This report was previously released by **Resist Density**. We are re-releasing it under our new name "**Midcoast ECO**". The report is otherwise unchanged.

EMERGENCY/DISASTER PREPAREDNESS ON THE SAN MATEO COUNTY MIDCOAST – April 30, 2019

June 19, 2019 Update

JQ Oeswein
Midcoast ECO Board Member

Executive Summary

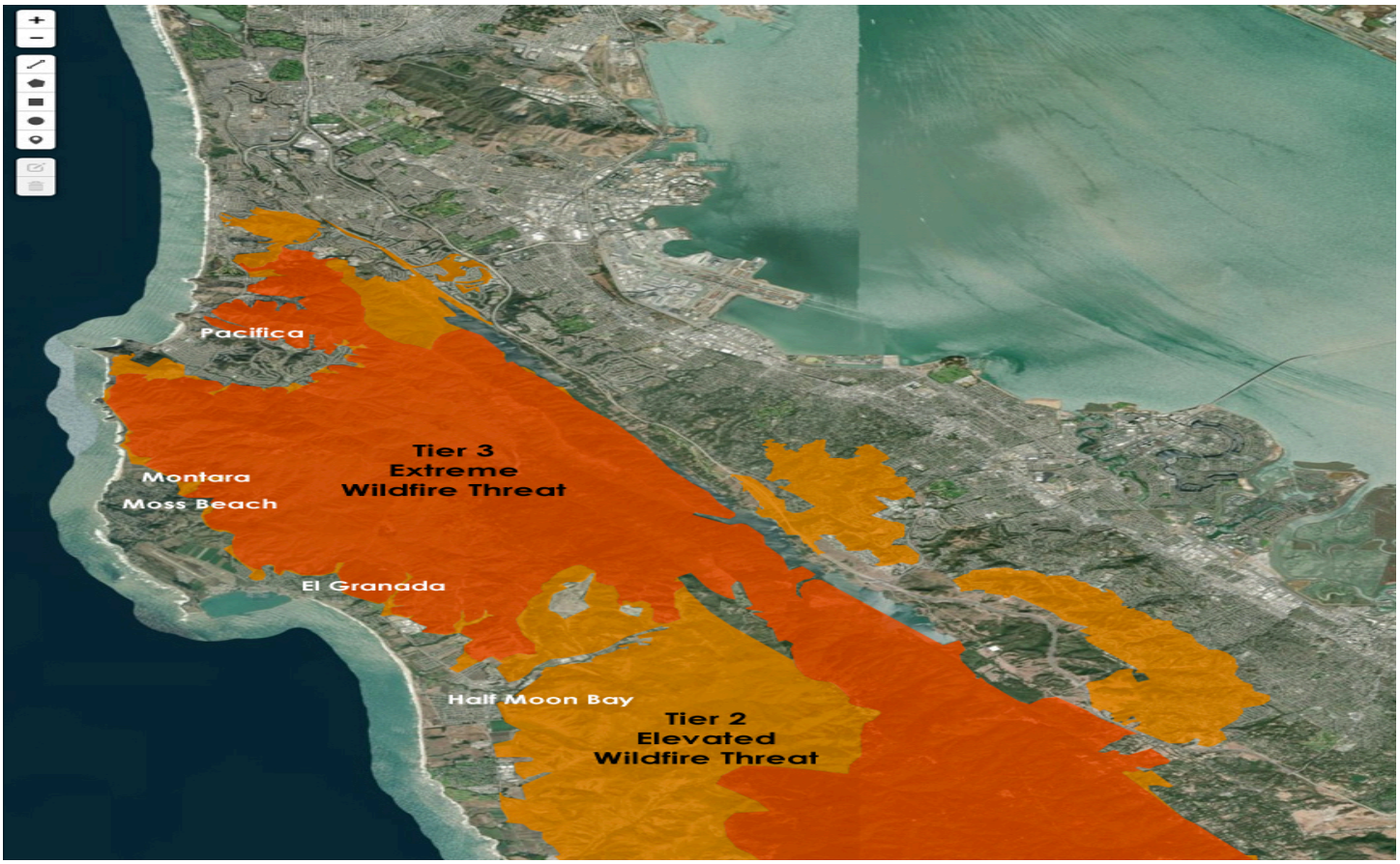
The unincorporated Midcoast of San Mateo County is unprepared for a major disaster. Recent devastating wildfires in California and the March 2019 HWY1 closure of the Lantos Tunnel at Devil's Slide highlight the need to critically review and update our disaster preparedness systems and improve our readiness. Recently updated state maps indicate significant threats for both wildfires and earthquakes in our area, and the threat of tsunamis is ever-present. With mountains and ocean surrounding us and only one road in, through and out, our ability to respond and/or evacuate in the event of a major disaster will be a challenge. It is imperative that we not only understand the different types of threats we face, but that we know what to do in each case.

Although recent focus on disaster preparedness statewide and locally is intensifying, we still have a long way to go in establishing the necessary plans, facilities and personnel to adequately deal with a major disaster on the Midcoast (Montara, Moss Beach, El Granada, Princeton-by-the-Sea, Miramar). Adequate preparation could well make the difference in our ability to survive and recover.

This document is intended to provide a brief overview of the significant risks of natural disasters on the Midcoast, as well as the readiness and ability of our responsible agencies and our community to respond. Information and resource links are provided for community members to better prepare for a disaster, as are recommendations for community input and involvement. Recommendations are also provided throughout the document for local, county and state agencies and are summarized at the end of the document.

Wildfire Threats

A 2018 Fire Threat Map from the CA Public Utilities Commission (magnified Midcoast area of map shown below) indicates that the entire Midcoast is either in or surrounded by an extreme or elevated wildfire threat area.



This threat is particularly heightened for older homes. According to an April 11, 2019 AP article 'Analysis: Safety rules give homes better chance in wildfires', the California Building Standards Commission "set strict rules for roofing materials, siding, windows, decks and other elements of a home built in 2008 or later… the regulations seem to be particularly effective at protecting structures from the types of wildfires that are increasingly common in California, where wind gusts can blow embers a mile or two ahead of the main wall of flames and do some of the worst damage."

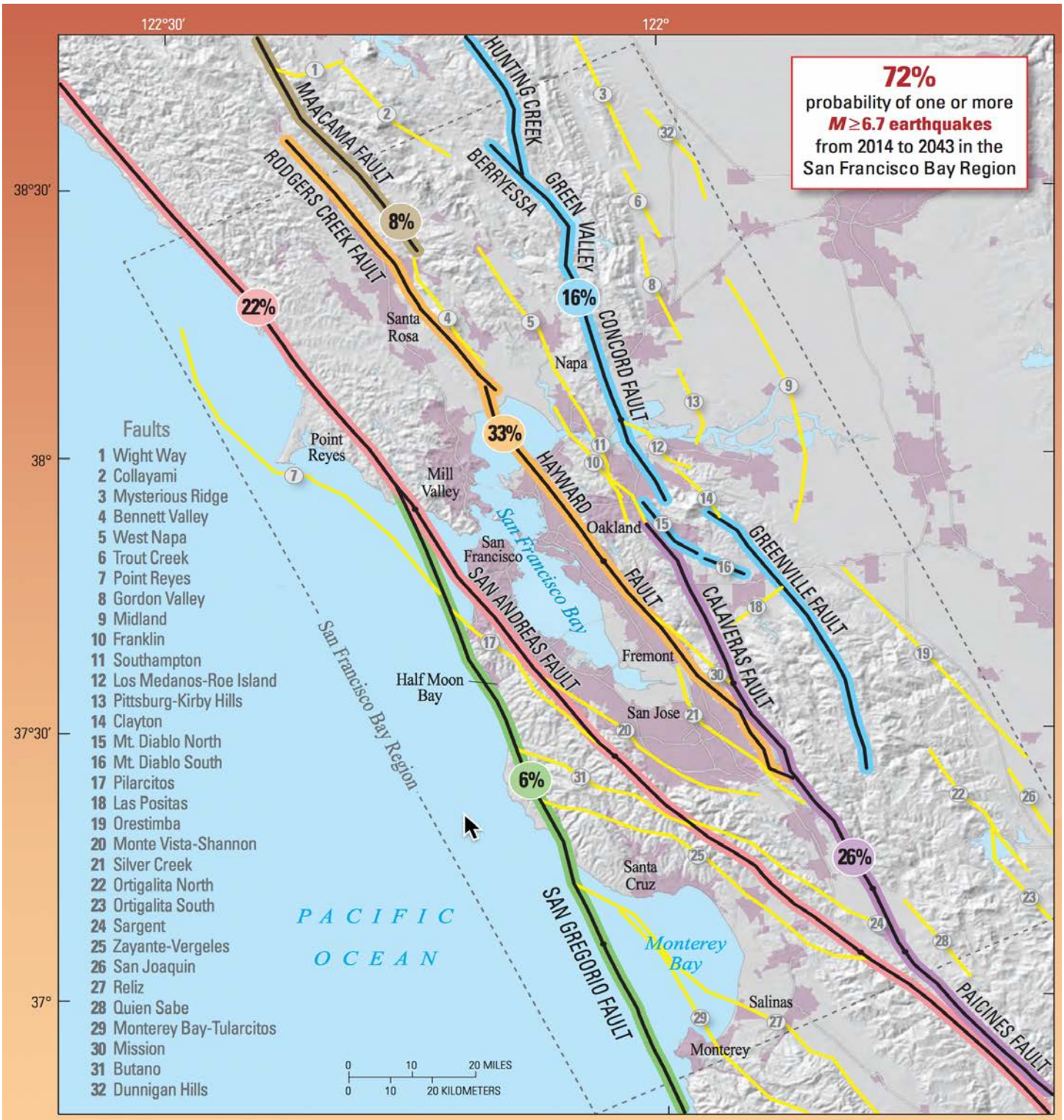
Most of the homes on the Midcoast are in medium-density urban areas and were built on small lots very close to each other prior to 2008. The cost to upgrade these homes to the new standards may be too high for most homeowners to afford and financial assistance like that provided by the state for earthquake upgrades is not yet provided for

the fire building standards upgrades. Homes that don't meet the new standards will be especially vulnerable to a nearby wildfire in the mountains and hills surrounding our neighborhoods. Even a new or upgraded home could be seriously damaged by an older, non-upgraded house burning down next to it. Fire danger to homes on the Midcoast will remain high for the foreseeable future, so it's important for homeowners to do what they can to reduce the risks.

In the event of a wildfire on the Midcoast, our local firefighters from the Coastside Fire Protection District (CFPD) will be the first responders on the scene to assess the situation and take action. Their prompt notification of additional firefighting units and outside agencies and their ability to get the required personnel, water and equipment to the scene will be critical to saving lives and property.

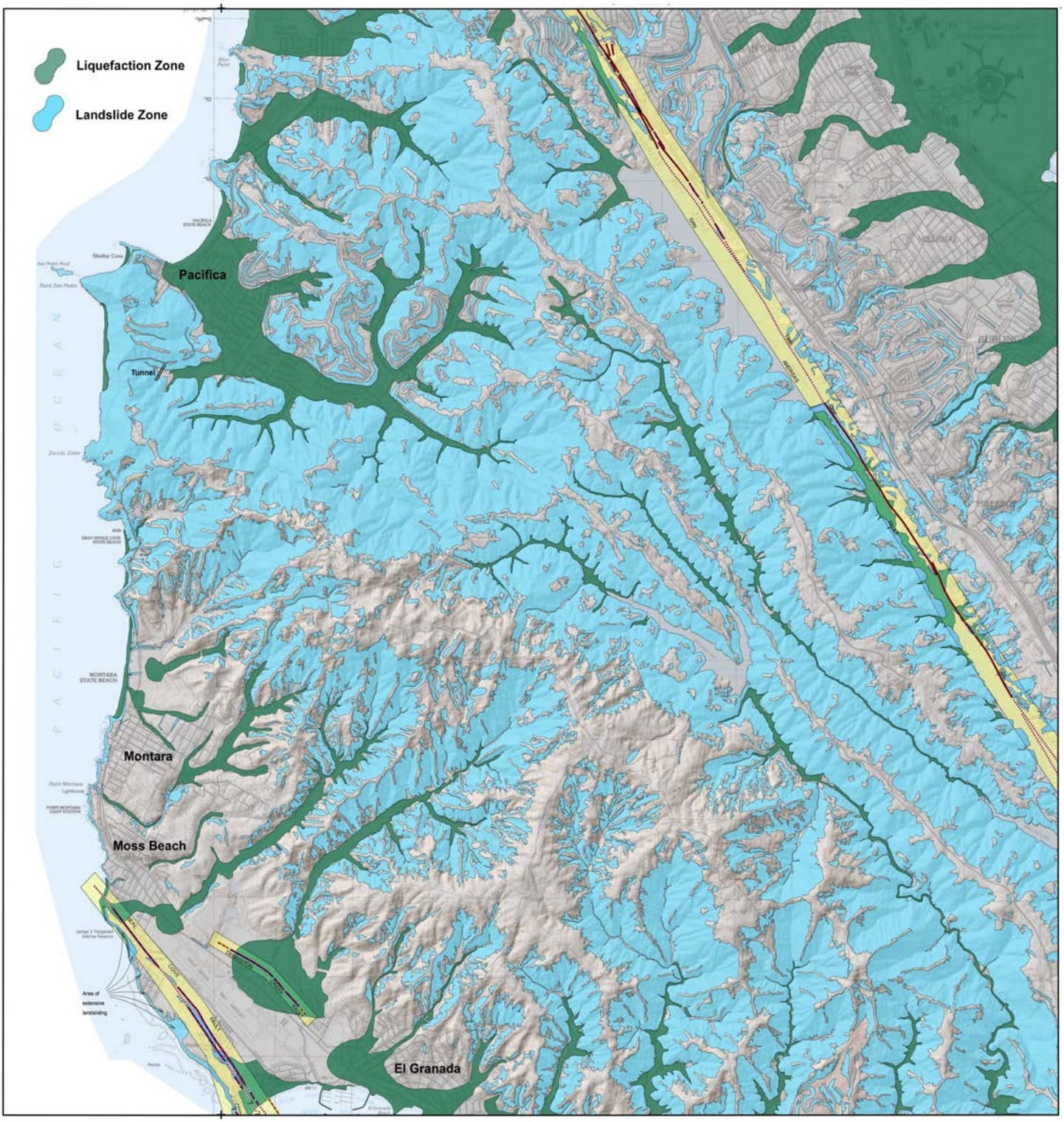
Seismic Threats

An April 4, 2019 report from the LA Times states that California is in an earthquake drought and according to Tom Rockwell, a San Diego State paleoseismologist, "At some point, that's going to change. We're going to have some big earthquakes." The 2014 USGS Working Group on California Earthquake Probabilities has estimated the probability of a strong earthquake (>M6.7) occurring by 2043 to be 72% for the San Francisco region. The probability that such a major earthquake would occur somewhere along a particular fault is shown as 22% for the peninsula section of the San Andreas Fault and 6% for the San Gregorio Fault (see figure below). Locally, the San Gregorio Fault runs just offshore of Half Moon Bay, proceeds north across land beginning at Pillar Point Harbor, runs parallel to the west side of Half Moon Bay Airport and proceeds offshore again at Moss Beach. Note also that the earthquake probability for lesser known faults, such as the Pilarcitos Fault, which runs between the San Andreas and San Gregorio Faults, is 13%. In any case, earthquakes of magnitude 6.7 are capable of causing widespread damage throughout the bay area including the coast of San Mateo.



Map of known active faults in the San Francisco Bay region. The 72 percent probability of a magnitude 6.7 or greater earthquake includes the well-known major plate-boundary faults, lesser-known faults, and unknown faults. The percentage shown within each colored circle is the probability that a magnitude 6.7 or greater earthquake will occur somewhere on that fault system by the year 2043. The probability that a magnitude 6.7 or greater earthquake will involve one of the lesser-known faults is 13 percent.

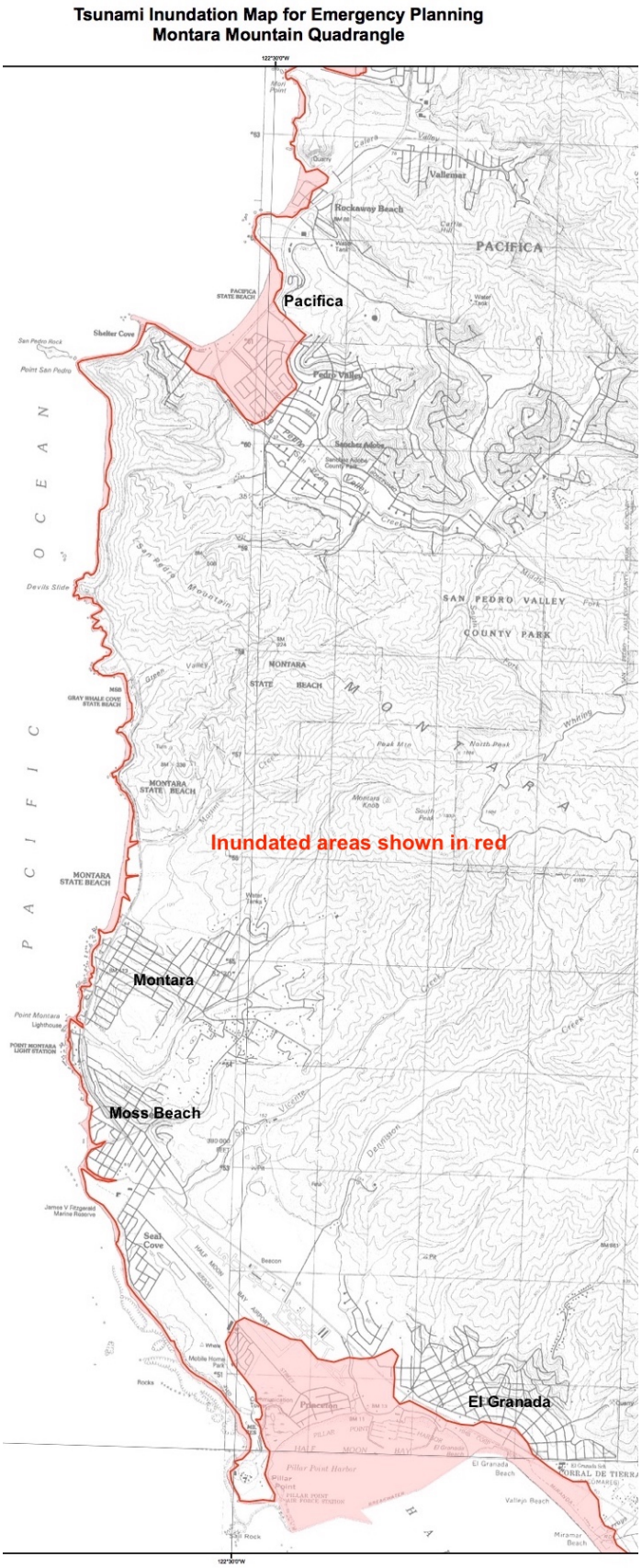
A 2019 Seismic Hazard Zone Report for the Montara Mountain Quadrangle and Earthquake Zone map (annotated map shown below) by the California Geological Survey further indicate that the entire Midcoast may be vulnerable to significant damage during an earthquake.



Almost all of the mountains and hills above our Midcoast communities are prone to producing landslides and areas surrounding our major creeks are liquefaction zones with the potential to also undergo permanent ground displacement. It is possible that landslides on HWY1 or HWY92 to the south or damage to the Lantos Tunnel to the north could significantly impair emergency response and block one or both of our only evacuation routes.

Tsunami Threats

According to a January 6, 2010 article in the HMB Review, "scientists still consider Half Moon Bay one of the top five most vulnerable points in the state" for a tsunami. This article and a 2009 Tsunami Inundation Map of the Montara Mountain Quadrangle from the California Geological Survey and CA Emergency Management Agency (annotated map shown below) indicate that a major earthquake in Alaska could "send a shockwave of water toward the San Francisco Bay Area that drives the ocean up about 30 feet on San Mateo County shores".

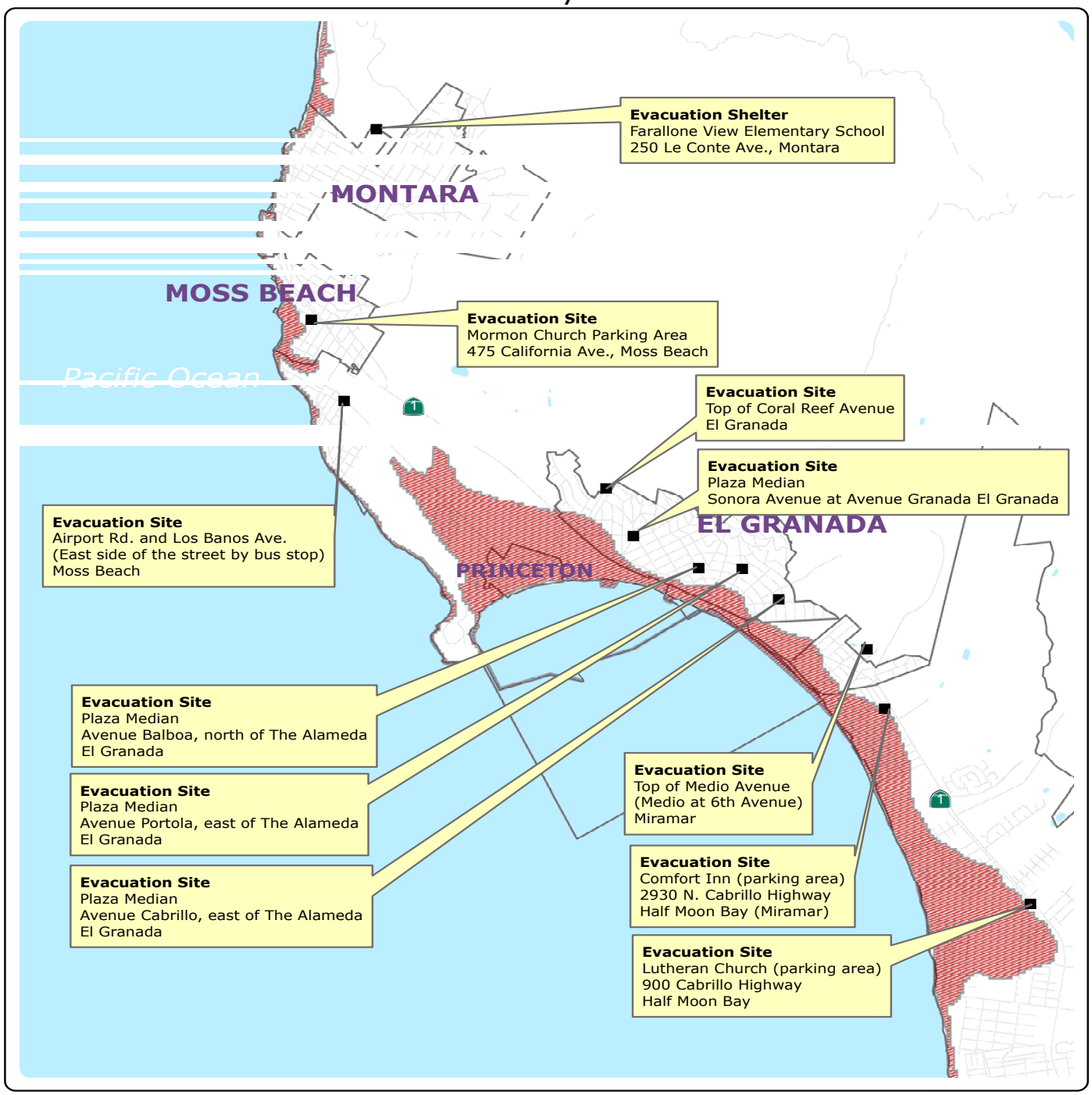


The Linda Mar area of Pacifica, “Pillar Point Harbor, Princeton and the southern reaches of the airport would be under water, as would the fire station in El Granada, and high tides would encroach on the four miles of shore extending south to Francis State Beach.” This will severely limit local emergency response and block Midcoast access by land, sea and air.

A Tsunami Inundation Map of the Half Moon Bay Quadrangle (not shown) indicates that inundation at Francis State Beach will also flood the SAM Sewage Treatment Plant, polluting the area and suspending wastewater treatment indefinitely for the unincorporated Midcoast and Half Moon Bay.

There is an evacuation shelter in Half Moon Bay at HMB High School and one on the Midcoast at Farallone View Elementary School in Montara. There are also several evacuation sites identified on the Midcoast, as noted in the map below. Red Cross also has the ability to set up temporary shelters if necessary.

Tsunami Evacuation Sites & Shelters
San Mateo County North Coast Area



Legend

- Evacuation Sites/Shelters
- Tsunami Hazard Zone

N

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Local Emergency Response and Readiness

The geographic isolation of the Midcoast from the rest of the SF Bay Area, as well as its rugged terrain, limited access and limited local services and infrastructure, will present a tremendous challenge for emergency response. The only entry/exit route on the Midcoast for emergency responders, residents and visitors is HWY1, with the Lantos Tunnel serving as the only entry/exit to the north. Limitations of this route were highlighted by recent incidents (i.e. several accidents in March and April, 2019, the March 12-13, 2019 Lantos Tunnel closure and the March, 2019 lane closure in Pacifica) that led to partial or complete closure of the highway. The March, 2019 Lantos Tunnel closure was caused by a power outage in Pacifica. To the surprise of many, this tunnel was built without backup power. Since power outages are likely to occur in a disaster, it is imperative that Caltrans and PG&E collaborate to identify and install a backup power system for the Lantos Tunnel to ensure that it remains open during future power outages.

Approximately 2 million people per year visit the Coastside and a large influx of visitors during many weekends creates gridlock on HWY1. Plans to build new large housing and commercial projects on the Coastside will only worsen the gridlock and proposed mitigation strategies will become less effective in alleviating the congestion. According to the 2016 draft of the Connect the Coastside Study from San Mateo County (a Comprehensive Transportation Management Plan intended to identify programs and improvements along Highway 1 and Highway 92 to accommodate the Midcoast's future transportation needs), the majority of intersections and road segments along the Coastside are projected to become unacceptable by 2040 under buildout conditions.

Even if HWY1 remains open on the Midcoast during a disaster, its already overburdened capacity will limit emergency response time and the ability of residents and visitors to evacuate if necessary.

Local tsunami sirens are tested at 25% volume at 10 AM on the first Wednesday of every month. However, these tests cannot be heard throughout the community. If the siren is activated at full volume in a real emergency, will the public know what it is? Occasional full volume alerts on the Midcoast with community notice would be helpful. Signs on HWY1 for tsunami evacuation are confusing and inadequate, directing motorists who are unfamiliar with the area to proceed further into danger and/or cause traffic jams. These signs should be updated to direct motorists to proceed to nearby evacuation sites (indicated in the figure above) or turn onto the nearest appropriate uphill side road. For other types of emergencies, similar local warning systems and information should also be provided.

In the event of a disaster, local services will not be adequate to serve residents and visitors. For those who cannot evacuate, food and other supplies will need to be provided. There is currently only one emergency shelter on the Midcoast at Farallone View Elementary School in Montara. More shelters will be needed for visitors and those who have lost their homes. Expanded emergency medical services will also be necessary, since existing medical facilities on the Midcoast are inadequate to deal with a major disaster. Seton Coastside in Moss Beach is the only medical facility on the Midcoast. It is a 116-bed senior convalescent home with very limited public emergency services. The closest hospital is Seton Hospital in Daly City and it does not have a trauma center and has limited emergency center services and capacity. Both hospitals have been in bankruptcy court since August 2018 but continue to operate. Although a sale of both facilities was approved by the bankruptcy court in April, 2019, it is uncertain how long they will be able to remain open due to the huge cost of seismic upgrades required. In any case, a Midcoast disaster will require those with serious injuries to be triaged locally and then transported by ambulance (if the roads are open) or airlifted to trauma facilities in San Francisco or on the Peninsula.

For large social events on the Midcoast and Half Moon Bay (e.g. Dream Machines, Mavericks Surf Competition, Pumpkin Festival), efforts are already underway to provide additional security and emergency response readiness. County Sheriffs and trained volunteers will have an increased presence at such events. However, plans to deal with evacuation or sheltering of visitors and residents in the event of a disaster need further development.

Additionally, in light of the heightened threats outlined in this report, our County building codes, ordinances and permitting process, as well as our Local Coastal Program (LCP) and Connect the Coastside study (CTC) should be updated to add new disaster preparedness criteria to sections governing our local infrastructure and environment. For example, restrictions on tree trimming should be eased and requirements for land owners to create and maintain ‘defensible space’ around their property should be added to reduce fire danger.

Regulations governing permit applications for large commercial and housing projects in the Midcoast should also be modified to ensure that these projects do not negatively impact emergency response times or the ability of residents and visitors to quickly evacuate the area if necessary. Any projects that further reduce the level of service (LOS) of Midcoast intersections or the HWY1 delay index should receive added scrutiny, especially with regard to the cumulative impact of these projects and already approved large scale Midcoast projects. New large projects should also be required to place power lines underground to reduce fire risk.

The San Mateo County Sheriff's Office of Emergency Services and Homeland Security (Sheriffs OES) is the lead disaster planning and response coordinator for the county, providing planning and training services to San Mateo County (SMC) and its 20 incorporated cities. The activities and responsibilities of the County and the 20 member cities (including Half Moon Bay) are delineated in a Joint Powers Agreement (JPA). The Sheriffs OES has assigned Emergency Service Coordinators (ESC) to cover different areas within the County. Brian Molver is the ESC responsible for the Midcoast. The member cities outlined in the JPA provide additional planning, personnel, facilities and training to further ensure timely and appropriately measured emergency response within their city limits. However, unincorporated areas like the Midcoast do not have this level of accountability or capability. The Sheriffs OES and their volunteers will therefore be solely responsible for responding to a Midcoast disaster. Their Basic Emergency Operations Plan, released in 2015, outlines the responsibilities of the SMC Emergency Operations Center and their plan of action prior to and during emergencies. This plan should be updated with the latest information and include more details on evacuation procedures.

The Coastside Fire Protection District (CFPD), under contract with the Cal Fire San Mateo-Santa Cruz Unit, is the lead firefighting agency on the Midcoast. There are two fire stations on the Midcoast, one in El Granada (Station 41) and one at Point Montara (Station 44). Our local firefighters are adept at dealing with house fires and providing emergency assistance to residents. In the event of a wildfire that overwhelms the capabilities of local firefighters or if there is not enough fire water reserve to deal with a wildfire, CFPD has cooperation agreements with other Cal Fire firefighting units and other support agencies, allowing them to solicit help in dealing with such a disaster (see the 2018 - CZU UNIT STRATEGIC FIRE PLAN).

The Coastside Emergency Corps, a volunteer organization founded in 2013, was established to provide coordination between emergency response agencies and volunteer organizations for the Midcoast, Half Moon Bay and unincorporated areas south to the SMC-Santa Cruz County line. The CEC has six standing committees, one of which oversees the Community Emergency Response Teams (CERT). There are four CERT branches, each with their own team of local volunteers trained in emergency response operations. CERT Branch 1 covers the Lantos Tunnel to Frenchman's Creek and includes Montara, Moss Beach, Princeton-by-the-Sea, Pillar Point Harbor, El Granada and Miramar (collectively referred to in this document as the unincorporated Midcoast). CERT Branch 1 currently has over 124 trained and certified volunteers, with many more on the waiting list for training. Branch 2 covers Frenchman's Creek to Tunitas Creek and includes Half Moon Bay. Our co-coordinators for CERT Branches 1 and 2 are Emily Kim

and Cynthia Sherrill. Branch 3 covers Tunitas Creek to the Santa Cruz County line. Branch 4 covers South Skyline neighborhoods. Coordinators for Branches 3 and 4 can be found on CEC's CERT page.

To be maximally effective, these CERT Branches have local sponsors to provide "a chain of command and a fiscal entity that can receive funds and authorize expenditures to fund training supplies or time for staff to train people" (see "Community emergency teams grow with concern on coast: Local CERT branches seek sponsorship"). These sponsors are the 'local authority' that will deploy CERT volunteers and help to coordinate their response activities with those of local professional first responders during an emergency. CERT Branches 1 and 2 are sponsored by the Coastside Fire Protection District (CFPD), serving the unincorporated Midcoast. CERT Branches 3 and 4 are sponsored by the La Honda Fire Brigade of the San Mateo County Fire Division of Cal Fire. To learn more about CEC and CERT, read the CEC newsletters for Spring 2018 and Spring 2019.

The Red Cross of the Northern California Coastal Region, Bay Area Chapter, which includes all of San Mateo County, would also respond in the event of a local or national disaster. They can provide food, clothing, emergency shelter and other assistance to those in need.

Communication and Coordination between Emergency Response Agencies

Aside from the responsibilities of the Sheriffs OES, CFPD, CEC, Red Cross and other individual agencies during a disaster, there are open questions regarding coordination that must be addressed (see "Alphabet soup of emergency planning requires coordination"). The extended closure of the HWY1 Lantos Tunnel in Devil's Slide on March 12-13, 2019 underscores the need for better communication and coordination between responsible agencies. In the event of a disaster involving one of the 20 member cities in San Mateo County, the Sheriffs OES has primary oversight responsibility for communication and agency coordination. However, the cities also have their own infrastructure and local authorities to share responsibility in order to better insure adequate response in an emergency within their city limits. For the unincorporated Midcoast, the Sheriffs OES is solely responsible for disaster planning and response. In the event of a wildfire, CFPD is the 'local authority' who will deploy CERT volunteers in Branches 1 and 2. It is unclear how the Sheriffs OES will formally coordinate with CFPD and CERT volunteers following other types of disasters on the Midcoast.

Communication with the Community Prior to a Disaster

The Sheriffs OES and CEC provide disaster information awareness, education and training for community members in San Mateo County. Both organizations also solicit volunteers and train them to assist in an emergency. To better prepare the community, the Sheriffs OES and CEC should jointly plan and conduct public disaster drills. However, it is our responsibility as citizens and community members to ensure that we are adequately prepared.

Communication with the Community During a Disaster

The Sheriffs OES is primarily responsible for communication to affected communities during a disaster, but it is not entirely clear how they will do this on the unincorporated Midcoast. There are several sources for Midcoast community members to get information during an emergency, but which is the most reliable (SMC Alert, tsunami warnings, Caltrans traffic flow/road closures, TV, radio, NextDoor)? During the March 12, 2019 simultaneous closure of the Lantos Tunnel on HWY1 and one lane of HWY92, inconsistent and erroneous information created confusion and frustration for commuters. Such discrepancies during a real disaster will magnify the crisis and must be avoided. Coordination and consistent communication between agencies and the media must be improved. SMC Alerts should also be provided in Spanish.

Tsunami warning sirens should be tested occasionally at full volume, with advance notice given to the community. We need to be sure that these audible warnings can be heard by all community members and that they know what the warning means. Consideration should also be given to updating this system and expanding it to include all types of emergencies. Tsunami signs on HWY1 for emergency evacuation should also be updated and signs for other types of emergencies should be posted. We also need to know what to do and where to go if communication is lacking (e.g. power out, no cell signal).

The CEC/CERT team for Branch 1 (Lantos Tunnel to Frenchman's Creek) has 124 volunteers and counting. As these volunteers live in our Midcoast neighborhoods, they will likely be the first responders on the Midcoast after a disaster. They are trained and certified to assist in any emergency. They can also maintain radio communications between themselves and other responders (firefighters, paramedics, police), as well as 47 licensed ham radio operators from CEC's ARES team (Amateur Radio Emergency Service). Using a radio tower on Montara Mountain, ARES operators will be able to maintain communications with areas outside the Midcoast, even without external power and cellular service. CERT Branches 1 and 2 will be deployed by CFPD in the event of

a wildfire. For other types of disasters, deployment of these volunteers and their coordination with CFPD and/or the Sheriffs OES requires further clarification.

Evacuation and Relief Plans

The Sheriffs OES will be primarily responsible for initiating and managing an evacuation. However, it is not clear who makes the decision to evacuate and how is it communicated to agencies and the public for cities versus unincorporated areas. Evacuation plans must be more fully developed to ensure that residents and visitors know what to do for each type of emergency. These plans should also consider the impact of road closures and other impediments and provide clear direction to residents and visitors on which way to go, especially when exits are blocked. A plan for using the old portion of HWY1 in Devil's Slide (now a County park) during an evacuation when the Lantos Tunnel is closed, blocked or gridlocked should also be considered. Local shelters and safe areas should also be identified for different types of emergencies with clear directions provided.

Community Member Responsibilities

Since the unincorporated status of the Midcoast makes it more difficult to garner political support and funding in dealing with the above issues, community involvement in disaster preparedness and input to local leaders is especially important. Express your concerns to state, county and local leaders (see contact info below) and insist that they continue to pursue effective improvements to our disaster readiness.

Midcoast Community Council (MCC)
Don Horsley, San Mateo County Board of Supervisors, District 3
Kevin Mullin, CA State Assembly, District 22 (Montara, Moss Beach)
Marc Berman, CA State Assembly, District 24 (Princeton, El Granada, Miramar, & south)
Jerry Hill, CA State Senator, District 13.

We also have a responsibility to prepare ourselves and our families for a disaster. This involves educating ourselves and planning accordingly.

First and foremost, everyone should sign up for San Mateo County Alerts, which provides the latest information by email, phone or text on local emergencies and instructions to community members. To get alerts and the latest information on power outages or to report an outage in your area, see the PG&E Outage page. It is also important to keep a battery-operated radio and fresh batteries available. Local information and updates

following a disaster can be obtained from KHMB (100.9 FM, 1710 AM), the emergency services radio station for the coastside.

To prepare for a wildfire, residents should create a 'defensible space' around their property by removing dead trees, plants, weeds, shrubs and other combustible materials and consider upgrading their homes with fire resistant building materials if they were built before 2008.

Review the CEC disaster prep page or the Sheriffs OES disaster prep page to get the latest information on disaster preparedness and learn how you and your family can plan for all types of disasters. To be prepared at home, you should have a minimum of 3 days' worth of supplies for each family member, an emergency kit and a family plan. If you see that an emergency is threatening you or your family, be prepared to evacuate immediately. Don't wait to be told! If you are told to evacuate, don't hesitate to do so!

If you are a local firefighter, paramedic, police officer, or other professional first responder, consider joining CEC. Even if you are not a professional, consider joining CERT as a volunteer. "Any citizen who wishes to... prepare for and cope with a disaster until help arrives, assist first responders and continue to support their community during the aftermath should go through CERT Training." The Sheriffs OES also solicits and trains volunteers to assist in a variety of search and rescue operations.

Summary Recommendations

- Sheriffs OES should update the 2015 Emergency Operations Plan (EOP) with the latest information, add more details on evacuation plans and clarify specific roles and responsibilities of other agencies and local authorities in dealing with different types of disasters in unincorporated areas versus cities.
- Sheriffs OES and CEC should plan and organize periodic public disaster drills on the Midcoast.
- Sheriffs OES should formalize plans to better deal with a disaster and evacuation during large coastside social events (e.g. Dream Machines, Pumpkin Festival).
- Tsunami sirens on the Midcoast should be tested periodically at full volume with community notice and such systems for other types of disasters should be established.
- Tsunami evacuation signs on HWY1 should be updated to provide clear direction to safe areas. Signs for other types of emergencies should be added.
- SMC should update SMC Alerts to include Spanish language alerts.

- SMC should fund Seton Coastside or establish a new medical facility on the Midcoast or HMB to provide 24-7 urgent care.
- SMC should identify or build more emergency shelter(s) on the Midcoast. These shelters should be set up for medical triage and have the ability for ambulatory transport of seriously injured persons to Bay Area hospitals by road or air.
- Caltrans and PG&E should identify and install appropriate backup power systems to the Lantos Tunnel to ensure that it remains open during a power outage.
- SMC should develop a plan to use the old portion of HWY1 in Devil's Slide Park as a backup exit for evacuations during emergencies when the Lantos Tunnel is closed, blocked or gridlocked.
- CFPD should provide more information to the community on how they will deal with a wildfire on the Midcoast, particularly with regard to use of limited local fire water reserves and response times for outside fire units and other outside agencies.
- SMC and/or the state of CA should provide financial assistance to homeowners to upgrade older homes to the 2008 fire protection building standards.
- MCC and the SMC Board of Supervisors should support efforts to:
    - 1) ease the permitting process for removing trees and other vegetation that will add 'fuel' to a wildfire,
    - 2) add regulations requiring land owners to create 'defensible space' around their property,
    - 3) include disaster preparedness criteria in permit applications for new homes and large projects to ensure that they do not negatively impact emergency response or evacuation times,
    - 4) update the Connect the Coastside study to ensure consideration of disaster preparedness in transportation management plans and
    - 5) require power lines for all new multi-unit housing and commercial buildings to be placed underground.

About Midcoast ECO (formerly Resist Density)

Mission:

Midcoast ECO advocates for the conservation of coastal land and sensible development within the infrastructure constraints and geographic isolation of the Unincorporated San Mateo County Midcoast. We work to inform our community of the cumulative impact of large building projects, mobilize the community to take action, and express concerns to decision makers.

Vision:

In support of the Local Coastal Program, Midcoast ECO's vision is the preservation of the Midcoast's open spaces, sensitive habitats, scenic resources, semi-rural community character and coastal access and safety on HWY 1 for residents and visitors.

About the author

James (JQ) Oeswein is a retired development scientist and scientific director. He is also a U.S. Army veteran, having served in Germany from 1971-73.

He received a B.S. degree with honors in Chemistry from the University of Kentucky in 1977 and a Ph.D. degree in Physical Biochemistry from the University of Florida in 1982. He had a very successful and rewarding post-graduate career in the biopharmaceutical industry at both Lilly Research Laboratories and Genentech, Inc.

His professional positions and appointments included leading several development projects in R&D, Quality and Manufacturing. He is an author of many scientific publications and presentations, as well as an inventor on several patents.

During the last few years of his career, he was a Director of Manufacturing Collaborations at Genentech, where he led the transfer of manufacturing and analytical technology of biopharmaceutical products from other companies and universities and also developed and managed manufacturing partnerships with other companies for in-licensed and out-licensed products.

JQ retired in 2007. His current interests include the continued pursuit of scientific knowledge, especially in the fields of astrophysics and cosmology. His hobbies include hiking the coastal trails and studying coastside history. He is currently a member of the Midcoast ECO Board and Leadership Team.