SAN MATEO COUNTY GENERAL PLAN SAFETY ELEMENT

COUNTY OF SAN MATEO
PLANNING AND BUILDING

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COUNTY OF SAN MATEO
PLANNING AND BUILDING

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1. INTRODUCTION

San Mateo County is at risk from a number of natural hazards, and climate change is projected to make many of these more damaging for people, buildings and structures, ecosystems, and other important community assets. The San Mateo County (County) Safety Element (Element) identifies potential natural hazards in the unincorporated county and provides policies and implementation actions to protect people, property, and ecosystems from such hazards. The hazards identified are seismic and geologic hazards, flooding and sea level rise, ocean acidification, severe weather, fire hazards, extreme heat, drought, and infectious and vector-borne diseases. The Element also includes discussion of emergency preparedness and response processes in San Mateo County. The County of San Mateo (County) prepared a background report that provides additional details about these issues, including more information about how these hazards occur, the history of these issues in the County, how the County addresses these issues, and how hazardous conditions may change in future years. The background report is attached to this element as **Appendix A**.

1.1 Regulatory Framework

California Government Code Section 65302(g) requires each California city and county to include within its General Plan a Safety Element that addresses the protection of the community from any unreasonable risks associated with the effects of seismic and other geologically induced hazards, flooding, and fires. The Safety Element is required to include mapping of known seismic and other geological hazards, and it must identify flood hazards and urban and wildland fire hazards. Where applicable, it must also address evacuation routes, peak-load water supply requirements, minimum road widths, and clearances around structures. The Safety Element also includes required information on fire protection, law enforcement, emergency preparedness, and the County's Local Hazard Mitigation Plan.

The requirements for Safety Elements reflect evolving understanding of climate change, wildfire risk, and community vulnerability. Section 65302(g)(3) of the California Government Code (CA Govt. Code), adopted in 2012, requires counties to address wildfire hazard issues in State Responsibility Areas where Moderate, High, and Very High Fire Hazard Severity Zones are located. Section 65302(g)(4) of the CA Govt. Code (2015) requires climate adaptation and resiliency strategies based on comprehensive vulnerability assessments or reliance on a Local Hazard Mitigation Plan that addresses climate adaptation risks and vulnerabilities. Section 65302(g)(6) of the CA Govt. Code (2018) aligns Safety Element updates with Housing Element updates, establishing an eight-year update cycle to ensure both elements address new requirements and incorporate updated information. Section 65302(g)(5) of the CA Govt. Code (2019) mandates identification of residential developments in hazard areas that lack at least two emergency evacuation routes. Section 65302.15 of the CA Govt. Code (2019) requires the Safety Element to be reviewed and updated as necessary to identify evacuation routes and assess their capacity, safety, and viability under a range of emergency scenarios.

The Safety Element must be internally consistent with other chapters of the County's General Plan. State law requires close coordination between the Safety Element and Housing Element, directing the County to review and as necessary revise the Safety Element when the Housing Element is revised every eight years. In addition to keeping the Safety Element current and relevant, this process also helps to ensure that housing development occurs in safe locations and that housing policies adequately address emergency

preparedness and disaster recovery needs. The Safety Element's hazard analysis and mapping may inform housing site selection in the Housing Element, while housing policies must consider how to protect vulnerable populations during hazard events and support their recovery afterward. The Safety Element and other chapters of the General Plan must also be consistent with the County's Zoning Regulations, which specify how land parcels may be used and establish standards for the development and use of land in the unincorporated county.

1.2 How to Use this Document

This Safety Element brings together the policies, data, and actions that guide how San Mateo County prepares for, reduces, and responds to natural hazards. It serves as a shared resource for residents, County staff, partner agencies, advisory bodies, and for the Board of Supervisors as the County's policymakers and stewards of long-term community safety. The Safety Element offers clear guidance for understanding hazards and coordinating decisions that strengthen resilience across the county. The document is designed to be used by multiple audiences, each with different needs and objectives.

For residents and other community members, it is designed to help:

- **Understand exposure**. Review hazard sections to learn how hazards like wildfire, flooding, earthquakes, or sea-level rise may affect community members, their property, and their neighborhood.
- **Learn preparedness steps.** Find resources on emergency alerts, evacuation planning, and actions community members can take to reduce vulnerability at home, work, and school.
- **Know what policies apply to local homes and businesses**. Understand which County safety standards may affect development, landscaping, or property improvements in hazard-prone areas.

For developers, property owners, and planning professionals:

- **Identify site constraints.** Use hazard maps and vulnerability analyses to understand which risks affect specific parcels before starting development projects.
- **Meet design and construction standards.** Reference policies on fire-resistant materials, defensible space, drainage requirements, and setbacks from hazard zones.
- **Ensure compliance.** Confirm that proposed projects align with County safety policies during the application and permit review process.
- **Plan for long-term resilience.** Incorporate climate adaptation measures and future hazard projections into site planning and infrastructure design.

For the Board of Supervisors (Elected Officials):

- **Guide policy decisions.** Use this Safety Element as a foundational reference when making land-use decisions, adopting new ordinances, or considering funding for public safety and resilience initiatives.

- **Ensure consistency across County actions**. California law requires that County decisions be consistent with the General Plan. This document helps elected officials evaluate whether proposed projects, community plans, and department initiatives align with adopted safety goals and policies.
- **Set priorities and allocate resources.** The Implementation Plan outlines which actions are time-sensitive, high-impact, or require multi-year investment, helping the Board assess budget needs and direct resources strategically.
- **Communicate with the community.** The hazard summaries and maps provide clear language you can use when engaging the public, responding to concerns, or providing leadership during emergencies or recovery periods.
- **Monitor progress and accountability.** The roles, responsibilities, and metrics will help the Board to track progress, ask informed questions, and ensure follow-through across County departments.

For County staff:

- **Reference for land use decisions**. Use hazard maps, policies, and implementation actions to inform development project reviews, development approvals, and capital improvement planning.
- **Use as an operational framework.** Refer to the goals, policies, and actions when developing programs, update procedures, and coordinate across departments.
- **Guide resource allocation.** Identify priority actions and timelines to support budget planning and strategic investments in community resilience.
- **Coordinate across departments.** Apply the goals and policies as a common framework for aligning emergency management, public works, planning, and health department efforts across County operations.
- **Track implementation.** Use the assigned roles and timelines to monitor progress and report on safety initiatives to leadership and the Board of Supervisors.

For partner agencies and community-based organizations:

- **Align programs with County goals.** Use the Element's goals and policies to coordinate outreach, education, and resource distribution efforts across the region.
- **Identify collaboration opportunities.** Find areas where joint planning, shared data, or coordinated response can address hazards that cross jurisdictional boundaries.
- **Support grant applications.** Reference the Safety Element in funding proposals requiring demonstration of alignment with local hazard mitigation planning.
- **Coordinate emergency response.** Ensure that agency protocols and mutual-aid agreements reflect countywide preparedness and response strategies.

This Safety Element applies specifically to the unincorporated areas of San Mateo County. However, because hazards such as earthquakes, wildfires, flooding, extreme weather, and sea level rise are not always contained within jurisdictional boundaries, this element emphasizes the critical importance of regional coordination and partnership. Many policies call for collaboration with incorporated cities, special

districts, and regional agencies to address shared risks and build collective resilience across the entire county.

Document Organization

This Safety Element is organized to first provide context and background on hazards facing the County, followed by goals, policies, and actions to address those hazards. The document includes:

- **Introduction** (this section): Provides an overview of the Safety Element's purpose, regulatory framework, and relationship to other planning documents.
- **Topic Sections**: Each section describes the nature of the hazard or safety-related issue, its expected impacts on San Mateo County, areas of highest risk or greatest vulnerability to the issue, and current mitigation activities. These sections also include figures, maps, and data tables to provide further information and context.
- **Emergency Preparedness and Response**: Describes the County's emergency management framework, alert systems, evacuation planning, and coordination among response agencies.
- **Goals, Policies, and Actions**: For each hazard topic, organized by category of preparedness and response activity, this element establishes:
  - Goals: Broad statements of the County's goals desired outcomes.
  - Policies: Statements and commitments to guide decision making.
  - Actions: Specific steps for the County to take to achieve goals and policies.

This Safety Element also includes two appendices: **Appendix A** (the Safety Element Background Report) and **Appendix B** (the Vulnerability Assessment).

1.3 Relationship to the Multijurisdictional Local Hazard Mitigation Plan

San Mateo County participates in the San Mateo County Multijurisdictional Local Hazard Mitigation Plan (LHMP), prepared by the San Mateo County Department of Emergency Management (DEM), in accordance with the federal Disaster Mitigation Act of 2000 and the Federal Emergency Management Agency's (FEMA's) hazard mitigation assistance guidance. An LHMP is a necessary document for cities and counties seeking federal funding to plan and prepare for disasters. The San Mateo County Multijurisdictional LHMP describes the County's and participating cities' vulnerability to various hazards and includes actions and projects for reducing risk. Hazard mitigation actions are essential to breaking the disaster cycle of damage, reconstruction, and repeated damage. The current Multijurisdictional LHMP, as certified by FEMA, is incorporated into this Safety Element by reference, as permitted by California Government Code Section 65302.6. The complete plan is available online at the San Mateo County Office of Emergency Management website: https://www.smcgov.org/dem/multijurisdictional-local-hazard-mitigation-plan.

1.4 Relationship to Other General Plan Chapters

Many topics in the Safety Element also relate to topics in other chapters of the County's General Plan, including:

- The **Land Use** chapters include consideration of fire, seismic, flooding, and other hazards in land use designations and their density and intensity standards.
- The **Climate** chapter considers the greenhouse gas emissions of unincorporated community members, businesses, and County operations and proposes policies to reduce them.
- The **Soil Resources** chapter contains policies to mitigate soil erosion.
- The **Vegetative, Water, Fish, and Wildlife Resources** chapter contains policies to conserve, enhance, and protect natural ecosystems, which contributes to resilience.
- The **Water Supply** chapter addresses water conservation and contains policies to ensure San Mateo County has a resilient water supply.
- The **Environmental Justice** chapter identifies communities disproportionately impacted by environmental and health hazards and develops policies to address these issues, which directly relates to safety considerations for vulnerable populations.
- The **Transportation** chapter covers good street design and accessibility of the transportation system, which is vitally important in providing emergency services.
- The **Housing** chapter coordinates with the Safety Element through the eight-year update cycle established by Senate Bill (SB) 1035 to ensure housing development occurs in safe locations and that housing policies adequately address emergency preparedness and disaster recovery needs.
- The **Man-Made Hazards** chapter addresses noise pollution and establishes standards for noise-compatible land uses, which relates to emergency response operations and community health considerations. This chapter also addresses Airport Safety and Hazardous Materials.

For information on how to use the overall General Plan and how it relates to other County planning documents, see the "General Plan Function and Organization" section of the **General Plan Overview** chapter.

1.5 Relationship to the Local Coastal Program

The County's Local Coastal Program, adopted in accordance with the California Coastal Act, guides land use and development in coastal areas to protect coastal resources and ensure public access. The Safety Element supports and complements the Local Coastal Program by addressing coastal hazards such as sea level rise, coastal erosion, flooding, and seismic risks that affect the coastal zone. By identifying hazard-prone areas and incorporating strategies to reduce risk and increase resilience, the Safety Element helps align public safety goals with the Local Coastal Program's objectives, supporting sustainable, hazard-aware development and long-term coastal resource protection, specifically in the 'Hazards' and 'Locating and Planning New Development' components.[1]

1.6 Relationship to the Green Infrastructure Plan

The Safety Element supports and complements the County's Green Infrastructure Plan, adopted in September 2019, to meet State and regional requirements for managing stormwater through nature-based solutions. The Green Infrastructure Plan guides the integration of green infrastructure – including vegetation, soils, and stormwater capture facilities – into public and private development throughout unincorporated San Mateo County. By reducing stormwater runoff, enhancing natural water filtration, and creating more resilient landscapes, green infrastructure implementation directly contributes to the Safety Element's goals for flood risk reduction and climate adaptation. The Green Infrastructure Plan's focus areas, including North Fair Oaks, West Menlo Park, and the Midcoast communities, align with the Safety Element's emphasis on protecting vulnerable areas from flooding and other climate-related hazards. Together, these plans advance multi-benefit projects that enhance water quality, reduce flood risk, support habitat restoration, and build community resilience to climate change impacts.

1.7 Climate Change and Vulnerability

State law also requires that, as part of the need to assess and protect against hazards, Safety Elements analyze climate vulnerability, which is the degree to which people, nature, the built environment, and other systems are susceptible to harm from climate change and associated hazards. This includes physical and mental injuries, property damage or destruction, environmental harm, economic damage, and other factors. The County prepared the 2025 San Mateo County Vulnerability Assessment Summary report (**Appendix B**), which identifies how climate change may alter community conditions, and the people and places in San Mateo County who should be prioritized for adaptation and resilience. This section summarizes the key findings from the Vulnerability Assessment. More details are available in the full report, attached to this element as **Appendix B.**

San Mateo County has varied landscapes and communities that will all be impacted by climate change. On the bayside, residents of North Fair Oaks and nearby unincorporated areas have lower incomes than the countywide average and many are members of frontline communities, meaning that they often face the most immediate and serious risk of harm from natural hazards. The urbanized bayside faces heightened risk from flooding, extreme heat, air quality hazards, and sea level rise. These hazards threaten transportation networks, homes, industrial hubs, and frontline communities, among many others in the area. Low-lying areas like North Fair Oaks and the unincorporated mobile home parks northeast of Redwood City experience disproportionate impacts from flood events. Meanwhile, major job centers and transit corridors such as Highways 101, 280, and 92 face increasing risks of disruption due to flooding, extreme weather events, and heat-related infrastructure strain. Rising temperatures amplify public health risks for vulnerable populations, especially low-income households, older adults, and outdoor workers. Critical infrastructure, including San Francisco International Airport and regional hospitals, is highly exposed to climate hazards such as sea level rise and flooding.

The rural Coastside faces impacts from coastal erosion, sea level rise, wildfires, landslides, and severe weather, threatening small unincorporated communities such as Pescadero, agriculture, and tourism-based economies. Highway 1, the region's primary transportation route, is at risk of closure from severe storms, landslides, and erosion, threatening to isolate coastal communities. Agricultural lands face growing

challenges from drought, agricultural pests, and shifting precipitation patterns, impacting local food production and farmworker livelihoods. Wildfire hazards in forested areas pose threats to homes, outdoor recreation, and emergency response. Coastal infrastructure and vital services, such as Seton Medical Center Coastside, are particularly vulnerable to extreme heat, infectious and vector-borne diseases, severe weather, flooding, sea level rise, and wildfire. This Safety Element describes the hazards that will likely impact San Mateo County and provides a set of goals, policies, and actions to mitigate the risk to community members and assets.

Health Impacts of Climate-Related Hazards

The hazards described throughout this Safety Element pose significant and interconnected threats to public health across San Mateo County. Climate change is intensifying many of these health risks, creating cascading effects that strain healthcare systems, increase economic burdens, and disproportionately impact vulnerable populations. Some of the potential health impacts from climate-related hazards include the following.

Respiratory and Cardiovascular Impacts

Extreme heat and poor air quality, including air quality impacts from wildfires, present some of the most significant health threats facing the county. Extreme heat causes heat-related illnesses ranging from heat cramps and heat exhaustion to heat stroke and death. Beyond these acute effects, extreme heat exacerbates underlying cardiovascular disease and respiratory illnesses, triggering heart attacks and strokes while heat-related dehydration compounds these risks. Wildfire smoke and air pollution from vehicles and industrial sources contain fine particulate matter ($PM_{2.5}$) that penetrates deeply into lung tissue and enters the bloodstream, leading to respiratory conditions, exacerbating asthma, and increasing the risks of heart attacks, strokes, and certain types of cancer. Warmer temperatures accelerate the formation of ground-level ozone and extend pollen seasons, further impacting those with respiratory conditions.

Physical Injuries and Trauma

Flooding, severe weather, earthquakes, tsunamis, and landslides all cause immediate physical injuries through similar mechanisms. These hazards result in drowning, cuts, crush injuries, broken bones, and blunt trauma from building collapse, falling debris, and the powerful force of water or earth movement. Earthquakes generate dust clouds that can make it very difficult to breathe, while fires ignited by damaged infrastructure result in burns and smoke inhalation. Landslides can cause mortality and injury through blunt trauma and crushing. Additionally, when landslide debris blocks waterways, floods can cause drowning and injuries downstream if the barriers fail before they can be safely removed. Tsunamis create drowning risks and risks of other injuries from debris and damaged structures. Severe weather events lead to injuries from falling debris, flying objects, and lightning strikes. These hazards also damage transportation infrastructure, preventing people from reaching medical care and delaying emergency response.

Infectious Diseases and Contamination

Multiple hazards create pathways for infectious disease and contamination. Floodwaters and tsunamis can cause water to become contaminated with sewage, chemicals, and other pollutants, leading to infections and gastrointestinal illnesses. Standing water creates breeding grounds for disease-carrying mosquitoes. Climate change is expanding the range of vector-borne diseases as warmer, wetter conditions allow mosquito and tick populations to increase and spread diseases like West Nile virus, dengue fever, Zika virus, and Lyme disease. Earthquakes and flooding can contaminate drinking water supplies and compromise sewage systems, increasing waterborne illness risks. Drought forces communities to rely on lower-quality water sources and can limit access to clean water for drinking and hygiene. Ocean acidification indirectly threatens health through reduced seafood availability and increased harmful algal blooms that produce toxins causing gastrointestinal, neurological, and respiratory symptoms in those consuming contaminated seafood.

Behavioral Health and Displacement

The psychological toll of climate-related hazards affects individuals, families, and entire communities. Experiencing or witnessing disasters, losing loved ones, being displaced from homes, and facing ongoing uncertainty about hazard risks all contribute to post-traumatic stress disorder, depression, anxiety, and other behavioral health conditions. Earthquakes, landslides, tsunamis, severe flooding, and wildfire cause particularly severe trauma due to sudden onset and potential for catastrophic damage.

Beyond the immediate physical damage from disasters, climate hazards drive displacement through cascading economic impacts. Natural disasters can disrupt employment, particularly for outdoor workers who may be unable to work when conditions are hazardous or commute routes are inaccessible. Small businesses may close permanently, eliminating local jobs. Rising insurance costs, repair expenses, and lost income can make housing unaffordable. These economic pressures often force long-time residents to relocate, severing established social networks and community ties that are crucial for wellness, recovery, and resilience. Low-resourced households face the greatest risk, as they typically lack financial buffers to weather economic disruptions and may struggle to find affordable alternative housing. The stress of displacement disrupts access to healthcare, medications, and social support networks. Even the chronic stress of living with increased hazard risk takes a toll on psychological well-being and recovery.

Behavioral health plays a critical role in emergency planning and preparedness to mitigate these impacts and build community resilience. Integrating behavioral health providers into planning processes ensures that mental health and substance use needs are addressed proactively—from developing trauma-informed evacuation protocols and crisis counseling hotlines to training first responders in psychological first aid. Preparedness efforts should prioritize equity by including culturally competent outreach to low-resourced and displaced populations, such as mobile crisis response teams and community-based peer support networks. By embedding behavioral health in hazard mitigation strategies, the County can reduce long-term trauma, support faster recovery, and strengthen social ties that buffer against future shocks.

Healthcare System Vulnerabilities

Beyond direct health impacts, hazards threaten the healthcare system's ability to respond when it is needed most. Power outages during heat waves, storms, and earthquakes create dangers for individuals dependent on electrically powered medical devices, medications requiring refrigeration, or climate-controlled environments. Hazard events can damage healthcare facilities, limit their ability to provide care when demand surges, and disrupt transportation access to medical services. These disruptions particularly affect vulnerable populations who already face barriers to healthcare access.

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2. SEISMIC HAZARDS

Seismic hazards are natural hazards resulting from earthquakes and related ground disturbances. These hazards can pose significant risks to people, property, and infrastructure. They can cause building collapse, disrupt transportation networks, damage critical utilities, and trigger secondary hazards that compound the initial damage. The consequences can include loss of life, injury, displacement of residents, economic losses, and long-term community disruption requiring extensive recovery efforts. San Mateo County is in a seismically active region due to the presence of major active faults, including the San Andreas Fault that bisects the county, the Hayward Fault to the east, and the San Gregorio Fault to the west. Common seismic hazards in the county include earthquakes and ground shaking, surface rupture, liquefaction, and tsunamis.

2.1 Earthquakes, Ground Shaking, and Surface Rupture

An earthquake is the vibration of the earth's surface following a release of energy in the earth's crust. Geologists have found that earthquakes reoccur along faults, which are zones of weakness in the earth's crust. San Mateo County is considered a seismically active region because of the presence of the San Andreas Fault that bisects the county, the Hayward Fault across the bay to the east, and the San Gregorio Fault to the west (see **Figure 1**). The primary seismic hazard for the county is potential ground shaking from these three large faults, although there are also smaller faults in the region capable of causing earthquakes. In addition to shaking and surface rupture, seismic hazards can also include liquefaction, tsunamis, and landslides.

The last significant (greater than magnitude 6.0) seismic event in the San Mateo County vicinity was the 7.1 magnitude San Andreas Loma Prieta Earthquake in 1989, which originated 10 miles northeast of Santa Cruz. Other significant regional earthquakes include the 1906 earthquake in San Francisco and the 2014 Napa earthquake. **Table 1** lists the earthquakes with a magnitude of 5.0 or greater within 100 miles of San Mateo County from 1950 to 2025.

TABLE 1: REGIONAL EARTHQUAKES MAGNITUDE 5.0 OR GREATER SINCE 1950

Date	Magnitude	Epicenter Location
3/22/1957	5.3	Daly City, CA
3/31/1986	5.70	12 miles east-northeast of Milpitas, CA
10/17/1989	7.1	10 miles northeast of Santa Cruz, CA
9/3/2000	5.17	8 miles northwest of Napa, CA
8/10/2001	5.50	9 miles west of Portola, CA
10/31/2007	5.6	10 miles northeast of San Jose, CA
8/24/2014	6.0	6 miles southwest of Napa, CA

2.2 Liquefaction

Soil liquefaction occurs when water-saturated sands, silts, or gravelly soils are shaken so violently that the individual grains lose contact with one another and float freely in the water, turning the ground into a liquid. Buildings and foundations lose load-bearing strength and may sink into what was previously solid ground. Unless properly secured, hazardous materials can be released, causing significant damage to the environment and people. **Figure 2** shows the areas facing an elevated liquefaction risk in San Mateo County. Sea level rise resulting from climate change can increase the risk of liquefaction as it causes groundwater tables to rise and soils can become more saturated.

2.3 Tsunami

A secondary hazard of earthquakes are tsunamis, which have the potential to affect the shoreline areas of San Mateo County. A tsunami is a series of high-energy waves that radiate outward like pond ripples from an area where a generating event occurs, arriving at shorelines over an extended period. Tsunamis can be induced by earthquakes, landslides, and submarine volcanic explosions.

At some locations, the advancing wave front will be the most destructive part of the tsunami. In other situations, the greatest damage will be caused by the outflow of water back to the sea between crests, sweeping away items on the surface and undermining roads, buildings, bulkheads, and other structures. This outflow can carry enormous amounts of debris, resulting in further destruction. Ships and boats may be forced against breakwaters, wharves, and other craft, or be washed ashore and left grounded after the withdrawal of the seawater.

Seiches are a potential hazard related to tsunamis. Seiches are standing waves oscillating in a body of water, and they can form in any enclosed or semi-enclosed body of water, including San Francisco Bay. They typically result from strong winds and rapid changes in atmosphere pressure, which push the water from one end of the enclosure to the other. Earthquakes and severe storm fronts can also cause seiches.

Table 2 lists known tsunami events that have struck the county or one of its jurisdictions through 2025. **Figure 3** illustrates the area that may be subject to inundation from tsunamis in San Mateo County.

TABLE 2: TSUNAMI EVENTS IN SAN MATEO COUNTY

Date	Description
9/24/1859	A tsunami originating in Northern California hit Half Moon Bay, with a wave 4.6 meters (15.1 feet) high.
4/1/1946	An M-7.3 earthquake in the East Aleutian Islands of Alaska triggered a tsunami that struck California. Wave heights of 2.6 meters (8.5 feet) were recorded in Half Moon Bay.
5/22/1960	An M-9.5 earthquake in Central Chile triggered a tsunami that reached San Mateo County. Wave heights of 1.2 meters (3.9 feet) were recorded in Pacifica.
3/28/1964	An M-9.2 earthquake off the Gulf of Alaska triggered a tsunami that reached San Mateo County. Wave heights of 1.4 meters (4.5 feet) were recorded in Pacifica.
2/27/2010	An M-8.8 earthquake in Central Chile triggered a tsunami that reached San Mateo County. Wave heights of 0.6 meters (2 feet) were recorded in Half Moon Bay.
3/11/2011	An M-8.9 earthquake near Honshu, Japan, generated a tsunami that significantly affected California. Wave heights were recorded at 0.7 meters (2.3 feet) in Half Moon Bay and 1 meter (3.3 feet) in Pacifica.
12/5/2024	An M-7.0 earthquake off the coast of Cape Mendocino resulted in a tsunami warning for parts of the Oregon and Northern California coasts, including San Mateo County. This earthquake did not result in any measurable tsunami wave in San Mateo County.
7/29/2025	An M-8.8 earthquake off the coast of Russia's Kamchatka Peninsula generated a tsunami that reached the California coast. A tsunami watch was declared for coastal San Mateo County. The tsunami wave height in San Mateo County was estimated at less than 0.3 meters (1 foot).

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FIGURE 1: REGIONAL FAULTS

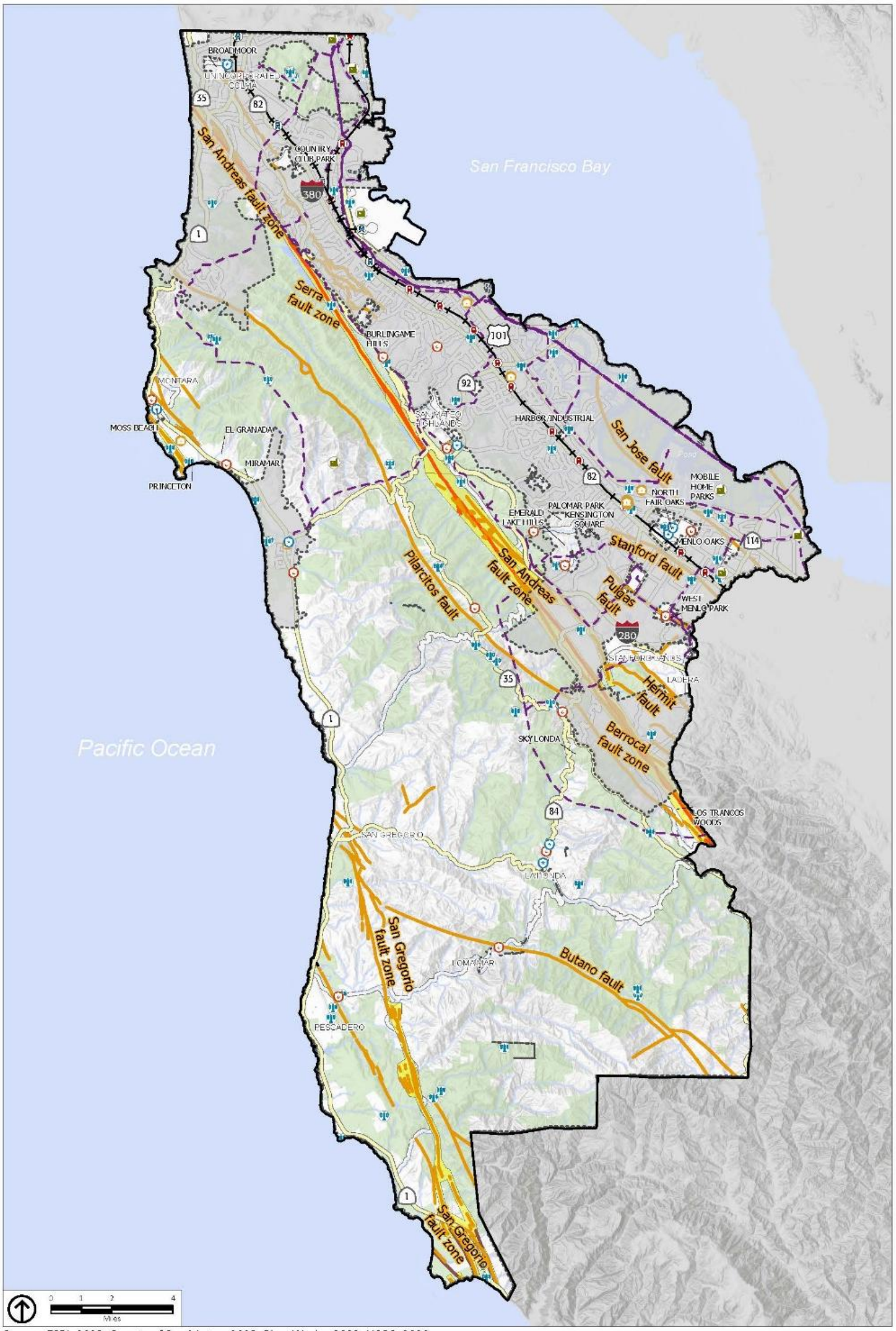

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FIGURE 2: LIQUEFACTION HAZARD AREAS

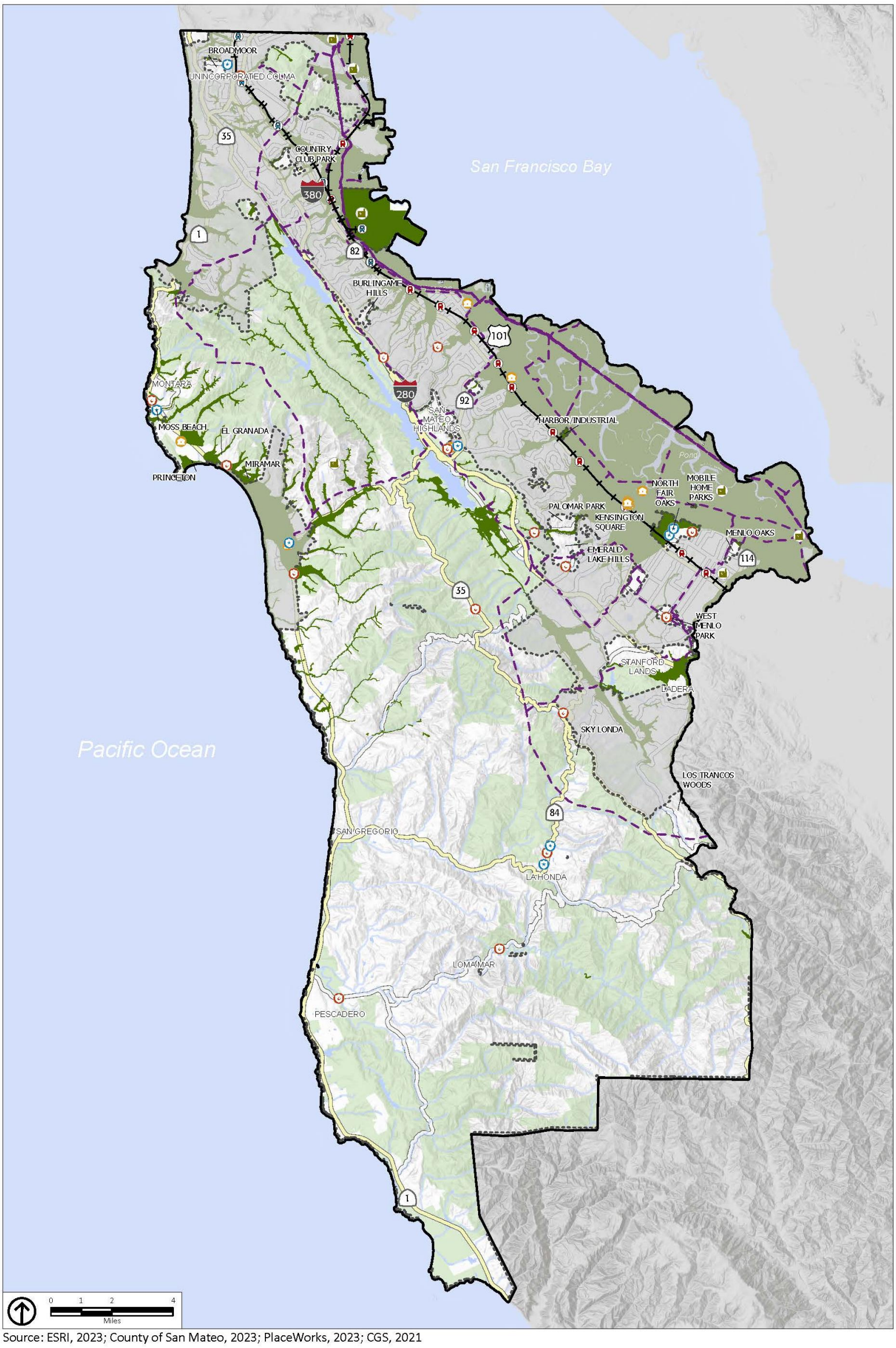

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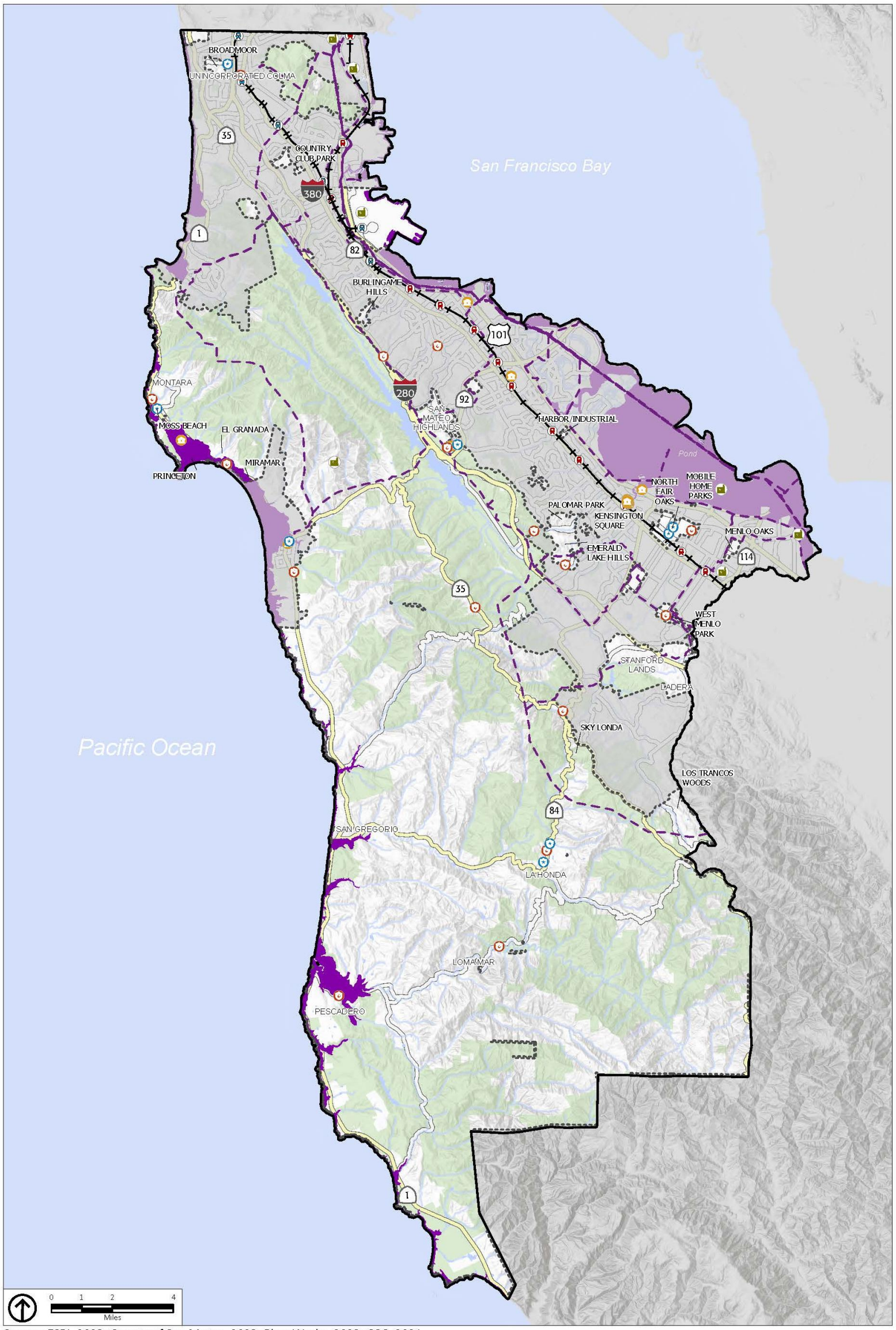
FIGURE 3: TSUNAMI HAZARD AREAS



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2.4 Seismic Hazard Risk Mitigation

There are three main County regulatory mechanisms meant to reduce the risk of damage in the event of an earthquake or seismic hazard: the Zoning Regulations, Local Coastal Program, and Building Standards Code. The County's Zoning Regulations apply review and/or design criteria to seismic fault/fracture areas and tsunami inundation areas in the following zones:

- Resource Management District
- Resource Management-Coastal Zone District
- Timberland Preserve Zone
- Timberland Preserve-Coastal Zone
- Planned Agricultural District

The Zoning Regulations implement the goals and policies of the County's Local Coastal Program, including regulations for development in hazard areas. The Local Coastal Program requires the County Geologist or an independent certified engineering geologist to review all building and grading permits in designated hazardous areas for potential geotechnical problems, and to review and approve all required seismic and geotechnical investigations as part of the development process. The County adopts the California Building Standards Code, and prepares local amendments as necessary, which establishes seismic design and construction standards for new buildings and structures. These standards include requirements for structural systems designed to withstand ground shaking, ensuring buildings can resist seismic forces and maintain structural integrity during earthquakes. The Building Standards Code also addresses seismic retrofit requirements for existing seismically vulnerable structures, such as unreinforced masonry buildings, soft-story structures, and nonductile concrete construction.

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3. GEOLOGIC HAZARDS

Geologic hazards are natural hazards resulting from ground movement or land instability not directly caused by seismic activity. These hazards can pose significant risks to people, property, and infrastructure. They can displace residents, block emergency routes, and damage critical infrastructure, disrupting daily life and requiring costly repairs. In coastal and hillside communities, such as those in San Mateo County, common geologic hazards include landslides and coastal erosion.

3.1 Landslides

A landslide, defined as the movement of rock, soil, or debris down a slope, is often triggered by natural events such as heavy rainfall, floods, earthquakes, or wildfires. In San Mateo County, landslides commonly occur during or after intense rainfall, particularly in areas previously affected by wildfires where vegetation loss destabilizes slopes. These events threaten homes and infrastructure, disrupt transportation networks, and contribute to downslope erosion.

As shown in **Figure 4**, the Coastside of the county are the most susceptible to landslide hazards, especially Sky Londa, La Honda, and Loma Mar. These areas have a history of previous landslides movements, making them susceptible to sliding again from heavy rainfall or seismic activity. Roadways in high-risk landslide areas include Interstate 280 and Highways 84 and 35.

Climate change is expected to exacerbate landslide hazards by increasing the frequency of wildfires and severe storms, which will likely elevate the risk of landslides, particularly fast-moving debris flows. Wildfires increase landslide risks by making slopes more vulnerable to erosion, as they burn away vegetation that stabilizes slopes, and alter soil properties by drying them out and reducing their capacity to retain water. Climate change is expected to cause more very dry and very wet years, increasing the risk of landslides and mudslides. These hazards can cascade, with post-wildfire debris flows blocking rivers or damaging infrastructure, which in turn can trigger flooding, isolate communities, and compound disaster recovery challenges.

Landslides have occurred regularly within San Mateo County in recent years. Table 3 lists known landslide events that have affected San Mateo County from 2000 to 2025.

3.2 Coastal Erosion

Coastal erosion is the process by which strong wave action, local sea level rise, and coastal flooding wear down or carry away rocks, soils, and sands. This includes erosion of beaches, dunes, bluffs, and cliffs. Many of the county's dune areas consist of open space in the form of low-lying beaches, and bluff areas contain buildings and infrastructure that could be damaged or destroyed by coastal erosion. Bluff erosion is particularly dangerous because bluffs can collapse rapidly and with little warning, harming people and community assets both above and below the bluffs.

Climate change is expected to increase sea level rise, storm frequency and intensity, and potentially wind action. These factors increase the rate of coastal erosion along the Pacific coastline of San Mateo County. According to the County of San Mateo's South Coast Sea Level Rise Vulnerability Assessment and Adaptation Report, approximately 537 acres of land south of Half Moon Bay is currently at risk of dune erosion, which is projected to increase to 1,015 acres at 0.8 feet of sea level rise, 1,355 acres with 1.6 feet of sea level rise, and 1,785 acres with 4.9 feet of sea level rise.[2] The bluffs between Half Moon Bay and Pacifica are projected to erode at a similar rate

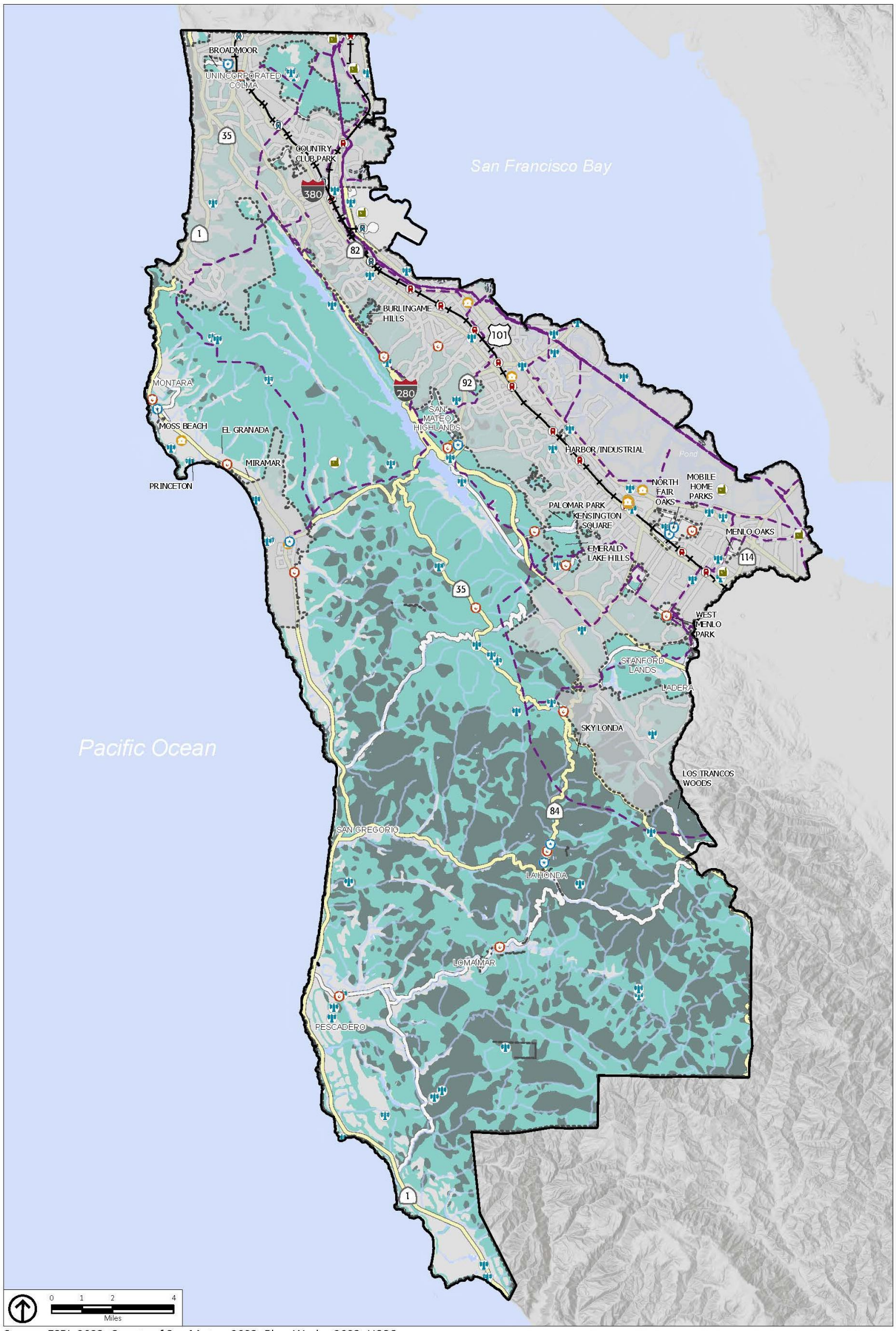
3.3 Geologic Hazard Risk Mitigation

The County has several measures to mitigate the risk of damage from geologic hazards through local codes and the Local Coastal Program. The County's Ordinance Code contains requirements pertaining to excavation, grading, filling, and clearing land to reduce the risk of landslides or erosion. Chapter 8.264, Geologic Hazards District Regulations of the County's Zoning Ordinance, regulates land development in areas determined to be hazardous because of geologic factors. It requires that prior to designating an area a Geologic Hazard District, a geotechnical report for the area shall be prepared by a certified engineering geologist under the direction of, or subject to review by, the County Geologist. The County's Local Coastal Program applies regulations for development in geologic hazard areas such as requiring geologic reports prepared by a certified engineering geologist for all proposed development. Policy 9.10 of the Local Coastal Program requires the County Geologist or an independent geologist to review all building and grading permits in designated hazardous areas for evaluation of potential problems and to review and approve all required investigations for adequacy.

TABLE 3: LANDSLIDE EVENTS IN SAN MATEO COUNTY

Date	Event Type
December 17, 2005 to January 12, 2006	A series of winter storms caused flooding, landslides, and mudslides in the region. Damage estimates for the San Mateo County region exceeded $100 million. Three homes were nearly wiped out by mudslides.
April 2006	Severe storms resulted in debris flows across the county. The hardest hit areas were water-soaked hillsides in Brisbane, Broadmoor, and El Granada. In total, 83 damage sites were documented throughout San Mateo County. Damage was estimated at nearly $13 million, with at least $6 million charged to county road damage. A slide caused Highway 1 at Devil's Slide to be closed for several months. A landslide also blocked lanes on Highway 84.
Winter 2017	A series of severe winter storms caused flooding and mudslides across San Mateo County.
March 2023	Highway 84 between Foxhill Road and Portola Road in Woodside was closed due to landslide triggered by severe weather. The slide resulted in the failure of approximately 250 feet of roadway on March 8, 2023. The road was fully reopened in May 2024. On March 22, 2023, a landslide on the 600 to 800 blocks of Patrol Road in Woodside impacted approximately 30 homes. Residents were urged to evacuate and Patrol Road was closed.
September 8, 2023	A landslide shut down eastbound Highway 84 west of Highway 35. The road was closed for several hours.

FIGURE 4: LANDSLIDE SUSCEPTIBILITY AREAS



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4. FLOODING AND SEA LEVEL RISE

Flooding occurs when normally dry land is covered by water. This can include creeks and streams overtopping their banks, heavy rainfall that surpasses the capacity of storm drains, and very high tides or coastal storm surge. It can also occur because of dam failure, water or wastewater infrastructure failure, or tsunamis. Floods are among the costliest natural disasters in terms of human hardship and economic loss nationwide, significantly threatening the health and life of community members and causing substantial damage to structures, landscapes, and critical infrastructure and utilities in the region. Standing water can weaken structural foundations, damage electrical systems, and create breeding grounds for vector-borne illnesses. Flooding accelerates soil erosion, reduces water quality, and leads to the loss of important environmental resources, making ecosystems more vulnerable. Flooding can lead to long-term public health problems if mold and mildew grow in buildings, displace communities if homes are destroyed or become uninhabitable, and increase economic burdens, such as rising home insurance costs.

Floods are among the most damaging natural hazards in unincorporated San Mateo County. Climate change is expected to make flood events worse and more frequent due to fewer yet more intense precipitation events in the form of atmospheric rivers and extratropical cyclones.[3] For example, what was historically a 200-year storm, or one that has a 1 in 200 chance of occurring each year, by 2100 could increase in frequency by 40 to 50 years (to a 1 in 150/160 chance each year).[4] This means that the 100-year and 500-year floodplains may expand, and the current floodplains may become 40- to 50-year floodplains. Climate change is also likely to increase the frequency and severity of droughts that cause soil to dry out and become hard. When precipitation does return, more water runs off the surface than is absorbed into the ground, which can increase flooding downstream.

Coastal Erosion at Pillar Point Bluffs

A 2016 geotechnical study found significant coastal bluff retreat at Pillar Point, with measured erosion rates ranging from 0.5 to 1.3 feet per year between 1993-2016 and recommended planning for a conservative retreat rate of 1.5 feet per year due to accelerating erosion potentially linked to sea level rise and changing wave patterns.

The report identified four key hazards at Pillar Point:

Active landsliding, with the report noting that blocks of earth 2-15 feet wide were failing from bluff edges.

Bluff retreat from decades of gradual erosion punctuated by catastrophic failures during major storm events, especially in 1982-1983, 1998, 2010, and 2015-2016.

Multiple trail segments are at high risk of being undermined.

Rockfall hazards from angular blocks falling from steep cliffs onto beaches below.

The study established Short-Term (10-year) and Long-Term (50-year) Hazard Zones to guide trail planning decisions. Recent observations suggest erosion rates may be accelerating beyond the study's projections, with some areas experiencing up to three feet of annual loss.

Source: Cotton, Shires and Associates, Inc., Geotechnical Hazard Assessment, June 2016

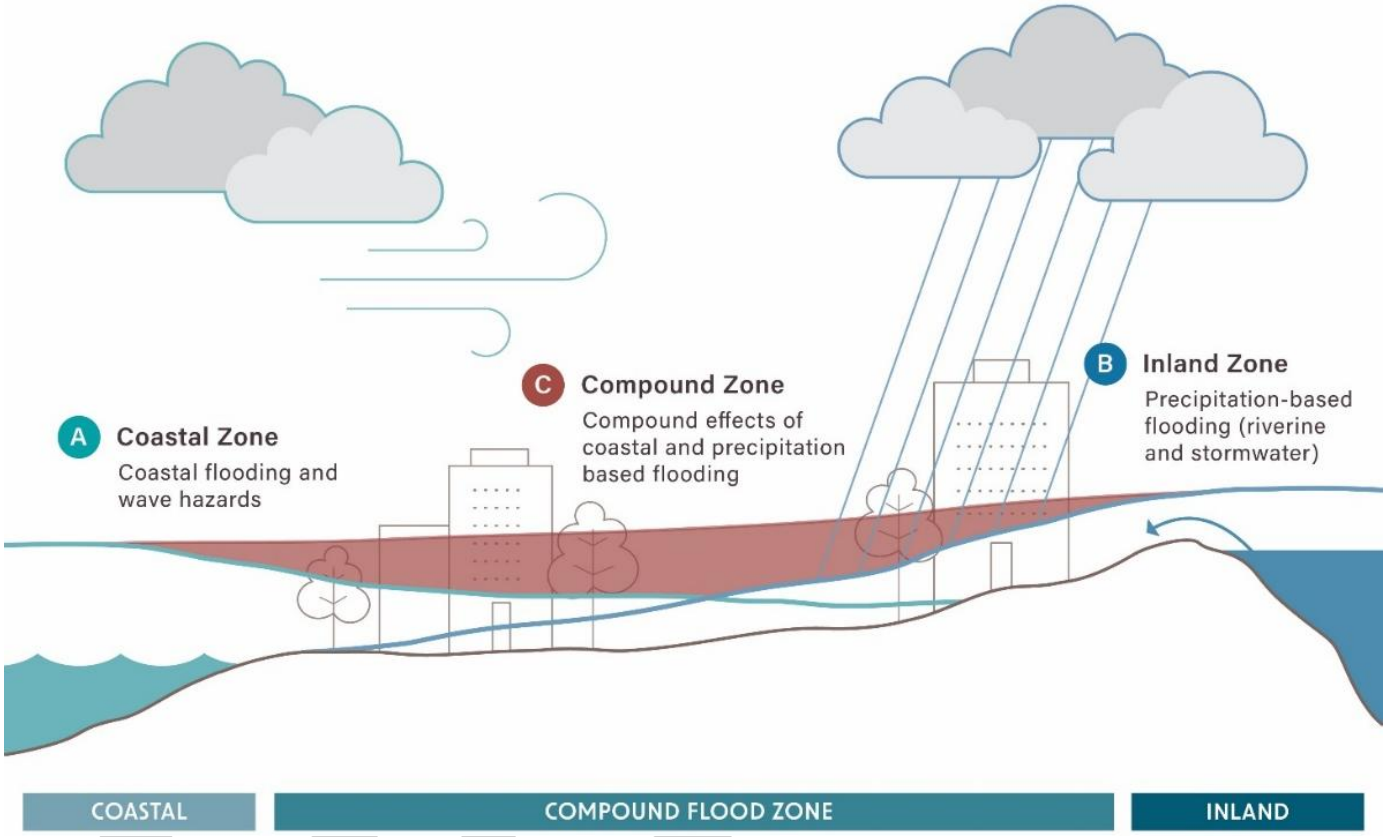
As sea levels rise, groundwater tables rise, and extreme storms become more frequent and intense, it will become more important to consider combined flood impacts of coastal flooding, stormwater flooding, and riverine flooding. Compound flooding occurs when two or more extreme hazards occur simultaneously or successively, amplifying the flooding and increasing the geographic area and depth of flooding (Grade et al. 2023). Compound flooding can also occur when two or more hazards co-occur that are not themselves extreme, but they result in extreme flooding when combined.

In low-lying coastal areas, compound flood events are commonly due to the joint occurrence of heavy precipitation, high river flows, elevated groundwater levels, soil saturation, and elevated coastal water levels (Feng et al. 2022; Magnan et al. 2022; May et al. 2023; Xu et al. 2023). San Mateo County includes low-lying coastal areas on both coasts. The low-lying areas along the bay shoreline are highly urbanized, and adaptation planning should consider both existing and future compound flooding to avoid inadvertently making one flood hazard worse while addressing other flood hazards. Currently, planning and design practices tend to look at the vulnerability and risks of one hazard at a time, failing to account for concurrent or successive events.

Figure 5 illustrates the conceptual area at greatest risk of compound flooding from both coastal and precipitation-based flood hazards. The flood risks in the "coastal transition zone" will be underestimated in the absence of a combined flood analysis. Although the County has a reasonable approximation of current and future coastal flood hazards on both coasts through the recent FEMA Flood Insurance Rate Map (FIRM) updates (FEMA 2019), the U.S. Geological Survey CoSMoS modeling and mapping (Barnard et al. 2021),

the Adapting to Rising Tides modeling and mapping (Vandever et al. 2017), and two future-condition shallow groundwater analysis and mapping efforts (Befus et al. 2020; May et al. 2022), there is limited modeling and mapping of riverine and stormwater flood hazards available. This represents a significant data gap in achieving climate resilience to compound flood hazards.

FIGURE 5: COMPOUND FLOODING IN COASTAL REGIONS



Source: (Pathways Climate Institute, 2024)

4.1 Flood Hazard Areas

In San Mateo County, developed and undeveloped areas of land are subject to flooding because of extensive urbanization, heavy seasonal rainfall exceeding stormwater system management capacities, high tides and coastal storm surge, or infrastructure failure (e.g., stormwater channels, levees, pump stations). A majority of these flood-prone areas are specifically subject to flooding from heavy rainfall and resulting stream overflows.

The Federal Emergency Management Agency (FEMA) designates specific flood hazard areas that are at risk of inundation in a 100-year flood and 500-year flood based on historic conditions. The California Department of Water Resources identifies areas at risk of flooding in a 200-year storm. As shown in **Figure 6**, FEMA-designated flood hazard areas in the interior of the unincorporated county occur primarily along creeks, rivers, and lakes, such as Crystal Spring Reservoir, San Andreas Lake, Denniston Creek, and San

Gregorio Creek. However, the flood hazard zones expand where the creeks drain into either the San Francisco Bay or the Pacific Ocean. The coastal and bayshore floodplains include several segments of Highways 1 and 101, most of the developed areas of Pescadero, the unincorporated Harbor/Industrial area between Belmont and San Carlos, large sections of other key roadways such as Pescadero Creek Road, and multiple State beaches. Flooding can block other rural roads or cause erosion over time, leading to further isolation of rural communities and creating challenges for emergency evacuation. For example, during flood events, floodwaters often block Pescadero Creek Road and isolate the community. Coastal and bayshore floodplains are projected to expand as sea levels rise and the tide regularly moves farther inland, eventually permanently flooding many developed low-lying coastal areas.

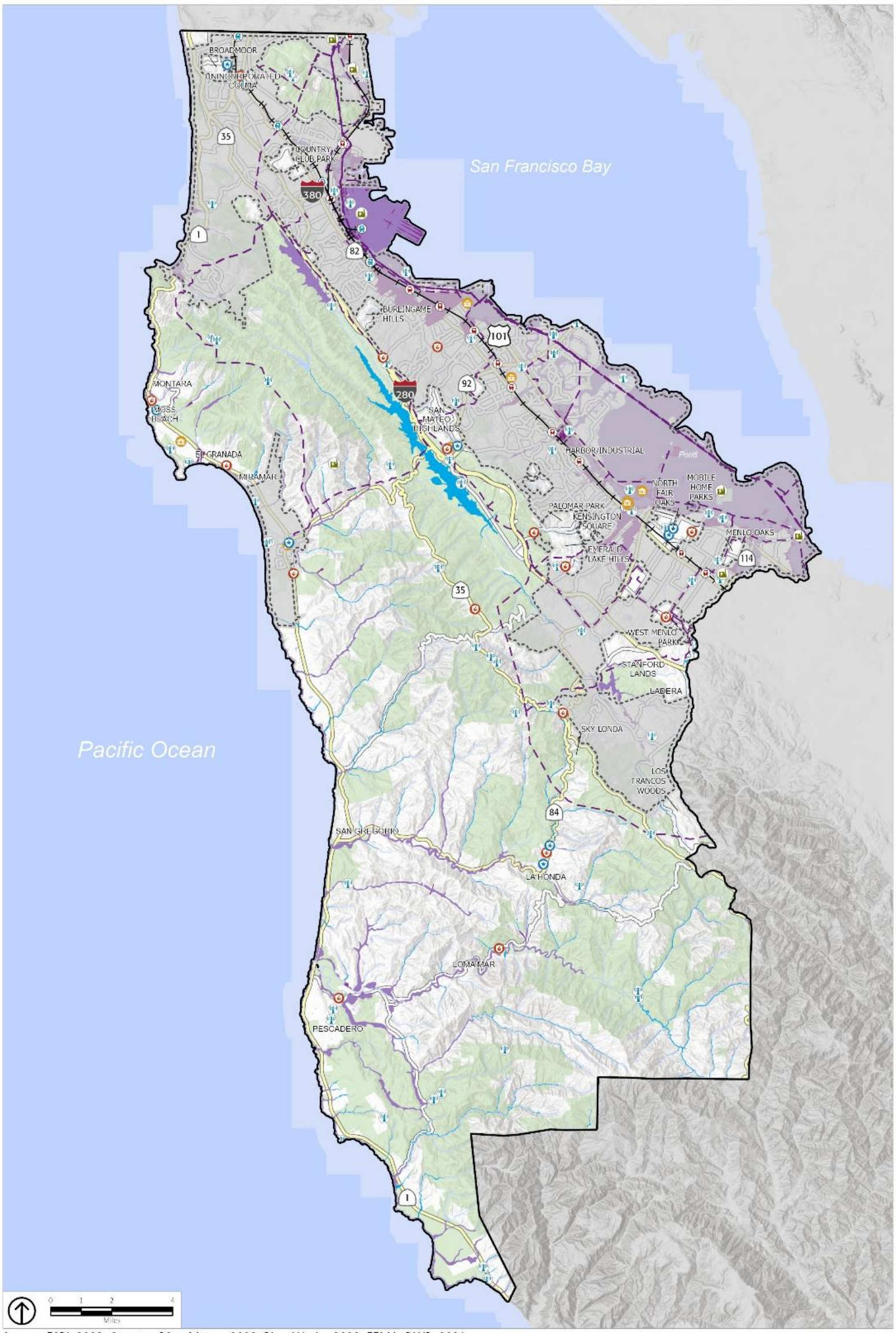
San Mateo County has seen 35 major flooding events since 1996, most of which have been flash floods. Some of the most significant flooding occurred during the winter of 2022/2023, which saw multiple back-to-back atmospheric rivers and widespread flooding throughout San Mateo County. During this period, some locations saw more than four inches of rain in a single day. Heavy rainfall, high tides, inadequate drainage infrastructure maintenance, and insufficient vegetation management combined to cause flooding in multiple places, including at the Belmont Mobile Home Park. Flooding from these storms displaced close to 100 people, including many from mobile homes in unincorporated areas in the county. The storms also toppled trees across San Mateo County and caused several mudslides.

OneWatershed Framework

San Mateo County's OneWatershed Framework is a community-led, watershed-scale planning initiative funded by California's Adaptation Planning Grant program. It brings together the City/County Association of Governments, OneShoreline, six local water agencies, and community-based organizations to identify shared climate risks to people and infrastructure. The OneWatershed Framework aims to facilitate a coordinated effort to ensure a climate resilient and equitable approach to watershed management in San Mateo County. Specifically, application of the OneWatershed Framework assesses the regional and shared risk of climate change to water infrastructure and resources (sewer, water, stormwater) and helps to develop opportunities to build adaptive capacity to climate impacts for the most vulnerable communities. By empowering neighborhoods to articulate resilience priorities, from flood control to equitable water access, the framework aims to catalyze multibenefit projects and create a replicable model that strengthens watershed and community resilience countywide.

Source: https://ccag.ca.gov/wp-content/uploads/2024/10/6-A7-OneWatershed_CEP_20240402_FINAL.pdf

FIGURE 6: FLOOD HAZARD ZONES



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4.2 Dam and Pipeline Failure

A dam failure is an uncontrolled release of water from a reservoir through a dam caused by damage or destruction to the dam or associated infrastructure. Water pipeline or aqueduct failures can create a similar sudden flood. These events are often triggered by heavy rains that overwhelm the stormwater management infrastructure or cause erosion or landslides, especially if there is a structural deficiency or insufficient capacity in the infrastructure. Dam and pipeline failures can range from minor to catastrophic and can potentially harm human life and property downstream from the failure. In addition, ecosystems and habitats can be destroyed by fast-moving floodwaters, debris, and sedimentation from inundation. Although dam and pipeline failures are very rare, these events are not unprecedented.

There are 24 dams in San Mateo County; 12 that could endanger lives and property if a failure occurred. **Figure 7** illustrates areas in the county that would be affected by inundation if these dams failed. The Lower Crystal Springs Dam is the largest dam in San Mateo County and therefore has the largest potential flooding area, making it a higher priority for regulation and preventative maintenance by County, State, and federal officials. It is located directly on the San Andreas Fault and impounds water to form the Lower Crystal Springs Reservoir, which serves as a water supply for San Francisco and most cities in San Mateo County. According to California's Division of Safety of Dams, the Lower Crystal Springs Dam has a low probability of failure in the event of an earthquake. Despite this low probability, the County and the San Francisco Public Utilities Commission, which owns the dam, have taken action to enhance safety and quality of the dam through significant seismic upgrades including doubling the width of the main spillway and raising the height of the parapet wall by 9 feet as part of the Lower Crystal Springs Dam Improvement Project.[5]

4.3 Flood Mitigation

In San Mateo County, the first line of defense against flooding is the network of local and regional creeks and stormwater conveyance systems, shoreline protection, and roads. Storm drains, culverts, pump stations, and roadside gutters collect and convey runoff to creeks, channels, and the bay, while streets themselves often serve as secondary flow paths during high-intensity storms. Along the bay and ocean coasts, levees, seawalls, revetments, and tide gates—together with nature-based features, such as wetlands, beaches, and dunes—help buffer communities from coastal flooding and erosion. This interconnected infrastructure is critical for protecting communities but is increasingly stressed by climate-driven extremes, including severe storms and cascading hazards such as post-wildfire debris flows.

Within incorporated areas, cities are responsible for managing and upgrading their stormwater conveyance systems and road networks, ensuring these assets can handle runoff, maintain access during storms, and adapt to changing climate conditions. Within unincorporated areas, the county holds this responsibility. Additionally, San Mateo County Flood and Sea Level Rise Resiliency District, known as OneShoreline, manages flood infrastructure in three flood zones: Colma Creek, San Bruno Creek, and San Francisquito Creek.

OneShoreline plays a crucial role in increasing the flood resilience of the county and its residents. OneShoreline works with local governments, community organizations, and stakeholders to plan and implement cross-jurisdictional flood resilience projects that protect communities from storms and sea level rise, restore ecosystems, enhance flood alerts, and improve public access and connectivity through expanded and accessible Bay Trail networks. OneShoreline is collaborating with multiple jurisdictions to advance the planning and design of resilience projects, acquire grant funding sources, and coordinate projects across jurisdictional boundaries.

Other agencies responsible for flood control in San Mateo County include local jurisdictions, San Francisco Public Utilities Commission, Federal Insurance Administration, the California Department of Water Resources (DWR), the United States Army Corp of Engineers (USACE), FEMA, and the San Mateo Resource Conservation District (RCD).

San Francisquito Creek Joint Powers Authority (SFCJPA)

The SFCJPA was established in 1999 following severe flooding in 1998 to coordinate flood risk reduction along San Francisquito Creek and the bay shoreline. San Mateo County participates in the SFCJPA through the San Mateo County Flood and Sea Level Resiliency District (OneShoreline), along with the cities of East Palo Alto, Menlo Park, and Palo Alto, and the Santa Clara Valley Water District.

The SFCJPA plans, manages, and coordinates multibenefit flood protection projects that integrate habitat restoration and community recreation. The creek forms the boundary between San Mateo and Santa Clara Counties, making regional coordination essential. Through this partnership, San Mateo County benefits from shared resources, joint-planning efforts, and collaborative flood risk reduction strategies that protect communities in Menlo Park and East Palo Alto while preserving one of the few remaining natural watercourses in the region.

DWR is responsible for managing and protecting California's water. DWR works with other agencies to protect, restore, and enhance the natural and human environments. DWR also works to prevent and respond to floods, droughts, and catastrophic events that would threaten public safety, water resources and management systems, the environment, and property.

The USACE identifies the need for and constructs major flood-control facilities, in partnership with local jurisdictions. It also develops flood- and dam-inundation maps and reports. It has permitting authorities for stream maintenance permits.

FEMA manages the National Flood Insurance Program, providing insurance to the public in communities that participate in the program. Flood insurance is required of all homeowners who have federally-backed loans and own homes in FEMA-designated floodplains. FEMA is the main federal government agency contact during natural disasters and publishes the maps, which identify the extent of flood potential based on a 100-year or 500-year flood event. FEMA also administers various grant programs for hazard mitigation.

The RCD maintains collaborative partnerships with private and public property owners to conduct flood mitigation efforts across coastal watersheds. The RCD provides technical assistance for erosion control, repairs failing creek crossings and improves road surface drainage, and implements water quality improvements that reduce sediment loads and downstream flooding impacts in watersheds, including Pescadero, Pilarcitos, and Gazos Creeks. These efforts address both immediate flooding concerns and long-term watershed health, helping property owners implement best management practices that protect infrastructure while reducing flood risk to downstream communities.

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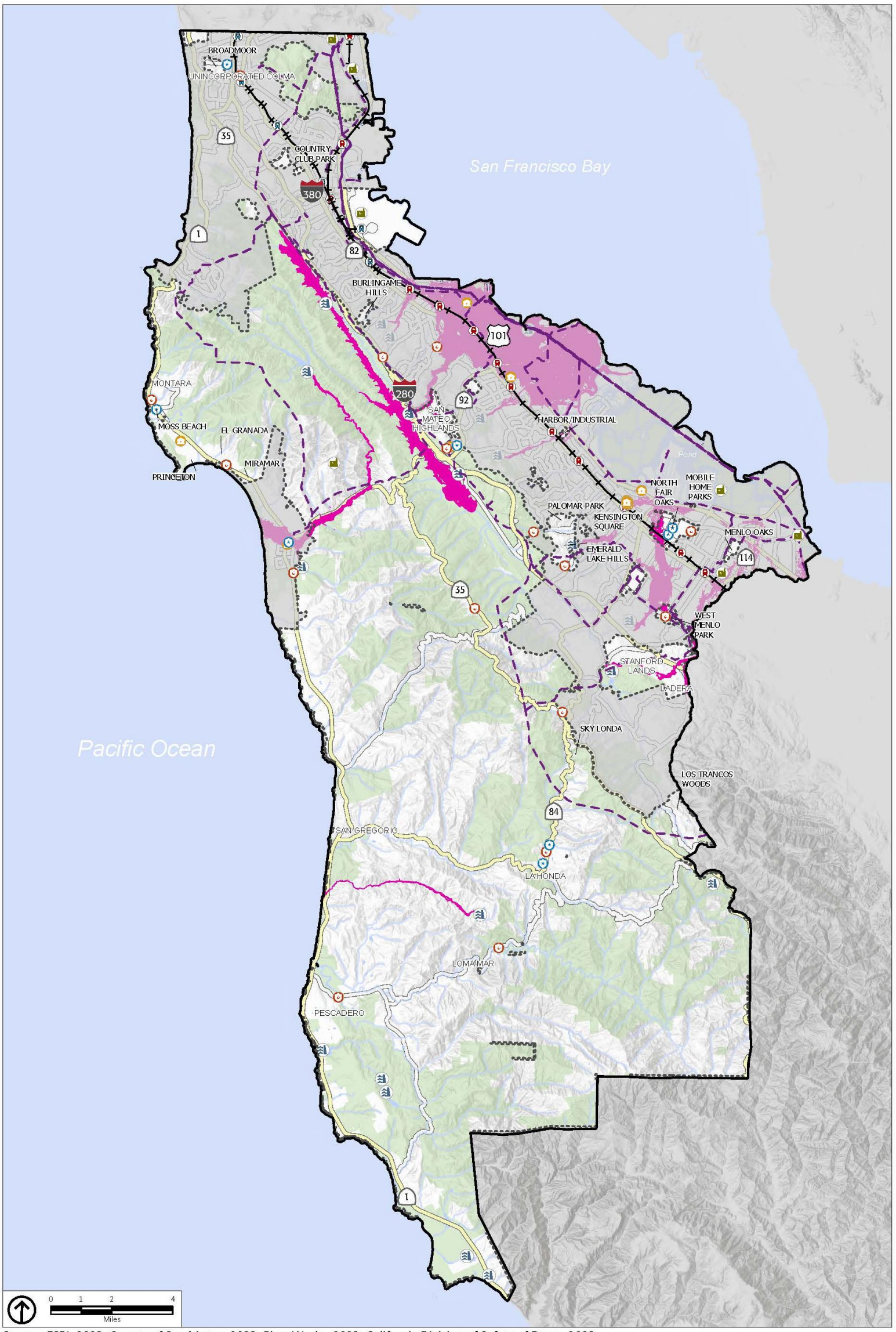
FIGURE 7: DAM INUNDATION AREAS



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4.4 Sea Level Rise

As global temperatures rise, glaciers and other polar ice melt. As this water flows into the ocean, sea levels increase. High average temperatures can also cause ocean water to expand, causing further rises in sea levels. Sea level rise, which includes increases in the levels of the San Francisco Bay, is a gradual process, taking place over years or decades, affecting coastal communities and those along the bay shoreline. Sea level rise has the potential to inundate homes, businesses, and infrastructure near shorelines and in low-lying coastal areas and to cause erosion of shorelines and loss of wetlands and riparian habitat over time. The communities and infrastructure that line many shorelines are already vulnerable to damage from storms, which will likely increase as the sea level continues to rise and inundate areas farther inland. According to the 2024 California Ocean Protection Council's *State of California Sea Level Rise Guidance*, sea levels on both the Bayside and Coastside of San Mateo County are projected to increase by as much as 0.4 feet (5 inches) by 2030, 1.3 feet (16 inches) by 2050, and 6.5 feet (78 inches) by 2100. However, sea levels could also rise faster than these projections, and storm surge, wave runup, and King Tide events could add an additional 24 to 36 inches of temporary flooding that would move farther inland.[6]

Figure 8 shows the county's projected flood exposure for a range of sea level rise and coastal storm scenarios. The unincorporated communities facing the most significant impacts from sea level rise are Pescadero, El Granada, Miramar, Montara, Moss Beach, Princeton-by-the-Sea, North Fair Oaks, unincorporated Mobile Home Parks near Redwood City, the Harbor/Industrial area, Olympic Country Club, and the San Francisco International Airport. Detailed sea level rise projection maps of various regions of San Mateo County are included in the full Vulnerability Assessment Report (**Appendix B**).

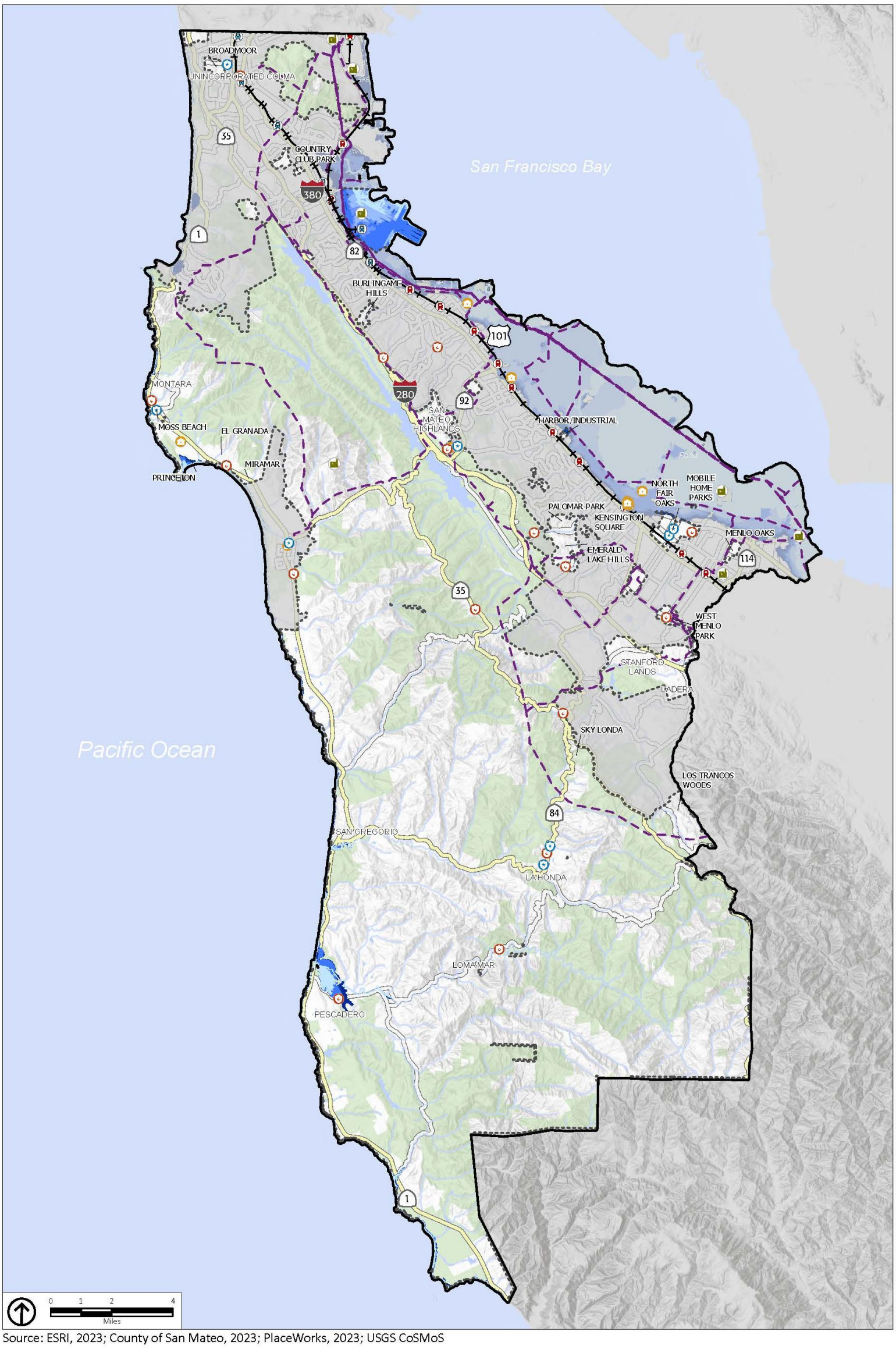
4.5 Emergent Groundwater

Emergent groundwater is a consequence of sea level rise and creates unique hazardous conditions. It occurs when groundwater is pushed upward by denser salt water that travels farther inland, raising the water level and in some places causing the groundwater to emerge to the surface, causing temporary or permanent flooding.[7] Higher groundwater levels, even if it does not emerge to the surface, can infiltrate storm drains, destabilize pipes, spread soil or groundwater contamination, undermine building and roadway foundations, corrode infrastructure not designed for salty groundwater, mobilize contamination, and increase liquefaction risk.[8]

Current modeling assumes that groundwater levels are expected to rise at the same rate as sea level rise in areas within half a mile from the shoreline. However, in areas where groundwater is being actively pumped, this rise could extend farther inland. Groundwater pumping in San Mateo County is relatively limited, but some pumping does occur in basins such as the San Mateo Plain Subbasin, which extends from San Mateo south into Santa Clara County, and the Westside Basin, which extends from San Francisco to Burlingame. There is also some limited groundwater pumping around Pescadero. On the Bayside, the role of stormwater systems and sloughs to manage rising groundwater, and the impacts of rising groundwater on communities and infrastructure, is being actively studied.

Emergent groundwater poses a significant challenge for several unincorporated communities in the region. As shown in **Figure 9**, the communities and assets facing the most significant exposure to emergent groundwater are Pescadero, El Granada, Montara, Moss Beach, North Fair Oaks, unincorporated Mobile Home Parks near Redwood City, the Harbor/Industrial area, Olympic Country Club, County Club Park, and the San Francisco International Airport. The San Mateo County Vulnerability Assessment Report (**Appendix B**) contains detailed emergent groundwater projection maps for various regions of the county.

FIGURE 8: SEA LEVEL RISE



Source: ESRI, 2023; County of San Mateo, 2023; PlaceWorks, 2023; USGS CoSMoS

- San Mateo County Boundary
- Unincorporated Areas
- Parks and Open Space
- Creeks and Waterways
- BART Stations
- Caltrain Stations
- BART Network
- Caltrain Network
- Transmission Lines
- Law Enforcement
- Fire Stations
- Government Facilities
- California Power Plants

Sea Level Rise

- 0 ft + 100-year storm
- 0.8 ft + 100-year storm
- 3.3 ft
- 3.3 ft + 100-year storm
- 6.6 ft
- 6.6 ft + 100-year storm

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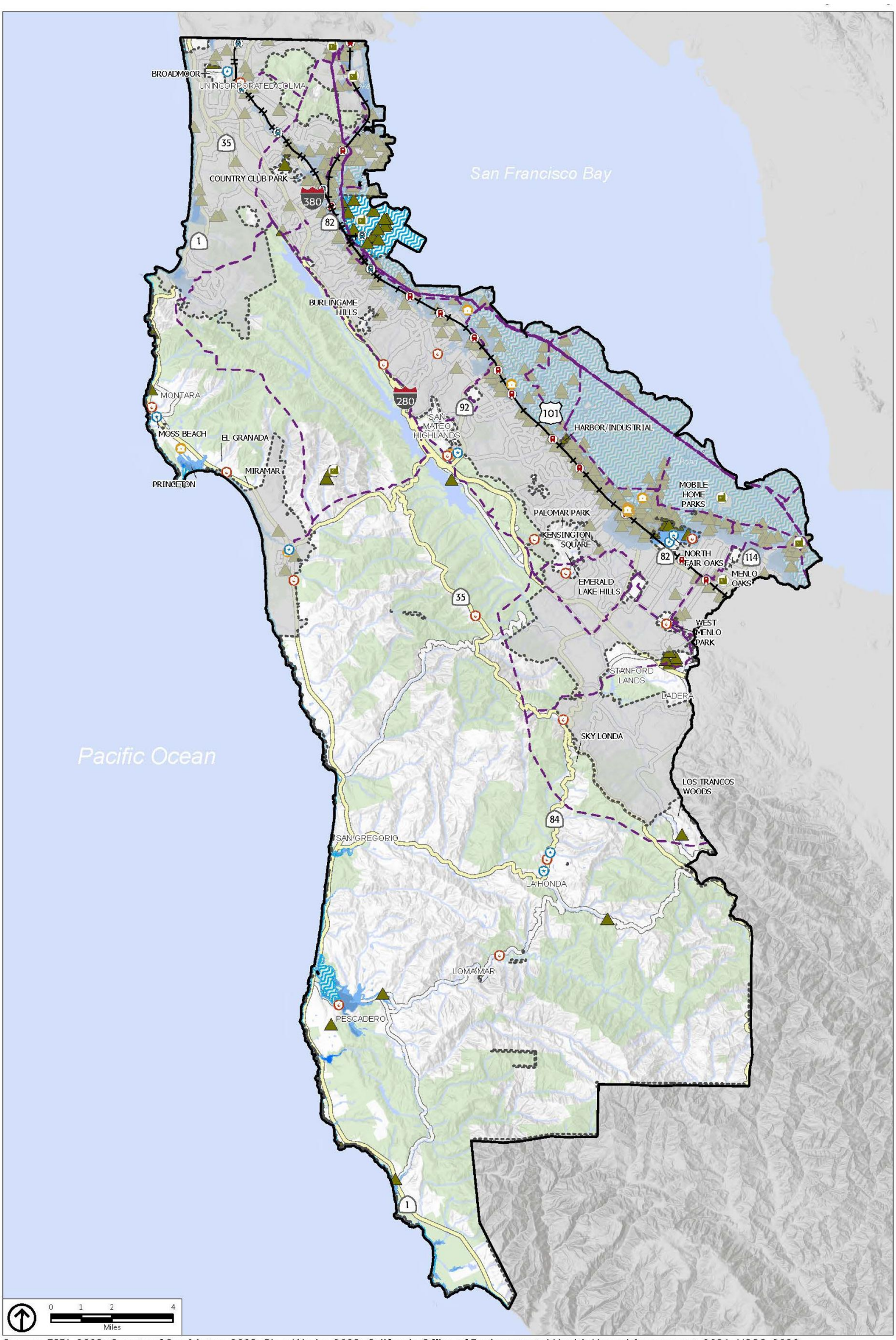
FIGURE 9: GROUNDWATER FLOODING BY SEA LEVEL RISE SCENARIO



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4.6 Planning for Sea Level Rise

Numerous agencies work collaboratively with the County to plan and implement projects to reduce the county's vulnerability to sea level rise, including OneShoreline and the Bay Conservation and Development Commission (BCDC). OneShoreline leads countywide coordination on flood and sea level rise resilience projects, offering technical support and planning and policy guidance to cities, the County, and developers. Regional initiatives like BCDC's Bay Adapt, Living Shorelines, and Climate Ready Program promote coordinated shoreline adaptation and prioritize nature-based solutions.

Shoreline Adaptation Projects

The San Francisco International Airport's Shoreline Protection Program is being developed to construct infrastructure to protect the airport against a 100-year storm and future sea level rise. The program will incorporate both FEMA and California Building Code standards into its protective infrastructure. Additionally, OneShoreline's Routine Maintenance Program for Bayside Creeks enables flood risk reduction through debris removal at five sites across San Bruno Creek, Belmont Creek, Cordilleras Creek, and Atherton Channel.

Requirements for Sea Level Rise Planning and Adaptation

In 2023, the California State Legislature passed SB 272 (Laird), Sea Level Rise: Planning and Adaptation, to promote coordinated, standardized planning for sea level rise across the state. The bill requires local governments within the Coastal Zone or within the jurisdiction of BCDC to develop sea level rise plans by January 1, 2034, either as part of a local coastal program subject to approval by the California Coastal Commission (Coastal Commission) or a subregional San Francisco Bay shoreline resiliency plan subject to approval by BCDC. The County is subject to this requirement and coordination with the Coastal Commission and BCDC for sea level rise planning. The sea level rise plan shall include, at a minimum: the use of best-available science, a vulnerability assessment that includes efforts to ensure equity for at-risk communities, sea level rise adaptation strategies and recommended projects, identification of lead planning and implementation agencies, and a timeline for updates, as needed, based on conditions and projections and as determined by the local government in agreement with the Coastal Commission or BCDC, as applicable. A timeline for sea level rise plan updates shall include economic impact analyses of, at a minimum, costs to critical public infrastructure and recommended approaches for implementing the sea level rise adaptation strategies in the plan. Critical public infrastructure includes, but is not limited to, transit, roads, airports, ports, water storage, and conveyance, wastewater treatment facilities, landfills, powerplants, and railroads. Jurisdictions with approved sea level rise plans will be prioritized for State funding to implement adaptation strategies and projects. SB 272 also directs BCDC and the Coastal Commission, in coordination with the Ocean Protection Council and others, to publish planning guidelines to support local governments. The Coastal Commission adopted its guidelines in November 2024. BCDC adopted the Regional Shoreline Adaptation Plan (RSAP) in December 2024.

County Sea Level Rise Policy for County-Owned Assets

In 2019, the Board of Supervisors adopted a Sea Level Rise Policy for County-Owned Assets to ensure that sea level rise is considered in all County-owned and operated assets, design and construction projects, leases, and property acquisitions and dispositions. The policy recognizes San Mateo County as the most vulnerable county in California to sea level rise in terms of property value at risk, with 43 County-owned facilities at risk from 3.3 feet of sea level rise, and 51 at risk from 6.6 feet of sea level rise. The policy requires new County facilities to be sited, designed, constructed, and adaptively managed to minimize sea level rise risks over the project life, with priority given to locations outside flood and erosion hazard areas for critical facilities and those serving vulnerable communities. For existing facilities undergoing major renovations through the Capital Improvement Planning process, the policy requires assessment of sea level rise risks and development of monitoring and adaptation strategies.[9]

Implementation includes maintaining a GIS-based sea level rise mapping tool, conducting baseline vulnerability assessments of County assets, tracking regional sea level rise adaptation projects, and developing incremental adaptation plans with specific triggers and thresholds. The policy established a Climate Change Preparedness Working Group with representatives from major County departments to guide implementation and monitor progress, with annual reports to the Board of Supervisors on policy implementation and lessons learned.[10]

Sea Level Rise Vulnerability Assessments

The County completed a Sea Level Rise Vulnerability Assessment in 2018 to identify built and natural assets vulnerable to sea level rise in the Bayshore area and the Coastside area north of Half Moon Bay, explore public health risks from cascading impacts, and discuss what these factors mean for policy and planning purposes. The Sea Level Rise Vulnerability Assessment identified that the assessed value of parcels in the study area exposed to near-term (present-day) flooding exceeds $1 billion, that the assessed value of parcels exposed to erosion and flooding in the long term (50–100 years) totals roughly $39.1 billion, with more than 30,000 residential parcels and 3,000 commercial parcels may be vulnerable in the long term.

In 2022, the County prepared the South Coast Sea Level Rise Vulnerability and Adaptation Report to assess current and future risks from coastal hazards and sea level rise along San Mateo County's South Coast. This report provided a technical analysis of South Coast assets exposed to coastal hazards exacerbated by sea level rise.

The County also prepared the Climate Ready North Fair Oaks Climate Risk Assessment in 2018 to evaluate the vulnerability of North Fair Oaks and the broader mid and lower peninsula to sea level rise and flooding. While the assessment found that there are no significant impacts to North Fair Oaks community members' ability to access amenities, it noted that areas closely tied to North Fair Oaks, including downtown Redwood City, East Palo Alto, and Redwood Shores could experience direct economic losses, potentially impacting the local economy and regional services. The Vulnerability Assessment that informs this Safety Element (included as Appendix B) is based on these previous assessments and reports.

5. OCEAN ACIDIFICATION

5.1 Ocean acidification chemistry

Ocean acidification is a shift in ocean chemistry brought on by climate change. As levels of carbon dioxide (one of the primary gases responsible for climate change) increase in the atmosphere, some of the carbon dioxide in the air reacts with ocean water to form carbonic acid. The carbonic acid levels in the ocean water increase, making the ocean more acidic. While this shift in ocean acidity would not be noticeable to people or the naked eye, it has profound impacts for ocean ecosystems.

5.2 Ocean acidification impacts

Ocean acidification makes it difficult for shellfish, plankton, corals, and many other species to grow shells or causes them to grow at a much slower rate. Ocean acidification can also impact the growth, reproduction, and behavior of other species that do not grow shells. Species that are not directly affected by ocean acidification can be harmed if acidification decreases the availability of their food or other species that they depend on.

In addition to ecosystem harm, ocean acidification can have economic impacts. Many of the species that are vulnerable to ocean acidification are commercially valuable. Acidification can cause a decrease in catch yields or may result in temporary or permanent closure of a fishery, affecting both commercial fisheries and the recreational and sport fishing industries.

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6. SEVERE WEATHER

Severe weather poses a significant threat to San Mateo County, disrupting daily life, compromising safety, and affecting infrastructure and ecosystems. Severe weather is usually caused by intense storm systems, although strong winds can occur without a storm. The types of dangers posed by severe weather vary widely and may include injuries or deaths, damage to buildings and structures, fallen trees and roads blocked by debris, and fires sparked by lightning. Severe weather often produces high winds and lightning that can damage structures and cause power outages. The most common severe weather events that have historically impacted San Mateo County are heavy rains (usually a result of atmospheric rivers), thunderstorms, and windstorms.

6.1 Atmospheric Rivers and Extratropical Cyclones

Most of California, including San Mateo County, has a Mediterranean climate that receives 75 percent of its rainfall between November and March, with virtually no rainfall in the summer. A large portion of winter rainfall is delivered by atmospheric rivers, which are long, narrow regions in the atmosphere that transport water vapor from the tropics. When the atmospheric rivers make landfall, they release this water vapor in the form of precipitation, often causing heavy rain that can lead to flooding and mudslide events. While atmospheric rivers play a critical role in replenishing California's water supplies, they can also cause significant injuries, disrupt travel, and damage property. Occasionally, atmospheric rivers may occur at the same time as storm systems from temperate areas, known as extratropical cyclones. When these events happen together, they create conditions known as "bomb cyclones", often causing very heavy precipitation, high windspeeds, and large waves. Climate change is expected to cause an increase in the number of years with intense levels of precipitation, even though average annual rainfall is not expected to significantly change. These extreme precipitation events are particularly concerning when coupled with sea level rise. Heavy rainfall can increase the frequency and severity of other hazards, including flooding.

A thunderstorm is a rain event that includes thunder and lightning. Lightning can cause forest and brush fires and deaths and injuries to livestock and other animals. According to the National Lightning Safety Institute, lightning causes more than 26,000 fires in the United States each year. "Lightning sieges" are extreme lightning events in which lightning strikes multiple points at once. In August 2020, an estimated 12,000 lightning strikes caused a set of fires known as the CZU Lightning Complex in San Mateo and Santa Cruz Counties.

6.2 Fog

Fog forms when air close to the ground can no longer hold all the moisture it contains, causing the excess moisture to condense as a low cloud. This occurs either when air is cooled to its dew point or the amount of moisture in the air increases. Cool marine air and fog are common in the Bay Area in the summer. Heavy fog is particularly hazardous because it can restrict surface visibility. Severe fog incidents can close roads, cause vehicle accidents and airport delays, and impair the effectiveness of emergency response.

6.3 Windstorms

Windstorms are generally short-term events involving winds or gusts of over 50 to 60 miles per hour (mph) that are strong enough to cause property damage. Wind speeds can reach up to 100 mph and can cause significant property damage, threaten public safety, and have adverse economic impacts from business closures and power loss. Falling trees and branches can damage buildings, power lines, and other property and infrastructure. During wet winters, saturated soil causes trees to become less stable and more vulnerable to uprooting from high winds. Downed trees, downed power lines, and damaged property also can be major hindrances to emergency response and disaster recovery.

6.4 Public Safety Power Shutoffs

Public safety power shutoff events are used as a preventive strategy to reduce wildfire risk during severe weather, especially during high winds and dry conditions. Utility companies like the Pacific Gas and Electric Company (PG&E) may shut off power lines during high winds, especially during hot and dry conditions, to prevent them from sparking fires causing power outages that may last for extended periods. Without backup power, communication networks may be disrupted, making it harder for residents to receive emergency notifications and for first responders to coordinate effectively. People who depend on medical devices, such as oxygen concentrators or ventilators, are at greater risk during power outages, as are those who need electricity for climate control to keep indoor temperatures safe. The loss of power to communications and other critical infrastructure disrupts access to goods and services. Many residents in San Mateo County's coastal and hillside areas depend on landlines for phone service due to unreliable cellphone coverage. Those who use cellular or cordless landline phones are more vulnerable in a hazard situation that results in a loss of power, owing to the loss of communication access.

7. FIRE HAZARDS

Fire hazards include both wildfires and urban fires. The combination of complex terrain, Mediterranean climate, and productive natural plant communities, along with ample natural ignition sources, has created conditions for extensive wildfires in San Mateo County. Fire conditions arise from a combination of high temperatures, low-moisture content in the air and plant matter, an accumulation of vegetation, different topographical features, and high winds. Historically, the fire season extended from early summer through late fall of each year during the hotter, drier months, although it is increasingly a hazard that can occur year-round due to the effects of climate change. Rising temperatures and prolonged droughts dry out vegetation, creating abundant fuel for fires. Pest outbreaks, such as bark beetle infestations, leave behind weakened and dead trees that serve as additional fuel, while extreme heat and erratic wind conditions make wildfires more unpredictable and harder to control. The fire season is extending beyond historical norms, leaving communities vulnerable for much longer periods.

San Mateo County community members can also be harmed by the smoke from wildfires across northern California. Wildfire smoke is damaging to human health due to its ability to deeply penetrate lung tissue and affect the heart and circulatory system. Although wildfire smoke presents a health risk to everyone, sensitive groups are more vulnerable and may experience more severe symptoms from exposure to wildfire smoke, such as children, older adults, people with chronic respiratory or cardiovascular disease, or people with limited financial resources.

7.1 Wildfire

Wildfire is any uncontrolled fire on undeveloped land. Wildfires occur on mountains, hillsides, and grasslands. Fuel, weather, and topography are primary factors that affect how wildland fires spread. The climate of San Mateo County and the surrounding area keeps the grass dry and more readily combustible during fire season.

While wildfires are a natural process, they can become dangerous when they move into areas known as the wildland-urban interface (WUI), where buildings and infrastructure mix with areas of flammable wildland vegetation. This allows wildland fires to easily spread to buildings and structures. Millions of homes now border major forests and brush areas in California. Human-caused fires are the leading cause of wildland fires, and with so many people living near and visiting wildland areas, the probability of human-caused fires is growing.

The California Department of Forestry and Fire Protection (CAL FIRE) has mapped wildfire hazard zones using a computer model that designates moderate, high, or very high fire hazard severity zones (FHSZs) for both local and state jurisdictions.

FHSZ ratings are derived from a combination of fire frequency (how often an area burns) and expected fire behavior under severe weather conditions. **Figure 10** illustrates the very high, high, and moderate fire hazard severity zones throughout the county. Wildfire-prone areas in the unincorporated county are generally in the foothills and open space areas on both the Bayside and Coastside. The communities most at risk are those surrounded by extensive open spaces and forested lands, often located along hillsides and ridgelines, which heighten their vulnerability to wildfires.

CAL FIRE establishes FHSZs in State Responsibility Areas, where the State is ultimately responsible for fire protection (although local authorities may provide the actual service). In areas where local authorities are responsible for fire protection, known as Local Responsibility Areas, CAL FIRE identifies these zones, but local governments must adopt the designations. Most of unincorporated San Mateo County is a State Responsibility Area, although some unincorporated areas on the Coastside and small sections of land on the Bayside are Local Responsibility Areas. **Figure 10** identifies the State and Local Responsibility Areas in San Mateo County.

As human activities are the leading cause of wildfires, increased development near these wildland areas has amplified the likelihood and risk of wildfire events.[11] Wildfires not only destroy homes and infrastructure but can also displace entire communities and degrade critical wildlife habitats. The economic consequences are significant, ranging from property damage and fire suppression costs to long-term business disruptions. Moreover, the loss of natural spaces impacts recreation, tourism, and local biodiversity.

Historically, an annual average of 1,181 acres burn in San Mateo County;[a] however, this is projected to increase by over 100 percent to 2,413 acres by mid-century (2035 to 2064) and by 140 percent compared to historic levels to 2,847 acres by late century (2070 to 2099).[12] As this is an annual average, some years are likely to see little or no wildfires in the unincorporated area, and other years are likely to see much larger fires.

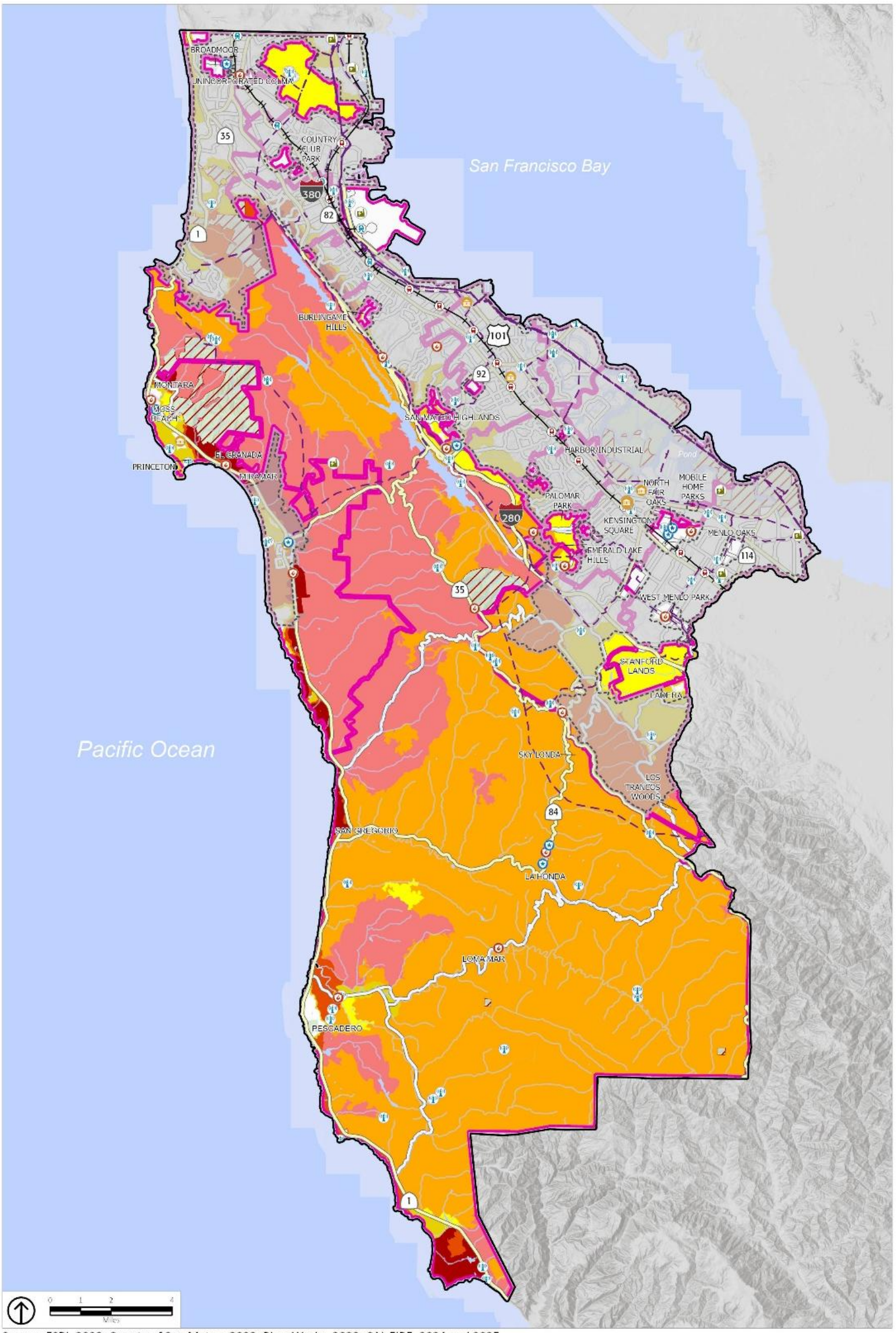
While San Mateo County has a prolific fire history, few of its fires have caused sufficient damage to trigger a State or federal disaster declaration. Notable fires of record are the November 1929 fire near Montara that destroyed 25 homes, a church, and cattle, and the August 2020 CZU Lightning Complex fire in Santa Cruz and San Mateo Counties, which destroyed 86,509 acres and 1,490 structures, damaged 140 structures, and caused one injury and one fatality. Fires burned in both Butano and Big Basin Redwoods State Parks during the CZU Lightning Complex fire, where several historic buildings were destroyed, including the visitor's center at Big Basin.

7.2 Urban Fires

Urban or structural fires occur in built-up environments, destroying buildings and other human-made structures. These disasters are often caused by many different means, including faulty wiring or mechanical equipment, or accidents involving combustible construction materials. The absence of fire alarms and sprinkler systems can exacerbate the damage associated with a structural fire. Structural fires are largely from human accidents, although deliberate fires (arson) may be a cause of some events. Older buildings that lack modern fire safety features may face greater risk of damage from fires. To minimize fire damage and loss, the locally adopted Fire Code, based on the State Fire Code, sets standards for building and construction. They require the provision of adequate water supply for firefighting, fire resistant construction, and minimum street widths-emergency vehicle access dimensions, among other things.

[a] Historical annual averages are based on modeled historical data from 1961 to 1990.

FIGURE 10: FIRE HAZARD SEVERITY ZONES AND FIRE RESPONSIBILITY AREAS



Source: ESRI, 2023; County of San Mateo, 2023; PlaceWorks, 2023; CAL FIRE, 2024 and 2025

- San Mateo County Boundary
- Unincorporated Areas
- Parks and Open Space
- Creeks and Waterways
- BART Stations
- Caltrain Stations
- BART Network
- Caltrain Network
- Transmission Lines
- Law Enforcement
- Fire Stations
- Government Facilities
- California Power Plants
- Communication Facilities
- Fire Protection Districts

Fire Hazard Severity Zone
(State Responsibility Area)
- Very High
- High
- Moderate

(Federal Responsibility Area)

(Local Responsibility Area)
- Very High
- High
- Moderate

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8. EXTREME HEAT

8.1 Extreme heat days

Extreme heat is an increasingly serious issue for San Mateo County, threatening public health, infrastructure, and the environment. Extreme heat days are defined as temperatures exceeding 98 percent of historical highs, and these events are becoming more frequent and intense due to climate change.[13, 14] Extended periods of extreme heat, known as heat events or waves, threaten community safety, drive up energy costs, and exacerbate the risks of wildfires and water shortages. The county has different extreme heat temperatures in different regions. On an extreme heat day, temperatures reach at least 83 degrees in Broadmoor, 93.6 degrees in Emerald Lake Hills, 95.3 degrees in North Fair Oaks, 80 degrees in El Granada, and 85.6 degrees in Pescadero.[15] According to data from the San Mateo County Extreme Heat Dashboard,[16] the county already experiences high heat events, and even small increases in temperature can negatively impact public health. Heatwaves directly impact human health by causing heat-related illnesses and deaths, while also worsening respiratory conditions due to increased air pollution. **Table 4** shows how climate change is expected to increase the number of extreme heat days in different regions of the county.

TABLE 4: PROJECTED NUMBER OF ANNUAL EXTREME HEAT DAYS

Sub-regional Location	Observed (1961-1990)	Near Term (2025-2035)	Mid-century (2035-2064)	Late Century (2070-2099)
Countywide	5	8	12	25
Broadmoor	3	5	7	16
Emerald Lake Hills	4	8	12	22
North Fair Oaks	4	8	12	21
El Granada	4	7	9	23
Pescadero	4	7	10	19

Note: These projections are based on Cal-Adapt's high-emission scenario (RCP 8.5), a "no-mitigation" pathway where global greenhouse gas emissions continue to increase throughout the 21st century. In Cal-Adapt, RCP 8.5 models "business as usual" scenarios, providing insights into the potential worst-case impacts if significant mitigation efforts are not implemented.

North Fair Oaks, Menlo Park, Redwood City, and East Palo Alto are projected to be the most impacted areas, though coastal residents should also prepare for increasing temperatures.[17] Although temperatures are lower in coastal areas, it is still dangerous when temperatures are higher than usual, because people and assets may not have the resources to cope. This is particularly the case in North Fair Oaks, where equity issues such as income disparities, housing quality, and a higher proportion of renters further exacerbate vulnerabilities. Across all of San Mateo County, temperatures above 85 degrees are considered high heat days, with an increased threat of heat-related illnesses and other constraints even if this temperature does not reach the local extreme heat threshold.[18]

8.2 Warm nights

When the daily minimum temperatures remain significantly above normal, warm nights can worsen an extreme heat day because people, ecosystems, and infrastructure may not get relief from high temperatures. A warm night is when temperatures remain above 57.8 degrees in Broadmoor, 58 degrees in Emerald Lake Hills, 60.2 degrees in North Fair Oaks, 56.3 degrees in El Granada, and 56.3 degrees in Pescadero.[19] **Table 5** shows the number of warm nights projected in the county and subregions.

TABLE 5: PROJECTED NUMBER OF ANNUAL WARM NIGHTS

Sub-regional Location	Observed (1961-1990)	Near Term (2025-2035)	Mid-century (2035-2064)	Late Century (2070-2099)
Countywide	7	25	49	122
Broadmoor	7	21	49	129
Emerald Lake Hills	6	22	43	106
North Fair Oaks	6	22	42	103
El Granada	7	22	44	120
Pescadero	7	22	44	120

Note: These projections are based on Cal-Adapt's high-emission scenario (RCP 8.5), a "no-mitigation" pathway where global greenhouse gas emissions continue to increase throughout the 21st century. In Cal-Adapt, RCP 8.5 models "business as usual" scenarios, providing insights into the potential worst-case impacts if significant mitigation efforts are not implemented.

8.3 Extreme heat impacts

Health impacts are the primary concern with these hazards, though economic and service impacts are also an issue. According to the California Climate Adaptation Strategy, heat waves have claimed more lives in California than all other declared disaster events combined. People exposed to extreme heat can suffer a number of heat-related illnesses, including heat cramps, heat exhaustion, and (most severely) heat stroke. Areas with lower extreme heat thresholds are not necessarily at lower risk, as persons and community assets used to cooler temperatures may be less prepared for extreme heat events. Outdoor workers in construction or landscaping are also much more exposed to the elements than most people, so they are more susceptible to extreme heat conditions and the potential associated health impacts. Extreme heat has disproportionate impacts on vulnerable populations including older adults, children, people who do not live or work in climate-controlled conditions, who do not have personal vehicles, or who have pre-existing medical conditions. Extreme temperatures can also harm plants and animals that are not well adapted to these events, including natural ecosystems.

Indirectly, extreme heat puts more stress on power lines, causing them to run less efficiently and increases demand for electricity (usually to run air conditioning units), which may lead to brownouts and blackouts. Extreme heat also adversely impacts transportation infrastructure. Sustained heat can cause the expansion of asphalt surfaces, resulting in potholed and rutted roads. Sustained high temperatures may cause train tracks to expand, resulting in the buckling of rail lines and the derailing of trains. Impacts to

roadways and rail lines can lead to closures and travel delays in the short term and accelerate the breaking down of infrastructure in the long term. Bay Area Rapid Transit (BART) and Caltrain cannot operate at full speed during high-heat events due to these risks, resulting in increased wait times and extended heat exposure for commuters.

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9. DROUGHT

A drought is where conditions are drier than normal for an extended period, making less water available for people and ecosystems. While drought is a normal occurrence in California, prolonged drought conditions can harm ecosystems and the regional economy. Droughts in California do not typically cause direct loss of life or structural damage, but they can lead to critical environmental and economic harm, including crop loss, increased water costs, habitat degradation, and heightened wildfire risks. Increasing water demands, such as population growth and increased use of irrigation for agriculture and landscaped areas, exacerbate these impacts, complicating water allocation and potentially leading to restrictions and quality issues.

During a drought, groundwater reserves deplete faster from increased pumping and less replenishment from precipitation. This can lead to lowered groundwater levels and issues like diminished pumping capacity, which could lead to fewer households receiving water or creating more challenges in meeting community water needs. Decreased groundwater negatively impacts stream flows, particularly in summer, leading to reduced water availability for ecosystems and wildlife that depend on these flows. Prolonged drought conditions also increase wildfire susceptibility due to dried vegetation and pest vulnerability.

Many of the cities, water districts, and private utilities in San Mateo County rely on the San Francisco Public Utilities Commission Hetch Hetchy Regional Water System for water supplies. Many of the Coastside agricultural lands and the more rural and remote communities in the county, especially on the South Coast, also rely on groundwater wells.

California regularly experiences droughts, but climate change will likely result in more frequent and severe droughts across the state. Overall, precipitation levels are expected to stay similar or increase slightly across San Mateo County. However, more years with extreme levels of precipitation, both high and low, are likely a result of climate change. More intense droughts are expected to harden soil and cause aquifer levels to drop due to reduced groundwater recharge. Additionally, when rains return, more water will run off rather than infiltrate into soils, potentially causing downstream flooding. Higher temperatures will further increase evaporation, worsening drought conditions.

Since San Mateo County receives most of its water from outside the region, it is also vulnerable to drought conditions in the Sierra Nevada. In years with lower-than-average winter precipitation levels and warmer temperatures, the size of the Sierra Nevada snowpack decreases significantly, which in turn makes less fresh water available for communities throughout California, including those that receive water from the Hetch Hetchy Regional Water System. For example, the recent 2012–2016 drought led to the most severe moisture deficits in the last 1,200 years and a 1-in-500-year low in Sierra snowpack levels.[20] State projections show that in the second half of the twenty-first century, snowpack levels in the Hetch Hetchy watershed may on average be 60 percent lower than historical norms, with even lower snowpack levels during extreme years.

9.1 Drought Mitigation

San Mateo County's approach to water and drought management is highly coordinated, involving regional partnerships and local water districts. The Bay Area Water Supply and Conservation Agency (BAWSCA) plays a central role, representing cities and utilities that rely on the Hetch Hetchy system for two-thirds of their water. BAWSCA's long-term strategy addresses potential drought-year scenarios and its conservation efforts include landscape education programs and water demand forecasting. The agency has also developed Drought Implementation Plans and a phased Strategic Plan to help members align with evolving state water use mandates.

Local water suppliers contribute to regional water resilience by producing Urban Water Management Plans, enforcing water waste ordinances, and investing in conservation, recycling, and monitoring efforts. The San Mateo County Municipal Code supports these efforts with water conservation regulations that guide consistent and responsible water use across all sectors during normal and drought conditions. Additionally, to address the needs of small water systems and rural communities, (SB 552 requires the County to establish a standing Drought and Water Shortage Task Force and develop a County Drought Resilience Plan. This State-mandated planning addresses drought preparedness for State small water systems (serving 5 to 14 connections), domestic wells, and other privately supplied homes, focusing on assessing water shortage risks and identifying short-term and long-term solutions.

10. INFECTIOUS AND VECTOR-BORNE DISEASES

Infectious and vector-borne diseases are bacteria, viruses, parasites, and other organisms that can cause diseases and illness in people. This Safety Element highlights diseases that can be spread by animals such as mice and rats, ticks, and mosquitoes, as these are the disease conditions that are most likely to increase because of climate change. However, there are many other potential diseases and conditions of public health significance likely to be impacted by climate change that will continue to be addressed as needs arise. Climate change-related hazards also result in numerous physical and behavioral health threats, as discussed at the beginning of this element.

Warmer, wetter conditions allow for increased populations of mosquitos and ticks, extending their geographic range and spreading diseases like West Nile virus, dengue fever, and Lyme disease. As temperatures rise and extreme weather events, such as heavy rainfall, become more frequent, these vectors can spread more broadly, transmitting diseases that threaten public health. San Mateo County experienced active cases of the Zika virus, which is transmitted by mosquitoes, in 2015 and 2016. Although not directly related to climate change, San Mateo County, like the rest of the United States, was included in the March 2020 FEMA major disaster declaration for the COVID-19 coronavirus pandemic. San Mateo County also dealt with effects from the 1918 to 1920 flu pandemic.

The combination of these factors suggests that infectious diseases, vector-borne diseases, and other conditions of public health significance threats extend beyond individual well-being, placing strain on healthcare systems, increasing economic burdens, and affecting behavioral health.

10.1 San Mateo County Health Response

San Mateo County Health is a comprehensive local health department comprised of multiple divisions, as well as San Mateo Medical Center hospital and clinics. County Health is dedicated to helping every San Mateo County resident live a long and healthy life. County Health provides a range of public health services, including preventative medicine and vaccine clinics, disease testing, and emergency medical response all residents. County Health protects the public by helping to regulate harms that could cause disease, informing advocacy to achieve healthier communities, preventing the spread of disease, and monitoring the environment and health of the community. Specific services such as case management are also provided to vulnerable populations, who are often also those most impacted by hazards. The County Health system works in surveillance, prevention, and control of communicable and chronic diseases. The San Mateo County Mosquito and Vector Control District serves as the county's community-based mosquito-control program, using surveillance, prevention, and control methods to reduce the risk of vector-borne diseases. These public health services and programs play a critical role in addressing the health impacts of climate-related hazards described in this Safety Element.

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11. HAZARDOUS MATERIALS

A material is considered hazardous if it appears on a list of hazardous materials prepared by a federal, state, or local agency, and/or if it has characteristics defined as hazardous by such an agency. Hazardous materials include a wide variety of substances commonly used in households and businesses. Motor oil, paint, solvents, lawn care and gardening products, household cleaners, gasoline, and refrigerants are among the diverse range of substances classified as hazardous materials.

Hazardous waste is hazardous materials that no longer have practical use, such as substances that have been discarded, discharged, spilled, contaminated, or are being stored prior to proper disposal. Nearly all businesses and residences generate some amount of hazardous waste. Certain businesses and industries, including gas stations, automotive service and repair shops, printers, dry cleaners, and photo processors, generate larger amounts of such substances. Hospitals, clinics, and laboratories generate medical waste, much of which is also potentially hazardous.

What is a hazardous material?

The California Code of Regulations defines a hazardous material as a substance that, because of physical or chemical properties, quantity, concentration, or other characteristics, may either (1) cause an increase in mortality or an increase in serious, irreversible, or incapacitating, illness or (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported or disposed of, or otherwise managed.

11.1 Hazardous Materials Sites

A release or spill of hazardous materials could result in fire, explosion, toxic clouds, or direct contamination of water, people, and property. The effects may involve a local site or many square miles. The large-scale release of hazardous materials in combination with events such as flooding or severe weather can spread contaminants across a wide area and amplify the potential long-term impacts on human and ecological health. Health problems may be immediate, such as corrosive effects on skin and lungs, or gradual, such as the development of cancer from a carcinogen. Damage to property could range from immediate destruction by explosion to permanent contamination by a persistent hazardous material.

Several State agencies monitor hazardous materials/waste facilities. Potential and known contamination sites are monitored and documented by the Regional Water Quality Control Board (RWQCB) and the California Department of Toxic Substances Control (DTSC). A review of the leaking underground storage tank (LUST) list produced by the RWQCB's and the DTSC's EnviroStor database indicates several potentially hazardous waste facilities and sites with contaminated or potentially contaminated soil or groundwater throughout the county. The DTSC's EnviroStor database identified 98 active or referred status cleanup sites in San Mateo County.

In 2010, a 30-inch-diameter natural gas transmission pipeline in San Bruno ruptured and released vast quantities of natural gas. The escaping gas ignited and initiated structure fires in the community surrounding the pipeline. Eight people lost their lives, 51 people required in-patient hospitalization, and 38 homes were destroyed. PG&E estimated the property damage from the rupture to be over $220 million. Since 1970, there has been 348 reported roadway hazardous materials incidents in San Mateo County. However, there were no fatalities or evacuations associated with these incidents.

11.2 Hazardous Materials Management

If a hazardous material spill poses an imminent public health threat, the San Mateo County Fire Department will contact appropriate agencies, such as the County Department of Environmental Health, DTSC, and the Governor's Office of Emergency Services (Cal OES), and cooperate with them to address the situation. The transport of hazardous materials/wastes and explosives through the county is regulated by the California Department of Transportation. Interstates 280 and 380, along with Highways 1, 35, 82, 84, 92, 101, 109, and 114 are open to vehicles carrying hazardous materials/wastes. The San Mateo County Fire Department, San Mateo County Department of Emergency Management, and San Mateo County Environmental Health Services are responsible for hazardous materials accidents at all locations in the county. Depending on location, San Mateo County fire protection districts will also respond to hazardous materials accidents.

12. EMERGENCY PREPAREDNESS, RESPONSE, AND RESILIENCE

Multiple agencies within the county, along with State and federal agencies, are involved with emergency preparedness and response.

12.1 Emergency Preparedness

Disaster preparedness refers to coordinated efforts to respond to both natural and human-caused disasters. The San Mateo County DEM prepares disaster plans for the county and coordinates required emergency services and facilities from all agencies and levels of government to meet emergency and disaster needs. The County's Emergency Operations Plan (EOP) establishes policies and procedures and assigns responsibilities to various agencies and individuals to ensure the effective management of emergency operations within the county.[21] In addition to creating plans, DEM develops exercises to evaluate operational and response capabilities. During significant incidents or emergencies, DEM is responsible for activating the County of San Mateo Emergency Operations Center to support local jurisdictions as needed. DEM coordinates and contracts to Cal OES and FEMA during an emergency for federal and State support.

Multijurisdictional Local Hazard Mitigation Plan

San Mateo County DEM leads implementation of the San Mateo County Multijurisdictional LHMP, a regional and cross-jurisdictional effort to plan for the reduction of risk from natural and human-made disasters. DEM led preparation of the Multijurisdictional LHMP in coordination with County departments, all 20 incorporated cities, and regional special districts. The Multijurisdictional LHMP assesses hazard vulnerabilities and identifies hazard mitigation actions that jurisdictions will pursue to reduce the level of injury, property damage, and community disruption that might otherwise result from such events. The Multijurisdictional LHMP addresses natural and human-caused hazards, including flooding, drought, wildfire, landslides, severe weather, terrorism, cyber threats, pandemic, and the impact of climate change on hazards, as well as other hazards. Adoption of the Multijurisdictional LHMP helps the County and participating agencies remain eligible for various types of pre- and post-disaster community assistance, such as grants, from FEMA and the State government.

Community Emergency Response Team

The San Mateo County DEM supports local Community Emergency Response Teams (CERT), organizations that train residents and members of the business community to increase disaster awareness and emergency response capability. The CERT program educates volunteers about disaster preparedness for the hazards that may impact their area and trains them in basic disaster response skills, such as fire safety, light search and rescue, team organization, and disaster medical operations. CERT offers consistent volunteer training and organization that professional responders can rely on during disaster situations, allowing them to focus on more complex tasks. San Mateo County DEM provides materials and supplies to local CERT programs through various grant opportunities.

12.2 Emergency Alert System

With advanced warning, evacuation can be effective in reducing injury and loss of life during a catastrophic event. SMC Alert is the primary emergency alert system in San Mateo County. SMC Alert can be used to issue flood, fire, severe weather, or tsunami warnings; notify the community about the locations of emergency shelters; provide information about available evacuation routes; and activate special teams within the community, such as CERT volunteers. Some cities also use the system for smaller alerts, such as traffic accidents, fires, street closures, flooding, and related incidents. Alerts are available in a wide variety of languages other than English, including Chinese, Spanish, and Filipino (standardized Tagalog), which are the primary languages in San Mateo County among households that are not fluent in English.

The Wireless Emergency Alert (WEA) system is an additional alert system available in the county. WEAs are short emergency messages from authorized public alerting authorities that can be broadcast from cell towers to any WEA-enabled mobile device in a locally targeted area. Wireless providers primarily use cell broadcast technology for WEA message delivery. WEA is a partnership between FEMA, the Federal Communications Commission, and wireless providers to enhance public safety.

12.3 Countywide Flood Early Warning System

OneShoreline is managing, upgrading, and expanding the San Mateo County flood early warning system to support emergency alerts and preparedness. The flood early warning system is an integrated network of stream, precipitation, and tide stations located to monitor real-time conditions. This system provides two major functions: an alert system, and data collection to proactively plan and implement stormwater management solutions.

If water levels reach established thresholds, alerts are released to DEM and local jurisdiction staff to watch conditions more carefully and to provide warning for when flood impacts may be expected. If a flood notice is warranted, the circles on the map will become orange (watch) or red (warning). Alert thresholds have been established for creeks throughout the county based on historic information and modeling. OneShoreline continues to explore methods for data collection, presentation, and decision-making. Data collected is made available through a public interface.

12.4 Emergency Response

San Mateo County Fire Department

The San Mateo County Fire Department (SMC Fire Department) provides comprehensive coverage and services in all risk contexts, such as fire protection, medical response, hazardous materials response, fire safety inspections, fire marshal duties, community education, emergency preparedness, and planning for most unincorporated areas (those not covered by a municipal fire department or local fire district) of San Mateo County. This includes the unincorporated communities of San Mateo Highlands (County Service Area 1), Emerald Lake Hills, Palomar Park, Kings Mountain, Sky Londa, La Honda, San Gregorio, Pescadero, Loma Mar, Middleton Tract, South San Mateo County Coast, and the Interstate 280 corridor between Farm Hill Boulevard and Black Mountain Road. The SMC Fire Department operates as a cooperative fire

protection program with CAL FIRE, combining the expertise and resources of both organizations. SMC Fire Department coordinates closely with municipal fire departments, local fire protection districts (such as Colma Fire Protection District, Coastside Fire Protection District, Woodside Fire Protection District, and Menlo Park Fire Protection District), and CAL FIRE through mutual-aid agreements and regional partnerships.

The SMC Fire Department's Fire Marshal's Office is responsible for review and adoption of regulations pertaining to the prevention and control of fires; review of development and building projects for compliance with applicable codes and standards; coordination with internal and external stakeholders; inspections of commercial and residential construction projects; commissioning of fire protection systems; response to fire-hazard complaints; conducting annual mandatory building inspections; and oversight of the County's Wildland-Urban Interface (WUI) Risk Reduction program, an effort to reduce damage caused by large wildfires in the unincorporated portions of the county.

San Mateo County Health

San Mateo County Emergency Medical Services (EMS) Agency is a division of County Health which plans, implements, evaluates, and regulates all aspects of the County's EMS system. This includes setting clinical standards for EMS personnel and assuring 911 system performance, including the availability of emergency medical resources throughout the County. Currently, EMS standards require first responder agencies to arrive at 90 percent of 911 requests for advanced life support within 6 minutes and 59 seconds in urban areas and 11 minutes and 59 seconds in suburban or rural areas. For ambulance transport requests, units are required to arrive within 12 minutes and 59 seconds in metro and urban areas and 19 minutes and 59 seconds in suburban or rural areas for 90% of all responses.

The San Mateo County EMS division also houses the Medical Health Operational Area Coordinator (MHOAC) Program, as authorized by the California Health and Safety Code Section 1797.153. The designated MHOAC is responsible for monitoring and coordinating medical and health resources during a local emergency and is authorized to place and respond to requests for mutual aid from outside of San Mateo County by communicating with regional, state, and federal partners.

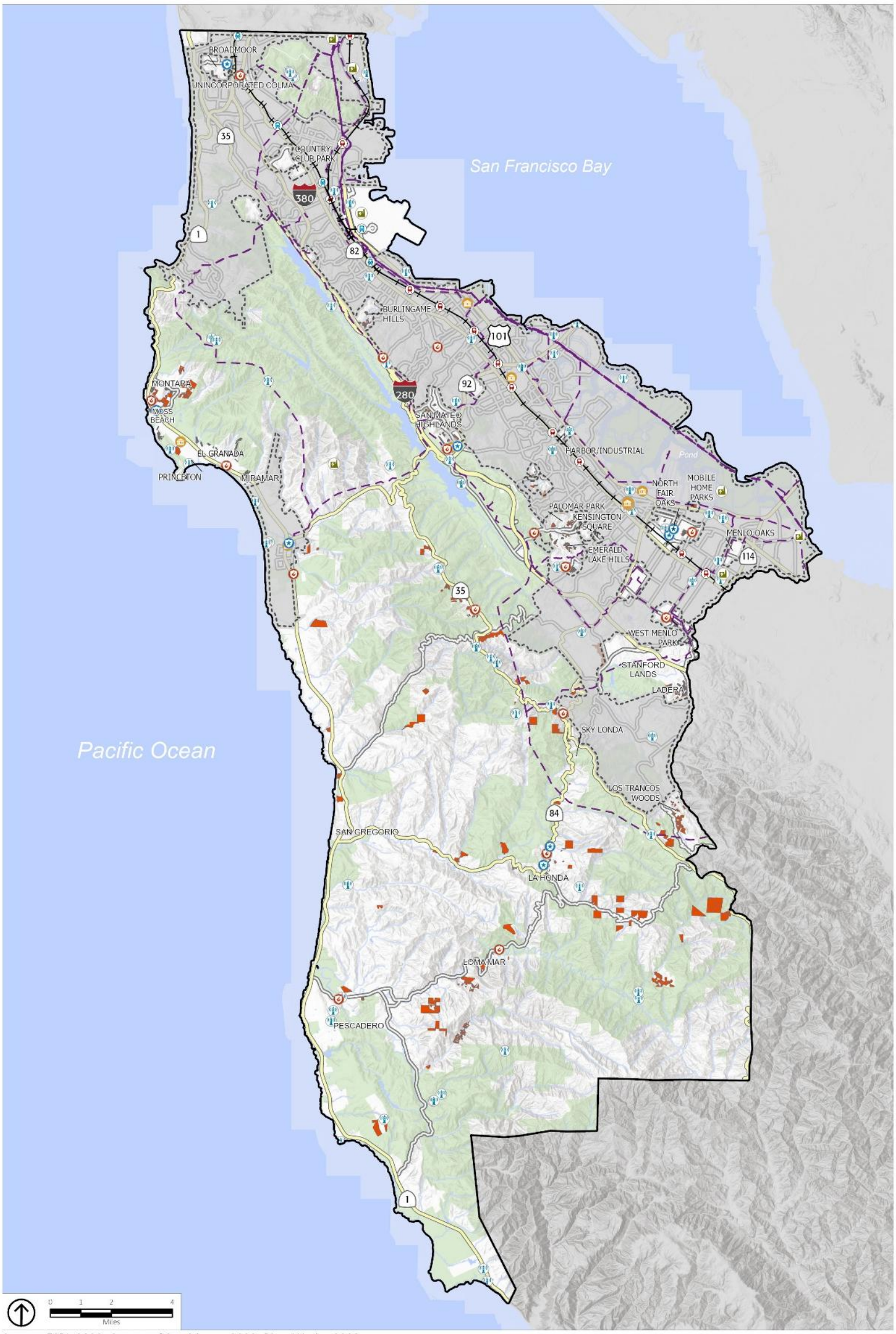
During routine circumstances, the MHOAC Program operates in a duty-officer mode with on-call personnel available 24/7. The MHOAC position represents the single point of contact for all emergent medical and health resource requests originating within County Health. If the San Mateo County Health Department Operations Center (Health DOC) is activated, the MHOAC Program functions may be distributed to various positions within the Health DOC. The MHOAC leads operations of the County EOC Medical Health Branch. The MHOAC is responsible for numerous public health functions during disasters, including evaluating medical needs, coordinating medical responses, and assessing the safety of food, water supplies, and the local environment.

12.5 Evacuations

In unincorporated San Mateo County, the potential primary evacuation routes include Highways 1, 84, and 92 along the Coastside. The potential primary evacuation routes on the Bayside include Highways 101 and 82 (El Camino Real), and Interstate 280. Although many of these routes can accommodate a large number of vehicles, hazardous conditions can constrain their capacity during an evacuation, especially on the Coastside. Hazards such as floods, landslides, and wildfires may block evacuation routes, while others such as earthquakes may cause bridges or road surfaces to collapse. The San Mateo County Sheriff's Office leads evacuation efforts, in coordination with the San Mateo County Emergency Management and other local emergency managers. During an evacuation, emergency managers may direct evacuating community members to routes other than the potential primary routes, based on factors such as incident conditions, roadway capacities, and the identification of areas of safety.

Some parts of the unincorporated county face evacuation challenges because there is only a single road in and out. These areas have heightened vulnerability, especially for fast-moving hazards that may require a rapid evacuation. If these single roads are blocked because of a hazard, evacuations out of the area and emergency response activities may be delayed or prevented. Section 65302(g)(5) of the CA Govt. Code requires that the Safety Element identifies residential parcels that lack access to at least two points of ingress and egress. **Figure 11** shows all residential parcels in the unincorporated county with these constraints. **Figure 12** shows these parcels in northern San Mateo County, **Figure 13** shows these parcels in the central Bayside, **Figure 14** shows these parcels in the central Coastside, **Figure 15** shows these parcels around La Honda and Los Trancos Woods, and **Figure 16** shows these parcels in the South Coast.

FIGURE 11: EVACUATION-CONSTRAINED RESIDENTIAL PARCELS IN SAN MATEO COUNTY



Source: ESRI, 2023; County of San Mateo, 2023; PlaceWorks, 2023

- San Mateo County Boundary
- Unincorporated Areas
- Parks and Open Space
- BART Stations
- Caltrain Stations
- Creeks and Waterways
- BART Network
- Caltrain Network
- Transmission Lines
- Emergency Healthcare Facilities
- Law Enforcement
- Fire Stations
- Government Facilities
- California Power Plants
- Communication Facilities
- Cellular Towers
- Land Mobile Broadcast Towers
- California Public Safety Microwave Network (CAPSNET)
- Paging Transmission Towers
- Evacuation-Constrained Parcels

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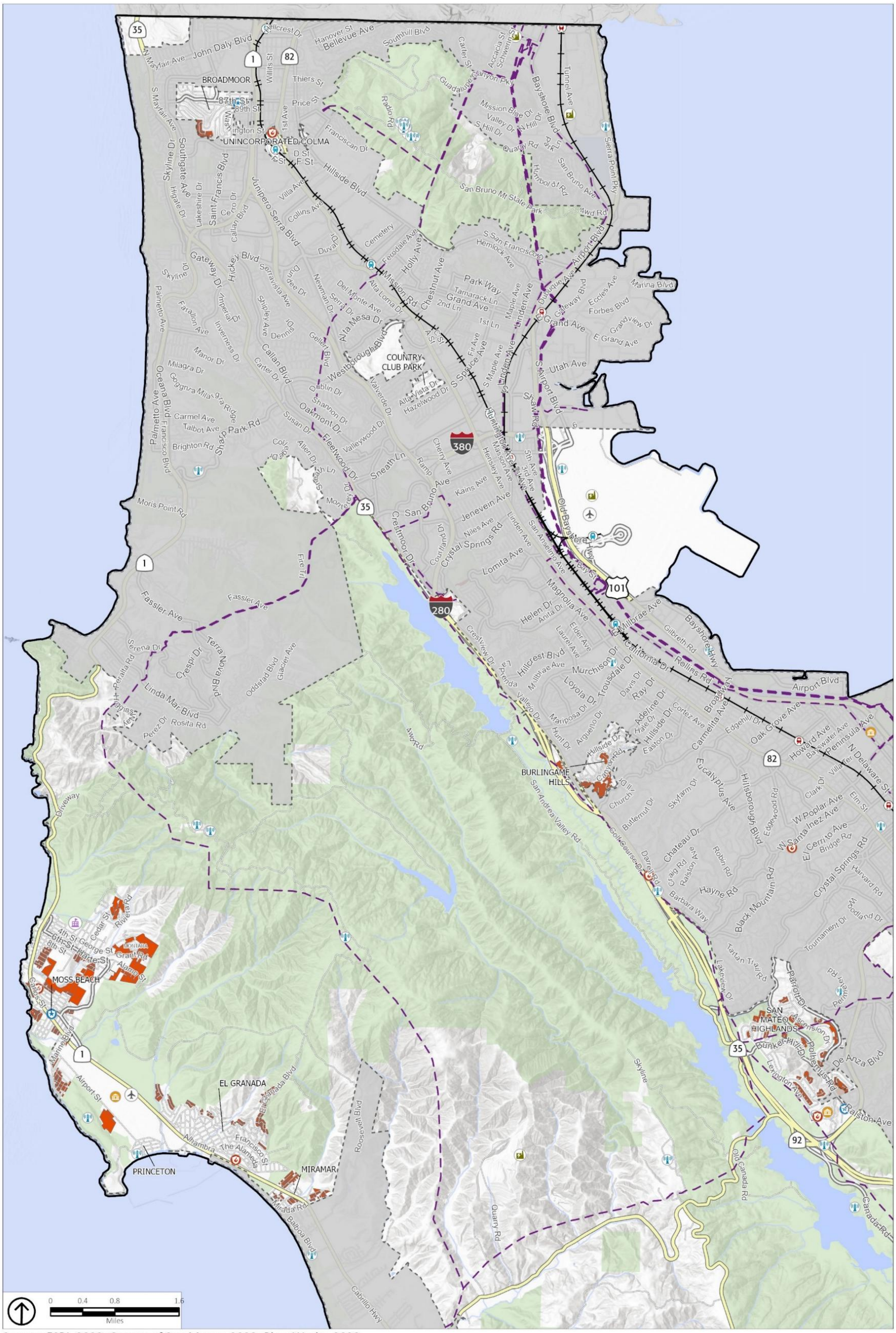
FIGURE 12: EVACUATION-CONSTRAINED RESIDENTIAL PARCELS IN NORTHERN SAN MATEO COUNTY



Source: ESRI, 2023; County of San Mateo, 2023; PlaceWorks, 2023

- San Mateo County Boundary
- Parks and Open Space
- BART Stations
- Caltrain Stations
- Creeks and Waterways
- BART Network
- Caltrain Network
- Transmission Lines
- Law Enforcement
- Fire Stations
- California Power Plants
- Government Facilities
- Airport
- Public Schools (K-12)
- Communication Facilities
- Cellular Towers
- Land Mobile Broadcast Towers
- California Public Safety Microwave Network (CAPSNET)
- Paging Transmission Towers
- Evacuation-Constrained Residential Parcels

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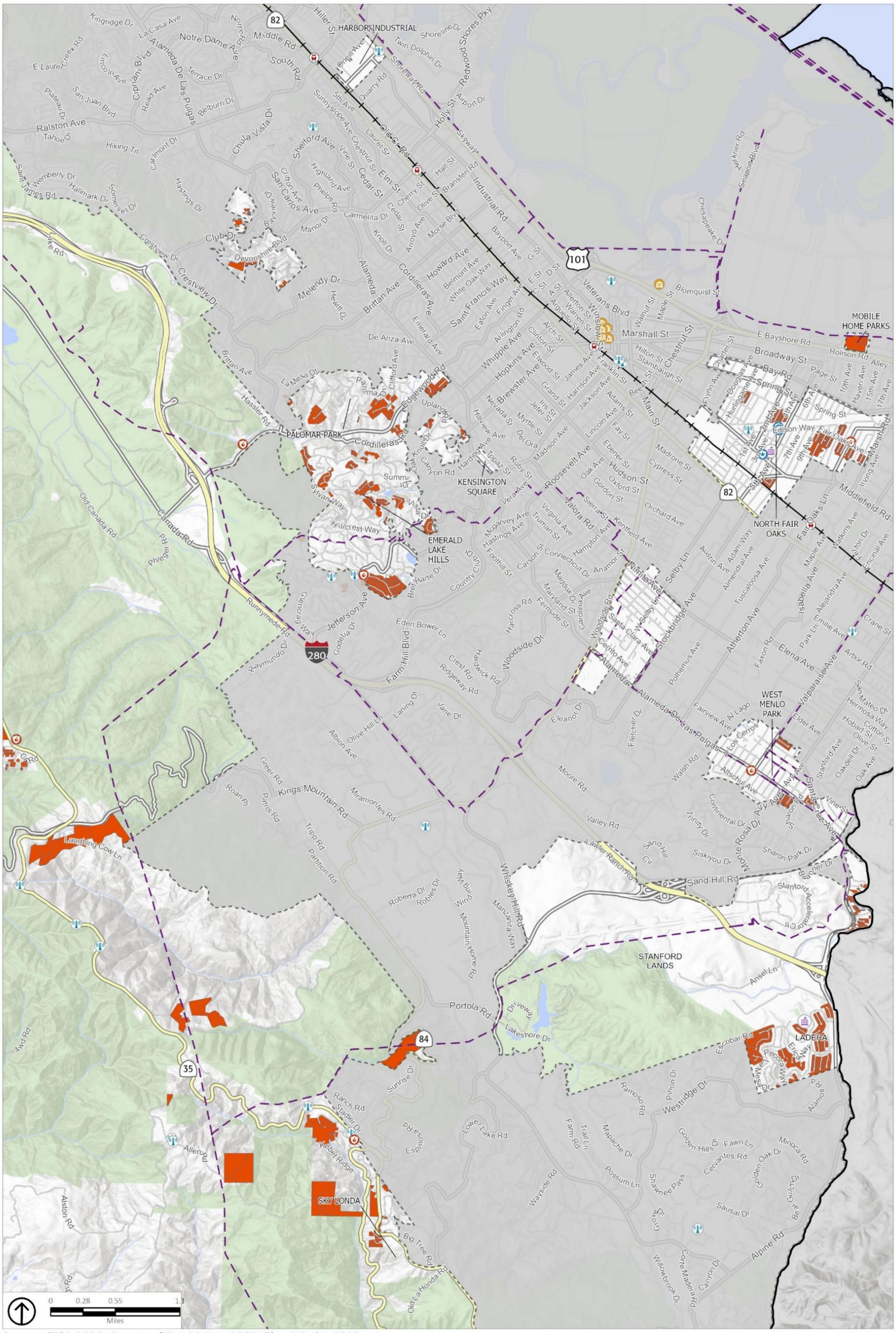
FIGURE 13: EVACUATION-CONSTRAINED RESIDENTIAL PARCELS IN CENTRAL BAYSIDE



Source: ESRI, 2023; County of San Mateo, 2023; PlaceWorks, 2023

- San Mateo County Boundary
- Parks and Open Space
- Caltrain Stations
- Creeks and Waterways
- Caltrain Network
- Transmission Lines
- Law Enforcement
- Fire Stations
- Government Facilities
- Public Schools (K-12)
- Communication Facilities
- Cellular Towers
- Land Mobile Broadcast Towers
- California Public Safety Microwave Network (CAPSNET)
- Paging Transmission Towers
- Evacuation-Constrained Residential Parcels

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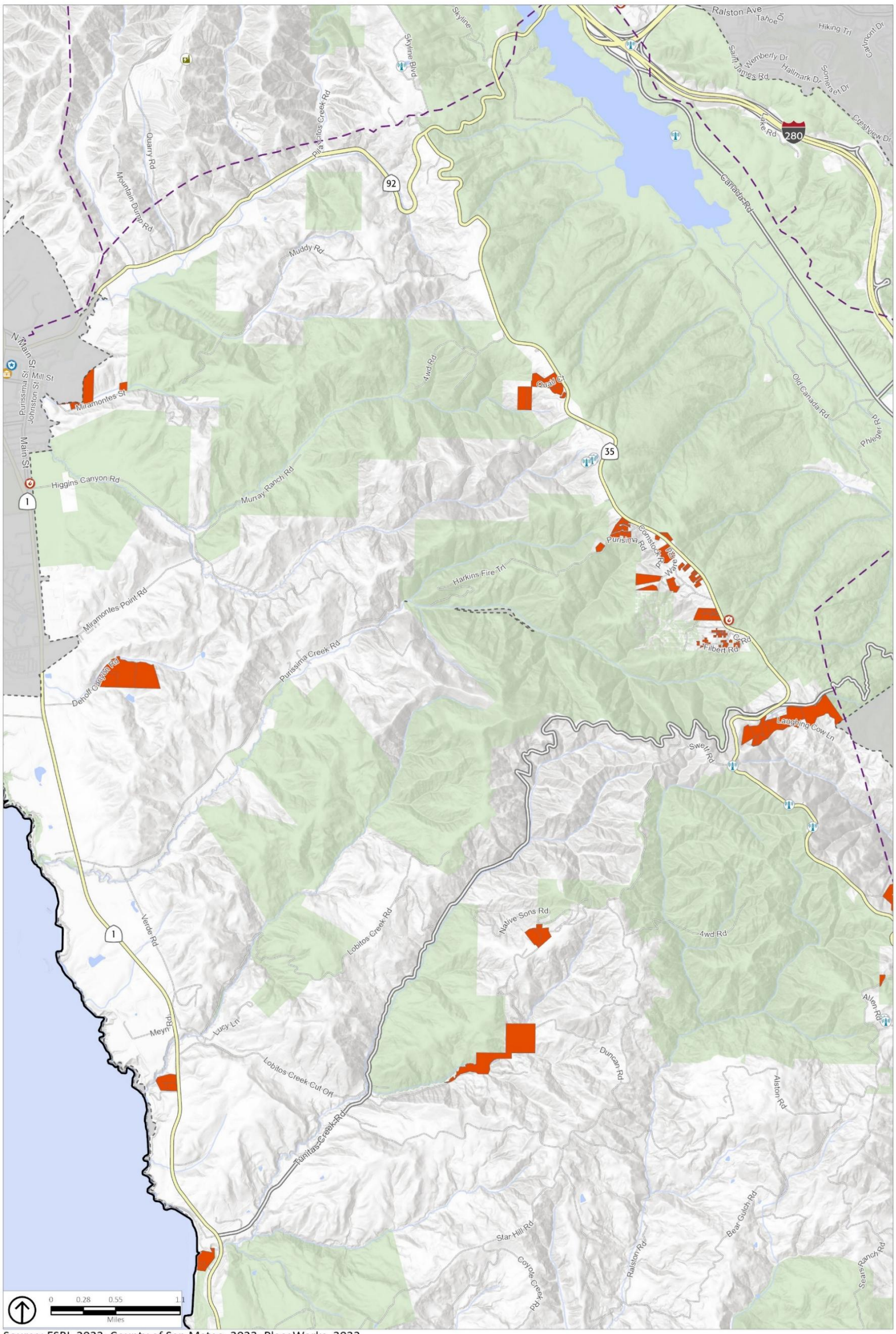
FIGURE 14: EVACUATION-CONSTRAINED RESIDENTIAL PARCELS IN CENTRAL COASTSIDE



Source: ESRI, 2023; County of San Mateo, 2023; PlaceWorks, 2023

- San Mateo County Boundary
- Parks and Open Space
- Creeks and Waterways
- Transmission Lines
- Fire Stations
- Government Facilities
- California Power Plants
- Communication Facilities
- Cellular Towers
- California Public Safety Microwave Network (CAPSNET)
- Paging Transmission Towers
- Evacuation-Constrained Residential Parcels

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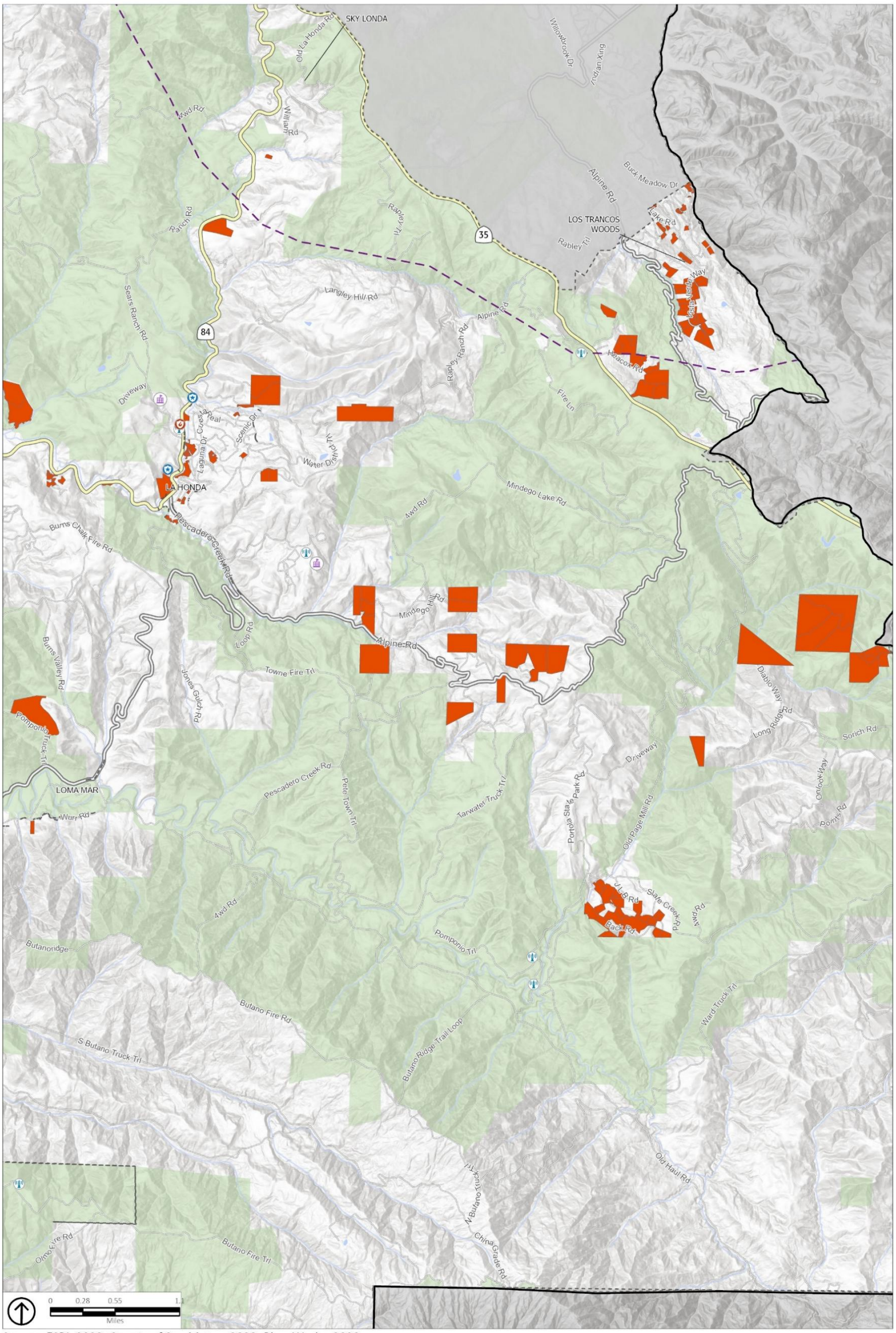
FIGURE 15: EVACUATION-CONSTRAINED RESIDENTIAL PARCELS IN LA HONDA/LOS TRANCOS WOODS



Source: ESRI, 2023; County of San Mateo, 2023; PlaceWorks, 2023

- San Mateo County Boundary
- Incorporated Cities
- Parks and Open Space
- Creeks and Waterways
- Transmission Lines
- Law Enforcement
- Fire Stations
- Public Schools (K-12)
- Communication Facilities
- Evacuation-Constrained Residential Parcels

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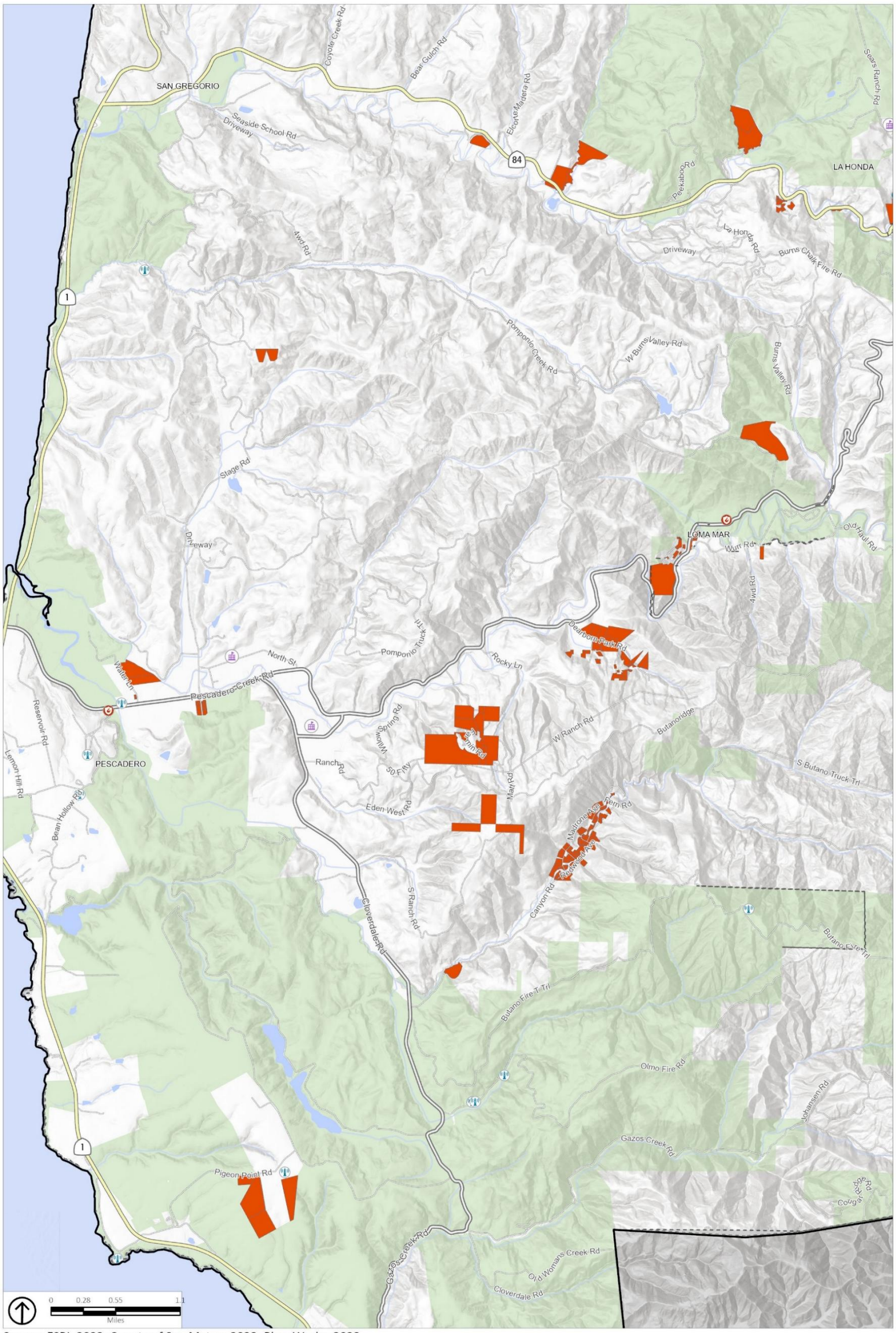
FIGURE 16: EVACUATION-CONSTRAINED RESIDENTIAL PARCELS IN SOUTH COAST



Source: ESRI, 2023; County of San Mateo, 2023; PlaceWorks, 2023

- San Mateo County Boundary
- Parks and Open Space
- Creeks and Waterways
- Law Enforcement
- Fire Stations
- Public Schools (K-12)
- Communication Facilities
- Cellular Towers
- Evacuation-Constrained Residential Parcels

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Genasys/Zonehaven

Public safety agencies throughout San Mateo County use the Genasys Protect app to communicate areas under evacuation orders/warnings during an emergency. Genasys provides first responders and public safety workers with tools to navigate the evacuation process, including information about when it is safe to return. The Genasys platform divides the community into zones to provide information tailored to impacted areas. Users of the app can choose the zone or zones for which they would like to receive alerts. Unincorporated San Mateo County is divided into many evacuation zones on the Genasys platform, as are all incorporated communities in the county. Community members can visit https://www.smcgov.org/dem/genasys-zonehaven to view their zone.

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13. GOALS, POLICIES, AND ACTIONS

This section contains the goals, policies, and actions for the Safety Element. The goals are the County's high-level vision for a safe and resilient community. Policies are statements to guide decision making and represent commitments by the County to enact the goals. Actions are specific steps the County will enact to implement the Safety Element policies. Collectively, the goals, policies, and actions create the General Plan's framework for addressing safety and resilience issues in San Mateo County.

Each policy and action includes information about implementation, including the responsible department(s) and supporting agencies. The responsible departments have primary responsibility for implementing the policy or action, while supporting agencies are other County departments, regional agencies, or partner organizations that will assist with or coordinate on implementation.

The goals are organized by topic, with one goal for each hazard or other public safety issue. The policies and actions are organized by the category of preparedness or response activity. There are five categories:

- **Data Policies.** These policies and actions direct the County to regularly collect, update, analyze, or model data on public safety and resilience topics to inform planning for hazard mitigation and resilience.
- **Public Communication Policies.** These policies and actions direct the County to educate, inform, or engage members of the public on safety and resilience topics, and share information to help community members prepare for and recover from hazard events.
- **Development Regulation Policies.** These policies and actions direct the County to establish and revise standards for new development and renovations to better resist hazardous conditions and more effectively protect the community.
- **Infrastructure Policies.** These policies and actions direct the County on public infrastructure improvements to better resist hazardous conditions and more effectively protect the community.
- **Program and Plan Policies.** These policies and actions direct the County to create or strengthen programs, plans, partnerships, or administrative structures, including coordination with outside organizations, other government agencies, and community-based organizations, on safety and resilience issues.

GOAL 1: Emergency Preparedness

There is a culture of emergency preparedness throughout the community and a focus on supporting emergency preparedness for the County's most vulnerable populations.

GOAL 2: Geologic and Seismic Hazard Policies

People, property, and infrastructure are protected from geologic and seismic hazards.

GOAL 3: Fire Hazards

Residents, businesses, and the natural environment are protected from unintended fire hazards.

GOAL 4: Flooding Hazards

Structures and residents are adequately prepared for flooding, and damage is minimized in the case of flooding.

GOAL 5: Sea Level Rise and Coastal Erosion

Community members are knowledgeable of the impacts and extent of sea level rise and coastal erosion and community assets are protected or moved from hazard areas.

GOAL 6: Groundwater Emergence

The community is informed about the risk of emergent groundwater due to sea level rise and protected from the associated risks, including potential inland flooding and the movement of hazardous materials.

GOAL 7: Extreme Heat

The community is prepared for an increasing amount of extreme heat events.

GOAL 8: Drought

The community is resilient to drought through collaborative conservation efforts.

GOAL 9: Air Quality

Community members experience clean, healthy air, with reduced exposure to harmful pollutants.

GOAL 10: Infectious and Vector-Borne Diseases

Prevent and mitigate risks to public health that could result from exposure to infectious diseases, vector-borne diseases, and other conditions of public health significance and ensure plans are in place to support people who are most at risk.

GOAL 11: Agriculture and Ecosystem Pests

Agricultural lands and ecosystems are resilient to climate change and protected from invasive pests.

13.1 Data Policies

Policy SE 1.1: Maintaining a Natural Hazards Information Base

Maintain and periodically update clear and comprehensive maps and other information on natural hazards in San Mateo County as new data and policy guidance becomes available. Incorporate new research and programs being conducted by County departments, State and federal agencies, and other sources that are useful in the prediction, mitigation, and response to natural hazards. Make this information easily available to the public in multiple languages.

Hazards: All Hazards, Seismic Hazards, Geologic Hazards, Flooding, Sea Level Rise, Severe Weather, Fire Hazards, Extreme Heat, Drought, Infectious and Vector-Borne Diseases, Hazardous Materials

Responsible Department(s): Department of Emergency Management, Planning and Building Department

Supporting Agencies: OneShoreline, Department of Public Works, San Mateo County Health, San Mateo County Resource Conservation District, Sustainability Department

Action SE 1.1a In partnership with OneShoreline, use the best-available sea level rise and extreme precipitation projections to regularly identify the areas of the county that are vulnerable to temporary and permanent inundation from sea level rise and compound flooding. Use this information to inform policy and permitting decisions and development and implementation of sea level rise adaptation and resilience strategies.

Action SE 1.1b Collaborate with OneShoreline to develop a standardized dataset for modeling sea level rise impacts at both the regional and local scale that accounts for both coastal and bay geomorphic features. Work with OneShoreline and appropriate State and federal partners to Refine groundwater rise projections in consideration of local conditions, interior drainage networks, sloughs, and updated climate projections and policy guidance.

Action SE 1.1c Provide an online map of hazards, including seismic and geologic hazards, flooding, sea level rise, emergent groundwater, wildfire, extreme heat, and other issues, as identified in this Safety Element. Members of the public, including current and prospective property owners, should be able to use this map to learn about hazards at the parcel level.

Action SE 1.1d Update maps at least every 5 years, or within 18 months after release of new datasets.

Policy SE 1.2: Land Subsidence

Increase understanding of areas of potential land subsidence within the county.

Hazard(s): Geologic Hazards

Responsible Department(s): Department of Public Works/Planning and Building Department

Supporting Agencies: Department of Emergency Management

Policy SE 1.3: Inventory and Abate Structures that are Fire Hazard Risks.

Create an inventory of all existing structures in the county that potentially do not meet current California Fire Code safety standards.

Hazard(s): Fire

Responsible Department(s): Planning and Building Department

Supporting Agencies: Fire Agencies

Action SE 1.3a Develop retrofit guidelines for existing non-conforming properties to understand what improvements may be necessary to comply with the California Fire Code, local ordinances, and best management practices.

Policy SE 1.4: Hazardous Material Monitoring in Hazard-Prone Areas

Identify hazardous materials facilities and sites in areas vulnerable to flooding, sea level rise, and emergent groundwater and establish a compliance monitoring program to ensure these sites implement appropriate flood protection measures. Include facilities that use, manufacture, store, or transport hazardous materials. Regularly review list to incorporate updates to facilities and hazard areas.

Hazard(s): Flooding, Sea Level Rise, Hazardous Materials

Responsible Department(s): Department of Emergency Management

Supporting Agencies: OneShoreline, San Mateo County Health, Planning and Building Department

Policy SE 1.5: Groundwater Monitoring Network

Coordinate the establishment and maintenance of a countywide shallow groundwater monitoring network, including installation of observation wells in vulnerable areas. Use collected data to validate groundwater rise projections, inform land use policies, building codes, and adaptation strategies, and make monitoring results publicly accessible.

Hazard(s): Flooding, Sea Level Rise, Drought

Responsible Department(s): OneShoreline

Supporting Agencies: Department of Emergency Management San Mateo County Health, Planning and Building Department, Sustainability Department

Policy SE 1.6: Ocean Acidification Monitoring

Participate in regional data sharing efforts on ocean pH and biological impacts from ocean acidification, as conducted by academic and research institutions.

Hazard(s): Ocean Acidification

Responsible Department(s): OneShoreline

Supporting Agencies: Sustainability Department

13.2 Public Communication Policies

Policy SE 2.1 **Public Education on Hazards**

Provide public education campaigns to increase awareness of and preparation for hazards in the community. Relevant hazards should be seismic and geologic hazards, flooding, sea level rise, severe weather, wildfire, extreme heat, drought, and other issues as identified in this Safety Element. These campaigns should educate residents about risks, discuss effective mitigation strategies, and identify available resources during and in advance of hazards. Ensure all public education activities are conducted in multiple languages and accessible formats to reach all community members. Consider opportunities to reduce barriers to community participation in workshops and other engagement events, such as providing stipends, childcare, and transit.

Hazard(s): Seismic and Geologic Hazards, Flooding, Sea Level Rise, Severe Weather, Emergent Groundwater, Wildfire, Extreme Heat, Drought

Responsible Department(s): Emergency Management, San Mateo County Health, County Executive's Office-Communications and Public Information

Supporting Agencies: Planning and Building Department, Department of Public Works, Sustainability Department.

Action SE 2.1a Partner with community-based organizations, homeowners associations, and neighborhood groups to create and disseminate educational materials for community members about human-caused, natural, and climate change-induced hazards, how to prepare for them, and what to do when a shelter-in-place or evacuation order is issued. Make this information widely available in various formats and languages to all community members, with special effort aimed at reaching people that are unsheltered, people without access to the internet, and people with special access and functional needs.

Action SE 2.1b Develop and implement public education programs that inform residents about vector-borne diseases and disease-carrying vectors.

Action SE 2.1c Organize localized emergency preparation trainings at times and places that are convenient for all residents.

Policy SE 2.2 **Emergency Alert Systems**

Ensure emergency alert systems provide community members with alerts about upcoming or current emergency events in languages and formats accessible to the entire community.

Hazard(s): Seismic Hazards, Geologic Hazards, Flooding, Fire Hazards, Extreme Heat

Responsible Department(s): Department of Emergency Management

Supporting Agencies: County Executive's Office-Communications and Public Information

Action SE 2.2a Develop and implement a proactive outreach program to enroll residents in vulnerable and high-hazard areas in SMC Alert, with targeted engagement in environmental justice communities and areas with populations that face barriers to accessing emergency information.

Action SE 2.2b Establish early warning and evacuation systems for hillside residents and those living in low-lying areas to evacuate prior to heavy rains that may lead to landslides, debris flows, or flash floods.

Action SE 2.2c Publicize reputable tools that provide awareness and warning about potential hazards to residents and community groups.

Policy SE 2.3 Fire-Safe Education Programs

Educate residents (with special attention to priority vulnerability populations) and businesses on vegetation management practices, including fire safety, landscape installation and maintenance, defensible space, and other fire hazard reduction strategies through public education programming, early detection programs, and property inspections.

Hazard(s): Fire Hazards

Responsible Department(s): Department of Emergency Management, Planning and Building Department

Supporting Agencies: Department of Public Works, Parks, Sustainability Department, County Executive's Office-Communications and Public Information, Emergency Services Council, Fire agencies, San Mateo County Resource Conservation District

Action SE 2.3a Publish and maintain accurate and up-to-date multilingual materials on fire hazard reduction strategies for property owners on County websites.

Action SE 2.3b Partner with community-based organizations to ensure fire hazard reduction strategies are accessible to vulnerable populations.

Action SE 2.3c Connect property owners to available resources, funding opportunities, and technical assistance programs that support fire safety retrofits and upgrades to meet updated fire code requirements.

Policy SE 2.4 Promotion of Efficiency and Resiliency Programs

Support and publicize efforts to increase efficiency and resilience in homes and businesses. Partner with service providers and public safety organizations on programs that promote energy efficiency, water conservation, building hardening, landscaping improvements, installation of green infrastructure, environmentally regenerative features, transition to all-electric appliances, energy resilience (solar and battery storage), and other appropriate measures.

Hazards: Seismic Hazards, Geologic Hazards, Flooding, Sea Level Rise, Fire Hazards, Extreme Heat, Drought

Responsible Department(s): Sustainability Department, Department of Emergency Management, Planning and Building Department

Supporting Agencies: Water agencies, utilities, Peninsula Clean Energy, fire agencies

Action SE 2.4a Promote available rebates for efficiency, clean energy, and resilience to community members.

Action SE 2.4b Publicize water conservation measures and incentive programs clearly on County websites and work with community groups and water providers to disseminate information directly to households and property owners.

Action SE 2.4c Identify funding opportunities to assist property owners with seismic retrofit improvements, prioritizing greater access for vulnerable populations.

Policy SE 2.5 Sustainable Farming Practice Education

Promote sustainable farming practices through educational programs by partnering with the University of California (UC) Cooperative Extension and other local agricultural agencies. These programs should aid farmers and growers in adapting to climate change, safeguarding the environment, and remaining economically viable.

Hazards: Severe Weather, Extreme Heat, Drought

Responsible Department(s): Agriculture / Weights and Measures

Supporting Agencies: San Mateo County Resource Conservation District, Sustainability Department

13.3 Development Regulation Policies

Policy SE 3.1 **Evacuation Access Standards**

Prohibit new subdivision residential development of 10 units or more in High and Very High Fire Hazard Severity Zones, and in areas at high risk of flooding, sea level rise and emergent groundwater by 2100, and dam inundation, as identified on **Figure 6** through **Figure 9**, unless the development has access to at least two emergency evacuation routes. Update the County Zoning Regulations and Subdivision Regulations to implement evacuation route requirements, establishing clear standards for what constitutes an adequate emergency evacuation route.

Hazards: Fire Hazards, Flooding, Sea Level Rise, Emergent Groundwater

Responsible Department(s): Planning and Building Department

Supporting Agencies: OneShoreline, Department of Public Works

Policy SE 3.2 **Emergency Response Access**

Require new development to assist emergency responders by providing high-visibility street signage, adequate access for fire and emergency vehicles and equipment, and fuel clearance around adjacent roadways.

Hazards: All Hazards, Seismic Hazards, Geologic Hazards, Flooding, Sea Level Rise, Severe Weather, Fire Hazards, Extreme Heat, Drought, Infectious and Vector-Borne Diseases, Hazardous Materials

Responsible Department(s): Planning and Building Department, Department of Public Works

Supporting Agencies: Department of Emergency Management, fire agencies, Sheriff

Action SE 3.2a Update the County Ordinance Code to require high-visibility street signage, adequate onsite access for emergency vehicles and equipment, and fuel clearance around roadways for new development.

Policy SE 3.3 **Safe Siting of Development**

As precisely as possible, determine the areas of the county where development should be avoided or where additional precautions should be undertaken during review of development proposals due to the presence of natural hazards. This shall include Alquist-Priolo fault zones, wildfire hazard severity zones, mapped floodplains, areas subject to elevated risks of landslides or liquefaction, areas prone to coastal erosion, and areas subject to sea level rise or emergent groundwater hazards over the life of the proposed development, along with other hazard-prone areas as County staff may identify.

- Give preference to land uses that minimize the number of people exposed to hazards in these areas.
- Determine appropriate densities and development.

- Require detailed analysis of hazard risk and design of appropriate mitigation when development is proposed in these areas, including assessment of hazardous conditions expected to be exacerbated by climate change, such as sea level rise.

Hazards: Seismic Hazards, Geologic Hazards, Flooding, Sea Level Rise, Fire Hazards, Hazardous Materials

Responsible Department(s): Planning and Building Department, Department of Public Works

Supporting Agencies: Sustainability Department, OneShoreline, Caltrans

Action SE 3.3a Review and amend the Zoning Regulations to incorporate updates to hazard areas.

Action SE 3.3b Roads and utility lines crossing hazard-prone areas shall include special design and construction techniques, as appropriate to minimize risk of failure over the life of the proposed infrastructure.

Action SE 3.3c Discourage locating high-occupancy structures, such as schools, hospitals, or correctional facilities, theaters, churches, or offices in areas of high hazard risk, unless suitable mitigation is included.

Action SE 3.3d Subdivisions shall be designed to cluster homesites, minimize placement of new roads and other improvements on unstable lands, and shall demonstrate suitable and stable building sites approved by the County Geologist or Qualified Geotechnical Consultant.

Action SE 3.3e Require new sensitive receptors, including schools, medical facilities, and senior housing, to be located at least 1,000 feet away from major sources of air pollution to the greatest extent possible.

Policy SE 3.4 Safe Siting of Public and Critical Facilities

Limit the building of public and critical facilities and infrastructure in areas of elevated hazard risks, including Alquist-Priolo fault zones, tsunami hazard zones, wildfire hazard severity zones, mapped floodplains, areas subject to elevated risks of landslides or liquefaction, areas prone to coastal erosion, and areas subject to sea level rise or emergent groundwater hazards. Whenever possible, account for how climate change may increase the frequency, intensity, and affected areas of hazards. If new critical facilities and public infrastructure cannot be located outside of areas prone to hazards, ensure that facilities and access routes are constructed to appropriate standards to maintain operations under these conditions over the life of the project.

Hazard(s): Seismic Hazards, Geologic Hazards, Flooding, Sea Level Rise, Fire Hazards

Responsible Department(s): Planning and Building Department

Supporting Agencies: Department of Public Works

Policy SE 3.5 **Building Code Updates**

Review and adopt State building code updates and prepare local amendments as necessary to address local geologic, topographic, or climatic conditions.

Hazard(s): Seismic Hazards, Geologic Hazards, Flooding, Sea Level Rise, Severe Weather, Fire Hazards, Extreme Heat, Drought, Infectious and Vector-Borne Diseases, Hazardous Materials

Responsible Department(s): Planning and Building Department

Supporting Agencies: Department of Public Works, Sustainability Department

Policy SE 3.6 **Seismic Retrofit Standards**

Comply with State, County, and local statutes regarding the identification and retrofit of seismically vulnerable structures (e.g., unreinforced masonry, soft-story, non-ductile concrete construction).

Hazard(s): Seismic Hazards

Responsible Department(s): Planning and Building Department/Department of Public Works

Supporting Agencies: N/A

Action SE 3.6a Periodically review methods to enhance current siting, design, and construction standards for ensuring post-seismic event structural integrity and functionality.

Policy SE 3.7 **Development Review for Geologic and Seismic Conditions**

Discourage projects involving General Plan amendments, zone changes, use permits, variances, building site approvals, and all other land development applications subject to the California Environmental Quality Act environmental assessment requirements in locations subject to hazardous geologic and seismic conditions unless suitable mitigation is included. The mitigation should both protect the safety of occupancy and the integrity and function of the buildings, and consider the depth of bedrock, soil stability, location of rift zones, and other localized geotechnical problems using the most current data.

Hazard(s): Seismic Hazard, Geologic Hazards

Responsible Department(s): Planning and Building Department

Supporting Agencies: Department of Public Works, OneShoreline

Policy SE 3.8 **Land Stability During Development**

In areas of high potential for landslides, avoid altering the land or hydrology that is likely to increase the hazard potential, including:

- Saturation due to drainage or septic systems;
- Removal of vegetative cover; or
- Steepening of slopes or undercutting the base of a slope.

Hazard(s): Geologic Hazards

Responsible Department(s): Planning and Building Department

Supporting Agencies: Department of Public Works, Parks Department, Planning and Building Department

Policy SE 3.9 **Shoreline Buffers**

Develop and adopt a Sea Level Rise Buffer Zone of 100 feet, at a minimum, from the Pacific Ocean shoreline into the Zoning Regulations to provide space to accommodate sea level rise and associated impacts and adaptation measures.

Hazards: Geologic Hazards, Sea Level Rise

Responsible Department(s): Planning and Building Department

Supporting Agencies: Department of Public Works, Harbor District, Sustainability Department

Action SE 3.9a Require development in the buffer zone to include design features that allow the site to be temporarily or permanently flooded and harden existing structures to flooding.

Action SE 3.9b Prioritize and maintain built public infrastructure and natural infrastructure in this zone for flood protection, habitat restoration, and public access.

Action SE 3.9c Preserve and protect sensitive habitats within the buffer zone, including allowing for upland migration of habitats.

Action SE 3.9d As sea levels and other conditions change, re-evaluate the Buffer Zone and adjust to continue to protect shoreline areas.

Action SE 3.9e When permitted, require shoreline barriers be sited as landward as possible within the Sea Level Rise Buffer Zone to provide as much space as possible for rising sea levels, incorporation of nature-based solutions, sensitive habitats, and future transition zone habitat migration.

Policy SE 3.10 **Coastal Erosion Overlay Zone**

Develop and adopt a Coastal Erosion Overlay Zone into the Zoning Regulations that contains a map of expected coastal erosion due to projected sea level rise and geologic conditions and includes requirements for development in the Overlay Zone, including, but not limited to:

- Requiring new development along the coastal bluffs to be set back an adequate distance to accommodate a 100-year event, including seismic, geologic, or storm-related hazards.
- Prohibit land divisions or new structures that would require the need for bluff protection work in coastal erosion areas, unless design and setback provisions are adequate to assure stability and structural integrity for the expected economic life span of the development (at least 50 years) and if the development (including storm runoff, foot traffic, grading, irrigation, and septic tanks) will neither create nor contribute significantly to erosion problems or geologic instability of the site or surrounding area.
- Requiring a geotechnical study for development within the coastal erosion zone or within 100 feet of an existing bluff.

Hazards: Geologic Hazards, Sea Level Rise

Responsible Department(s): Planning and Building Department

Supporting Agencies: Department of Public Works, Sustainability Department

Action SE 3.10a Require the submittal of a site stability evaluation report for new development within the Coastal Erosion Overlay Zone, prepared by a soils engineer or a certified engineering geologist, as appropriate, acting within their areas of expertise, based on an on-site evaluation. The report shall consider:

- Historic, current, and foreseeable cliff erosion, including investigation of recorded land surveys and tax assessment records in addition to the use of historic maps and photographs where available, and possible changes in shore configuration and transport.
- Cliff geometry and site topography, extending the surveying work beyond the site as needed to depict unusual geomorphic conditions that might affect the site and the proposed development.
- Geologic conditions, including soil, sediment, and rock types and characteristics in addition to structural features, such as bedding, joints, and faults.
- Evidence of past or potential landslide and erosion conditions, the implications of such conditions for the proposed development, and the potential effects of the development on landslide activity.
- Wave and tidal action, including effects of marine erosion on sea cliffs.
- Ground and surface water conditions and variations, including hydrologic changes caused by the development (e.g., introduction of sewage effluent and irrigation water to the groundwater system; alterations in surface drainage).
- Potential effects of seismic forces resulting from a maximum credible earthquake.
- Effects of the proposed development, including siting and design of structures, septic system, landscaping, drainage, and grading, and impacts of construction activity on the stability of the site and adjacent area.
- Any other factors that may affect slope stability.
- Potential erodibility of site and mitigating measures to be used to ensure minimized erosion problems during and after construction (i.e., landscaping and drainage design).

Policy SE 3.11 Coastal Sea Walls

Prohibit seawalls and erosion barriers unless they are demonstrably the only means of protecting persons and critical facilities from rising sea level, and if they do not create off-site impacts. New coastal sea walls and erosion barriers must be consistent with Local Coastal Program requirements and San Francisco Bay Conservation and Development Commission standards.

Hazard(s): Geologic Hazards, Sea Level Rise

Responsible Department(s): Planning and Building Department

Supporting Agencies: Coastal Commission, San Francisco Bay Conservation and Development Commission

Policy SE 3.12 **Accommodating Sea Level Rise and Emergent Groundwater in Development**

Require planning and design of new and/or substantial construction to be resilient to projected sea levels and emergent groundwater for the life of the project, either by designing for areas of a site to be temporarily or permanently flooded or designing development to be hardened against floodwaters.

Hazard(s): Sea Level Rise, Flooding

Responsible Department(s): Planning and Building Department

Supporting Agencies: OneShoreline, Sustainability Department

Action SE 3.12a Establish an interdepartmental sea level rise working group to review and revise as necessary County planning processes and development standards to incorporate the latest sea level rise projections, in alignment with the County's Sea Level Rise Policy for County Assets.

Action SE 3.12b Evaluate and amend the County's Building Regulations, Zoning Regulations, and other development standards to ensure that new and/or substantial construction adequately incorporates sea level rise, emergent groundwater, major storms, flooding, and other climate impacts into siting and design. Collaborate with OneShoreline and use OneShoreline's Planning Policy Guidance as a template to assist with these amendments. Regularly review (at least every five years) and update the Building Regulations, Zoning Regulations, and development standards to align with best practices.

Policy SE 3.13 **Sea Level Rise and Emergent Groundwater Overlay Zones**

Adopt Sea Level Rise and Emergent Groundwater Overlay Zones with associated land use regulations for site planning and minimum construction elevations that reflect best available sea level rise data, as currently shown in **Figure 8** and **Figure 9**. Refer to State, BCDC, and OneShoreline policy guidance when developing these overlay zones. These regulations should:

- Have a minimum lowest floor elevation of three feet above the current base flood elevation and elevate critical equipment.
- Require adaptation pathway triggers for private as well as public shoreline projects, so that design and construction plans anticipate phased adaptation (e.g., raising structures, expanding barriers) when sea levels or flood frequencies reach defined thresholds.
- Prohibit new basements or below-grade spaces in mapped groundwater emergence zones unless designed to prevent buoyancy, infiltration, and contamination mobilization.
- Projects located in areas subject to emergent groundwater shall incorporate project measures to monitor and reduce seasonal and permanent impacts, including buoyancy, seepage, infiltration, liquefaction, corrosion, and transport of hazardous materials in soils and groundwater.
- Maximize the use of natural infrastructure for flood resilience (i.e., wetland restoration, green infrastructure, floodplain restoration, other nature-based measures, and open space protection) before considering hardened structures.

- Assess and plan for future flood and erosion conditions for the life of the project.
- Prohibit new facilities that use, manufacture, store, or transport hazardous materials in emergent or high groundwater areas, as shown on **Figure 9**.
- Contribute to regional shoreline infrastructure funds.
- Assess how risks of liquefaction, slope instability, erosion, sea level rise, and groundwater rise may compound each other and design accordingly or avoid development in areas where risk is too great.
- If located on a contaminated site, account for impacts of rising shallow groundwater on contaminated soil or groundwater in project design and all steps of the site remediation process, in coordination with the relevant agencies responsible for the remediation plan for the site.

Hazard(s): Sea Level Rise, Flooding

Responsible Department(s): Planning and Building Department

Supporting Agencies: OneShoreline, Sustainability

Policy SE 3.14 **Hazardous Material Facility Hardening**

Ensure that hazardous materials facilities and sites are hardened against flooding to prevent the release of harmful materials.

Hazards: Flooding, Sea Level Rise

Responsible Department(s): Department of Emergency Management

Supporting Agencies: Department of Public Works, San Mateo County Resource Conservation District, Planning and Building Department, OneShoreline, San Mateo County Health

Policy SE 3.15 **Contaminated Site Cleanup**

Work with State and federal agencies and property owners to facilitate the cleanup of contaminated sites in mapped flood zones, prioritizing those that pose the highest risk to priority vulnerability populations and ecosystems.

Hazards: Flooding, Sea Level Rise

Responsible Department(s): San Mateo County Health, Department of Emergency Management

Supporting Agencies: Department of Public Works, San Mateo County Resource Conservation District, Planning and Building Department, Sustainability Department, OneShoreline

Action SE 3.15a Establish development review procedures that require contaminated sites within mapped sea level rise, flood, and emergent groundwater zones to complete cleanup to unrestricted use standards or demonstrate that remedies will remain protective under projected sea level rise scenarios, prior to approval of redevelopment projects.

Action SE 3.15b Develop guidance for evaluating whether existing land use covenants and institutional controls at contaminated sites will remain effective under projected sea level rise and flooding scenarios.

Policy SE 3.16 **Floodplain Management Regulations**

Regularly review local floodplain management regulations to ensure that they align with the Federal Emergency Management Agency's minimum criteria to reduce or avoid future flood damage to qualify for the sale of federally subsidized flood insurance through the agency's National Flood Insurance Program (NFIP).

Hazard(s): Flooding

Responsible Department(s): Planning and Building Department

Supporting Agencies: Department of Emergency Management, Department of Public Works, OneShoreline

Policy SE 3.17 **Areas of Special Flood Hazard**

Wherever possible, retain natural floodplains and guide development to areas outside of areas of special flood hazard. Discourage new development in areas designated a 100-year floodplain and require home hardening of existing structures against flooding in areas designated 100-year floodplains. Promote subdivision design to avoid areas of special flood hazard when possible, and identify these areas on the approved subdivision map. Consider land uses that do not expose significant numbers of people to flooding hazards, such as agriculture, timber production, public and private recreation, and general open space, to be the most appropriate for flooding hazard areas.

Hazard(s): Flooding

Responsible Department(s): Planning and Building Department

Supporting Agencies: OneShoreline, Department of Public Works, San Mateo County Resource Conservation District, Parks Department

Policy SE 3.18 **Increase Permeable Surface**

Ensure development employs site design and landscaping techniques that minimize the number of impermeable surfaces to improve drainage and increase flood resilience, consistent with the Municipal Regional Stormwater National Pollutant Discharge Elimination System (NPDES) Permit issued by the Regional Water Quality Control Board.

Hazard(s): Flooding

Responsible Department(s): Planning and Building Department

Supporting Agencies: Department of Public Works, Sustainability Department

Action SE 3.18a Update County Standard Drawings and specifications to include standards and appropriate applications for pervious and permeable surface materials in County rights-of-way.

Policy SE 3.19 Creek Buffers

Establish a minimum buffer zone of 35 feet from top of creek bank to accommodate and maintain built and natural infrastructure for flood risk reduction and habitat restoration.

Hazards: Flooding

Responsible Department(s): Planning and Building Department

Supporting Agencies: San Mateo County Resource Conservation District, Department of Public Works, Parks Department, OneShoreline

Action SE 3.19a Adopt standards and permitting criteria to implement the 35-foot creek buffer, including setbacks, easements, and long-term maintenance requirements coordinated with local jurisdictions and property owners.

Policy SE 3.20 Avoidance of Creek Bank Armoring

Discourage new creek bank armoring (e.g., concrete lining, riprap, bulkheads) that increases or transfers downstream flood risk, degrades habitat, and reduces channel capacity. Promote nature-based alternatives that stabilize banks while maintaining or restoring natural creek functions.

Hazard(s): Flooding

Responsible Department(s): Planning and Building Department

Supporting Agencies: Department of Public Works, OneShoreline, Parks Department, San Mateo County Resource Conservation District, OneShoreline

Action SE 3.20a Update the Building Regulations to require applicants to evaluate bioengineering or nature-based stabilization alternatives before permitting new bank armoring, and to demonstrate that any proposed treatment will not cause adverse impacts to adjacent properties or other creek bank segments.

Policy SE 3.21 Update Local Amendments to California Fire Code

Continue to work with the California Department of Forestry/County Fire Department to incorporate the triennial updates to the California Fire Code and California Wildland-Urban Interface Code, and adopt local amendments as needed.

Hazard(s): Fire Hazards

Responsible Department(s): Planning and Building Department

Supporting Agencies: Fire agencies

Policy SE 3.22 Fire Service Capability

Require new developments and major remodels or renovations to comply with the California Building Code, California Fire Code, California Wildland-Urban Interface Code, and local adopted ordinances for construction and adequacy of water flow and pressure, onsite ingress/egress, and other measures to ensure adequate fire protection. Proposed right of way (ROW) improvements for ingress/egress fall under the jurisdictional authority of the

Department of Public Works and must comply with the County of San Mateo's Road Standards and policies.

Hazard(s): Fire Hazards

Responsible Department(s): Planning and Building Department

Supporting Agencies: Fire agencies

Policy SE 3.23 Fire Protection Plans

Require fire protection plans for new development in High and Very High Fire Hazard Severity Zones designated by the County and CAL FIRE. Fire protection plans should be consistent with requirements of the California Fire Code and Wildland-Urban Interface Code, and include a risk analysis, fire response capabilities, fire safety requirements (defensible space, infrastructure, and building ignition resistance), mitigation measures and design considerations for non-conforming fuel modifications, wildfire education, and evacuation plans.

Hazard(s): Fire Hazards

Responsible Department(s): Fire agencies, Planning and Building Department

Supporting Agencies: Department of Public Works, Department of Emergency Management

Policy SE 3.24 Fire-Safe Design Regulations

Coordinate with Fire Districts and Departments serving the unincorporated areas of the county on the need for fire-safe design regulations as applicable covering such elements as vegetation management around homes, adequacy of existing and future water supplies, fire flow tests, fire hydrants, routes or throughways for fire equipment access, clarity of addresses and street signs, and long-term maintenance in compliance with California Fire-Safe Regulations, adopted California Fire Code, California Wildland-Urban Interface Code, local ordinances, and County of San Mateo Road Standards and policies for the built-out, populated areas of the region.

Hazard(s): Fire Hazards

Responsible Department(s): Planning and Building Department, Department of Public Works, fire agencies

Supporting Agencies: Department of Emergency Management

Action SE 3.24a Continue to involve Fire District personnel, and involve other emergency personnel as needed, in the development review process to ensure that new development adequately addresses service levels, security concerns, and safety.

a. Consider the adequacy of access for fire protection vehicles during review of any new development proposal.

b. Determine the adequacy of access through evaluation of length of dead end roads, turning radius for fire vehicles, turnout requirements, road widths and shoulders and other road improvement considerations for conformance with the standards of the agency responsible for fire protection for the site proposed for development.

c. To the maximum extent possible, design access for fire protection vehicles in a manner which will not result in unacceptable impacts on visual, recreational, and other valuable resources.

d. When evaluating proposals for new subdivisions ensure that road patterns both facilitate access for fire protection vehicles and establish secondary access routes for emergency evacuation.

e. Encourage the Department of Public Works to study existing road patterns that have access problems to determine the feasibility and costs of access improvements.

f. Identify emergency access and evacuation routes for existing developed areas and provide this information to area residents.

g. For new projects in existing neighborhoods with inadequate access for fire protection vehicles, consider additional building development standards that allow for onsite fire sheltering and defense.

Policy SE 3.25 Avoid New Development in Fire-Prone Areas

Minimize new development in the High and Very High Fire Hazard Severity Zones. If development is proposed in these zones, require fire-safe design, including, but not limited to, defensible space and home hardening and compliance with fire-safe regulations, adopted California Fire Code, California Wildland-Urban Interface Code, and local ordinances.

Hazard(s): Fire Hazards

Responsible Department(s): Planning and Building Department

Supporting Agencies: Fire agencies, Department of Emergency Management

Policy SE 3.26 Improved Air Quality in New Development

Maintain development and building site design standards that protect residents from exposure to poor air quality. Investigate updating the County Ordinance Code to include wildfire smoke and traffic-related pollution. Enforce Bay Area Air District requirements for new development, including health risk assessments, air filtration systems, setback requirements, and construction and operation standards. Promote the use of the best-available air filtration and ventilation technologies in new development.

Hazard(s): Fire Hazards

Responsible Department(s): Planning and Building Department

Supporting Agencies: San Mateo County Health, Sustainability Department

Action SE 3.26a Consult with the Bay Area Air District and community stakeholders to investigate updating the County Ordinance Code to include a clean construction ordinance that requires projects to implement extra measures to reduce emissions at construction sites in or near places that are already overburdened by air pollution and sensitive receptors.

Action SE 3.26b Update development standards and public education materials related to indoor air quality as new technologies become available.

Policy SE 3.27 Extreme Heat Mitigation Requirements for Private Development

Require new development to implement strategies to reduce the effects of extreme heat.

Hazard(s): Extreme Heat

Responsible Department(s): Planning and Building Department

Supporting Agencies: Sustainability Department, San Mateo County Health

Action SE 3.27a Require new development to implement and maintain bus stop amenities, as identified in SamTrans Bus Stop Improvement Plan, if the project is adjacent to an existing or proposed transit stop as part of the required public realm improvements.

Action SE 3.27b Continue to require preservation of trees on private property through implementation of the Protected Tree Ordinance.

Policy SE 3.28 Indoor Temperature Threshold

Establish and enforce a safe maximum indoor temperature for new and existing housing and nonresidential space.

Hazard(s): Extreme Heat

Responsible Department(s): Planning and Building Department

Supporting Agencies: Sustainability Department, County Executive's Office, Human Services Agency, San Mateo County Health

Policy SE 3.29 Drought-Tolerant Landscaping

Require native, drought-tolerant landscaping in both private development and public spaces, in accordance with applicable State laws. Ensure that new landscaping does not exacerbate wildfire or flood risks and aligns with vegetation and stormwater management standards through educational materials, community outreach, and workshops.

Hazard(s): Drought

Responsible Department(s): Sustainability Department, Planning and Building Department, Department of Public Works

Supporting Agencies: Fire agencies

13.4 Infrastructure Policies

Policy SE 4.1 **Maintenance of Evacuation Routes**

Collaborate with surrounding jurisdictions and Caltrans to ensure the ongoing maintenance and readiness of potential evacuation routes serving the county.

Hazard(s): Seismic Hazards, Geologic Hazards, Flooding, Severe Weather, Fire Hazards, Drought, Hazardous Materials

Responsible Department(s): Department of Emergency Management

Supporting Agencies: Department of Public Works, Parks, fire agencies, Sheriff, OneShoreline

Action SE 4.1a Identify corridors where temporary evacuation capacity can be created through manual traffic direction to optimize traffic flow, including use of available parking lanes, shoulders, paved trails, and bikeways for traffic while ensuring emergency responder access is maintained. Secure funding and other resources as needed to construct any needed improvements.

Action SE 4.1b Provide battery back-up power systems for all County-owned traffic signals on potential evacuation routes.

Action SE 4.1c Seek funding to identify, prioritize, and implement improvements to existing emergency access for existing developments in wildfire-prone and flood-prone areas, as identified in **Figure 6** and **Figure 10**, that do not meet minimum road standards for emergency equipment, such as:

- Additional vehicle pullouts at key hillside locations.
- Limiting or restricting on-street parking at key hillside locations.
- Potential for construction of new or improved emergency access routes.
- Roadside clearance improvements.
- Leveraging existing alternative or secondary routes, including fire roads, trails, and easements.

Policy SE 4.2 **Public Facilities and Infrastructure Retrofits**

Retrofit existing critical infrastructure and public facilities to be resilient to hazardous conditions, including flooding, sea level rise, wildfires, seismic and geologic hazards, extreme heat, poor air quality, and severe weather events. Incorporate features allowing these infrastructure components and facilities to remain operational during and immediately after emergency events.

Hazard(s): Seismic Hazards, Geologic Hazards, Flooding, Sea Level Rise, Severe Weather, Fire Hazards, Extreme Heat, Drought, Infectious and Vector-Borne Diseases, Hazardous Materials

Responsible Department(s): Planning and Building Department, Department of Public Works, Sustainability Department

Supporting Agencies: Department of Emergency Management, SamTrans, BART, Caltrain, San Mateo County Health, local water agencies, OneShoreline

Action SE 4.2a Invest in infrastructure upgrades for County-operated water systems to increase their firefighting suppression capacity.

Action SE 4.2b Inventory critical infrastructure and public facilities that are at risk of damage from extreme heat and prioritize retrofits to those that are most vulnerable and highly used in an extreme heat event, such as public transportation infrastructure and cooling centers.

Action SE 4.2c Equip community-serving facilities with heat pump HVAC systems to reduce energy use while maintaining comfortable indoor temperatures.

Action SE 4.2d Include energy efficiency, all-electric equipment, water efficiency, renewable energy, and battery energy storage systems as feasible into project designs during retrofits to critical public facilities.

Action SE 4.2e Perform an audit of water use and associated appliances at all municipal facilities and propose a retrofit plan.

Action SE 4.2f Encourage and support local and regional transportation providers to complete a study of existing air quality impacts of transportation infrastructure and provide recommendations on how to improve air quality through infrastructure design.

Action SE 4.2g Incorporate OneShoreline's Public Infrastructure Guidance into capital improvement planning to ensure public infrastructure projects adequately account for flooding, sea level rise, and emergent groundwater in project siting, design, and implementation.

Action SE 4.2h Analyze and plan capital projects vulnerable to sea level rise and/or emergent groundwater, as shown in **Figure 8** and **Figure 9**, over the life of the project (at least 50 years), in accordance with the County's Sea Level Rise Policy for County Assets. Evaluate an adaptation pathway for capital projects based on project lifespan, vulnerability to damage and closure during a storm event, and risk of costly repairs and impact of disruption of public services.

Action SE 4.2i Require capital improvement projects in sea level rise hazard areas to include a qualitative or quantitative assessment of costs, benefits, and avoided costs of proposed adaptation strategies over the project lifecycle, including comparison of adaptation options.

Policy SE 4.3 Utility Resilience

Work with utility providers and local agencies to identify and prioritize at-risk utility infrastructure and incorporate utility resilience into regional adaptation planning.

Hazard(s): Seismic Hazards, Geologic Hazards, Flooding, Sea Level Rise, Severe Weather, Fire Hazards

Responsible Department(s): Department of Emergency Management, Planning and Building Department

Supporting Agencies: Department of Public Works, Parks Department, fire agencies, local utilities (including power, gas, water, sewer, and communication), OneShoreline, Sustainability Department

Action SE 4.3a Collaborate with the Pacific Gas and Electric Company to underground electrical transmission infrastructure throughout the county, prioritizing high-voltage transmission lines within High or Very High Fire Hazard Severity Zones.

Action SE 4.3b Require the undergrounding of electrical lines for major new construction projects in, and adjacent to, Fire Hazard Severity Zones.

Action SE 4.3c Seek funding, in coordinating with the California Public Utilities Commission and other relevant agencies, to support the relocation and protection of at-risk underground utility infrastructure.

Policy SE 4.4 Utilities Crossing Fault Lines

Design and construct new County facilities and utility infrastructure that cross active fault traces to accommodate horizontal and/or vertical displacement. Equip utility lines that cross active fault traces with shut-off devices and flexible materials, using the best-available technology. Work with other agencies and utility companies to provide similar features for facilities and infrastructure not owned by the County.

Hazard(s): Seismic Hazards

Responsible Department(s): Department of Public Works

Supporting Agencies: Planning and Building Department, Department of Emergency Management

Action SE 4.4a Partner with large utility providers to seek funding to develop a Utilities Resilience Program. This program shall examine all existing utility lines that cross active fault traces to determine their ability to survive fault movement and the necessary modifications to withstand anticipated movement.

Policy SE 4.5 Critical Facilities Energy Resilience

Perform an energy resilience needs assessment across critical County facilities and explore funding opportunities to support improvements.

Hazard(s): Seismic Hazards, Flooding, Severe Weather, Fire Hazards

Responsible Department(s): Department of Public Works, Sustainability Department

Supporting Agencies: Planning and Building Department, San Mateo County Resource Conservation District, Parks Department, Peninsula Clean Energy

Action SE 4.5a Consider and evaluate opportunities to install solar and battery storage at County facilities, and to phase out methane gas cogeneration at facilities, in alignment with the Government Operations Climate Action Plan.

Policy SE 4.6 Storm Drain Retrofits and Maintenance

Periodically review the County's annual maintenance program for storm drains to evaluate capacity upgrades against projected rainfall intensity curves to increase the capacity of the storm drains in consideration of more frequent and extreme storms and sea level rise. Build,

retrofit, and maintain storm drain systems to provide safe conveyance, treatment, and management of stormwater as sea level and groundwaters rise, flooding increases, and rainfall changes over time.

Hazard(s): Flooding, Sea Level Rise

Responsible Department(s): Department of Public Works, Sustainability Department

Supporting Agencies: OneShoreline, Parks Department, San Mateo County Resource Conservation District, Department of Emergency Management, City/County Association of Governments (C/CAG)

Action SE 4.6a Periodically explore amending the stormwater ordinance to ensure continued safe and effective drainage under at least a medium-high precipitation, sea level rise, and emergent groundwater risk aversion scenario by 2100, based on availability of new data and OneShoreline guidance for Resilient Public Infrastructure.

Action SE 4.6b In sizing system upgrades, incorporate future tidal backwater and joint rainfall–tide events, explore redundant pumping capacity, and provide backflow prevention is designed for Base Food Elevation plus 6 feet of water levels.

Policy SE 4.7 Dams and Levee Monitoring and Upgrades

Partner with OneShoreline and other agencies to ensure dams, levees, creeks, flood channels, and canals throughout the county are maintained, monitored, and upgraded to address priority vulnerabilities, meet current engineering and environmental standards, and support adaptation to future flood conditions.

Hazard(s): Seismic Hazards, Flooding

Responsible Department(s): OneShoreline, Department of Public Works

Supporting Agencies: Department of Emergency Management, Parks Department, Planning and Building Department, Sustainability Department, San Mateo County Resource Conservation District, San Francisco Public Utilities Commission (for dams)

Action SE 4.7a Develop a priority list of facilities most in need of maintenance, inspection, retrofit, or replacement based on public safety risk, regulatory standards, and community vulnerability.

Policy SE 4.8 Fire Breaks

Ensure any proposed fuel breaks and other fire defense improvements on public and private property are adequately funded and maintained in perpetuity in compliance with California Fire Code, California Wildland-Urban Interface Code, and local adopted ordinances.

Hazard(s): Fire Hazards

Responsible Department(s): Fire Agencies

Supporting Agencies: County Executive's Office, Parks Department, Department of Public Works, Department of Emergency Management

Policy SE 4.9 **Shade Cover in Public and Private Spaces**

Install and maintain drought-tolerant trees, shade structures, and landscaped areas as part of cooling strategies in public and private spaces.

Hazard(s): Extreme Heat

Responsible Department(s): Department of Public Works, Parks Department, Planning and Building Department

Supporting Agencies: SamTrans, Caltrain, BART, Sustainability Department

Action SE 4.9a Ensure extreme heat mitigation strategies and design features are considered in the County budget and Capital Improvement Program regular processes.

Action SE 4.9b Coordinate with SamTrans, Caltrain, and other transit providers to increase shading and use of heat-mitigating materials at transit stops.

Action SE 4.9c Develop and implement heat mitigation strategies in partnership with community-based organizations.

Policy SE 4.10 **County-Owned Drought-Resistant Landscapes**

Retrofit County-owned landscapes to increase the amount of drought-resistant and/or native plant landscaping.

Hazard(s): Drought

Responsible Department(s): Department of Public Works

Supporting Agencies: N/A

13.5 Program and Plan Policies

Policy SE 5.1 **Local Hazard Mitigation Plan Integration**

Incorporate the current San Mateo County Multijurisdictional Local Hazard Mitigation Plan, as approved by the Federal Emergency Management Agency, into this Safety Element by reference, as permitted by California Government Code Section 65302.6.

Hazard(s): All Hazards, Seismic Hazards, Geologic Hazards, Flooding, Sea Level Rise, Severe Weather, Fire Hazards, Extreme Heat, Drought, Infectious and Vector-Borne Diseases, Hazardous Materials

Responsible Department(s): Department of Emergency Management

Supporting Agencies: Fire agencies, Sheriff, Department of Public Works, San Mateo County Health, Planning and Building Department

Action SE 5.1a Review and update the San Mateo County Multijurisdictional Local Hazard Mitigation Plan every five years.

Policy SE 5.2 **All-Hazards Evacuation Plan**

In coordination with incorporated communities, complete and implement the All-Hazards Evacuation Plan, and review and update the Plan during updates to the Multijurisdictional Local Hazard Mitigation Plan or as circumstances warrant.

Hazard(s): Seismic Hazards, Geologic Hazards, Flooding, Sea Level Rise, Severe Weather, Fire Hazards, Extreme Heat, Drought, Infectious and Vector-Borne Diseases, Hazardous Materials

Responsible Department(s): Department of Emergency Management

Supporting Agencies: Fire agencies, Sheriff, Department of Public Works, Planning and Building Department

Policy SE 5.3 **Coordination for Effective Evacuations**

Coordinate with transit agencies, school districts, community service organizations, and faith-based organizations to assist with evacuation efforts, ensuring evacuation services are available to vulnerable populations, including those with limited English proficiency, limited mobility, or limited access to transportation, communication, and other lifeline resources and services.

Hazard(s): Seismic Hazards, Geologic Hazards, Flooding, Sea Level Rise, Severe Weather, Fire Hazards, Extreme Heat, Drought, Infectious and Vector-Borne Diseases, Hazardous Materials

Responsible Department(s): Department of Emergency Management

Supporting Agencies: Fire agencies, Sheriff, County Executive's Office-Communications and Public Information, San Mateo County Health, Planning and Building Department, Department of Public Works, Parks Department

Action SE 5.3a Coordinate with local animal rescue organizations, veterinary professionals, and emergency services to improve evacuation planning for livestock and animals, including identifying and publicizing suitable locations for temporary animal holding, developing protocols for safe transport, and incorporating animal care considerations into emergency preparedness outreach and drills.

Policy SE 5.4 Emergency Operations Plan

Maintain and update as needed an Emergency Operations Plan that meets current and anticipated community needs in the event of a major disaster or hazardous event and conforms with the California Standardized Emergency Management System (SEMS).

Hazard(s): Seismic Hazards, Geologic Hazards, Flooding, Sea Level Rise, Severe Weather, Fire Hazards, Extreme Heat, Drought, Infectious and Vector-Borne Diseases, Hazardous Materials

Responsible Department(s): Department of Emergency Management

Supporting Agencies: Fire agencies, Sheriff, Department of Public Works, San Mateo County Health, Planning and Building Department, County Executive's Office-Communications & Public Information

Action SE 5.4a Establish direct feedback channels for residents, community leaders, and local community-based organizations throughout the Emergency Operations Plan process. This might include the establishment of a task force, advisory committee, or other community-led leadership opportunity for those who are most passionate about being a part of the development of this resource and reduce barriers to their participation through direct outreach and compensation for their participation and expertise.

Policy SE 5.5 Coordination Between Public Health and Emergency Response

Promote coordination between public health agencies and emergency response organizations.

Hazard(s): Seismic Hazards, Geologic Hazards, Flooding, Sea Level Rise, Severe Weather, Fire Hazards, Extreme Heat, Drought, Infectious and Vector-Borne Diseases, Hazardous Materials

Responsible Department(s): San Mateo County Health, Department of Emergency Management

Supporting Agencies: N/A

Action SE 5.5a Ensure that San Mateo County Health is consulted in the development of any Emergency Operations Plan.

Policy SE 5.6 Healthcare Resiliency

Work with local community partners to address health inequities throughout the community, to help increase residents' resilience to natural hazards.

Hazard(s): Seismic Hazards, Geologic Hazards, Flooding, Sea Level Rise, Severe Weather, Fire Hazards, Extreme Heat, Drought, Infectious and Vector-Borne Diseases, Hazardous Materials

Responsible Department(s): San Mateo County Health

Supporting Agencies: N/A

Action SE 5.6a Prioritize efforts to address health inequities in unincorporated communities that are underserved and/or have limited access to healthcare facilities and are highly vulnerable to hazards, as identified in the Vulnerability Assessment (Appendix B).

Action SE 5.6b Support efforts to increase health insurance coverage, connect patients to medical homes, and improve access to timely and culturally appropriate healthcare.

Action SE 5.6c Engage with community through the Community Health Improvement Plan process to help inform strategies used to improve healthcare resiliency.

Policy SE 5.7 Community Emergency Response Team

Collaborate with the Sheriff's Department to support Community Emergency Response Team (CERT) training for residents and members of the business community to increase disaster awareness and emergency response capability.

Hazard(s): Seismic Hazards, Geologic Hazards, Flooding, Sea Level Rise, Severe Weather, Fire Hazards, Extreme Heat, Drought, Infectious and Vector-Borne Diseases, Hazardous Materials

Responsible Department(s): Department of Emergency Management

Supporting Agencies: Fire agencies, Sheriff, Department of Public Works, OneShoreline, Sustainability Department, Planning and Building Department

Action SE 5.7a Regularly update Community Emergency Response Team training materials on hazards and related risks identified in the San Mateo County Vulnerability Assessment or the best-available climate science data.

Policy SE 5.8 Coordination of Emergency Services

Maintain adequate response times and capabilities through regional partnerships and mutual-aid agreements with emergency service and medical service providers.

Hazard(s): Seismic Hazards, Geologic Hazards, Flooding, Sea Level Rise, Severe Weather, Fire Hazards, Extreme Heat, Infectious and Vector-Borne Diseases, Hazardous Materials

Responsible Department(s): Department of Emergency Management

Supporting Agencies: Fire agencies, Sheriff, San Mateo County Health

Policy SE 5.9 Coordination of Emergency Facilities and Resilience Centers

Coordinate with cities, school districts, recreation and park districts, and community-based organizations to ensure adequate and equitably located emergency shelters, community resilience centers, and alternate care sites are available when natural disasters and other hazardous conditions occur. Support the creation of Resilience Centers to provide community members with essential services before, during, and after hazard events, by partnering with community groups and residents of Environmental Justice Priority communities to establish location, programming, and activation of hubs and other place-based resilience resources.

Hazard(s): Seismic Hazards, Geologic Hazards, Flooding, Sea Level Rise, Severe Weather, Fire Hazards, Extreme Heat, Infectious and Vector-Borne Diseases, Hazardous Materials

Responsible Department(s): Department of Emergency Management, Sustainability Department, County Libraries

Supporting Agencies: Fire agencies, Sheriff, County Executive's Office-Communications & Public Information, San Mateo County Health, Technology Services Department, Department of Housing, Planning and Building Department, OneShoreline, Human Services Agency

Action SE 5.9a Identify and map existing community facilities, such as libraries, gymnasiums, community centers, and auditoriums, that can serve as community resilience centers and support people with access and functional needs during hazard events. Work with the owners of these facilities to identify and implement upgrades, prioritizing facilities in impacted communities.

Action SE 5.9b Share information on resilience centers, cooling centers, and alternate care sites with local transit providers to cross-promote and reach individuals with fewer mobility options.

Action SE 5.9c Support local efforts to secure grant funding for developing and maintaining community resilience centers, including training for resident area captains, procurement of emergency supplies, and regular awareness and educational events to build community capacity for self-sufficiency.

Policy SE 5.10 Mobile Resilience Resources

Explore opportunities to develop mobile providers of water, backup power, and medical supplies that can be deployed to vulnerable communities during extreme heat events, power outages, and other emergencies.

Hazard(s): Seismic Hazards, Geologic Hazards, Flooding, Severe Weather, Fire Hazards, Extreme Heat, Drought

Responsible Department(s): San Mateo County Health, Department of Emergency Management

Supporting Agencies: Sustainability Department

Action SE 5.10a Complete a pilot mobile heat-resilience program that provides water, backup power, and medical supplies to vulnerable communities during extreme heat events or other relevant emergencies.

Policy SE 5.11 Reconstruction and Recovery Planning

Secure funding and prepare a recovery plan and standards to guide reconstruction efforts after a landslide, flood, fire, earthquake, or other significant disaster. Direct reconstruction outside of hazard-prone areas to the greatest extent feasible, including through the use of mechanisms to transfer development potential. Focus on community resilience, equity, and sustainability for reconstruction and recovery efforts.

Hazard(s): Seismic Hazards, Geologic Hazards, Flooding, Sea Level Rise, Severe Weather, Fire Hazards

Responsible Department(s): Planning and Building Department, Department of Emergency Management, County Executive Officer

Supporting Agencies: Department of Public Works, OneShoreline, Sustainability Department, San Mateo County Resource Conservation District

Policy SE 5.12 Emergency Power Supplies

Encourage private property owners to install emergency power supplies, including solar panels and battery energy storage systems, at residential and nonresidential properties.

Hazard(s): Seismic Hazards, Flooding, Severe Weather, Fire Hazards

Responsible Department(s): Sustainability Department

Supporting Agencies: Planning and Building Department, Peninsula Clean Energy

Policy SE 5.13 Wildlife Corridors

Identify wildlife corridors with consideration of projected climate changes and the effects to ecosystems and habitat to reduce habitat fragmentation and threats to ecosystem health.

Hazard(s): Flooding, Sea Level Rise, Severe Weather, Fire Hazards, Extreme Heat, Drought

Responsible Department(s): Parks Department

Supporting Agencies: Midpeninsula Regional Open Space District, Golden Gate National Recreation Area, San Mateo County Resource Conservation District, Department of Public Works

Action SE 5.13a Continue to work with conservation agencies to identify appropriate locations and methods for incorporating wildlife crossings, fish passage, and migration corridors, into future road projects.

Action SE 5.13b Evaluate the potential for conducting a countywide biodiversity and connectivity assessment to understand the potential impacts of climate change.

Policy SE 5.14 Habitat Restoration

Prioritize California native and non-invasive plant species that are adapted to future climate change in habitat restoration projects.

Hazard(s): Flooding, Sea Level Rise, Severe Weather, Fire Hazards, Extreme Heat, Drought

Responsible Department(s): Parks Department

Supporting Agencies: San Mateo County Resource Conservation District, Midpeninsula Regional Open Space District

Policy SE 5.15 Farmworker Protection from Hazards

Collaborate with community-based organizations and labor unions to ensure farmworkers have adequate protection against climate change hazards, including loss of work due to reduced crop yields.

Hazard(s): Flooding, Sea Level Rise, Severe Weather, Fire Hazards, Extreme Heat, Drought, Infectious and Vector-Borne Diseases

Responsible Department(s): Agriculture/Weights and Measures, San Mateo County Health, San Mateo County Agricultural Ombudsman, Sustainability Department, Human Services Agency

Supporting Agencies: N/A

Policy SE 5.16 Home-Hardening Assistance

Partner with community-based organizations to provide financial assistance to low-resourced households to harden homes against flooding, fire, and other natural hazards.

Hazard(s): Seismic Hazards, Geologic Hazards, Flooding, Sea Level Rise, Severe Weather, Fire Hazards, Extreme Heat

Responsible Department(s): Planning and Building Department, OneShoreline, Sustainability Department

Supporting Agencies: County Executive's Office, Resource Conservation District

Action SE 5.16a Explore creating a program or expanding an existing program, like OneShoreline's Home Protection and Insurability Initiative, in partnership with community-based organization partners to provide grants or materials (e.g., flood vents, sump pumps, flood barriers) for low-resourced households to assist with home-hardening.

Policy SE 5.17 Property Insurance

Collaborate with incorporated jurisdictions and local community-based organizations in the county to evaluate opportunities to preserve and improve the cost and quality of rental and property insurance for community members.

Hazard(s): All Hazards, Seismic Hazards, Geologic Hazards, Flooding, Sea Level Rise, Severe Weather, Fire Hazards, Extreme Heat, Drought, Infectious and Vector-Borne Diseases, Hazardous Materials

Responsible Department(s): OneShoreline

Supporting Agencies: Sustainability Department, Department of Housing,

Action SE 5.17a Establish an interjurisdictional working group to investigate solutions for lowering insurance premiums and expanding coverage for property owners and renters.

Action SE 5.17b Coordinate with OneShoreline and community groups to explore the feasibility of creating a parametric insurance model for areas in flood-prone areas, including both inland and shoreline flooding.

Action SE 5.17c Partner with major private insurers to establish pilot projects that reduce wildfire or flood risk at both the property and community scales, and to ensure that private insurance that is priced to reflect risk reduction actions.

Policy SE 5.18 **Flood Insurance Adoption**

Increase uptake in flood insurance by households that are not required to purchase insurance, but that reside in areas with increasing flood risk.

Hazard(s): Flooding

Responsible Department(s): OneShoreline, Planning and Building Department

Supporting Agencies: County Executive's Office, Department of Emergency Management, Department of Housing, Sustainability Department, County Executive's Office-Communications & Public Information

Action SE 5.18a Conduct a study to analyze various methods to increase uptake in flood insurance.

Policy SE 5.19 **Federal Emergency Management Agency Community Rating System**

Improve the county's rating in the Federal Emergency Management Agency's National Flood Insurance Program's Community Rating System (CRS) and realize the full extent of the program's benefits.

Hazard(s): Flooding

Responsible Department(s): Planning and Building Department

Supporting Agencies: Department of Emergency Management, OneShoreline, Department of Public Works, Sustainability Department

Action SE 5.19a Conduct a gap analysis of current County activities against Community Rating System-creditable activities and identify priority actions to improve the rating.

Action SE 5.19b Provide training for County staff and establish procedures to track and document Community Rating System-creditable activities.

Policy SE 5.20 **Multi-Benefit Flood Projects**

Advance flood management and stormwater quality projects providing multiple benefits, including reduced flood risk, enhanced habitat, water quality, climate adaptation, groundwater recharge, recreation, complete streets, community safety, and resilience.

Hazard(s): Flooding

Responsible Department(s): Department of Public Works, OneShoreline, Sustainability Department

Supporting Agencies: Planning and Building Department, San Mateo Resource Conservation District, Parks Department, City/County Association of Governments of San Mateo County

Action SE 5.20a In partnership with OneShoreline, Resource Conservation District, local jurisdictions, property owners, and community-based organizations, identify, prioritize, and implement riparian corridor and channel restoration and maintenance projects that reduce flood risk, enhance habitat, and improve stormwater conveyance.

Action SE 5.20b Seek funding to complete riparian corridor and water channel restoration and maintenance projects.

Policy SE 5.21 South Coast Stormwater Management

Continue efforts to secure funding for implementing stormwater management plans and systems for South Coast watersheds and communities most seriously threatened by flood hazards.

Hazard(s): Flooding

Responsible Department(s): Sustainability Department, San Mateo Resource Conservation District

Supporting Agencies: Department of Public Works, OneShoreline, Planning and Building Department, Parks Department, City/County Association of Governments of San Mateo County

Policy SE 5.22 Multijurisdictional Flood Resilience Collaboration

Collaborate with OneShoreline, Resource Conservation District, incorporated communities, and local districts and Joint Power Authorities to address watershed-based flooding problems on public and private properties. Work with federal, State, and local agencies to achieve cooperative solutions to flooding hazards that are multijurisdictional in nature.

Hazard(s): Flooding

Responsible Department(s): Sustainability Department, Planning and Building Department

Supporting Agencies: OneShoreline, Department of Public Works, Parks Department, San Mateo Resource Conservation District, City/County Association of Governments of San Mateo County

Policy SE 5.23 Landfill Closures

Ensure existing landfill facilities meet current and future closure safety standards and requirements and are resilient to potential impacts from natural hazards.

Hazard(s): Geologic Hazards, Coastal Erosion, Sea Level Rise, Flooding

Responsible Department(s): Department of Public Works

Supporting Agencies: Sustainability Department, OneShoreline, San Mateo County Health

Action SE 5.23a Monitor closed landfill sites to identify potential pollution sources, and locations where closure activities may be threatened by hazard conditions.

Policy SE 5.24 Collaboration with Local Community

Ensure efforts to increase resilience to the impacts of flooding, sea level rise, coastal erosion, and other natural hazards in unincorporated communities occurs in a manner that incorporates the knowledge and experiences of residents through a collaborative process that engages community members, community-based organizations, and private entities.

Hazard(s): *Flooding, Sea Level Rise, Geologic Hazards, Coastal Erosion*

Responsible Department(s): *Sustainability Department, Department of Emergency Management, Planning and Building Department*

Supporting Agencies: *OneShoreline, Parks Department, Department of Public Works, San Mateo Resource Conservation District, County Executive's Office-Communications and Public Information*

Action SE 5.24a Co-create flood preparation and response action plans with community members and community-based organizations to increase community and individual resilience to flood events, complementing technical expertise of flood hazards and emergency response with local knowledge of what happens in the community during a flood emergency.

Policy SE 5.25 Coordinated Sea Level Rise Adaptation

Coordinate with OneShoreline, adjacent jurisdictions, neighboring counties, and regional, State, and federal agencies to develop and implement coordinated approaches to sea level rise with other jurisdictions and asset owners in San Mateo County.

Hazard(s): *Sea Level Rise, Geologic Hazards*

Responsible Department(s): *Planning and Building Department, Sustainability Department, Department of Public Works*

Supporting Agencies: *OneShoreline, Resource Conservation District*

Policy SE 5.26 Strategic Relocation and Managed Retreat

Consider strategic relocation, managed retreat, and mechanisms to transfer development potential out of high-risk coastal areas as tools to protect communities and infrastructure from harm due to sea level rise, emergent groundwater, and coastal erosion.

Hazard(s): *Sea Level Rise, Geologic Hazards*

Responsible Department(s): *Planning and Building Department, Sustainability Department*

Supporting Agencies: *OneShoreline*

Action SE 5.26a Partner with OneShoreline, surrounding jurisdictions, community-based organizations, and service providers to conduct a managed retreat feasibility study for areas subject to sea level rise, emergent groundwater, or coastal erosion. The study should identify public and critical assets at risk and the cost of facilitating managed retreat and summarize equity, affordable housing, economic, environmental, and legal implications. As part of this study, identify priority zones within the affected areas to initially focus on.

Policy SE 5.27 Sea Level Rise Adaptation Plan

Develop a comprehensive sea level rise adaptation plan, consistent with Senate Bill 272 requirements, to be incorporated into the County's Local Coastal Program and coordinated with the California Coastal Commission and San Francisco Bay Conservation and Development Commission (BCDC), as applicable, using best-available science. Ensure shoreline adaptation strategies are consistent with regional standards and tailored to address local flood risks,

emergent groundwater, habitat opportunities, and community needs. Work with incorporated communities and OneShoreline to ensure local shoreline adaptation plans reflect County policies, projects, and funding priorities.

Hazard(s): Sea Level Rise, Flooding

Responsible Department(s): Planning and Building Department

Supporting Agencies: OneShoreline, Department of Public Works, Sustainability Department, Parks Department, San Mateo Resource Conservation District

Policy SE 5.28 Encourage Pre-Fire Planning Efforts

Work with fire protection agencies to prepare pre-fire plans that identify hazardous subareas of the county, how fire response will be coordinated, and how evacuation of residents will proceed.

Hazard(s): Fire Hazards

Responsible Department(s): Fire agencies

Supporting Agencies: Department of Emergency Management, Department of Public Works, Parks, Emergency Services Councils, Fire Safe Councils

Action SE 5.28a Work with local fire safe councils, CAL FIRE San Mateo-Santa Cruz Unit, and other fire protection agencies to update and implement the Community Wildfire Protection Plan for San Mateo County.

Policy SE 5.29 County Staff Training

Provide programs for ongoing staff training focused on understanding fire hazard risks posed by older structures and infrastructure, as well as risk-reduction activities.

Hazard(s): Fire Hazards

Responsible Department(s): Department of Emergency Management

Supporting Agencies: Fire agencies, Planning and Building Department

Policy SE 5.30 Long-term Maintenance of Fire Hazard Reduction Projects

Coordinate with local and regional agencies to require vegetation management and long-term maintenance of fire hazard reduction projects (including community fire breaks) on all private and public roads and properties in fire hazard severity zones, as shown on **Figure 10**.

Hazard(s): Fire Hazards

Responsible Department(s): Department of Emergency Management

Supporting Agencies: Fire agencies, Department of Public Works, Parks, Sustainability Department

Action SE 5.30a Coordinate with the County Fire Departments, CalFire, local Fire Safe Councils and other relevant County jurisdictions and departments on regional vegetation management and fire hazard reduction projects.

Policy SE 5.31 Transit Access for Spare the Air Days

Coordinate with regional transit agencies to provide free or reduced-cost public transportation during Spare the Air days to reduce vehicle emissions.

Hazard(s): Fire Hazards

Responsible Department(s): Planning and Building Department, Sustainability Department

Supporting Agencies: SamTrans

Policy SE 5.32 Clean Air Facilities

Support and secure funding for clean air facilities that provide refuge during poor air quality events. This includes maintaining the existing permanent clean air facilities, incorporating air filtration systems in new and renovated resilience centers, supporting comparable private facilities, and prioritizing locations accessible to transit-dependent and vulnerable populations.

Hazard(s): Fire Hazards

Responsible Department(s): Sustainability Department, Department of Emergency Management

Supporting Agencies: SamTrans

Action SE 5.32a Work with local and regional transportation providers to ensure that vulnerable populations, including older adults, individuals without access to reliable transportation, and individuals with disabilities or chronic health conditions, have access to clean air facilities on poor air quality days.

Policy SE 5.33 Coordinating Heat Resilience Strategies

Pursue partnerships and funding opportunities with regional, State, and federal agencies, as well as private and nonprofit sectors, to implement heat-effective resilience strategies.

Hazard(s): Extreme Heat

Responsible Department(s): Sustainability Department, Department of Emergency Management

Supporting Agencies: San Mateo County Health

Action SE 5.33a Identify staff who can lead heat resilience strategy development and inter-agency coordination.

Policy SE 5.34 Urban Tree Canopy

Preserve and expand the urban tree canopy to lessen the impacts of extreme heat and support carbon sequestration.

Hazard(s): Extreme Heat

Responsible Department(s): Department of Public Works, Parks Department, Planning and Building Department

Supporting Agencies: Sustainability Department

Action SE 5.34a Secure funding for and develop an urban greening plan to expand the tree canopy, prioritizing areas with little or no tree coverage, and maintain the urban forest to increase resilience of the forest (maintain soil moisture and healthy root systems) and prune or remove and replant appropriately to reduce the number of downed trees.

Policy SE 5.35 Regional Water Supply Coordination

Work with regional water providers to prepare for a reduced long-term water supply resulting from more frequent and severe drought events to implement extensive water conservation measures and ensure sustainable water supplies, including fire suppression needs.

Hazard(s): Fire Hazards, Drought

Responsible Department(s): Sustainability Department

Supporting Agencies: Fire agencies, City/County Association of San Mateo County, Bay Area Water Supply and Conservation Agency, OneShoreline

Action SE 5.35a Coordinate with water providers to continue to invest in programs that help residential and nonresidential customers save water and money by using the most efficient appliances and fixtures, fixing leaks, and practicing water-wise landscaping and indoor water consumption.

Action SE 5.35b Coordinate with water providers to maintain and enhance water supply infrastructure to ensure adequate supplies for existing and future daily demands and firefighting suppression requirements.

Policy SE 5.36 Regional Coordination for Improved Air Quality

Collaborate with the Bay Area Air District and surrounding jurisdictions to address regional air quality impacts and implement coordinated response strategies.

Hazard(s): Fire Hazards

Responsible Department(s): Planning and Building Department, San Mateo County Health, Department of Emergency Management, Sustainability Department

Supporting Agencies: Bay Area Air District

Action SE 5.36a Consult with the Bay Area Air District and community stakeholders and prepare an Air Quality Community Risk Reduction Plan that applies to areas with high levels of air pollution and associated health risks, providing a comprehensive strategy to protect community members from the negative health effects of air pollution.

Action SE 5.36b Support implementation of the Bay Area Air District's Wildfire Emission Response Program through data sharing, public communications, emergency response coordination, and resource deployment.

Policy SE 5.37 **Environmental Justice and Capital Improvement Projects**

Integrate air quality considerations into the planning of Capital Improvement Projects, with emphasis on reducing exposure for environmental justice communities and other vulnerable populations.

Hazard(s): Air Quality

Responsible Department(s): Department of Public Works

Supporting Agencies: Sustainability Department, San Mateo County Health

Action SE 5.37a Create a checklist of air quality considerations to be referenced when planning and scoping Capital Improvement Projects.

Policy SE 5.38 **Clean Air Filtration Program**

Expand participation in Bay Area Air District's Clean Air Filtration Program by supporting residential filter installation and maintenance. Partner with community-based organizations for program implementation, prioritizing environmental justice communities and vulnerable populations.

Hazard(s): Fire Hazards

Responsible Department(s): Department of Emergency Management, Sustainability Department

Supporting Agencies: San Mateo County Health

Policy SE 5.39 **Collaboration on Pest Outbreaks**

Facilitate collaboration amongst growers, universities, and agricultural companies to share data on pest outbreaks and trends to improve monitoring, building on the County's existing Pest Exclusion program and pest identification services provided by Agriculture/Weights and Measures.

Hazard(s): Severe Weather, Extreme Heat, Drought

Responsible Department(s): Agriculture/Weights and Measures

Supporting Agencies: San Mateo County Resource Conservation District

Action SE 5.39a Identify staff to consult with businesses, universities, and other organizations to facilitate data sharing on pest trends.

Policy SE 5.40 **Integrated Pest Management**

Encourage the use of integrated pest management methods to reduce the exposure of farmworkers and nearby communities to pesticides.

Hazard(s): Extreme Heat, Drought, Hazardous Materials

Responsible Department(s): Agriculture/Weights and Measures

Supporting Agencies: San Mateo County Resource Conservation District

Policy SE 5.41 **Regenerative Agriculture**

Promote regenerative agriculture and landscaping techniques that improve soil health and ecosystem functioning to increase resilience to climate change hazards.

Hazard(s): Flooding, Severe Weather, Fire Hazards, Extreme Heat, Drought

Responsible Department(s): San Mateo County Resource Conservation District, Sustainability Department, Agriculture/Weights and Measures

Supporting Agencies: N/A

Action SE 5.41a Work with the agricultural community and University of California (UC) Cooperative Extension to promote education, training, information-sharing programs, and networking opportunities for farmers, ranchers, and agricultural agencies to increase agriculture's resilience to climate change hazards.

Policy SE 5.42 **Polyculture and Agroforestry**

Promote polyculture and agroforestry systems that integrate trees, shrubs, and other crop varieties into agricultural landscapes to increase biodiversity, ecosystem health, and resilience to climate change hazards.

Hazard(s): Flooding, Severe Weather, Fire Hazards, Extreme Heat, Drought

Responsible Department(s): Agriculture/Weights and Measures

Supporting Agencies: San Mateo County Resource Conservation District

Policy SE 5.43 **Invasive Species Management**

Collaborate with State agencies, regional land managers like Midpeninsula Regional Open Space District, Golden Gate National Recreation Area, and neighboring local agencies to align invasive species management efforts across jurisdictions.

Hazard(s): Flooding, Severe Weather, Fire Hazards, Extreme Heat, Drought

Responsible Department(s): Parks and Recreation

Supporting Agencies: San Mateo County Resource Conservation District

Policy SE 5.44 **Vector Control**

Maintain comprehensive vector control efforts that address changing environmental conditions and disease patterns.

Hazard(s): Extreme Heat, Drought

Responsible Department(s): Mosquito and Vector Control District, San Mateo County Health

Supporting Agencies: N/A

Policy SE 5.45 Tribal Coordination

Collaborate with local tribes to incorporate Traditional Ecological Knowledge and cultural heritage into the selection of native plant species for public and private landscaping, habitat restoration, and infrastructure projects.

Hazard(s): Flooding, Severe Weather, Fire Hazards, Extreme Heat, Drought

Responsible Department(s): Parks Department, Department of Public Works, County Executive's Office

Supporting Agencies: San Mateo County Resource Conservation District, Midpeninsula Regional Open Space District, OneShoreline

Policy SE 5.46 Regional Coordination for Managing Forests

Collaborate with federal, State, tribal, and regional partners to proactively manage forested lands to reduce fire risks and pest outbreaks.

Hazard(s): Flooding, Severe Weather, Fire Hazards, Extreme Heat, Drought

Responsible Department(s): Parks Department, fire agencies, Agriculture/Weights and Measures

Supporting Agencies: San Mateo County Resource Conservation District

Policy SE 5.47 Climate Change-Induced Ecosystem Changes

Anticipate and accommodate ecosystem changes caused by climate change in land use planning and management practices, ensuring long-term ecological health, community safety, and climate resilience.

Hazard(s): Flooding, Severe Weather, Fire Hazards, Extreme Heat, Drought

Responsible Department(s): Planning and Building Department, Parks Department

Supporting Agencies: San Mateo County Resource Conservation District, OneShoreline

Policy SE 5.48 Marine Ecosystem Conservation

Support restoration of eelgrass beds, kelp forests, and salt marshes, which sequester carbon and locally buffer against ocean acidification.

Hazard(s): Ocean Acidification

Responsible Department(s): OneShoreline, Planning and Building Department

Supporting Agencies: San Mateo County Resource Conservation District, San Mateo County Harbor District

Policy SE 5.49 **Drought Resilience Plan**

Implement the Drought Resilience Plan and update as needed every five years, corresponding with updates of the Safety Element. Implement the short-term response actions as needed to provide immediate relief during drought emergencies and water shortage events. Implement the long-term mitigation strategies on an ongoing basis to reduce future vulnerabilities.

Hazard(s): Drought

Responsible Department(s): San Mateo County Health, Sustainability Department, Planning and Building Department, Department of Emergency Management

Supporting Agencies: Office of Community Affairs, Fire Agencies, Resource Conservation District, OneShoreline, County Parks, C/CAG, Department of Public Works

Action SE 5.49a Continue meetings of the County Water Shortage Task Force to facilitate Drought Resilience Plan implementation and overall drought preparedness for State Small Water Systems and domestic wells.

Policy SE 5.50 **Monitoring and Response to Disease Outbreaks**

Continue to implement coordinated monitoring and response to disease outbreaks or other public health hazards across jurisdictional boundaries that consider the needs of priority vulnerability populations.

Hazard(s): Infectious and Vector-Borne Diseases

Responsible Department(s): San Mateo County Health

Supporting Agencies: Department of Emergency Management

14. ENDNOTES

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