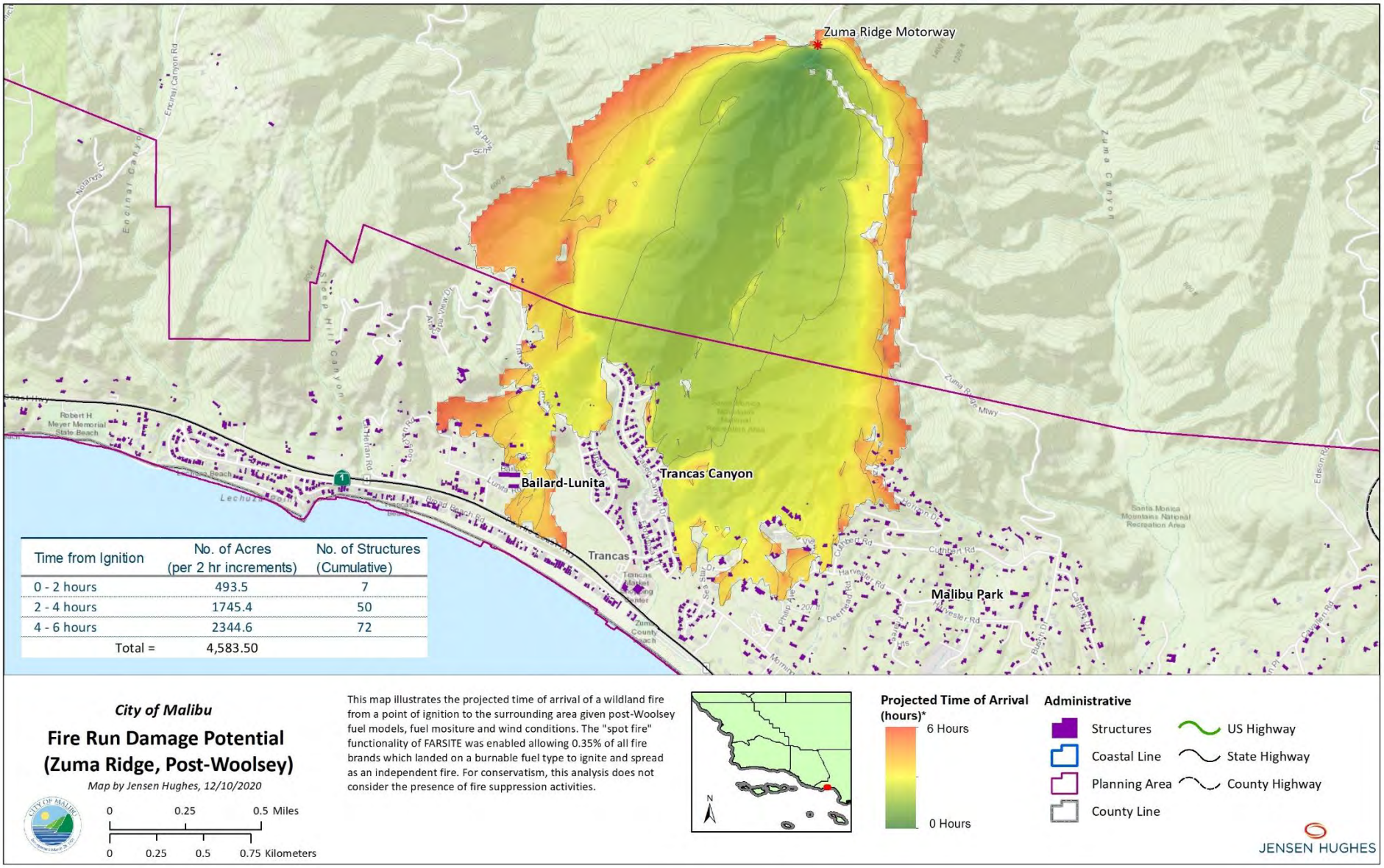


Figure 31. Fire Run Damage Potential for a Potential Ignition Source at Zuma Ridge

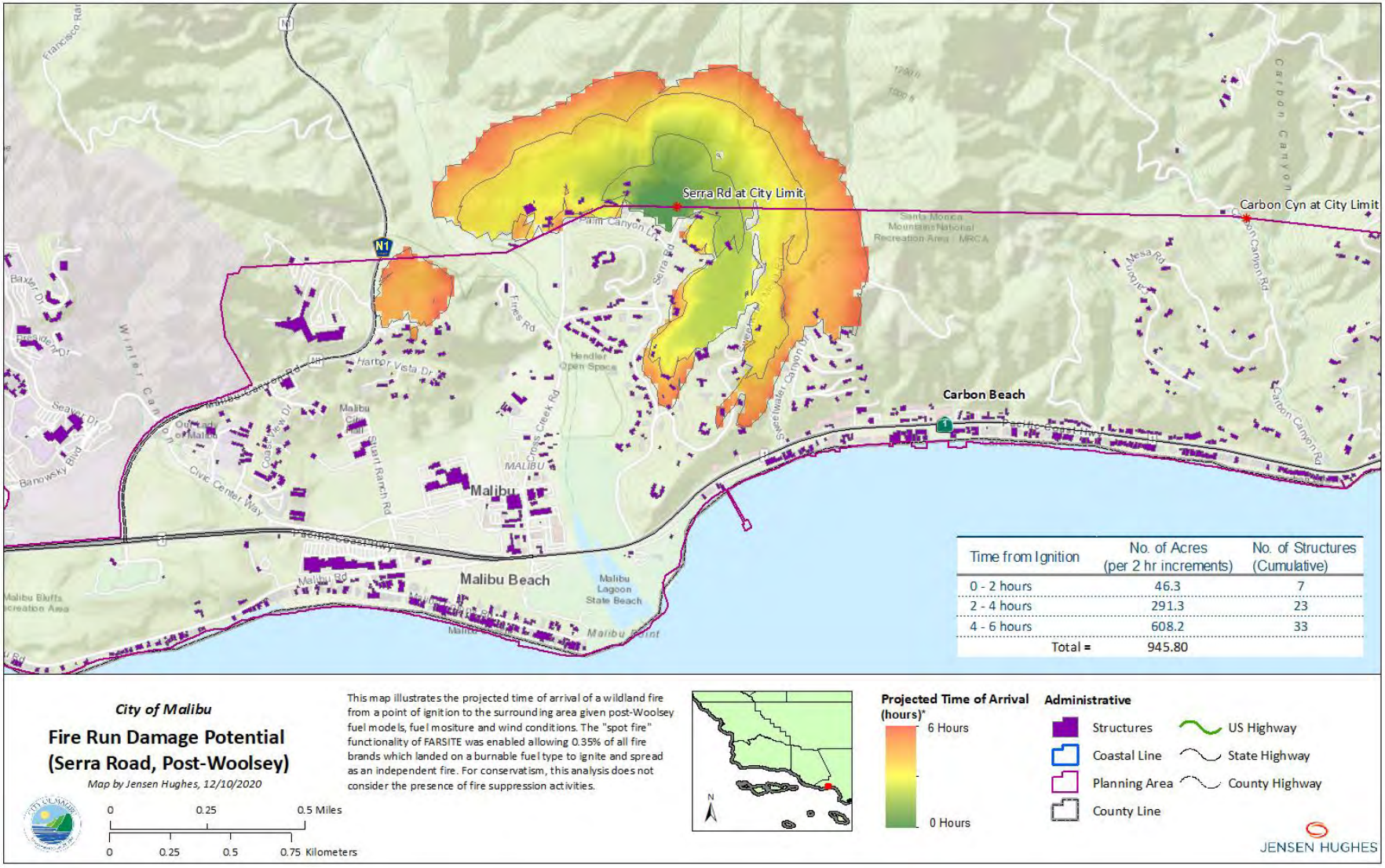


Figure 32. Fire Run Damage Potential for a Potential Ignition Source at Serra Road

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

- Structure data obtained from the Microsoft Building dataset (created September 25, 2018) 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 Malibu is assumed to be $3,291,802 per Zillow estimates (www.zillow.com, accessed December, 2020). These values are applied to all structures impacted by the modeled fires.
- 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 6-hour simulation period.

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

Table 9 presents the number of structures within the City boundaries that would fall within the representative fire perimeters. The table also captures the final fire size of the representative simulated fires and the potential total financial loss.

Table 9. Estimated Financial Loss Due to Representative Wildfires in the City

Simulation Name	Final Fire Size (acres)	Total Structures Impacted within City boundaries	Total Potential Wildfire Damage
Zuma Ridge	4,583	72	$114,192,000
Serra Road	945	33	$52,338,000

Note: In addition to estimating the potential physical and financial losses of two fire scenarios in and/or near the City boundaries, the modeling also highlights the extreme speed of onset (i.e., time from ignition to arrival of the initial flaming front) of a fire that may occur in and/or near the City when wind conditions are high (i.e., during Santa Ana events similar to the Woolsey fire). The Zuma Ridge simulation travels approximately 1.8 miles during the six-hour simulation period, while the Serra Road simulation travels about 0.5 miles during the same period.

These two scenarios show the potential impact to residents and infrastructure under a variety of fire weather conditions that occur annually within and near the City. These estimates are supported by observations of fire spread during Woolsey and other fires and can be used to determine the timing of evacuations in future wildfires under similar conditions.

5.7 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.

All areas of Malibu are vulnerable to wildfires due to their proximity to wildland vegetation, hazardous topographic features (e.g., canyons, drainages, the Santa Monica Mountains). In addition, all structures are also vulnerable due to firebrands that can be carried downwind up to 1 mile or more into receptive fuels throughout the Planning Area.

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.

Wildfire will continue to threaten the communities within Malibu 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 City of Malibu provide the regulatory basis for preparedness, but these alone will not protect life safety and the City's values.

5.8 COMMUNITY INPUT ON HAZARDS AND RISKS

As part of the CWPP process, a community survey was administered to understand the experiences, perceptions, needs and concerns of local residents to past and future wildland fire threats in and around the

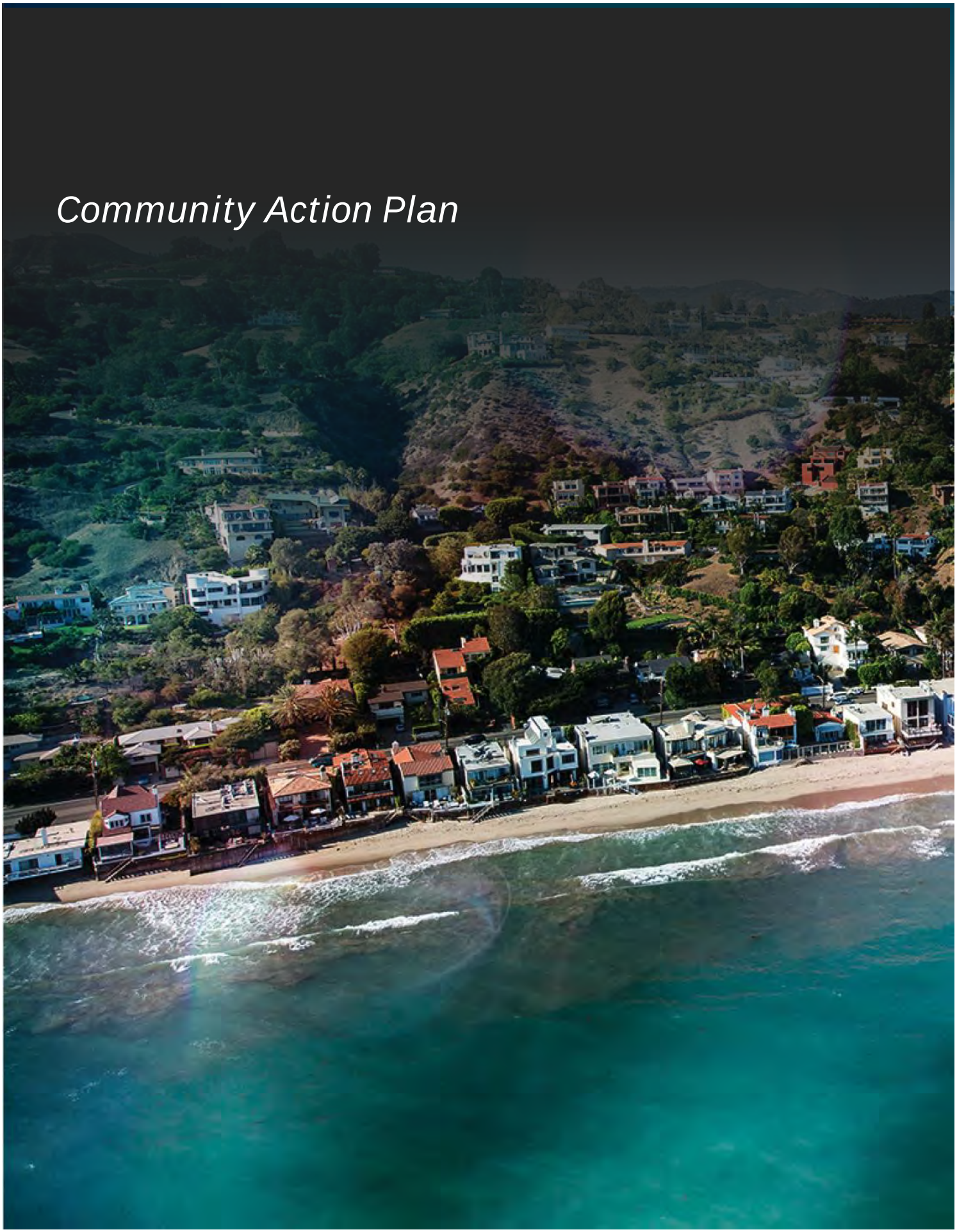
City. Additionally, the survey was intended to gather broader and more nuanced information from community members that may not be captured by traditional government mechanisms. The aim was to use this information to better tailor community-based activities, educational programs, services, policies, and other action items that not only help mitigate wildland fire risks but are also locally relevant, inclusive, and sustainable.

A total of 225 households responded to the survey, which consisted of eight (8) thematic areas – (1) general demographics (2) physical housing characteristics (3) risk mitigations practices (4) wildfire fire experiences related to evacuation and emergency communications (5) wildfire risk perceptions and values (6) public education (7) policy changes and (8) free responses. Of the responding households/person, more than 80% of have lived in Malibu for more than eight years.
The following are key findings from the CWPP survey:

- Approximately 28% indicated their primary residence has single pane windows
- More than 58% of respondents indicate they have created defensible space around their structure
- Approximately 51% indicated they received information regarding the Woolsey Fire through an emergency alert system
- More than 6% indicate they did not receive any alerts/information during the Woolsey Fire
- Nearly 82% of respondents indicate they did not receive enough information on how or where to safely evacuate during the Woolsey Fire
- Almost 40% indicated that ecological values should be given equal weight to private property values when deciding how to mitigate wildfire risk
- Nearly 62% of respondents are very likely or likely to support the use of herbicides to treat invasive species

Full survey results are available at:
https://ca-malibu.civicplus.com/DocumentCenter/View/26840/CWPP-Public-Survey-Response-Summary

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 Planning Area for 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 Malibu and other communities 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 City, County and Regional levels.

6.1.1 City | 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 City's website at https://www.malibucity.org/DocumentCenter/View/22985/Ready-Set-Go-Document?bidId=

+ **Sustainable Defensible Space**

  This project, funded by Cal Fire and developed with inputs from Los Angeles and Ventura County fire departments, offers solutions to improve resilience and resource conservation values, and resistance of structures to wildfire loss for developed properties in the SMMNRA by improving management by homeowners of their defensible space zone. https://defensiblespace.org/

+ **Fire Danger Ratings**

Residents can monitor fire danger conditions on County of Los Angeles Fire Department website https://fire.lacounty.gov/fire-weather-danger/. Understanding current fire danger can help residents react appropriately when notified of an emerging fire situation.

+ **Arson Watch | Malibu**

Arson Watch is a volunteer program under the supervision of the Los Angeles County Sheriff's Department. The program includes volunteers from Malibu, Topanga, Agoura Hills and Calabasas, responsible for patrolling over 185 square miles of the Santa Monica Mountains during periods of extreme fire weather conditions. Arson Watch teams look for signs of smoke or fire and report any sighting, warnings and vital information to the Malibu/Lost Hills Sheriff's station, L.A. County Fire, California Highway Patrol, and other local officials. Each volunteer is issued an official ID, two-way radio, safety vest, shirt, hat, and vehicle identification signs. Volunteers are provided training in what to look for when patrolling and how to communicate via two-way radio during patrols. It was an Arson Watch volunteer who reported the Old Topanga Canyon/Malibu Fire in November 1993.

+ **Volunteers on Patrol | City of Malibu**

In December 2010, the Malibu City Council approved the establishment of a *Volunteers On Patrol* (VOP) program in the City of Malibu. The VOP program was created by the Los Angeles County Sheriff's Department to allow civilian volunteers to help the Sheriff's Department achieve its goals, to prevent crime by mere presence or identify public hazards, while helping to serve and protect the local community. Members may act as the eyes and ears of the Sheriff's Department by notifying deputies of suspicious persons/vehicles, accidents, and other safety hazards. VOP's also help to maintain public safety by offering services such as traffic control, and parking enforcement.

+ **Emergency Preparedness | City of Malibu**

The emergency preparedness link on the City of Malibu website has information for all types of emergencies https://www.malibucity.org/952/Fire-Safety

- **Emergency Survival Guide**

  Included in the City of Malibu's Emergency Preparedness information is a link to 'Emergency Survival Guide'. This is a public education and awareness guide designed to increase emergency preparedness at home, work and school for Malibu residents. The program features customizable emergency preparedness training. https://www.malibucity.org/DocumentCenter/View/26673/Malibu-Survival-Guide

- **Emergency Operations Plan**

  Included in the City of Malibu's Emergency Preparedness information is a link to the "2018 Emergency Operations Plan Update". https://www.malibucity.org/DocumentCenter/View/68/Emergency-Operations-Plan?bidId=

- **Multi-Jurisdictional Hazard Mitigation Plan**

  Included in the City of Malibu's Emergency Preparedness information is a link to the "Hazard Mitigation Plan". The five cities within the Las Virgenes-Malibu Council of Governments

(LVMCOG) made an extensive effort to create a Multi-jurisdictional Hazard mitigation plan. The LVMCOG provides a point of coordination between its member cities as well as other cities and public agencies.

https://www.malibucity.org/DocumentCenter/View/26939/Las-Virgenes-Malibu-Council-of-Government-Multi-Jurisdictional-Hazard-Mitigation-Plan-2018

- **Fire Safety Liaison | City of Malibu**

  The Fire Safety Liaison position was created by the City of Malibu in 2019. The individual hired for the position serves as liaison between the City's Public Safety Program and the Los Angeles County Fire Department, the general public, City staff, appointed boards and committees, community organizations, and other governmental agencies seeking interaction with the City's Public Safety Program.

  Under general direction of the Public Safety Manager, the Fire Safety Liaison is responsible for the development and implementation of a comprehensive fire prevention and safety program that includes providing fire safety public education to community groups and organizations, as well as assisting neighborhoods with developing and implementing fire safety plans/strategies. It also includes free home ignition zone assessments of residential homes.

  To schedule an appointment, email FireSafety@malibucity.org, call 310-456-2489, ext. 387 or visit https://www.malibucity.org/952/Fire-Safety

+ **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.

The CERT program was developed in 1985 by the Los Angeles City Fire Department to provide basic training in safety and lifesaving skills to the general public. It has since been adopted and enhanced by the Federal Emergency Management Agency (FEMA) and the National Fire Academy.

The City of Malibu 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://www.malibucity.org/226/CERT

Note: December 2020 update – all CERT Training has been cancelled until further notice

+ **Fire Safe Councils (FSCs) and Fire Wise Community**

Fire Safe Councils are grassroots, community lead organizations that mobilize and empower residents to protect their homes, communities, and environments from wildfires. Throughout California FSCs educate homeowners about community wildfire preparedness activities, typically working directly with local fire officials to design and implement projects that increase the wildfire preparedness and response efforts. The City of Malibu has one Fire Safe Council registered in the program called Horizon Hills FSC and one Firewise called Big Rock Mesa.

6.1.2 County | Regional Programs

+ **LA County Fire Hazard Reduction Programs**

  - **Brush Clearance Inspection Program**

The Brush Clearance Program is a combined effort between the County of Los Angeles Fire Department and the County of Los Angeles Department of Agricultural Commissioner/Weights and Measures, Weed Hazard and Pest Abatement Bureau (Weed Abatement Division). This unified enforcement legally declares properties a public nuisance, when warranted and requires the clearance of hazardous vegetation.

The Department's Brush Clearance Unit enforces the Fire Codes related to brush clearance on improved properties, coordinates inspections and compliance efforts with fire station personnel, and provides annual brush clearance training to fire station personnel. These measures create "Defensible Space" for effective fire protection of property, life and the environment.

More information on the program can be found here: https://fire.lacounty.gov/fire-hazard-reduction-programs/

- **Vegetation Management Program**

  The Vegetation Management Program was established to develop strategies for responding to the growing fire hazard problem. The program is responsible for the development of fuel management projects with stakeholders, including cities, community groups, and other agencies; experimentation with various methods of reducing or removing fuels in fire prone areas, as well as evaluation of environmental impacts and effects of these practices.

  More information on the program can be found here: https://fire.lacounty.gov/fire-hazard-reduction-programs/

- **Forestry Fuel Modification unit**

  The Fuel Modification Unit is responsible for the approval of a landscape plan for structures located in High Fire Hazard Severity Zones. The process of approval consists of reviewing aspects such as structure location and type of construction, topography, slope, amount and arrangement of vegetation and overall site settings. The objective through this approval plan process is to create defensible space necessary for effective fire protection of homes in the Fire Hazard Severity Zones.

  New construction planned in high fire hazard severity zones can be submitted for a review. Plan checkers are available for in-office meetings by appointment.

  More information on the program can be found here: https://fire.lacounty.gov/forestry-fuel-modification/

+ **American Red Cross of Southern California**

  The Southern 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 Southern California website is available at https://www.redcross.org/local/california/southern-california/about-us.html and the Los Angeles County Red Cross Facebook page is available at https://www.redcross.org/local/california/los-angeles.html.

+ **Los Angeles County Office of Emergency Management**

  This department is within the County Executive Office and is responsible for emergency planning and coordination for Los Angeles County Operational Area. OEM is responsible for comprehensively planning

for, responding to and recovering from large-scale emergencies and disasters that impact Los Angeles County.

The Office of Emergency Management is responsible for maintaining an approved Operational Area Emergency Response Plan, which addresses natural disasters, technological incidents, and national security emergencies within the Los Angeles 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://ceo.lacounty.gov/wp-content/uploads/2019/12/OAERP-Approved-Adopted-Version-6-19-2012.pdf

+ **Ready LA County**

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 has a section dedicated specifically to help people prepare for wildfire. https://www.ready.gov/wildfires

+ **Los Angeles County Amateur Radio Emergency Services (ARES)**

ARES is a nationwide organization of licensed radio amateurs who have volunteered their expertise and equipment to provide emergency communications whenever disaster strikes. The LA County ARES support over 65 local hospitals in the greater Los Angeles County with auxiliary communications while also supporting local communities by providing knowledge, expertise and hardware as trained radio operators to other local agencies in need of communications support during emergency, community events, and for educational purposes. ARES is organized by the American Radio Relay League and has ARES members on the county and state level. For more information: http://www.areslax.org/

+ **Los Angeles County Department of Animal Care and Control**

The LA County Department of Animal care and control includes six animal care centers which serve unincorporated Los Angeles County and 49 contract cities. The department provides animal control and rescue services in its service areas 24 hours a day, seven days a week. Additional information is available at https://lacounty.gov/residents/animals-pets/.

The site also includes a link to the Federal Emergency Management Agencies pet preparedness document: https://www.malibucity.org/DocumentCenter/View/17527/Pet-Preparedness---FEMA

+ **Equine Response Team – Los Angeles County Department of Animal Care and Control**

In the event of an emergency which requires large animal evacuations the County of Los Angeles Animal Care and Control will select and activate various evacuation sites to be opened. Equine Response Team (ERT) provides volunteer support to the County of Los Angeles Department of Animal Care and Control for the safe evacuation and temporary sheltering and care of horses and livestock during emergencies and educates horse owners about emergency preparedness for their horses. ERT is a team of specially trained volunteers that provide emergency evacuation and temporary sheltering for horses and livestock in need of evacuation and care.

More information can be found here:
http://file.lacounty.gov/SDSInter/dacc/233395_P&SEmergencyResponseERTManual.pdf

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

High winds (Santa Ana events), along with high temperatures and low humidity create conditions that are conducive to wildfire. When forecasts predict critical fire weather conditions, the power companies may proactively shut down power in certain at-risk areas to reduce the threat of wildfires.

When a Public Safety Power Shut off (PSPS) is being considered for Malibu, the City will send out emergency messaging to alert the community using emergency alerts, Disaster Notifications (like Reverse 9-1-1), the website, social media, the phone hotline and PSAs on KBU 99.1 FM radio. The City Hall phone line (310-456-2489) will be staffed 24 hours/day.

To learn more about PSPS in Malibu, visit: https://www.malibucity.org/970/Public-Safety-Power-Shutoff-PSPS

Southern California Edison (SCE) is the primary power provider for Malibu and Ventura County. Regarding PSPS they state the following: When there are potentially dangerous weather conditions in fire-prone areas, a Public Safety Power Shutoff event may need to be called. 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). Los Angeles County Office of Emergency Management (LACOEM) 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.

+ **Everbridge®: Disaster Notification System**

All landline and cell phone numbers associated with the City of Malibu are automatically entered into the City's Disaster Notification System. This service is contracted by the City to allow immediate mass distribution of critical information and instructions in case of large-scale disasters, such as earthquakes, wildfires, major road closures, evacuations, or other catastrophic incidents.

There is an option for residents and businesses to also register additional cellphone numbers (for voice and/or text message), home or work phones, or email addresses to receive time-sensitive emergency messages on multiple devices, no matter where you are. This system is separate from the City's traffic and emergency alerts, which are used for lane closures and low-level emergencies.

Visit here to register: https://member.everbridge.net/453003085613099/login

+ **NIXLE: Disaster Notification System**

Nixle notification system sends traffic and low-level emergency advisories by text message and email to subscribers. The Nixle website also offers notifications from various law enforcement, fire and other government agencies. To register and learn more visit: https://local.nixle.com/city/ca/malibu/
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**

+ **Alert LA County**

Alert LA County is a free mass notification system for Los Angeles County residents and businesses. The Sheriff's Department uses Alert LA County to contact residents during an emergency or disaster in the community. The system sends emergency messages that include shelter-in-place instructions and evacuation procedures. It has accessibility features for people with disabilities and others with access and functional needs. The emergency alert allows registration in a preferred language for notifications.

+ **NotifyLA**

NotifyLA is the City of Los Angeles' mass notification system used to provide emergency information to Los Angeles residents, businesses and subscribers via recorded phone messages, text messages or e-mail in case of emergencies or critical situations. This information will keep the public informed when a disaster occurs and will provide preemptive warnings in some cases. The messages include early warning notices, disaster notifications, evacuation notices, public health notices, and public safety notices of imminent or perceived threats to life or property. NotifyLA uses the 911 database, therefore, only land-line numbers are automatically included in the system. In order to receive a notification via your cell phone, Voice over IP (VoIP) number or email, residents must register those telephone numbers and/or e-mail address in NotifyLA. NotifyLA uses geomapping so alerts are targeted by geographic location.

+ **City of Malibu Phone Hotline**

The City's phone hotline offers the ability to hear information about traffic lane closures and emergency situations. To call the hotline, dial 310-456-9982. If you wish to report an emergency situation, call 911 or contact the Malibu/Lost Hills Sheriff's Station directly at (310) 456-6652.

+ **Malibu Radio Emergency Services**

The City of Malibu will put out emergency information on KBUU 99.1 FM, Malibu's only locally-operated radio station. Anyone with an FM radio can tune in to get emergency information.

+ **National Weather Service (NWS)**

The NWS transmits continuous weather information on 146.425 and 146.525 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.

+ **PulsePoint – LA County Fire Department**

The PulsePoint program is a mobile phone app that is capable of alerting registered users when a sudden cardiac arrest occurs in a public place in their immediate vicinity. This app is for citizens and off-duty professionals trained in CPR who would like to provide help immediately after cardiac arrest. The app informs these registered citizens at the same time as emergency responders. Users are given detailed instructions, including the location of automatic external defibrillators (AEDs) nearby. This is an optional app that is not enabled by default and users must opt-in to utilize this program.

For more information: https://fire.lacounty.gov/pulsepoint/#1569372301055-0da46b36-4d44

6.3 SOCIAL MEDIA AND MEDIA PROGRAMS

6.3.1 Social Media

The City of Malibu and Los Angeles County 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 10 summarizes some of the primary social network links for emergency preparedness in Malibu and surrounding areas:

Table 10. Social Media and Media Programs

Source	Weblink
City of Malibu	
City of Malibu Facebook	https://www.facebook.com/CityofMalibu/
City of Malibu Twitter	https://twitter.com/CityMalibu?ref_src=twsrc%5Egoogle%7Ctwcamp%5Eserp%7Ctwgr%5Eauthor
City of Malibu Instagram	https://instagram.com/cityofmalibu?igshid=15xh94orcwod1
Malibu City Notification Registration page	https://www.malibucity.org/list.aspx https://member.everbridge.net/453003085613099/login
Malibu/ Lost Hills County Sherriff Twitter	https://www.facebook.com/LostHillsSheriffsStation/ https://twitter.com/LHSLASD
Los Angeles County	
County of Los Angeles Fire Department Website	https://fire.lacounty.gov/
LA Co. Fire Department Facebook	https://www.facebook.com/LACoFD
LA Co. Fire Department Twitter	https://twitter.com/LACoFD
LA Co. Fire Department Instagram	https://www.instagram.com/losangelesfiredepartment/?hl=en
LA County Sherriff Facebook	https://www.facebook.com/LosAngelesCountySheriffsDepartment
LA County Sherriff Instagram	https://www.instagram.com/lasdhq/?hl=en
County of Los Angeles Office of Emergency Management Twitter	https://twitter.com/ReadyLACounty
County of Los Angeles Office of Emergency Management Instagram	https://www.instagram.com/readylacounty/

6.3.2 Ready LA County Radio Broadcast

Area radio stations monitor emergency broadcasts from a variety of sources including the L.A. County Emergency Alert System, NOAA Weather Radio, California Law Enforcement Radio and Federal Emergency Management Agency (FEMA) Radio.

The following is a list of radio stations in Los Angeles County to listen for emergency information:

- KBUU 99.1 FM
- **KFI** 640 AM
- **KNX** 1070 AM
- **KFWB** 980 AM
- **KROQ** 106.7 FM
- **KHTS** 1220 AM
- **KRLA** 870 AM
- **KCBS** 93.1 FM
- **KABC** 790 AM
- **KAVL** 610 AM

6.3.3 LA36 Public Access Television

The LA36 is a Los Angeles County Local Television station offering a range of programming including sports, education, news and information, pollical, non-profit and emergency updates. This community cable station is the second largest in the country, reaching over 1.6 million viewers in LA county.

6.4 PROTECTING VALUES

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

6.4.1 Life Safety

The City of Malibu and Los Angeles County Fire Department'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 action 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 risk. The educational information and resources provide by the City of Malibu and the LA County are available to aid individuals and community groups in this effort such as "Ready-Set-Go". 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. The Los Angeles County Title 32 Fire code requires that any property designated as Fire hazard Severity zone within State Responsibility Areas or Very High Fire Hazard Severity Zone within the Local Responsibility Areas requires 200-feet of defensible space from all sides of any structure but not beyond the property line except when adverse conditions exist. Research suggests that even the 200-feet of defensible space may not be sufficient for firefighters to engage in structure defense safely (See Section 5.4).

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. Safe separation distance (SSD) calculations can provide a better estimate for whether a structure can be defended with lower risk of thermal injury. This distance is oftentimes greater than 100 feet. Onsite consultation with Malibu's Fire Safety Liaison and/or Fire Department personnel is recommended to determine whether the clearance around a structure or other improvement is sufficient to provide a safer structure defense environment.

6.4.1.3 Reducing Structure Ignitability

In the event of a major, rapid on-set wildfire, firefighting resources may 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. The Woolsey Fire damaged or destroyed over 480 homes in the City and significant amounts of landscaping and other structures such as outbuildings, decks, ornamental features and fences.

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. 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 33 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) and LA County Fire recommendations. Within this 200-foot area, there are three zones (Zones 1 to 3, which are also consistent with LA County Fire Department Fuel Modification Zones). Note: Within Zone 1, new state legislation (AB 3074) is requiring an "ember resistant" zone (i.e., no combustibles or vegetation) within 0-5' of the structure that will likely come into full effect in January 2023, upon local adoption. This is a more stringent requirement than currently in local City of Malibu ordinance No. 461. See below for further information:

+ 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:
    - 0-5 feet ("ember-resistant" zone) – The first five feet surrounding any structure and attached deck are the most vulnerable to ignition caused by embers. Avoid anything combustible in this area, including woody plants, mulch, woodpiles, combustible trellises, and stored items. This is an excellent location for walkways, or hardscaping with pavers, rock mulch, decomposed granite, or pea gravel. This should include a six-inch noncombustible zone between the ground and the start of the building's exterior siding

- 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 xeric 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.

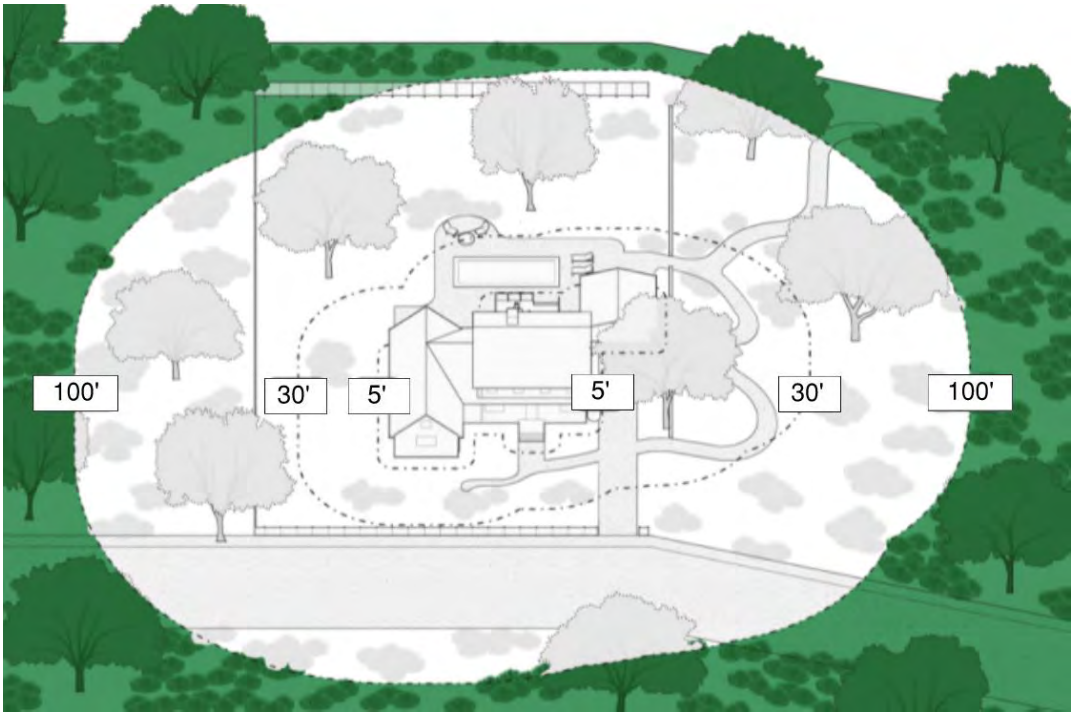

Figure 33. Home Ignition Zone (courtesy: www.defensiblespace.org).

Mitigating risks within the HIZ is important but requires a joint effort if a neighbor’s residence is closer than the full 100 or 200-foot distance. Figure 34 depicts a representative example of 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.

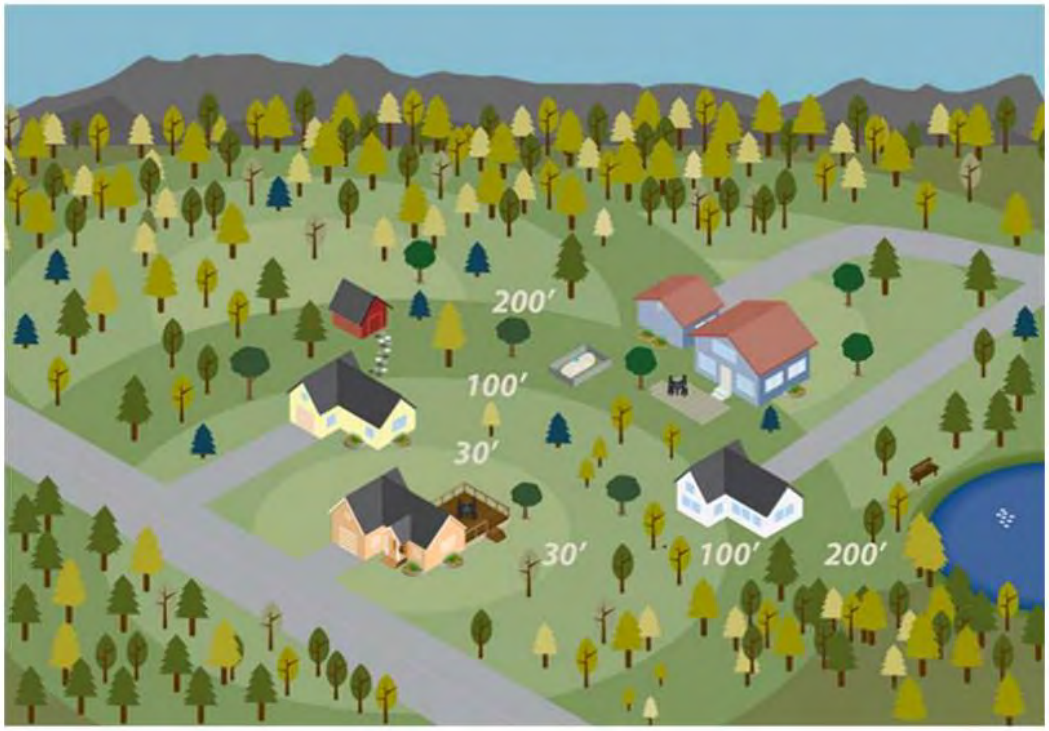

Figure 34. Home Ignition Zone Overlap (courtesy: www.firewise.org).

The HIZ concepts when applied to other structures and/or critical infrastructure in the community can improve their survivability as well.

On March 23, 2020 the City Council of the City of Malibu adopted the Fire-Resistant Landscaping Ordinance No. 461. Certified by the California Coastal Commission, the ordnance includes amendments that strive to minimize the risks to life and property as a result of fire, and protect property from damage caused by fires, by restricting the fuels available for the spread of fires.

A summary of the requirements of the ordinance:

- Structure must maintain a five-foot defensible space buffer around exterior wall.
- The planting of Palm trees is prohibited.
- The planting of highly flammable trees within 50 feet of structures is prohibited.
- The maximum growth height of trees and shrubs planted near overhead power lines is 25 feet if they are below or within 20 feet of a power line or 40 feet if they are within 20 to 50 feet of a power line.
- Hedges and flammable fences and walls are prohibited within five feet of a building.
- "Non-combustible Zone" (0 – 5 ft) - Mulch material proposed between zero and five feet from a structure must consist of nonflammable materials, such as gravel and decomposed granite. Flammable mulch materials, including shredded bark, pine needles, and artificial turf, are prohibited between zero and five feet of a structure. Use of wood chips and shredded rubber are prohibited anywhere on the site. Non-

continuous use of flammable mulch (excluding wood chips and shredded rubber) is allowed between five feet and 30 feet from a structure.

The Fire-Resistant Landscaping ordinance applies to any (1) industrial, commercial, institutional, or multifamily use or a subdivision, (2) new single-family residence which includes altered landscape of 500 square feet or more (3) existing single-family residential which proposes a new or altered landscape area two thousand five hundred square feet or more.

For more information: https://www.malibucity.org/1035/Fire-Resistant-Landscaping

In addition to Ordinance No. 461, Assembly Bill 3074 also became law in January 2021. This bill requires landowners in Very High Fire Hazard Severity zones to use more intense fuel reductions between 5 and 30 feet around the structure, and to create an ember-resistant zone within 5 feet of the structure, based on regulations promulgated by the State Board of Forestry and Fire Protection, https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201920200AB3074. Note: As previously mentioned, this new legislation will likely not come into full effect until January 2023.

More detailed information on reducing structural ignitability can be found in Chapter 7A of the California Building Code (Ordinance 2019-0056), Public Resources Code 4291, and Chapter 49, of the Title 32 of the LA County Code. Table 11 delineates mitigation actions that will enhance protection of life safety and improve the survivability of structures in the community.

Table 11. Structure Mitigation Actions.

Structure Component	*Mitigation Actions*
Defensible Space	The LA County Fire Code Title 32 requires up to 200 feet of defensible space (within areas designated as a Fire Hazard Severity Zone within State Responsibility Areas or Very High Fire Hazard Severity Zone within the Local Responsibility Areas) from all sides of any structure but not beyond the property line except when adverse conditions exist. Select fire resistance plants and non-combustible hardscape for the landscaping, following Ordinance No. 461 (Municipal Code Section 17.53.090). 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 6 inches contrasting with the background.
Roof	Replace wood-shake or shingle roofs with a Class-A material (Ordinance 2019-0056) 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.

Structure Component	Mitigation Actions
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.
Residential Fire Sprinkler Systems	Automatic residential fire Sprinkler Systems are required in all new and two-family dwellings and townhouses. An automatic residential fire sprinkler system is not required for additions or alterations to existing building that are not already provided with an automatic residential sprinkler system. Annual maintenance service or inspection of these systems is strongly recommended to ensure operability.
Detached accessory structures	All detached accessory structures should ideally follow the same provisions as the main structure. Detached accessory structures should be constructed of non-combustible materials or of ignition-resistant materials.

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 are more fire resistant than non-native invasive plant species and serve as a source of biological and genetic floral diversity (Lombardo, 2012).

This chapter summarizes the fuels treatment strategy for the City's Planning Area 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 City and LACoFD play 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 and are a priority.

6.5.1 Existing Fuel Treatment Activities

There are currently few fuel treatments in the landscape within the Planning Area. See Figure 35 and Table 12 for details. A strategic landscape level fuel treatment program addressing overall wildfire risk does not appear to be present and may not be appropriate given that wind driven wildfires which impact Malibu generally overpower the influence of landscape scale fuel treatments. The existing program appears to be loosely coordinated between property owners and the City, as existing fuel treatments reflect the priorities of individuals, community groups, City and/or County agencies. As such, a more targeted approach to the City's fuel treatment plan is presented in Section 6.5.2.

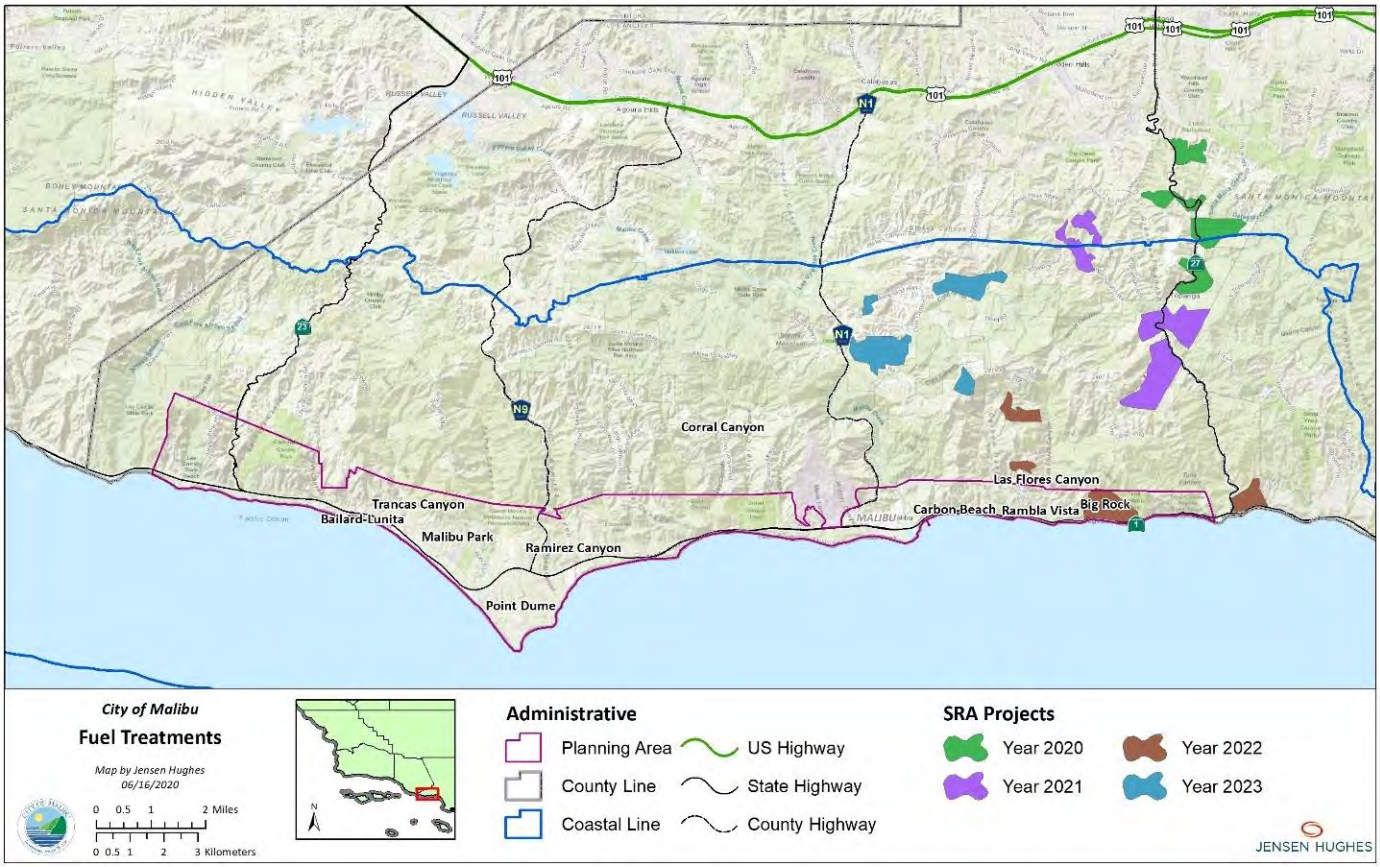

Figure 35. Existing Fuel Treatments in and around Malibu

Table 12. Existing Fuel Treatments in the City

Unit Name	Type	Activity	Acres	Miles
Big Rock Mesa	Defensible Space	thinning/chipping	73	-
		Totals =	**73**	-

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. Los Angeles County Fire Department (including City of Malibu) extends this to 200 feet of structures and requires this work to be completed prior to June 1 annually.

The County has an inspection program with a goal of ensuring that property owners are complying with these regulations; however, the existing program does not inspect all properties or enforce compliance on all on violators annually. While compliance with defensible space regulations is characterized as being high by County personnel, in a field survey of the City conducted in June 2020, it was not difficult to find non-complying parcels.

6.5.2 Proposed Fuel Treatments

Proposed fuel treatment units have been designed to enhance protections to identified values at risk. See Figure 36 and Table 13 for details. This is by no means an exhaustive list, but it provides a starting point for a more targeted fuel treatment program that can expand over time. By developing a public/private network of fuel treatments the City can further reduce the unwanted consequences of wildfire. See Appendix D for Prescriptive Guidelines and Best Management Practices for Fuel Treatments.

Table 13. Proposed fuel treatments

Geographic Area	Unit Name	Type	Activity	Acres	Miles
Western	Decker Edison	Defensible Space	thinning/chipping	77	
	La Herran & Lunita	Defensible Space	thinning/chipping	76	
	Paseo Canyon Drive	Defensible Space	thinning/chipping	18	
	Busch Drive	Roadside	thinning/chipping		.8
Central	Latigo & Calicut	Defensible Space	thinning/chipping	51	
	Kanan Dume & Zumirez	Defensible Space	thinning/chipping	130	
	Portshead & Meadow Court	Defensible Space	thinning/chipping	309	
	Paradise Cove	Defensible Space	thinning/chipping	5	
	Ramirez Canyon Road	Roadside	thinning/chipping		.9
	Corral Canyon Road	Roadside	thinning/chipping		1.5
Eastern	Big Rock Road Prism	Roadside	thinning/chipping		1.3
	Lower Big Rock Drive	Roadside	Thinning/chipping		.5
	Las Flores Mesa Eucalyptus	Defensible Space	thinning/chipping	4	
	Malibu Crest Palms	Defensible Space	thinning/chipping	1	
	Big Rock-Las Flores Fireline	Fuelbreak	Clearing/mastication		.9
			Totals =	**670**	**5.9**

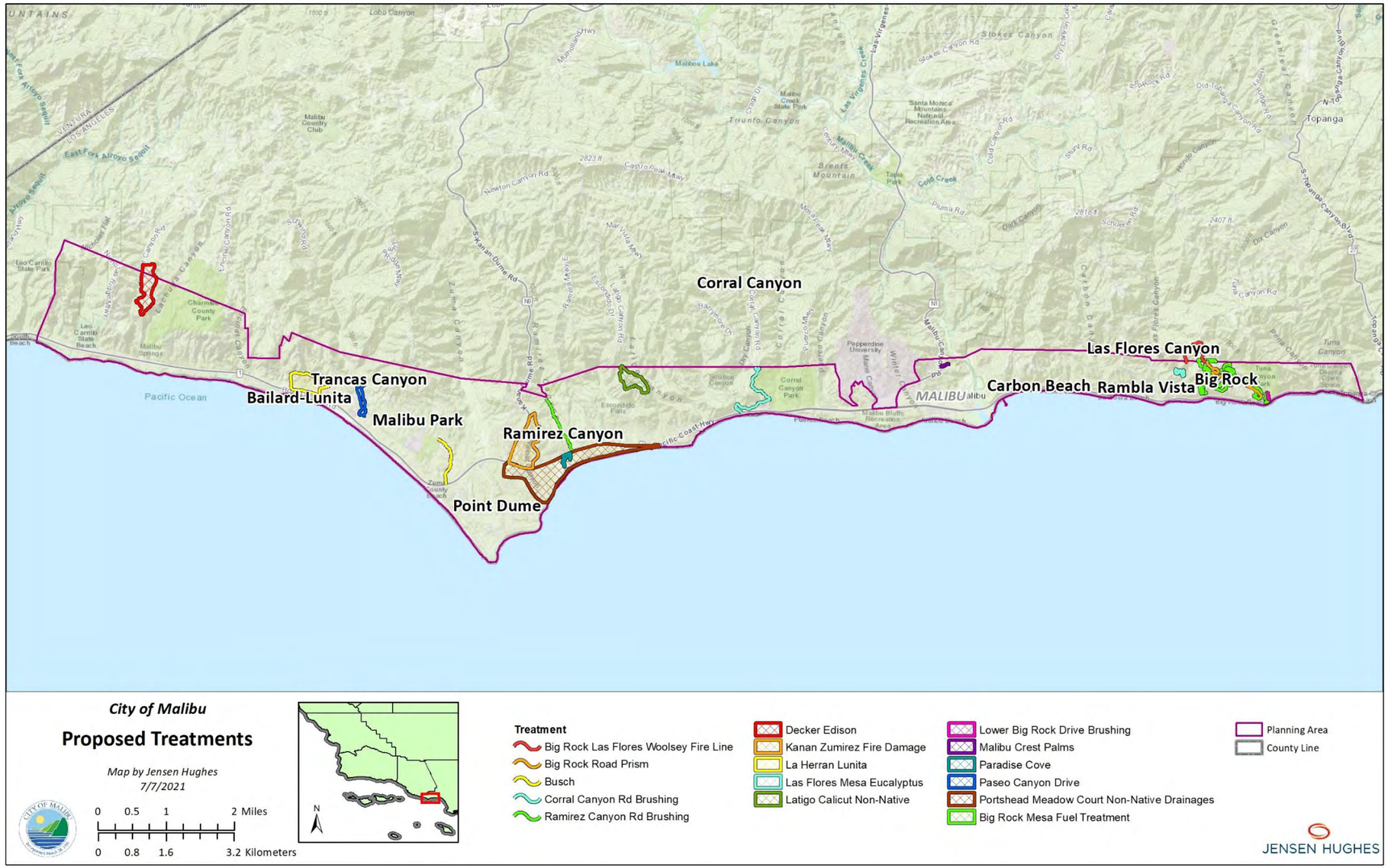

Figure 36. Proposed Fuel Treatments Across the City

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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 City.

The combination of topography and vegetation can often make it difficult to protect structures with only 100 feet of clearance. Depending on site specific conditions, upwards of 200 feet of clearance may be needed to adequately protect homes from a wildfire as determined by LA County Fire Code Title 32. Refer to Figure 34 in the HIZ/Structural hardening section for graphic representation of the concept. It is recommended that the City and LACoFD use a combination of public education, site visits and grant funding to promote the idea of Community Defensible Space, with the Big Rock 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 Big Rock Mesa are actively creating defensible space on their individual properties with assistance from the Los Angeles County Fire Department, which indicates a willingness to collaborate towards improving the protection of the neighborhood from fire. The City and/or County 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 City.

6.5.2.2 Fuelbreaks

Fuelbreaks are strategically placed landscape vegetation treatments that provide a potential control point for wildfires. There are several opportunities to develop these features within the Planning Area. These include:

+ Contingency firelines which were built for the 2018 Woolsey fire on private lands, these areas can be maintained and improved.

6.5.2.3 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 City does not appear to have an ongoing program to help facilitate and/or manage roadside clearance to meet Local and/or 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.

6.5.2.4 Private Ownership Lands Recommendations

Given that the vast majority of the land within the within the Planning Area is held by individuals and not local, state, or federal government, much of the responsibility for mitigating wildfire hazard will fall on individual property owners. Many smaller parcels have difficultly establishing the 100' of defensible space as required by the California Public Resources Code (PRC), let alone the 200 ft required by LACoFD and City of Malibu, since individuals do not have the authority to manipulate vegetation beyond their property lines. However, establishing high quality defensible space regardless of the parcel size should be a priority for all residents of Malibu.

+ ***Follow Defensible Space and Structural Hardening Direction.*** Multiple websites provide clear guidance on establishing and maintaining defensible space. CAL FIRE provides easy to understand defensible space direction at *https://www.readyforwildfire.org/prepare-for-wildfire/get-ready/defensible-space/.* The Los Angeles County Fire Department maintains a list of approved brush clearance and goat vendors at *https://fire.lacounty.gov/fire-hazard-reduction-programs/* to assist property owners in establishing and maintaining their defensible space. Refer to Section 6.4.1.3 for details.

  Importantly, the City of Malibu's Wildfire Liaison can be contacted to work directly with property owners concerning defensible space and home hardening techniques.

+ **Remove Fire Susceptible Species from the Defensible Space Zones**. While the defensible space codes and standards (e.g. PRC 4291) defines the standards of defensible space it does not address the relative flammability of vegetation that is retained on the property. Los Angeles County Fire maintains a list of species which are prohibited within the defensible space zones as well a list of acceptable plants by defensible space zone at https://fire.lacounty.gov/wp-content/uploads/2020/05/Plant-Selection-Guidelines.pdf.

  Compared to other locations Los Angeles County is lenient regarding the species prohibited in the defensible space zones. For a more comprehensive list of species which should not be utilized in a fire safe landscape see the County of San Diego Department of Planning and Land Use list of undesirable species at https://www.sandiegocounty.gov/content/dam/sdc/pds/docs/DPLU199.pdf.

+ **Remove All Combustibles within 5' of a Structure**. The first five feet from a structure should be free of combustible material of any kind. A recent study focused on the flammability of landscape mulches and found that all of the mulches evaluated were combustible under the test conditions of dry, hot and windy weather and more than 2½ months of outdoor exposure (University of Nevada Cooperative Extension, 2011). Key recommendations from the study are:

  - Since all mulch test is flammable, maintain a noncombustible, ignition–resistant area immediately adjacent to the house and other structures. During a wildfire, embers may accumulate in this area, providing an ample source of ignition for combustible materials.

  - Composted wood chips demonstrated the least hazardous fire behavior of the eight mulch treatments tested and would be the best choice for use in a residential landscape in the 5-feet to 30-feet defensible space zone.

  This "ember resistant" or "non-combustible" zone within 5ft of a structure is adopted by City of Malibu in local ordinance 461 and recently by AB 3074.

+ **Implement Vegetation Treatment Standards on Larger Parcels**. On larger parcels where ownership allows for the manipulation of vegetation beyond the defensible space zones, property owners should consider applying the Vegetation/Fuel Treatment Prescriptive Guidelines presented in this plan. Organized by vegetation types, these guidelines provide direction on how to manage vegetation in larger areas to reduce potential wildfire impacts as well as limiting resource damage by reducing fire intensity.

6.5.2.5 Community Chipping Program

The City does not currently have an annual program to provide mechanically chipping services/equipment to help facilitate defensible space work by homeowners at the neighborhood level. These types of programs are generally very popular in other communities, as they help encourage, weed abatement and defensible space work at the individual and neighborhood level. This annual program also provides an opportunity for community outreach and public education on wildfire mitigation work.

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 City and LACoFD***. 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. 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, City and LACoFD 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 three Treatment Units (Units) based on LACoFD's Structure Defense Tactical Maps (Figure 37).

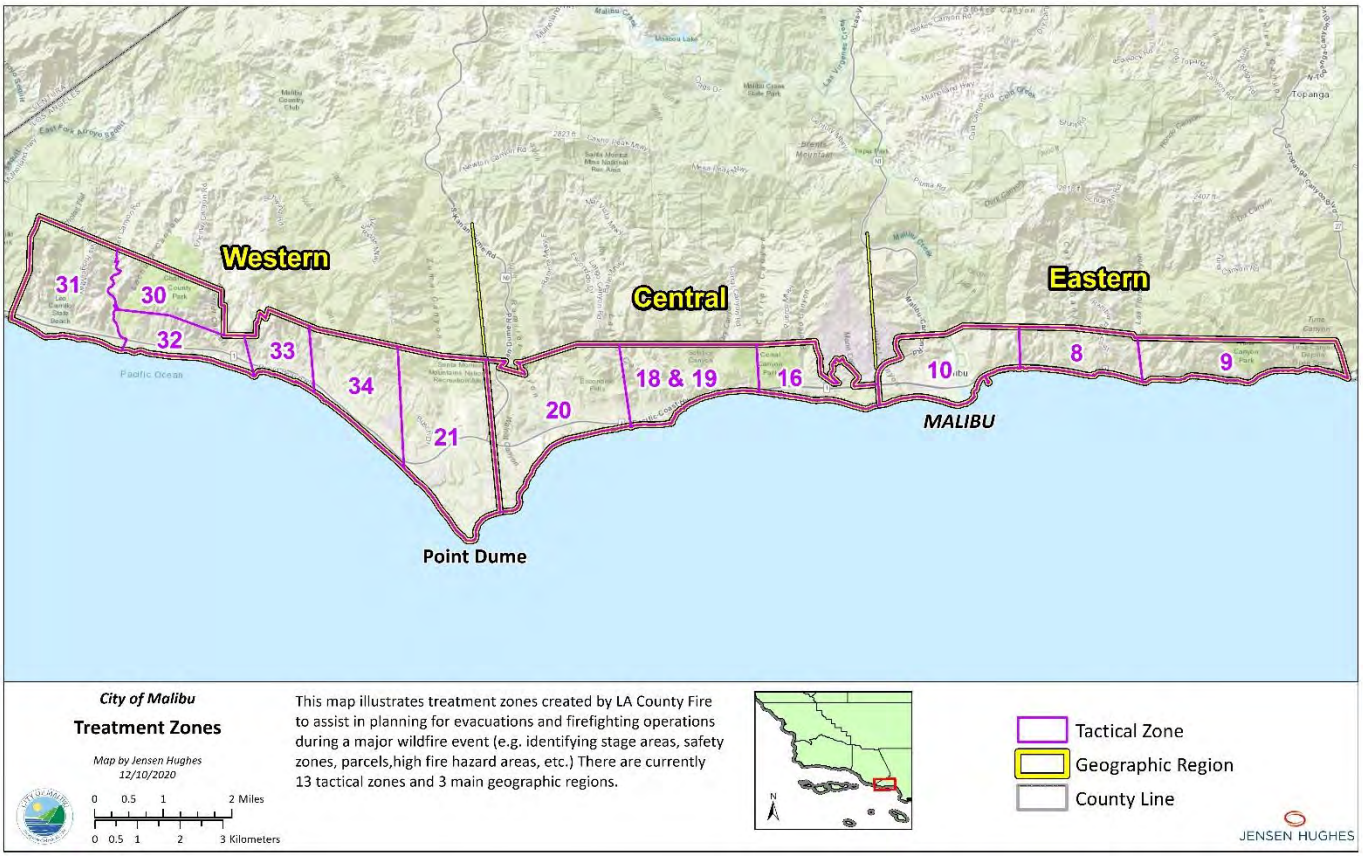

Figure 37. Malibu Treatment Units based on LACoFD Structure Defense Tactical Map.

The Units 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 Units 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, and environmental drivers, which could affect which areas or new projects are implemented.

Table 14. Vegetation Management by Units

	Geographic Region		Acres	Priority
Western Malibu	Very High - 11+ ft.		12.5	**1**
	High - 08-11 ft.		1516.7	
	Moderate - 04-08 ft.		1742.9	
	Low - 0-04 ft.		1109.7	
	Urban Fuels		1788.7	
		Total =	***6170.6***	
Central Malibu	Very High - 11+ ft.		3.3	**2**
	High - 08-11 ft.		857.6	
	Moderate - 04-08 ft.		949.6	
	Low - 0-04 ft.		862.2	
	Urban Fuels		1020.8	
		Total =	**3693.5**	
Eastern Malibu	Very High - 11+ ft.		50.0	**3**
	High - 08-11 ft.		484.2	
	Moderate - 04-08 ft.		564.4	
	Low - 0-04 ft.		689.6	
	Urban Fuels		1001.0	
		Total =	**2789.3**	

6.6 EVACUATION

The Malibu coastal region, which includes incorporated and unincorporated areas, is challenged by significant access and egress impediments that can adversely affect emergency response efforts and public evacuation needs. These hurdles include challenging road characteristics (narrow, winding and/or steep); limited access/egress routes independent of fire hazards; vegetation encroachment on roads; community and individual home security gates; addresses not clearly visible from the property access point; unlit roads and intersections, and unlit street signage. As a community interconnected with surrounding cities, Malibu's main evacuation route (Highway 1/PCH) is also impacted by the limited capacity of existing local road network to accommodate emergency surge loads in combination with typical traffic congestion. 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.

In 2019, the City coordinated a multi-agency evacuation exercise with representatives from LACoFD, Los Angeles County Fire, Sheriff's, Public Works, Beaches and Harbors Departments, Cal Trans, CHP, Beaches and Harbors, Pepperdine, Topanga Coalition for Emergency Preparedness, Santa Monica Police Department, and County Supervisor Sheila Kuehl's office. This exercise resulted in the development of a 2020 Evacuation Plan (https://www.malibucity.org/DocumentCenter/View/26832/FINAL-Evacuation-Plan-8192020) that included identification of agency roles and responsibilities, evacuation and traffic management strategies, and established communication protocols. See

Figure 38 for defined evacuation zones. The City has also created a search tool to help identify evacuation zones based on address (https://malibucity.org/ZoneSearch).

Figure 38. Malibu's Emergency Evacuation Zones

6.6.1 During a Wildfire Event

The Los Angeles County Sheriff's Department (LASD) is the jurisdictional authority for ordering an evacuation. This decision is made in consultation with the Los Angeles County Fire Department (LACoFD) 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).

The City utilizes two Public Alert and Notification systems to notify the community about low-level emergencies (e.g., lane closures, beach advisories, utility advisories, weather advisories) and disaster-level emergencies requiring immediate action. Refer to City's website for details (https://www.malibucity.org/566/Alerts-Emergency-Notifications). As no single notification system would accomplish 100 percent of public notification to prepare for and/or alert individuals adequately during an emergency event, the City, LASD and LACoFD will employ all communication methods to attempt to notify and alert individuals, including:

- ***Everbridge Disaster Notification system*** (includes most landlines, cellphones and wireless alerts by area)
- ***NIXLE*** (for low-level emergencies via text and email subscribers)
- ***Civic Plus (https://ca-malibu.civicplus.com/)***
- ***Emergency Alert System (EAS)*** supported by the National Weather Service broadcast
- ***Radio and television*** announcements
- ***Door-to-door notifications***
- ***Social media***, such as Twitter, Facebook and Instagram
- ***City's website Alert Center*** (for low-level emergencies via text and email subscribers)

In the event of communication power outages, the City will implement the following strategies:

- *Printed materials to distribute to Emergency Information Stations*
- *Phone hotline*
- *Radio PSA for KBU*
- *Flyers for in-person distribution*
- *Posters*
- *Press releases to the media*
- *Loudspeakers in vehicles*
- *Deployment of Information Stations (i.e., large wooden sandwich boards with posted information at pre-identified locations such as Zuma beach, Bluff's Park and Las Flores Park, Safe Refuge Areas and additional locations identified on the day)*

6.6.2 Main Evacuation Routes

The City has identified evacuation routes (See

Figure 38, Malibu Evacuation Plan) that offer individuals pre-planned options for rapid egress from areas threatened by a wildfire. These include Pacific Coast Highway (North- and South-bound), Kanan-Dume Rd (Route N9), Malibu Canyon Rd (Route N1) and Topanga Canyon Rd (State Route 27). Note: Decker Canyon Rd (State Route 23) is not identified as a main evacuation route. A recent traffic study indicated evacuation west on PCH is the preferred option due to higher capacity for traffic.

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, identify potential alternatives should fire behavior and/or road conditions require a change and stay connected with emergency notification systems for instructions.*

6.6.3 Safe Refuge Areas

Safe evacuation areas have been identified by the City to serve as temporary staging areas, as well as assist in traffic management. These areas include:

1. Zuma Beach Parking Lot (30000 Pacific Coast Highway, Malibu, CA 90265)
2. Topanga State Beach Parking Lot (18700 Pacific Coast Hwy, Malibu, CA 90265)
3. Will Rogers State Beach Parking Lot (17000 Pacific Coast Hwy, Pacific Palisades, CA 90272)
4. Santa Monica Beach Parking Lots (Pacific Coast Hwy, Santa Monica, CA 90401)

Note: These refuge areas are not considered "hard or permanent shelter". Refer to

Figure** 38 **for locations.

6.6.4 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. ***In the public survey undertaken as part of this Plan, more than 50% of respondents indicated that they did not evacuate during the Woolsey fire but elected to "sheltered in place".***
- 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. ***In the public survey undertaken as part of this Plan, more than 60% of respondents indicated that they took more than one vehicle during the Woolsey fire.*** This can introduce additional demands on the transit networks and should be considered as part of an evacuation management plan. ***These increased loads may warrant a revision to the transit analysis that was previously undertaken to inform the 2020 Evacuation Plan.***
- Vulnerable populations and/or individuals with limited mobility may be less likely to respond to, cope with, or recover from wildfire. ***In the public survey undertaken as part of this Plan, 30% of respondents indicated that they or someone in their household has a disability or impairment. Per Census data, this number was estimated to be 11.8% of residents.***
- Additional residents and other visitors in unincorporated Malibu will also introduce significant traffic loads to the already limited road/evacuation route capacities. ***If not considered in the recent traffic analysis conducted for the area, a revision to that study to account for these additional loads should be undertaken to better inform evacuation planning efforts.***
- Evacuating pets, service animals, and large animals pose significant problems since panicked animals behave unpredictably and may refuse to respond to normal handling approaches.

In addition to evaluating these potential evacuation issues, an evacuation field drill is recommended to identify any additional physical, social behavioral, operational, communications and management challenges requiring improvement to the 2020 Evacuation Plan to provide for the safe and efficient execution of an evacuation order.

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 impact of that fire on a community. The City of Malibu has retained the services of the Los Angeles County Fire Department to provide their fire service. County Fire has multiple jurisdictional responsibilities besides wildland fire suppression, including emergency medical services, structure fire suppression, hazardous materials incidents, swift water and water rescue, inspection and permitting and code enforcement. In 2017 the Department responded to a total of 724 wildland fires county-wide, this represented 8.7% of all fire calls. Wildland fire responses represented only 0.18% of Department's total emergency response workload that year.

6.8 FISCAL RESOURCES AND CONSTRAINTS

Fiscal resources and budgetary constraints may make it difficult for the City to implement the recommendations found in this plan. Establishing local priorities for available staffing and funding while still seeking additional funding sources will allow the City to continue enhancing wildfire protection for the residents of the Planning Area.

6.8.1 Potential Grant Funding Sources

The following identifies several grant sources which may be available to the City and LACoFD:

+ ***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.

+ ***Fire Service Grants and Funding (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's 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 is intended to provide a foundation for continued multi-agency collaboration and cooperation for fire protection planning efforts in the City. Effective monitoring of wildfire planning efforts provides important opportunities to evaluate the overall success of this CWPP in reducing wildfire risk and improving planning processes. This plan does not end when it is adopted, but evolves with a continuous cycle of collaborative planning, implementation, monitoring and adapting strategies based on lessons learned. Basic recommendations that will lead to a successful program are:

- Continue to identify and evaluate wildland fire hazards
- Increase awareness of the community to reduce loss and damage from wildland fires
- Incorporate fire and fuels management practices with landowner priorities and City/LACoFD efforts

7.1 CWPP MONITORING

The City's Public Safety Core Team, in conjunction with representatives of the Los Angeles County Fire and Sheriff's Departments should 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 portion of this document has been developed as a "tear out" with a simple monitoring and tracking system built in. Identified actions approved by City leadership can be assigned a responsible individual and target completion date with the Action Plan providing an opportunity to track accomplishments for reporting purposes. This portion of the Plan should be reviewed and updated annually to measure accomplishments or to realign priorities as conditions warrant.

7.2 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 more resilient landscapes and the increased safety of people and property. Committing to 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 is likely to happen when wildfire moves through a treatment.

Developing targeted questions to guide monitoring can aid in formulating a monitoring plan. By focusing on addressing a few key questions, it ensures that the right information is collected to efficiently address specific objectives. Jain and others (2012) provide questions that can be used to develop an effective monitoring plan https://www.fs.fed.us/rm/pubs/rmrs_rn063.pdf.

There are essentially three phases of fuels management monitoring: short term, medium-and long-term. Short-term monitoring addresses the immediate results of a treatment, while longer-term monitoring can provide information about the effectiveness of fuel treatments to enhance community wildfire resiliency. 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 City and Los Angeles County Fire Department should consider in their efforts to reduce the wildfire threat to community assets. Table 15 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. Table 16, contains site specific actions which have been identified for three specific geographic areas. These areas were identified using the Los Angeles County Fire Department's thirteen structure defense tactical maps for Malibu. These maps are designed for field-use and targeted to be a comprehensive source of structure defense information for use by firefighting resources. These thirteen tactical areas were consolidated into three geographic areas of interest: Western, Central and Eastern Malibu. See Figure 37.

Note: 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.

Table 15. Community-Wide Actions

Community Wide Actions					
Objective	Action	Number	Responsible Official	Target Date	Status
A. Public Notification and Evacuation Review existing public alert protocols and evacuation procedures.	Evaluate the willingness of the community to develop improved cellular coverage, including traditional cell towers to improve communications into canyon areas throughout the City	A-1			
	Investigate the willingness/cost of expanding the use of local radio systems to CERT/Arson Watch members or HOAs where cellular communication is poor. Use Malibu West as a template for implementation	A-2			
	Establish clear protocols for use of the 50 bullhorns staged at City Hall to be used by city staff members to make evacuation notices during power outages. Use of CERT members could be explored in future.	A-3			

	Post signage at the intersection of PCH and major canyon travel routes, identifying the City evacuation zone that the road is associated with. Assure that residents are aware of evacuation zone numbering and the evacuation notification processes.	A-4	LACoFD		
	Develop a multi-agency tabletop exercise to address evacuation traffic flow issues along PCH during Woolsey Fire. Focus on east-bound traffic flow into Santa Monica	A-5	LACoFD	Ongoing	
	Work with relevant evacuation and transportation authorities in Los Angeles and Ventura Counties to assesses the need for a revised traffic analysis to account for social behavioral input, reduced evacuation routes and other conditions that may better inform wildfire evacuation planning.	A-6	Malibu Public Safety, Los Angeles and Ventura County Fire Department, Police and Sheriff's Departments	Ongoing	
	Develop a program to identify and address evacuation vulnerable populations within the City	A-7	Malibu Public Safety & LA County Public Health		
B. Codes and Enforcement Evaluate the effectiveness of existing vegetation	Work with Los Angeles County Fire to create a "surge" inspection program for PRC 4291 defensible space compliance. Target inspections of all residences within a three-year time frame	B-1			

treatment codes and enforcement.	Identify residents that have completed the NFPA "Assessing Structure Ignition Potential from Wildfire" training. Use their skills to increase the capacity to complete Home Ignition Zone inspections.	B-2	Fire Safety Liaison	On going	
	Inspect and enforce recently revised fire protection standards (Municipal Code 17.53.090 or Local Ordinance 461) which prohibit the planting of Palm trees and requires planting of certain flammable species (with exceptions) no closer than 50 feet from structures.	B-3	City plan checking and inspections; Forestry and LACoFD Fire Prevention	On-going	
	Inspect and enforce recently revised fire protection standards (17.53.090) which requires that mulch material between zero and five feet from a structure must consist of nonflammable materials.	B-4	Plan checking and inspections; LACoFD Forestry / CA's Wildfire and Forest Resiliency Action Plan	Ongoing	
	Explore developing a local ordinance for the City 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 and encourage property owners on the benefits of this practice, as well as, exploring opportunities to provide financial assistance for implementation.	B-5	City Public Safety, City Attorney and LACoFD Forestry		

C. Manage landscape vegetation to promote the use of fire resilient species	Investigate opportunities to incentivize the removal of existing, flammable non-native species. Seek grants or other fiscal sources to fund a program.	C-1	Fire Safety Liaison and LACoFD Forestry		
	Seek funding to establish chipper programs to help facilitate best practices for vegetation management at the neighborhood level.	C-2	Fire Safety Liaison and LACoFD Forestry		
D. Improve Defensible space Develop fuel treatment strategies for defensible space around structures and along transportation routes	Establish and maintain a spatial database of planned and completed fuel treatments within the City. Include other entities within and adjacent to the City who are also managing vegetation. This would include Los Angeles County, National Park Service, MRCA, Caltrans and others.	D-1	Fire Safety Liaison, LACoFD Forestry, RX1 and AC7 Office	On going	
	Encourage development of Community Defensible Space where adjacent landowners design and implement fuel treatments to protect groups of homes. Treatments are based on how vegetation and topography effect fire behavior regardless of property boundaries.	D-2	Fire Safety Liaison and LACoFD Forestry	On going	
	Work with the jurisdictional roads agency to cut back ornamental vegetation that is encroaching on the road prisms throughout the City	D-3	LACoFD Forestry		
	Work with CALTRANS on removal or maintenance of non-native tree species within the Right-of-Way along PCH	D-4	LACoFD Forestry		
	Work with the jurisdictional road agencies and private road associations to evaluate the willingness to treat invasive species commonly found in disturbed sites associated with roadways	D-5	LACoFD Forestry		

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	Develop standardized signage that identifies residences with static water sources that can be used during suppression operations should the pressurized system fail. Provide signage free to residents willing to install the identification	E-1	LACoFD Fire Prevention		
	Research Senate Bill 465 to determine if the City is eligible for PACE program financing to help property owners retrofit existing non-conforming structures to current WUI building construction requirements	E-2	LACoFD Fire Prevention		
	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-3	LACoFD Fire Prevention		
	Research opportunities to incentivize property-owners to harden structures through tax breaks, cost sharing and/or insurance incentives	E-4			
	If residents are eligible for California's Property Assessed Clean Energy (PACE) Program, identify City processes that can be streamlined to facilitate PACE financing for wildfire safety improvements.	E-5			

structure survives a wildfire.	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-6			
F. Build Community and Regional partnerships 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.	Continue coordination efforts with all applicable public agencies and private interest groups that are involved in the Santa Monica Mountains region to foster and maintain a unified, comprehensive, and strategic wildfire hazard reduction plan as prepared in the Santa Monica Mountains CWPP. Continue to monitor and evaluate the effectiveness, sustainability, and relevance in achieving the desired performance objectives.	F-1	California's Wildfire and Forest Resiliency Action Plan		
	Connect with existing Fire Safe Councils to better understand local needs and provide support where appropriate for plan actions. Encourage and assist the establishment of additional Fire Safe Council and/or Firewise communities	F-2	Fire Safety Liaison	Semiannually	

	Establish improved communications with Homeowners Associations and other volunteer community groups (e.g., Fire Safe Councils) that have expressed an interest in wildfire mitigation actions. HOAs and other groups may have funding for self-supported actions within their area of authority but need technical guidance from the City/County Fire.	F-3	Fire Safety Liaison		
	Review LACoFD tactical maps and review with local community groups/leaders to update, where needed, local firefighting resources (e.g., drafting locations, alternative water supplies) and/or other fire safety challenges (e.g. narrow roads, dead ends, other dangers) that may enhance awareness of 1st responders, particularly those who are unfamiliar with City.	F-4			
G. 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	Continue the City sponsored Home Ignition Zone inspection program where residents can request assistance from the City's Fire Safety Liaison to provide more detailed information on home hardening techniques, defensible space, and fire safe landscaping.	G-1	Fire safety liaison and LACoFD	Ongoing	
	Work with County Fire and County Sheriffs to determine the viability of neighborhood fire brigades. Continue to support the Ready-Set-Go direction for fire evacuation.	G-2	Public Safety Manager and/or Fire safety liaison	Ongoing	

community level. Public education is critical to community preparedness and citizens need to know where to obtain accurate information before an event occurs.	Update the City's website to better organize wildfire safety information. Include information on City, County and State code information related to building codes, landscaping requirements, and defensible space and post-fire effects on flooding and soil erosion on the Fire Safety page.	G-3	City of Malibu Webmaster, LACoFD Forestry and LAC Public Works		
	Continue providing community and/or homeowner/neighborhood training classes on wildfire preparedness	G-4	Fire safety liaison and LACoFD	Ongoing	
	Publish posters and other information with graphics that clearly explain defensible space requirements found in PRC 4291, LACoFD and Malibu specific requirements (Ordinance 461). E.g., https://www.readyforwildfire.org/prepare-for-wildfire/ready-set-go/rsg-campaign-toolkit/. Have information available on the website and as a handout. Include topics such as • Community Defensible Space • Fuel Modification Zones • Ongoing Maintenance	G-5	Fire safety liaison or wildland fire specialist and LACoFD		

Table 16. Actions by Geographic Area

Actions by Geographic Area					
1. Western Malibu – LACoFD Structure Defense Areas 21 & 30-34					
Objective	Action	Tracking Number	Responsible Official	Target Date	Status
Develop fuel treatment strategies along travel routes.	Work with jurisdictional agencies to assure that Right-of-Ways (ROW) along Decker Canyon, Encinal Canyon and Trancas Canyon Roads from the City limits south to PCH have vegetation maintained in a condition that supports safe evacuation.	WM-1	LACoFD Forestry Div 7 LAW Ref. California's Wildfire and Forest Resiliency Action Plan		
Manage landscape vegetation to promote the use of fire resilient species. Review existing public alert protocols and evacuation procedures.	Work with property owners to remove non-native tree species, particularly Italian Cypress off of Decker Edison Road. Install Decker Edison Road signage off of Decker Canyon Road.	WM-2	LACoFD Forestry Div 7 LAW Ref. California's Wildfire and Forest Resiliency Action Plan		

Evaluate the effectiveness of the existing vegetation treatment codes and enforcement.	Ensure enforcement of fuel modification plans on rebuilds off of lower Encinal Canyon Road	WM-3	LACoFD Forestry Div 7 LAW Ref. California's Wildfire and Forest Resiliency Action Plan		
Review existing public alert protocols and evacuation procedures.	Close Charmlee Park to public access during times of elevated fire danger	WM-4	City of Malibu		
Develop fuel treatment strategies for defensible space around structures. Develop fuel treatment strategies along travel routes.	Work with individual property owners between La Herran and Lunita Roads to build community defensible space. Focus on improved access/exotic removal along N/S trending roads and long driveways.	WM-5	LACoFD Forestry Div 7 LAW Ref. California's Wildfire and Forest Resiliency Action Plan		
Develop fuel treatment strategies along travel routes.	Develop agreement with property owners to maintain vegetation east of Paseo Canyon Drive on SRA land as a green belt or in a state of low fire flammability	WM-6	LACoFD Forestry Div 7 LAW Ref. California's Wildfire and Forest Resiliency Action Plan		

Evaluate the effectiveness of the existing vegetation treatment codes and enforcement.	Assure that fuel modification plans are strictly enforced on all rebuilds between Bonsall Canyon Road and Trancas Canyon Road	WM-7	LACoFD Forestry Div 7 LAW Ref. California's Wildfire and Forest Resiliency Action Plan		
Manage landscape vegetation to promote the use of fire resilient species.	Facilitate the establishment of a special assessment zone to fund the removal and maintenance of non-native pines, eucalyptus, pepper trees, oleander and other non-fire resilient species in the neighborhoods between Trancas and Bonsal Canyons	WM-8	LACoFD Forestry Div 7 LAW Ref. California's Wildfire and Forest Resiliency Action Plan		
Develop fuel treatment strategies along travel routes.	Remove or maintain non-native tree species within the ROW along lower Busch Drive to improve evacuation safety	WM-9	LACoFD Forestry Div 7 LAW Ref. California's Wildfire and Forest Resiliency Action Plan		
2. Central Malibu – LACoFD Structure Defense Areas 16 & 18-21					
Objective	Action	Tracking Number	Responsible Official	Target Date	Status

Manage landscape vegetation to promote the use of fire resilient species.	Work with property owners and jurisdictional agencies to remove fire damaged eucalyptus located in the drainage north of PCH between Kanan Dume Road and Zumirez Drive	CM-1	LACoFD Forestry Div 7 LAW Ref. California's Wildfire and Forest Resiliency Action Plan		
Review existing public alert protocols and evacuation procedures.	Investigate the improvement of the dirt road from the end of Galahad Road south to PCH as an alternate egress for the small neighborhood	CM-2	LACoFD Forestry Div 7 LAW Ref. California's Wildfire and Forest Resiliency Action Plan		
Manage landscape vegetation to promote the use of fire resilient species.	Work with property owners, jurisdictional agencies and environmental groups to maintain or remove non-native tree species in the drainages south of PCH between Portshead Road and Meadows Court	CM-3	LACoFD Forestry Div 7 LAW Ref. California's Wildfire and Forest Resiliency Action Plan		

Develop fuel treatment strategies along travel routes.	Work with jurisdictional road agency and National Park Service to maintain clearances along access road to Solstice Canyon Park. Maintain brush clearance along the roadway a minimum of 10 feet on each side, using best management practices, to improve traffic flow and visibility in the event of an evacuation.	CM-4	LACoFD Forestry Div 7 LAW Ref. California's Wildfire and Forest Resiliency Action Plan		
Evaluate the effectiveness of the existing vegetation treatment codes and enforcement. Manage landscape vegetation to promote the use of fire resilient species.	Ensure enforcement of fuel modification plans for all rebuilds off of Latigo Canyon Road. Encourage property owners to remove non-native tree species, focusing on Eucalyptus and Italian Cypress in the small residential development area just south of the City limits (Calicutt Road Area)	CM-5	LACoFD Forestry Div 7 LAW Ref. California's Wildfire and Forest Resiliency Action Plan		
Develop fuel treatment strategies along travel routes.	Work with property owners and jurisdictional roads agency to maintain the ROW of Latigo Canyon Road in a state of low flammability to promote safe evacuation of residents.	CM-6	LACoFD Forestry Div 7 LAW Ref. California's Wildfire and Forest Resiliency Action Plan		
Review existing public alert protocols and evacuation procedures.	Work with property owners to improve access from along Ramirez Canyon to enhance access and structure defense opportunities.	CM-7			

Manage landscape vegetation to promote the use of fire resilient species.	Develop agreements with property owners to maintain the eucalyptus dominated open space above Paradise Cove Mobile Home Park	CM-8			
Review existing public alert protocols and evacuation procedures.	Evaluate the large field at the N/E corner of Civic Center Way and Stuart Ranch Road as a TRA and as a mechanism to limit the number of vehicles egressing PCH during an evacuation	CM-9			
Develop fuel treatment strategies along travel routes.	Support ongoing efforts to perform roadside hazard reduction along Corral Canyon Road from PCH to the City limits	CM-10			
Review existing public alert protocols and evacuation procedures.	Evaluate the potential of improving the existing dirt road at the end of Via Acero to connect Ramirez Canyon to Kanan Dume Road as an alternate evacuation route	CM-11			
3. Eastern Malibu – LACoFD's Structure Defense Areas 8-10					
Objective	Action	Tracking Number	Responsible Official	Target Date	Status
Review existing public alert protocols and evacuation procedures.	Work with Pepperdine University Public Safety to establish a TRA where residents can assemble during an evacuation in order to lessen the flow of traffic on PCH	EM-1	LACoFD		
Develop fuel treatment strategies along travel routes.	Work with jurisdictional road agency and property owners to cut back ornamental vegetation encroaching on the road prism along Big Rock Canyon Road	EM-2			
Manage landscape vegetation to promote the use of fire resilient species.	Work with property owner to maintain a "stringer of palm trees east of Malibu Canyon Road and north of Malibu Crest Road to reduce ember production potential	EM-3			
Manage landscape vegetation to promote the use of fire resilient species.	Work with property owners to maintain overstocked eucalyptus stand near the water tank on Las Flores Mesa/Eagle Pass Roads	EM-4			

Build community and regional partnerships.	Develop a pilot community chipper program for Las Flores Mesa and lower Big Rock Mesa Road areas. Evaluate community participation and effective to determine if expansion to other areas is warranted	EM-5	LACoFD Forestry Div 7 LAW Ref. California's Wildfire and Forest Resiliency Action Plan		
Develop fuel treatment strategies along travel routes.	Work with jurisdictional road agencies and environmental groups to address the treatment and removal of Fountain grass along Big Rock Canyon Road. Consider the use of herbicides to increase effectiveness of treatments	EM-6	LACoFD Forestry Div 7 LAW Ref. California's Wildfire and Forest Resiliency Action Plan		
Develop fuel treatment strategies for defensible space around structures.	Enhance vegetation clearance around temporary generator sites which support the water system in the event of a power outage	EM-7	LACoFD Forestry Div 7 LAW Ref. California's Wildfire and Forest Resiliency Action Plan		

Develop fuel treatment strategies for defensible space around structures.	Work with LACFD to maintain and widen existing fuel breaks from the Woolsey Fire in the Big Rock community on SRA land.	EM-8	LACoFD Forestry Div 7 LAW Ref. California's Wildfire and Forest Resiliency Action Plan		
Develop fuel treatment strategies along travel routes.	Support ongoing efforts for the annual treatment of roadside herbaceous fuels along lower Big Rock Canyon and Seaboard Roads	EM-9	LACoFD Forestry Div 7 LAW Ref. California's Wildfire and Forest Resiliency Action Plan		
Develop fuel treatment strategies for defensible space around structures.	Work with jurisdictional agencies to eliminate the build-up of dead material in lower Las Flores Creek between Las Flores Creek Park and PCH.	EM-10	LACoFD Forestry Div 7 LAW Ref. California's Wildfire and Forest Resiliency Action Plan		

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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. CAL FIRE) 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 – Railroads – 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.

+ *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 Director 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

+ *2019 California Building Code Chapter 7A as amended by LA County (Title 26, Building Code)*

This subchapter of the 2019 California Building Code with Los Angeles County amendments (Title 26) provides guidance on building materials, systems, and/or assemblies used in the exterior design and construction of new buildings, and to additions, alterations or repairs made to existing buildings, erected, constructed, or moved within any Fire Hazard Severity Zone within State Responsibility Areas or any Wildland-Urban Interface Fire Area designated by the LACoFD after the application date (July 1, 2008). These are essentially structural hardening provisions required for new buildings in high wildfire prone areas. The latest LA County Ordinances which outline these amendments include, Ordinance 2019-0056, 2016-0053, and 2013-0048. Refer to http://lacounty-ca.elaws.us/code/coor_title26_ch for details of LA County amendments.

+ *California Fire Code Chapter 49 as amended by LA County (Title 32, Fire Code)*

Chapter 49 of the California Fire Code with Los Angeles County amendments 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. LA County has amended these requirements through Title 32 of the County Code. Ordinance 2020-0014 outlines these updates. Notable wildfire related updates include clearance of brush and vegetative growth, requiring defensible space of 200 ft. Additionally, LA county requires a fuel modification plan for all properties located within areas designated as a Fire Hazard Severity Zone within State Responsibility Areas or Very High Fire Hazard Severity Zone within the Local Responsibility Areas, according to applicable Fire Hazard Zone maps. The fuel modification plan includes a set of scaled plans that includes a plot plan showing fuel modification zones indicated with applicable assessment notes, a detailed landscape plan, and an irrigation plan.

+ *Los Angeles County General Plan 2035*

The LA County General plan is a comprehensive policy document applicable to all unincorporated areas of LA County that informs future land use decisions, including policies addressing and connecting the following 12 elements: land use, mobility, air quality, conservation and natural resources, parks and recreation, noise, safety, public services and facilities, economic development, and housing. The General Plan serves as a blueprint for the future, prescribing policy goals and objectives to shape and guide the physical development of the City. The General Plan is the legal basis for all local land use decisions while also setting the vision for how the City will evolve.

+ *Los Angeles County, Planning and Zoning, Title 22*

LA County Title 22, “Planning and Zoning” establishes how unincorporated communities in the county use land within their boundaries. It establishes the basic type and intensity of uses permitted by the General Plan for each land use category, including the overall maximum density for residential

development and maximum intensity of development for commercial and industrial uses. The General Plan is the foundation for all of the land uses that occur in the unincorporated County, and provides the framework for how the County will plan for and address the numerous land use challenges it faces. The Land Use Element in the General Plan also utilizes short-term programs and long-term strategies to provide flexible and comprehensive guidelines for dealing with County land use decisions and future development scenarios.

In accordance with Section 65302(a) of the Government Code, the Land Use Element of the General Plan identifies the goals and policies that guide the distribution, general location, and extent of uses of land for housing, business, industry, open space, and other uses of land in unincorporated Los Angeles County. The Land Use Element ensures a compatible balance of land uses to meet the diverse needs of the unincorporated communities in the County. Equally important, the Land Use Element provides planning tools, such as land use policy maps, as well as land use policy strategies, that will coordinate future development and revitalization efforts in the County. The Element's principal intent is to be visionary, flexible, and sustainability focused.

In addition to the County General Plan, land use policy is established through any of the several types of community-based plans that comprise the General Plan. They are: Area Plans, Community Plans, Neighborhood Plans, Local Plans, Local Coastal Plans, and Specific Plans.

As Malibu is an incorporated city, it's general plan dictates the land use policies adopted in the City's administrative boundary. However, unincorporated Malibu is subject to the County's General plan, which is not explicitly subject of this CWPP.

+ *Los Angeles County and* California Residential Code, Title 30 Section R*337.*

The LA County Title 30, Residential Code is the 2019 Residential Code with LA county ordinance changes and amendments, adopting a more bespoke building standard described in Ordinance 2019-0060. Specific to wildfire, the residential code section 337 outlines the adopted requirements for construction of new buildings, or repairs made to existing buildings located in any Fire Hazard Severity Zone or Wildland Interface Fire Area. Section 337 details requirements for the performance, materials, and protective coverings to items such as roof coverings, weathering, ventilation openings, and accessory buildings and miscellaneous structures.

+ *Los Angeles County Regional Planning, SEA Ordinance Implementation Guide, 2020*

The LA county Significant Ecological Area (SEA) Program was established in 1980 to help conserve the genetic and physical diversity within Los Angeles County by designating biological resource areas capable of sustaining themselves into the future. In January of 2020 the Significant Ecological Areas ordinance was adopted by the County of Los Angeles. The SEAs ordinance implements the goals and policies of the LA County General Plan by establishing permitting requirements, design standards, and review processes for development within SEAs. The goal of the SEA Ordinance is to guide development to the least impactful areas on a property in order to avoid adverse impacts to biological resources. The purpose of the implementation guide is to provide an overview of the SEA program, while guiding implementation of the ordinance clarifying regulatory language.

+ *South Coast Air Quality Management 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. The South Coast Air Quality Management District (SCAQMD) was formed in 1976 and encompasses Orange County, non-desert regions of Los Angeles County, San Bernardino County, and Riverside County. It develops plans and

regulations designed to achieve public health standards by reducing emissions from business and industry. South Coast AQMD's Governing Board adopts plans and regulations for the region and then submits them to the California Air Resources Board and the Federal EPA. Refer to the webpage (http://www.aqmd.gov/home) for detailed information on the general plans, policies, and programs. The District also provides some specific information on wildfire smoke impacts and preparedness activities http://www.aqmd.gov/home/air-quality/wildfire-health-info-smoke-tips.

+ *Los Angeles County All-Hazard Mitigation Plan, 2019*

The purpose of the All-Hazard mitigation plan is to assess risks posed by natural hazards and to develop a mitigation action plan for reducing the risks in unincorporated Los Angeles County. This report describes each of the eight prominent hazards (climate change, drought, damn failure, earthquake, flood, landslide, tsunami, and wildfire) including impact tables for the planning area, vulnerable populations and critical facilities within each hazard area. The report also includes the proposed Mitigation Strategy aligning with the Los Angeles County's capabilities. It serves as a specific blueprint for how the County will reduce its risks to hazards, discussing the evaluation, implementation and progress made in local mitigation efforts.

+ ***Los Angeles County Fire Department "Act. Action. Accomplish" 2017****-2021 Strategic Plan*

A LA County Fire department Strategic plan identifies the mission and vision of the department through 2021. The document identifies three specific goals: 1) Emergency Operations Service, 2) Public Service and 3) Organization Effectiveness. The LAFD provides a brief strategy identifying specific implementation plans for each goal. Examples of these strategies include, strengthening operation effectiveness, developing and implementing the community outreach opportunities, developing catastrophic preparedness strategies for the Department and the community, work with SoCal Gas to prepare emergency response plan for gas facilities, and develop an education and training plan for emergency operations personnel to aid in mental health and substance abuse incidents among vulnerable communities.

+ *Los Angeles County Fire Department, Overview Booklet, 2020.*

The Los Angeles County Fire Department Overview booklet was published in January of 2020. The document provides an overview of the fire departments capabilities, mission, and statistics of the historic utilization of the department. At a high level the document provides information on its sub-division groups including the Emergency operations and Field division, Air and Wildland division, Forestry division, Fire Prevention division, Community Emergency Response Team, and its Education and Community programs.

B.4 CITY | COMMUNITY LEVEL POLICY

+ *Malibu Municipal Code Chapter 15, Buildings and Construction Code*

The Malibu Municipal Code (Building code of the City of Malibu) Is the Title 26, Building Code, of the Los Angeles County Code, adopting the California Building Code, 2019 Edition (Part 2 of Title 24 of the California Code of Regulations), as amended and in effect on January 1, 2020. The municipal code includes local ordinances, including Ordinance No 461 for landscape water conservation and fire protection.

+ *Malibu Local Coastal Program - 2002*

The purpose of this article is to implement the policies of the California Coastal Act of 1976, to carry out the policies of the City of Malibu Land Use Plan. In 2002 Malibu amended its Local Coastal Program

(LCP) directly through its local use plan. The plan requires new development on beaches or bluffs to create an impact report that includes future sea level rise projections. The plan also states that one of the cities intended policies is to develop a strategy to address the issue of sea level rise.

+ *Ordinance No 461 – 2020*

  Ordinance No 461 was adopted in 2020. The ordinance includes land use planning policies which amended the Malibu Municipal Code and the Local Coastal Program to foster more fire-resistant landscapes. The ordinance discussed restrictions on certain flammable plants, trees and materials in landscaping plans. Fostering the creation of fire-resistant landscapes.

+ *City of Malibu Emergency-Operations Plan – 2018*

  The Emergency Operations Plan (EOP) for the City of Malibu 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 Malibu Emergency Operations Center (EOC) staff remember to communicate, collaborate, coordinate, and cooperate with each other and with the field responders and other jurisdictions.

+ *Las Virgenes Malibu Council of Government Multi-Jurisdictional Hazard Mitigation Plan – 2018*

  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.

  In 2018 the City of Agoura Hills, City of Calabasas, City of Hidden Hills, City of Malibu, City of Westlake Villages, and the Las Virgeens-Malibu council of governments created a joint power of agreement, to provide a vehicle for members to engage in reginal and cooperative planning and coordination of government services and responsibilities. The goal of the document is to promote sound public policy and programs designed to protect the public, critical facilities, infrastructure, private and public property, and the environment form natural and human generated hazards. This comprehensive document evaluates natural, technological, and human caused disaster impacts while identifying resources and capabilities and proposes mitigation actions or projects to reduce future impacts.

+ *City of Malibu General Plan – 2014*

  The City of Malibu General Plan, adopted in November 1995 and updated in 2014 with the adoption of the 2013-2021 Housing Element update, serves as a tool for directing growth while maintaining an attractive, viable, and safe environment. It outlines a vision for the City and establishes policies to achieve the objectives. The City of Malibu General Plan provides an analysis of existing conditions in the City, including physical, social, cultural, and environmental resources and opportunities. Additionally, it looks at trends, issues, and concerns that affect the region and provides policies to guide development and change by identifying common goals, objectives, and programs. Land use consistent with flood, geological and fire safety requirements are considered.

+ *City of Malibu Fuel Modification Plan (Review Required)*

The Los Angeles County Fire Department, Fuel Modification Unit is responsible for the approval of a landscape and irrigation plan for structures located in the Fire Hazard Severity Zones. The process of approval consists of reviewing aspects such as structure location and type of construction, topography, slope, amount and arrangement of vegetation and overall site settings. Our objective through this approval plan process is to create defensible space necessary for effective fire protection of homes in the Fire Hazard Severity Zones. Any new structure greater than 120 square feet will need a fuel modification plan approved by the forester.

+ *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.

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 flacking 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 17). Since flame lengths can be directly related to potential firefighting success, these breakpoints are used for classifying modeled fire behavior throughout the CWPP.

Table 17. 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 17 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 City 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.

D.1 ROADSIDE FUEL TREATMENT PRESCRIPTIVE GUIDELINES

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

Table 18. Roadside Fuel Treatment Prescriptive Guidelines

Location → / Fuel Type	Primary Zone (A) (10' minimum; up to 50') (distance varies with terrain & accessibility)
Grass/ Forbs	Reduce fuel depth to less than 2-inch.
Surface dead/down material	Remove all large (>3-inches diameter) dead/down material.
Chaparral/Shrub	Remove all chaparral/shrub vegetation within this zone. Retain the root system to provide for soil stabilization
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 trees and branches extending over roadways to a minimum height of 13 feet 6 inches.
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.

D.2 VEGETATION/FUEL TREATMENT PRESCRIPTIVE GUIDELINES

The following table describes prescriptive guidelines for vegetation management in the HIZ.

Table 19. 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	Reduce heavier pockets of dead/down flammable material to < 5" depth.
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.
Trees Overstory (without chaparral/shrub understory)	Thin smaller trees leaving larger trees (>than 6-inches DBH) at 10-20 ft crown spacing limb/prune lower branches 6-feet above grade level, or lower 1/3 of tree height on smaller trees. Remove dead standing trees.	Thin smaller trees leaving larger trees (> than 6-inches DBH) at approximately 10 foot crown spacing; 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. Understory: remove chaparral/shrub; limb/prune healthy ornamental shrubs to 1/3 of shrub height, maintain spacing between shrubs.	Thinning specifications are the same as Trees Overstory without Chaparral/shrub understory (Zone B). Understory: occasional less dense chaparral/shrub or small tree clump in openings is acceptable.	Thinning specifications are the same as Trees Overstory without chaparral/shrub understory in Zone C. 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 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 City of Malibu Native Tree Protection requirements.

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.
- 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) will be marked on the project area maps (Figure 7).
- Known landslide and unstable areas should be avoided as 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 areas any ESHA.
- 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.
- Required riparian zone setbacks will be identified, mapped and flagged prior to project implementation work.
- Any 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 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 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.

+ **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 seed. However, the use of herbicides can be controversial and require an impact analysis following California Environmental Quality Act (CEQA) or National Environmental Policy Act (NEPA) protocols.

  Where conditions allow, mowing or weed-whipping herbaceous fuels before seeds are sown can also be effective at eliminating target species. However, treating these fuels before they are fully cured will require a second treatment to address the fire hazard associated with regrowth

+ **Native Trees** – The City has a native tree protection ordinance which provides direction regarding the maintenance and removal of five native tree species; native oak (Quercus species), California Walnut (Juglans californica), Western Sycamore (Platanus racemosa), Alder (Alnus rhombifolia), or Toyon (Heteromeles arbutifolia) tree, that has at least one trunk measuring six inches or more in diameter, or a combination of any two trunks measuring a total of eight inches or more in diameter, measured at four and one-half feet above natural grade. (Local Implementation Plan, Chapter 5).

  Three exemptions to the ordinance are listed as part of the Local Implementation Plan:

  - Native trees destroyed or damaged by a natural disaster. A damaged tree shall be exempt only if the general health of the tree is so poor that efforts to ensure its long-term health and survival are unlikely to be successful as determined by an arborist report and confirmed by the city biologist after a site inspection of the tree.
  - Native trees that constitute an imminent public health and safety hazard due to the risk of falling where the structural instability cannot be remedied as determined by a licensed arborist's report and confirmed by the city biologist after a site inspection of the tree.
  - Native trees that were planted for ornamental purposes as part of an approved coastal development permit where their planting was not required by the LCP or Coastal Act for mitigation or restoration. (Ord. 445 §4, 2019)

  Property owners are advised to contact the City prior to undertaking any maintenance or removal actions which may involve one or more of these five protected species.

+ **Chaparral** – Treatments involving 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 structure. To eliminate a chaparral species from a treatment zone, the use of herbicides to kill regrowth or grubbing out the root structure is required. Both treatments required attention over time to fully eliminate chaparral from the desired area.

  The Local Coastal Plan, Land Use Plan contains two policy statements which may influence removal of chaparral within the Planning Area. These policies are:

- LUP Policy 3.27 - Buffers shall be provided from coastal sage scrub and chaparral Environmentally Sensitive Habitat Area (ESHA) that are of sufficient width to ensure that no required fuel modification (Zones A, B, or C, if required) will extend into the ESHA and that no structures will be within 100 feet of the outer edge of the plants that comprise the habitat.
- LUP Policy 4.48 - When brush clearance is required for fire safety, brushing techniques that minimize impacts to native vegetation and ESHA and minimize erosion, runoff, and sedimentation shall be utilized.

Property owners are advised to contact the City before undertaking any chaparral removal outside of the defensible space zones as define in California Public Resources Code 4291.

+ **Open burning** – Open burning to dispose of material generated during a hazardous fuel removal treatment is not permitted within the Planning Area

Appendix E. *Public Workshop*

The following is a sample agenda provided as part of the 1st and 2nd public workshops held in in Malibu at City Hall. A copy of the full presentation is available on the City's website. https://www.malibucity.org/952/Fire-Safety

JENSEN HUGHES
Advancing the Science of Safety

Agenda

Meeting Title:	Malibu CWPP Public Workshop
Date/Time	February 20, 2020 / 6:00 to 8:00 p.m.
Meeting Location:	Malibu City Hall, Multi-Purpose Room, 23825 Stuart Ranch Rd.
Project	City of Malibu Community Wildfire Protection Plan (CWPP)
Distribution:	All Stakeholders

Item #		*Who*
1	Welcome and Introduction	JH & CoM
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	CoM

Appendix F. *Results of Public Survey*

A copy of the results of the public survey is available on the City's website. https://www.malibucity.org/952/Fire-Safety