CITY OF LAGUNA BEACH

LOCAL HAZARD MITIGATION PLAN
FEMA APPROVED PLAN

JUNE 2018

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ABBREVIATIONS

AEL: Annualized earthquake loss

AR: Atmospheric river

CAL FIRE: California Department of Forestry and Fire Prevention

Cal OES: California Governor's Office of Emergency Services

CDH: California Department of Public Health

CEC: California Energy Commission

CFR: Code of Federal Regulations

CGS: California Geological Survey

DoD: United States Department of Defense

DWR: California Department of Water Resources

ENSO: El Niño Southern Oscillation

EF: Enhanced Fujita scale

EPA: United States Environmental Protection Agency

FEMA: Federal Emergency Management Agency

FHSZ: Fire hazard severity zone

FRA: Federal Responsibility Area

GWRS: Groundwater Replenishment System

IAEA: International Atomic Energy Agency

INES: International Nuclear and Radiological Event Scale

IPCC: Intergovernmental Panel on Climate Change

LBCWD: Laguna Beach County Water District

LRA: Local Responsibility Area

MMI: Modified Mercalli Intensity scale

MMS: Moment Magnitude Scale

MWD: Metropolitan Water District of Southern California

MWDOC: Municipal Water District of Orange County

NOAA: National Oceanic and Atmospheric Administration

NRC: United States Nuclear Regulatory Commission

NWS: National Weather Service

OCFCD: Orange County Flood Control District

OCSD: Orange County Sheriff's Department

OCTA: Orange County Transportation Authority

OCFA: Orange County Fire Authority

OCWD: Orange County Water District

SCE: Southern California Edison

SCEDC: Southern California Earthquake Data Center

SCWD: South Coast Water District

SDG&E: San Diego Gas and Electric

SoCalGas: Southern California Gas Company

SOCWA: South Orange County Wastewater Authority

SONGS: San Onofre Nuclear Generating Station

SRA: State Responsibility Area

UCERF3: Third Uniform California Earthquake Rupture Forecast

USGS: United States Geological Survey

WHO: World Health Organization

WRCC: Western Regional Climate Center

WUI: Wildland-urban interface

GLOSSARY

100-year flood: A flood that has a 1 percent chance (one in 100) of occurring in any given year.

500-year flood: A flood that has a 0.2 percent chance (one in 500) of occurring in any given year.

ARkStorm: An emergency planning scenario that modeled a repeat of California's 1861-1862 winter storms, which caused unprecedented flooding throughout the state.

Atmospheric river: A narrow band of very moist air in the atmosphere, which can generate intense storms. Up to 50 percent of California's rainfall comes from the relatively small number of atmospheric storms that affect the state annually.

Climate change: Long-term changes in the average meteorological conditions (temperature, precipitation, wind, etc.) of an area.

Derecho: A type of intense windstorm that blows in a straight line, caused by a strong, large thunderstorm.

Downburst: A type of intense windstorm that descends from a strong thundercloud and then gusts out in all directions.

El Niño Southern Oscillation: A natural cycle of wind and water temperatures in the eastern tropical areas of the Pacific Ocean that affects global weather patterns, including precipitation levels in California. Consists of a warm phase (El Niño), a neutral phase, and a cool phase (La Niña).

Epicenter: The point on the surface of the ground above which an earthquake begins.

Fault line: A boundary between sections of the earth's surface.

Fault rupture: An event in which sections of the earth's surface suddenly move past each other along part or all the length of a fault. The sudden movement generates the shaking that we perceive as an earthquake.

Flash flood: A dangerous type of flood that occurs very quickly, with little warning. Usually a result of sudden, intense precipitation.

Flood plain: The area that may be affected by a flood, usually named by the type of flood that can occur there (e.g. a 100-year flood plain).

Katabatic wind: A hot dry wind, caused when areas of high pressure occur over an area of high elevation, and lower pressure zones form over lower elevations. As the wind descends, it heats up, becomes drier, and can increase in speed.

Liquefaction: A phenomenon in which loose, wet soil is suddenly shaken, causing the soil to behave more like a fluid and lose its stability. Often caused by earthquakes.

Meteotsunami: A rare form of a tsunami, caused by a sudden and large shift in atmospheric pressure.

Microburst: A downburst that affects a small area, although the wind speeds are not necessarily less intense than a full-scale downburst.

Modified Mercalli Intensity scale: A way of measuring the intensity of an earthquake based on the damage it causes at a specific location. As a result, an earthquake will register a different rating on the Modified Mercalli Intensity scale in different places.

Moment Magnitude Scale: A way of measuring the intensity of an earthquake based on the amount of energy released by the fault rupture. A replacement for the Richter Scale.

Pandemic: A global outbreak of an infectious disease.

Pathogen: A foreign body, such as a bacteria or virus, that causes disease.

Ponding: A type of flooding caused when water collects in a low-lying area.

Radiation: The transmission of energy through waves or particles. For the purposes of this Plan, refers to ionizing radiation, which can damage or kill the cells of living beings, potentially causing serious health problems or death.

Radioactive: Referring to a material that naturally decays at an atomic level, releasing radiation.

Rupture: See "Fault rupture"

Santa Ana winds: A type of katabatic wind that affect the coastal areas of southern California. They are commonly known for fanning wildfires.

Sea level rise: A global increase in the level of the ocean, driven by melting land ice and increases in water temperature as a result of climate change.

Snowpack: Snowfall that accumulates in cold mountain areas and remains frozen for a long period of time. In California, snowpack in the Sierra Nevada provides a large amount of water to the state during the summer and early autumn months as it melts.

State Water Project: An extensive system of aqueducts and pumps that conveys water from the northern Sierra Nevada to cities and agricultural lands throughout California, including to the Los Angeles region.

Subduction zone: A location where a large section of the earth's surface, generally an ocean floor, is moving underneath a large section of land. Strong earthquakes in these regions are responsible for most major tsunamis.

Tsunami: A fast-moving wave triggered by the rapid displacement of a large volume of water, often as a result of an earthquake. Tsunamis grow in size as they reach the shore, and can cause major damage along coastal areas.

CHAPTER 1
INTRODUCTION

PLAN PURPOSE AND AUTHORITY

Hazard events can lead to injuries or death, affect overall health and safety, damage or destroy public and private property, harm ecosystems, and disrupt key services. Although the hazard event itself often gets the most attention, it is only one part of a larger emergency management cycle:

- The Event (aka Disaster)
- Response
- Recovery
- Mitigation
- Preparedness

Emergency planners and responders can take steps during the response, recovery, mitigation, and preparedness phases of the cycle to minimize the harm caused by a disaster. This Local Hazard Mitigation Plan (LHMP, or Plan) focuses on optimizing the mitigation phase of the cycle. Mitigation involves making a community more resilient to disasters so that when hazards do ultimately occur, the community suffers less damage and is able to recover more effectively. It differs from preparedness, which is planning in advance for how best to respond when a disaster occurs or is imminent. For example, a policy to make homes structurally stronger so they suffer less damage during an earthquake is a mitigation action, while fully equipping shelters to accommodate people who lose their homes in an earthquake is a preparedness action. Some activities may qualify as both.

KEY TERMS

Hazard: A natural or human-caused event that has the potential to cause damage.

Laguna Beach, like all other communities, could potentially suffer severe harm from hazard events, and although large disasters may cause widespread devastation, even smaller disasters can have substantial effects. Laguna Beach cannot make itself completely immune to hazard events, but this Plan can help make the community a safer place to live, work, and visit. This Plan provides a comprehensive assessment of the threats that Laguna Beach faces from natural and man-made hazard events and a coordinated strategy to reduce these threats. It identifies resources and information that can help community members, City staff, and local officials understand local threats and make informed decisions. The LHMP

can also support increased coordination and collaboration between the City, other public agencies, local employers, service providers, community members, and other key stakeholders.

FEDERAL AUTHORITY

Laguna Beach is not required to prepare an LHMP, but state and federal regulations encourage it. The federal Robert T. Stafford Disaster Relief and Emergency Act (Stafford Act), amended by the Disaster Management Act of 2000 (DMA 2000), creates a federal framework for local hazard mitigation planning. It states that jurisdictions that wish to be eligible for federal hazard mitigation grant funding must prepare a hazard mitigation plan that meets a certain set of guidelines and submit this plan to the Federal Emergency Management Agency (FEMA) for review and approval. These guidelines are outlined in the Code of Federal Regulations, Title 44, Part 201, and discussed in greater detail in FEMA's Local Mitigation Plan Review Tool.

KEY TERMS

Mitigation: Actions that increase resiliency and reduce the harmful effects of a hazard.

Resilient: Better able to avoid or lessen the harmful effects of a hazard.

STATE AUTHORITY

California Government Code Sections 8685.9 and 65302.6

California Government Code Section 8685.9 (also known as Assembly Bill 2140 or AB 2140) limits the State of California's share of disaster relief funds paid out to local governments to 75 percent of the funds not paid for by federal disaster relief efforts, unless the jurisdiction has adopted a valid hazard mitigation plan consistent with DMA 2000 and has incorporated the hazard mitigation plan into the jurisdiction's General Plan. In these cases, the State may cover more than 75 percent of the remaining disaster relief costs.

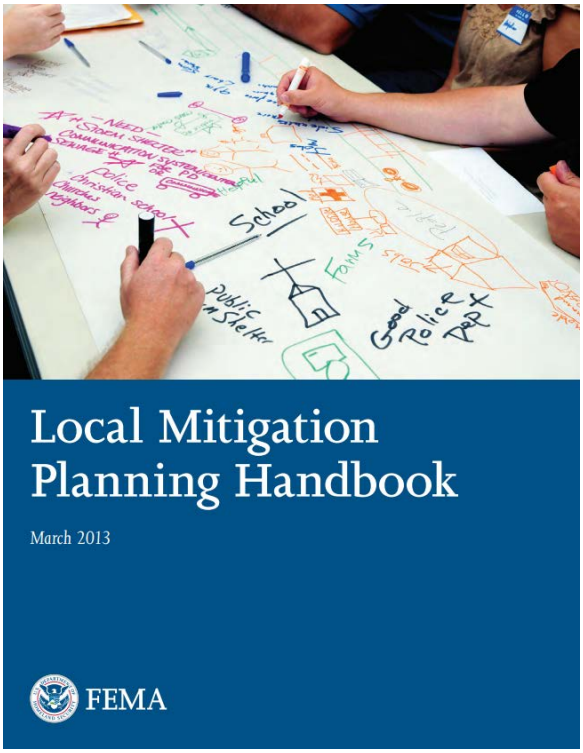
All cities and counties in California must prepare a General Plan, which must include a Safety Element that addresses various hazard conditions and other public safety issues. The Safety Element may be a stand-alone chapter or incorporated into another section as the community wishes. California Government Code Section 65302.6 indicates that a community may adopt an LHMP into its Safety Element, as long as the LHMP meets applicable state requirements. This allows communities to use the LHMP to satisfy state requirements for Safety Elements. As the General Plan is an overarching long-term plan for community growth and development, incorporating the LHMP into it creates a stronger mechanism for implementing the LHMP.

California Government Code Section 65302 (g)(4)

California Government Code Section 65302 (g)(4), also known as Senate Bill (SB) 379, requires that the Safety Element of a community's General Plan address the hazards created or exacerbated by climate change. The Safety Element must identify how climate change is expected to affect hazard conditions in the community, and include measures to adapt and be more resilient to these anticipated changes. As the

LHMP can be incorporated into the Safety Element, including these items in the LHMP can satisfy the state requirement. SB 379 requires that climate change must be addressed in the Safety Element when the LHMP is updated after January 1, 2017 (for communities that already have an LHMP), or by January 1, 2022 (for communities without an LHMP).

This LHMP is consistent with current standards and regulations, as outlined by Cal OES and FEMA. It uses the best available science, and its mitigation measures reflect best practices and community values. It meets the requirements of current state and federal guidelines and makes Laguna Beach eligible for all appropriate benefits under state and federal law and practices. Note that while FEMA is responsible for reviewing and certifying this LHMP, and Cal OES is responsible for conducting a preliminary review, this Plan does not grant FEMA or Cal OES any increased role in the governance of Laguna Beach or authorize either agency to take any specific action in the community.



FEMA's Local Mitigation Planning Handbook, last updated in 2013, is one of the key guidance documents for local communities in preparing hazard mitigation plans.

PLAN ORGANIZATION AND USE

The Laguna Beach LHMP is both a reference document and an action plan. It has information and resources to educate readers and decision makers about hazard events and related issues, and a comprehensive strategy that the City and community members can follow to improve resiliency in Laguna Beach. It is divided into the following chapters:

- **Chapter 1: Introduction**. This chapter discusses the purpose and authority of the LHMP, its goals, how to use the Plan, and how it was developed.
- **Chapter 2: Community Profile**. This chapter provides an overview of the history of Laguna Beach, its demographics, the local economy, and its land uses and infrastructure.
- **Chapter 3**: **Hazard Assessment**. This chapter summarizes the various hazard conditions in Laguna Beach, their history, the risk of future occurrence, and any effects of climate change on their frequency and intensity. It also discusses how hazards were selected and prioritized for inclusion in this Plan.
- **Chapter 4**: **Threat Assessment**. This chapter discusses the threat to community members, buildings, and infrastructure posed by individual hazard types. It also summarizes the methods and approach used to prepare the threat assessment.

- **Chapter 5: Hazard Mitigation Strategy**. This chapter contains specific hazard mitigation actions to improve resiliency in Laguna Beach, and a discussion of how the mitigation actions were developed.
- **Chapter 6**: **Plan Maintenance**: This chapter discusses how the Plan will be implemented and summarizes how Laguna Beach can monitor and update the Plan in future years**.**

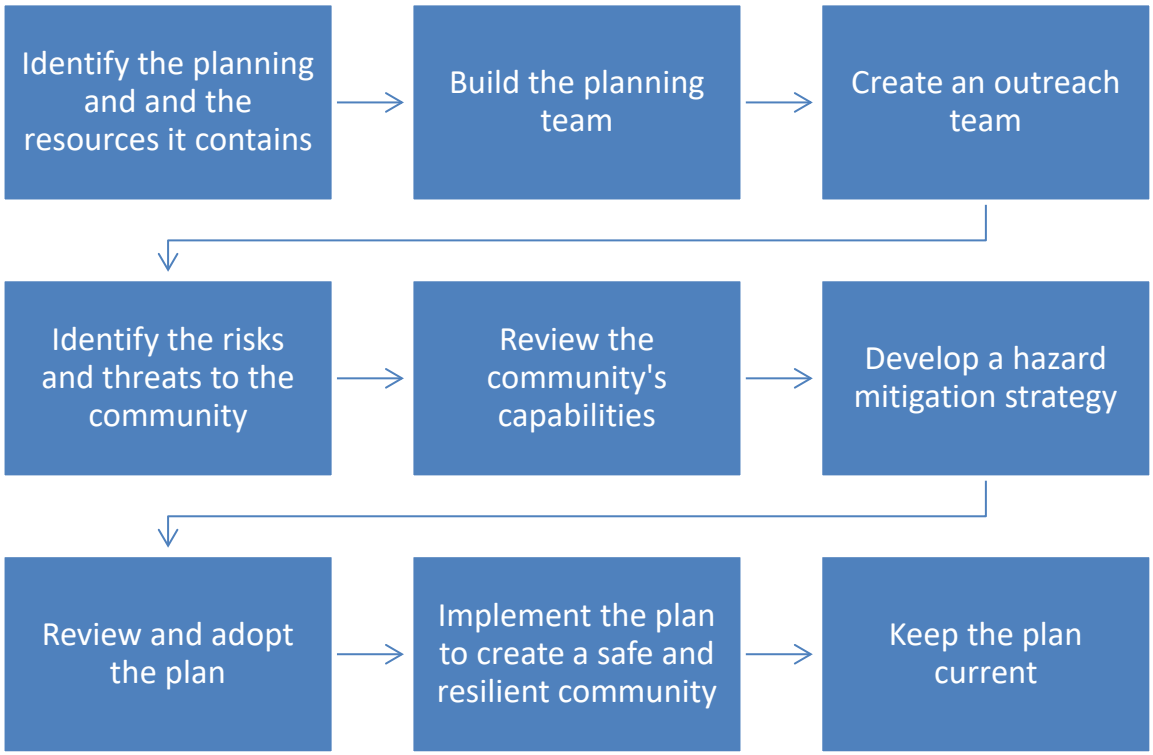
PLAN GOALS

This Plan was developed to broadly increase resiliency in Laguna Beach. There are five key goals for Laguna Beach's LHMP:

- Reduce the threat to life, injury, and property damage for Laguna Beach residents, employees, and visitors.
- Keep critical services and government functions operational by protecting key infrastructure in Laguna Beach.
- Protect natural systems from current and future hazard conditions.
- Coordinate mitigation activities among City departments and with neighboring jurisdictions.
- Strengthen resiliency in Laguna Beach through partnerships with community members, local businesses, and community organizations.

PLANNING PROCESS

State and federal guidance for local hazard mitigation plans do not require that jurisdictions follow a standardized planning process. FEMA encourages communities to create their own planning process that reflects local values, goals, and characteristics. FEMA does suggest a general planning process:



This section describes the process used by the City to develop its LHMP.

HAZARD MITIGATION PLANNING COMMITTEE

The City established a Hazard Mitigation Planning Committee. The Committee is made up of representatives from key City departments as well as stakeholder members that include residents, representatives from local and regional agencies, and companies that are key to hazard mitigation activities. These stakeholders are identified by asterisks (*). The City also informed other emergency managers from surrounding cities. At the Orange County Emergency Management Organization meeting on October 6, 2017, Jordan Villwock (Laguna Beach LHMP Project Manager) gave a verbal update on the plan process and an opportunity for members to provide input. No comments were made by attendees at this meeting. **Appendix A** contains the sign in sheet for this meeting.

These members make up the Committee:

- Tiffany Bates: Human Resources & Risk Manager, Laguna Beach Administrative Services
- Ethan Brown: Senior Emergency Coordinator, Orange County Sheriff's Department*
- Wade Brown: Undergrounding Program Director, Laguna Beach Public Works
- Duane Cave: External Relations Manager, San Diego Gas and Electric Company*
- Karalee Darnell: Government Affairs Manager, Southern California Edison*
- Jeff Dixon: Assistant Superintendent, Laguna Beach Unified School District*

- Drew Downing: Manager, Orange County Health Care Agency*
- Robert Elster: Vice Chair, Laguna Beach Emergency/Disaster Preparedness Committee*
- William Fegley: Parks Manager, Orange County Parks*
- Jennifer Gates: Senior Planner, Laguna Beach Community Development Department
- Adam Gufarotti: Senior Recreation Supervisor, Laguna Beach Community Services Department
- Ryan Hallett: Senior Administrative Analyst, Laguna Beach City Manager's Office
- Jeff Hoey: Battalion Chief, Orange County Fire Authority*
- Hannah Johnson: Project Manager, Laguna Beach Water Quality Department
- Tim Kleiser: Police Lieutenant, Laguna Beach Police Department
- Lance Larson: Reserve Officer, Orange County Intelligence and Assessment Center*
- Matt Lawson: Chair, Laguna Beach Emergency/Disaster Preparedness Committee*
- Leo Lopez: Safety Officer, Laguna Beach County Water District*
- Kory McCain: Parks Supervisor, Orange County Parks*
- John Navarette: Public Affairs Manager, Southern California Gas Company*
- Sean Preacher: Health and Safety Manager, South Orange County Wastewater Authority*
- David Shissler: Water Quality Director, Laguna Beach Water Quality Department
- Paul Simonds: Public Affairs Manager, Southern California Gas Company *
- Kirk Summers: Fire Chief, Laguna Beach Fire Department
- Megan Tomasko: Environmental Compliance and Emergency Coordinator, South Coast Water District *
- Joe Torres: Police Lieutenant, Laguna Beach Police Department
- Kai Bond: Marine Safety Captain, Laguna Beach Marine Safety Department
- Jordan Villwock: Emergency Operations Coordinator, Laguna Beach Police Department
- Trisha Woolslayer: Health and Safety Manager, South Coast Water District*
- Ryan Zajda: Facilities Director, Laguna Beach Unified School District*
- James Brown, Fire Marshal, Laguna Beach Fire Department

The Committee held four meetings throughout the plan development process to lay out the methods and approach for the Plan, draft and review content, make revisions, and engage members of the public.

- **Committee Meeting #1 (August 10, 2017)**: The Committee members confirmed the project goals and their purpose and responsibilities of the Committee. They revised the community engagement and outreach strategy, confirmed and prioritized the hazards to be included in the Plan, and identified critical facilities for the threat assessment.

- **Committee Meeting #2 (September 14, 2017)**: Members held a detailed discussion about the results of the hazards assessment and mapping that showed the areas facing an elevated risk. The Committee also reviewed the hazard prioritization results.
- **Committee Meeting #3 (October 18, 2017)**: The Committee reviewed the results of the risk assessment to identify the populations and assets that may face greater harm in the event of a hazard event. The Committee also discussed potential hazard mitigation actions to address vulnerabilities.
- **Committee Meeting #4 (November 1, 2017)**: The Committee reviewed the draft mitigation measures, made revisions, and assigned priorities.

Invitation to Committee meetings, as well as meeting agendas/materials, were provided via email. **Appendix A** contains copies of invitations, meeting agendas and sign in sheets, and other relevant materials distributed for Committee meetings.

PUBLIC ENGAGEMENT

Under FEMA guidelines, local hazard mitigation planning processes should create opportunities for members of the public to be involved in plan development—at a minimum, during the initial drafting stage and during plan approval. The Committee chose to go beyond minimum standards and conduct more extensive community outreach to help ensure that the LHMP reflects community values, concerns, and priorities. The Committee developed a community engagement and outreach strategy (engagement strategy) to guide all public engagement activities. **Appendix B** contains a copy of the strategy.

Public Meetings

In-person public meetings were a central component of the City's engagement efforts. These meetings provided an opportunity for members of the public to learn about the LHMP in depth—the plan development process, the hazards of concern, and the mitigation strategy and individual actions. At these meetings, members of the public could speak directly to City staff and other stakeholders and provide detailed feedback. The City held three public meetings, and notices of each meeting were widely distributed in advance in accordance with City notification requirements, the engagement strategy, legal requirements, and best practices.

- **Public Meeting #1 (September 14, 2017)**: This meeting was the kick-off for public engagement. Members of the public learned about the importance of an LHMP, what the Plan would include, and the timeline for developing it. They engaged in a series of activities to identify the hazards that most concerned them as well as mitigation action ideas.
- **Public Meeting #2 (October 18, 2017)**: At this meeting, members of the public learned about the hazard profiles developed for the plan and Laguna Beach's vulnerabilities to individual hazard types. Activities at this meeting included opportunities to suggest hazard mitigation actions and to comment on others.

- **Public Meeting #3 (January 8, 2018)**: This meeting was conducted by the Emergency and Disaster Preparedness Committee and marked the beginning of the public review period. It included a discussion about how the Plan was prepared, the results of the analyses, and the chosen hazard mitigation strategies. Committee members had the opportunity to review the plan and provide feedback to Planning Team. Members of the public were also invited to comment on the Plan at this meeting.

- **Public Meeting # 4 (February 27, 2018):** This meeting was conducted by the City Council nearing the end of the public review period. The meeting included a discussion about how the Plan was prepared, the results of the analyses, and the chosen hazard mitigation strategies. Council members had the opportunity to review the plan and provide feedback to the Planning Team. Members of the public were also invited to comment on the Plan at this meeting.

Online Engagement

The City recognized that not all community members are able to attend public meetings and conducted public engagement through social media and online platforms. The Committee set up a project website as a simple, one-stop location for community members to learn about the LHMP. The website included information about what an LHMP is and why the City prepared one. It had links to materials and plan documents as they became available and allowed members of the public to receive notifications about upcoming events. The Committee also used social media accounts, such as Facebook, Twitter, and NextDoor, to send quick notifications or bursts of information about the Plan and the development process.

A central part of the online engagement was an online survey. This survey asked community members about their experience and familiarity with emergency conditions, their level of preparedness for future emergencies, and preferred actions for the City to take to increase resiliency in Laguna Beach.

The survey had responses from 194 community members; those responses are summarized here:

- Wildfire was the hazard of greatest concern to the largest number of respondents, followed by seismic hazards (e.g. earthquakes and related events) and landslides.

- Approximately 30 percent of respondents have been affected by a disaster in their current home, and half of these respondents reported being impacted by wildfire. Many respondents mentioned being impacted by flooding and falling tree limbs.

- Many respondents were concerned about falling power lines and power poles and wanted the City and utility companies to place electrical lines underground.

- Many respondents believed that a release of radioactive material from the San Onofre Nuclear Generating Station, especially a release triggered by a tsunami or earthquake, poses a threat to Laguna Beach.

- Ponding (localized flooding caused by overwhelmed storm drains or other poor drainage) occurs throughout the community, disrupting road networks and flooding some homes.
- Among homeowners, 42 percent of respondents either did not have adequate homeowners insurance to cover hazard events or were unsure if their insurance was sufficient.
- Approximately 64 percent of respondents have already taken steps to protect their homes from hazard events.
- The most common emergency kit items that respondents had were can openers (94 percent), cooking and eating utensils (90 percent), first aid kits (83 percent), and a flashlight with batteries (83 percent). However, less than half of respondents had a portable radio (49 percent), important family documents in a strong container (32 percent), a secondary source of heat (21 percent), or extra fuel (11 percent).
- More than half of respondents (58 percent) are not aware of the special needs of their neighbors.
- Approximately 20 percent of respondents are CERT members, and another 39 percent of respondents would like to know more about the program. Approximately 42 percent of respondents have heard of the Emergency Disaster Preparedness Committee, and another 37 percent of respondents would like to learn more.
- Respondents felt that the most effective thing the City can do is to provide effective emergency notifications and communication.
- Approximately 63 percent of respondents' employers have a disaster recovery plan, and approximately 56 percent of respondents' employers have a workforce communications plan.

Appendix B contains copies of all materials used for public outreach, including the full results of the community survey.

Radio Engagement

A unique engagement strategy was the use of the local radio station **KX 93.5** for community outreach. On October 18, 2017, the radio station interviewed Jordan Villwock (from the City of Laguna Beach) and Aaron Pfannenstiel (from technical consulting firm PlaceWorks) about the LHMP. This interview was intended to inform community members that listen to this local station about the project and opportunities to get involved and provide input. A copy of this interview is on the City's LHMP web page and available for download at this link: http://www.kx935.com/podcasts/local-hazard-mitigation-plan/.

PUBLIC REVIEW DRAFT

On January 8th, 2018, Laguna Beach released a draft copy of the LHMP for public review and comment. The document was posted electronically on the City's website, and hard copies were made available at the Laguna Beach Public Library, City Clerks Office, and the Susi Q Community Center. The City distributed notifications about the public review draft through social media accounts and other online sources.

PLAN REVISION AND ADOPTION

Following public comment, the Committee revised the Plan and submitted it to Cal OES and FEMA. Comments received during public review included:

- Identifying the large number of visitors (six million) that frequent the City on a yearly basis.
- Update of numbers and calculations within some of the tables in Section 4.

Upon completion of Cal OES and FEMA review, the Committee then made additional revisions to incorporate comments from state and federal agencies, as appropriate, and submitted the final draft to City decision makers. The Laguna Beach City Council adopted the final LHMP on [DATE], 2018. **Appendix C** contains a copy of the adoption resolution.

PLAN RESOURCES

The Committee used a number of different plans, studies, technical reports, datasets, and other resources to prepare the hazard assessment, mapping, threat assessment, and other components of this Plan. **Table 1-1** provides some of the primary resources the Committee used to prepare this Plan.

TABLE 1-1: KEY RESOURCES FOR PLAN DEVELOPMENT

Section	Key Resources	Example Uses
Multiple sections	• Cal-Adapt • California Geological Survey • California State Hazard Mitigation Plan • City of Laguna Beach General Plan • FEMA Local Hazard Mitigation Plan Guidance • National Oceanic and Atmospheric Administration • National Weather Service • United States Geological Survey • US Census Bureau 2011-2015 American Community Survey	• Science and background information on different hazard conditions. • Records of past disaster events in and around Laguna Beach. • Current and anticipated climate conditions in and around Laguna Beach. • Projections of future seismic conditions and events.
Community Profile	• City of Laguna Beach financial and economic reports • California Energy Commission • Laguna Beach County Water District • Laguna Beach Historical Society • South Coast Water District	• Demographic information for Laguna Beach and Orange County. • History of the region. • Economic trends in Laguna Beach. • Commute patterns in Laguna Beach. • Local land uses patterns. • Background information on utilities serving Laguna Beach.
Hazard Assessment (Coastal Hazards)	• Intergovernmental Panel on Climate Change	• History and future projections of sea level rise.
Hazard Assessment (Disease and Pest Management)	• California Department of Health • World Health Organization	• Science and historical records of disease outbreaks.
Hazard Assessment (Extreme Weather)	• California Department of Water Resources • US Drought Monitor • Western Regional Climate Center	• Science and background information of extreme weather events. • Historical record of extreme weather events in and around Laguna Beach.
Hazard Assessment (Flood)	• FEMA Map Service Center • Orange County Flood Control District	• Records of past flood events in and around Laguna Beach. • Locations of flood-prone areas in Laguna Beach.
Hazard Assessment (Human-Caused Hazards)	• Global Terrorism Database • International Atomic Energy Agency • US Nuclear Regulatory Commission	• Historical records of terrorism. • Science and background information on nuclear hazards.
Hazard Assessment (Seismic Hazards)	• Southern California Earthquake Data Center	• Locations of fault zones. • Records of past earthquakes.
Hazard Assessment (Wildfire)	• California Department of Forestry and Fire Prevention	• Records of past fire events. • Location of fire hazard zones in and around Laguna Beach.

Note: Sections that are not individually called out in this table relied primarily on sources identified in multiple sections.

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CHAPTER 2
COMMUNITY PROFILE

This chapter of the LHMP is a summary of Laguna Beach, with information about the community's physical setting, history, economy and demographics, current and future land uses, and key infrastructure. The Community Profile establishes the baseline conditions that inform the development of the hazard mitigation actions in **Chapter 5.**

SETTING AND LOCATION

Laguna Beach is in southern Orange County between the Pacific Ocean and the San Joaquin Hills. It is approximately 45 miles southeast of downtown Los Angeles. The cities of Laguna Woods, Aliso Viejo, Laguna Niguel, and Dana Point lie along Laguna Beach's eastern border. Beyond the San Joaquin Hills, the cities of Newport Beach and Irvine are to the north. The Pacific Ocean borders Laguna Beach to the southwest.

The coastal areas of Laguna Beach sit on a series of coastal terraces of varying height, from a few feet high to close to 140 feet tall, with a flat coastal plain below Laguna Canyon (Laguna Beach 2012). Laguna Beach's winding coastline forms numerous coves and beaches. Away from the coast, the city rises quickly into the ridges and canyons of the San Joaquin Hills. Although most of Laguna Beach is near the coast, the city also extends approximately five miles inland along the east side of Laguna Canyon. In the inland hillside areas, parts of the community reach elevations above 1,000 feet.

HISTORY

Human settlement in what is now Laguna Beach dates back to 6,000 BCE, or potentially earlier. These early residents were largely nomadic, depending primarily on hunting, fishing, and gathering plants for survival. Eventually the Tongva (Gabrielino) Native American culture developed across much of the Los Angeles Basin, with Laguna Beach near the southern border of Tongva lands. The Tongva were one of the largest Native American groups in southern California, with as many as 5,000 to 10,000 members at the time of contact with Europeans (Harkin 2004).

The Spanish explorer Juan Rodriguez Cabrillo and the English privateer Sir Francis Drake both sailed along the coast of California in the 1500s, but the first permanent European settlement in the area did not occur until Spanish explorers and priests established the missions along much of the California coast, beginning in 1769. The nearest mission to modern-day Laguna Beach, Mission San Juan Capistrano, was established in 1776. After Mexico (including California) became independent from Span in 1821, the missions were secularized and large portions of land were granted to prominent figures. The area north of Laguna Canyon became part of Rancho San Joaquin, although the rest of the community was not granted (Laguna Beach Historical Society 2017).

The area south of Laguna Canyon was open to homesteading in the 1870s, approximately 20 years after the United States conquered California in the Mexican-American war, and Rancho San Joaquin became part of the Irvine Ranch. The first American settler arrived in 1871, and by 1888 there were 15 families living permanently in the area. At this time, the town was two separate settlements, Laguna Beach (called "Lagona" until 1904) near the mouth of Laguna Canyon, and South Laguna. Even at this time, the town was a popular visitor destination, particularly during the summer, and tourism quickly became a major industry. The area became a center for artists beginning in 1903, when the artist Norman St. Clair made sketches of the coast that quickly raised the town's profile. At this time, a group of investors purchased North Laguna (then called Laguna Cliffs) from the Irvine Ranch and developed it, expanding the town north of Laguna Canyon (Laguna Beach 2006).

Art galleries have been a feature of Laguna Beach since the early 1900s. Image from the Orange County Archives.

Laguna Beach continued to grow, particularly with the arrival of the Pacific Coast Highway in 1926. Incorporated in 1927, it was the first city in southern Orange County, with a population of approximately 1,900. Despite growing to a size of over 23,000 people in the present, Laguna Beach has retained its distinction as an artistic community and popular vacation spot (Laguna Beach 2006). In 2016, an estimated over 6 million people visited Laguna Beach (Visit Laguna Beach 2017).

DEMOGRAPHICS

The US Census estimated Laguna Beach's population at 23,230 residents as of 2015. It is one of the smallest of Orange County's 34 cities by population; only Laguna Woods, La Palma, Los Alamitos, and Villa Park have fewer people (US Census Bureau 2015a).

Compared to Orange County as a whole, Laguna Beach residents are older and have a higher median household income, although both groups have similar levels of home ownership. **Table 2-1** shows the basic demographics for Laguna Beach and Orange County.

TABLE 2-1: BASIC DEMOGRAPHICS, LAGUNA BEACH AND ORANGE COUNTY (2015)

	Laguna Beach	Orange County
Total population	23,230	3,116,069
Percent of residents that are children (less than 10 years)	6.56%	12.47%
Percent of residents that are senior citizens (65+ years)	22.72%	12.76%
Median age	50.3	37.1
Total households	11,239	1,009,353
Median household income	$98,366	$76,509
Percent of rental households	39.93%	42.32%

Source: US Community Census 2015a, 2015b, 2015c.

A greater proportion of Laguna Beach residents identify as white compared to Orange County residents. Approximately 11 percent of Laguna Beach residents identify as nonwhite, compared to approximately 37 percent of Orange County residents. **Table 2-2** shows the racial and ethnic composition in Laguna Beach and Orange County.

TABLE 2-2: RACIAL AND ETHNIC COMPOSITION, LAGUNA BEACH AND ORANGE COUNTY (2015)

	Laguna Beach		Orange County	
Race or Ethnicity	Population	Percentage	Population	Percentage
White	20,615	88.74%	1,970,000	63.22%
Black or African-American	208	0.90%	51,816	1.66%
American Indian and Alaska Native	41	0.18	12,476	0.40%
Asian	1,096	4.72%	590,342	18.94%
Native Hawaiian and Other Pacific Islander	53	0.23%	9,529	0.31%
Other race	441	1.90%	368,220	11.82%
Two or more races	776	3.34%	113,686	3.65%
Hispanic or Latino (of any race) *	1,806	7.77%	1,064,499	34.16%
Total	23,230	100%	3,116,096	100%

Source: US Census Bureau 2015d, 2015e.

* The US Census Bureau does not currently count persons who identify as Hispanic or Latino as a separate racial or ethnic category. Persons who identify as Hispanic or Latino are also included in the other racial or ethnic categories.

Laguna Beach residents have a higher level of educational attainment than the average Orange County resident. Approximately 72 percent of adults 25 years of age or older in Laguna Beach have obtained a college degree, compared to 46 percent of Orange County adults. Similarly, approximately 3 percent of Laguna Beach adults have not finished high school, compared to 16 percent of Orange County adults. **Table 2-3** shows educational attainment for adults in Laguna Beach and Orange County.

Spanish is the most commonly spoken language in Laguna Beach other than English, followed by Vietnamese, German, and French. Among residents at least five years of age, approximately 86 percent of Laguna Beach residents speak English at home, compared to approximately 69 percent of Orange County residents. Among speakers of the more common languages in Laguna Beach other than English,

large majorities are also English proficient. **Table 2-4** shows the language proficiency among residents five years of age and older in Laguna Beach and Orange County.

TABLE 2-3: EDUCATIONAL ATTAINMENT OF RESIDENTS 25+ YEARS OF AGE, LAGUNA BEACH AND ORANGE COUNTY (2015)

Educational Attainment	Laguna Beach		Orange County	
	Population	Percentage	Population	Percentage
Less than 9th grade	73	0.40%	182,478	8.78%
9th grade to 12th grade (no diploma)	386	2.12%	144,383	6.95%
High school graduate or equivalent	1,356	7.44%	367,556	17.69%
Some college (no degree)	3,261	17.89%	436,584	21.01%
Associate's degree	1,232	6.76%	162,649	7.83%
Bachelor's degree	6,293	34.52%	506,749	24.39%
Graduate or professional degree	5,681	31.16%	277,384	13.35%
Total	18,282	100%	2,077,783	100%

Source: US Census Bureau 2015f.

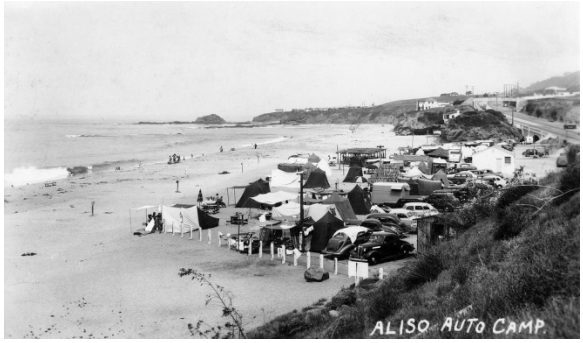
TABLE 2-4: LANGUAGE PROFICIENCY OF RESIDENTS 5+ YEARS OF AGE, LAGUNA BEACH AND ORANGE COUNTY (2015)

Language Spoken at Home	Laguna Beach		Orange County	
	Number of Speakers	Percent Not Proficient in English	Number of Speakers	Percent Not Proficient in English
English	19,408	-	1,587,426	-
Spanish	947	13.41%	770,012	44.52%
Vietnamese	290	6.55%	172,876	58.42%
German	273	17.95%	8,844	11.09%
French	269	24.91%	8,604	17.38%
All other languages	1,314	16.89%	377,207	39.99%
Total	22,501	-	2,294,969	-

Source: US Census Bureau 2015g.

ECONOMY AND COMMUTE PATTERNS

Laguna Beach is known as a vacation and tourism destination, as evidenced by the estimated over 6 million visitors annually (Visit Laguna Beach 2017), and this is reflected in the local economy. According to the US Census, more than a third of jobs (approximately 39 percent) in the community are in food services and accommodation. Other major economic sectors are retail trade (approximately 11 percent), education



This image from the 1930s shows an auto camp for visitors at the mouth of Aliso Creek. Image from the Orange County Archives.

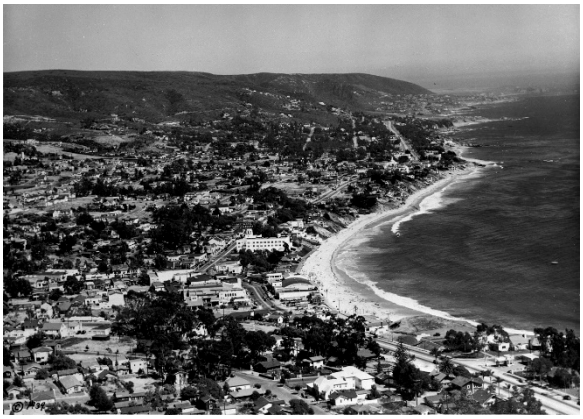
(approximately 10 percent), and various professional and technical services (approximately 8 percent) (US Census 2017). Most of Laguna Beach's largest employers are in food services and accommodation, along with local government agencies and institutional organizations. **Table 2-5** shows the major employers in the community.

TABLE 2-5: TEN LARGEST EMPLOYERS IN LAGUNA BEACH (2015-2016)

Employer	Industry	Number of Employees	Percent of Total Employees
Mission Hospital Laguna Beach	Health care	2,500	19.69%
Montage Laguna Beach	Hotel	730	5.75%
Laguna Beach School District	Education	350	2.76%
City of Laguna Beach	Government administration	260	2.05%
Laguna College of Art & Design	Education	241	1.90%
Surf & Sand Resort	Hotel	240	1.89%
Pacific Edge Hotel	Hotel	198	1.56%
Las Brisas Restaurant	Restaurant	186	1.46%
Hotel Laguna	Hotel	123	0.97%
Mozambique	Restaurant	95	0.75%
Total (Top 10 employers)	-	4,923	38.76%
All other employers	-	7,777	61.24%
Total jobs	**-**	**12,700**	**100%**

Source: Laguna Beach 2016.

Laguna Beach residents are mostly commuters—approximately 88 percent of employed residents travel outside of the community for work. Residents who commute mostly travel to Irvine, Los Angeles, Newport Beach, and other Orange County communities, although some travel to San Diego County and the Inland Empire, and approximately 3 percent travel to the San Francisco Bay Area. Similarly, approximately 88 percent of people who work in Laguna Beach come from other communities, predominantly from Laguna Niguel, Irvine, and Dana Point, as well as Los Angeles and other communities in Orange County (US Census 2017).



Laguna Beach's general layout and land use patterns have remained similar over the years, as shown in this image from 1939. Image from the Orange County Archives.

The highest concentration of jobs in Laguna Beach is in the downtown area near the intersection of Coast Highway and Laguna Canyon Road. Other job centers include the area around Treasure Island Park, south Laguna Beach near Table Rock Beach, and the commercial and institutional areas in Laguna Canyon (US Census 2017).

LAND USES

Laguna Beach's coastal regions are mostly developed. Some developed areas extend into the hills and canyons, although most of the city's inland areas are

undeveloped and designated for open space or recreational uses. These undeveloped areas comprise more than half of Laguna Beach's land area. Residential land uses, predominantly low-density residential, make up most of the city's developed area. Commercial, industrial, and institutional land uses contribute smaller fractions (Laguna Beach 2012). **Figure 1** depicts the general plan land uses for the city.

DEVELOPMENT TRENDS

Due to the lack of developable open land, development activities in the city typically involve minor modifications to existing commercial and residential buildings as well as major remodels and construction of custom homes. In 2017, major remodels and new dwellings accounted for 49 permits issued by the Community Development Department. The number of permits issued in 2017 is similar to the number issued in 2015 and 2016, showing signs of consistent development activity in the city. **Table 2-6** shows recent development trends in Laguna Beach.

TABLE 2-6: DEVELOPMENT ACTIVITY TRENDS

Year	Commercial	Residential
2015	129	1253 (4 major remodels, 18 new dwellings)
2016	99	1173 (25 major remodels, 24 new dwellings)
2017*	95	1021 (21 major remodels, 28 new dwellings)

*As of October 25, 2017.

INFRASTRUCTURE ASSESSMENT

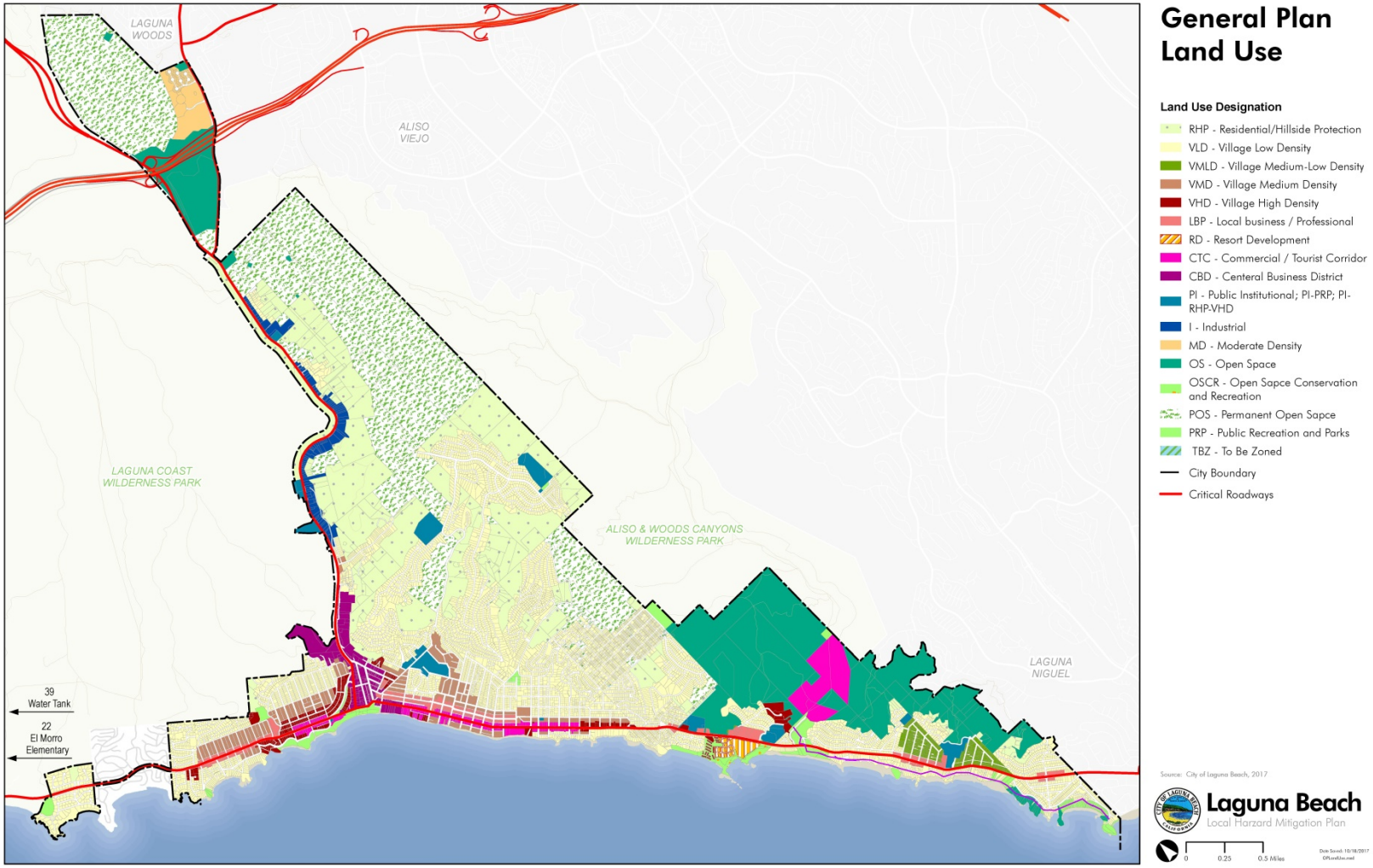
It is critically important to maintain the key infrastructure networks in Laguna Beach, as well as external parts of these networks that support the community. Damage to infrastructure networks may lead to additional hazards, such as a burst water tank that causes flooding or downed power lines that cause fire.

ELECTRICITY

Most of Laguna Beach receives its electricity from Southern California Edison (SCE), which is one of California's three major investor-owned utility companies and the largest electrical supplier in the state.[1] The southern part of Laguna Beach, approximately south of 2nd Avenue, is serviced by San Diego Gas and Electric (SDG&E), another investor-owned utility and the fourth-largest electrical supplier in California (CEC 2015a, 2016). These companies source electricity from power plants throughout California and neighboring states and deliver it through a network of large-scale power lines and substations.

[1] As of 2015, as measured by the amount of electricity supplied.

Figure 1: General Plan Land Use Map



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There are no registered commercial power plants in Laguna Beach, although numerous homes and other buildings in the community have small-scale solar energy panels or backup generators (EPA 2017). Laguna Beach has one substation, the Borrego substation, which is on El Toro Road near the border with Laguna Woods. A second substation, the Morro substation, sits on Laguna Canyon Road, although technically it is just outside of the city limits on unincorporated land (CEC 2017a). The primary transmission line in Laguna Beach runs along Laguna Canyon Road between the two substations, with connections to other substations outside of the city. The section of Laguna Beach served by SDG&E receives its electricity through the Laguna Niguel substation, approximately a mile and a half east of Laguna Beach (CEC 2015b). These external connections provide Laguna Beach with some redundancies against power outages in the event that individual power lines are damaged, although damage to a substation or more widespread damage to power lines could result in a greater loss of power. The Borrego and Morro substations and all transmission lines in Laguna Beach are owned by SCE, and SDG&E owns the Laguna Niguel substation (CEC 2015b, 2017a).

Electrical substations are vital facilities to ensure that electrical service is safe and reliable. Image from Paul Chernikhowsky.

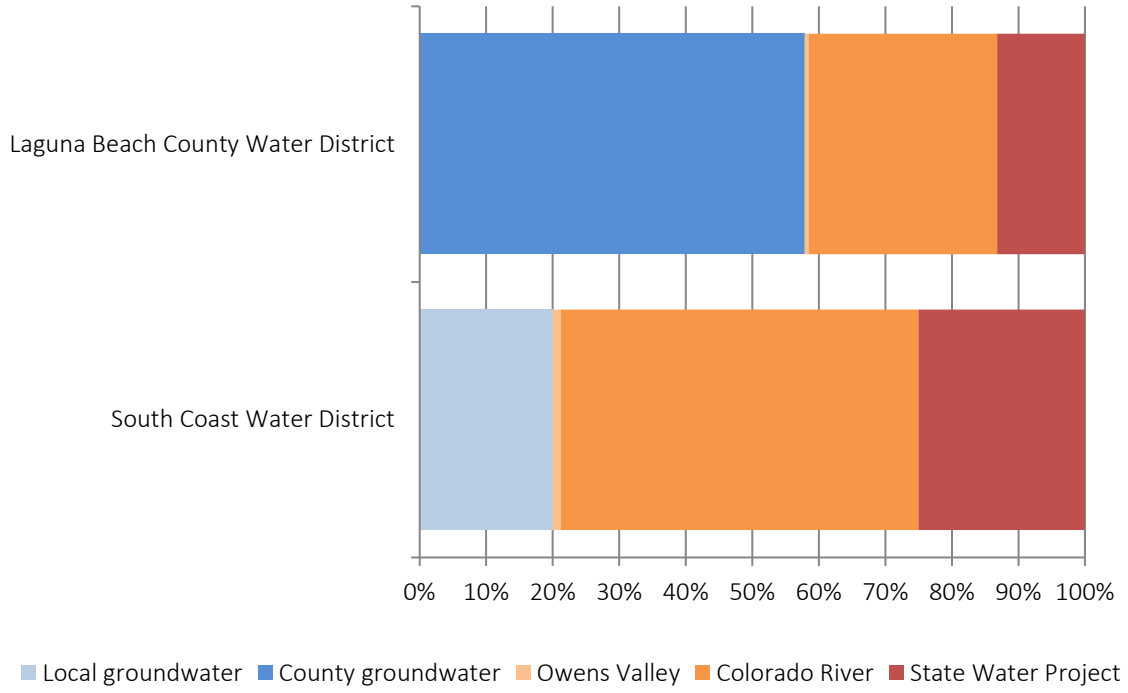
NATURAL GAS

Natural gas service in Laguna Beach is provided by the Southern California Gas Company (SoCalGas). There is a major transmission line running the length of Laguna Beach underneath Pacific Coast Highway, but no other large pipelines are present (SoCalGas 2017; CEC 2017b). Various facilities in Huntington Beach, Dana Point, and other surrounding communities help to keep the natural gas flowing safely and reliably (CEC 2017b). Damage to the transmission line in Laguna Beach or to facilities in surrounding communities could reduce natural gas service in Laguna Beach. Because natural gas is highly flammable and potentially combustible, any rupture in a natural gas pipeline or an accident that causes a spark around natural gas could lead to a fire or explosion.

WATER AND WASTEWATER

There are two water providers in Laguna Beach: the Laguna Beach County Water District and the South Coast Water District, both of which are public agencies. South Coast Water District provides service to south Laguna Beach, generally south of Cardinal Drive, and the Laguna Beach County Water District serves the remainder of the community. Both districts receive their water from a variety of sources, including local and county groundwater, and imported water from the Sierra Nevada, Colorado River, and Owens River. **Figure 2** shows the proportions of water sources from both water districts.

Figure 2: Water Sources in Laguna Beach



Sources: LBCWD 2016; MWD 2016; MWDOC 2016; Regan 2018; SCWD 2016; Woolslayer 2018.

Both districts are members of the Municipal Water District of Orange County (MWDOC), which is in turn a member of the Metropolitan Water District of Southern California (MWD). MWDOC supplies the districts with surface water and groundwater from elsewhere in Orange County. MWD provides MWDOC with water from the Owens Valley, Colorado River, and State Water Project. MWDOC then distributes this water to individual districts.

The South Coast Water District obtains approximately 20% of its water from local groundwater basins, while the Laguna Beach County Water District receives approximately 60% of its water from groundwater basins elsewhere in Orange County (Regan 2018; Woolslayer 2018). The remaining supply for most agencies is made up by imported MWD water. A majority of this water comes from the Colorado River, and a smaller part from the Sierra Nevada through the State Water Project. A very small portion of imported water comes from the Owens River through the Los Angeles Aqueduct.

As most of the water used in Laguna Beach does not come from sources within the community, there is a risk that damage to local pipelines and pumping stations may interrupt the districts' ability to deliver water. Supplies of water from MWD, or groundwater pumped from elsewhere in Orange County may be affected by damage to water treatment plants and delivery infrastructure in the county. The districts are

also vulnerable to water infrastructure damage in the Los Angeles Basin or the major aqueducts that supply the region, as this may affect MWD supplies.

The Laguna Beach County Water District maintains 21 storage reservoirs with a total capacity of 33.5 million gallons, enough to meet approximately 10 days of demand (LBCWD 2016). The South Coast Water District, working collectively with several other regional agencies, has enough storage capacity to meet demand for approximately seven days (SCWD 2016). Both agencies have connections to a regional pipeline network that allows them to receive water from other Orange County water suppliers in the event of a short-term emergency.

Wastewater service in the community is supplied by the City of Laguna Beach and the South Orange County Wastewater Authority (SOCWA). The City operates the sewer lines and pump stations that collect wastewater from buildings and facilities in Laguna Beach and conveys it to a regional network operated by SOCWA for treatment. The nearest treatment facility is the Coastal Treatment Plant just outside of Laguna Beach in the unincorporated area of Aliso Canyon. Other treatment facilities are in Dana Point and Laguna Niguel. Damage to the City-owned sewer system or to SOCWA facilities may reduce treatment capacity or cause a leak, which in turn may pose a hazard to human and environmental health.

TRANSPORTATION

The two major roadways in Laguna Beach are the Coast Highway (State Route 1) and Laguna Canyon Road (State Route 133). The Coast Highway runs the length of Laguna Beach near the coast, with two lanes in both directions, and connects to Newport Beach to the northwest and Dana Point to the southeast. Laguna Canyon Road runs from Coast Highway through Laguna Canyon to eastern Irvine, with two lanes in both directions south of Canyon Acres Drive and one lane beyond. State Route 73 runs from Costa Mesa to Laguna Niguel through a short portion of the City's northern border, and is only accessible to most of the community through Laguna Canyon Road. Major regional freeways include Interstates 5 and 405, which are northeast of the city.

California's famed State Route 1 is a primary route through Laguna Beach. Image from Tony Hisgett.

In the event of an emergency, most community members would likely evacuate in either direction along the Coast Highway, and Laguna Canyon Road would serve as the evacuation route for residents in the canyon. If the Coast Highway is inaccessible, the only way out of Laguna Beach is through Laguna Canyon Road, which could easily become congested due to its limited capacity. Use of these evacuation routes will be based on the incident occurring and areas of the City impacted.

The City of Laguna Beach operates bus and trolley lines that run along Coast Highway and into city neighborhoods, with more-limited service outside of the summer tourism season. The Orange County Transportation Authority runs bus lines that connect to neighboring cities along Coast Highway and Laguna Canyon Road. The nearest train station is the Mission Viejo/Laguna Niguel station, served by the regional Metrolink commuter rail system. The nearest airport with commercial service is John Wayne Airport near Santa Ana and Costa Mesa.

CHAPTER 3
HAZARD ASSESSMENT

This chapter discusses the types of hazards that might reasonably happen in Laguna Beach. It describes these hazards and how they are measured, where in Laguna Beach they may occur, a history of these hazards in and around Laguna Beach, and the future risk they pose. The discussion of future risks includes any changes to the frequency, intensity, and/or location of these hazards as a result of climate change. This chapter also discusses how the Hazard Mitigation Planning Committee selected and prioritized the hazards in this Plan.

KEY TERM

Risk: The chance of a hazard happening—especially one of a particular size or intensity.

HAZARD IDENTIFICATION

FEMA guidance identifies a number of hazards that communities should evaluate for inclusion in a hazard mitigation plan. Communities may also consider additional hazards for their plans. The Committee reviewed an extensive list of hazard events and excluded the ones that do not pose a threat to Laguna Beach. **Table 3-1** lists the hazards considered by the Committee and explains why each hazard was or was not included. The table also shows if a hazard is recommended for consideration by FEMA and if it is included in the 2013 "California Multi-Hazard Mitigation Plan."

TABLE 3-1: HAZARD EVALUATION FOR LAGUNA BEACH LHMP

Hazard	Recommended for Consideration	Included in LHMP?	Reason for Inclusion or Exclusion
Agricultural pests	California plan	No	No major agricultural activity or resources in Laguna Beach.
Air pollution	California plan	No	Air pollution is a state and regional issue that is addressed through plans and regulations administered by the South Coast Air Quality Management District and/or California Air Resources Board.
Avalanche	FEMA guidance	No	Avalanches do not happen in Laguna Beach.
Climate change	California plan	Yes (as a function of other hazard discussions)	Climate change contributes to the frequency, intensity, and/or location of other hazards. It is not a stand-alone hazard. It will be discussed as a factor for future hazards rather than as an event.
Coastal flooding and storms	California plan	Yes	The Committee determined that coastal flooding and storms should be covered under coastal hazards and extreme weather.
Dam failure	FEMA guidance California plan	No	Laguna Beach does not lie in the risk zone for any dams.

TABLE 3-1: HAZARD EVALUATION FOR LAGUNA BEACH LHMP

Hazard	Recommended for Consideration	Included in LHMP?	Reason for Inclusion or Exclusion
Disease and pest management	California plan	Yes	The Committee determined that diseases and pests pose a sufficient risk to human health to be included in this Plan.
Drought	California plan	Yes	Droughts are a recurring and potentially severe hazard in Laguna Beach. This hazard has been incorporated with the extreme weather discussion.
Earthquake	FEMA guidance California plan	Yes	Laguna Beach is in a seismically active area and has been impacted by earthquakes.
Energy shortage	California plan	No	Laguna Beach is not responsible for supplying energy to the community.
Erosion	FEMA guidance California plan	Yes	Erosion occurs regularly in Laguna Beach and occasionally threatens property and human health. This discussion is part of the coastal hazards topic.
Expansive soil	FEMA guidance	No	There are no expansive soil issues identified in Laguna Beach.
Extreme cold	FEMA guidance California plan	No	Temperatures in Laguna Beach rarely become cold enough to pose a threat to health or safety.
Extreme heat	FEMA guidance California plan	No	The Committee determined that extreme heat is not a hazard of concern to Laguna Beach.
Flood	FEMA guidance California plan	Yes	Floods occur occasionally in Laguna Beach and pose a threat to people and property.
Fracking	California plan	No	Fracking is not an issue of concern in Laguna Beach because it lacks petroleum resources.
Hail	FEMA guidance	No	Hail that is severe enough to pose a threat to people and property is too rare in Laguna Beach to be included.
Hazardous materials release	California plan	No	The Committee determined that hazardous material releases are not a hazard of concern.
Hurricane	FEMA guidance California plan	No	Hurricanes are too rare in Laguna Beach to be included.
Infrastructure failure	California plan	Yes	Infrastructure failure can pose a threat to people and property in Laguna Beach. This discussion is included with human-caused hazards.
Landslide	FEMA guidance California plan	Yes	Numerous landslides have happened in the community in the past few decades, so this hazard is included in the Plan.
Levee failure	California plan	No	Laguna Beach is not protected by levees.
Lightning	FEMA guidance	No	Although lightning occurs occasionally in Laguna Beach, it is not sufficiently threatening to people and property to be included in this Plan.
Metal theft	California plan	No	This issue was not identified by the Committee as a concern in Laguna Beach.
Methane-containing soils	Regional hazard plans	No	Issues associated with methane-containing soils were not identified in Laguna Beach by the Committee.
Nuclear hazard	California plan	Yes	Laguna Beach is less than 15 miles from the San Onofre Nuclear Generating Station, which houses radioactive material. A release of these materials is a concern of the community.

TABLE 3-1: HAZARD EVALUATION FOR LAGUNA BEACH LHMP

Hazard	Recommended for Consideration	Included in LHMP?	Reason for Inclusion or Exclusion
Sea level rise	FEMA guidance California plan	Yes	Laguna Beach has low-lying coastal areas that are susceptible to sea level rise. This topic is included under the coastal hazards discussion.
Severe wind	FEMA guidance	Yes	Severe winds occasionally blow in Laguna Beach and pose a threat to people and property.
Severe winter weather	FEMA guidance	Yes	Severe winter weather usually refers to blizzards, ice storms, etc. The Committee decided to use this term for the intense storms that usually hit Laguna Beach during the rainy (winter) season.
Storm surge	FEMA guidance	No	The Committee determined that storm surge is covered by other hazards.
Subsidence	FEMA guidance	No	There is no record of subsidence (independent of those associated with landslides) or subsidence potential that could pose a threat to people and property.
Terrorism	California plan	Yes	Since terrorist attacks can happen anywhere, the Committee felt the Plan should address terrorism under human-caused hazards.
Thunderstorm	California plan	No	Although Laguna Beach occasionally experiences thunderstorms, the Committee determined that thunderstorms are addressed by other hazards.
Tornado	FEMA guidance California plan	No	Given the rarity of tornadoes in Laguna Beach, the Committee determined that tornadoes are adequately covered by other hazards.
Transportation crashes	California plan	No	The Committee determined that the hazard mitigation plan is not the appropriate location to address transportation crashes.
Tsunami	FEMA guidance California plan	Yes	Laguna Beach has low-lying coastal areas in a seismically active area, and so is at risk of tsunamis.
Volcano	California plan	No	There are no volcanoes near enough to Laguna Beach to reasonably pose a threat.
Wildfire	FEMA guidance California plan	Yes	Significant wildfires have occurred in Laguna Beach in the past and pose a significant threat to people and property.

The Hazard Mitigation Planning Committee combined multiple selected hazards into a single category, renamed some hazard types, and discussed some hazards with multiple subcategories in order to streamline the list and make it more accurately reflect the conditions in Laguna Beach.

- Extreme Weather: combines drought, severe winter weather, and severe wind.
- Seismic Hazards: addresses seismic shaking and liquefaction instead “earthquake.”
- Coastal Hazards: includes coastal erosion (erosion hazard), sea level rise, and tsunami.
- Human-Caused Hazards: combines infrastructure failure, nuclear hazards, and terrorism.
- Landslides and Mudflows: instead of “landslides,” since mudflows are a community concern.

After hazard evaluation and the organizational changes made by the Committee, this Plan discusses eight hazard categories:

- Coastal hazards
- Disease and pest management
- Extreme weather
- Flood
- Human-caused hazards
- Landslide and mudflow
- Seismic hazards
- Wildfire

HAZARD SCORING AND PRIORITIZATION

The Committee followed FEMA guidance for hazard mitigation plans and prioritized each of the eight hazards. In the initial step, it assigned a score of 1 to 4 in four criteria for each of the eight hazards. The four criteria are:

- **Probability:** the likelihood that the hazard will occur in Laguna Beach in the future.
- **Location:** The size of the area that the hazard would affect.
- **Maximum probable extent:** The severity of the direct damage of the hazard to Laguna Beach.
- **Secondary impacts:** The severity of indirect damage of the hazard to Laguna Beach.

The Committee assigned a weighting value to each criterion, giving a higher weight to the criteria deemed more important, and multiplied the score for each criterion by the weighting factor to determine the overall score for each criterion. The weighting values were recommended by FEMA:

- Probability: 2.0
- Location: 0.8
- Maximum probable extent: 0.7
- Secondary impacts: 0.5

Table 3-2 shows the rubric used to assign a score for each criterion.

TABLE 3-2: CRITERION SCORING

Probability		Maximum Probable Extent (Primary Impact)	
The estimated likelihood of occurrence based on historical data.		*The anticipated damage to a typical structure in the community.*	
Probability	Score	Impact	Score
Unlikely—less than a 1 percent chance in a given year.	1	Weak—little to no damage	1
Occasional—a 1 to 10 percent chance in a given year.	2	Moderate—some damage, loss of service for days	2
Likely—a 10 to 90 percent chance in a given year.	3	Severe—devastating damage, loss of service for months	3
Highly likely—more than a 90 percent chance in a given year.	4	Extreme—catastrophic damage, uninhabitable conditions	4
Location		**Secondary Impact**	
The projected area of the community affected by the hazard.		*The estimated secondary impacts to the community at large.*	
Affected Area	Score	Impact	Score
Negligible—affects less than 10 percent of the planning area.	1	Negligible—no loss of function, downtime, and/or evacuations	1
Limited—affects 10 to 25 percent of the planning area.	2	Limited—minimal loss of functions, downtime, and/or evacuations	2
Significant—affects 25 to 75 percent of the planning area.	3	Moderate—some loss of functions, downtime, and/or evacuations	3
Extensive—affects more than 75 percent of the planning area.	4	High—major loss of functions, downtime, and/or evacuations	4

After calculating the overall score for each criterion for each hazard, the scores for location, maximum probable extent, and secondary impact were summed to determine the total impact score for each hazard. FEMA guidance recommends multiplying the total impact score by the overall probability score to determine the final score for each hazard. A final score between 0 and 12 is considered a low-threat hazard, 12.1 to 42 is a medium-threat hazard, and a score above 42 is considered a high-threat hazard. This final score determines the prioritization of the hazards.

Table 3-3 shows the individual criterion scores, the final score, and the threat level for each hazard based on the above prioritization process.

Earthquakes are high priority hazards, as they are likely to occur, affect a wide area, and can be very damaging. Image from FEMA (FEMA News Photo).

TABLE 3-3: HAZARD SCORES AND THREAT LEVEL

Hazard	Probability (2.0)	Impact (2.0)			Final Score	Threat Level
		Location (0.8)	Primary Impact (0.7)	Secondary Impact (0.5)		
Coastal Hazards	3 (Likely)	2 (Limited)	3 (Severe)	2 (Limited)	28.2	Medium
Disease and Pest Management	2 (Occasional)	4 (Extensive)	2 (Moderate)	3 (Moderate)	24.4	Medium
Extreme Weather	3 (Likely)	4 (Extensive)	4 (Extreme)	4 (High)	48.0	High
Floods	4 (Highly Likely)	2 (Limited)	3 (Severe)	4 (High)	45.6	High
Human-Caused Hazards	4 (Highly Likely)	2 (Limited)	3 (Severe)	3 (Moderate)	41.6	Medium
Landslide and Mudflow	3 (Likely)	3 (Significant)	4 (Extreme)	4 (High)	43.2	High
Seismic Hazards	4 (Highly Likely)	4 (Extensive)	4 (Extreme)	4 (High)	64.0	High
Wildfire	4 (Highly Likely)	4 (Extensive)	4 (Extreme)	4 (High)	64.0	High

HAZARD PROFILES

COASTAL HAZARDS

For the purposes of this plan, coastal hazards include coastal erosion, sea level rise, and tsunamis. Some hazards closely associated with coastal erosion, including flooding and landslides, are discussed in their own section.

Description

Coastal erosion: Coastal erosion is the gradual or sudden wearing away of coastal bluffs and beaches by wind, rain, high surf, tides, and other events. If buildings and facilities on a beach or bluff have poor drainage, this can make erosion worse. Bluff erosion weakens the edges of the coastal terraces and causes parks or yards built on top of the bluffs to shrink over time. Erosion also weakens or hollows out areas under any structures, which may lead to a partial or complete collapse of the structure if the erosion progresses far enough. If the risk of collapse is high enough, the structure may be closed to prevent a potential disaster. Beach erosion causes beaches to become narrower, which can decrease their recreational use or limit coastal access. A narrower beach is also less able to act as a buffer from wave action and coastal flooding, so beach erosion can increase the risk to beachfront properties or increase the rate of bluff erosion when the beach is at the base of a cliff.

Sea level rise: Sea level rise is the increase in the height of the ocean's surface and is driven by changes in the Earth's climate. Global temperatures are increasing and causing land ice (i.e., glaciers) to melt. The meltwater runs into the oceans, raising the sea level surface. Warmer temperatures also cause the water in the oceans to expand (as water, like many other materials, expands when warmed), further raising

surface heights. Although it occurs globally, various forces and changes in the ocean's composition cause sea level rise at different rates in different locations. Sea level rise can happen naturally at the end of an ice age, although current sea level rise is very likely (at least a 90 percent chance) the result of human-caused climate change (IPCC 2013).

Cliff erosion is a common hazard along the coastal communities of California. Image from Bill Taroli.

Currently and in the near future, sea level rise is not a direct threat, but it exacerbates various coastal flooding hazards, such as storms, high surf, or exceptionally high tides. Sea level rise makes beaches narrower and less effective as buffers between the ocean and waterfront development. As a result, when coastal flooding occurs, floodwaters can advance farther inland. Higher ocean levels can also increase the rate of erosion of beaches and bluffs. In the long term, ocean levels may rise high enough to permanently or semi-permanently flood low-lying coastal areas.

Tsunami: A tsunami is a type of sea wave typically created by a geologic event underwater or along the shore. Earthquakes are the most common cause of tsunamis, but they may also be triggered by landslides, volcanic eruptions, and (on extremely rare instances) meteor strikes.[2] A large and sudden change in atmospheric pressure can also trigger a rare type of tsunami called a meteotsunami (Monserrat et al. 2006). Such events can suddenly displace a large volume of water, which creates the tsunami. In the open ocean the wave travels at 500 to 600 miles per hour (mph) but is only a few feet high and often unnoticed by passing ships (NOAA 2009). As the wave approaches the shore, the shallow depth to the sea floor forces the wave to slow down and grow up to 100 feet tall as it comes ashore (National Geographic 2014). Tsunamis can inundate coastal areas, causing widespread flooding, and the force of the water can cause significant damage. A typical tsunami event involves multiple waves of varying height, and the initial wave is not always the tallest.

Part of the danger of tsunamis is that they can cause damage far away from the event that triggers them. Although tsunamis weaken as they travel and typically do the greatest damage near the displacement event, large ones can retain enough energy to be destructive hundreds or thousands of miles away. For example, the tsunami from the Indian Ocean earthquake in 2004 caused measurable waves over 8,000 miles away in California (NOAA 2014). Meteotsunamis have a more localized effect and generally do not cause damage across distances of more than 300 miles (Vilibić et al. 2016).

[2] Tsunamis are sometimes incorrectly called tidal waves, but a tidal wave is a different type of event. Tsunamis are not caused by tides.

Location and Extent

Coastal erosion: The entire shoreline of Laguna Beach—both beach and bluffs—is subject to coastal erosion. Depending on the orientation of the shoreline and differences in geology, erosion has different rates in different locations. The average 70 year cliff-retreat rate for Southern California is approximately 0.3 meters per year (Hapke 2009), with erosion rates of approximately 0.2 meters per year within the Laguna Beach area. Erosion is often worse during the rainy season, when severe storms can cause substantial erosion.

Sea level rise: All beaches in Laguna Beach are at risk of sea level rise. Coastal bluffs are high enough to protect most development in the community from sea level rise, but Main Beach Park and buildings with their lower levels at or close to beach level may be exposed to sea level rise in the future. **Figure 3** depicts areas of the City that would be inundated by 66 inches of sea level rise, expected by 2100.

Tsunami: All beaches in Laguna Beach could be inundated by a tsunami. In the low-lying coastal areas near Main Beach, the water from a tsunami could reach inland between Broadway and Forest Avenue, as far as the current Wells Fargo Bank building. A tsunami could also travel up Aliso Creek as far as The Ranch (formerly the Laguna Beach Country Club) (California Department of Conservation 2009a, 2009b). Approximately 0.13 square mile of Laguna Beach is in the tsunami hazard zone. **Figure 4** depicts the tsunami inundation hazard areas for the City.

Past Events

Coastal erosion: Although coastal erosion is more or less continuous throughout Laguna Beach, there have been some significant erosion events in the past. Strong storms and high tides during the winter of 2015–2016 caused enough erosion at Treasure Island Beach that the stairs no longer reached the sand, making the beach inaccessible (Connelly 2016). During the winter of 2010–2011, winter storms caused similar erosion at multiple community beaches (Barboza 2010).

Sea level rise: Since the 1920s, water level gauges in southern California have measured a steady increase in the average height of the ocean, although the amount of increase varies by location. At the Port of Los Angeles, the sea has risen approximately 1 millimeter per year, or slightly less than 4 inches in 100 years (NOAA 2017a). At La Jolla, sea levels have increased by approximately 2.2 millimeters annually, or approximately 8.5 inches in 100 years (NOAA 2017b). No specific hazard event has been directly linked to sea level rise, although it may have made coastal flood events somewhat worse.

Figure 3: Sea Level Rise Hazard Zones

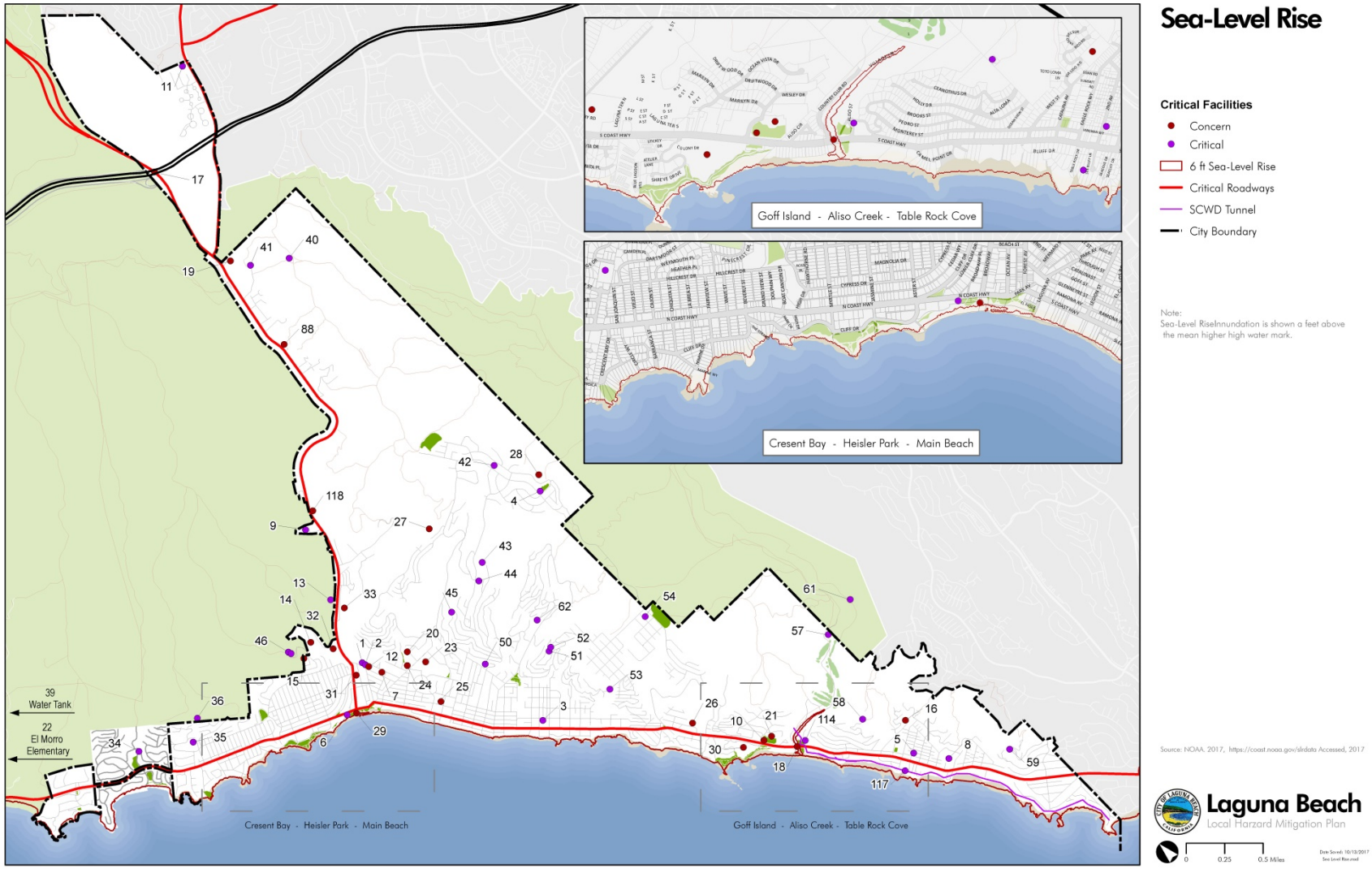


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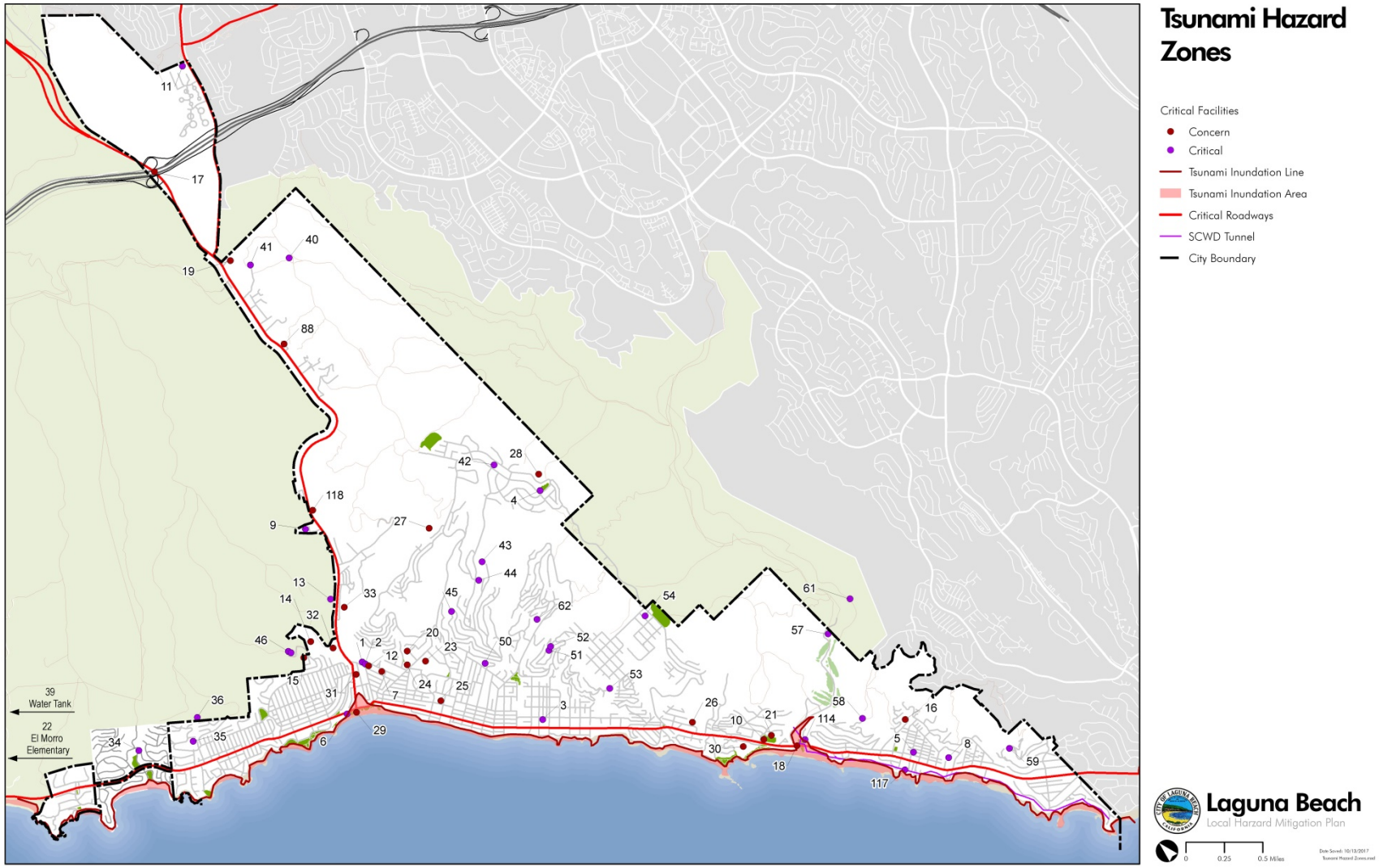
Figure 4: Tsunami Hazard Zones



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Tsunami: Multiple tsunami events have affected Laguna Beach in the past. In these cases, the tsunami was triggered by an event thousands of miles away, and the waves had enough energy to reach Laguna Beach, although the community has generally escaped damage. These events include the 2011 Tōhoku earthquake in Japan, the 2004 Indian Ocean earthquake, the 1964 earthquake in Alaska, and the 1960 earthquake in Chile. Some recent tsunami events have resulted in beach closures in Laguna Beach as a precaution (Schwebke 2015). While the City has not suffered direct damage, past tsunamis have resulted in damage elsewhere in California.

Risk of Future Events

Coastal erosion: All expectations are that coastal erosion will continue to affect the beaches and bluffs of Laguna Beach. The rate of future erosion will depend on a variety of factors, including sea level rise, the frequency and intensity of storms, and the drainage practices of blufftop and beachside development.

Sea level rise: As climate change continues, the rate of sea level rise is expected to increase. Sea levels could increase up to one foot above historic levels by 2030, two feet by 2050, and up to 66 inches by 2100. At these levels, independent of all other factors, most of Laguna Beach is projected to remain unaffected, although beaches could face occasional inundation. At seven feet or more of sea level rise, however, Main Beach Park and areas further inland could be permanently or semi-permanently flooded (Climate Central 2017). This degree of sea level rise could happen after 2100—or sooner if the sea level rises at faster rates than expected. Knowing the rate of sea level rise influences how to protect existing facilities in the sea level rise hazard zone, and how to address future construction within the hazard-prone area.

Tsunami: The geologic events that trigger most tsunamis cannot be predicted. It is possible that meteotsunamis could be forecast because they are triggered by weather events, but there is no accurate means of forecasting meteotsunamis yet (Vilibić et al. 2016). It is expected that tsunamis will continue at the same rate as in the past and at similar intensities. The California Geological Survey has identified 6 local fault lines and 12 distant locations that could potentially cause a tsunami in Laguna Beach (California Department of Conservation 2009a, 2009b).

The most damaging tsunamis are mostly triggered by earthquakes at an offshore fault called a subduction zone. Earthquakes at these faults cause the ocean floor to move up or down along the fault boundary, causing a large vertical displacement of water that can become a major tsunami. Most of California lacks these subduction zones, so the chance of a major tsunami being triggered by a local event is remote, but not impossible.

Future tsunamis will likely be triggered by local fault lines or distant subduction zones. California's local offshore faults mostly move side to side and so do not create the large vertical displacements of a subduction zone, although they still could cause enough displacement to generate tsunamis that are several feet high (USGS 2013; Oskin 2014a). A tsunami of this size is potentially capable of causing substantial damage and could arrive in Laguna Beach in less than 10 minutes (Legg et al. 2002). The nearest subduction zone is the Cascadia Subduction Zone, which reaches as far south as Cape Mendocino (approximately 600 miles northwest of Laguna Beach). This subduction zone recently achieved notoriety

for being reported as "overdue" for an earthquake, and tsunamis have accompanied its major earthquakes in the past. Other potential subduction zones that could create tsunamis include the Japan Trench (the source of the 2011 Tōhoku earthquake), the Kuril-Kamchatka Trench in the northwest Pacific Ocean, and the Atacama Trench off the coast of Peru and Chile (the source of the 1960 Valdiva earthquake, the strongest ever recorded). A meteotsunami in Laguna Beach is possible, but such events are rare.

The northern California community of Crescent City suffered damage from the tsunami triggered by the 2011 Tōhoku earthquake, which occurred close to 4,500 miles away. Image from the California Department of Fish and Wildlife.

Climate Change Considerations

Coastal erosion: Although coastal erosion is a constant process, the most significant erosion is often caused by wind and rain from storms. Most of California's major storms result from a meteorological phenomenon called an "atmospheric river," and studies forecast that atmospheric river storms that affect southern California will become more intense as a result of climate change (Oskin 2014b). This means that these storms could have stronger winds and produce more rain, which could increase beach and cliff erosion.

Sea level rise: Sea level rise is only a concern in Laguna Beach because of climate change, and it is very likely that this hazard would not exist without climate change. There are no particular climate change considerations for sea level rise, because it is a direct consequence of climate change. However, sea level rise will contribute to coastal erosion as the increase in the height of the ocean allows water to penetrate further inland. As a result, sea level rise will have the potential to increase the eroding effect of the waves and tides farther inland than currently anticipated.

Tsunami: There is no known link between climate change and the geologic events that trigger most tsunamis. Climate change may affect meteotsunamis, but these events are already rare and have not happened in Laguna Beach as far as anyone knows, so any effects of climate change on these events would be difficult to identify. Climate change is expected to have an indirect effect on tsunamis by raising sea levels and allowing ocean water to reach farther inland, which would also allow tsunamis to inundate areas farther inland.

DISEASE AND PEST MANAGEMENT

Description

Diseases and pests are a pair of closely related hazards that can affect humans, animals, and plants. Foreign bodies that cause disease, called pathogens, include germs (i.e., bacteria and viruses), fungi, and a host of other agents. Other diseases may be caused by internal conditions, such as a genetic abnormality.

This Plan only examines diseases caused by pathogens, with an emphasis on those that are affected by environmental conditions.

Pests are organisms whose presence is unwelcome. Pests often include insects and rodents, but may include many others (e.g., birds that eat fruit in an orchard before it is harvested may be considered pests). They can cause direct bodily harm (e.g., mosquitos by biting) or physical or economic damage (e.g., termites), or they may be considered unclean and cause concerns about hygiene (e.g., rats). Some pests can cause diseases, such as ticks that can transmit Lyme disease, or act as hosts to other pests that cause diseases, such as rats that harbor disease-carrying fleas.

In Laguna Beach, disease and pests primarily pose a risk to human health and comfort, although some diseases and pests could also be harmful to buildings and landscaping. Diseases and pests of concern in Laguna Beach include:

- **Influenza (the flu)** is an infectious disease caused by a virus. Common symptoms include fever, cough, headache, sore throat, muscle and joint pain, and a runny nose. There are annual outbreaks worldwide of varying severity. On average, influenza kills between 250,000 and 500,000 people globally each year (WHO 2014), although rapid global outbreaks that infect large numbers of people, known as pandemics, can have much higher death rates.

- **Mosquitos** are insects known for causing bites that develop irritating rashes. Mosquitos can also carry various diseases that they pass on to the humans and animals that they bite. Many of these diseases are more common in tropical areas, although some may occur in temperate areas such as Laguna Beach.

- **Mice and rats** are highly adapted to urban areas. They often eat discarded food and live in abandoned or dirty areas, so they are frequently considered unclean. Mice and rats can transmit diseases—the most infamous of which are bubonic plague (transmitted by fleas that live on rodents) and hantavirus (which causes a lung infection that is often fatal).

- **Ticks** are small arachnids that feed on blood. Although the bite itself is generally painless, ticks can transmit diseases to the animals that they bite. The most well-known disease, Lyme disease, can cause a rash, fever, and headache. If left untreated, Lyme disease can lead to neurological complications.

Brown rats are a common pest animal in urban areas. Image from Jean-Jacques Boujot.

Location and Extent

Outbreaks of diseases and pests can happen anywhere in Laguna Beach, and no particular area is more or less susceptible than any other. Ticks and tick-borne diseases are the exception, since ticks are usually found on grasses and leaves, and so are more likely to be found in the undeveloped areas. Areas with standing water, including small puddles in flowerpots, can be breeding grounds for mosquitos, and such areas may face a somewhat higher risk from mosquitos and mosquito-borne illnesses. Similarly, easily accessible garbage or piles of abandoned material may attract mice and rats.

The severity or size of most diseases and pest outbreaks are not measured using a defined scale. The exception is influenza pandemics, which can be measured on the Pandemic Influenza Phases scale established by the World Health Organization. **Table 3-4** shows this scale and describes each phase.

TABLE 3-4: PANDEMIC INFLUENZA PHASES

Phase	Description
Phase 1	No animal influenza virus is known to have caused infection in people.
Phase 2	An animal influenza virus has caused infection in people. There is a potential pandemic threat.
Phase 3	An animal influenza virus has caused occasional infections or infections in small groups. There may be limited human-to-human transmission, but nothing large enough to sustain community-level outbreaks.
Phase 4	Human-to-human transmission is able to sustain community-level outbreaks. There is a significantly higher risk of a pandemic.
Phase 5	Human-to-human transmission in at least two countries in the same region. A pandemic is likely imminent.
Phase 6	Human-to-human transmission in at least two countries in the same region and in at least one other country outside of the region. A pandemic is underway.
Post-peak	Transmission levels are declining below peak levels, although second waves may occur and transmission could return to previous levels or higher.
Post-pandemic	Transmission levels have returned to normal levels for seasonal influenza outbreaks.

Source: WHO 2017.

Past Events

The most significant disease and pest-related events in Laguna Beach have been influenza outbreaks. The largest influenza pandemic was the “Spanish flu” of 1918–1919, which killed approximately 600,000 people in the United States and approximately 200 people in Orange County (approximately 0.33 percent of Orange County’s population at the time) (Dillow 2009). In recent years, flu outbreaks have killed between 2 and 22 people each year in Orange County and sent another 18 to 44 people to intensive care units. The most recent pandemic, the “swine flu” outbreak in 2009–2010, killed 47 people in Orange County and sent 166 people to intensive care (CDH 2014, 2016a).

West Nile virus is disease of high concern, although it remains very rare. In 2015, Orange County had 92 reported cases of West Nile virus, a decline from 2014’s 263 cases, but more than other years. Orange County has a somewhat higher per-capita rate of West Nile virus than all of California. Orange County had 15 cases of Lyme disease from 2006 to 2015, only a quarter of the per-capita rate of infection for all California residents, and none from 2012 to 2015. Hantavirus is even rarer in Orange County. From 2006

to 2015, approximately 8.5 percent of deer mice (a common carrier of the virus) in Orange County tested positive (CDH 2016b), but there have been no human cases. Orange County has been included in state disaster declarations involving agricultural pests, but these events have had no substantial impact in Laguna Beach due to the absence of agricultural activities (Cal OES 2013).

Risk of Future Events

All expectations are that diseases and pests will continue to be a hazard in Laguna Beach because completely eradicating pest organisms and pathogens is impossible. The most common disease- and pest-related hazard is influenza, and it is likely to remain so, although other diseases and pests are also expected to remain. It is possible that new diseases or more virulent forms of other diseases will emerge or that hardier pest organisms will evolve or migrate into the area, increasing the risk of disease- and pest-related hazards. Similarly, it is possible that improvements in medical science and hygienic practices will decrease the risk of such hazards. These changes are unknown and unknowable.

Climate Change Considerations

Climate change is expected to bring warmer average temperatures to Laguna Beach. This may cause existing pests, including those that can carry diseases, to remain active for longer periods of the year, increasing the risk of exposure. It may also result in pest species or pathogens that are not currently active in Laguna Beach to migrate into the area. For example, changes in temperature and precipitation have already increased the range of mosquitoes known to carry diseases that originated in tropical areas, including yellow fever, dengue fever, and the Zika virus (McKenna 2017). At the same time, studies remain uncertain on how climate change will specifically affect a number of individual diseases (Wu et al. 2015).

EXTREME WEATHER

For the purposes of this Plan, extreme weather includes drought, severe winter storms, and windstorms. Some of the potential consequences of extreme weather, including floods, landslides, and coastal erosion, are discussed in other sections.

Description

Drought: A drought is a long period of time with substantially less precipitation than normal. The primary direct impact of a drought is that it reduces available water supplies. This is particularly concerning in agricultural areas and natural environments, but it can also have consequences for urban areas. Droughts can harm landscapes because plants do not get the water that they need to survive. In severe cases, droughts may lead to a human health risk if available water supplies are not sufficient to meet basic needs.

Indirectly, drought causes soils to dry out, making it harder and less able to absorb water. When precipitation returns, the soil absorbs less water, increasing the amount of runoff, which can lead to flooding. Dry soil is more susceptible to erosion and landslides because it does not bind together as well. Drought causes many plants in natural areas to dry out, making them more susceptible to pest/diseases and increasing the risk of wildfires.

Severe winter storms: Like much of California, most of the storm systems that pass over Laguna Beach arrive between mid-autumn and mid-spring, especially from December to March (WRCC 2017). The strength of these storms can vary widely, and sometimes can be particularly intense. Although there is no specific definition of a severe winter storm, these systems often include strong winds and heavy rainfall. Some may include lightning, hail, and on rare occasions tornadoes.

Severe winter storms are often the result of a meteorological phenomenon called an "atmospheric river," which is a band of very moist air. Such storms are a minority of all the storms that affect California, but they are responsible for up to 50 percent of all precipitation (NOAA 2015). Severe winter storms are also linked to the El Niño Southern Oscillation (ENSO, also known as El Niño), a natural cycle of winds and water temperatures in the eastern tropical areas of the Pacific Ocean that causes global shifts in weather conditions. ENSO has three phases—a warm phase (called El Niño), a neutral phase, and a cool phase (called La Niña). Severe storms and precipitation in California generally increase during the warm phase, particularly in southern California (Jong et al. 2016).

Severe winter storms can have a range of impacts on the community. Intense rains can cause floods, which can damage buildings and create a risk of personal injury or drowning. Floodwaters can also cause erosion and saturate the soil, potentially sparking landslides and mudflows. Strong winds can cause property damage and potential injuries, and lightning strikes can spark wildfires.

Wind: Wind is simply the movement of air due to differences in the pressure of the atmosphere, caused by local and regional variations in temperatures as well as topography and the rotation of the earth. Wind flows from areas of high pressure to areas of lower pressure and substantial changes in pressure cause stronger winds, while gradual changes create much calmer breezes. Winds can accompany storms (which are areas of low atmospheric pressure) but can also occur independently.

This Plan is concerned with winds that pose a risk to people and property. This is generally winds with speeds of 47 mph or higher, which is the threshold for slight structural damage, although some damage is possible at lower speeds. High winds may cause direct damage to structures, create airborne debris, and blow down trees and branches. People are at risk of being struck by debris during high wind events, which can lead to injury or even death. High winds often cause power outages by knocking over power lines or damaging electrical equipment.

There are several specialized forms of high wind that can create hazardous conditions. A tornado, a rapidly rotating column of air that stretches from a thunderstorm cloud to the ground, is one of the best known. Tornadoes can cause significant, even extreme damage due to the very high wind speeds. Katabatic winds are hot dry winds that flow from areas of high elevation to lower regions (the Santa Ana winds in southern California are a famous example of such a wind). Downbursts, microbursts, and derechos are winds that often accompany strong thunderstorms and can reach speeds comparable to a tornado.

Location and Extent

Drought: Droughts are regional events, and so all parts of Laguna Beach face the same risk of drought, although the urban areas will likely experience different effects than the open space. It is also possible for communities to experience a "long-distance drought," since many urban areas in California receive water supplies from great distances. If these distant areas experience drought, it may cause water shortages in the urban areas that rely on them, even if the urban areas themselves have normal precipitation levels.

There are numerous scales for measuring drought conditions, although one of the most common is the US Drought Monitor Classification Scheme. This rating system is a synthesis of multiple different scales into a descriptive index, shown in **Table 3-5**.

TABLE 3-5: US DROUGHT MONITOR CLASSIFICATION SCHEME

Category	Description	Possible Impacts
D0*	Abnormally dry	Slower growth of crops and pastures.
D1	Moderate drought	Some damage to crops and pastures. Water bodies and wells are low. Some water shortages may occur or may be imminent. Voluntary water use restrictions can be requested.
D2	Severe drought	Likely crop and pasture losses. Water shortages are common, and water restrictions can be imposed.
D3	Extreme drought	Major crop and pasture losses. Widespread water shortages and restrictions.
D4	Exceptional drought	Exceptional and widespread crop and pasture losses. Emergency water shortages develop.

Source: US Drought Monitor 2017a

* D0 areas are those under "drought watch" but not technically in a drought. They are potentially heading into drought conditions or recovering from drought but not yet back to normal.

Severe winter storms: There is an equal chance of a severe winter storm affecting any part of Laguna Beach, although variations in intensity throughout the storm system may result in somewhat more or less severe weather in different neighborhoods. Severe winter storms are not measured on any particular scale.

Wind: Winds may occur anywhere in Laguna Beach. Areas at the bottom of larger passes and canyons, which includes large sections of the coastal terraces in the community, may be particularly at risk from Santa Ana winds.

Winds are commonly measured with the Beaufort Scale, developed in 1805. It is based on wind speed and observed effects and uses a scale from 0 to 12. Wind speeds that reach a 9 (severe gale) or above are generally considered intense and a potential hazard. **Table 3-6** shows the Beaufort Scale.

TABLE 3-6: BEAUFORT SCALE

Force	Speed (mph)	Description
0	0 to 1	Calm: Smoke rises vertically and the sea is flat
1	1 to 3	Light air: The direction of wind is shown by smoke drift, but not wind vanes.
2	4 to 7	Light breeze: Wind is felt on the face, leaves rustle, and wind vanes are moved. Small wavelets appear on the ocean, but do not break.
3	8 to 12	Gentle breeze: Leaves and small twigs are in motion, and light flags are extended. Large wavelets appear on the ocean and crests begin to break.
4	13 to 18	Moderate breeze: Dust and loose paper become airborne, and small branches are moved. Small waves appear on the ocean.
5	19 to 24	Fresh breeze: Small trees begin to sway and moderate waves form.
6	25 to 31	Strong breeze: Large branches are in motion, and using an umbrella becomes difficult. Large waves begin to form.
7	32 to 38	Near gale: Whole trees are in motion, and walking against the wind can be hard. Foam from breaking waves is blown in streaks.
8	39 to 46	Gale: Walking is difficult and twigs break off trees.
9	47 to 54	Severe gale: Slight structural damage. Crests of waves begin to topple.
10	55 to 63	Storm: Trees are uprooted and considerable damage to structures. Very high waves form in long, overhanging crests.
11	63 to 72	Violent storm: Widespread damage. Exceptionally high waves form, and the ocean is completely covered in foam.
12	73 and above	Hurricane: Devastating damage. On the ocean, the air is filled with foam and spray.

Source: NWS 2017.

The Beaufort Scale is generally insufficient for measuring extremely strong winds. Such events are rare in Laguna Beach, because they are often associated with events such as hurricanes and tornadoes, which only happen in very limited cases in the community. Hurricane-force winds are commonly measured with the Saffir-Simpson Hurricane Wind Scale, which can also be used for strong winds independent of hurricane events. **Table 3-7** shows this system of wind measurement.

TABLE 3-7: SAFFIR-SIMPSON HURRICANE WIND SCALE

Category	Speed (mph)	Description
1	74 to 95	Very dangerous winds produce some damage, including to home roof and sidings. Large branches of trees snap and shallow-rooted trees may be toppled.
2	96 to 110	Extremely dangerous winds produce extensive damage, including major damage to home roofs and sidings. Many shallow-rooted trees are uprooted. Power lines are mostly or completely knocked down.
3	111 to 129	Devastating damage. Well-built framed homes can suffer major damage. Many trees are snapped or uprooted.
4	130 to 156	Catastrophic damage. Homes suffer the loss of most of the roof and/or some exterior walls. Most trees are snapped or uprooted.
5	157 and above	A high percentage of homes are destroyed.

Source: NOAA 2017c.

Tornadoes are measured using a separate scale, called the Enhanced Fujita (EF) scale. Rather than measuring the actual wind speed, the EF scale uses estimates of wind speeds as determined by observed damage. **Table 3-8** shows the EF scale.

TABLE 3-8: ENHANCED FUJITA SCALE

Rating	Speed (mph)	Description
F0	65 to 85	Light damage: There is some damage to chimneys, branches are broken off trees, and shallow-rooted trees fall. Signboards damaged.
F1	86 to 110	Moderate damage: Surfaces are peeled off roofs and moving vehicles are blown off roads. Mobile homes pushed off foundations or overturned.
F2	111 to 135	Considerable damage: Mobile homes are demolished and roofs are torn off framed houses. Large trees are snapped or uprooted, and light objects become missiles. Cars are lifted off the ground.
F3	136 to 165	Severe damage: Roofs and some walls are torn off well-constructed houses. Trains are overturned and most trees in forests are uprooted. Heavy cars are lifted and thrown.
F4	166 to 200	Devastating damage: Well-constructed houses are leveled, and structures with weak foundations are blown away. Cars are thrown, and large objects become missiles.
F5	201 and above	Incredible damage: Strong frame houses are leveled and blown away. Vehicle-sized objects are thrown over 300 feet. Bark is stripped off trees, and incredible phenomena occur.

Source: NOAA 2006a, 2006b.

Past Events

Drought: Droughts are a recurring feature in California and have been recorded many times in history throughout the state, although the length, intensity, and frequency of droughts vary. The "Great Drought" of 1863 and 1864 caused widespread damage to the cattle industry throughout the state, hastening the rancho land grants. The "Dustbowl Droughts" from 1928 to 1935 devastated agriculture throughout the state and helped spur the development of California's modern water infrastructure. A drought from 1976 to 1977 dramatically lowered reservoir levels across California and helped encourage water conservation practices that continue to this day. Other significant droughts were from 1987 to 1992 and from 2007 to 2009 (Cal OES 2013; Kotin and Marion 2014; DWR 2015).

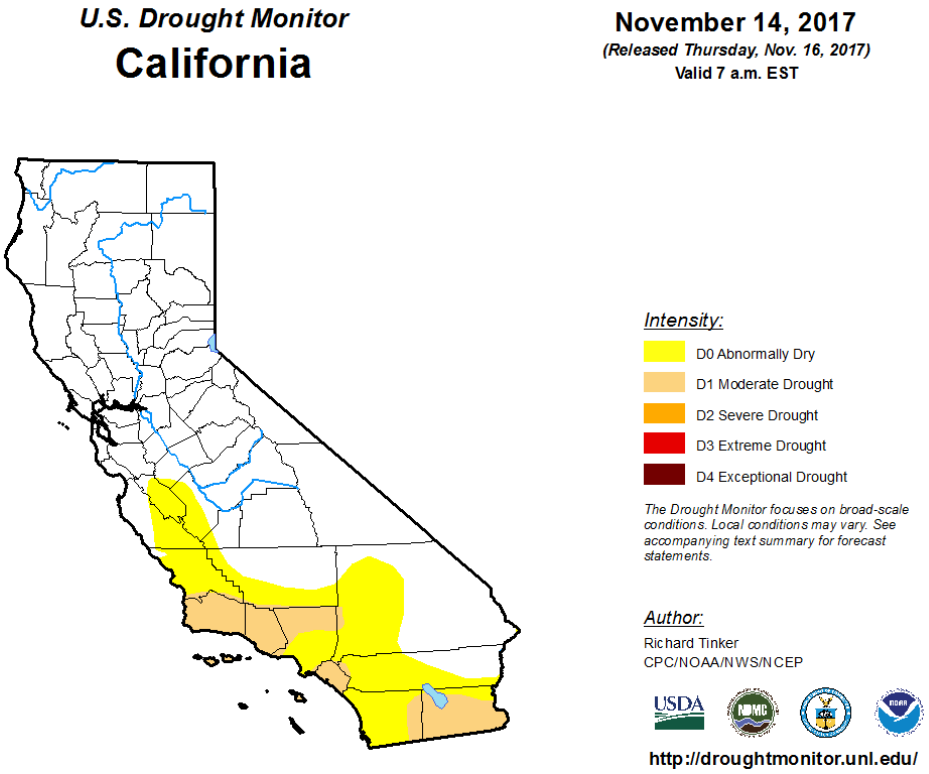
Recent drought conditions have affected water levels across California, including in Orange County, as shown in this 2015 image of Anaheim Lake. Image from the California Department of Water Resources.

One of the most significant droughts in California's history was from 2012 to 2017. It affected all areas of the state, and by 2014 was already considered the most severe drought in the past 1,200 years (Griffin and Anchukaitis 2014). At its peak, virtually all of California was experiencing D2 (severe drought) conditions, and over half of the state, including Laguna Beach, was in a D4 (exceptional drought) condition (US

Drought Monitor 2014). Governor Brown declared a statewide drought emergency in January 2014 (Office of the Governor 2014) and in 2015 ordered a 25 percent reduction in urban water use (Megerian et al. 2015). The state adopted laws to begin regulating groundwater use, a step it had previously refused to take, and communities throughout the state introduced incentive programs and mandatory restrictions to curtail water use. The drought ended in 2017 following wet winters in 2015–2016 and 2016–2017, although many water conservation efforts remained in place, and some long-term effects of the drought linger (Boxall 2017).

As of November 2017, approximately 8 percent of California is in a state of at D1 (moderate drought). An additional 14 percent of the state is under a drought watch. Dry conditions are mostly limited to southern California and the southern Central Coast region. All of Orange County, including Laguna Beach, is currently experiencing D1 conditions. **Figure 5** shows statewide drought conditions as of November 14, 2017.

Figure 5: Statewide Drought Conditions, November 14, 2017



Severe winter storms: Severe winter storms have occasionally affected Laguna Beach, most recently during the winter of 2016–2017. Multiple strong storms dropped more than three inches of rain in less than six hours, causing flash flooding and mudflows (Swegles and Whitehead 2017). A series of intense winter storms in December 2010 washed mud into the downtown area and caused significant erosion along city beaches. Other major storms affected Laguna Beach in the winters of 2004–2005 (which ultimately led to a major landslide in June 2005), 1997–1998, and 1982–1983, which were linked to the warm period of the ENSO

cycle (Alderton 2015). A storm in January of 1949 caused an inch of snowfall in Laguna Beach and widespread damage along the southern California coast. A storm in 1934 dropped over three and a half inches of rain in Laguna Beach and the ensuing flood killed 45 people across southern California (NOAA 2010).

Wind: Since 1955, the National Weather Service has measured 27 individual high wind events in Orange County, 4 of them in Laguna Beach or in its immediate vicinity. None of these events caused any injuries or deaths, although there were financial damages. The most recent recorded event was in January of 2010, when winds up to 80 mph were measured between Laguna Beach and Mission Viejo (NOAA 2017d). This event caused approximately $407,500 in damage, or approximately $462,000 in 2017 dollars (SHELDUS 2016). A high wind event in April of 2005 had wind speeds up to 69 mph measured in Dana Point. Earlier that year, winds up to 80 mph were measured nearby in Laguna Woods. In 2001, wind speeds of 75 mph were measured near Emerald Bay (NOAA 2017d). Several other high wind events have been connected with storm systems or Santa Ana events in Laguna Beach.

One tornado has been reported since 1955—a 1958 F1 event that caused no injuries and resulted in less than $500 of damage (NOAA 2017e). Waterspouts (weak tornadoes that form over water) were reported off the coast of Laguna Beach in 1998, 2001, and 2003 (NOAA 2010). Remnants of hurricanes have affected Laguna Beach at times in the past, resulting in rains, high winds, and thunderstorms. Twice, tropical storms with wind speeds between 39 and 72 mph, have affected the region. In 1939 a tropical storm made landfall at Long Beach, resulting in 45 deaths and causing extensive flooding throughout southern California (Blake et al. 2007). In 1976 Tropical Storm Kathleen made landfall along the California-Mexico border and caused widespread damage throughout the region (NOAA 2010). Only one storm system with hurricane-force winds has come to the region. On October 2, 1858, a Category 1 hurricane came very close to making landfall near San Diego before swerving along the coast and disappearing past Catalina. The storm caused heavy rains and intense winds across the Los Angeles and San Diego regions (Chenoweth and Landsea 2004).

Risk of Future Events

Drought: It is expected that drought conditions will continue to recur in Laguna Beach, as they do throughout California. The Laguna Beach County Water District and the South Coast Water District receive a mixture of local groundwater and recycled water; county surface water, groundwater, and recycled water; surface and groundwater from the wider Los Angeles/Orange County region; and imported water from the Sierra Nevada, Colorado River, and Owens River.

Recycled water is highly drought resistant because it is produced by processing wastewater—as long as some water is available, there will be wastewater and, by extension, recycled water. Groundwater is also resilient to drought because groundwater basins can hold large volumes of water that have built up over an extended time. Groundwater basins are refilled by local precipitation that filters through the ground (a process called recharge). Orange County has further enhanced the resiliency of groundwater supplies in the county with the Groundwater Replenishment System, which pumps extra water into the groundwater basin to supplement natural processes (OCWD 2017). However, a prolonged drought slows

natural recharge, which can reduce groundwater supplies. Drought conditions can also increase the likelihood that water suppliers will increase groundwater pumping to compensate for the loss of other supplies, although new legislation to regulate groundwater can help prevent this.

Surface supplies, including those imported from other regions, are more vulnerable to drought conditions. Although groundwater supplies can potentially last forever if properly managed, surface supplies can run dry after a few years of drought conditions. In most droughts in California, surface water sources can typically supply only a reduced amount of water, and in some cases supply may be depleted entirely.

The risk that future drought conditions would substantially affect Laguna Beach is to some degree lessened by the large volume of groundwater in local water supplies. However, a substantial portion of the community's water is imported, and these supplies are more vulnerable to drought. Overall, Laguna Beach may be relatively unaffected by short-term droughts, but longer-term droughts that affect groundwater supplies will have more significant effects.

Severe winter storms: All indications are that severe winter storms will continue in Laguna Beach. Although the specific frequency and intensity of these storms is difficult to predict for any individual rainy season, the natural cycles that cause intense storm systems to affect Laguna Beach are expected to continue.

Wind: High wind events are also expected to continue in Laguna Beach for the same reason. Winter storms and the Santa Ana wind events are likely to be the most common types of high winds in Laguna Beach. Tornado events and tropical storms will also continue, although very rarely.

Climate Change Considerations

Drought: Overall, climate change is likely to decrease precipitation levels throughout the state, although there will likely be significant variation in year-to-year rainfall, and some studies point to a minor increase in precipitation levels. In Laguna Beach, which historically receives about 11.9 inches of rainfall a year, annual precipitation levels are expected to range between 9.4 and 13.6 inches toward the end of the century (CEC 2017c).

Although changes to precipitation levels may be unclear, climate change is projected to result in more frequent and severe droughts, partly due to the greater variability in precipitation levels. Warmer temperatures mean that less precipitation will fall as snow, and that any snow that does fall will melt faster. The accumulated snow of the winter (known as snowpack) is a major source of water in California's dry season, but climate change is expected to reduce the water available from this source, particularly at the end of the dry season.

Severe winter storms: Climate change is expected to affect atmospheric rivers, which will affect severe winter storms that strike Laguna Beach. According to recent studies, the average atmospheric river storm is likely to become 10 to 20 percent more intense by 2100, although the number of atmospheric river storms in southern California is not projected to change (Oskin 2014b). It is unclear how climate change may affect the ENSO cycle, if it does at all. A 2014 study suggests that extreme warm cycles may eventually

occur every 10 years rather than every 20, which may lead to more years with severe winter storms. However, other studies forecast that the ENSO cycle will weaken, and still others project it will not change significantly (Cho 2016). At this time no one clearly understands how climate change may affect the ENSO cycle and severe winter storms.

Wind: Anticipated increases in the intensity of atmospheric river storms due to climate change may also intensify the strong winds that accompany these storms. It is unknown yet if climate change will have any effect on Santa Ana winds. Increases in storm intensity may potentially cause an increase in the number of tornadoes, since tornado events are associated with intense storms. However, tornadoes are already very rare in Laguna Beach, and climate change may not cause a substantial enough change in tornado frequency to be noticeable.

FLOOD

This section discusses flooding as a result of storms and precipitation. Flood events that are caused by sea level rise (independent of all other factors) or tsunamis are discussed in the Coastal Hazards section. Flooding due to infrastructure failure, such as a burst pipe or water tank, is discussed in the Human-Caused Hazards section.

Description

A flood is any event that causes normally dry land to be inundated with water. Flooding usually results from precipitation, either a long period of moderate precipitation or a single intense storm. During these events, lakes and rivers can overtop their banks, or storm drains and pumps cannot carry all the water away. When the amount of water exceeds the capacity of natural or human systems to drain or contain it, the water flows into normally dry areas. Floodwaters can flow through an area or collect in a low-lying area with poor drainage and create a standing pool of water (known as ponding).

Although flooding may occur anywhere in a community, some types of flooding are limited to coastal areas. Intense storms can create large waves and strong winds that push ocean water onshore in an event known as a storm surge. Very high tides, sometimes called king tides, can also cause flooding in low-lying coastal areas. These events sometimes work in concert to create stronger floods (such as a storm surge that arrives during a king tide).

Floods are dangerous for a number of reasons. Moving water is very strong. It can damage buildings, carry large debris that damages objects it collides with, and in extreme cases move entire structures. Moving water can wash away soil, weakening structures built on top and potentially leading to partial or complete collapse. Both standing and moving water can damage property and structures, create barriers to movement (effectively stranding people without access to boats), and pose a drowning hazard. Flash floods are particularly dangerous because they can happen too fast for effective evacuation.

Location and Extent

Flood events are commonly described in years, such as a 100-year or 500-year flood. This refers to the chance of an event occurring in any given year. A 100-year flood is actually one that has a 1 percent chance

(1 in 100) of occurring in a year, and a 500-year flood has a 0.2 percent chance (1 in 500) of occurring in a year. A 100-year flood is the common benchmark for a major flood, and such events are often known as "base floods."

Floods may be described with other numbers—a very high number of years for the most severe floods or a lower number of years for less-severe floods. The number of years reflects a long-term average; it does not mean that such events only happen once in a given period. It is possible to have multiple 100-year floods within a few years or even a single year.

Areas that repeatedly flood are known as flood plains and are designated by the severity of flood that may be expected there. For example, an area that can be inundated by a 100-year flood is called the 100-year flood plain. In theory, any area can be flooded if the flood event is severe enough, but the areas at greatest risk are low-lying areas near natural or human-made bodies of water. Flood plains are defined by FEMA, which generally recognizes three types of flood plains—the 100-year flood plain (or "special flood hazard area"), the area outside of the 100-year flood plain but in the 500-year flood plain (or "moderate flood hazard area"), and the area outside of the 500-year flood plain (or "minimum flood hazard area"). FEMA also categorizes flood plain types in more detail based on a number of factors. **Table 3-9** shows these detailed flood plain categories.

TABLE 3-9: FEMA FLOOD PLAIN CATEGORIES

Category	Description
A	Within a 100-year flood plain, but the water height of the 100-year flood is not known.
A1-30 or AE	Within a 100-year flood plain and the water height of the 100-year flood is known.
AO	Within a 100-year flood plain, and the water height of the 100-year flood is between one and three feet but not specifically known.
A99	Within a 100-year flood plain, protected by flood protection infrastructure such as dams or levees.
AH	Within a 100-year flood plain, and the water height of the 100-year flood is between one and three feet and is specifically known.
AR	Within a 100-year flood plain, protected by flood protection infrastructure that is not currently effective, but is being rebuilt to provide protection.
V	Within a 100-year flood plain for coastal floods, but the water height of the flood is not known.
V1-30 or VE	Within a 100-year flood plain for coastal floods and the water height of the flood is known.
VO	Within a 100-year flood plain for shallow coastal floods with a height between one and three feet.
B	Within a 500-year flood plain, or within a 100-year flood plain with a water height less than one foot (found on older maps)
C	Outside of the 500-year flood plain (found on older maps)
X	Outside of the 500-year flood plain (found on newer maps)
X500	Within a 500-year flood plain, or within a 100-year flood plain with a water height less than one foot (found on newer maps)
D	Within an area with a potential and undetermined flood hazard.
M	Within an area at risk of mudslides from a 100-year flood event.
N	Within an area at risk of mudslides from a 500-year flood event.
P	Within an area at risk of mudslides from a potential and undetermined flood event.
E	Within an area at risk of erosion from a 100-year flood event.

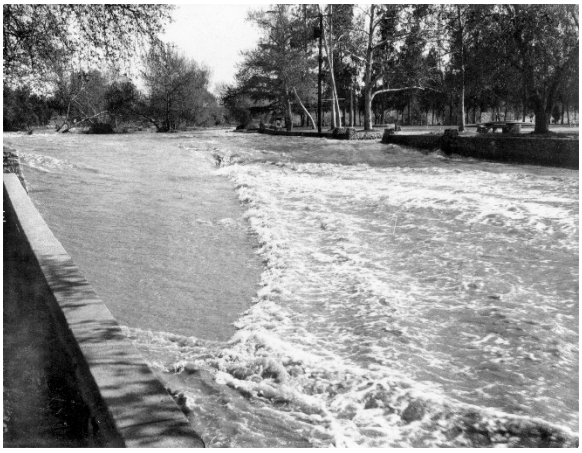
Source: CFR 2016.

In Laguna Beach, the 100-year flood plains include the areas around creeks and below major canyons. The largest 100-year flood plain covers Laguna Canyon and the area of downtown Laguna Beach that sits directly below it. Other 100-year flood plains are Emerald Canyon, Bluebird Canyon, Aliso Canyon, and the areas below these canyons.[3] The 500-year flood plains are along the edges of the 100-year flood plains. Most of the beaches lie within coastal flood hazard zones, as does the low-lying area on the landward side of the Pacific Coast Highway by Main Street Beach. The rest of Laguna Beach is designated Zone X (minimal hazard area). FEMA has mapped the flood height for Laguna Canyon and the area below it, along with some of the beaches (FEMA 2017a). **Figure 6** depicts the mapped flood hazard zones in Laguna Beach.

Past Events

Floods are a frequent event in California and in the history of Laguna Beach.

- A strong storm in 1929 caused extensive coastal flooding in the downtown area.
- In February of 1937, a strong winter storm dropped 5.59 inches of rain on Laguna Beach in two days, causing significant flooding in Laguna Canyon and downtown.
- In March of 1938, over 5 inches of rain fell in two days, causing over $20,000 of damage in Laguna Canyon (approximately $350,000 in 2017 dollars). This was part of a larger series of storms that inundated southern California in early 1938, causing flooding as far north as San Luis Obispo, and prompted the construction of flood control channels in Laguna Canyon.
- A storm in February of 1941 dropped 2.63 inches of rain and caused one home to collapse.
- A storm in December of 1966 lasted six days, resulting in 4.76 inches of rainfall, flooding Laguna Canyon and causing over $263,000 of damage throughout Orange County (approximately $2 million in 2017 dollars).
- A series of storms in early 1969 overwhelmed drainage channels, causing flooding in downtown, mudslides in Laguna Canyon, and widespread flooding in the lowland areas of Orange County. Overall, state and federal disasters were declared in 40 of California's 58 counties. Statewide, the 1969 storms killed 47 people, injured 161, and caused $300 million in damages (over $2 billion in 2017 dollars). In Orange County, damage exceeded $2.5 million ($17 million in 2017 dollars).
- In January of 1978, a storm dropped 3.43 inches of rain, inundating Laguna Canyon as far



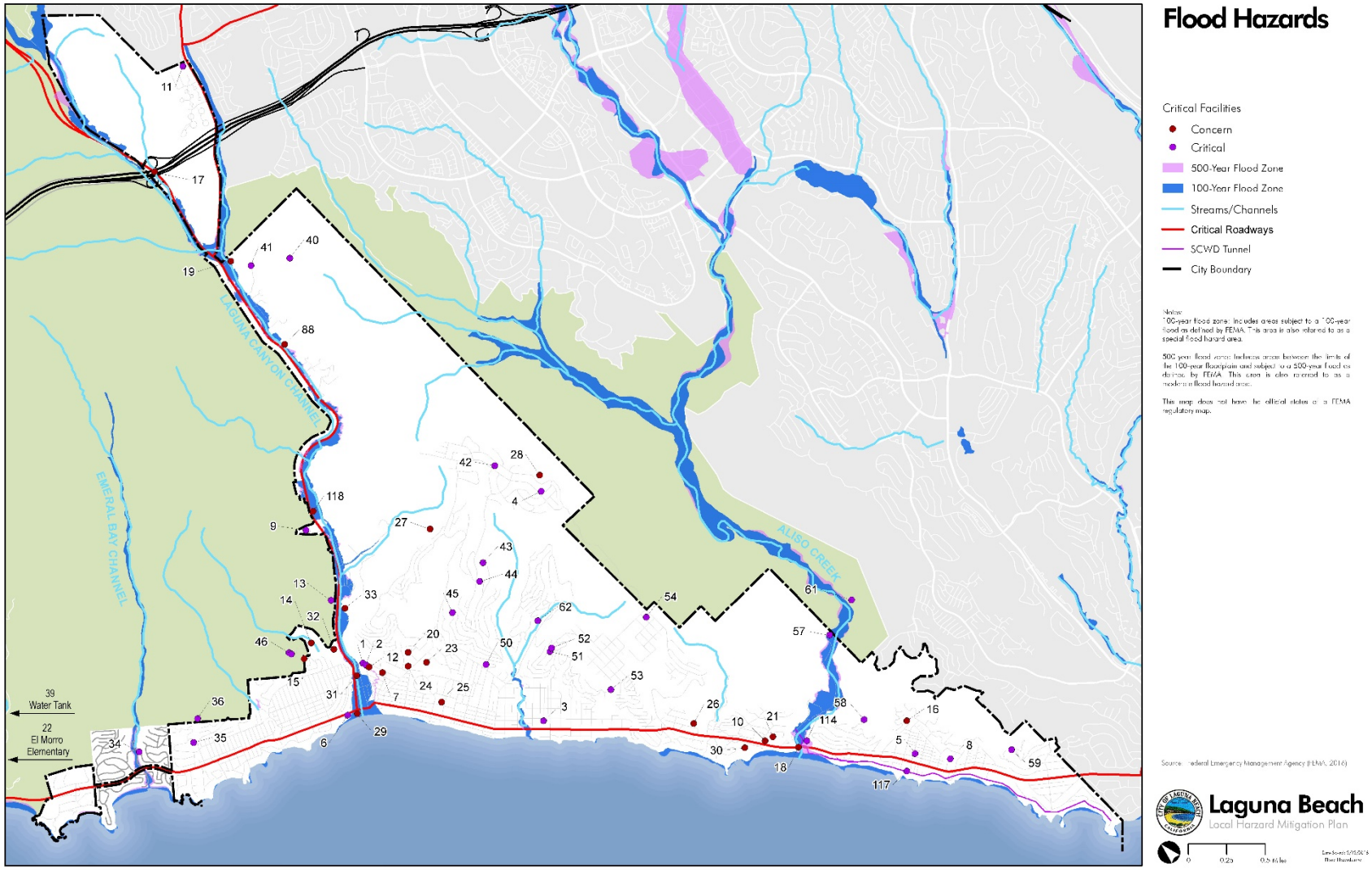
Fast-moving floodwaters from the 1969 flood in the nearby City of Orange. Image from the Orange County Archives.

[3] Emerald Canyon and most of the area below it is unincorporated county area, but Pacific Coast Highway in this area is within the Laguna Beach city limits.

north as Interstate 405 and causing severe damage to homes and business in Laguna Canyon and downtown. The storm also caused coastal flooding along Main Beach Park. State and federal disaster declarations were issued as a result.

- Storms in the winter of 1982–1983 caused the Laguna Lakes at the north end of Laguna Canyon to overflow, washing out Laguna Canyon Road and flooding downtown. State and federal disasters were declared in 44 counties, including Orange County. The storms caused approximately $524 million in damage statewide (approximately $1.3 billion in 2017 dollars).
- A storm in 1993 caused flooding in Laguna Canyon and downtown, damaging many homes and small businesses, and prompted a state and federal disaster declaration.
- Storms in January of 1995 damaged an estimated 50 businesses and dozens of homes and destroyed a large section of the boardwalk. Flooding was widespread throughout California, prompting a disaster declaration that included Orange County. Total damage from the storm in Orange County was approximately $55 million (close to $90 million in 2017 dollars).
- A storm in January of 1997 resulted in one death and flooding along Sun Valley Drive in Laguna Canyon. This was part of a series of storms that caused over $194 million ($300 million in 2017 dollars) in damage statewide and prompted state and federal disaster declarations in 48 counties, although not in Orange County.
- A December 1997 storm dropped 7.2 inches of rain, the heaviest rainfall recorded in Laguna Beach in 100 years. The storm resulted in flooding and landslides that destroyed 2 homes and damaged an additional 20 homes, City Hall, and other public buildings. This storm prompted a state disaster declaration in Orange County and caused $17.7 million in damage (approximately $27 million in 2017 dollars).
- A series of storms in the winter of 2004–2005 caused approximately $36.7 million in damages ($46.3 million in 2017 dollars) throughout Orange County and resulted in one injury.
- Storms in December of 2010 damaged over 90 homes and 70 businesses as well as the Main Beach boardwalk and other public infrastructure. The storms also caused multiple breaks in sewer lines and destabilized others, causing widespread beach closures and prompting the need for emergency repairs. The storms inundated communities in southern and central California. Orange County and 11 other counties in the state were declared state and federal disaster areas. Total damage in Orange County came to $48.3 million (approximately $54.1 million in 2017 dollars).
- Storms in January of 2017 caused beach closures and flooding along the Main Beach boardwalk. Most of California, including Orange County, was declared a disaster area in response (City of Laguna Beach 1995, 2011; Cal OES 2013; OCFCD 2013; SHELDUS 2016; Office of the Governor 2017; Zint et al. 2017).

Figure 6: FEMA Flood Zones



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Risk of Future Events

As the list of past events shows, flooding is a recurring event in Laguna Beach. Although flood control channels and drainage systems help reduce flooding, existing flood control infrastructure is not always able to meet the community's needs. Most of the storm drains in Laguna Beach are built to handle a 25-year flood and could be overwhelmed in more severe events, leading to ponding. Storm drains at Boat and Bluebird canyons can accommodate a 100-year flood, although debris from flood events can reduce their capacity. The flood control channel in Laguna Canyon can only handle between 5 and 43 percent of the water from a 100-year flood at various points (Laguna Beach 1995), although the City is currently rehabilitating the channel in Laguna Canyon and the downtown area to make a minor improvement to its capacity (Robinson 2016).

The recurring nature of strong winter storms, coupled with ongoing capacity problems in the City's drainage and flood control infrastructure, means that flood events are almost certain. Although upgrades to infrastructure can reduce the flood risk in Laguna Beach, they would not eliminate the risk entirely—particularly intense storms would still be able to cause significant flooding. Coastal flooding remains a risk along Main Beach Park and downtown properties close to the water. Atmospheric rivers, ENSO, and other cycles of Pacific Ocean temperatures are expected to play a role in the frequency and intensity of flood events.

It is unknown how severe future flood events may be, but scientists point to a repeat of California's devastating 1861–1862 floods, which were a 500-year to 1,000-year event, as the most extreme of plausible future floods. Under such a scenario, known as the ARkStorm, Orange County would experience an estimated $50 billion in damage, more than any other county in California. All of Laguna Beach would be substantially affected, although Laguna Canyon and downtown would likely experience the most severe effects. Critical services, including power, water, and communication, could be disrupted for several days to a few months (USGS 2011).

Climate Change Considerations

As discussed in the Extreme Weather section, climate change is expected to increase the average intensity of atmospheric river storms that affect southern California, although the overall number of atmospheric river storms is not expected to change. The increase in intensity could increase the number of flood events, because there may be more storms severe enough to overwhelm existing flood control and drainage infrastructure. It may also increase the severity of the most intense flooding, because the severe atmospheric river storms that often cause such events are projected to become 10 to 20 percent more intense (Oskin 2014b). It is unclear how climate change may affect phenomena such as ENSO, and whether any changes to the climate may affect the frequency or intensity of flooding in Laguna Beach.

It is possible that droughts, which are expected to occur with greater frequency and to be more intense as a result of climate change, may exacerbate flooding. Dry soil cannot absorb water as easily, which can lead to ponding and increased runoff when rains do return. As discussed in the Coastal Hazards section,

sea level rise may also exacerbate coastal flooding by increasing the average height of the ocean, allowing waves and storm surges to penetrate farther inland.

HUMAN-CAUSED HAZARDS

For the purposes of this plan, a human-caused hazard is any hazard that is directly caused by human activity or structures. A human-caused hazard may be triggered by a natural disaster, and human-caused hazards may in turn create other hazardous situations. Potential consequences of human-caused hazards, including floods, landslides, and wildfires, are discussed in their own sections.

Description

Infrastructure failure: Infrastructure failure is when a piece of infrastructure fails in such a way that it creates a threat to people, property, or other community assets. Generally, infrastructure failure is categorized into two threats: active or passive. During an active threat, infrastructure fails, releasing a substance that is harmful or potentially harmful, such as a broken wastewater line that releases untreated sewage. A passive threat involves infrastructure that cannot perform its function. The failure itself is not dangerous, but under the right circumstances, the failure can increase the risks to people or property. For example, a clogged storm drain is not directly dangerous, but can lead to flooding during a storm. Some infrastructure failures may be both active and passive. For example, a broken power line is directly dangerous (it creates a threat of electrocution, and the wires may spark a wildfire) and creates an indirect risk (the loss of electricity service can be harmful during hot weather).

Infrastructure failures often occur as an effect of a natural hazard, such as floods or high winds. Failures can also occur as a result of human error, deliberate action, or because the infrastructure was not properly maintained and failed as a result of overuse or wear and tear. Some infrastructure failures can directly cause other hazard situations. Utility lines (power lines, water and wastewater pipes, natural gas lines, etc.), flood control and drainage infrastructure, seawalls, erosion control measures, and other forms of infrastructure can all create hazardous situations in the event of a failure.

Nuclear hazards: There are various naturally occurring and artificial materials that are known as radioactive substances because they release certain waves (gamma waves) and subatomic particles (alpha and beta particles). These waves and particles are a form of radiation and are released by the natural decay of radioactive materials or by a nuclear reaction. When they are spread into the environment through the release of radioactive material or by a nuclear reaction, they create a nuclear hazard.

Radiation comes in multiple forms. Visible light, radio waves, and sound are all types of radiation, and even gravity is theorized to be a form of radiation. For the purposes of this Plan, radiation refers to ionizing radiation, which has enough energy to strip electrons from atoms. Exposure to ionizing radiation can be extremely harmful to people and other living beings. This radiation damages DNA and destroys a body's cells, which can lead to a wide range of symptoms and could lead to death if the damage is too severe or untreated. Chronic exposure to lower levels of ionizing radiation may lead to cancer or other long-term health impacts. Ionizing radiation is not directly harmful to buildings or structures, but physical objects

may become contaminated with radioactive material. Since some radioactive substances persist for an extremely long time (thousands or millions of years, and longer in some cases[4]), contaminated objects may release radiation and pose a health risk long after the initial nuclear hazard event.

There are many ways a nuclear hazard could occur, but the most likely is the accidental release of radioactive material. Small amounts of radioactive material are used in various medical and industrial applications, and there are a limited number of cases, such as nuclear power generating, that use larger amounts of material. Use of these materials also generates nuclear waste, which is not used for any purpose but is itself radioactive. If the equipment containing any of these radioactive substances breaks, is used improperly, or otherwise fails, it could release these materials into the environment. A similar event could occur if a vehicle carrying radioactive material crashes. A nuclear hazard could also be created by the deliberate release of radioactive material or the triggering of a nuclear reaction, although such events are extremely rare.

Terrorism: Terrorism is the use or threat of force to intimidate people or government agencies in order to achieve a specific political or social purpose. Terrorists may seek to change government policy, protest government actions, influence an election or court case, or achieve any number of other objectives. In some cases, a hate crime (against the victim due to their specific identity) may qualify as terrorism if the intent is to intimidate others with the same identity. Acts of war may also be considered terrorism.

There is no template for terrorist attacks. Perpetrators usually try to kill or injure people, damage or destroy property and infrastructure, disrupt government operations, interrupt key services, or some combination of these or other goals. Most terrorist attacks use conventional firearms or explosives, but other materials or methods can also be used. For example, cyberterrorism, which seeks to disrupt or destroy computer systems or steal information from them, may not involve any physical violence. Terrorist attacks may also use weapons of mass destruction (e.g., biological, chemical, radioactive, or high-yield explosive materials), although this is extremely rare.

Location and Extent

Infrastructure failure: Infrastructure failure may happen anywhere. The specific risk of any individual piece of infrastructure failing depends on the type of infrastructure, the conditions that it is exposed to, and how well it is maintained. Although no piece of infrastructure is completely safe, infrastructure that is well maintained and protected from degradation as much as possible is less likely to suffer failure. There is no scale for infrastructure failure. Key pieces of infrastructure that serve a critical function to the community are analyzed as part of the threat assessment in **Chapter 4**.

Nuclear hazards: In most cases, the sources of radioactive material in and around Laguna Beach are limited. Small amounts of radioactive material may be found in medical offices throughout the

[4] Some radioactive substances take an incomprehensibly long time to decay. The most common form of uranium takes 4.5 billion years to decay by half (half-life), roughly equal to the age of the earth. The longest-lived radioactive material, a version of the element tellurium, has a half-life that is several orders of magnitude greater than the age of the universe.

community, where they are used in x-rays and other medical imaging equipment, for radioactive therapy to treat cancer, and other procedures. Academic and scientific institutions in Laguna Beach may also use radioactive materials in various ways (NRC 2014a). Any of these facilities may potentially suffer some incident that causes a release of radioactive material, and the risk of a nuclear hazard is somewhat higher around these facilities than elsewhere in the community.

The primary source of radioactive material in the vicinity of Laguna Beach is the San Onofre Nuclear Generating Station (SONGS), approximately 18 miles southeast of the community. SONGS is a closed nuclear power plant, which ceased generating power in 2012 and was permanently closed in 2013.[5] There is approximately 3.55 million pounds of radioactive spent fuel on the site, which will remain at the SONGS facility for at least the next several years. Laguna Beach is outside of the 10-mile emergency planning zone surrounding SONGS, and so faces a lower risk of exposure if a nuclear event occurs. However, a sufficiently large release of radioactive material, particularly if wind conditions are right, could create a nuclear hazard situation in Laguna Beach. The southern end of the community is likely to face greater exposure, due to its closer proximity to SONGS (OCSD 2017). As Laguna Beach lacks major highways, it is unlikely that a vehicle crash involving radioactive material would occur in the community, although Laguna Beach may be affected by such incidents on nearby Interstates 5 or 405.

The now-closed San Onofre Nuclear Generating Station, as seen from San Onofre State Beach. Image from Luke Jones.

There are two scales that are commonly used to measure the severity of nuclear hazards. The first is the International Nuclear and Radiological Event Scale (INES) by the International Atomic Energy Agency. **Table 3-10** shows the INES scale. In addition, the US Nuclear Regulatory Commission (NRC) has its own scale, used to measure events that occur specifically at nuclear reactors (e.g., a power plant). **Table 3-11** shows the NRC Emergency Classification scale.

[5] SONGS was shut down in 2012 after problems developed in pipes that had been installed a few years previously. The repair work would have required a modification to SONGS's operating license, and the facility's owners elected to permanently close the facility in 2013 rather than conduct the repair work and go through a lengthy and uncertain relicensing process (Mufson 2013).

TABLE 3-10: INTERNATIONAL NUCLEAR AND RADIOLOGICAL EVENT SCALE (INES)

Event Type			Example Event Descriptions
Incident	1	Anomaly	A member of the public is overexposed to radiation. A source of low-level radiation is lost or stolen. There are small problems with safety components at a nuclear facility.
	2	Incident	Safety components at a nuclear facility fail significantly, but there are no actual consequences. A source of high-level radiation is inadequately packed. A sealed source of high-level radiation is found.
	3	Serious incident	There is a near accident at a nuclear power plant with no remaining safety provisions. A highly radioactive source is lost or stolen.
Accident	4	Accident with local consequences	More than 0.1% of the radioactive material in a contained facility is released. There is a high probability of public exposure. There is at least one death from radiation.
	5	Accident with wider consequences	Large quantities of radioactive material are released. Significant public exposure is likely. There are several deaths from radiation.
	6	Serious accident	There is a significant release of radioactive material. A full emergency response is likely needed.
	7	Major accident	There is a major release of radioactive material. Health and environmental effects are widespread.

Source: IAEA 2008.

TABLE 3-11: NRC EMERGENCY CLASSIFICATION SCALE

Event Name	Event Description
Notification of Unusual Event	There is a potential degradation in safety or a security threat. At this level, no release of nuclear material requiring offsite monitoring or response has occurred.
Alert	There is an actual or potential degradation in safety, or hostile action that creates a probable life-threating situation has occurred. Small amounts of radioactive material may occur.
Site Area Emergency	There is an actual or likely major failure of key reaction functions. Radioactive material release may occur, but levels beyond the facility border are not expected to exceed safe exposure thresholds.
General Emergency	The reactor core has degraded or degradation is imminent. Radiation levels beyond the facility border are expected to exceed safe exposure thresholds.

Source: NRC 2014.

Terrorism: No place can be considered completely safe from acts of terror. Terrorists often target prominent sites such as military bases, government offices, shopping malls, corporate headquarters, major commercial facilities, institutional facilities, or key industrial or infrastructure sites. Terrorists may also target festivals or other large gatherings of people. Some of these types of facilities or events take place in Laguna Beach and may potentially be targets for terrorism. Terrorist acts may also involve low-profile facilities such as homes, schools, or places of worship. There is no scale for measuring acts of terror, and such acts are often classified by the number of deaths or injuries or by the amount of damage.

Since 2011 the Department of Homeland Security has used the National Terrorism Advisory System, which provides three types of advisories to the American public:

- **Bulletin**: describes current developments or general trends regarding threats of terrorism.
- **Elevated Alert**: warns of a credible terrorism threat against the United States.

- **Imminent Alert**: warns of a credible, specific, and impending terrorism threat against the United States.

Past Events

Infrastructure failure: Laguna Beach has suffered occasional infrastructure failures before, typically because of other hazard events. Strong rains frequently overwhelm local drainage systems and cause flooding, as discussed in the Floods section. Intense winds have occasionally blown down power lines, disrupting electrical service and sometimes causing fires. Several storms have also caused infrastructure failure of sewage lines, creating human and environmental health risks.

Nuclear hazards: There is no history of substantive nuclear events in or around Laguna Beach. There have been occasional minor releases of radioactive material from SONGS that did not result in any unsafe exposure—most recently, a leak in 2012 that resulted in the plant's closure (Bermudez 2012). Nuclear reactors at the Santa Susana Field Laboratory (approximately 71 miles northwest of downtown Laguna Beach, near the community of Simi Valley) experienced four nuclear incidents between 1959 and 1969, including a partial meltdown of a reactor core. Scientists have estimated that these events contributed to cancer rates in the vicinity of the laboratory (Santa Susana Field Laboratory Advisory Panel 2006), but data remains scarce, and there is no evidence that these events created a nuclear hazard in Laguna Beach.

Terrorism: Laguna Beach has not experienced any known acts of terror. According to the Global Terrorism Database, there have been 18 acts of terror or attempted acts of terror in Orange County since 1970. Four acts resulted in injuries or death:

- In 1985 a bomb was used to assassinate Alex Odeh, an activist and the West Coast Regional Director of the American-Arab Anti-Discrimination Committee, at his office in Santa Ana (START 2017a). Several others were injured, and the office suffered extensive damage (FBI 2017). According to the FBI, the attack was likely the work of the extreme right-wing Jewish Defense League (Cummings 1985), although the case remains unsolved (FBI 2017).

- In 1986 the former South Vietnamese official Trahn Khan Van was shot and wounded in Westminster (START 2017b). Investigators believed the perpetrators committed the act due to their belief that Van supported the government of Vietnam at the time (Wride and Rose 1986).

- In 1987 terrorists set fire to the offices of the Vietnamese magazine *Mai* in Garden Grove, killing the editor of the magazine who was sleeping in the office at the time. The Vietnamese Organization to Exterminate Communists and Restore the Nation claimed responsibility (START 2017c).

- In 2009 four white assailants stabbed, punched, and kicked a Latino man named Sergio Hernandez in Huntington Beach while yelling racial slurs. Hernandez was hospitalized overnight (START 2017d).

Other, more significant terrorist attacks in the region include a 1974 bombing at Los Angeles International Airport that killed 3 people and injured 36, a 2002 shooting at Los Angeles International Airport that killed

2 people and wounded another 4, and a 2015 mass shooting and attempted bombing in San Bernardino that killed 14 people and injured at least 17 more.

Risk of Future Events

Infrastructure failure: Infrastructure failure events are expected to continue in Laguna Beach. Events such as clogged or broken storm drains, damaged power lines, and ruptured water and wastewater pipes are likely in the future, particularly as a consequence of intense storm systems. More serious but less frequent forms of infrastructure failure may also occur, particularly if key infrastructure is not well maintained.

Nuclear hazards: The closure of SONGS further decreased the already extremely low risk of a nuclear meltdown affecting the community. The only operating nuclear reactor in Southern California is a small reactor on the University of California Irvine campus used for research (NRC 2017). The presence of radioactive material in and around Laguna Beach, including the significant quantities of material at SONGS, means that there is some risk of a future nuclear hazard event, although such events are very rare. Given the heavy security around significant quantities of radioactive material and past trends, the release of enough material to cause a substantive nuclear hazard is possible but is likely very low.

Terrorism: Terrorism is often a function of national or global social, political, or economic issues, and the specific risk to an individual community is often unknown and unknowable. Terrorism is often thought of as being more likely in cities that are home to highly prominent targets, although, as previously discussed, these incidents may happen anywhere. Laguna Beach is expected to continue to remain a potential target for terrorist acts, although it is probably a lower-priority target than other communities in the region.

Climate Change Considerations

Infrastructure failure: Infrastructure failure that is caused by other hazard types may be affected by climate change. Many infrastructure failure events in Laguna Beach are directly or indirectly caused by floods and high winds, brought on by intense storms. As discussed in the Extreme Weather section, some severe storms are expected to become more intense because of climate change. This in turn may cause more infrastructure failures. Climate change is also expected to increase the number of extreme heat events in Laguna Beach, and as higher temperatures stress mechanical and electrical systems, it is possible that this effect may also increase the frequency or severity of infrastructure failure events.

Nuclear hazards: Links between radioactivity and climate change are unknown. There is some possibility that increases in the frequency or severity of other hazard types due to climate change, such as flooding, could increase the risk of a natural disaster that damages a container or vessel holding radioactive material. Therefore, climate change could potentially increase the risk of a nuclear hazard, although this risk is low enough that climate change is not expected to create an appreciable increase in the frequency or intensity of radiation exposure.

Terrorism: Terrorism is not directly linked to climate change because it is not directly caused by weather or climate conditions. There are concerns that climate change may increase the rate of terrorism globally by causing food and resource shortages, resulting in economic and societal upheaval (particularly in less

developed nations) that could lead some individuals to commit acts of terror (DoD 2015). However, such concerns are more likely at a national or global scale and are not expected to substantially change the risk of terrorism in and around Laguna Beach.

LANDSLIDES AND MUDFLOWS

Description

When a hillside or other slope becomes unstable, the soil and rocks that make up the slope slide toward the bottom. Landslides are often sudden, although some are very slow over a very long time. Loose and fractured materials are more likely to slide than compact materials or solid rock, and steep slopes are at greater risk than gentle rises. Areas that have been recently burned by wildfires are more susceptible to sliding because the fire destroys the plant cover that helps stabilize slopes.

Landslides are usually induced by either earthquakes or moisture. The shaking of an earthquake can decrease slop stability, or in a more severe instance, can fracture the earth material enough that it slides. Moisture-induced landslides can occur when the ground soaks up so much water that it becomes loose and unstable. This is often the result of intense or long-lasting rainfall, but can also result from broken pipes or overwatering landscapes. In some cases, hillside erosion from rainfall can induce instability and cause landslides. If the slide is wet enough to become mud, the event is known as a mudslide or mudflow.

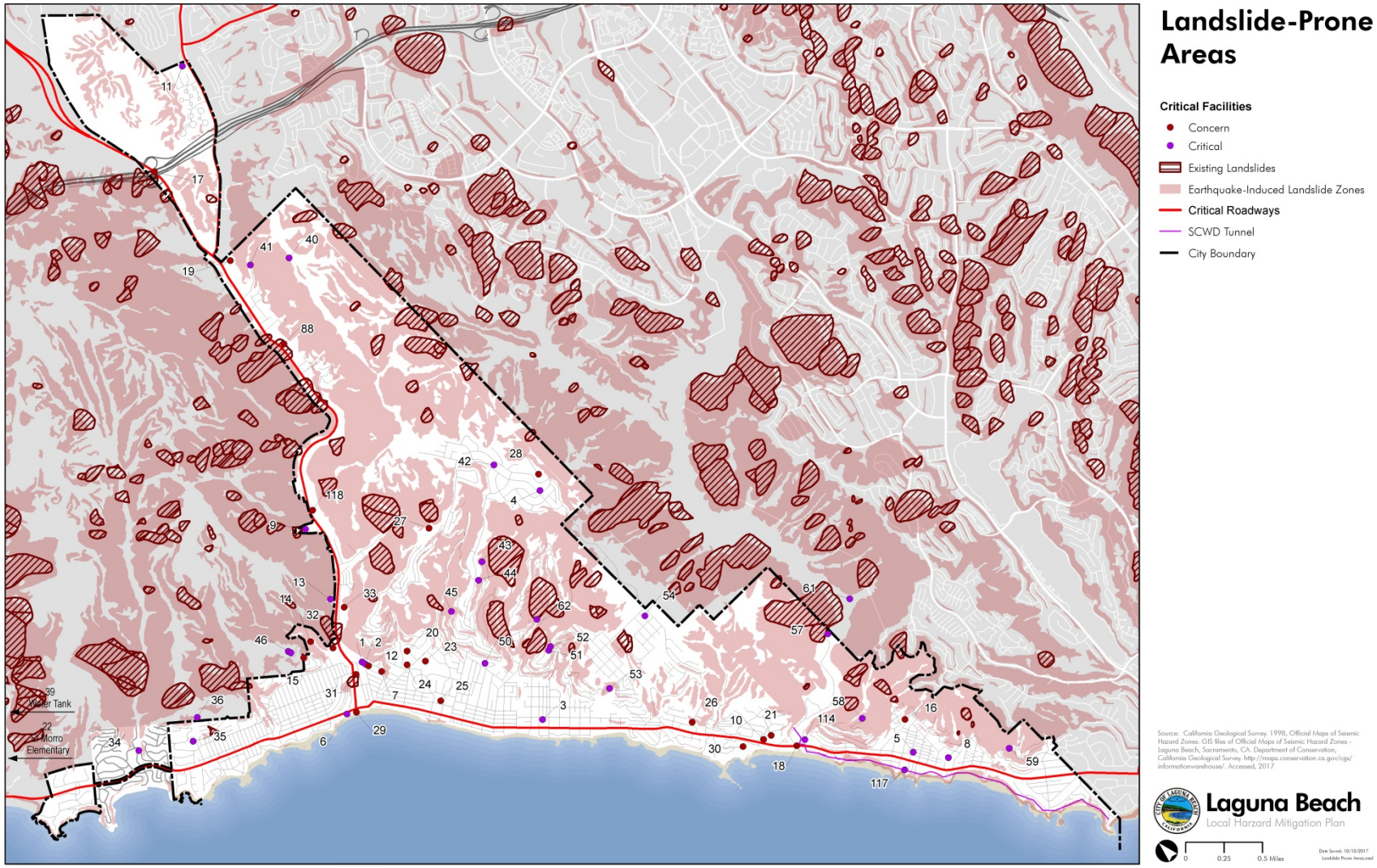
Regardless of the cause or specific form, a landslide can damage or destroy any structures built on the sliding material or in its path. Infrastructure built into the soil, such as water pipes or telecommunication lines, may be severed by landslides. This could potentially lead to infrastructure-induced flooding if water pipes are broken. In addition to property damage, landslides can crush or bury people, creating a risk of serious injury or death. The loose material deposited by a landslide can also block roads and waterways.

Location and Extent

The parts of Laguna Beach at risk of landslides are the areas at the bottom of canyons and along the canyon slopes. According to studies of landslide susceptibility in Orange County, the areas that face a high or very high risk of sliding under normal conditions include the slopes on either side of Laguna, Bluebird, and Aliso canyons; the area north of the Temple Hill neighborhood; and many of the coastal bluffs. Additional areas face a high risk of landslides in the event of an earthquake, including the hills above Irvine Cove, Boat Canyon, and the Skyline Drive neighborhood (CGS 1976).

The severity of a landslide is often measured by the amount of material that slid (e.g., in cubic feet). There is no scale for measuring individual landslides. **Figure 7** depicts the areas of existing landslides and areas of landslide susceptibility in the event of an earthquake. This map does not depict areas at risk of moisture-induced landslides, which may realistically occur on any sufficiently steep and loose hill, and may spread from the base of the slope into flatter areas of Laguna Beach.

Figure 7: Landslide Hazard Areas



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Past Events

Multiple substantial landslides, primarily moisture-induced slides, have occurred in Laguna Beach's history. The most recent and significant event was on June 1, 2005. The slopes above Bluebird Canyon, weakened by strong winter rains, slid in the early morning. The landslide injured 5 people (although not significantly), destroyed 17 houses, and damaged another 11, causing approximately $27 million in damages, or $34 million in 2017 dollars (Weikel et al. 2005; SHELDUS 2016). Intense rains during the winter of 1997–1998 led to multiple landslides. Two beachside homes were destroyed by sliding bluffs on December 6, 1997, and another 20 homes were damaged. A landslide on February 23, 1998, damaged 2 homes in the Canyon Acres neighborhood. The following day a landslide damaged 14 homes and several businesses throughout Laguna Canyon, killing 1 person and injuring 9. Another landslide the next day damaged 2 homes, killed 1 person, and injured 10 (Laguna Beach 2011; CGS 2016a). A 2000 landslide destroyed a home on Cerritos Drive (Laguna Beach 2000). In the spring of 1995, a pair of landslides on Dunning Drive damaged homes and forced evacuations (Earnest 1995). A 1993 landslide on Mystic Lane destroyed 3 homes and part of the street (Laguna Beach 1996). In 1980, a landslide destroyed 2 homes near the intersection of Del Mar Avenue and Baja Street (Laguna Beach 1984).

Figure 1. The aftermath of a 1998 landslide in Laguna Beach. Image from FEMA (Dave Gatley).

The most damaging landslide in Laguna Beach's history was on October 2, 1978. Heavy rain in March of 1978 is believed to be the ultimate cause of the landslide, which damaged or destroyed 50 homes in the Bluebird Canyon neighborhood. Ten days later, a small section at the top of the slope collapsed, destroying another home. The slide was approximately 3.5 acres in size, although geologists suspected that the slope on which the slide occurred was in fact debris from a larger and much older landslide (Miller and Tan 1979). The slide caused over $20 million in damage ($73.2 million in 2017 dollars), and Laguna Beach was declared a state and federal disaster area as a result (Cal OES 2013; SHELDUS 2016).

Risk of Future Events

All expectations are that landslides will continue in Laguna Beach because the factors that cause landslides remain in the community. Given that earthquake-induced landslides have not occurred in Laguna Beach's recorded history, it is likely that such events will remain rare, although substantial earthquake events may cause future landslides. Moisture-induced landslides have been somewhat more frequent, usually as a consequence of intense storms or winters with heavy rainfall. All expectations are that most landslides in Laguna Beach will continue to be moisture induced.

Climate Change Considerations

There is no known link between climate change and seismic activity, and therefore climate change is not expected to have any effect on earthquake-induced landslides. However, climate change may increase the frequency and/or intensity of moisture-induced landslides. As discussed more extensively in the Extreme Weather section, atmospheric river storms are expected to become more intense as a result of climate change. This will likely cause more precipitation to be absorbed by the soil of slopes in Laguna Beach, which may help destabilize hillsides and cause an increase in the frequency of landslide events. It is also possible that the increase in precipitation could destabilize areas that were mostly stable under less intense storms, which could mean that landslides could become larger. There are other potential changes to precipitation patterns in Laguna Beach that may affect moisture-induced landslides, but additional research is necessary to clearly identify these changes.

SEISMIC HAZARDS

A seismic hazard is the consequence of earthquakes and other tectonic activity. This Plan includes liquefaction and seismic shaking as seismic hazards. Landslides, which may be caused by earthquakes, are discussed in the Landslides and Mudflows section. Tsunamis, which are usually caused by earthquakes, are discussed under the Coastal Hazards section.

Description

Liquefaction: Liquefaction occurs when loosely packed material, such as sand or silt, that is saturated with water, is suddenly shaken. The force of the shaking causes the saturated material to behave less like solid ground and more like a fluid. In addition to the composition of the soil, the liquefaction risk also depends on the height of the groundwater table. In areas where the groundwater table is higher, more soil is saturated and so may be at risk of liquefaction if the soil is composed of susceptible material.

This liquefied soil loses much or all of its stability, which can damage any structure built on it. In some cases of liquefaction, structures built on the soil may collapse completely. Liquefied soils may also damage or destroy utility lines in the ground. This may cause floods if water lines are broken or may create a risk of fire if there is damage to natural gas lines. Liquefied soils may also flow more easily down slopes, increasing the risk for mudslides.

Seismic shaking: Seismic shaking is shaking of the ground due to an earthquake. Earthquakes are caused by plate tectonics, which is the gradual movement of sections of the Earth's surface. As the sections move past each other along boundaries called faults—at a rate between a fraction of an inch and about five inches each year—the sections occasionally "stick" as a result of friction and stress accumulates. The stress eventually becomes strong enough to overcome the friction holding the sections together, causing them to suddenly move past each other. This sudden movement causes fault rupture, which causes the seismic shaking associated with an earthquake.

Faults occur at the boundaries between large sections of the earth's surface, called plates. However, this constant process of sticking and releasing stress can deform the plate and cause faults far away from the

boundaries themselves. For example, most of California sits on the North American plate, but the coastal areas of the state south of San Francisco are on the Pacific plate. The San Andreas Fault is the main boundary between these plates, but other fault lines can be found up to 200 miles away. The presence of the San Andreas Fault and many other fault lines is the reason for California's frequent seismic shaking and other tectonic activity.

Seismic shaking can be strong enough to result in widespread devastation or so weak it can only be detected with scientific instruments. The intensity of seismic shaking is a result of the amount of energy released by the fault rupture (how much of the accumulated stress was released), the length of the rupture (the longer the slip along the fault line, the greater the shaking), and the depth at which the rupture occurs (ruptures that occur closer to the surface often cause stronger shaking). Usually, the areas closest to the site of the rupture experience the greatest shaking, although differences in geology and soil also affect this.

Seismic shaking can damage or destroy buildings and structures and may cause partial and total collapse. The movement of the ground can damage or destroy infrastructure on or beneath the surface, such as roads, rail lines, and utility lines and pipes. This in turn can cause releases of hazardous materials, breaks in water lines that cause floods, human and environmental health risks from damaged wastewater lines, and other dangerous situations resulting from infrastructure failure. Falling debris and structures during seismic shaking creates a risk of personal injury or death.

Location and Extent

Liquefaction: Multiple areas in Laguna Beach are at risk of liquefaction, primarily the beaches and the canyon areas, because the soils in these areas are sand or loose sediment washed down the canyons by floods and creeks, and such material is prone to liquefaction. Specific risk areas are where the Pacific Coast Highway crosses below Emerald Canyon as well as the roads and properties of Laguna, Bluebird, and Aliso Canyons (CGS 2008). There is no standardized scale for measuring liquefaction events**. Figure 8** depicts the areas of the City susceptible to liquefaction.

Seismic shaking: All of Laguna Beach is at risk of seismic shaking from local and regional faults. Shaking may be more intense in areas situated on looser material. The intensity of seismic shaking is usually measured with the Modified Mercalli Intensity (MMI) scale, which is based on the amount of observed damage. As a result, an earthquake will have a different MMI measurement in different locations. The MMI scale uses Roman numerals on a 12-point scale. It replaces the Richter scale, which is no longer used because it is less accurate when measuring large earthquakes. **Table 3-12** shows the MMI scale.

KEY TERMS

Spectral Acceleration: The maximum acceleration experienced by a building or other structure during an earthquake.

Period: The time it takes to complete one cycle of a seismic wave, measured in seconds or fractions of a second.

TABLE 3-12: MODIFIED MERCALLI INTENSITY SCALE

Intensity	Description	Description
I	Instrumental	Felt only by a very few people, under especially favorable conditions.
II	Feeble	Felt only by a few people at rest, especially on the upper floors of buildings.
III	Slight	Noticeable by people indoors, especially on upper floors, but not always recognized as an earthquake.
IV	Moderate	Felt by many indoors, and by some outdoors. Sleeping people may be awakened. Dishes, windows, and doors are disturbed.
V	Slightly strong	Felt by nearly everyone, and many sleeping people are awakened. Some dishes and windows broken, and unstable objects overturned.
VI	Strong	Felt by everyone. Some heavy furniture is moved, and there is slight damage.
VII	Very strong	Negligible damage in well-built buildings, slight to moderate damage in ordinary buildings, and considerable damage in poorly-built buildings.
VIII	Destructive	Slight damage in well-built buildings, considerable damage and partial collapse in ordinary buildings, and great damage in poorly-built buildings.
IX	Ruinous	Considerable damage in specially designed structures. Great damage and partial collapse in substantial buildings, and buildings are shifted off foundations.
X	Disastrous	Most foundations and buildings with masonry or frames are destroyed, along with some well-built wood structures. Rail lines are bent.
XI	Very disastrous	Most or all masonry structures are destroyed, along with bridges. Rail lines are greatly bent.
XII	Catastrophic	Damage is total. The lines of sight are distorted, and objects are thrown into the air.

Source: USGS 2017a.

Another indirect measure of seismic shaking measures the energy released by the fault rupture—the moment magnitude scale (MMS, denoted as M_w or simply M). The MMS begins at 1.0 and increases as the energy of the earthquake grows. The MMS is a logarithmic scale, meaning that the difference between numbers on the scale multiplies as they get bigger. For example, an earthquake with 5.0 M_w is approximately 1.4 times greater than 4.9 M_w, 32 times greater 4.0 M_w, and 1,000 times greater than 3.0 M_w.

Figure 9 shows the shaking potential from a simulated earthquake on the Newport-Inglewood fault, the closest major fault to Laguna Beach. The intensity of the shaking is measured as a percent of the earth's gravity (g). For example, shaking of 1.5g is equal to 1.5 times the force of earth's gravity

Figure 8: Liquefaction Hazard Zones

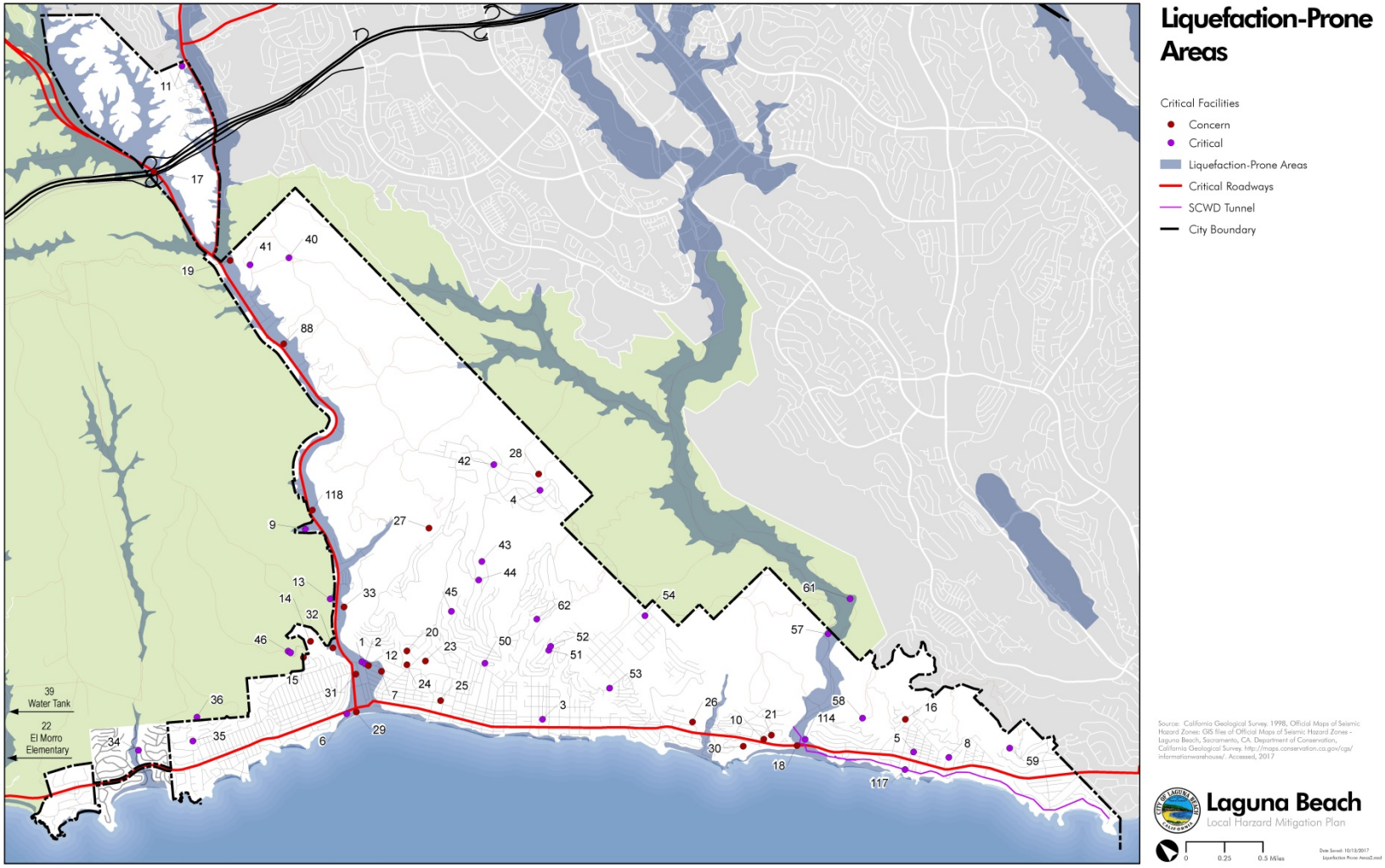

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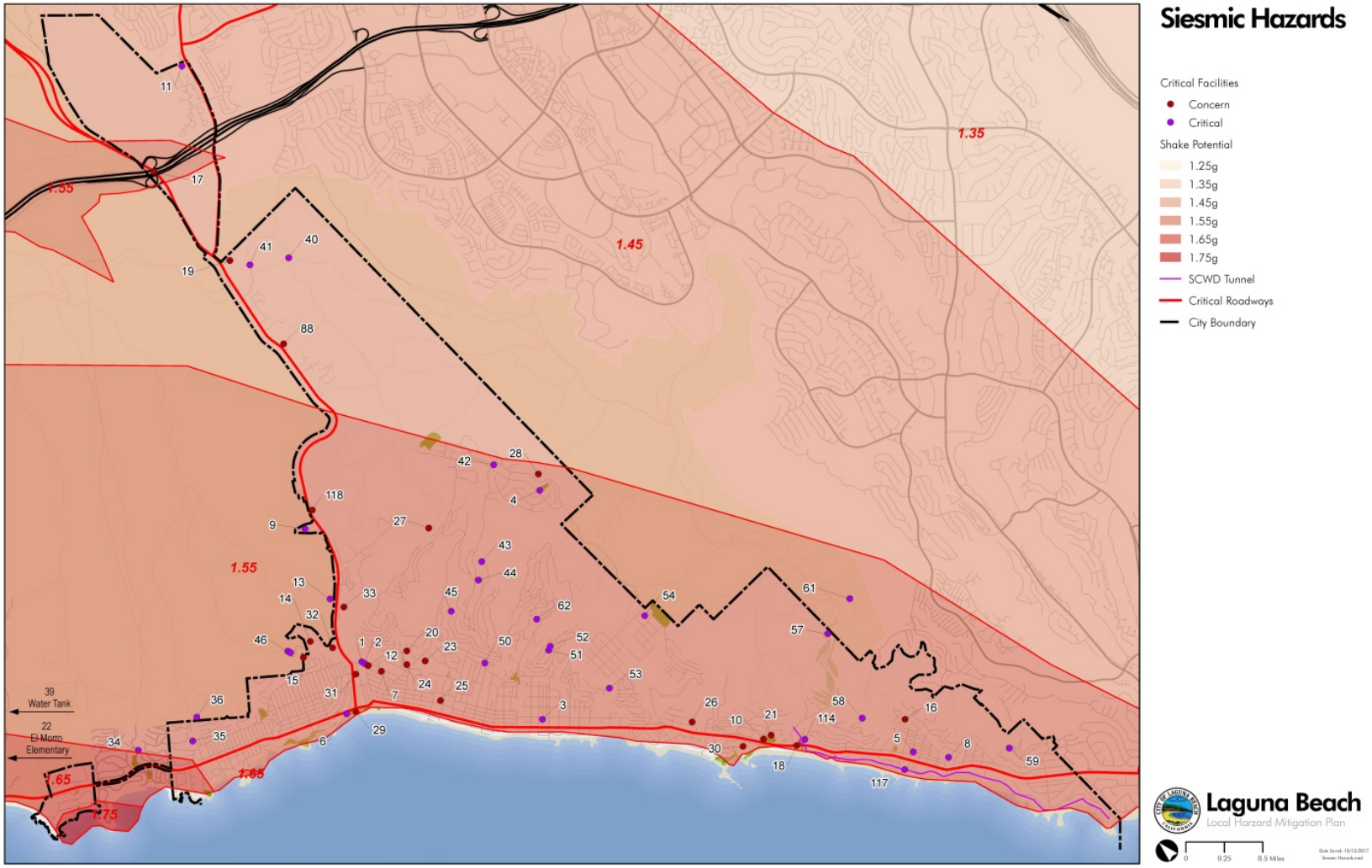
Figure 9: Seismic Shaking Potential (Newport-Inglewood Fault)



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Past Events

Liquefaction: Despite experiencing multiple earthquakes, Laguna Beach has no record of liquefaction. A number of communities nearby and in the wider region have experienced liquefaction during significant earthquakes.

Seismic shaking: In seismically active coastal California, small earthquakes are common. One of the larger of these was a 4.3 M_w event in 1969 that was felt widely throughout Laguna Beach (Laguna Beach 1995). Laguna Beach has also experienced some significant seismic shaking events, the strongest of which was the 1933 Long Beach earthquake, approximately 14 miles northwest of Laguna Beach off the shore of Huntington Beach. This event measured 6.4 M_w (SCEDC 2013) and had a Mercalli intensity of VI (Strong) in Laguna Beach (Laguna Beach 1995). It killed 120 people and caused over $50 million in damage (approximately $970 million in 2017 dollars), including some damage to unreinforced masonry buildings in Laguna Beach (SCEDC 2013). Other significant earthquakes felt in Laguna Beach are the 1994 Northridge earthquake and the 1987 Whittier Narrows earthquake.

Although other earthquakes have caused extensive regional damage, none of them caused substantive damage in Laguna Beach in recorded history. **Table 3-13** shows major earthquakes (at least 6.0 M_w) within 100 miles of downtown Laguna Beach.

TABLE 3-13: SIGNIFICANT EARTHQUAKES WITHIN 100 MILES OF LAGUNA BEACH

Event Name	Distance (Miles)*	Magnitude
1812 Wrightwood earthquake	54 (approximately)	7.5
1910 Elsinore earthquake	24	6.0
1918 San Jacinto earthquake	54	6.8
1923 North San Jacinto Fault earthquake	44	6.3
1933 Long Beach earthquake	14	6.4
1937 Terwilliger Valley earthquake	88	6.0
1948 Desert Hot Springs earthquake	89	6.0
1954 San Jacinto Fault earthquake	100	6.4
1968 Borrego Mountain earthquake	100	6.6
1971 San Fernando earthquake	69	6.6
1992 Joshua Tree earthquake	90	6.1
1992 Landers earthquake	90	7.3
1992 Big Bear earthquake	72	6.4
1994 Northridge earthquake	64	6.7

Source: SCEDC 2011.
* Distance between epicenter and downtown Laguna Beach

Orange County was included in disaster declarations for the 1994 Northridge earthquake and the 1987 Whittier Narrows earthquake, although there was no substantive damage in Laguna Beach from either event.

Risk of Future Events

Liquefaction: Although there is no record of liquefaction events in Laguna Beach, the presence of liquefaction-prone soils means that future earthquakes could trigger liquefaction in the community. Earthquakes on the nearest faults, including the Newport-Inglewood, Oceanside, and San Joaquin Hills faults, could cause sufficient ground shaking to trigger liquefaction, although the chance of an earthquake on these faults is relatively low. Larger, more-distant faults are more likely to cause significant earthquakes, although the shaking from these earthquakes may not be strong enough in Laguna Beach to trigger liquefaction.

Seismic shaking: Laguna Beach is in a seismically active area. Given the significant seismic shaking events in the past, it is almost certain that such events will continue. The region has many fault lines, some of them major faults, and it is almost inevitable that a regional fault line will rupture in the foreseeable future and cause a major seismic shaking event. The Third Uniform California Earthquake Rupture Forecast (UCERF3) was released in 2015 and is the most recent assessment of the probability of a major earthquake on various faults between 2015 and 2044. **Table 3-14** shows the results of UCERF3 for key fault lines near Laguna Beach.

TABLE 3-14: EARTHQUAKE PROBABILITIES FOR KEY FAULTS NEAR LAGUNA BEACH (2015-2044)

Fault	Distance (Miles)*	Probability			
		6.7+ M_w	7.0+ M_w	7.5+ M_w	8.0+ M_w
Newport-Inglewood	2	1.08%	0.90%	0.43%	Negligible
Oceanside	3	0.72%	0.59%	0.23%	Negligible
San Joaquin Hills	7	0.78%	0.41%	0.24%	Negligible
Palos Verdes	17	3.17%	2.84%	0.92%	Negligible
Whittier	23	1.64%	1.47%	0.81%	0.01%
Elsinore	23	3.83%	1.95%	1.08%	0.01%
Sierra Madre	40	1.43%	1.12%	0.78%	0.03%
San Jacinto	45	6.71%	6.43%	5.29%	2.77%
San Andreas†	52	25.87%	22.06%	18.74%	6.91%

Source: USGS 2015.
* Distance between downtown Laguna Beach and the nearest point of the fault. All distances are approximate.
† Southern California segments only.
Note: UCERF3 results consist of two individual models (3.1 and 3.2), each of which provides rupture probabilities for each segment of the fault. This table shows the maximum probability for a section of the fault in either model.

In addition to the UCERF3 forecasts, which project the odds of a major earthquake on local and regional faults, the US Geological Survey forecasts the severity of seismic shaking in different locations for various plausible earthquake scenarios. **Table 3-15** shows the anticipated shaking in Laguna Beach from some of these scenarios.

TABLE 3-15: SELECTED SHAKING SCENARIOS FOR LAGUNA BEACH

Fault	Magnitude	Distance to Epicenter (Miles)*	MMI in Laguna Beach
Newport-Inglewood	7.0	2	VIII (Destructive)
	7.2	14	VII (Very strong)
	7.5	75	VIII (Destructive)
Palos Verdes	7.3	19	VII (Very strong)
	7.7	50	VII (Very strong)
Elsinore	7.0	25	VI (Strong)
	7.3	23	VI (Strong)–VII (Very strong)
	7.7	110	VII (Very strong)
Sierra Madre	7.3	46	VI (Strong)
San Jacinto	7.7	51	VI (Strong)
San Andreas	8.0	89	VI (Strong)

Source: USGS 2017b.
* Distance between downtown Laguna Beach and the epicenter (the point on the surface above where the fault rupture began).

The US Geological Survey scenarios show that the Newport-Inglewood fault could cause the strongest seismic shaking in Laguna Beach, and the Palos Verdes and Elsinore faults could cause the next-strongest shaking. The more distant Sierra Madre, San Jacinto, and San Andreas faults could cause strong shaking, but due to their distance from Laguna Beach, it would not be as significant as the closer faults. Although there are no shaking scenarios for the Oceanside, San Joaquin Hills, or Whittier faults, the Oceanside and San Joaquin faults could likely cause strong shaking due to their proximity to Laguna Beach, and shaking from the Whittier fault would be somewhat weaker. However, according to the UCERF3, the faults closest to Laguna Beach are less likely to rupture within the next few decades than regional faults such as the San Jacinto and San Andreas.

The primary faults of concern for Laguna Beach are the Newport-Inglewood, Palos Verdes, and Elsinore. Although the chance of a major earthquake on these three faults is somewhat low, they all have the potential to cause significant damage in Laguna Beach. Earthquakes from regional faults are more likely, but are expected to cause less damage (although not inconsequential).

Climate Change Considerations

Liquefaction: Changes in precipitation patterns could affect groundwater levels, which could in turn affect the susceptibility of soils in Laguna Beach to liquefaction. However, Laguna Beach has no records of liquefaction events, and it is unknown if climate change will have any discernible effect on liquefaction. There is no link between climate change and the seismic events that trigger liquefaction.

Seismic shaking: There is no evidence of any link between climate change and seismic activity that could affect conditions in Laguna Beach,[6] so climate change is not expected to cause any changes to the frequency or severity of earthquake events.

[6] Melting land ice as a result of climate change decreases the weight on the land and increases the weight on ocean floors, and there is some evidence that this redistribution of weight may affect stresses on faults, changing earthquake patterns. However, this connection is disputed, and there is currently no evidence that such a connection would cause a significant change in seismic activities in the region of Laguna Beach (Hampel et al. 2010; McGuire 2010).

WILDFIRE

Description

Wildfires are fires that burn in largely undeveloped and natural areas, and they are a regular feature of ecosystems throughout California. These fires help to clear brush and debris from natural ecosystems and are necessary for the health of many ecosystems and the life cycle of various species. However, the common practice since the early twentieth century was to suppress naturally occurring fires in wildland areas, allowing dry plant matter and other fuels to build up.

At the same time, human activity has caused changes in the buffer zone between urbanized and undeveloped areas, known as the wildland-urban interface (WUI). The more natural setting of a WUI can make these zones highly desirable places to live, and in many parts of California, the WUIs have become developed, albeit at lower densities than fully urbanized areas. However, this development activity has brought more people into wildfire-prone areas. The availability of fuel and increasing encroachment into the WUI have made wildfires among the most common and dangerous of all-natural hazards in California. From 1950 to 2012 there have been 178 fire emergencies in the state, more than any other hazard event. Fires have killed 129 people (behind only floods and earthquakes among natural disasters), injured over 2,100 people (behind only earthquakes), and caused over $2.7 billion in damages (Cal OES 2013).

Wildfires can be sparked by lightning, accidents, or arson. The size and severity of any fire depends on the availability of fuel, weather conditions, and topography, although wildfires in the WUI do not need to be large to be damaging. The 1991 Tunnel Fire in Oakland was relatively small, only 1,600 acres, but was the second-most destructive and second deadliest wildfire in California history (CAL FIRE 2016, 2017). The flames from wildfires create serious risks to property and lives. Smoke and other particulate matter from wildfires poses a health risk, even to those not in the immediate vicinity of the blaze. Burned areas can be more susceptible to flooding and landslides, because wildfires destroy the vegetation that helps to slow down water runoff and holds slopes together.

Location and Extent

Wildfires are not measured on a specific scale and are usually classified by size (e.g., acres burned) or impact (buildings destroyed or damaged, injuries or deaths, cost of damage, etc.). The risk of wildfire is classified on a three-tier scale of fire hazard severity zones (FHSZs): very high, high, and moderate. These classes do not correspond to a specific risk or intensity of fire, but are qualitative terms that consider many factors. Fire-prone areas are also classified by the agency responsible for fire protection. Federal Responsibility Areas (FRAs) fall to federal agencies such as the US Forest Service, the Bureau of Land Management, and

Wildfires have been a regular part of the landscape in the Orange County region. This sign, which used to stand at the Top of the World, showed the localized fire danger. Image from Patrick Nouhailler.

the National Park Service. State Responsibilities Areas (SRAs) fall to the California Department of Forestry and Fire Protection (CAL FIRE), and Local Responsibility Areas (LRAs) fall to local governments.

The topography of Laguna Beach is extremely conducive to wildfires. The community is bordered by natural, undeveloped hillsides, and the developed areas are very narrow, so much of the community is very close to these hillsides. All the canyon and hillside areas in Laguna Beach, as well as some parts of the coastal terraces, are classified Very High Fire Hazard Severity Zones (VHFHSZ). In some places, the VHFHSZ extends south of Pacific Coast Highway and even to the beach. The hillsides that border the community are also classified VHFHSZs. All of Laguna Beach is an LRA, as are the hillsides that are part of neighboring incorporated communities, and unincorporated areas that border Laguna Beach are SRAs (CAL FIRE 2012). **Figure 10** depicts the VHFHSZs mapped throughout Laguna Beach.

Past Events

The biggest wildfire in Laguna Beach's history was the Laguna Canyon Fire of 1993, which began on October 27 in an unincorporated area near Laguna Canyon Road. The fire began by arson and quickly moved toward the community, assisted by extremely high winds (according to some weather stations, gusts reached 92 mph) and hot, dry temperatures. The fire burned homes in the Canyon Acres, Mystic Hills, and Emerald Bay neighborhoods as well as the El Morro neighborhood northwest of the city. Although damage was mostly limited to Laguna Beach, the fire spread as far as Newport Coast Drive in Irvine and almost as far north as Interstate 405. The fire was contained by the evening of October 28 and declared under control three days later (Alderton 2013; Clay 2013). Although there were no fatalities, the Laguna Canyon Fire injured 37 people, damaged or destroyed 441 structures, burned approximately 14,440 acres, and caused approximately $530 million in damage (close to $2 billion in 2017 dollars). It ranks among the 20 most damaging wildfires in California's history and was declared a state and federal disaster (SHELDUS 2016; CAL FIRE 2017).

Several other wildfires have burned in Orange County and in the wider region, although these events have not caused damage in Laguna Beach. There have also been occasional brush fires in the area, many of which were caused by damaged electrical lines or transformers. There were such fires in Laguna Canyon in 2007, 2011, and 2015, as well as a 2012 fire near Laguna Terrace (Laguna Beach 2015).

Risk of Future Events

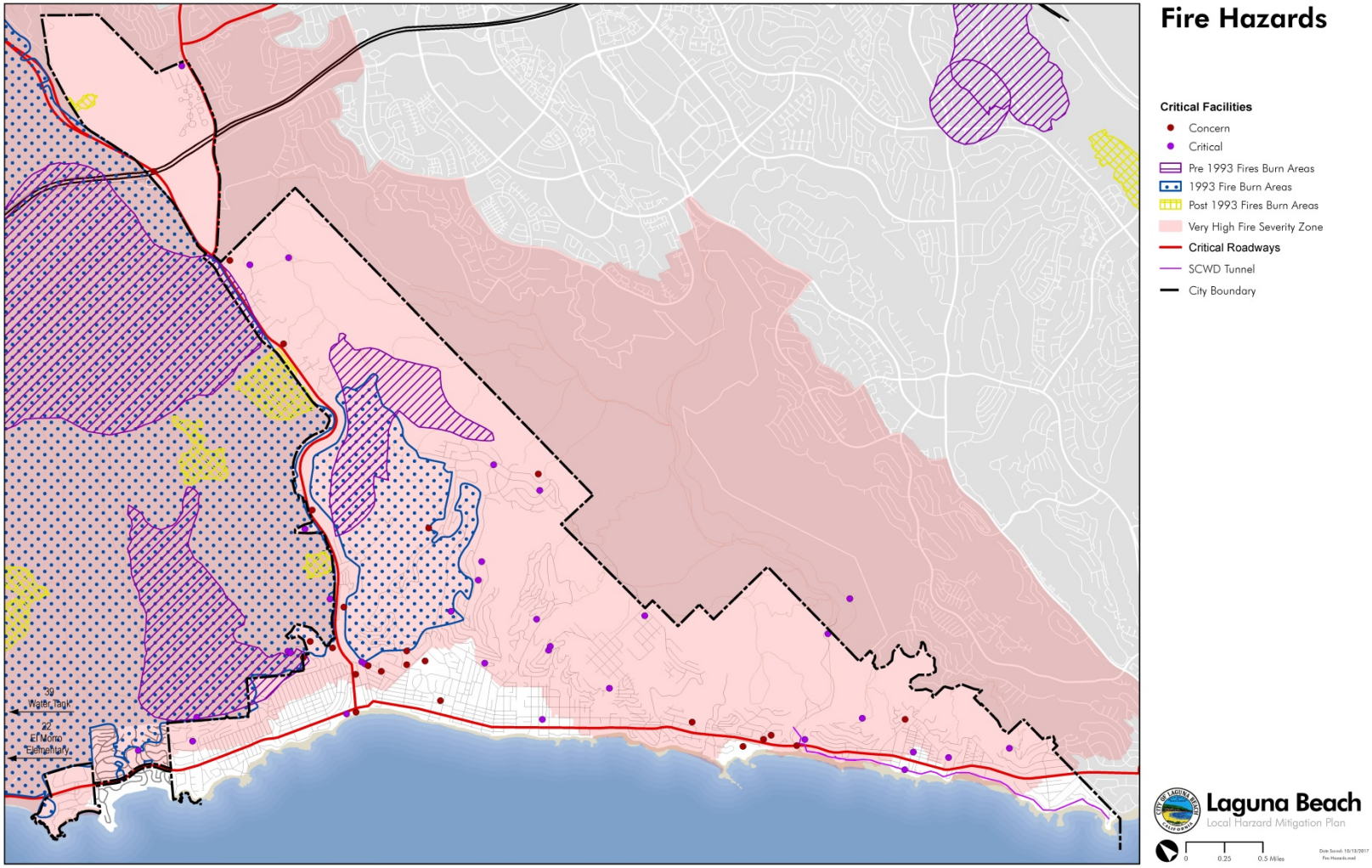
The past history of wildfires in Laguna Beach and the presence of VHFHSZs in and around the community mean that such events are very likely in the future. The risk is expected to remain highest in the hills, canyons, and sections of the coastal terraces near the hillsides, although all of Laguna Beach faces a threat from wildfires.

Climate Change Considerations

Climate change is expected to cause an increase in temperatures as well as more frequent and intense drought conditions. This will likely increase the amount of dry plant matter available for fuel, increasing the risk of wildfire statewide. In the hills of Orange County, which are already highly prone to wildfires, climate change is not expected to substantially increase the number of acres burned annually (CEC 2017).

However, increases in fuel supplies could cause wildfires to move faster or spread into more-developed areas, which could increase the threat to Laguna Beach.

Figure 10: Very High Fire Hazard Severity Zones



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CHAPTER 4
THREAT AND VULNERABILITY ASSESSMENTS

Each hazard assessed in **Chapter 3** affects Laguna Beach in different ways, with different effects on different people, structures, ecosystems, services, and other community assets. The frequency of hazards and the areas they affect also influence their effects on Laguna Beach. **Chapter 3** analyzed the risks of hazards, and this chapter analyzes their overall threat and identifies specific populations and physical assets that may be harmed. This chapter also looks at the overall vulnerability of Laguna Beach based on the risk and threat assessments.

KEY TERM

Threat: The potential of a hazard to do harm.

THREAT ASSESSMENT PROCESS

The threat assessment process looks at the harm that Laguna Beach may suffer from a hazard event but does not consider its likelihood, so it gives equal weight to hazards that are almost certain (e.g., floods or landslides) hazards that are less likely (e.g., nuclear hazards).

KEY TERM

Asset: A population, structure, service, ecosystem, or any other component of a community that may be affected by a hazard.

The threat assessment analyzes three aspects of each hazard—the physical threat to critical facilities and facilities of concern, the social threat to vulnerable populations, and the threat to any other assets that may be affected.

CRITICAL FACILITIES AND FACILITIES OF CONCERN

Critical facilities are properties that serve an important function in the operations of the municipal government and in serving members of the Laguna Beach community. They include City administration buildings, water tanks and pumps, public safety buildings such as police and fire stations, and bases of operations for City maintenance activities. Facilities of concern are less vital to safety and well-being in Laguna Beach, but may serve as assembly points or temporary shelters, assist in evacuations, or play a supportive role in preparing for and recovering from hazard events. Both critical facilities and facilities of concern may be owned by the City, other agencies, or private companies.

The Hazard Mitigation Planning Committee identified 85 critical facilities and 26 facilities of concern that fall into several different categories based on their function. **Table 4-1** shows the number of critical facilities and facilities of concern in each category, the total estimated value of the facilities in each category, and examples of the facilities in each. **Appendix D** has a complete list of the critical facilities and the facilities of concern.

TABLE 4-1: CRITICAL FACILITIES AND FACILITIES OF CONCERN

Category	Number of Facilities		Estimated Value*	Example Facilities
	Critical	Concern		
Communication	0	2		Telecommunication dish for county emergency operations
Community services	0	2	$10,673,346	Homeless shelter
Education	0	11	$123,511,582	Public and private schools, school administration facilities
Energy	2	0		Electrical substations
Fire †	5	0	$9,843,581	Fire stations
Public assembly	0	2	$24,000,000	Festival grounds
Road	0	2		Transportation overpasses
Utility	73	1	$66,662,028	Water tanks, pump stations
Water	1	2		Water provider offices
Miscellaneous	4	4	$33,438,929	City administration, public safety buildings, assembly points
Total	**85**	**26**	**$268,129,466**	

* Estimated value is a combination of the value of the structure and the contents. Values are not available for all facilities in each category.
† Four fire stations are operated by the City and located within the Laguna Beach city limits. A fifth facility, Orange County Fire Authority Station #11, is operated by Orange County and is located in the unincorporated area of Emerald Bay, adjacent to Laguna Beach.

The threat assessment for critical facilities and facilities of concern looks at the number and types of facilities that lie within the areas of elevated risk for different hazards. Hazard events may damage or destroy these facilities, leaving them unable to function or with limited capacity. Repair or reconstruction work may be necessary to make these facilities fully operational. Facilities outside of the elevated risk hazard areas may still be affected by hazards, although the risk (and therefore chance of damage) is lower.

KEY TERM

Threatened population: A population whose members have certain physical, socioeconomic, or other characteristics that make them more likely to suffer harm during a hazard event.

THREATENED POPULATIONS

A hazard event that strikes Laguna Beach with equal severity across the community may nevertheless have very different impacts on different people. Age, physical and mental condition, socioeconomic status, access to key services, and many other factors affect the ability of people to prepare for and respond to a hazard event. For example, higher-income households are more able to retrofit their homes to resist floodwaters, or move to an area with better drainage, than a lower-income household. The higher-income household is therefore less likely to suffer significant damage during a flood event than the lower-income household, even if both homes receive the same amount of rain.

A social threat analysis looks at how people with various characteristics are more likely to be harmed by a hazard event, and where these threatened populations live in Laguna Beach. This includes an assessment of whether the people in an area of an elevated hazard risk are more likely

than average to be considered a threatened population. This Plan looks at the following metrics to determine threatened populations:

- **Disability status.** Disabled persons often have reduced mobility and may have a difficult time taking care of themselves. They may have little or no ability to mitigate for hazard conditions, particularly without access to assistance from others.

- **Income levels.** Lower-income households are less likely to have the financial resources to carry out mitigation activities on their homes. Financial challenges may make it difficult for lower-income persons to participate in educational opportunities or learn about available resources. They are also less likely to be able to easily move to a location outside of a hazard zone if necessary. The national poverty limit standard for a family of four is approximately $24,500.

- **Senior citizens (individuals at least 65 years of age).** Senior citizens are more likely to have reduced mobility, physical or mental disabilities, and lower income levels, all of which can decrease their ability to mitigate hazard events. Physical and mental characteristics may also make senior citizens more likely to be injured during a hazard event.

Individuals with weakened immune systems, including young children and senior citizens, may face greater health threats from diseases. Images from the Centers for Disease Control and Prevention and Lennart Tange.

Table 4-2 shows how many people in Laguna Beach meet one of the metrics for threatened populations. **Chapter 2** provides additional demographic details for the community.

TABLE 4-2: LAGUNA BEACH THREATENED-POPULATION METRICS

Threatened Population Metric	Community-Wide Data
Percentage of households with a disabled person	10.6%
Area median income	$112,609
Percentage of households under the poverty limit	7.6%
Percentage of senior citizens	23.5%

Source: ESRI 2017.

Note: Due to data limitations, the population data used for the threat assessment may not be consistent with the census demographics in Chapter 2. The demographics data used in the threat assessment are for comparative purposes only, and are not meant to replace the more accurate demographics in Chapter 2.

The social threat assessment also looks at the threat to other threatened populations, such as homeless persons, individuals without access to lifelines (vehicles or communication), or undocumented immigrants. Because data for these individuals are not readily available, the number of persons in areas of elevated risk cannot be accurately counted, so this assessment will discuss more generally how these other threatened populations may be affected.

OTHER ASSETS

Other assets in Laguna Beach may be harmed by hazard events besides threatened populations and critical facilities/facilities of concern. These assets may include important services, infrastructure networks, ecosystems, and local economic activities. The threat assessment will describe the potential harm to these other assets as information is available.

THREAT PROFILES

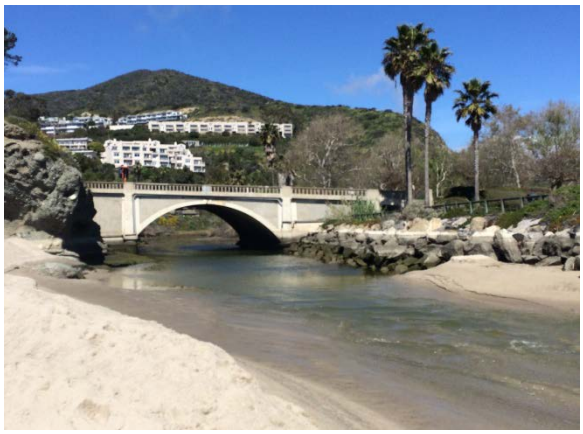
COASTAL HAZARDS

Physical Threat

There is no defined hazard zone for cliff and bluff erosion, but in general, facilities on top of the cliffs may face the threat of erosion. These facilities are wastewater lift stations and stormwater outlets, which may break and release wastewater in the event of significant clifftop erosion, potentially causing an environmental and human health hazard.

There are six critical facilities and facilities of concern in the sea level rise hazard zone. Only one facility, Main Beach, is vulnerable at one foot of sea level rise. A stormwater outlet at Divers Cove is vulnerable to damage at three feet of sea level rise. Three wastewater lift stations and a stormwater outlet at Fisherman's Cove are vulnerable at six feet of sea level rise.

There are 37 critical facilities and facilities of concern within Laguna Beach's 0.13-square-mile tsunami hazard zone, including the Montage lift station and the City's Marine Safety Headquarters building. Several stormwater outlets and wastewater lift stations are in the tsunami hazard zone, and the wastewater lift stations could potentially cause a release of sewage in the event of a tsunami. The Aliso Bridge is also in this hazard zone. Since this is the only roadway across Aliso Creek, a tsunami could sever the connection between south Laguna Beach and the rest of the community. **Table 4-3** shows the types of critical facilities in the tsunami hazard zone and the potential loss if these facilities are damaged by a tsunami.



The bridge over Aliso Canyon is one of the critical facilities located in the tsunami hazard zone. Image from Sergei Gussev.

TABLE 4-3: FACILITIES IN TSUNAMI HAZARD ZONE

Category	Tsunami Hazard Zone	Potential Loss in Tsunami Hazard Zone*	Not in Hazard Zone
Communication	0	$0	2
Community services	0	$0	2
Education	0	$0	11
Energy	0	$0	2
Fire	0	$0	5
Public assembly	0	$0	2
Road	1	$0	1
Utility	33	$22,500,000	41
Water	0	$0	3
Miscellaneous	3	$9,364,840	5
Total	**37**	**$31,864,840**	**74**

* Potential loss is based on known replacement values. Estimated value is a combination of the value of the structure and the contents. Values are not available for all facilities in each category.

Social Threat

Because there is no defined cliff erosion hazard zone, there is no count of how many people may be threatened by erosion. People who live in houses at the top of cliffs, particularly cliffs that are already unstable or have a history of erosion, are vulnerable to this hazard. Substantial cliff erosion can force individuals to leave their homes and resettle elsewhere, which can be difficult for persons with limited incomes.

Homes along the cliffs of Laguna Beach could be at risk of damage from continued cliff erosion. Image from Jeri Koegel.

Sea level rise is not expected to cause any social vulnerability in Laguna Beach, because there are no homes in the inundation zone for the foreseeable future.

There are an estimated 146 residents in the tsunami hazard zone, approximately 0.6 percent of Laguna Beach's population. Residents in the tsunami hazard zone are not uniquely socially vulnerable compared to other community members, although they may still be harmed by a tsunami. People who are linguistically isolated or lack access to lifelines may not receive notification of potential or impending tsunamis. Elderly or disabled persons, or those without access to vehicles, may be unable to evacuate if a tsunami does occur. **Table 4-4** shows the social vulnerability of residents in the tsunami hazard zone.

TABLE 4-4: TSUNAMI HAZARD ZONE THREATENED POPULATION METRICS

Threatened Population Metric	Tsunami Hazard Zone	City of Laguna Beach
Population	146	23,095
Households	89	11,308
Percentage of households with a disabled person	10.1%	10.6%
Area median income	$103,160	$112,609
Percentage of households under the poverty limit	10.1%	7.6%
Percentage of people who are senior citizens	21.2%	23.5%

Source: ESRI 2017.

Other Threats

Both coastal erosion and sea level rise are "permanent" hazards because once an area is affected by that hazard it is very difficult to restore it to a prehazard state. In the long-term, both hazards are expected to result in a loss of beach areas and cliff-top parks, which could affect tourism rates and thus have an impact on the local economy. A significant tsunami event can cause similar damage to beaches and other recreational or tourism sites, potentially also causing economic harm. There are numerous wastewater lift stations in the sea level rise and tsunami hazard zones, and damage to these facilities may decrease the quality of wastewater service in the community. A significant tsunami could inundate portions of Pacific Coast Highway, limiting access to parts of the community and forcing people to take secondary routes that are more likely to become congested. This in turn could affect response times for police, fire, and emergency medical services.

DISEASE AND PEST MANAGEMENT

Physical Threat

Although a few pests (e.g., termites) can cause harm to physical structures—and potentially significant damage with a serious infestation—most disease and pest management hazards have little to no impact on physical structures. Some diseases and pests can affect landscapes, seriously damaging or killing plants. Such damage may be aesthetically harmful and expensive to replace, but it does not affect the operations of critical facilities, facilities of concern, or other buildings or structures in Laguna Beach.

Social Threat

Diseases and pests affect everyone in Laguna Beach to some degree, from a mild inconvenience to a fatal condition. The specific social vulnerability depends on the disease or pest infestation, although in general, senior citizens, young persons, and people with weakened immune systems face the greatest threat. Persons who live alone and become significantly ill—especially senior citizens and persons with disabilities—could face an elevated threat if they are unable to take care of themselves. Lower-income individuals also face a high threat from disease and pest management hazards if they are unable to afford the necessary treatment.

Other Threats

A major outbreak of a disease could stress health care facilities and systems in and around Laguna Beach, causing a decline in medical services. Such an outbreak could also prevent many people from going to work, which would harm the economy and affect the quality of many local services. Substantial damage to local ecosystems could occur if a disease or pest outbreak affects important plant or animal species.

EXTREME WEATHER

Physical Threat

Extreme weather could affect all parts of Laguna Beach, so all critical facilities and facilities of concern lie within the hazard zone. Intense winds likely pose the greatest threat to physical structures, particularly from trees or branches that fall on buildings and cause substantial damage. Older structures that have deferred maintenance or have not been retrofitted for high wind conditions may suffer greater damage in comparison to newer/updated structures. Utility lines and wooden utility poles face an elevated threat from wind, as do buildings without reinforced roofs. Droughts typically do not cause physical damage, but the decrease in water use and subsequent wastewater generation can reduce the flushing out of debris in wastewater pipes, which can decrease system efficiency.

Social Threat

Events such as high winds and severe winter weather can harm people throughout Laguna Beach. Homeless persons and persons who work outdoors are more likely to be exposed to these hazards, increasing the threat of injury or mortality. Lower-income households, who may not be able to afford homes built to more rigorous standards or retrofit their homes, may be at greater risk for harm. Lower-income individuals may have difficulty maintaining trees on their property, which increases the threat from weak or diseased branches. Drought events are unlikely to seriously harm people in Laguna Beach, although strict financial penalties for water waste or overuse that may be imposed during a drought could have a disproportionate impact on lower-income individuals.

Other Threats

Debris from high winds and other severe weather events can block roadways, disrupting the local transportation network. This in turn can affect transit and emergency response personnel, who may be unable to reach certain areas of the community or may have to take alternative routes. The chaparral, scrub, and grassland ecosystems in and around Laguna Beach are well adapted to drought conditions, but much more frequent and/or intense drought events may harm these natural environments. In addition to the direct damage to the local ecosystems, this may have economic impacts on the community.

FLOOD

Physical Threat

The primary flood-prone areas in Laguna Beach are the canyons and the areas directly below them, which includes parts of downtown. There are 19 critical facilities and facilities of concern in the community's mapped flood plains—13 facilities in the 100-year flood plain and 6 in the 500-year flood plain. The

Anneliese's School and a warehouse owned by the Laguna Beach Unified School District are both in the 100-year flood plain, as is the Laguna Beach Transit Center and the site used for the Sawdust Festival. The Laguna Beach County Water District headquarters and the site used for the Festival of Arts are among the facilities in the 500-year flood plain. **Table 4-5** shows the critical facilities and facilities of concern in the flood hazard zones, as well as the potential loss associated with these facilities if they are damaged due to flooding.

TABLE 4-5: FACILITIES IN FLOOD HAZARD ZONE

Category	100-Year Flood Hazard Zone	Potential Loss in 100-Year Flood Hazard Zone*	500-Year Flood Hazard Zone	Potential Loss in 500-Year Flood Hazard Zone ($) *	Not in Hazard Zone
Communication	0	$0	0	$0	2
Community Services	1	$161,280	0	$0	1
Education	2	$0	0	$0	9
Energy	0	$0	0	$0	2
Fire	0	$0	0	$0	5
Public assembly	1	$0	1	$24,000,000	0
Road	2	$0	0	$0	0
Utility	6	$19,081,014	4	$3,000,000	64
Water	0	$0	1	$0	2
Miscellaneous	1	$196,106	0	$0	7
Total	13	$19,438,400	6	$27,000,000	92

* Potential loss is based on known replacement values. Estimated value is a combination of the value of the structure and the contents. Values are not available for all facilities in each category.

Social Threat

An estimated 98 residents live in the flood hazard areas in Laguna Beach, primarily in the 100-year flood plain. The residents in the flood hazard areas do not appear to be socially vulnerable compared to the average resident of Laguna Beach, although residents in these zones have a lower median income and a higher percentage live under the poverty limit compared to the entire community. Lower-income persons in flood-prone areas may be unable to afford flood insurance premiums or flood-proofing improvements to their homes, so they may face disproportionate harm from flood events. Persons with mobility challenges or lack of access to vehicles may have difficulty evacuating from a serious flood event, particularly a flash flood. **Table 4-6** shows the social vulnerability of residents in the flood hazard zones. Due to the small number of residents in the hazard zone, some demographic information is missing.

TABLE 4-6: FLOOD HAZARD ZONE THREATENED POPULATION METRICS

Threatened Population Metric	100-Year Flood Hazard Zone	500-Year Flood Hazard Zone	City of Laguna Beach
Population	93	5	23,095
Households	49	4	11,308
Percentage of households with a disabled person	12.2%	-	10.6%
Area median income	$102,486	-	$112,609
Percentage of households under the poverty limit	12.2%	-	7.6%
Percentage of people who are senior citizens	22.6%	-	23.5%

Source: ESRI 2017.
Note: Due to data limitations, the population metrics used for the threat assessment may not be consistent with the census demographics in Chapter 2.

Other Threats

Floodwaters can block roadways since several inches of water is enough to stall cars, and rushing water as shallow as one foot is enough to sweep away small vehicles. Floodwaters can also carry debris that can block roadways, hindering transit, emergency response services, and evacuations (parts of the Pacific Coast Highway and Laguna Canyon Road in flood-prone areas are at particular risk). Although rare, serious floods that erode soil around water, wastewater, and natural gas pipes may interrupt these services. Serious damage to a large number of homes or businesses may slow economic activity in Laguna Beach until reconstruction activities finish. This is of particular concern for the downtown area, which faces an elevated risk of flooding.

Main Beach Park and the nearby downtown area are within the flood plain. Image from Mark Tegethoff.

HUMAN-CAUSED HAZARDS

Physical Threat

Infrastructure failure could affect any critical facility, facility of concern, or other structure in Laguna Beach. Structures below or adjacent to water tanks face an elevated risk, as do structures near any hazardous material storage areas. Failure of wastewater infrastructure is unlikely to cause physical damage to structures, although exposure to wastewater can pollute some materials and require replacement. Nuclear hazards are directly dangerous to physical structures only in the event of a nuclear explosion, which is extremely unlikely. However, radioactive material could contaminate structures, requiring them to be replaced to ensure safe human contact. Terrorism may harm physical structures, although the unknown and unknowable risks of terrorism make it difficult to determine which structures face higher or lower threat levels. Some forms of terrorism may cause little or no damage to structures, but others may result in complete destruction.

Social Threat

All residents face relatively similar levels of social vulnerability from infrastructure failure, although persons heavily dependent on some pieces of infrastructure may face greater threats if the infrastructure in question fails. For example, senior citizens are more susceptible to extreme heat, so a failure of electricity infrastructure during a heat wave may cause more harm to senior citizens than other residents. In the event of a serious nuclear hazard that exposes people to dangerous levels of radiation, young children are more likely to be harmed. There are no characteristics that make any group of people more or less likely to be targeted by terrorism, although persons with mobility challenges may have difficulty evacuating the scene of a terrorist act.

Other Threats

The failure of any part of an infrastructure network can disrupt the service or services that rely on that network. For example, a water tank rupture can temporarily curtail water service in Laguna Beach, or a fallen power line can cause a blackout in part of the community. A nuclear hazard or act of terror may also damage infrastructure or cause roadways to be shut down, which may reduce key services. Significant nuclear or terror-related events may reduce visitors, harming the local economy. Damage to the downtown or major job centers could also reduce local economic activities. Although unlikely, the release of a significant amount of radioactive material could damage local wildlife if not quickly contained or cleaned up.

LANDSLIDE AND MUDFLOW

Physical Threat

Landslides and mudflows may affect buildings on hillsides or directly above or below slopes. There are 60 critical facilities and facilities of concern in areas that face elevated landslide risks, the City Corporation Yard, two fire stations, four schools, and the Morro Substation. **Table 4-7** shows the number of key facilities and facilities of concern in the landslide hazard zones as well as the potential loss resulting from damage to these structures from a landslide.

TABLE 4-7: FACILITIES IN LANDSLIDE HAZARD ZONE

Category	Landslide Hazard Zone	Potential Loss in Landslide Hazard Zone*	Not in Hazard Zone
Communication	2	$0	0
Community services	2	$10,673,346	0
Education	5	$48,421,186	6
Energy	1	$0	1
Fire	2 †	$0	3
Public assembly	2	$24,000,000	0
Road	1	$0	1
Utility	38	$29,581,014	36
Water	3	$0	0
Miscellaneous	4	$21,554,281	4
Total	**60**	**$133,796,511**	**51**

* Potential loss is based on known replacement values. Estimated value is a combination of the value of the structure and the contents. Values are not available for all facilities in each category.

† Includes Orange County Fire Authority Station #11, owned by Orange County.

Social Threat

Large sections of Laguna Beach are hilly, so a substantial portion of the community's population lives in landslide-prone areas. An estimated 7,613 people live in a landslide hazard zone, or approximately 33 percent of all residents. The social vulnerability in the landslide-prone areas is not substantially different from the social vulnerability in the wider community. Low-income persons may not be able to make structural retrofits to their homes that make them more resilient to landslide events. Persons with disabilities, senior citizens, and others who may have mobility challenges may not be able to rapidly get out of their homes if they live in the path of slide, increasing the risk of injury or death. **Table 4-8** shows the social vulnerability of residents in the landslide hazard zone.

TABLE 4-8: LANDSLIDE HAZARD ZONE THREATENED POPULATION METRICS

Threatened Population Metric	Landslide Hazard Zone	City of Laguna Beach
Population	7,613	23,095
Households	3,363	11,308
Percentage of households with a disabled person	12.5%	10.6%
Area median income	$126,143	$112,609
Percentage of households under the poverty limit	7.7%	7.6%
Percentage of people who are senior citizens	25.0%	23.5%

Source: ESRI 2017

Note: Due to data limitations, the population metrics used for the threat assessment may not be consistent with the census demographics in Chapter 2.

Other Threats

Landslides may block roadways for weeks or even months. Such an event in Laguna Beach could cause long-term disruptions to the roadway network, hindering emergency response services. A landslide that

blocks Laguna Canyon Road could cause additional complications because Pacific Coast Highway would then be the only roadway in and out of Laguna Beach, increasing vulnerability to the community. Underground utility lines built in slide-prone areas, or above-ground lines built on or above them, can be damaged in a landslide, causing service outages. Landslides could affect sensitive ecological areas around the community, causing localized harm to the region's ecosystem, although widespread disruptions are unlikely.

SEISMIC HAZARDS

Physical Threat

Seismic hazards can cause widespread damage or destruction to buildings and other structures. All buildings in the community, including all critical facilities and facilities of concern, are threatened by earthquakes, although the threat varies depending on which fault line is responsible for the event. In general, facilities closest to the fault line face the highest threat. The fault line most likely to cause a significant earthquake in Laguna Beach is the Newport-Inglewood fault, which is closest to the Emerald Canyon area. Facilities in this area, such as Fire Station 11 and the Irvine Cove wastewater lift station, likely face the greatest threat. The weakest shaking from a Newport-Inglewood seismic event is projected to occur in the upper Laguna Canyon area, which includes facilities such as Anneliese Elementary and the Animal Shelter wastewater lift station.

There are 55 key facilities and facilities of concern in liquefaction hazard zones, including City Hall, two schools, both electrical substations, a fire station, and both public assembly sites. **Table 4-9** shows the numbers of key facilities and facilities of concern in the liquefaction-prone areas of Laguna Beach and the potential loss associated with damage to these facilities.

TABLE 4-9: FACILITIES IN LIQUEFACTION HAZARD ZONE

Category	Liquefaction Hazard Zone	Potential Loss in Liquefaction Hazard Zone*	Not in Hazard Zone
Communication	0	$0	2
Community services	2	$10,673,346	0
Education	3	$0	8
Energy	2	$0	0
Fire	1	$0	4
Public assembly	2	$24,000,000	0
Road	2	$0	0
Utility	36	$35,581,014	38
Water	1	$0	2
Miscellaneous	6	$30,681,911	2
Total	55	$100,936,271	56

* Potential loss is based on known replacement values. Estimated value is a combination of the value of the structure and the contents. Values are not available for all facilities in each category.

Using HazUS, the California Geological Survey conducted an "Annualized Loss Estimation for the State of California" that determined total built environment losses for the state would amount to $3.7 billion. An annualized earthquake loss (AEL) provides a long-term average loss per year in a specified geographic area (such as state, county, or census tract). It can be used as a reasonable indicator of relative regional earthquake risk and, therefore, facilitates understanding and comparison of earthquake risk in different communities.

Based on this estimation (provided in **Table 4-10**), Laguna Beach can expect an AEL of $1.9 million, which is about 0.05 of 1 percent of the total loss statewide. In comparison, Orange County can expect nearly $260 million in AEL, which is nearly 7 percent of total losses statewide.

TABLE 4-10: ANNUALIZED EARTHQUAKE LOSS FOR ORANGE COUNTY AND LAGUNA BEACH

	Annualized Earthquake Loss (AEL)	Percent of Statewide AEL
City of Laguna Beach	1,932,000	0.050%
County of Orange	259,025,000	6.950%

Source: CGS 2016b.

Social Threat

Since all of Laguna Beach could be affected by earthquakes, all community members could be threatened by these events. Lower-income persons have a greater risk of living in housing that is less earthquake resistant, because homes that are seismically retrofitted may command higher prices. Senior citizens and persons with disabilities may be less able to evacuate weakened buildings, increasing their chances of being harmed by falling debris. Persons in the liquefaction hazard zone are slightly more likely to live under the poverty limit than the average Laguna Beach resident, and households in the liquefaction hazard zone are also somewhat more likely to include a person with disabilities. If an earthquake triggers a liquefaction event, the heightened social vulnerability of residents in the liquefaction-prone areas may make them more vulnerable. **Table 4-11** shows the social vulnerability in the liquefaction hazard zone.

TABLE 4-11: LIQUEFACTION HAZARD ZONE THREATENED-POPULATION METRICS

Threatened Population Metric	Liquefaction Hazard Zone	City of Laguna Beach
Population	326	23,095
Households	188	11,308
Percent of households with a disabled person	14.4%	10.6%
Area median income	$100,730	$112,609
Percent of households under the poverty limit	10.6%	7.6%
Percent of people who are senior citizens	24.8%	23.5%

Source: ESRI 2017.
Note: Due to data limitations, the population data used for the threat assessment may not be consistent with the census demographics in Chapter 2.

Other Threats

Seismic hazards can cause widespread damage to infrastructure networks, potentially interrupting electricity, water and wastewater, transportation, natural gas, and communication services. Government administration can be impaired if key facilities are damaged, and seismic damage to local hospitals could hinder medical care. A serious seismic event that does widespread damage to the downtown area and local hotels could temporarily affect tourism, and by extension the local economy.

WILDFIRE

Physical Threat

More than half of the critical facilities and facilities of concern in Laguna Beach are in the wildfire hazard zone, including six schools, two fire stations, City Hall, Mission Hospital, and the Montage Laguna Beach (a hotel and major employment center). Several water tanks and wastewater lift stations are also in the wildfire hazard zone. Although these facilities may be constructed of metal, concrete, and other materials that are unlikely to burn, the high temperatures of a wildfire can still cause extensive damage to these structures and the machinery they contain. **Table 4-12** shows the number of critical facilities and facilities of concern by type in the wildfire hazard zone.

TABLE 4-12: FACILITIES IN WILDFIRE HAZARD ZONE

Category	Very High Fire Hazard Zone	Potential Loss in Very High Fire Hazard Zone*	Not in Hazard Zone
Communication	2	$0	0
Community services	2	$10,673,346	0
Education	8	$49,783,393	3
Energy	1	$0	1
Fire	2	$2,663,418	3
Public assembly	2	$24,000,000	0
Road	2	$0	0
Utility	38	$32,581,014	36
Water	2	$0	1
Miscellaneous	6	$24,074,089	2
Total	65	$143,775,260	46

* Potential loss is based on known replacement values. Estimated value is a combination of the value of the structure and the contents. Values are not available for all facilities in each category.

Social Threat

The wildfire hazard zone covers a large section of Laguna Beach—70 percent of the residents live in this zone. The demographics of the wildfire hazard zone closely match that of Laguna Beach at large, so there is no elevated social vulnerability risk. People without access to transportation are often at higher risk during a wildfire event because wildfires can move at very rapid speeds, sometimes requiring immediate evacuation. People who are unable to drive or do not have a vehicle have little time to make other arrangements.

TABLE 4-13: WILDFIRE HAZARD ZONE THREATENED-POPULATION METRICS

Threatened Population Metric	Wildfire Hazard Zone	City of Laguna Beach
Population	16,177	23,095
Households	7,507	11,308
Percentage of households with a disabled person	11.1%	10.6%
Area median income	$121,262	$112,609
Percentage of households under the poverty limit	7.3%	7.6%
Percentage of people who are senior citizens	26.0%	23.5%

Source: ESRI 2017
Note: Due to data limitations, the population data used for the threat assessment may not be consistent with the census demographics in Chapter 2.

Other Threats

Wildfire events can destroy power lines and force the shut-off of natural gas supplies, disrupting energy services in the community. Roadways can be blocked by flames or closed to provide access for emergency responders, making it more difficult to get around. Critically, Pacific Coast Highway at both ends of Laguna Beach and Laguna Canyon Road are all in the wildfire hazard zone. In an extreme scenario, one or more wildfires could block all roads in and out of the community. Although the ecosystems in southern California are largely adapted to wildfires, a major event could cause extensive damage to the surrounding habitat, leading to a long recovery period. Significant wildfire damage to the community may cause a long-term decrease in business activity and tourism visits, affecting the local economy.

Ecosystems around Laguna Beach, such as the Laguna Coast Wilderness Park, are at risk of damage from wildfires. Image from Tristan Schmurr.

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CHAPTER 5
HAZARD MITIGATION STRATEGY

STRATEGY DEVELOPMENT PROCESS

Laguna Beach's hazard mitigation strategy is a comprehensive set of actions, known as hazard mitigation actions, which are intended to reduce the impacts of hazard events. These actions will help to protect the safety and well-being of residents and visitors, critical facilities and facilities of concern, other buildings and structures, key services, the local economy, and other important community assets. Some actions will also help with emergency preparedness, allowing for a more effective community response to hazard events. Preparedness actions are not a required component of an LHMP, but they support and complement mitigation activities, and the Hazard Mitigation Planning Committee chose to include them as part of the overall hazard mitigation strategy.

USE OF HAZARD AND THREAT ASSESSMENT

The Committee relied in part on the hazard profiles and threat assessments in this Plan to develop the actions in the mitigation strategy. The Committee prepared a comprehensive set of mitigation actions that respond to the relevant hazard situations and provide protection to residents, businesses, and community assets in Laguna Beach. The Committee took care to ensure that the mitigation actions will help to reduce damage from the most frequent types of hazard events, the most significant that may reasonably occur, and those with the greatest potential to harm the community. The Committee also drafted mitigation actions that will help protect the most vulnerable members of the community and the most vulnerable local assets.

The hazard mitigation strategy was developed in part to protect key community assets, such as Main Beach. Image from Steven Perez.

CAPABILITIES ASSESSMENT

As part of the effort to draft mitigation actions, the Committee performed a capabilities assessment. This is a review of the existing local agencies, public policies, funding sources, individuals, and other resources that can support hazard mitigation activities in Laguna Beach. The hazard mitigation actions build off of the existing success of these resources and leverage their capabilities to support improved resiliency in the community. The capabilities assessment looked at the following types of resources:

- Personnel resources: City staff and volunteers, and staff and volunteers at other agencies.
- Plan resource: Advisory or enforceable plans adopted by the City or other agencies.
- Policy resource: Policies adopted and implemented by the City or other agencies.
- Technical resource: Data and tools available to the City.

Table 5-1 shows the capabilities assessment for Laguna Beach.

TABLE 5-1: CAPABILITIES ASSESSMENT

Resource Name	Type of Resource	Ability to Support Mitigation	Website
City of Laguna Beach			
Building Code	Policy resource	The Laguna Beach Building Code and associated standards (Residential Code, Mechanical Code, Electrical Code, etc.) are a set of regulations that govern how new buildings are constructed. These standards are published by the state and are adopted by local communities, sometimes with amendments to make the codes more locally applicable. Mitigation actions to construct buildings to a safer standard, allowing them to better resist damage during a hazard event, may be made part of future building code updates.	http://www.qcode.us/codes/lagunabeach/ (Title 14)
Capital Improvement Plan	Plan resource	The Laguna Beach Capital Improvement Plan is a set of construction projects planned for City-owned buildings, facilities, and infrastructure. It is updated every year as part of the City's annual budget and includes projects for the next 10 years. Mitigation actions to retrofit existing City-owned structures or to build new ones that are better able to resist damage may be implemented by including these projects in the Capital Improvement Plan in the future.	http://www.lagunabeachcity.net/cityhall/pw/cityprojects/default.htm
Community Development Department	Personnel resource	The Laguna Beach Community Development Department is responsible for approving building permits, ensuring that buildings and private property comply with appropriate standards, and conducting short-term and long-term planning activities in the community. As part of these duties, the department enforces the Laguna Beach Building Code and all land use regulations. Mitigation actions related to the construction of new structures or retrofits or improvements to existing structures may be implemented through future plan processing by Community Development Department staff.	http://www.lagunabeachcity.net/cityhall/cd/default.htm
Community Emergency Response Team	Personnel resource	The Laguna Beach Community Emergency Response Team (CERT) is a group of volunteers trained in disaster preparedness, public safety, traffic control, and emergency response. CERT members can conduct disaster preparedness activities as well as light emergency response activities when disaster situations occur. The program is managed by the Laguna Beach Police Department. Mitigation actions related to community training and education may be further implemented through expansion of the CERT program.	http://www.lagunabeachcity.net/cityhall/police/emergprep/cert.htm
Finance Division	Personnel resource	The Laguna Beach Finance Division, part of the City's Administrative Services Department, is responsible for preparing the City's annual budget, as well as other financial reports, and handles the receipt and distribution of City funds. The Finance Division may not directly implement mitigation actions, but can support successful implementation by incorporating mitigation actions into the City budget and administration of grant support.	http://www.lagunabeachcity.net/cityhall/citygov/administrative_services/finance/default.htm
Fire Department	Personnel resource	The Laguna Beach Fire Department provides fire protection and firefighting services in Laguna Beach. The department's responsibilities include taking preparatory steps to prevent fires or limit their destruction. Mitigation actions related to reducing the likelihood of fires or minimizing injury and damage from fires may be implemented through fire department staff.	http://www.lagunabeachcity.net/cityhall/fire/default.htm

TABLE 5-1: CAPABILITIES ASSESSMENT

Resource Name	Type of Resource	Ability to Support Mitigation	Website
General Plan	Plan resource	The Laguna Beach General Plan is the long-term, comprehensive blueprint for development and changes in the community. The policies in the general plan address land uses, public safety, environmental protection, and transportation, and others. The general plan serves as a framework for mitigation actions, establishing the overarching policies for mitigation activities. Mitigation actions may be directly incorporated into the general plan to provide a stronger enforcement mechanism.	http://www.lagunabeachcity.net/cityhall/cd/planning/plans.htm
Human Resources Division	Personnel resource	The Laguna Beach Human Resources Division, part of the City's Administrative Services Department, is responsible for recruiting and training City staff. Mitigation actions that relate to staff training may be implemented through the Human Resources Division.	http://www.lagunabeachcity.net/cityhall/citygov/administrative_services/personnel/default.htm
Marine Safety Department	Personnel resource	The Laguna Beach Marine Safety Department is responsible for ensuring the safety of residents and visitors at the community's beaches. This includes closing beaches or restricting beach access when conditions are unsafe. Mitigation actions related to the safety of beach-goers and the protection of beach areas may be implemented through Marine Safety Department staff.	http://www.lagunabeachcity.net/cityhall/marine/default.htm
Police Department	Personnel resource	The Laguna Beach Police Department is charged with maintaining public safety in the community. As part of this work, the police department is responsible for conducting emergency preparedness activities, investigating criminal activity, and directing traffic. Mitigation actions that relate to the safe movement of traffic (e.g. during evacuations), the public safety of residents during emergency events, and terrorism-related activities may be implemented through police department staff. As emergency preparedness is part of the department's responsibilities, the police department can also widely implement other types of mitigation actions through coordination with other departments and agencies.	http://www.lagunabeachcity.net/cityhall/police/default.htm
Public Works Department	Personnel resource	The Laguna Beach Public Works Department is responsible for constructing and maintaining City-owned facilities and infrastructure, including roadways, sidewalks, parks, and open space areas. The department also handles solid waste collection activities in the community. Mitigation actions that involve constructing or retrofitting City-owned facilities and infrastructure may be implemented through Public Works Department staff.	http://www.lagunabeachcity.net/cityhall/pw/default.htm
Transit and Trolley Division	Personnel resource	The Laguna Beach Transit and Trolley Division provides transportation services within the community and coordinates with other local and regional transit providers to help ensure effective transportation options for persons with limited mobility. Mitigation actions related to providing transportation services, including assistance with evacuations for persons who are unable to drive, may be implemented through Transit and Trolley Division staff.	http://www.lagunabeachcity.net/cityhall/transit_and_trolleys/citybus.htm
Water Efficient Landscape Ordinance	Policy resource	The Laguna Beach Water Efficient Landscape Ordinance establishes water efficiency standards for new or rehabilitated landscapes in the community. Mitigation measures that relate to outdoor water use may be integrated into the Water Efficient Landscape Ordinance and implemented through enforcement activities.	http://www.qcode.us/codes/lagunabeach/ (Title 19)

TABLE 5-1: CAPABILITIES ASSESSMENT

Resource Name	Type of Resource	Ability to Support Mitigation	Website
Water Quality Department	Personnel resource	The Laguna Beach Water Quality Department is responsible for constructing, maintaining, and operating the community's wastewater and storm drain systems. These systems include pipelines, manholes, lift stations, and storm water outlets. Mitigation actions that involve construction of new wastewater or storm drain infrastructure or retrofits of existing wastewater or storm drain infrastructure may be implemented through Water Quality Department staff.	http://www.lagunabeachcity.net/cityhall/wq/default.htm
Zoning Code	Policy resource	The Laguna Beach Zoning Code is an implementation tool for the City's general plan. It establishes regulations for land uses throughout the community, including where different types of development and land use activity can occur, how these developments can look, and how they may be operated. Mitigation actions that relate to the siting, construction, and operation of new developments in Laguna Beach may be implemented through the Zoning Code to ensure these locations address risks identified in the plan.	http://www.qcode.us/codes/lagunabeach/ (Title 25)
Orange County			
Laguna Beach County Water District	Technical resource	The Laguna Beach County Water District (LBCWD) is an independent government agency that provides water services to the area of Laguna Beach north of Cardinal Drive. Mitigation measures related to water use and water supply may be implemented in collaboration with LBCWD staff.	http://www.lbcwd.org/home
Municipal Water District of Orange County	Technical resource	The Municipal Water District of Orange County (MWDOC) is a public agency that is the wholesale water provider for large sections of Orange County, including both water providers in Laguna Beach. As part of these responsibilities, it provides education and financial resources for water supply and water conservation activities. Mitigation actions related to water use may be implemented with support and assistance from MWDOC.	http://www.mwdoc.com/
Orange County Fire Authority	Technical resource	The Orange County Fire Authority (OCFA) provides fire protection and firefighting services to the unincorporated areas of Orange County and many incorporated communities. Fire-related mitigation actions that require coordination with the county may be implemented in collaboration with OCFA staff.	http://ocfa.org/
Orange County General Plan	Plan resource	The Orange County General Plan is the long-term blueprint for growth and development in the unincorporated areas of Orange County, including Emerald Bay and the hills surrounding Laguna Beach. Mitigation actions that require coordination with the county may be supported by including these actions in the Orange County General Plan.	http://www.ocpublicworks.com/ds/planning/generalplan2005
Orange County Hazard Mitigation Plan	Plan resource	The Orange County Hazard Mitigation Plan identifies and describes the hazard events that may occur in the unincorporated areas of Orange County, and provides a suite of mitigation actions to help decrease the potential damage from these hazards. Mitigation actions for Laguna Beach that require coordination with the county may be integrated into the County's Hazard Mitigation Plan. Similar mitigation actions in both the county's and Laguna Beach's hazard mitigation plans can lead to a more regionally unified hazard mitigation strategy, which may improve effectiveness.	http://www.ocgov.com/civicax/inc/blobfetch.aspx?BlobID=47524

TABLE 5-1: CAPABILITIES ASSESSMENT

Resource Name	Type of Resource	Ability to Support Mitigation	Website
Orange County Water District	Technical resource	The Orange County Water District (OCWD) is the agency responsible for managing groundwater supplies in Orange County, which is a source of some of the water supply for Laguna Beach. Mitigation actions related to groundwater supplies, including groundwater recharge, may be implemented with support and assistance from OCWD.	https://www.ocwd.com/
South Coast Water District	Technical resource	The South Coast Water District (SCWD) is an independent government agency that provides water services to the area of Laguna Beach south of Cardinal Drive. Mitigation measures related to water use and water supply may be implemented in collaboration with SCWD staff.	http://www.scwd.org/default.htm
Regional, State, and Federal Agencies			
Cal-Adapt	Technical resource	Cal-Adapt is an online tool that provides detailed projections for future climate-related conditions in California, including factors such as temperature, precipitation, and sea level rise. These projections can help inform forecasts of future hazard events and can explain how hazard conditions are expected to change. The Committee can use Cal-Adapt to monitor anticipated changes in future climate conditions and adjust mitigation actions accordingly.	http://cal-adapt.org/
California Department of Transportation	Technical resource	The California Department of Transportation (Caltrans) is the state agency with jurisdiction over designated highways, including the Pacific Coast Highway (State Route 1) and Laguna Canyon Road (State Route 133). Mitigation measures related to ensuring the resiliency of state-designated freeways will be implemented through coordination with Caltrans.	http://www.dot.ca.gov/
California Governor's Office of Emergency Services	Technical resource	The California Governor's Office of Emergency Services (Cal OES) is the state agency responsible for reduce hazards in the state through mitigation activities, conducting emergency planning, supporting emergency response and recovery activities, and acting as a liaison between local and federal agencies on emergency-related issues. It provides guidance on hazard mitigation planning activities, shares best practices, and distributes funding opportunities. The Committee can work with Cal OES to obtain funding to implement LHMP mitigation strategies and to receive guidance on future updates.	http://www.caloes.ca.gov/
California State Hazard Mitigation Plan	Plan resource	The California State Hazard Mitigation Plan assesses the types of hazards that may be present in California. It includes descriptions of these hazards, summaries of past hazard events, descriptions of how these hazards may occur in the future, and how these hazards may harm the people and assets of California. Like a local hazard mitigation plan, the State Hazard Mitigation Plan is updated every five years. The Committee can use the State Hazard Mitigation Plan as a source of information to refine the hazard profiles and vulnerability assessments in future Laguna Beach LHMPs.	http://www.caloes.ca.gov/for-individuals-families/hazard-mitigation-planning/state-hazard-mitigation-plan
Federal Emergency Management Agency	Technical resource	The Federal Emergency Management Agency (FEMA) is the federal agency responsible for hazard mitigation, emergency preparedness, and emergency response and recovery activities. It provides guidance to state and local governments on hazard mitigation activities, including best practices and how to comply with federal requirements. FEMA also provides funding for hazard mitigation actions through grant programs.	https://www.fema.gov/

TABLE 5-1: CAPABILITIES ASSESSMENT

Resource Name	Type of Resource	Ability to Support Mitigation	Website
Metropolitan Water District of Southern California	Technical resource	The Metropolitan Water District of Southern California (MWD) is a public agency that supplies water to various water providers throughout the southern California region, many of whom in turn distribute the water to more localized water suppliers. Water used in Laguna Beach that comes from outside Orange County is supplied by MWD. Mitigation actions that involve local water supplies may be implemented through coordination with MWD. The agency may also provide technical support and other resources for mitigation actions involving water use.	http://www.mwdh2o.com/
Private agencies			
San Diego Gas & Electric Company	Technical resource	The San Diego Gas & Electric Company (SDG&E) is the electrical service provider for the part of Laguna Beach south of 2nd Street. SDG&E also owns the electrical distribution grid in this part of the community. Mitigation actions that relate to the resiliency of Laguna Beach's electrical grid will be implemented through coordination with SDG&E.	https://www.sdge.com/
Southern California Edison	Technical resource	Southern California Edison (SCE) is the electrical service provider for the part of Laguna Beach north of 2nd Street. SCE also owns the electrical distribution grid in this part of the community. Mitigation actions relating to the resiliency of Laguna Beach's electrical grid will be implemented through coordination with SCE.	https://www.sce.com/
Southern California Gas Company	Technical resource	The Southern California Gas Company (SoCalGas) is the natural gas provider for Laguna Beach and also owns the natural gas infrastructure in the community. Mitigation actions that address the resiliency of natural gas infrastructure and services in Laguna Beach will be implemented through coordination with SoCalGas.	https://www.socalgas.com/

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EVALUATION OF POTENTIAL HAZARD MITIGATION ACTIONS

Based on the hazard profiles, threat assessment, and capabilities assessment; the results of the community survey; discussions among Committee members; and existing best practices, the Committee prepared a set of potential mitigation actions. The Committee next evaluated these potential actions using the following criteria:

FEMA requires local governments to evaluate the monetary and nonmonetary costs and benefits of potential mitigation actions. Although local governments are not required to assign specific dollar values to each action, they should identify the general size of costs and benefits. The Committee may elect to include measures that have a high cost or low benefits, but such measures should be clearly beneficial to the community and an appropriate use of local resources.

Warning signs, such as this tsunami hazard notice, can be high-priority measures because they are relatively inexpensive, visible, and highly beneficial to large numbers of people. Image from Franco Folini.

In addition, FEMA directs local governments to consider the following questions as part of the financial analysis:

- What is the frequency and severity of the hazard type to be addressed by the action, and how vulnerable is the community to this hazard?
- What impacts of the hazard will the action reduce or avoid?
- What benefits will the action provide to the community?
- What critical facilities, if any, will benefit from the action? How many facilities will benefit, and how important are they to the community?
- What are the environmental benefits or impacts of the action?

The Committee also chose to review and revise the potential hazard mitigation actions using a third set of criteria, known as STAPLE/E (Social, Technical, Administrative, Political, Legal, Economic, and Environmental). The Committee did not formally assess every potential mitigation action under all STAPLE/E criteria, but used the criteria to guide and inform discussion. The Committee also discussed how these criteria may be used to evaluate grant applications the City may submit to receive funding for LHMP implementation. **Table 5-2** shows the STAPLE/E criteria.

TABLE 5-2: STAPLE/E CRITERIA

Issue	Criteria
Social	• Is the action socially acceptable to Laguna Beach community members? • Would the action treat some individuals unfairly? • Is there a reasonable chance of the action causing a social disruption?
Technical	• Is the action likely to reduce the risk of the hazard occurring, or will it reduce the effects of the hazard? • Will the action create new hazards, or make existing hazards worse? • Is the action the most useful approach for Laguna Beach to take, given the goals of the City and of community members?
Administrative	• Does the City have the administrative capabilities to implement the action? • Are there existing City staff who can lead and coordinate implementation of the measure, or can the City reasonably hire new staff for this role? • Does the City have enough staff, funding, technical support, and other resources to carry out implementation? • Are there administrative barriers to implementing the action?
Political	• Is the action politically acceptable to City officials and to other relevant jurisdictions and political entities? • Do community members support the action?
Legal	• Does the City have the legal authority to implement and enforce the action? ▪ Are there potential legal barriers or consequences that could hinder or prevent implementation of the action? • Is there a reasonable chance that implementation of the action would expose the City to legal liabilities? • Could the action reasonably face other legal challenges?
Economic	• What are the monetary costs of the action, and do the costs exceed the monetary benefits? • What are the start-up and maintenance costs of the action, including administrative costs? • Has funding for action implementation been secured, or is a potential funding source available? • How will funding the action affect the City's financial capabilities? • Could implementation of the action reasonably burden the Laguna Beach economy or tax base? • Could there reasonably be other budgetary and revenue impacts to the City?
Environmental	• What are the potential environmental impacts of the action? • Will the action require environmental regulatory approvals? • Will the action comply with all applicable federal, state, regional, and local environmental regulations? • Will the action reasonably affect any endangered, threatened, or otherwise sensitive species of concern?

PRIORITIZATION

As part of the effort to review the hazard mitigation actions, the Committee also prioritized the actions. The prioritization efforts looked at the risks and threats from each hazard, financial costs and benefits, technical feasibility, and community values, among others. Committee members were asked to identify their priority actions through a voting exercise. Items prioritized by at least four Committee members are considered high priority, and those prioritized by one to three members are considered medium priority. Actions not prioritized by any Committee member are considered low priority.

COST ESTIMATES

To meet the cost estimation requirements of the hazard mitigation planning process, the Committee identified relative cost estimates based on their understanding of the mitigation action intent and their

experience developing identical or similar programs/implementing projects. Three cost categories based on the City's typical cost criteria were used for budgeting purposes:

- Low cost ($): $100,000 or less
- Medium cost ($$): $100,001 to $250,000
- High cost ($$$): Greater than $250,000

HAZARD MITIGATION ACTIONS

HAZARD MITIGATION GOALS

The goals identified in **Chapter 1**, help develop policies to protect community members, ecosystems, and other important assets from hazard events. These goals were developed to ensure consistency with the City's General Plan Safety Element, which will be updated as part of this process. These goals informed the development of mitigation actions and act as checkpoints to help City staff determine the progress of mitigation action implementation.

Based on the criteria and evaluation processes used during Plan development, the Committee prepared a prioritized list of mitigation actions to improve Laguna Beach's resiliency to hazard events. Collectively, these are the community hazard mitigation strategy. **Table 5-3** lists the mitigation actions as well as the prioritization of each action and other details related to implementation.

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TABLE 5-3: MITIGATION ACTIONS

	Mitigation Action	Potential Funding Sources	Responsible Agency/ Department	Relative Cost	Timeframe	Priority
Preparedness Activities						
P.1	Develop a Major Event Evacuation and Shelter Plan, as a stand-alone plan or an appendix to the City's Emergency Operations Plan, in coordination with local hotels and major event coordinators. This plan should include information on how to safely and rapidly evacuate visitors, shelter in place locations, and to provide shelter and important supplies to visitors, if a major hazard occurs during peak tourism times. *Relevant hazards: Coastal hazards, extreme weather, flood, human-caused hazards, landslide and mudflow, seismic hazards, wildfire*	1,2,3,4	Police	$	N/A	N/A
P.2	In coordination with the Orange County Transportation Authority, the Laguna Beach Trolley, School Districts, and private transportation companies, ensure that there is a sufficient supply of vehicles available to evacuate Laguna Beach residents and visitors who do not have access to private vehicles or are otherwise unable to drive. As part of this action, emergency transportation locations should be designated and identified. *Relevant hazards: Coastal hazards, extreme weather, flood, human-caused hazards, landslide and mudflow, seismic hazards, wildfire*	1,2,3,4	Police	$	N/A	N/A
P.3	Conduct outreach to the hospitality industry to provide information about avoiding hazards and dangerous conditions to visitors. *Relevant hazards: Coastal hazards, disease and pest management, extreme weather, flood, human-caused hazards, landslide and mudflow, seismic hazards, wildfire*	1,2,3,4	Police	$	N/A	N/A
P.4	Expand participation in the Laguna Beach Community Emergency Response Team (CERT) program for local residents and businesses. *Relevant hazards: Coastal hazards, disease and pest management, extreme weather, flood, human-caused hazards, landslide and mudflow, seismic hazards, wildfire*	1,2,3,4	Police	$	N/A	N/A
P.5	Develop a backup energy supply program for critical facilities and persons dependent on medical devices to ensure a sufficient supply of batteries or a reliable source of backup electricity, in close coordination with health care providers. *Relevant hazards: Coastal hazards, flood, human-caused hazards, landslide and mudflow, seismic hazards, wildfire*	1,2,3,4	Police Public Works	$$	N/A	N/A

TABLE 5-3: MITIGATION ACTIONS

	Mitigation Action	Potential Funding Sources	Responsible Agency/ Department	Relative Cost	Timeframe	Priority
P.6	Expand the community-wide emergency notification system using telephones, text messaging, social media, television, radio, and other media as appropriate. Ensure that information is clear, accurate, and provided in commonly spoken languages. *Relevant hazards: Coastal hazards, disease and pest management, extreme weather, flood, human-caused hazards, landslide and mudflow, seismic hazards, wildfire*	1,2,3,4	Police	$	N/A	N/A
P.7	Pre-stage adequate supplies of sandbags for local residents and businesses, including pre-filled sandbags for individuals who may be unable to fill them on their own. *Relevant hazards: Coastal hazards, extreme weather, flood, landslide and mudflow, wildfire*	1,2,3,4	Police	$	N/A	N/A
P.8	Collaborate with relevant state and federal agencies and Southern California Edison to ensure City staff, residents, and businesses receive regular updates about the status of decommissioning activities at the San Onofre Nuclear Generating Station. *Relevant hazards: Human-caused hazards*	1,2,3,4	Police	$	N/A	N/A
P.9	Conduct regular emergency preparedness drills and training exercises for City staff.	1,2,3,4	Police	$$	N/A	N/A
Multiple hazards						
1.1	Underground power lines and other electrical grid equipment, in close coordination with Southern California Edison and San Diego Gas and Electric. Prioritize undergrounding high-capacity power lines along evacuation routes and in areas of elevated hazard risk. *Relevant hazards: Coastal hazards, extreme weather, flood, human-caused hazards, landslide and mudflow, seismic hazards, wildfire*	1,2,3,4	Public Works	$$$	2023	High (8)
1.2	Install and harden emergency backup generators at water pump stations and sewer lift stations. *Relevant hazards: Coastal hazards, extreme weather, flood, human-caused hazards, landslide and mudflow, seismic hazards, wildfire*	1,2,3,4	Water Quality/ Water Districts	$$	2022	Medium (2)

TABLE 5-3: MITIGATION ACTIONS

	Mitigation Action	Potential Funding Sources	Responsible Agency/ Department	Relative Cost	Timeframe	Priority
1.3	Expand fiber optic communication systems throughout the City, through the following strategies: • Connect key critical facilities with fiber optic communications • Improve emergency communications between critical facilities and key infrastructure through the use of a "dark fiber" network • Install fiber optic systems or conduit for fiber optic infrastructure in coordination with undergrounding infrastructure projects or projects that include subsurface excavation within public streets. • Require installation of underground conduit in association with private developments proposed throughout the City. *Relevant hazards: Coastal hazards, extreme weather, flood, human-caused hazards, landslide and mudflow, seismic hazards, wildfire*	1,2,3,4	Public Works/ IT	$$$	Ongoing	High (4)
1.4	Evaluate the community-wide road network to identify potential bottlenecks during a major evacuation and establish a plan to prioritize capital improvements that focus on reducing barriers to effective evacuations. *Relevant hazards: Coastal hazards, extreme weather, flood, human-caused hazards, landslide and mudflow, seismic hazards, wildfire*	1,2,3,4	Fire	$	2019	High (5)
1.5	Replace or supplement larger emergency response equipment with smaller vehicles that are better able to navigate narrow community streets without sacrificing response effectiveness. *Relevant hazards: Coastal hazards, disease and pest management, extreme weather, flood, human-caused hazards, landslide and mudflow, seismic hazards, wildfire*	1,2,3,4	Fire	$$$	Ongoing	Medium (1)
1.6	Establish a primary and alternative Emergency Operations Center in areas outside of major hazard zones to the extent feasible. Consider collocation with other City buildings/facilities as potential options. *Relevant hazards: Coastal hazards, disease and pest management, extreme weather, flood, human-caused hazards, landslide and mudflow, seismic hazards, wildfire*	1,2,3,4	Police	$$$	2020	High (7)
1.7	Explore the feasibility of connecting key critical facilities, including City Hall/Police Station, Marine Safety HQ, and community fire stations, to a microgrid power-supply network. *Relevant hazards: Coastal hazards, flood, human-caused hazards, landslide and mudflow, seismic hazards, wildfire*	1,2,3,4	Public Works	$$$	2023	Medium (1)

TABLE 5-3: MITIGATION ACTIONS

	Mitigation Action	Potential Funding Sources	Responsible Agency/ Department	Relative Cost	Timeframe	Priority
1.8	Coordinate closely with water and natural gas providers to add isolation valves at key locations along their pipeline networks. Identify locations and corridors necessary to isolate wastewater from human contact due to overflows caused following catastrophic service failures. *Relevant hazards: Coastal hazards, flood, human-caused hazards, landslide and mudflow, seismic hazards*	1,2,3,4	Water Quality/ Water Districts/ Utility Providers	$$	Ongoing	Medium (1)
1.9	Expand the City's comprehensive educational campaign for residents and businesses that describes the hazards present in the community and emphasizes cost-effective mitigation efforts, such as proper construction techniques, bracing of furniture and appliances, and purchase of additional insurances. Distribute information through social networking, websites, print media, radio, television, in utility bills, at special events and in City facilities, and/or other media as appropriate. *Relevant hazards: Coastal hazards, disease and pest management, extreme weather, flood, human-caused hazards, landslide and mudflow, seismic hazards, wildfire*	1,2,3,4	Police	$	Ongoing	Medium (2)
1.10	Identify areas in need of slope stabilization and stabilize with deep rooted vegetation, geotextile fabric, and other slope stabilization techniques. *Relevant hazards: Coastal hazards, landslide and mudflow, wildfire*	1,2,3,4	Public Works	$$	Ongoing	Low
1.11	Closely monitor changes to the boundaries of hazard-prone areas, and adopt new mitigation activities or revise existing ones as appropriate to protect health, safety, property, and overall community well-being. *Relevant hazards: Coastal hazards, flood, landslide and mudflow, seismic hazards, wildfire*	1,2,3,4	Community Development	$	Ongoing	Low
1.12	Establish greater setbacks for siting new City critical facilities in mapped flood hazard, coastal hazard, and landslide hazard zones to the extent feasible. Ensure critical facilities sited within the wildfire hazard zone, exceed the minimum mitigation standards as defined by the Fire Code. *Relevant hazards: Coastal hazards, flood, landslide and mudflow, seismic hazards, wildfire*	1,2,3,4	Community Development/ Public Works/ Fire	$	Ongoing	Low
1.13	As opportunities arise, explore the feasibility of relocating critical City facilities outside of mapped hazard zones. *Relevant hazards: Coastal hazards, flood, landslide and mudflow, seismic hazards, wildfire*	1,2,3,4	City Manager's Office	$$$	Ongoing	Low

TABLE 5-3: MITIGATION ACTIONS

	Mitigation Action	Potential Funding Sources	Responsible Agency/ Department	Relative Cost	Timeframe	Priority
1.14	Identify appropriate sites for community shelters, ideally located outside of mapped hazard zones to the extent feasible. Ensure that there is sufficient space for residents and visitors, and stock shelters with necessary supplies. *Relevant hazards: Coastal hazards, extreme weather, flood, human-caused hazards, landslide and mudflow, seismic hazards, wildfire*	1,2,3,4	Community Services	$	Ongoing	High (5)
1.15	Integrate policy direction and other information from this Plan into other City documents, including the General Plan Safety Element and Capital Improvements Program. *Relevant hazards: Coastal hazards, disease and pest management, extreme weather, flood, human-caused hazards, landslide and mudflow, seismic hazards, wildfire*	1,2,3,4	Community Development	$	Ongoing	Low
Coastal hazards						
2.1	Develop criteria for clifftop properties to estimate when erosion may begin to cause structural damage or pose a safety risk.	1,2,3,4	Community Development	$	TBD	Low
2.2	Explore the feasibility of long-term acquisition for properties that have been made unsafe or unsuitable for development due to erosion.	1,2,3,4	City Manager's Office	$	TBD	Low
2.3	Expand the city's TsunamiReady designation, and pursue certification as a TsunamiReady Tier Two community.	1,2,3,4	Police/ Marine Safety	$	TBD	Low
2.4	Explore modifications to the berm at Main Beach Park as necessary, and modify the design of the barrier to the extent feasible to protect the park and adjacent properties from coastal (tsunami, wave run-up, etc.) and inland flooding conditions.	1,2,3,4	Public Works	$	TBD	Low
2.5	Expand the beachfront mass notification siren and public address network to alert residents and visitors of potential coastal hazard events (tsunami, high surf, etc.).	1,2,3,4	Police/ Marine Safety	$	2020	Medium (3)
Disease and pest management						
3.1	Coordinate with health care providers to ensure rapid and accurate distribution of information about disease conditions.	1,2,3,4	Police	$	Ongoing	Low
3.2	Work with Orange County Health Care Agency and local health care providers, businesses, and schools to ensure that information about free or low-cost vaccines for common seasonal illnesses is readily available to all community members.	1,2,3,4	Police	$	Ongoing	Low

TABLE 5-3: MITIGATION ACTIONS

	Mitigation Action	Potential Funding Sources	Responsible Agency/ Department	Relative Cost	Timeframe	Priority
3.3	Work with the Orange County Vector Control to distribute information about mosquito-proofing property and mosquito bite avoidance for residents and visitors.	1,2,3,4	Police	$	Ongoing	Low
3.4	Update City landscape standards to incorporate disease-resistant plant species as part of landscaping projects/ improvements.	1,2,3,4	Community Development	$	TBD	Low
Extreme weather						
4.1	Reduce the use of imported water through close coordination with the Laguna Beach County Water District and the South Coast Water District.	1,2,3,4	Water Quality/ Water Districts	$$$	Ongoing	Medium (1)
4.2	Aggressively search for and repair leaks in water infrastructure through close coordination and cooperation with the Laguna Beach County Water District and South Coast Water District.	1,2,3,4	Water Quality/ Water Districts	$$	Ongoing	Medium (2)
4.3	Increase the use of recycled water sources for City residents and businesses, through close coordination and collaboration with the Laguna Beach County Water District and South Coast Water District.	1,2,3,4	Water Quality/ Water Districts	$$	TBD	Low
4.4	Incentivize indoor and outdoor water efficiency through community-wide education and rebate programs and continue to maintain these programs and other restrictions on water use in the absence of drought conditions. This activity requires close coordination with local water providers and the Municipal Water District of Orange County.	1,2,3,4	WEROC	$	TBD	Low
4.5	When installing new landscapes or significantly redoing existing landscaping on City property, use drought-tolerant plants or xeriscaping. On City property, limit turf that is not drought-tolerant to recreational fields and lawns, and only if no feasible drought-tolerant alternative exists.	1,2,3,4	Public Works	$	Ongoing	Low
4.6	Work with local electricity providers to continue to maintain a clear space around all power lines, and to upgrade existing power lines and poles to be more resistant to severe winds.	1,2,3,4	Public Works	$	Ongoing	High (7)
Flood						
5.1	Use permeable paving and landscaped swales in all new and replacement City-owned hardscape, to the extent feasible.	1,2,3,4	Public Works	$$	Ongoing	Medium (1)
5.2	Require new construction and significant redevelopment projects not required to prepare a Water Quality Management Plan to reduce runoff through the use of landscaped swales, permeable paving, and other applicable low-impact development strategies.	1,2,3,4	Community Development	$	Ongoing	Low
5.3	Increase the capacity of storm drains, particularly in areas with known ponding during rain events.	1,2,3,4	Public Works	$$$	2021	Medium (1)

TABLE 5-3: MITIGATION ACTIONS

Mitigation Action		Potential Funding Sources	Responsible Agency/ Department	Relative Cost	Timeframe	Priority
5.4	Conduct frequent cleanings of storm drain intakes, especially before and during the rainy season.	1,2,3,4	Public Works	$	Ongoing	Low
5.5	Encourage all property owners within 100-year and 500-year floodplains to obtain flood insurance and flood proof their structures.	1,2,3,4	Community Development	$	Ongoing	Medium (1)
5.6	Continue to require new construction and significant retrofits in flood-prone areas to comply with the City's Floodplain Management Ordinance, and encourage construction activities adjacent to floodplains to meet similar requirements.	1,2,3,4	Community Development	$	Ongoing	Low
5.7	Discourage new buildings or facilities intended to house or provide critical services to persons with functional needs (e.g. senior citizens and persons with disabilities) from being constructed in or immediately adjacent to the 100-year or 500-year floodplain.	1,2,3,4	Community Development	$	Ongoing	Low
5.8	Explore opportunities to acquire land in or near floodplains to act as buffers or water infiltration sites.	1,2,3,4	City Manager's Office	$$$	TBD	Low
Human-caused hazards						
6.1	Conduct proactive community policing during special events. Ensure that all staff involved in community police are trained to engage with and respect community members while maintaining security.	1,2,3,4	Police	$	Ongoing	Low
6.2	Conduct regular inspections of key infrastructure and promptly repair all substantial deficiencies.	1,2,3,4	Public Works	$	Ongoing	Low
Landslide and mudflow						
7.1	Install and maintain slope stabilization measures on publicly-owned hillsides above roads, buildings, and other facilities.	1,2,3,4	Public Works	$$$	TBD	Low
7.2	Work with private property owners to install, inspect and maintain effective drainage systems and stabilizing vegetation on and above landslide-prone slopes.	1,2,3,4	Community Development	$	Ongoing	Low
7.3	Conduct a community-wide moisture-induced landslide and mudslide risk analysis, including the potential for building destruction/damage, deaths, and injuries. Consider the anticipated changes to precipitation patterns, wildfires, and other factors that may influence mudslide events.	1,2,3,4	Public Works	$$	2019	Medium (1)
Seismic hazards						
8.1	Conduct a seismic analysis of all critical facilities, including City Hall and all fire stations, and retrofit vulnerable facilities, as necessary.	1,2,3,4	Public Works/ Community Development	$$$	2019	High (11)

TABLE 5-3: MITIGATION ACTIONS

	Mitigation Action	Potential Funding Sources	Responsible Agency/ Department	Relative Cost	Timeframe	Priority
8.2	To the extent feasible, construct all new and significantly retrofitted City-owned facilities to remain operational in the event of a major earthquake.	1,2,3,4	Public Works/ Community Development	$$	Ongoing	Medium (1)
8.3	Prepare an inventory of seismically vulnerable buildings and structures in Laguna Beach. Explore feasible solutions to mitigate vulnerable buildings and structures to be retrofitted.	1,2,3,4	Police/Community Development	$	TBD	Low
8.4	Work with service providers and other owners of facilities of concern to identify seismically vulnerable structures and conduct seismic retrofit activities.	1,2,3,4	Community Development	$	Ongoing	Low
8.5	Improve local understanding of the threat of a major earthquake by conducting a city-wide scenario modeling potential loss of life and injuries, destroyed and damaged structures, and interruptions to key services.	1,2,3,4	Community Development	$	2023	Medium (1)
8.6	Encourage the installation of resilient (seismically appropriate) piping for new or replacement pipelines, in close coordination with local water, natural gas, and other providers.	1,2,3,4	Public Works	$$	Ongoing	Low
8.7	Conduct an educational campaign and incentives to encourage the use of reinforced chimneys, anchored rooftop-mounted equipment, window film, and other preventative measures to reduce damage at private buildings.	1,2,3,4	Community Development	$	TBD	Low
8.8	Encourage community groups and industry representatives assist in outreach to residents and businesses to obtain earthquake insurance.	1,2,3,4	Community Development	$	Ongoing	Low
Wildfire						
9.1	Create a streamlined permitting process with Coastal Commission for fuel removal activities that are consistent with the Natural Community Conservation Plan and Habitat Conservation Plan for Orange County's Central and Coastal Subregion.	1,2,3,4	Fire	$$	2022	Medium (1)
9.2	Conduct enhanced vegetation management activities that reduce fuels and increase clearance zones around developed areas of the wildland urban interface.	1,2,3,4	Fire	$$	2019	High (6)
9.3	Expand outreach regarding home fire safety inspections for residents and businesses in fire-prone areas. Provide information about ways to retrofit homes and maintain landscapes to improve resiliency to wildfires.	1,2,3,4	Fire	$	Ongoing	Low
9.4	Expand outreach to discourage landscaping that uses plants with a high sap or resin content, that accumulate dead vegetation, very low moisture content, or other features that make the plants more vulnerable to fires.	1,2,3,4	Fire	$	Ongoing	Low

TABLE 5-3: MITIGATION ACTIONS

Mitigation Action		Potential Funding Sources	Responsible Agency/ Department	Relative Cost	Timeframe	Priority
9.5	Update the Laguna Beach Community Wildfire Protection Plan and Other Natural Disasters to incorporate the mitigation actions of this plan and goals and policies of the General Plan.	1,2,3,4	Fire/Community Development	$	2019	High (5)
9.6	Develop a fire response time analysis that determines the key factors that affect emergency response issues, such as street width, type of response apparatus, and parking restrictions. Outcomes from this analysis should be incorporated into new City policy and standards, if necessary.	1,2,3,4	Fire	$$	2019	High (7)
9.7	Develop a vegetation management pilot program that assists abatement activities for homeowners that meet low-income requirements.	1,2,3,4	Fire	$	TBD	Low

Relative Cost: Low ($) - $0-$100,000, Medium ($$) - $100,001-$250,000, High ($$$) - >$250,000
Potential Funding Sources: 1 – General Fund, 2 – Grants, 3 – Community Facilities Districts, 4 - Bonds

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NATIONAL FLOOD INSURANCE PROGRAM

Laguna Beach participates in the National Flood Insurance Program (NFIP), which was created by Congress in 1968 to provide flood insurance at subsidized rates to homeowners who live in flood-prone areas. Individual communities have the option to participate in the NFIP, although property owners who live in nonparticipating communities with flood-prone areas will not be able to buy flood insurance through the program. Additionally, nonparticipating communities with mapped flood plains cannot receive federal grants or loans for development activities in flood-prone areas and cannot receive federal disaster assistance to repair flood-damaged buildings in mapped flood plains (FEMA 2017b). Laguna Beach has participated in NFIP since 1974 (FEMA 2017c).

Although participation is not a dedicated hazard mitigation action, Laguna Beach will continue to participate in NFIP and comply with the program's requirements through continued enforcement of the City's Floodplain Management Ordinance (Title 25, Chapter 25.38 of the Laguna Beach Municipal Code). This ordinance applies to land within the mapped 100-year flood plain and requires any construction activities in the 100-year flood plain to meet stricter standards to ensure that any new or retrofitted developments are more resilient to flood events. The ordinance also limits the types of land uses and activities in the 100-year flood plain and requires businesses to install flood-proofing measures—such as doors as windows that can withstand the pressures from floodwaters (Laguna Beach 2017). As part of the City's efforts to comply with NFIP, Laguna Beach will make updates and revisions to the Floodplain Management Ordinance to minimize the threat of harm from flood events. These updates and revisions may be promoted by changes in local demographics, shifts in land uses, changes to flood regimes such as frequency and intensity of flood events, and other factors that may warrant municipal action. The City will also continue to incorporate any changes to the locations and designations of mapped flood plains into future planning documents, including future updates to this Plan.

As of the end of September 2015 there were 446 properties in Laguna Beach insured under NFIP, mostly single-family houses or other low-density residential buildings, with a total insured value of approximately $143.9 million. Since the start of the program, NFIP has paid out 316 claims to Laguna Beach properties, totaling approximately $4.8 million (FEMA 2017d). There are 33 properties in Laguna Beach known as repetitive loss properties, which have filed claims at least twice (FEMA 2017e).

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CHAPTER 6
PLAN MAINTENANCE

In order for this LHMP to remain effective and useful to the community of Laguna Beach, it must remain up to date. An updated version of the LHMP will continue to guide hazard mitigation activities in Laguna Beach and will help keep the City eligible for state and federal hazard mitigation funding. The Hazard Mitigation Planning Committee has structured this LHMP so that the City can easily update individual sections as new information becomes available and as new needs arise, helping to keep this Plan current.

This chapter discusses how to update this Plan to keep it in compliance with applicable state and federal requirements. This chapter also describes how the City can incorporate the mitigation actions described in Chapter 5 into existing programs and planning mechanisms, and how public participation will remain an important part of Plan monitoring and future update activities.

COORDINATING BODY

The Committee will remain responsible for maintaining and updating the Plan, including evaluating the Plan effectiveness as needed. The members of the Committee will also coordinate implementation of the Plan through their respective positions. A list of the current Committee members is in Chapter 1. In future years, the following staff and representatives (either current Committee members or other individuals) from the following City organizations should be included in maintenance and update activities:

- Laguna Beach Administrative Services Department
- Laguna Beach City Manager's Office
- Laguna Beach Community Development Department
- Laguna Beach Fire Department
- Laguna Beach Marine Safety Department
- Laguna Beach Police Department
- Laguna Beach Public Works Department
- Laguna Beach Water Quality Department

As appropriate, staff from other organizations who sat on the Committee during the preparation of this Plan should be invited to participate in future plan maintenance and update activities. Other organizations that should be asked to participate in this process are:

- Laguna Beach County Water District
- Laguna Beach Emergency/Disaster Preparedness Committee
- Laguna Beach Unified School District
- Orange County Fire Authority
- Orange County Health Care Agency

- Orange County Intelligence and Assessment Center
- Orange County Parks
- Orange County Sheriff's Department
- San Diego Gas & Electric Company
- South Coast Water District
- South Orange County Wastewater Authority
- Southern California Edison
- Southern California Gas Company

The Emergency Operations Coordinator, a position in the Laguna Beach Police Department, is the staff member responsible for coordinating the Committee and will serve as the project manager for future LHMP updates. The Emergency Operations Coordinator may also designate this role to another staff member. The Emergency Operations Coordinator or their designee will coordinate maintenance of this Plan, lead the formal Plan review and evaluation activities, direct the Plan update, and assign tasks to other members of the Committee to complete these activities. Such tasks may include collecting data, developing new mitigation actions, updating mitigation actions, making presentations to City staff and community groups, and revising sections of the Plan document.

PLAN IMPLEMENTATION

The effectiveness of the Plan depends on successful implementation of the mitigation actions. This includes integrating mitigation actions into existing City plans, policies, programs, and other implementation mechanisms. The mitigation actions in this Plan are intended to reduce the damage from hazard events, help the City secure funding, and provide a framework for hazard mitigation activities. The members of the Committee have prioritized the hazard mitigation actions, as shown in **Table 5-3** in Chapter 5, and these prioritizations will guide implementation of the actions through new or existing City mechanisms as resources are available. The LHMP project manager (the Emergency Operations Coordinator or their designee) is responsible for overseeing the implementation, promotion, and maintenance of this Plan. The project manager is also responsible for facilitating meetings and other coordinating activities related to Plan implementation and maintenance.

This Plan works in concert with the Laguna Beach General Plan, particularly the Safety Element. The Safety Element creates a framework for mitigation and preparation activities, and integrates with the goals of this Plan. The LHMP is a way for the City to expand on the goals and policies in the general plan, identifying specific mitigation actions to achieve the general plan's high-level objectives. The general plan and the LHMP collectively help to reduce the threat from hazardous conditions to Laguna Beach residents, businesses, visitors, buildings and facilities, infrastructure, key services, ecosystems, and other assets.

PLAN MAINTENANCE

To support maintenance and implementation, this Plan is supported by the Laguna Beach Mitigation Implementation Handbook (handbook), provided in **Appendix E** for reference. The handbook is intended

to function as a stand-alone document that gives concise and accessible guidance to jurisdiction staff for implementing and maintaining the Plan. A key component of this handbook is the specific mechanisms that the jurisdiction can use to integrate this plan into other planning mechanisms within the City.

PLAN EVALUATION

When members of the Committee are not updating the Plan, they should meet at least once a year to go over the implementation of mitigation actions and to evaluate the Plan's effectiveness. These meetings should include:

- Discussion of the timing of implementing the mitigation actions.
- Evaluation of the actions that are being implemented, and determining if these actions are succeeding.
- Revisions, as needed, of the prioritization of mitigation actions.
- Integration of the mitigation actions into other mechanisms as needed.

The first of these meetings will be held in the 2019 calendar year. To the extent possible, Committee meetings should be scheduled at an appropriate time in the City's annual budgeting process, which will help ensure that funding and staffing needs for mitigation actions are considered.

When the Committee meets to evaluate the Plan, members should consider these questions:

- What hazard events, if any, have occurred in Laguna Beach in the past year? What were the impacts of these hazards on the community? Were the impacts mitigated, and if so, how?
- What mitigation actions have been successfully implemented? Have any mitigation actions been implemented but not successfully, and if so, why?
- What mitigation actions, if any, have been scheduled for implementation but have not yet been implemented?
- What is the schedule for implementing future mitigation actions? Is this schedule reasonable? Does the schedule need to be adjusted for future implementation, and are such adjustments appropriate and feasible?
- Have any new issues of concern arisen, including hazard events in other communities or regions, that are not covered by existing mitigation actions?
- Are new data available that could inform updates to the Plan, including data relevant to the hazard profiles and threat assessments?
- Are there any new planning programs, funding sources, or other mechanisms that can support hazard mitigation activities in Laguna Beach?

PLAN UPDATES

The information in this Plan, including the hazard profiles, threat assessments, and mitigation actions, are based on the best available information, practices, technology, and methods available to the City and Committee at the time this Plan was prepared. As factors change, including technologies, community demographics and characteristics, best practices, and hazard conditions, it is necessary to update the Plan, so it remains relevant. Additionally, Title 44, Section 201.6(d)(3) of the Code of Federal Regulations requires that LHMPs be reviewed, revised, and resubmitted for approval every five years to remain eligible for federal benefits.

UPDATE METHOD AND SCHEDULE

The update process should begin no later than four years after this Plan is adopted, allowing a year for the update process before the Plan expires. The Emergency Operations Coordinator or their designee may also choose to begin the update process sooner, depending on the circumstances. Some reasons for accelerating the update process may include:

- A presidential disaster declaration for Laguna Beach or for an area that includes part or the entire city.
- A hazard event that results in one or more fatalities in Laguna Beach.

The update process will add new and updated methods, demographic data, community information, hazard data and events, considerations for threat assessments, mitigation actions, and other information as necessary. This will help keep the Plan relevant and current. The Committee will determine the best process for updating the Plan, which should include the following steps:

- Involve at least one member from each City department on the Committee or as a supporting role to contribute as needed.
- Contact non-City organizations that sat on the Committee during preparation of the Plan or other relevant entities to gauge their interest and involve them in the update process.
- Review and update the hazard mapping and threat assessment for critical facilities.
- Revise the threat assessment for populations and other assets.
- Review and revise the mitigation actions as needed, including in response to actions that have been completed, changed, cancelled, or postponed.
- Send a draft of the updated Plan to appropriate external agencies.
- Make a draft of the updated Plan available to members of the public for comment.
- Following public review, send a draft of the updated plan to Cal OES and FEMA for review and approval.

- Adopt the final updated Plan within one year of beginning the update process and within five years of the adoption of the previous Plan.

UPDATE ADOPTION

The Laguna Beach City Council is responsible for adopting this Plan and all future updates. As previously mentioned, adoption should occur every five years, within one year of the commencement of the update process and before the current Plan expires. The adoption should take place after FEMA notifies the City that the Plan is Approved Pending Adoption. Once the City Council adopts the Plan following its approval by FEMA, the Police Department will transmit a copy of the adopted Plan to FEMA.

PUBLIC INVOLVEMENT

The City will continue to keep members of the public informed about the Committee's actions to review and update the LHMP. The Committee will develop a revised community engagement strategy that reflects the City's updated needs and capabilities. The updated strategy should include a tentative schedule and plan for public meetings, recommendations for the use of the City website and social media accounts, and content for public outreach documentation. The Committee will also distribute annual progress reports to Laguna Beach community members.

POINT OF CONTACT

The Emergency Operations Coordinator for Laguna Beach is the primary point of contact for this Plan and for future updates. At the time of writing, the Emergency Operations Coordinator is Jordan Villwock, available at (949) 497-0389 or jvillwock@lagunabeachcity.net.

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CITY OF LAGUNA BEACH

APPENDICES

LOCAL HAZARD MITIGATION PLAN
FEMA APPROVED PLAN

JUNE 2018

APPENDIX A
MEETING MATERIALS

1. Hazard Mitigation Planning Committee invitation
2. Orange County Emergency Management Organization meeting sign-in sheet
3. Hazard Mitigation Planning Committee Meeting #1 meeting materials and sign-in sheet
4. Hazard Mitigation Planning Committee Meeting #2 agenda and sign-in sheet
5. Hazard Mitigation Planning Committee Meeting #3 agenda and sign-in sheet
6. Hazard Mitigation Planning Committee Meeting #4 agenda and sign-in sheet

From: Villwock, Jordan PD
To: [redacted]
Subject: City of Laguna Beach - Hazard Mitigation Planning Committee
Date: Tuesday, July 11, 2017 4:13:27 PM
Attachments: image004.png

Dear Potential Hazard Mitigation Planning Committee Member,

The City of Laguna Beach is starting the preparation of their Local Hazard Mitigation Plan in August. This plan allows the City access to grant funding sources through FEMA to conduct hazard mitigation planning activities. As part of the plan process, the City and their consultant will be facilitating a series of four meetings to discuss the different elements of the plan. We need your assistance during this process by participating on this committee and attending these meetings. Since we work with your Department/Agency on a regular basis and value your input and knowledge of the issues within the City, we hope that you will join us and participate in the process. These meetings are expected to last up to 2 hours each and will occur on a monthly basis from August through November.

Tentative dates are:

- August 10, 2017 – 2:00 p.m. to 4:00 p.m.
- September 14, 2017 – 2:00 p.m. to 4:00 p.m.
- October 12, 2017 – 2:00 p.m. to 4:00 p.m.
- November 1, 2017 – 2:00 p.m. to 4:00 p.m.

All meetings will be held at Laguna Beach City Hall, 505 Forest Ave, Laguna Beach, in Conference Room A and a parking pass will be provided to those attending.

Once these meetings are complete, we expect to finalize the Administrative Draft document for review and comment sometime in late November/Early December. Once this process is complete, we ask that you remain available if we have any follow up questions or need additional insight, however we expect this will most likely not be necessary.

We understand the significant commitments you already have, and our goal is to facilitate a process that minimizes your time commitments, while maximizing your effective participation in the process. If you are assigning a staff member to participate please provide their contact information. If you have any questions, please do not hesitate to contact me at 949-497-0389 or jvillwock@lagunabeachcity.net.

Sincerely,

Jordan Villwock
Emergency Operations Coordinator
Laguna Beach Police Department
505 Forest Avenue, Laguna Beach, CA 92651

Office: 949-497-0389

Date: 10/06/17

OCEMO Sign In Sheet

Jurisdiction			Initials	Alternate Representative -- Please Print Name Clearly
2-1-1 Orange County	Amy	Arambulo		
American Red Cross	Monica	Ruzich	MR	
Anaheim City School District	Mary	Grace		
Anaheim Union School District	Shanna	Egans		
Brea-Olinda Unified School District	David	Giordano		
Buena Park Library District	Mary	McCasland		
Buena Park School District	Mike	Anderson		
Cal OES Exercise Planner				
Cal OES Southern Region	Jim	Acosta		
California State University Fullerton	Sue	Fisher	SF	
Caltrans District 12	Donald	Patton		
Capistrano Bay District	Donald	Russell		
Capistrano Unified School District	Mike	Beekman		
Centralia School District	Pamela	Gandara		
Chapman University	Randy	Burba		
City of Aliso Viejo	Sarah	Barker	SB	
City of Anaheim	Robert Bob	McClellan	RMC	
City of Brea	Lisa	Keyworth	LK	
City of Buena Park	Lance	Charnes	LC	
City of Costa Mesa	Keith	Davis	KD	TERE DUENSING
City of Cypress	Ariana	Kennedy		Loree Erpelding
City of Dana Point	Mike	Rose		
City of Fountain Valley	Tony	Coppolino		Jim McDonald JPM
City of Fullerton	Chris	Guerrero		
City of Garden Grove	~~TJ~~ RANDY	~~McGovern~~ ABRAHAMSON		

Date: 10/06/17

OCEMO Sign In Sheet

Jurisdiction			Initials	Alternate Representative -- Please Print Name Clearly
City of Huntington Beach	Brevyn	Mettler		
City of Irvine	Robert	Simmons		
City of La Habra	David	Gonzalez		
City of La Palma	Terry	Kim		ED FLEMING EdFe City of LaPalma.org
City of Laguna Beach	Jordan	Villwock		
City of Laguna Hills	Roland	Chacon		
City of Laguna Niguel	Phil	Robinson		
City of Laguna Woods	Chris	Macon		
City of Lake Forest	Stephanie	Smith		
City of Los Alamitos	Stacy	Smith		
City of Mission Viejo	Paul	Catsimanes		
City of Newport Beach	Katie	Eing		
City of Orange	Phil	McMullin		
City of Placentia	Steve	Pischel		
City of Rancho Santa Margarita	Luke	South		Diego Chavez
City of San Clemente	Stephen	Foster	SF	Hi
City of San Juan Capistrano	Jacob	Green		
City of Santa Ana	Steve	Rhyner		
City of Seal Beach	David	Barr		
City of Stanton	James	Wren		
City of Tustin	Joe	Meyers		
City of Villa Park	Steve	Franks		
City of Westminster	Ellen	Lopez		Ellen Lopez
City of Yorba Linda	Mike	Ferdig	MF	Mike Ferdig
Coast Community College District	Bill	Kerwin		MIKE COLVER

Date: 10.06.17

OCEMO Sign In Sheet

Jurisdiction			Initials	Alternate Representative -- Please Print Name Clearly
Costa Mesa Sanitary District	Scott	Carroll		
Cypress School District	Robert	Daley		
Disneyland Resort	Matt	Ankley		
East Orange County Water District	Lisa	Ohlund		
El Toro Water District	Sherri	Seitz		
Emerald Bay Service District	Jim	Waddell		
Emergency Management Division	Donna	Boston		
Fountain Valley School District	Joe	Hastie		
Fullerton Joint High School District	Carl	Erickson		
Fullerton School District	Helene	Morris		
Garden Grove Sanitary District	Brent	Hayes		
Garden Grove Unified School District	Alan	Trudell		
Health Care Agency-Disaster Management	Tammi	McConnell		
Hospital Association of Southern California	Whitney	Ayers		
Huntington Beach City School District	Jon	Archibald		
Huntington Beach Union H.S. District	Pat	Stellhorn		
Irvine Ranch Water District	Sunny	Lee		
Irvine Unified School District	Stephen	Bayne		
John Wayne Airport	Richard	Steele		
La Habra City School District	Susan	Belenardo		
Laguna Beach County Water District	David	Youngblood		
Laguna Beach Unified School District	Jeff	Dixon		
Los Alamitos Unified School District	Chris	Vlasic		
Lowell Joint School District	Andrea	Reynolds		
Magnolia School District	Alejandro	Flores		

Date: 10/06/17

OCEMO Sign In Sheet

Jurisdiction			Initials	Alternate Representative -- Please Print Name Clearly
Mesa Consolidated Water District	Phil	Lauri		
Midway City Sanitary District	Ken	Robbins		
Moulton Niguel Water District	Matt	Collings		
Municipal Water District of Orange County	Kelly	Hubbard		
Naval Weapons Station, Seal Beach	David	Dollarhide		
Newport-Mesa Unified School	Matthew	Jennings		Greg Allen
North O.C. Community College District	Tammy	Oh		
North Orange County ROP	Howard	Burkett		
OC Vector Control District	Michael	Hearst		
OCCR - OC Animal Care	Stefani	Waterman		
OCCR-OC Public Libraries	Helen	Fried		
Ocean View School District	Michael	Conroy		
OCSD-Communications	Lee	Kaser		
OneOC (Volunteer Center Orange County)	Ursula	Walsh		
Orange County Cemetery District	Tim	Deutsch		
Orange County Department of Education	Christine	Laehle		
Orange County Fair and Exposition Center	Nick	Buffa		
Orange County Fire Authority	Marc	Stone		
Orange County Sanitation District	George	Rivera		
Orange County Transportation Authority	Katrina	Faulkner		
Orange County Water District	Bill	Dunivin		
Orange Unified School District	Mike	Pollock		
Placentia Library District	Jeanette	Contreras		
Placentia-Yorba Linda Unified	Doug	Domene		
Rancho Santiago Community College District	Toni	Bland		

Date: _____/_____/_____

OCEMO Sign In Sheet

Jurisdiction			Initials	Alternate Representative -- Please Print Name Clearly
Rossmoor Community Services	James	Ruth		
Rossmoor/Los Alamitos County Water District	Susan	Bell		
Saddleback College	Todd	DeVoe		
Saddleback Valley Unified School District	Frank	Manzo		
Santa Ana Unified School District	Kevin	Phillips		
Santa Margarita Water District	Dan	Ferons		
Savanna School District	Dr. Sue	Johnson		
Serrano Water District	Jerry	Vilander		
Social Services Agency	Delcie	Hynes		
South Coast Water District	Andrew	Brunhart		
South O.C. Community College District	Jim	Pyle		
South Orange County Wastewater Authority	Sean	Peacher		
Sunset Beach Sanitary District	John	Woods		
Surfside Colony Community Services	Eugene	Salagui		
Three Arch Bay Community Service District	Nicki	Roknifard		
Trabuco Canyon Water District	Michael	Perea		
Transportation Corridor Agency	Sam	Elters		
Tustin Unified School District	Sean	Diaz		
University of California, Irvine	Anne	Widney		
Water Emergency Response of O.C.	Kelly	Hubbard		
Westminster School District	Cyndi	Paik		
Yorba Linda Water District	Steve	Conklin		

Date: ____/____/____

OCEMO Sign In NON Listed Attendees

Please Print Name Clearly

	Jurisdiction	First Name	Last Name	email Address
1	American Red Cross	Robert	Smalley	robert.smalley@redcross.org
2	Justin Mammen	OCCOut		jmammen@occouts.org
3	GG CORP	Don	Thorpe	thorpedj@yahoo.com
4	Red Cross/COADOC	SEAN	WARD	SEAN.WARD@redcross.org
5	Community Service Programs	Claudia	Torres	CTORRES@CSPINC.ORG
6	~~Sanjana Noor~~ ARC	Sanjana	Noor	sanjana.noor@redcross.org
7	ANAHEIM			
8	~~Amber Sen~~			
9	OCMVCD	Amber	Semrow	asemrow@ocmvcd.org
10	ARC	Amy	Ashland	Amy.Ashland@redcross.org
11	Dagle McIntosh Center	Bruce	Morgan	bmorgan@daylemc.org
12				
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14				
15				
16				
17				
18				
19				
20				
21				

Date: ____/____/____

OCEMO Sign In NON Listed Attendees

Please Print Name Clearly

	Jurisdiction	First Name	Last Name	email Address
22	Cal OES	Jim	Acosta	
23	OCSD	Nathan	Ramirez	NRamirez@ocsd.org
24	TetraTech	Denise	Davis	denise.davis1@tetratech.com
25	SCART	Susan	Kuyot	Suckey+socal.rr.com
26	SCART	Terry	Cookley	
27	Prime Healthcare	Jose	Fermin	JFermin2@primehealthcare.com
28	Pei Lee OCSD	Pei	Lee	plee@ocsd.org
29	OC Clerk - Recorder	Billy	Le	BILLY.LE@REC.OCGOV.COM
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City of Laguna Beach
Local Hazard Mitigation Plan

Hazard Mitigation Planning Committee Meeting #1

Thursday August 10th, 2:00 – 4:00 p.m.
Laguna Beach City Hall, Council Chambers
505 Forest Ave, Laguna Beach, Ca 92651

Agenda

1. Introductions (5 minutes)
2. Project Overview (5 minutes)
3. HMPC Purpose and Responsibilities (10 minutes)
4. Preliminary Project Goals (10 minutes)
5. Critical Facilities (15 minutes)
6. Community Engagement Strategy (15 minutes)
7. Hazards of Concern (25 minutes)
8. Hazard Prioritization Exercise (30 minutes)
9. Next Steps (5 minutes)

Project Overview

The Local Hazard Mitigation Plan (LHMP) for the City of Laguna Beach will serve as the community's strategic plan to assess and reduce the threat from hazardous conditions, including both natural and human-caused hazards (if applicable). Communities are not required to prepare a LHMP, but having a plan creates a unified and deliberate approach to strengthen community resilience. A valid LHMP provides jurisdictions eligibility for grant funding and additional post-disaster relief funds from Federal Emergency Management Agency (FEMA). LHMPs remain valid for five years after approval and adoption by a local agency.

LHMPs are authorized by both federal and state law. The federal Robert T. Stafford Disaster Relief and Emergency Act, as amended by the Disaster Mitigation Act of 2000 requires state, local, and tribal governments that wish to be eligible for certain federal hazard mitigation grants to submit hazard mitigation plans. These grants include FEMA's Hazard Mitigation Grant and Pre-Disaster Mitigation programs. California law limits state disaster relief payments to local jurisdictions to 75 percent of the costs not covered by FEMA, although the state may pay for more than 75 percent of these costs if communities have a valid LHMP and have adopted the plan as part of their General Plan.

Figure 1 - Four Phases of Emergency Management

Completion and acceptance of the City's LHMP by FEMA provides access to the following competitive FEMA grant programs for the **next 5 years**:

- **Hazard Mitigation Grant Program (HMGP)**
- **Pre-Disaster Mitigation (PDM)**

Under these programs up to **75% of the cost** of an implementation project could be covered by a FEMA grant.

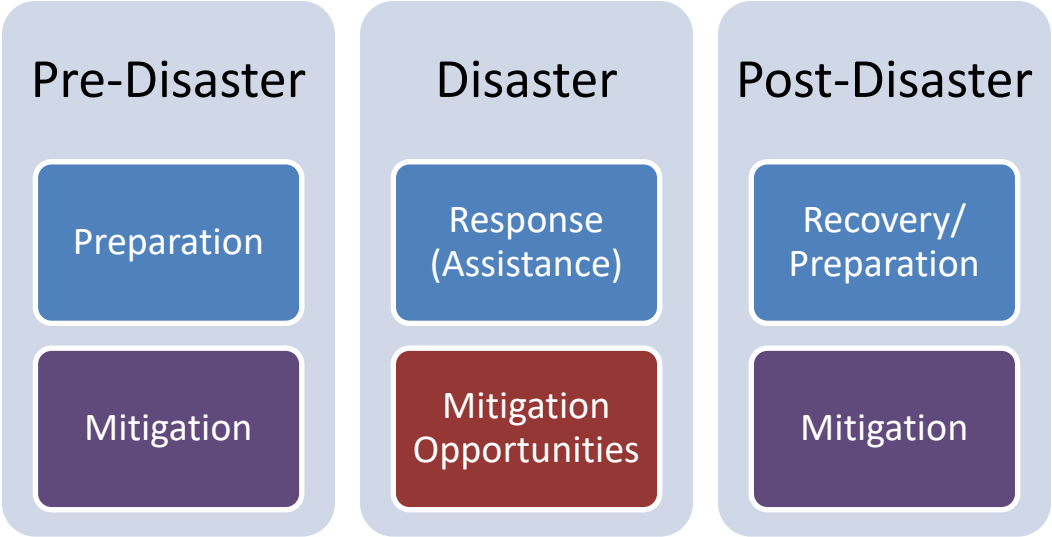

Figure 2 - Mitigation Linkages

HMPC Purpose and Responsibilities

Hazard Mitigation Planning Committee

- Actively guides the LHMP's development and provides feedback
- Consist of representatives from City departments, stakeholder agencies and community partners

HMPC Members/Stakeholders

- **City Departments**
  - Administrative Services
  - Community Development (Building Safety and/or Planning Divisions)
  - Fire
  - Marine Safety
  - Office of the City Manager
  - Police
  - Public Works
  - Water Quality
- **Laguna Beach Emergency & Disaster Preparedness Committee** (Matt Lawson, Robert Elster)
- **Other organizations**
  - Caltrans
  - Laguna Beach County Water District
  - Laguna Beach Unified School District
  - Orange County Emergency Management (Sheriff)
  - Orange County Fire Authority
  - Orange County Health Care Agency
  - Orange County Intelligence Assessment Center (OCIAC)
  - Orange County Parks
  - San Diego Gas & Electric
  - South Coast Water District
  - South Orange County Wastewater Authority (SOCWA)
  - Southern California Edison
  - Southern California Gas Company

Current Work Program

Project Initiation: kick-off meeting, plan outline creation, and data collection.

Process Planning and Development: HMPC Meetings, Community Engagement/Outreach.

Risk Assessment: hazard identification, hazards and critical facilities mapping, vulnerability assessments and loss estimates, and community capabilities.

Hazard Mitigation Strategy: confirming hazard mitigation goals, creating and evaluating hazard mitigation actions.

Plan Maintenance: approach to maintaining and updating the LHMP; creating materials to support future update activities.

Plan Compilation and Adoption: review and approval of the Draft LHMP, submittal and coordination with Cal OES/FEMA, and final plan adoption.

Preliminary Goals of the Project

Draft Goals prepared for the HMPC

- **Reduce the threat to life, injury, and property damage for Laguna Beach residents, employees, and visitors**. The plan will seek to make homes, businesses, and other buildings and infrastructure components more resilient to hazard events. It will educate community members about the threats that are present (or may become present) in Laguna Beach, and provide them with information about reducing vulnerabilities.
- **Protect natural systems from current and future hazard conditions**. The natural setting of Laguna Beach is a critical asset and should be protected against the threat of hazard events as with all other assets. The plan will take advantage of the protections and benefits provided by natural systems to support community-wide resilience.
- **Coordinate mitigation activities among City departments and with neighboring jurisdictions**. A unified hazard mitigation approach is most effective, and ensures that hazard mitigation is being carried out in a comprehensive and holistic fashion. This includes working with all municipal departments to conduct hazard mitigation planning, and aligning local efforts with Orange County and surrounding communities.
- **Strengthen resiliency in Laguna Beach through partnerships with community members, local businesses, and community organizations**. Successful hazard mitigation activities involve a wide range of individuals and organizations, including both private businesses and public and non-profit agencies. These efforts help ensure that the hazard mitigation plan more fully reflects the community, and encourages the wider community to take action and demonstrate leadership.

Critical Facilities

From the Laguna Beach Critical Facility Checklist:

Asset Name	Sector	Priority	Address	Phone
Laguna Beach City Hall	Government Facility	I	505 Forest Ave	949-497-3311
Laguna Beach Police	Law Enforcement	I	505 Forest Ave	949-497-0701
Laguna Beach Fire Station #1	Fire	I	501 Forest Ave	949-497-0785
Laguna Beach Fire Station #2	Fire	I	285 Agate St	949-494-3480
Laguna Beach Fire Station #3	Fire	I	2900 Alta Laguna Blvd	949-494-4697
Laguna Beach Fire Station #4	Fire	I	31646 2nd Ave	949-494-5869
Mission Hospital Laguna Beach	Healthcare	I	31872 Coast Hwy	949-499-1311
Borrego Substation	Energy	II	El Toro/Aliso Creek	N/A
Laguna Beach County Water	Water	II	306 3rd St	949-494-1041
Morro Substation	Energy	II	1086 Laguna Canyon Rd	N/A
OC Comm. Fire Station #2	Satellite Comm.	II	285 Agate St	N/A
OC Comm. Fire Station #3	Satellite Comm.	II	2900 Alta Laguna Blvd	N/A
OC Comm. Mission Hospital	Satellite Comm.	II	31872 Coast Hwy	N/A
OC Comm. Moorhead	Satellite Comm.	II	1 Poplar Dr.	N/A
OC Comm. Moorhead Site	Satellite Comm.	II	10783 Lookout Dr.	N/A
South Coast Water District	Water	II	31592 West St	949-499-4555
Anneliese Elementary	Education	III	20062 Laguna Canyon Rd	949-497-8310
Anneliese Elementary	Education	III	758 Manzanita	949-494-7388
Anneliese School	Education	III	21542 Wesley Dr.	949-499-5527
El Morro Elementary	Education	III	8681 N. Coast Hwy	949-497-7780
Laguna Beach High School	Education	III	625 Park Ave	949-497-7750
Laguna Beach School District	Education	III	550 Blumont	949-497-7700
Montessori School of Laguna	Education	III	340 St. Ann's Dr.	949-494-2411
St. Catherine's School	Education	III	30516 Coast Hwy	949-494-7339
Thurston Middle School	Education	III	2100 Park Ave	949-497-7785
Top of the World Elementary	Education	III	21601 Treetop Ln	949-497-7790
Aliso Beach Park	Outdoor	IV	31121 Coast Hwy	N/A
Festival of Arts	Public Assembly	IV	650 Laguna Canyon Rd	949-494-1145
Laguna Beach Transit Center	Mass Transit	IV	375 Broadway	N/A
Main Beach	Outdoor	IV	107 S. Coast Hwy	N/A
Montage Laguna Beach	Lodging	IV	30801 Coast Hwy	949-715-6161
Sawdust Festival	Public Assembly	IV	935 Laguna Canyon Rd	949-494-3030
73/133	Road	IV	73/133	N/A

Discussion:

- Roadways
    - Pacific Coast Highway
    - Laguna Canyon Road
- Utilities
    - Water Reservoirs
    - Treatment Plants
    - Pump Stations
    - Culverts

Community Engagement Strategy

Refer to Draft Community Engagement Strategy (Handout)

Refer to Draft Online Survey (Handout)

Hazards of Concern

Avalanche	Flood	Seismic hazards
Climate change	Geological hazards	Severe winter storm
Coastal erosion	Hailstorm	Tornado
Coastal storm	Hazardous materials	Tsunami
Dam failure	Human-caused hazards*	Volcano
Disease/pest management	Hurricane	Wildfire
Drought	Land subsidence	Wind
Earthquake fault rupture	Landslide and mudflow	Windstorm
Expansive soils	Liquefaction	
Extreme heat	Sea level rise	

* Nuclear Hazards
TEXT – Identified in the RFP
Text – Excluded due to lack of hazard potential
Text – Required due to State of California Hazard Mitigation Plan

Hazard Prioritization Exercise

Hazard Prioritization

Hazards identified in the RFP include:

- Climate change hazards
- Earthquakes
- Floods (Sea Level Rise)
- Geologic and soil hazards (Landslides)
- Nuclear hazards
- Severe weather (e.g. extreme temperatures, drought, fog, heavy rains/thunderstorms, wind, lightning)
- Wildfires
- Other human-caused hazards
- Other hazards as determined

Initial Recommendations:

- Analyze extreme temperatures and drought each as a separate hazard
- Address climate change as an element of each hazard, rather than a separate hazard
- Other hazards that could be added include:
    - Hazardous materials
    - Tsunamis (state maps show a risk of inundation near Ocean Avenue and near Aliso Beach Park)

Hazard Prioritization Criteria [Weightings]

- Probability (likelihood of occurrence) [2.0]
- Location (size of potentially affected area) [0.8]
- Maximum Probable Extent (intensity of damage) [0.7]
- Secondary Impacts (severity of impacts to community) [0.5]

For ranking purposes, hazards are graded on four criteria, using a scale of 1 to 4. The score for each criterion is weighted, and then all scores are aggregated in a method described by FEMA to generate a final priority score. For each hazard, determine how the hazard ranks on the following four criteria:

- **Probability**. The estimated likelihood that the hazard will occur in the future.

1 (Unlikely) 2 (Occasionally) 3 (Likely) 4 (Highly likely)

- **Location**. The size of the affected area from a typical future occurrence.

1 (Negligible) 2 (Limited) 3 (Significant) 4 (Extensive)

- **Maximum Probable Extent**. The estimated damage to facilities from a typical future occurrence.

1 (Weak – little to no damage) 2 (Moderate – some damage, loss of service for days) 3 (Severe – devastating damage, loss of service for months) 4 (Extreme – catastrophic damage, uninhabitable conditions)

- **Secondary Impacts**. The effects to the community beyond physical damage.

1 (Negligible – no loss of function, downtime, and/or evacuations) 2 (Limited – minimal loss of function, downtown, and/or evacuations) 3 (Moderate – some loss of function, downtime, and/or evacuations) 4 (High – major loss of function, downtime, and/or evacuations)

Impact

Affected Area Score	Primary Impact Score	Secondary Impact Score
4(3.2)	2 (1.4)	1 (0.5)

Impact score: 3.2 + 1.4 + 0.5 = 5.1

Total Score

Impact Score	Probability Score
(5.1)	3 (6)

Total Score: 5.1 x 6 = 30.6

Low:	Medium:	High:
0-12	12.1-42	42.1 and up

Next Steps

Communication Protocols:

Most communication between the City of Laguna Beach and PlaceWorks will be conducted between the following primary contacts:

City of Laguna Beach

Jordan Villwock, Emergency Operations Coordinator
Phone: (949) 497-0389
Email: **jvillwock@lagunabeachcity.net**
PlaceWorks

Aaron Pfannenstiel, LHMP Project Manager
Phone: (909) 989-4449, extension 2201
Email: **ajp@placeworks.com**

Please make sure these primary contacts are CC'd on any transmittals.

Next Meeting:

Date: **September 14, 2017**
Time: **2:00-4:00pm**
Location: **City Hall Conference Room A or Council Chambers**
Topic: **Review of Hazard Profiles and Mapping**

HAZARD MITIGATION PLANNING COMMITTEE

Project:	City of Laguna Beach Hazard Mitigation Plan	**Meeting Date:**	8/10/2017
Facilitator:	Jordan Villwock & Aaron Pfannenstiel	**Place/Room:**	City Council Chambers

Name	Title	Department	E-Mail	Signature
Aaron Pfannenstiel	Project Manager	Placeworks	ajp@placeworks.com	
David Shissler	Water Quality Director	Water Quality	dshissler@lagunabeachcity.net	
Hannah Johnson	Project Manager	Water Quality	hjohnson@lagunabeachcity.net	
Kirk Summers	Fire Chief	Fire Department	ksummers@lagunabeachcity.net	
Jennifer Gates	Senior Planner	Community Development	jgates@lagunabeachcity.net	
Joe Torres	Police Lieutenant	Police Department	jtorres@lagunabeachcity.net	
Jordan Villwock	Emergency Operations Coordinator	Police Department	jvillwock@lagunabeachcity.net	
Ryan Hallet	Sr. Admin Analyst	City Manager's Office	rhallet@lagunabeachcity.net	
Tiffany Bates	Human Resources & Risk Manager	Administrative Services	tbates@lagunabeachcity.net	
Tom Christopher	Fire Division Chief	Fire Department	tchristopher@lagunabeachcity.net	
Tom Trager	Marine Safety Captain	Marine Safety	ttrager@lagunabeachcity.net	
Wade Brown	Underground Director	Public Works	wbrown@lagunabeachcity.net	
Karalee Darnell	Public Affairs	Edison	Karaless.b.darnell@sce.com	
John Navarette	Public Affairs	SoCal Gas	jnavarette@semprautilities.com	FD Russell for J. Navarette
Trisha Wooslayer	Health & Safety Mgr	South Coast WD	twooslayer@scwd.org	
Leo Lopez	Safety Officer	Laguna Beach Water	llopez@lbcwd.org	
Jeff Dixon	Superintendent	Laguna Beach USD	jdixon@lbusd.org	
Ryan Zjada	Facilities Director	Laguna Beach USD	rzjada@lbusd.org	
Duane Cave	Public Affairs	SDG&E	dcave@semprautilities.com	

HAZARD MITIGATION PLANNING COMMITTEE

Project:	City of Laguna Beach Hazard Mitigation Plan	**Meeting Date:**	8/10/2017
Facilitator:	Jordan Villwock & Aaron Pfannenstiel	**Place/Room:**	City Council Chambers

Name	Title	Department	E-Mail	Signature
Matt Lawson	EDPC Chair	EDPC	mlawson@lagunabeachcity.net	
Robert Elster	EDPC Vice Chair	EDPC	relster@lagunabeachcity.net	
Ethan Brown	Senior Emergency Coordinator	OCSD EM	etbrown@ocsd.org	
Jeff Hoey	Battalion Chief	OCFA	jeffhoey@ocfa.org	
William Fegley	Parks Manager	OC Parks	William.fegley@ocparks.com	WSF
Kory McCain	Parks Supervisor	OC Parks	Kory.mccain@ocparks.com	
Lance Larson	Reserve Officer	OCIAC	llarson@lagunabeachcity.net	
Drew Downing	Manager	OCHCA	ddowning@ochca.com	
Sean Preacher	Health & Safety Mgr	SOCWA	spreacher@socwa.org	
TIM KLESSER	LIEUTENANT	PD	TKLESSER@lagunabeachcity.net	
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Paul Simonds	Public Affairs Mgr		psimonds@sempra utilities.com	

City of Laguna Beach
Local Hazard Mitigation Plan

Hazard Mitigation Planning Committee Meeting #2

Thursday, September 14th, 2:00 – 4:00 p.m.
Laguna Beach City Hall, Council Chambers
505 Forest Ave, Laguna Beach, CA, 92651

Agenda

1. Introductions (5 minutes)
2. Review of Project Goals (5 minutes)
3. Review of Hazard Prioritization (5 minutes)
4. Hazard Profiles/Mapping Discussion (75 minutes)
5. Next Steps (5 minutes)

Next Meeting:

Date: **October 18, 2017**
Time: **2:00-4:00pm**
Location: **City Council Chambers**
Topic: **Review of Risk Assessment**

HAZARD MITIGATION PLANNING COMMITTEE

Project:	City of Laguna Beach Hazard Mitigation Plan	**Meeting Date:**	9/14/2017
Facilitator:	Jordan Villwock & Aaron Pfannenstiel	**Place/Room:**	City Council Chambers

Name	Title	Department	E-Mail	Signature
Tiffany Bates	Human Resources & Risk Manager	Administrative Services	tbates@lagunabeachcity.net	—
Ethan Brown	Senior Emergency Coordinator	OCSD EM	etbrown@ocsd.org	
Wade Brown	Underground Director	Public Works	wbrown@lagunabeachcity.net	Wade Brown
Duane Cave	Public Affairs	SDG&E	dcave@semprautilities.com	—
Tom Christopher	Fire Division Chief	Fire Department	tchristopher@lagunabeachcity.net	—
Karalee Darnell	Public Affairs	Edison	Karaless.b.darnell@sce.com	
Jeff Dixon	Superintendent	Laguna Beach USD	jdixon@lbusd.org	
Drew Downing	Manager	OCHCA	ddowning@ochca.com	
Robert Elster	EDPC Vice Chair	EDPC	relster@lagunabeachcity.net	Rob Elster
William Fegley	Parks Manager	OC Parks	William.fegley@ocparks.com	—
Jennifer Gates	Senior Planner	Community Development	jgates@lagunabeachcity.net	
Ryan Hallett	Sr. Admin Analyst	City Manager's Office	rhallet@lagunabeachcity.net	Ryan Hallett
Jeff Hoey	Battalion Chief	OCFA	jeffhoey@ocfa.org	
Hannah Johnson	Project Manager	Water Quality	hjohnson@lagunabeachcity.net	
Lance Larson	Reserve Officer	OCIAC	llarson@lagunabeachcity.net	
Matt Lawson	EDPC Chair	EDPC	mlawson@lagunabeachcity.net	
Leo Lopez	Safety Officer	Laguna Beach Water	llopez@lbcwd.org	
Kory McCain	Parks Supervisor	OC Parks	Kory.mccain@ocparks.com	
John Navarette	Public Affairs	SoCal Gas	jnavarette@semprautilities.com	

HAZARD MITIGATION PLANNING COMMITTEE

Project:	City of Laguna Beach Hazard Mitigation Plan	**Meeting Date:**	8/10/2017
Facilitator:	Jordan Villwock & Aaron Pfannenstiel	**Place/Room:**	City Council Chambers

Name	Title	Department	E-Mail	Signature
Aaron Pfannenstiel	Project Manager	Placeworks	ajp@placeworks.com	
Sean Preacher	Health & Safety Mgr	SOCWA	spreacher@socwa.org	—
David Shissler	Water Quality Director	Water Quality	dshissler@lagunabeachcity.net	
Kirk Summers	Fire Chief	Fire Department	ksummers@lagunabeachcity.net	
Joe Torres	Police Lieutenant	Police Department	jtorres@lagunabeachcity.net	—
Tom Trager	Marine Safety Captain	Marine Safety	ttrager@lagunabeachcity.net	
Jordan Villwock	Emergency Operations Coordinator	Police Department	jvillwock@lagunabeachcity.net	
Trisha Wooslayer	Health & Safety Mgr	South Coast WD	twooslayer@scwd.org	Trisha Wooslayer
Ryan Zjada	Facilities Director	Laguna Beach USD	rzjada@lbusd.org	
Adam Gufarotti	Sr. Rec Sup	City of Laguna Beach	agufarotti@laguna	
MATT				
ROBERT ELSTER	EDPC Member	—	reelster@cox.net relster@lagunabeachcity.net	

City of Laguna Beach
Local Hazard Mitigation Plan

Hazard Mitigation Planning Committee Meeting #3

Thursday, October 18th, 2:00 – 4:00 p.m.
Laguna Beach City Hall, Council Chambers
505 Forest Ave, Laguna Beach, CA, 92651

Agenda

1. Introductions (5 minutes)
2. Review of Preliminary Survey Results (10 minutes)
3. Review of Risk Assessment (60 minutes)
4. Mitigation Strategies Brainstorm (35 minutes)
5. Next Steps (10 minutes)

Next Meeting:

Date: **Wednesday, November 1, 2017**
Time: **2:00-4:00pm**
Location: **City Council Chambers**
Topic: **Review of Mitigation Actions**

HAZARD MITIGATION PLANNING COMMITTEE

Project:	City of Laguna Beach Hazard Mitigation Plan	**Meeting Date:**	October 18, 2017
Facilitator:	Jordan Villwock & Aaron Pfannenstiel	**Place/Room:**	City Council Chambers

Name	Title	Department	E-Mail	Signature
Tiffany Bates	Human Resources & Risk Manager	Administrative Services	tbates@lagunabeachcity.net	
Ethan Brown	Senior Emergency Coordinator	OCSD EM	etbrown@ocsd.org	
Wade Brown	Underground Director	Public Works	wbrown@lagunabeachcity.net	Wade Brown
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Jeff Dixon	Superintendent	Laguna Beach USD	jdixon@lbusd.org	
Drew Downing	Manager	OCHCA	ddowning@ochca.com	
Robert Elster	EDPC Vice Chair	EDPC	relster@lagunabeachcity.net	
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Ryan Hallett	Sr. Admin Analyst	City Manager's Office	rhallet@lagunabeachcity.net	
Jeff Hoey	Battalion Chief	OCFA	jeffhoey@ocfa.org	
Hannah Johnson	Project Manager	Water Quality	hjohnson@lagunabeachcity.net	
Lance Larson	Reserve Officer	OCIAC	llarson@lagunabeachcity.net	
Matt Lawson	EDPC Chair	EDPC	mlawson@lagunabeachcity.net	Matt Lawson
Leo Lopez	Safety Officer	Laguna Beach Water	llopez@lbcwd.org	
Kory McCain	Parks Supervisor	OC Parks	Kory.mccain@ocparks.com	
John Navarette	Public Affairs	SoCal Gas	jnavarette@semprautilities.com	

HAZARD MITIGATION PLANNING COMMITTEE

Project:	City of Laguna Beach Hazard Mitigation Plan	**Meeting Date:**	October 18, 2017
Facilitator:	Jordan Villwock & Aaron Pfannenstiel	**Place/Room:**	City Council Chambers

Name	Title	Department	E-Mail	Signature
Aaron Pfannenstiel	Project Manager	Placeworks	ajp@placeworks.com	
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David Shissler	Water Quality Director	Water Quality	dshissler@lagunabeachcity.net	
Kirk Summers	Fire Chief	Fire Department	ksummers@lagunabeachcity.net	
Joe Torres	Police Lieutenant	Police Department	jtorres@lagunabeachcity.net	
~~Kai Bond~~ Kevin Snow	Marine Safety Lieutenant	Marine Safety	kbond@lagunabeachcity.net	K. Snow
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Trisha Wooslayer	Health & Safety Mgr	South Coast WD	twooslayer@scwd.org	Trisha Wooslayer
Ryan Zjada	Facilities Director	Laguna Beach USD	rzjada@lbusd.org	
Adam Gufarotti	Sr. Rec Supv	Community Services	agufarotti@lagunabeachcity.net	
Megan Tomasko	Compliance & Emerg. Prep.	SCWD	mtomasko@scwd.org	
MATT LAWSON	EDPC	—	matt.lawson7@hotmail.com	Matt

City of Laguna Beach
Local Hazard Mitigation Plan

Hazard Mitigation Planning Committee Meeting #4

Wednesday, November 1, 2017, 2:00 – 4:00 p.m.
Laguna Beach City Hall, Council Chambers
505 Forest Ave, Laguna Beach, CA, 92651

Agenda

1. Review of Draft Mitigation Actions (75 minutes)
2. Prioritization of Draft Mitigation Actions (15 minutes)
3. Q&A (10 minutes)
4. Next Steps (5 minutes)

Next Meeting:

Date: **January**
Time: **TBD**
Location: **City Council Chambers**
Topic: **Public Review of the Draft LHMP**

HAZARD MITIGATION PLANNING COMMITTEE

Project:	City of Laguna Beach Hazard Mitigation Plan	**Meeting Date:**	November 1, 2017
Facilitator:	Jordan Villwock & Aaron Pfannenstiel	**Place/Room:**	City Council Chambers

Name	Title	Department	E-Mail	Signature
Tiffany Bates	Human Resources & Risk Manager	Administrative Services	tbates@lagunabeachcity.net	
Ethan Brown	Senior Emergency Coordinator	OCSD EM	etbrown@ocsd.org	
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Hannah Johnson	Project Manager	Water Quality	hjohnson@lagunabeachcity.net	
Lance Larson	Reserve Officer	OCIAC	llarson@lagunabeachcity.net	
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HAZARD MITIGATION PLANNING COMMITTEE

Project:	City of Laguna Beach Hazard Mitigation Plan	**Meeting Date:**	November 1, 2017
Facilitator:	Jordan Villwock & Aaron Pfannenstiel	**Place/Room:**	City Council Chambers

Name	Title	Department	E-Mail	Signature
Aaron Pfannenstiel	Project Manager	Placeworks	ajp@placeworks.com	
Sean Preacher	Health & Safety Mgr	SOCWA	spreacher@socwa.org	
David Shissler	Water Quality Director	Water Quality	dshissler@lagunabeachcity.net	
Kirk Summers	Fire Chief	Fire Department	ksummers@lagunabeachcity.net	
Joe Torres	Police Lieutenant	Police Department	jtorres@lagunabeachcity.net	
Kai Bond	Marine Safety Lieutenant	Marine Safety	kbond@lagunabeachcity.net	
Jordan Villwock	Emergency Operations Coordinator	Police Department	jvillwock@lagunabeachcity.net	J. Villwock
Trisha Wooslayer	Health & Safety Mgr	South Coast WD	twooslayer@scwd.org	
Ryan Zjada	Facilities Director	Laguna Beach USD	rzjada@lbusd.org	
Adam Gufarotti	Sr. Rec Supv	Community Services	agufarotti@lagunabeachcity.net	
Megan Tomasko	Emer. Prep	SCWD	mtomasko@scwd.org	
~~DAVID SHISSLER~~	~~Dir. WQ~~	~~CLB~~	~~dshissler@lagunabeachcity.net~~	

APPENDIX B
COMMUNITY OUTREACH MATERIALS

1. Community Engagement Strategy
2. City LHMP website
3. Community kick-off meeting presentation and sign-in sheets
4. Community open house presentation boards and sign-in sheets
5. Community survey invitation
6. Community survey results
7. Susie Q Center newsletter with LHMP announcement

COMMUNITY ENGAGEMENT STRATEGY

The City of Laguna Beach is currently developing a Local Hazard Mitigation Plan (LHMP), which will be the strategic plan to assess and reduce the threats that the community faces from current and future hazard conditions. Based on preliminary discussions, these hazards are:

- Drought
- Extreme heat
- Floods (including sea level rise)
- Geologic hazards (e.g. landslides and erosion)
- Nuclear hazards
- Severe weather
- Seismic hazards (earthquakes and related hazards)
- Wildfire

Guidelines from the Federal Emergency Management Agency (FEMA) requires that the City create opportunities for members of the public to be involved in the development of the plan, at a minimum during its initial drafting stage and during plan approval, and that such opportunities be documented. This process helps ensure that the LHMP reflects community values, concerns, and priorities. Laguna Beach will follow these guidelines when preparing its LHMP, and will go above the minimum FEMA requirements to secure more extensive community involvement as opportunities allow.

Key Terms

Hazard: A natural or human-caused event with the potential to cause damage.

Resiliency: The ability of a population or asset to reduce a threat.

Risk: The chance that a hazard, especially one of a particular size or intensity, will occur.

Threat: The potential of a hazard to do harm.

Vulnerability: A weakness that increases the threat posed to a population or asset.

The overarching goals of the LHMP document as are follows:

- Enhance the resilience of community members, private property, and natural systems to hazard events.
- Keep critical services and government functions operational by protecting key infrastructure in Laguna Beach.
- Ensure that the City of Laguna Beach is eligible for increased funding for hazard mitigation and disaster recover activities.
- Support compliance with state laws that require addressing specific hazards and other items, including the effects of climate change.

These goals will be reflected throughout the community outreach process, with the intent to educate community members and obtain feedback in an open and transparent manner to support preparation of the LHMP. The engagement process should be respectful and neutral, providing all participants with the opportunity to express their opinions in a productive way. This Community Engagement Strategy describes how Laguna Beach will conduct outreach to members of the local community and other stakeholders of importance, in a flexible and outcome-oriented manner.

PROJECT TEAM AND RESPONSIBILITIES

The LHMP is being prepared by a project team, comprised of members from the City's Hazard Mitigation Planning Committee (HMPC) with support from the members of the Laguna Beach Emergency and Disaster Preparedness Committee, key stakeholders (as discussed in the Community Members section), and technical consulting firm PlaceWorks. The HMPC members are as follows:

- Tiffany Bates: Human Resources & Risk Manager, Administrative Services
- Wade Brown: Undergrounding Director, Public Works Department
- Tom Christopher: Fire Division Chief, Fire Department
- Jennifer Gates: Senior Planner, Community Development Department
- Adam Gufarotti: Senior Recreation Supervisor, Community Services
- Ryan Hallett: Senior Administrative Analyst, City Manager's Office
- Hannah Johnson: Project Manager, Water Quality
- David Shissler: Water Quality Director, Water Quality
- Kirk Summers: Interim Fire Chief, Fire Department
- Tom Trager: Marine Safety Captain, Marine Safety Department
- Joe Torres: Police Lieutenant, Police Department
- Jordan Villwock: Emergency Operations Coordinator, Police Department (HMPC leader)

The members of the HMPC will be responsible for reviewing all proposed methods, materials, and content for outreach activities. As the local experts, they will be able to provide valuable information about how best to reach community members, and to share information and receive feedback effectively. It is likely that at least one member of the HMPC, Jordan Villwock or a designee, will attend meetings and other outreach events to serve as a representative of the City. HMPC staff will serve as the primary liaisons with community members on the project (e.g. answering public inquiries about the LHMP), and will be responsible for distributing content through the preferred means.

Members of the project team from PlaceWorks will prepare a description of the recommended community engagement strategy, as well as materials and content for outreach activities. This may include digital and print materials, as well as any other items used for community engagement. At least one member of the PlaceWorks team will attend meetings and other outreach events, helping to facilitate the event and serving as technical experts as needed. PlaceWorks will also be responsible for collecting and analyzing the results of engagement activities, and sharing these results with other members of the project team.

Key stakeholders and members of the Laguna Beach Emergency and Disaster Preparedness Committee may be involved in outreach activities. The specific roles of these individuals will be determined on an ad-hoc basis depending on their availability and skill set, and the status of the project and outreach activities.

COMMUNITY MEMBERS

During community engagement activities, the project team will reach out to two groups of community members. The project team will engage members of the general public, which includes people who live and/or work in Laguna Beach, as well as those who own property or run businesses in the community.

Additionally, the project team will work with key stakeholders, who represent agencies, businesses, or other organizations that are present in the community or are otherwise important to local health, safety, and quality of life. Such stakeholders do not include representatives from City agencies. The project team anticipates the following key stakeholders:

- Laguna Beach County Water District
- Laguna Beach Unified School District
- Orange County Emergency management
- Orange County Fire Authority
- Orange County Intelligence Assessment Center
- Orange County Lifeguards
- Orange County Parks
- San Diego Gas & Electric
- South Coast Water District
- South Orange County Wastewater Authority
- Southern California Edison
- Southern California Gas Company

Modifications to this list may occur throughout the process, if additional stakeholders are identified.

PUBLIC MEETINGS

In-person public meetings allow members of the Laguna Beach community to learn about the LHMP, including the process of the plan development, hazards of concern, and feasible steps the City and community members can take to improve resiliency. These meetings allow for members of the community to speak directly to City staff and other stakeholders about the project, and to provide useful feedback. Discussions at in-person meetings are often more detailed and involved than those through online media.

All meetings will emphasize the project goals and the City's intent in preparing the LHMP, as discussed above. The meetings will also provide an opportunity for members of the project team to address any misconceptions about the LHMP. Educational material to correct other misconceptions that may arise could be distributed as part of other outreach activities, including being posted online and on the City's social media accounts. Example misconceptions may include:

- "Laguna Beach must have an LHMP to receive disaster relief funding". In actuality, communities are eligible for federal disaster relief funding regardless of whether they have an LHMP or not. However, the State of California limits its share of disaster relief funding to 75 percent of the costs not paid by the federal government unless the community has a valid LHMP, at which point the State may pay more than 75 percent.
- "The LHMP must analyze all potential hazards". An LHMP must only look at natural hazards. Human-caused hazards may be included for the sake of improving overall community safety, but are not necessary. FEMA only provides funding to help mitigate natural hazards.

The City is planning to hold three public meetings at key stages of the process, with the opportunities for additional engagement opportunities as desired by the HMPC.

MEETING 1

The first meeting is intended to kick off the process for members of the public. At this meeting, City staff and other members of the project team will share information about the LHMP and what it is, the process used to prepare it, and future opportunities for engagement. Attendees will be able to sign up for notifications about future outreach events and opportunities to become involved. This meeting will involve a presentation by members of the project team, and will be followed by a collaborative dialogue among community members, and between community members and members of the project team. This will allow members of the public to explain, from their perspective, what they think is most important for the City to know and address in the LHMP. Posters, handouts, and other materials will be used as appropriate to support a constructive session.

This meeting is currently scheduled for Thursday, September 14, 2017.

MEETING 2

The second meeting will share the outcomes of initial analyses for the LHMP, including information about the hazards present in Laguna Beach, the threats posed by these hazards, and the overall community vulnerability. It will also allow participants to comment on potential future actions. This meeting will be structured more as an open house, which will allow community members to freely study materials and to talk to project team members without being on a fixed schedule. This meeting will feature interactive activities that will allow community members to weigh in on items such as potential hazard mitigation strategies.

This meeting is currently scheduled for Wednesday, October 18, 2017.

MEETING 3

The third meeting will be held after an initial draft of the LHMP has been prepared. It will be conducted as a joint study session with the Laguna Beach City Council and the Laguna Beach Planning Commission. Meeting participants will learn about the initial draft of the plan, including how it was prepared, the results of its analyses, and the recommended policy actions it contains. This meeting will include a presentation by the project team to members of the City Council/Planning Commission and members of the public. The members of the City Council and Planning Commission will have the opportunity to review the plan in advance of a formal adoption hearing, and to provide preliminary feedback to members of the project team. Community members will also be able to provide public comment to the City Council and Planning Commission. This meeting will be the start of a public review period, lasting at least 30 days, before changes are made to the plan and it is submitted to state and federal agencies for approval.

This meeting is currently scheduled for Tuesday, January 16, 2018.

ONLINE AND MEDIA ENGAGEMENT

Engagement through online systems and media outlets allows the City to reach a wide audience without requiring extensive effort by project staff. Online methods are well suited to receive community input on specific issues, and allow community members to participate who may be unable to attend in-person

meetings. Local media outlets allow the City to easily send out notifications and other information that reaches a large segment of the community. There are multiple elements of online and media engagement that will be used during the development of the Laguna Beach LHMP.

PROJECT WEBSITE

The project website will be a simple, one-stop location for community members to learn about the LHMP. It will contain information about what an LHMP is, why the City is preparing one, and how community members can get involved, along with other topics. The website will also include links to materials and plan documents as they become available, and will contain notifications about upcoming events related to the plan development.

SOCIAL MEDIA

The use of social media accounts, such as Facebook, Twitter, and NextDoor, is an easy way for the City to send quick notifications or bursts of information about the project to a large number of community members. The City can use its social media accounts to send out information about upcoming events or other opportunities for public involvement.

ONLINE SURVEY

The online survey is an effective way to collect information and comments from community members about issues of importance to the LHMP. The survey will include questions about community members' past experience and familiarity with emergency conditions, level of preparedness for future emergencies, and preferred actions for the City to take to increase community resiliency, along with other questions that the project team chooses to add. Links to the survey can be posted on the project website and distributed through social media announcements. The project team can also distribute paper copies of the survey during community events or meetings, if desired.

PRESS RELEASES

Press releases allow the City to send out information about upcoming project milestones or other notifications to local media outlets, including print media, television, and radio. The City can use these documents to alert members of the public about the status of the project and upcoming events, often in conjunction with postings on social media and on the project website. The number of press releases should be limited (e.g. one to announce the beginning of public engagement, one to announce the release of the public draft plan, and potentially a third if warranted), as too many press releases will likely be ignored.

CONTENT FOR ONLINE AND MEDIA ENGAGEMENT

The following material can be used for the online and media engagement components of the community engagement strategy. It can also be adapted and revised as the project proceeds and specifics change.

PROJECT WEBSITE CONTENT

Local Hazard Mitigation Plan

The City of Laguna Beach is preparing a Local Hazard Mitigation Plan, or LHMP. This plan will help create a safer community for residents, businesses, and visitors. The LHMP allows public safety officials and city staff, elected officials, and members of the public understand the threats from natural and human-caused hazards in our community. The plan will also recommend specific actions to proactively decrease these threats before disasters occur.

Why have an LHMP?

An LHMP will let Laguna Beach plan for future emergencies. Usually, after a disaster occurs, communities take steps to recover from the emergency and rebuild. A LHMP is a way for the City to become more prepared in advance of these disasters, so when they do occur, less damage occurs and recovery is easier. Our community can use LHMP strategies to reduce instances of property damage, injury, and loss of life from disasters. Besides protecting public health and safety, this approach can save money. Studies estimate that every dollar spent on mitigation saves an average of four dollars on response and recovery costs. An LHMP can also help to strengthen the mission of public safety officers, such as police and fire department staff, providing them with clear roles and responsibilities to build a safer community.

Besides helping to protect Laguna Beach, our LHMP will make the City eligible for grants from the Federal Emergency Management Agency (FEMA) that can be used to further improve safety and preparedness in the community. Having an adopted LHMP can also make Laguna Beach eligible to receive more financial assistance from the State when disasters do occur.

What is in our LHMP?

The City of Laguna Beach plans for our LHMP to have four main sections:

- A summary of the natural and human-caused hazards that pose a risk to our community. This will include descriptions of past disaster events and the chances of these disasters occurring in the future.
- An assessment of the threat to Laguna Beach, which will describe how our community is vulnerable to future disasters. The plan will look at the threat to important buildings and infrastructure, such as police and fire stations, hospitals, roads, and utility lines. It will also look at the threat to community members, particularly disadvantaged persons.
- A hazard mitigation strategy, which will lay out specific policy recommendations for Laguna Beach to carry out over the next five years. These recommendations will help reduce the threat that our community faces from hazard events.
- A section on maintaining the plan, which will help ensure that our LHMP is kept up-to-date. This will make it easier for us to continue to proactively protect ourselves, and will also keep the City eligible for additional funding.

What hazards will our LHMP help protect against?

The City plans to include the following natural hazards in our LHMP:

- Drought
- Extreme heat
- Floods (including sea level rise)
- Geologic and seismic hazards (including earthquakes and landslides)
- Nuclear hazards
- Severe weather
- Wildfire

Our LHMP will also look at how climate change may affect these hazards, and may include other hazards that pose a threat to our community.

How is our LHMP being prepared?

The City has assembled a Hazard Mitigation Planning Committee (HMPC), which includes representatives from public safety officials and City departments, and will guide the overall development of our LHMP. The HMPC is supported by engaged private citizens on the Laguna Beach Emergency & Disaster Preparedness Committee, key stakeholders, and technical consultants. Together, these participants form the project team responsible for preparing our plan.

When will our LHMP be done?

The project team plans to release a first draft of the Laguna Beach LHMP for public review in January 2018. After members of the public provide comments and feedback, the project team will revise the plan, and send it to state and federal agencies for review and approval. Once approved by state and federal agencies, the Laguna Beach City Council will approve the final LHMP. We hope to have the plan ready for adoption in the summer of 2018, but it may be later depending how long state and federal review takes.

How can I get involved?

You can get involved in preparing our LHMP in different ways.

- The project team will hold public meetings to share information about our LHMP and obtain community feedback. The first of these meetings is scheduled for Thursday, September 14, 2017.
- The City will release an online survey to members of the public in the fall of 2017, asking for information about past experience with natural hazards and how our LHMP can be the most useful. Take the survey when it comes out, and encourage your friends and family to do the same.
- The City will release a draft of the completed LHMP for public review. Please review and provide comments on this document, either at in-person meetings or in writing.
- Encourage members of the Laguna Beach City Council to adopt the plan. Then, encourage them to put the plan into effect.
- Reach out to the project team [insert contact information] for more ways to stay involved.

What can I do now to be better prepared for disasters?

- Know the hazards that may affect you at your home, work, or school. You can find out more at http://myhazards.caloes.ca.gov/.
- Assemble an emergency kit for your home. In a disaster, you may have to rely on supplies in your emergency kit for at least three days. Be sure to include supplies for any pets and anyone in your home with special needs. Learn more at https://www.ready.gov/build-a-kit.
- Have a disaster plan for your household, including how people should contact each other if a disaster occurs and where you should meet.
- Learn about your neighbors and how to help them. In a disaster, emergency responders may not be able to reach your neighborhood for a while. Know if your neighbors have any special needs, and be sure to check on them as soon as you can.
- Make sure your homeowner's or renter's insurance covers you from disasters such as earthquakes and floods. If these disasters occur, having good insurance coverage will help you recover easier.
- Volunteer with an emergency response or community service organization that does work on disaster education and preparation.
- Speak to your employer about creating a disaster recovery, workforce communication, and/or business continuity plan. If they already have one or more of these plans in place, make sure you and your co-workers know it.
- Join Laguna Beach's Community Emergency Response Team (CERT), a group of volunteers trained by the Laguna Beach Police Department to assist emergency responders during disasters. Training is free and offered at times throughout the year. Learn more at http://www.lagunabeachcity.net/cityhall/police/emergprep/cert.htm.

SOCIAL MEDIA POSTS

Facebook

Project/meeting announcement

Help us build a safer Laguna Beach! Our city is currently preparing a Local Hazard Mitigation Plan (LHMP), which will provide information about our community's vulnerabilities to disasters and what we can do to be more prepared. Come to [LOCATION] at [TIME] on [DATE] to learn more and get involved. Additional information is located here: [PROJECT WEBSITE].

Survey

Let your voice be heard as we plan for a safer Laguna Beach! Our city is looking for engaged community members to take a quick survey on hazards and emergency preparations. Your responses will help in the preparation of our Local Hazard Mitigation Plan (LHMP). All survey responses are completely anonymous. Take the survey at [SURVEY LINK] and learn more about the LHMP at [PROJECT WEBSITE].

Public plan release

With the help of our active and involved community members, we have prepared a first draft of our Local Hazard Mitigation Plan (LHMP). This plan will help our community learn about and prepare for future

emergencies, building a safer Laguna Beach for everyone. You can read the plan at [LINK], and submit comments for how to make the LHMP better at [COMMENT FIELD/WEBSITE/EMAIL ADDRESS]. You can also make in-person comments at our public meeting at [LOCATION] at [TIME] on [DAY]. Help us make our LHMP the best it can be!

Twitter

Project/meeting announcement

Our city is writing a new plan to help us build a safer Laguna Beach. Come to our public kickoff meeting to learn more and get involved! [Link to webpage announcement – use URL shortener]

Survey

We want your opinion to help us build a safer Laguna Beach! Take a few minutes to take our Local Hazard Mitigation Plan survey at [Link to survey – use URL shortener].

Public plan release

The first draft of our plan to help us build a safer Laguna Beach for everyone is out! Read the plan and comment online or in person. Learn more at [Link to website post – use URL shortener].

BLOG/NEWSLETTER POSTS

Project/meeting announcement

Wildfires. Floods. Earthquakes. We've all heard about these disasters and many of us have lived through them, often several times. It's easy to think that there's nothing we can really do about these events, but while we often can't stop them from happening, we can make sure that the damage to our community is reduced.

At the City of Laguna Beach, we want to make our community as safe as it can be, which is why we're preparing a Local Hazard Mitigation Plan (LHMP). These plans will help our community assess the potential for future disasters, take steps to prepare for them, and make us eligible for additional funding from the federal and state government. Our LHMP will cover four major topics.

- Summarizing the natural and human-caused hazards that pose a threat to our community.
- Looking at how our community members, buildings, and infrastructure are vulnerable to these hazards.
- Outlining a Hazard Mitigation Strategy, with specific policy recommendations for future actions to help reduce the threat from these hazards.
- Maintaining and updating the plan, keeping it current in the face of changing conditions.

Our LHMP is being prepared by public safety officials and City staff, with support from members of the Laguna Beach Emergency & Disaster Preparedness Committee, other affected agencies, and technical consultants. Community input is vital to ensure that our plan reflects the opinions, concerns, and goals of

the community. The first of three community meetings will be held on Thursday, September 14, 2017 at [TIME] at [PLACE]. Come to the meeting and learn about the project, talk with our team, and share your thoughts about how we can make Laguna Beach more resilient.

Can't make the meeting? We'll be releasing an online survey soon that will let you weigh in on our plan. We'll also be hosting future meetings and events to get feedback and raise awareness about reducing the threat from disasters. To learn more, visit our project website at [WEBSITE] or contact [CONTACT PERSON] at [CONTACT INFORMATION].

Survey

The City of Laguna Beach recently started work on a Local Hazard Mitigation Plan (LHMP), a five-year strategy to identify and reduce the threats from natural and human-caused disasters to our community. This plan is being prepared by public safety officials and City staff, with support from members of the Laguna Beach Emergency & Disaster Preparedness Committee, other affected agencies, and technical consultants. It's vital to us that our LHMP reflects the opinions, concerns, and goals of our community members, which is why we want your input.

We've posted an online survey for all community members, which will help us better understand the issues important to you, how prepared we are as a community, and what actions we should take to be better prepared in the future. The survey should only take five to ten minutes of your time, and all responses are completely anonymous. Take the survey at [Link to survey], and encourage your family and friends in Laguna Beach to do the same.

To learn more about the Laguna Beach LHMP, visit our project website at [WEBSITE] or contact [CONTACT PERSON] at [CONTACT INFORMATION].

Public plan release

Since July of 2017, we've been working on a Local Hazard Mitigation Plan (LHMP), a five-year strategy to identify and reduce the threats from natural and human-caused disasters to our community. This plan is being prepared by public safety officials and City staff, with support from members of the Laguna Beach Emergency & Disaster Preparedness Committee, other affected agencies, and technical consultants. Feedback and comments from other Laguna Beach community members have helped to ensure that the plan reflects the opinions, concerns, and goals of our residents and businesses.

A first draft of the completed plan is now available, and we want your input. Tell us what you think about the plan and ways we can improve it. We want to hear all your ideas.

We'll integrate public comments into the plan prior to transmittal to state and Federal agencies. You can share your comments until [DATE]. You can read the plan here, [LINK]; and send your comments to [ADDRESS]. You can also come to our public meeting at [TIME] on [DATE] at [LOCATION] to talk to project staff and share your thoughts directly with the City Council and City staff.

SAMPLE PRESS RELEASE

The City of Laguna Beach has begun preparation of a Local Hazard Mitigation Plan (LHMP), a five-year strategic plan to improve local resilience to hazard events. Development of the plan, the first such plan for Laguna Beach, is being funded through a grant from the Federal Emergency Management Agency (FEMA). The plan is being prepared by public safety officials and City staff, with support from members of the Laguna Beach Emergency & Disaster Preparedness Committee, other affected agencies, and technical consultants. It will also incorporate regular feedback from key Laguna Beach community members. The City plans to release a draft of the plan for public review in January of 2018, with final adoption planned for summer of 2018 following approval from the California Office of Emergency Services and FEMA.

The Laguna Beach LHMP will summarize the natural and human-caused hazards that pose a threat to the community, including drought, flooding, earthquakes, and wildfires. As a part of this process, the plan will identify how climate change is expected to affect future hazards in Laguna Beach. The LHMP will analyze how community members, buildings, and infrastructure are vulnerable to the threats posed by these hazards. It will outline a Hazard Mitigation Strategy that will provide specific policy and action recommendations to City staff and community partners to improve overall resiliency to hazard events. The plan will also include steps to maintain it and keep it updated, including keeping the plan current in the face of changing conditions.

In addition to protecting Laguna Beach from current and future hazards, having an LHMP will allow Laguna Beach to be eligible for grants from FEMA for additional hazard mitigation efforts, under the provisions of the federal Robert T. Stafford Act and the Disaster Mitigation Act of 2000. It will also make Laguna Beach eligible to receive additional disaster relief funding from the State of California, per California Government Code Section 8685.9.

How can we help you?

Local Hazard Mitigation Plan

The City of Laguna Beach is preparing a Local Hazard Mitigation Plan, or LHMP. This plan will help create a safer community for residents, businesses, and visitors. The LHMP allows public safety officials and city staff, elected officials, and members of the public understand the threats from natural and human-caused hazards in our community. The plan will also recommend specific actions to proactively decrease these threats before disasters occur.

If you want to provide input please use this link to a short survey: http://bit.ly/2iH7eLY

To listen to our radio interview about the Hazard Mitigation Plan on KX 93.5 FM click here!

Why have an LHMP?

An LHMP will let Laguna Beach plan for future emergencies. Usually, after a disaster occurs, communities take steps to recover from the emergency and rebuild. A LHMP is a way for the City to become more prepared in advance of these disasters, so when they do occur, less damage occurs and recovery is easier. Our community can use LHMP strategies to reduce instances of property damage, injury, and loss of life from disasters. Besides protecting public health and safety, this approach can save money. Studies estimate that every dollar spent on mitigation saves an average of four dollars on response and recovery costs. An LHMP can also help to strengthen the mission of public safety officers, such as police and fire department staff, providing them with clear roles and responsibilities to build a safer community.

Besides helping to protect Laguna Beach, our LHMP will make the City eligible for grants from the Federal Emergency Management Agency (FEMA) that can be used to further improve safety and preparedness in the community. Having an adopted LHMP can also make Laguna Beach eligible to receive more financial assistance from the State when disasters do occur.

What is in our LHMP?

The City of Laguna Beach plans for our LHMP to have four main sections:

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- A hazard mitigation strategy, which will lay out specific policy recommendations for Laguna Beach to carry out over the next five years. These recommendations will help reduce the threat that our community faces from hazard events.
- A section on maintaining the plan, which will help ensure that our LHMP is kept up-to-date. This will make it easier for us to continue to proactively protect ourselves, and will also keep the City eligible for additional funding.

What hazards will our LHMP help protect against?

The City plans to include the following natural hazards in our LHMP:

Drought, extreme heat, floods, geologic and seismic hazards, nuclear hazards, severe weather, and wildfire.

Our LHMP will also look at how climate change may affect these hazards, and may include other hazards that pose a threat to our community.

How is our LHMP being prepared?

The City has assembled a Hazard Mitigation Planning Committee (HMPC), which includes representatives from public safety officials and City departments, and will guide the overall development of our LHMP. The HMPC is supported by engaged private citizens on the Laguna Beach Emergency & Disaster Preparedness Committee, key stakeholders, and technical consultants. Together, these participants form the project team responsible for preparing our plan.

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- The City will release an online survey to members of the public in the fall of 2017, asking for information about past experience with natural hazards and how our LHMP can be the most useful. Take the survey when it come out, and encourage your friends and family to do the same.
- The City will release a draft of the completed LHMP for public review. Please review and provide comments on this document, either at in-person meetings or in writing.

- Reach out to the project team (Project Lead - Jordan Villwock, jvillwock@lagunabeachcity.net or 949-497-0389) for more ways to stay involved.

What can I do now to be better prepared for disasters?

- Know the hazards that may affect you at your home, work, or school. You can find out more at http://myhazards.caloes.ca.gov
- Assemble an emergency kit for your home. In a disaster, you may have to rely on supplies in your emergency kit for at least three days. Be sure to include supplies for any pets and anyone in your home with special needs. Learn more at www.readyoc.org.
- Have a disaster plan for your household, including how people should contact each other if a disaster occurs and where you should meet.
- Learn about your neighbors and how to help them. In a disaster, emergency responders may not be able to reach your neighborhood for a while. Know if you neighbors have any special needs, and be sure to check on them as soon as you can.
- Make sure your homeowner's or renter's insurance covers you from disasters such as earthquakes and floods. If these disasters occur, having good insurance coverage will help you recover easier.
- Volunteer with an emergency response or community service organization that does work on disaster education and preparation.
- Join Laguna Beach's Community Emergency Response Team (CERT), a group of volunteers trained by the Laguna Beach Police & Fire Departments to assist emergency responders during diasters. Training is free and offered at times throughout the year. Learn more at http://www.lagunabeachcity.net/cityhall/police/emergprep/cert.htm.

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(949) 497-0771 *(fax)*
Contact Us

Employee Directory
Employee OWA
Privacy Policy

Community Kick Off Meeting

Local Hazard Mitigation Plan
City of Laguna Beach

Agenda/Overview

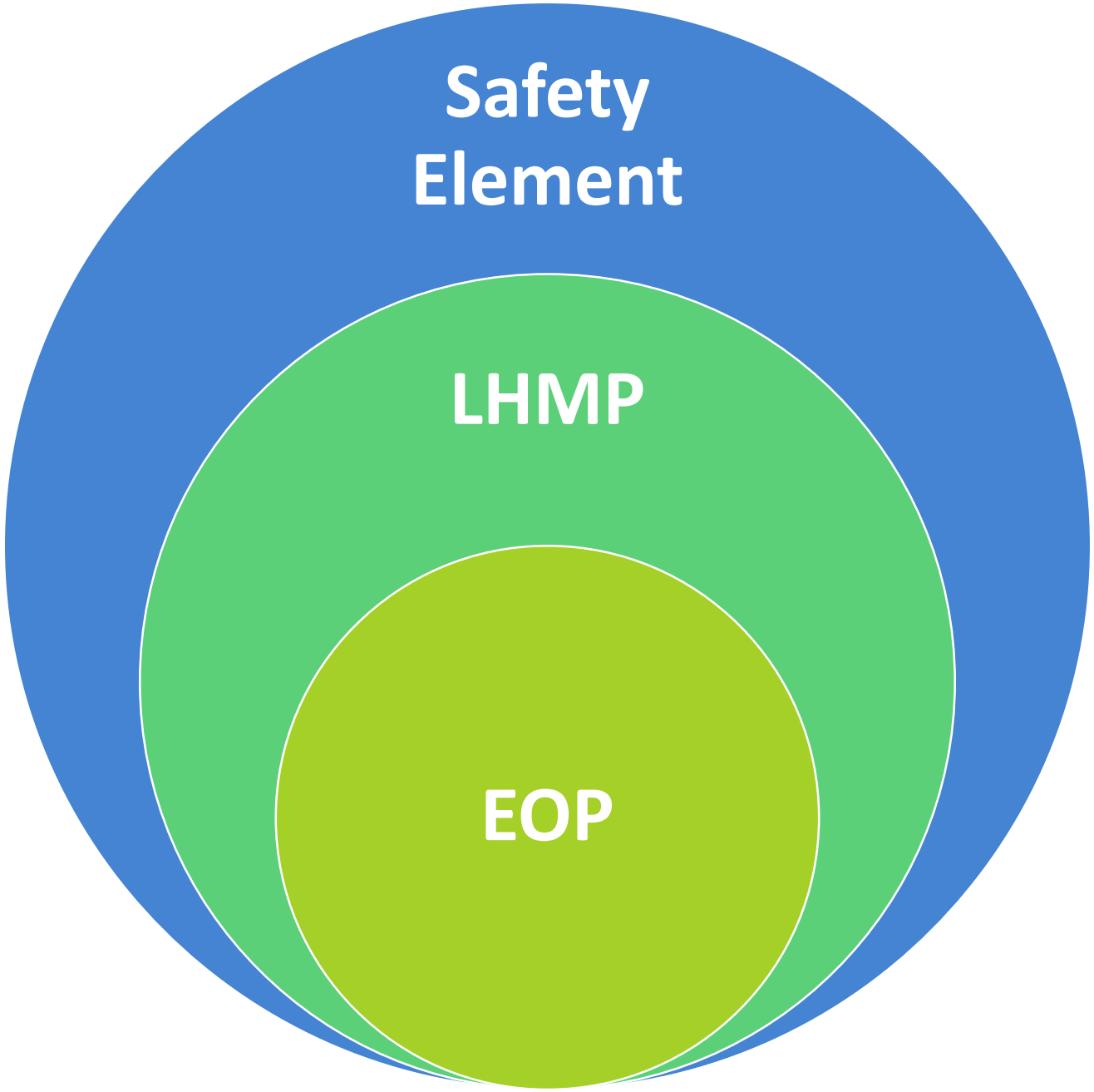
- Welcome/Introductions
- Project Background
- Project Funding
- Hazard Mitigation Planning Committee
- Overview of a Local Hazard Mitigation Plan
- Overview of the Project Work Plan (Community Input)
- Public Engagement Opportunities
- Questions and Answers

Project Background

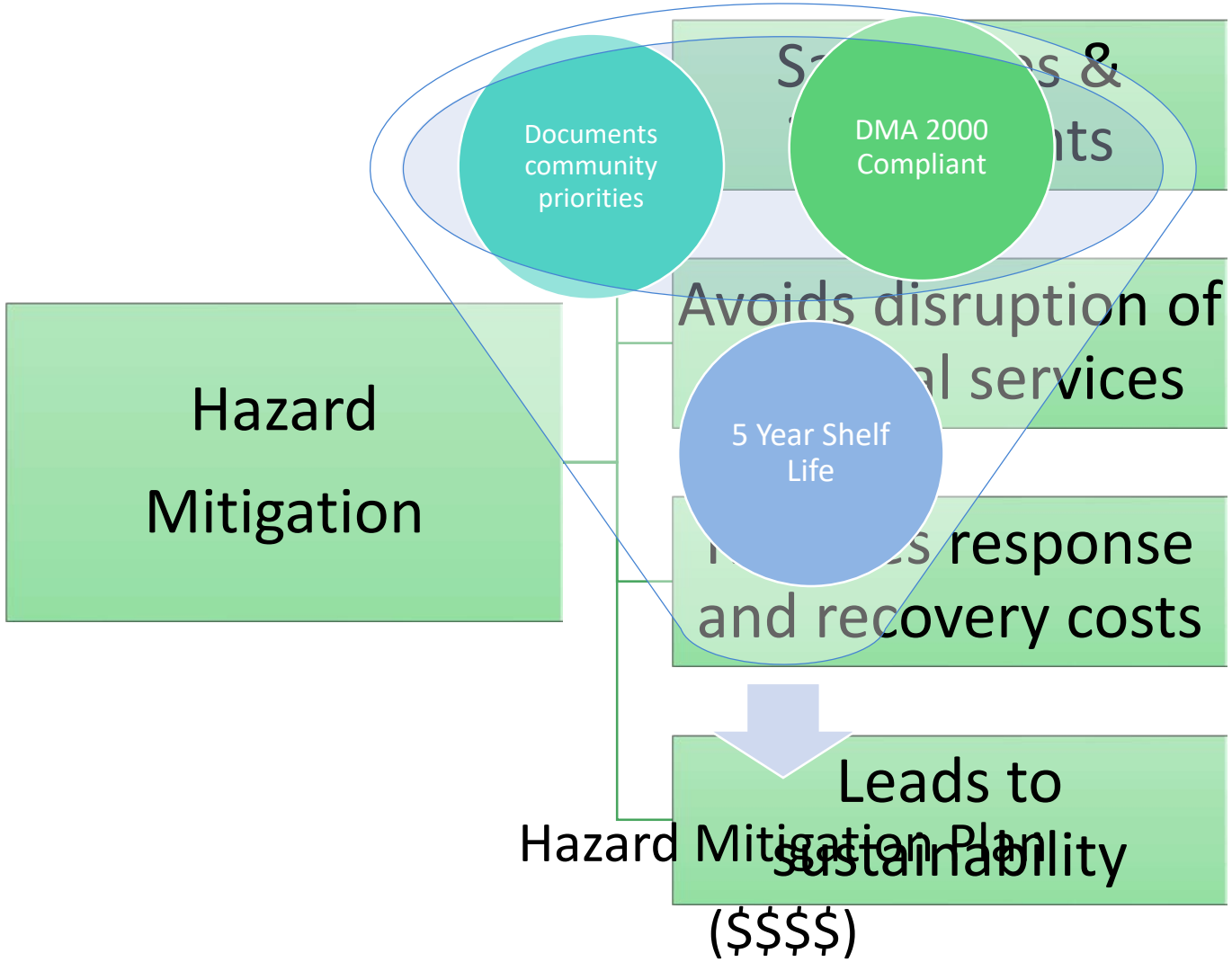
What	Who	Why
• Preparation of a Local Hazard Mitigation Plan (LHMP)	• Led by Laguna Beach Emergency Management Division	• Assist the City with future mitigation grant opportunities

How

- Integrate the LHMP with the City's General Plan Safety Element to comply with recent legislation



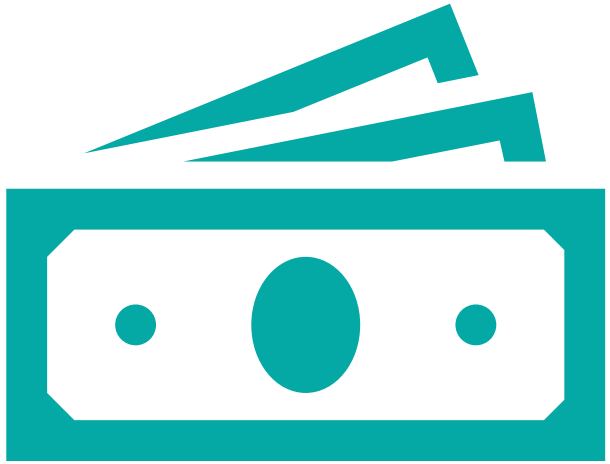
What is Hazard Mitigation (Plan)



Project Funding

- City Received a Grant from the Federal Emergency Management Agency (FEMA)

- City staff time applies to the matching funds requirement of the grant



Address Local Laguna Issues

- Topographic Challenges
- Circulation Constraints
  - Evacuation
  - Congestion
- Past Hazards
  - Wildfires
  - Floods
  - Landslides

Hazard Mitigation Planning Committee

- Administrative Services
- Public Works Department
- Fire Department
- Community Development Department
- Community Services
- City Manager's Office
- Water Quality
- Marine Safety Department

Residents and Businesses

- Police Department (Project Lead)

External Stakeholders

Misconceptions

"Laguna Beach must have an LHMP to receive disaster relief funding". ➡ FALSE

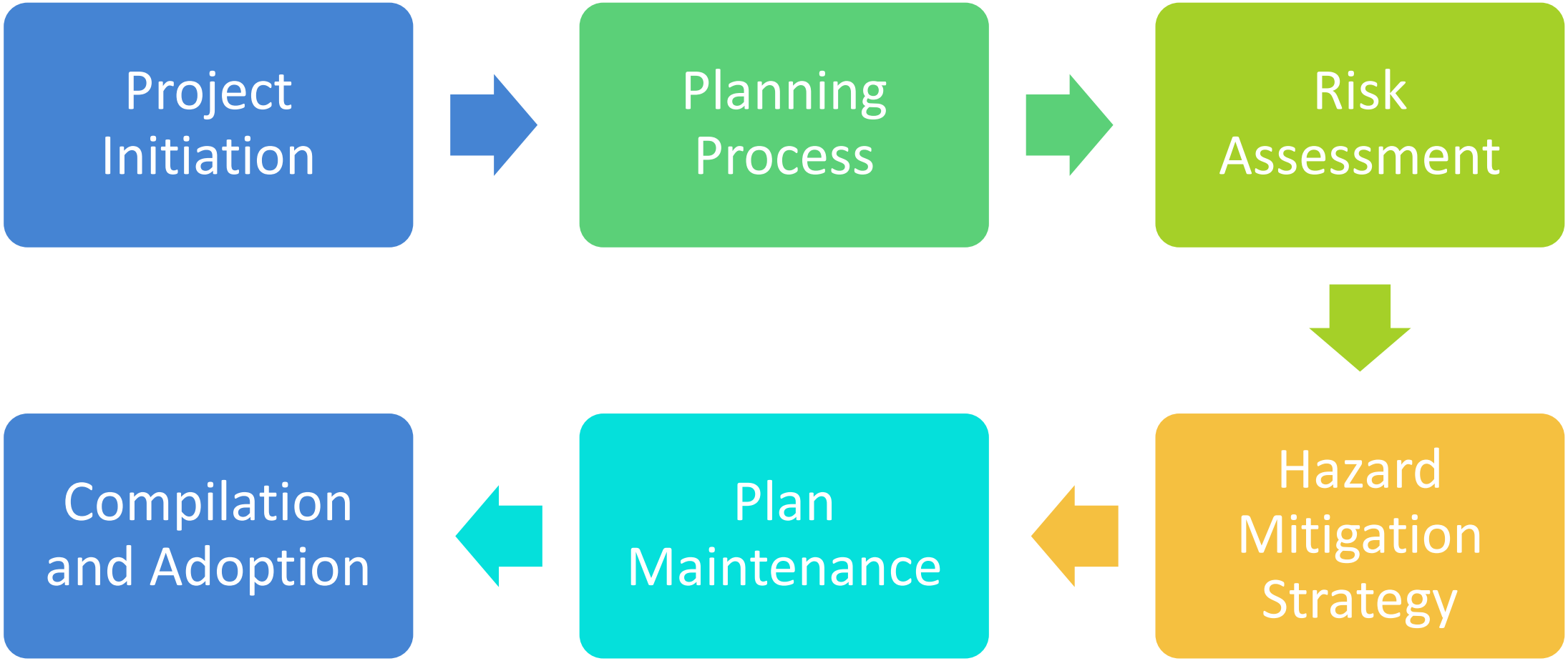
In actuality, communities are eligible for federal disaster relief funding regardless of whether they have an LHMP or not. However, the State of California limits its share of disaster relief funding to 75 percent of the costs not paid by the federal government unless the community has a valid LHMP, at which point the State may pay more than 75 percent.

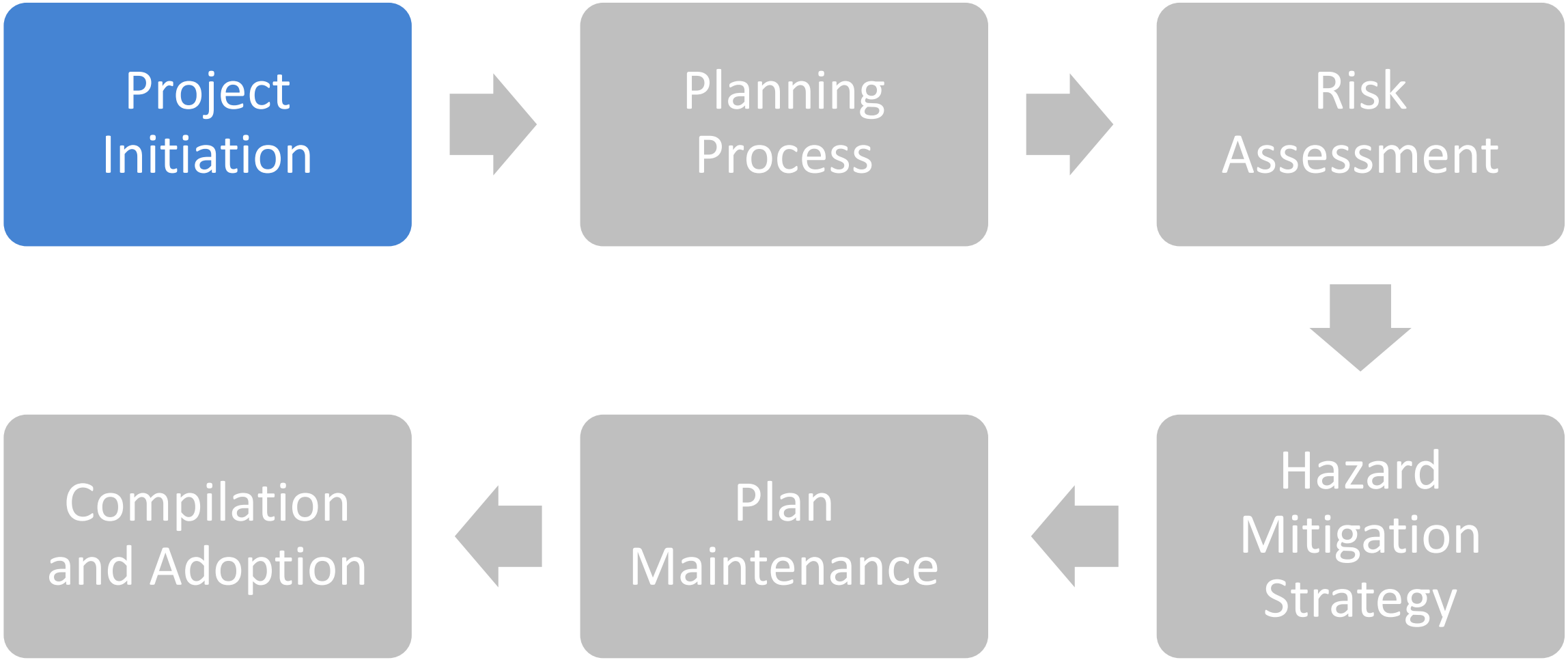
Misconceptions

"The LHMP must analyze all potential hazards". ➡ **FALSE**

An LHMP must only look at natural hazards. Human-caused hazards may be included for the sake of improving overall community safety, but are not necessary. FEMA only provides funding to help mitigate natural hazards.

Overview of the Plan Development Process





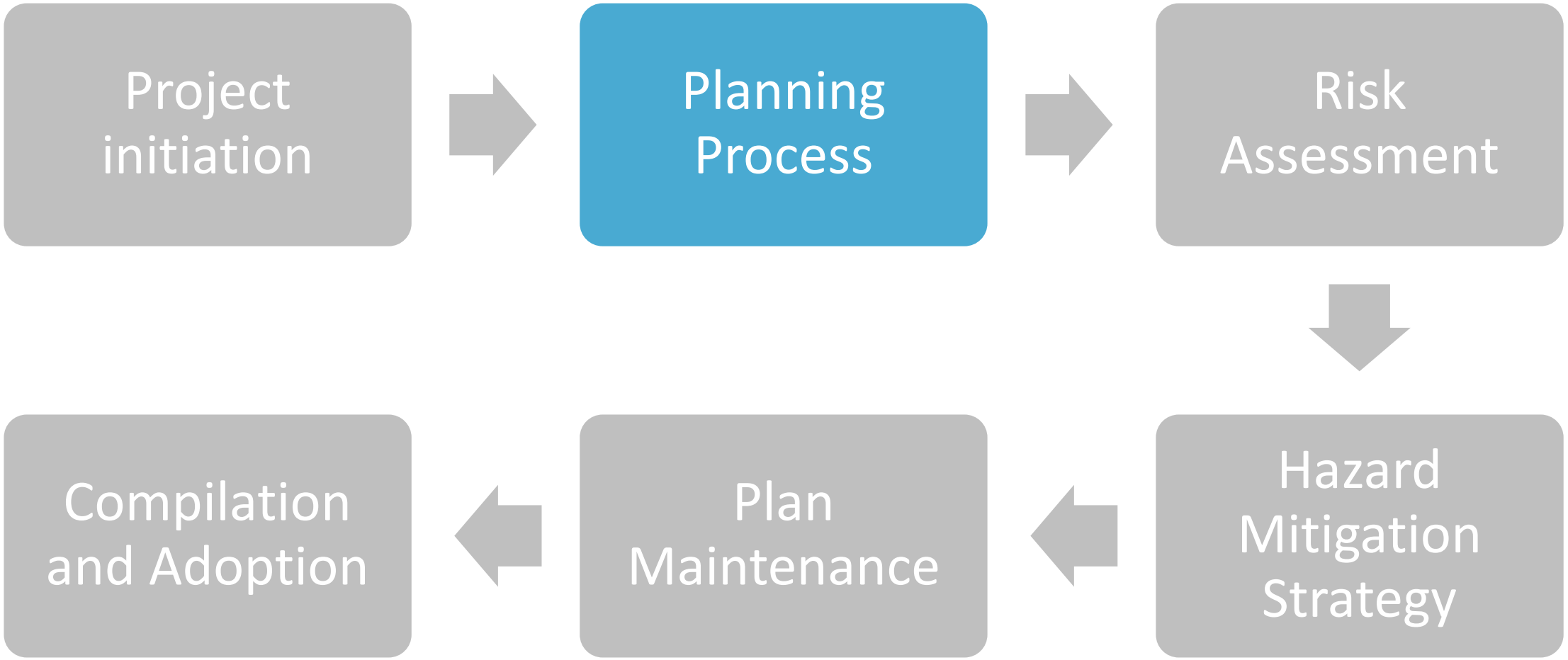
» Establish Project Goals

» Determine Format/ Content

» Finalize Plan Approach

» Collect Data

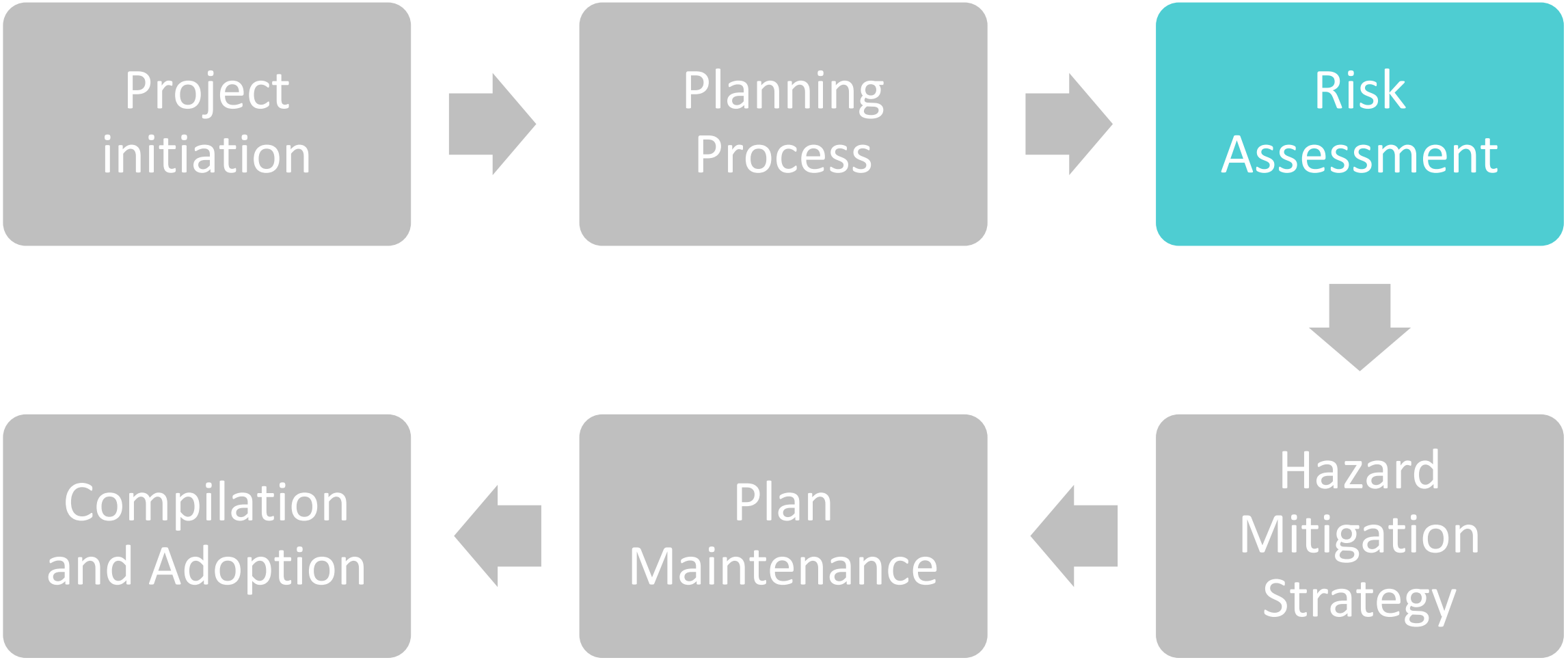
PLACEWORKS



» Convene Hazard Mitigation Planning Committee (HMPC) meetings

» Conduct community outreach
- Public meetings (3)
- Online and media engagement

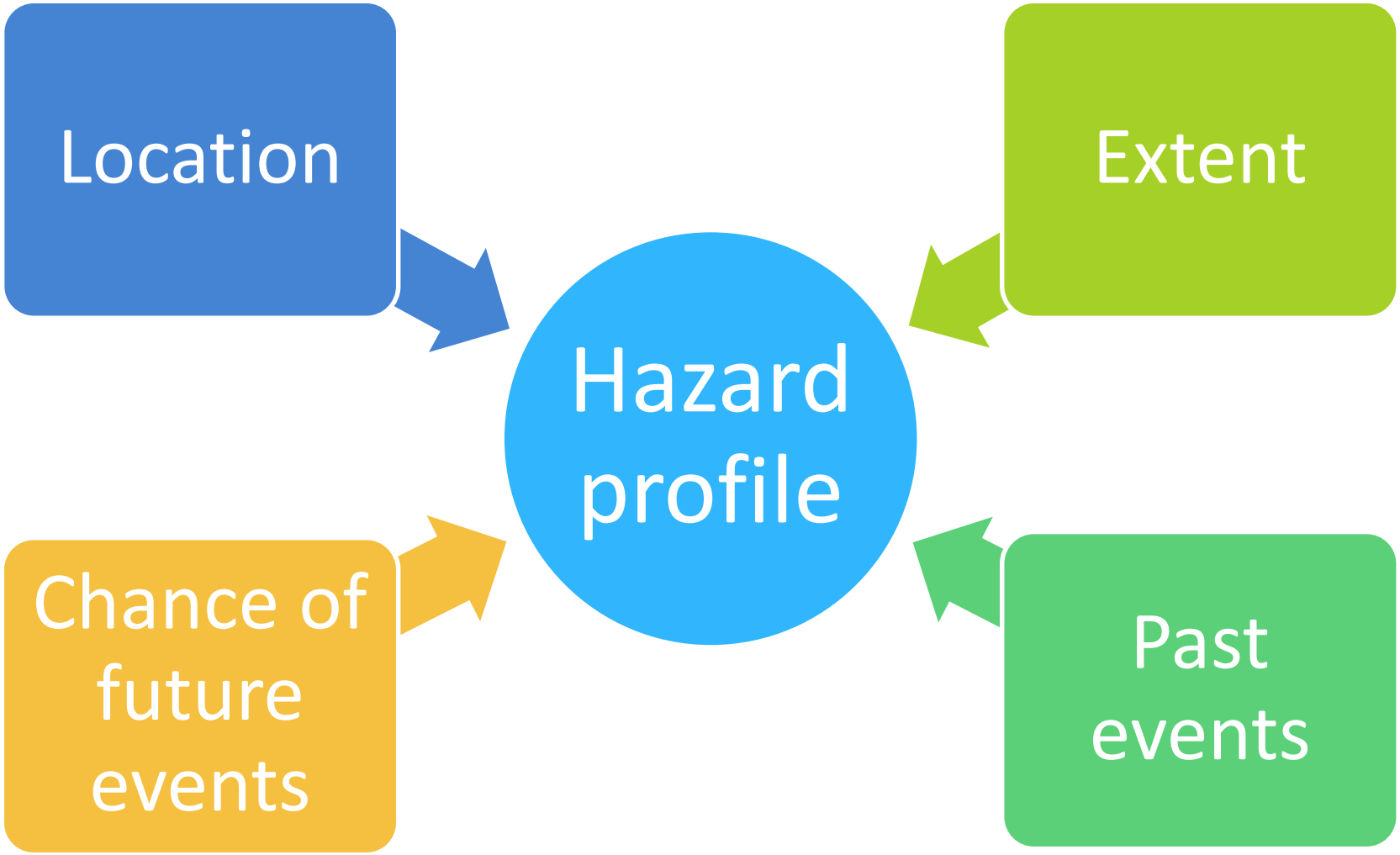
PLACEWORKS



» Determines overall threat to community

» Two components
- Hazard profiles
- Vulnerability assessment

PLACEWORKS



- Describes hazards that affect community
- Explains why some hazards are excluded

Dot Exercise

PLACEWORKS

Impacts of each hazard

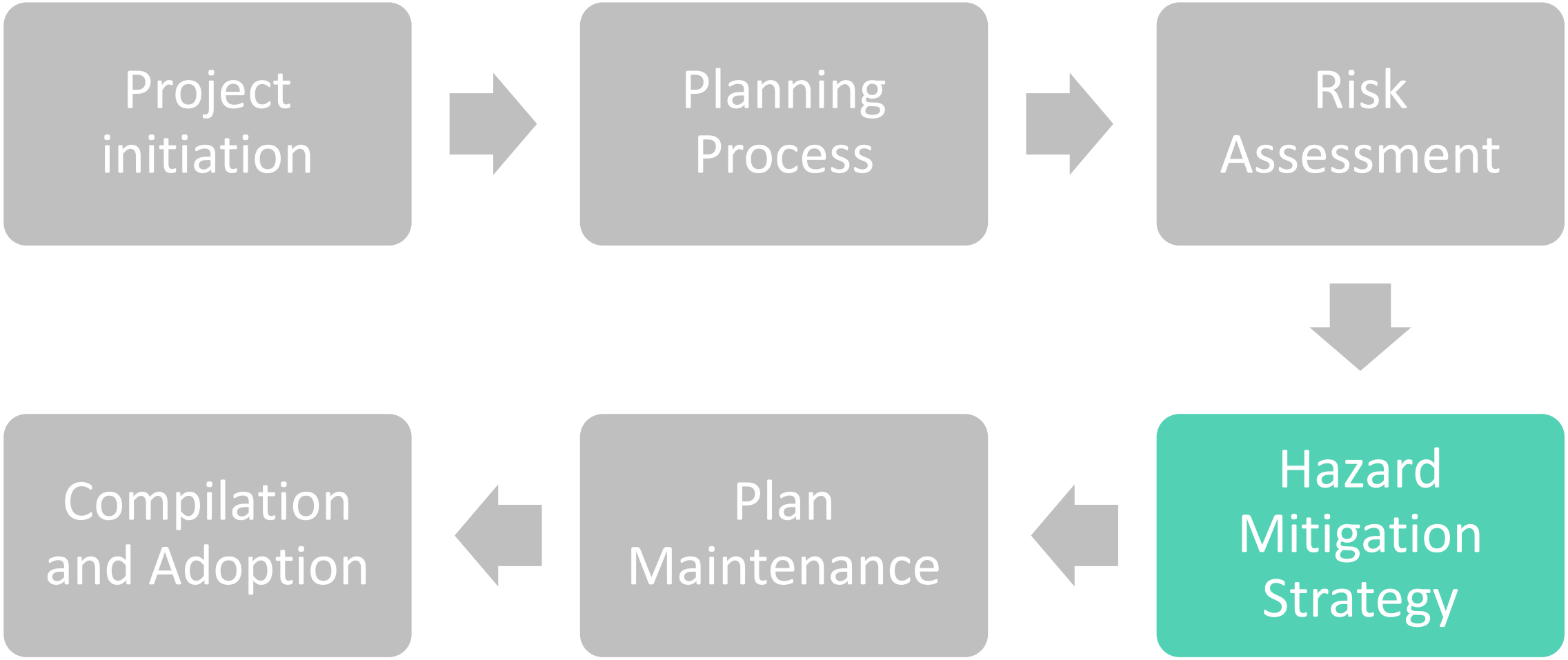
Vulnerability to each hazard

Vulnerability Assessment

Repetitive loss properties

Potential dollar losses

PLACEWORKS



» Mitigation Actions

- Future steps undertaken by the City to reduce potential vulnerabilities

PLACEWORKS

Mitigation Strategies/Actions

Goals

- Overarching objectives

Strategies

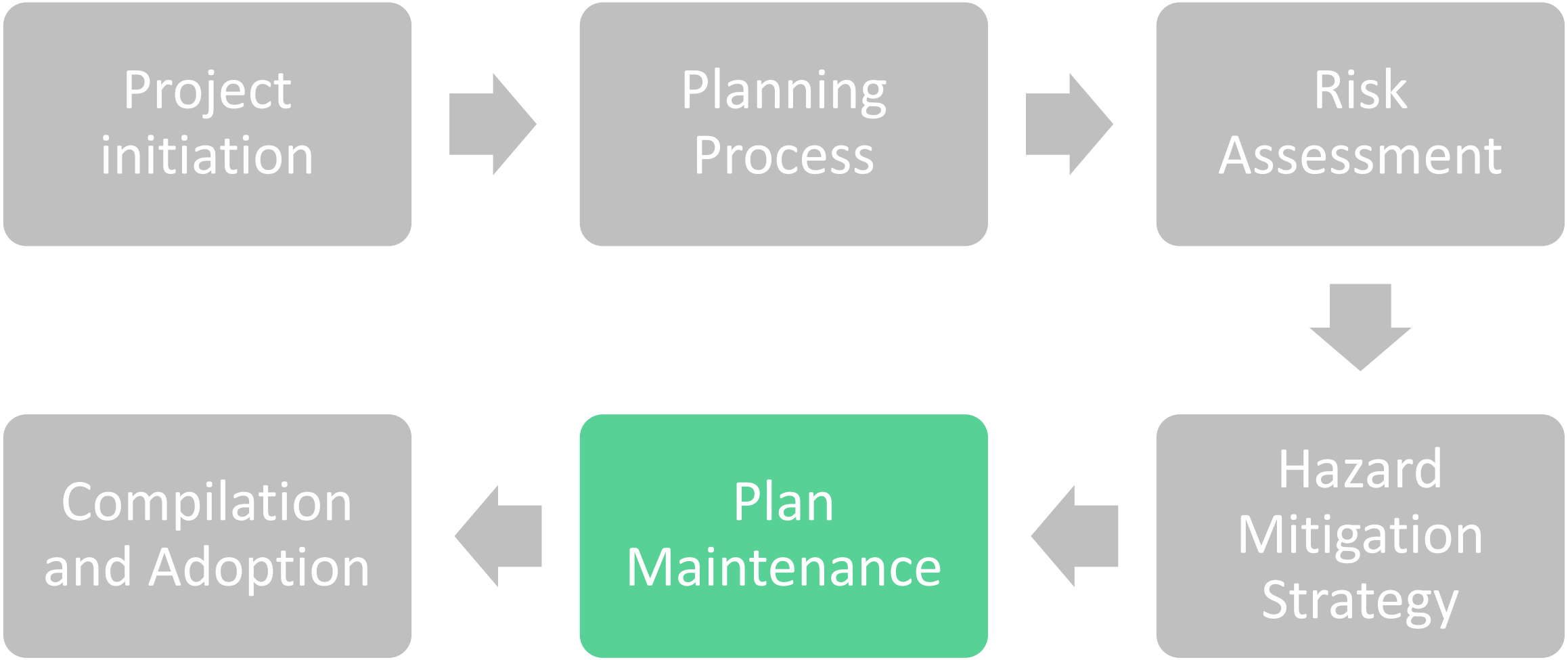
- Comprehensive, specific measures

Action plan

- Prioritizes measures
- Includes implementation details

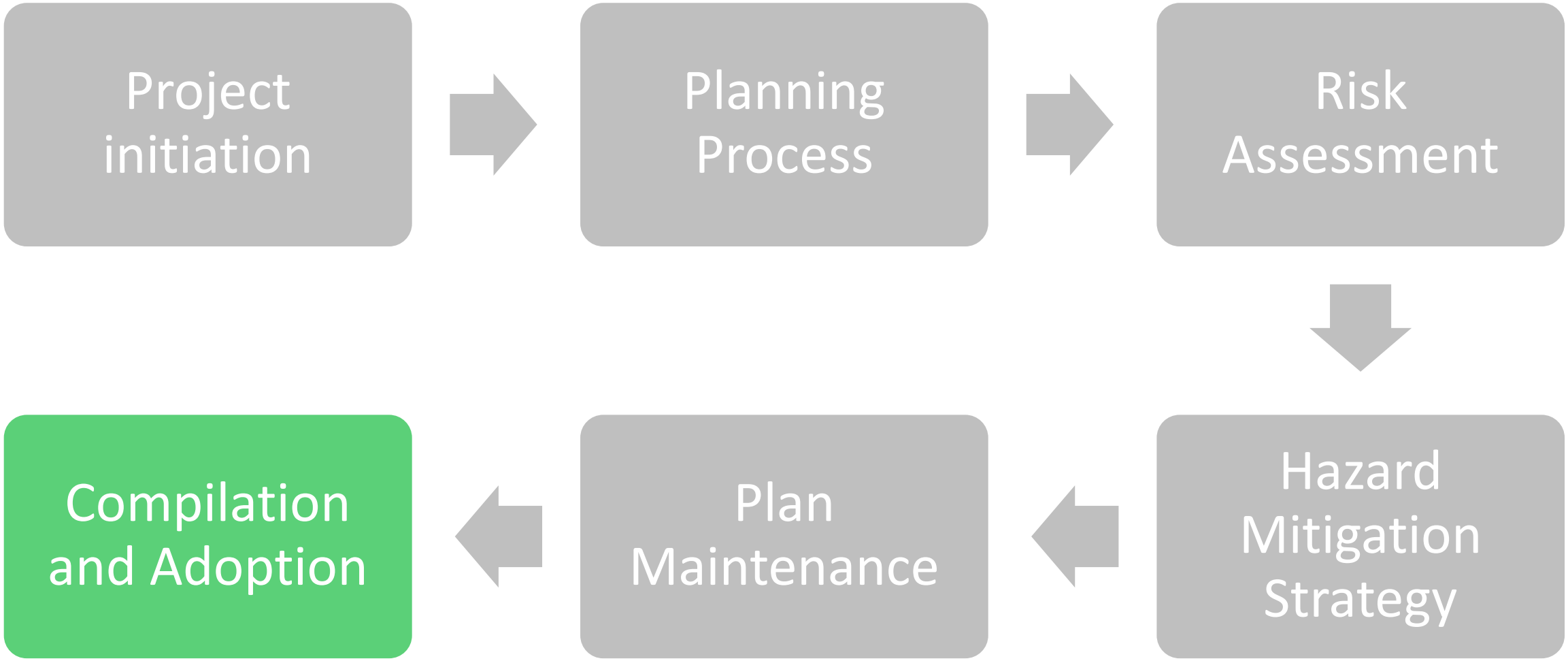
Post-It Note Exercise

PLACEWORKS



- Ensures plan remains valid during five-year horizon
- Includes regular updates on implementation
- Provides guidance for future updates

PLACEWORKS



- Public review
- Approval from Cal OES and FEMA
- Final City Council adoption

PLACEWORKS

Public Engagement Opportunities

Project initiation	Planning Process	Risk Assessment	Hazard Mitigation Strategy	Plan Maintenance	Compilation and Adoption	Plan Adoption upon FEMA Approval
	Community Kick Off Meeting Online Survey Social Media Updates	Hazard Profiles Workshop Social Media Updates			LHMP Public Review Period Public Meeting Social Media Updates	City Council Adoption Hearing

How to Stay Engaged/Informed

Laguna Beach LHMP Website

http://www.lagunabeachcity.net/cityhall/police/emergprep/local_hazard_mitigation_plan.htm

Laguna Beach LHMP Survey

http://bit.ly/2iH7eLY

Social Media

- Nextdoor, Facebook, Twitter

Questions/Answers

If you have additional questions, please contact:

City of Laguna Beach
Jordan Villwock, Emergency Operations Coordinator
Phone: (949) 497-0389
Email: **jvillwock@lagunabeachcity.net**

PlaceWorks
Aaron Pfannenstiel, LHMP Project Manager
Phone: (909) 989-4449, extension 2201
Email: **ajp@placeworks.com**

City of Laguna Beach
Local Hazard Mitigation Plan | Community Kick-Off Meeting

Name	City of Residence	How did you hear about the meeting?	What is your email address?	May we contact you with news and updates about the LHMP?
Jerry Myers	Laguna Beach	EDPC	[redacted]	YUP
Ed Leiby	LAGUNA BEACH	E-MAIL	[redacted]	ES
CHRIS TOMLIN	Laguna Beach		[redacted]	Yes
Renea Sendele	Laguna Beach	Newpaper	[redacted]	Yes
~~KAREN~~ KLAMMER	LB	email	[redacted]	Yes
BETH JOHNSEN	LB	Next door	[redacted]	yes!
~~ARNDI~~ JOSEPHSON	L.B.	" "	[redacted]	
MATT LAWSON	L.B.	LHMP meeting	[redacted]	YES!
Karen Jenks	LB	Nextdoor	[redacted]	Yes

The email addresses of attendees have been redacted to protect their privacy

City of Laguna Beach
Local Hazard Mitigation Plan | Community Kick-Off Meeting

Name	City of Residence	How did you hear about the meeting?	What is your email address?	May we contact you with news and updates about the LHMP?
Larry Ulvestad	LB	Email	[redacted]	Yes
working on CO Managing Laguna's largest underground utility district – Woods Cove				
Martha Hernandez	OM	Email from City LBS Director of care mgm.	[redacted]	yes
WADE BROWN	SAN CLEMENTE	CITY OF LAGUNA BEACH		
Robert Adler	LB	STU NEWS?	[redacted]	

The email addresses of attendees have been redacted to protect their privacy

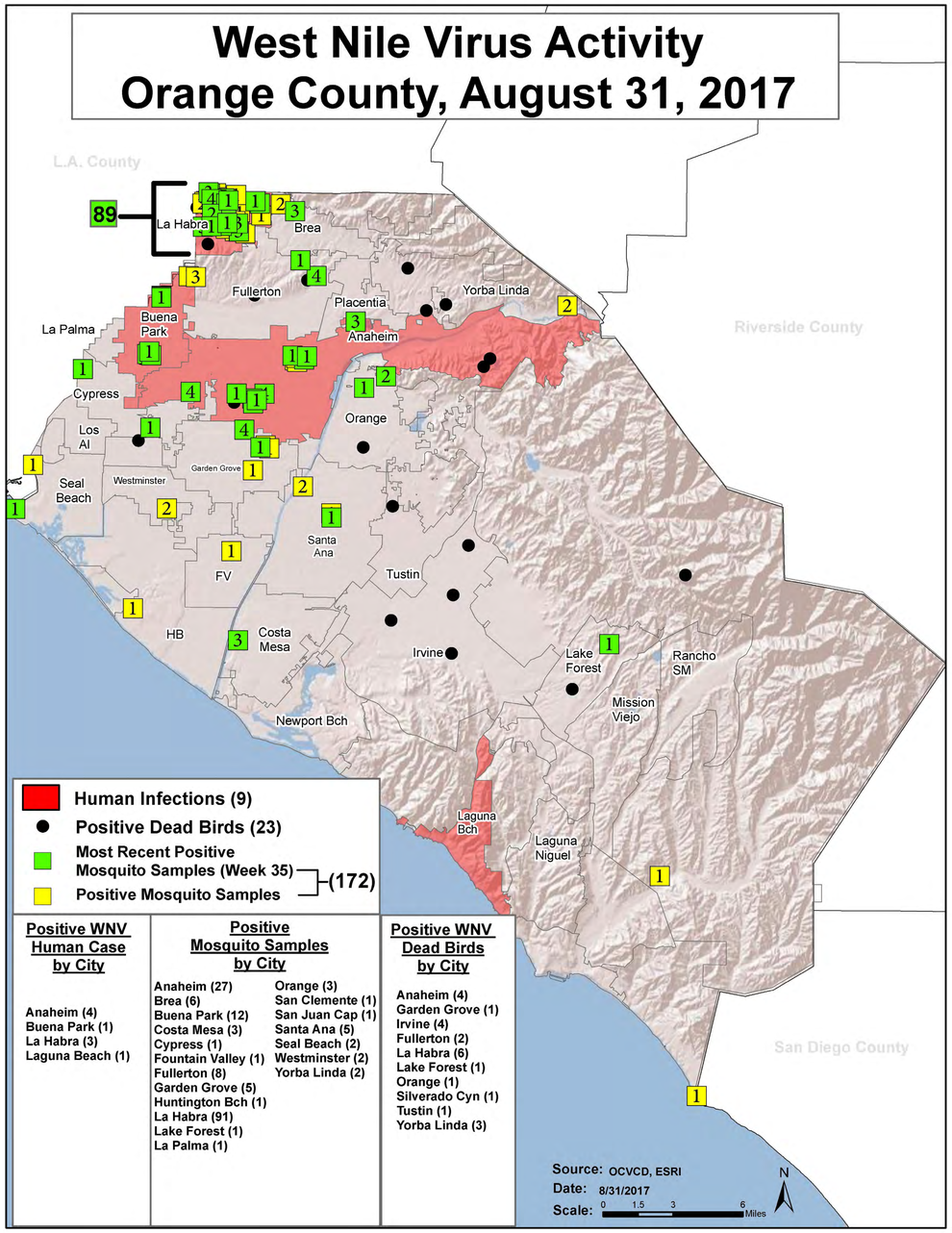
Disease and Pest Management

Medium Concern

- Greatest concern associated with influenza, mosquitos, ticks, and mice & rats

- Young children, senior citizens, and immuno-compromised persons face the greatest risk

- Climate change expected to increase temperatures, which may increase risk of disease exposure



Coastal Hazards

Medium Concern

Erosion

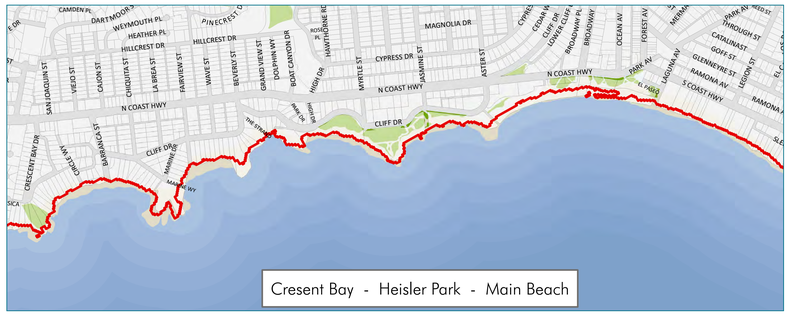
Shoreline erosion can vary from 10 inches to 2.5 feet each year.

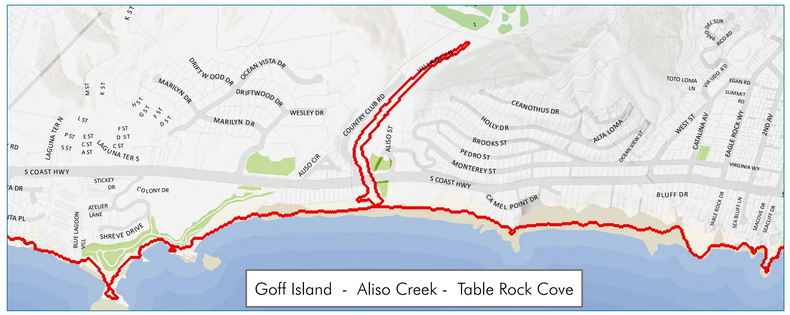
Average rate of cliff failure is 0.25 to 0.75 meters per year.

- It is expected that climate change will exacerbate coastal hazards and increase the rate of erosion in some areas
- Future updates to the LHMP can incorporate new information

Sea Level Rise

Sea level rise is mostly a threat to beach areas, but Main Beach Park and Aliso Creek areas are also at risk.



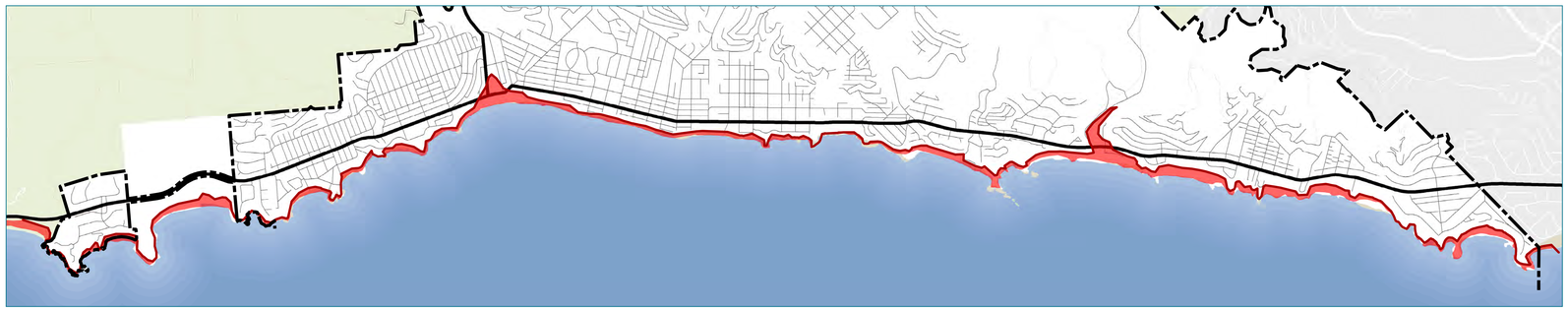


6 ft Sea-Level Rise

Tsunami

Tsunamis are mostly a threat to beach areas, but Main Beach Park and Aliso Creek areas are also at risk.

"Megatsunamis" are unlikely, but significant tsunamis are possible.



Tsunami Inundation Line | Tsunami Inundation Area | City Boundary

Human-Caused Hazards

Medium Concern

Infrastructure Failure

Infrastructure that could fail includes water and sewer lines, water tanks, natural gas pipes, and power lines.

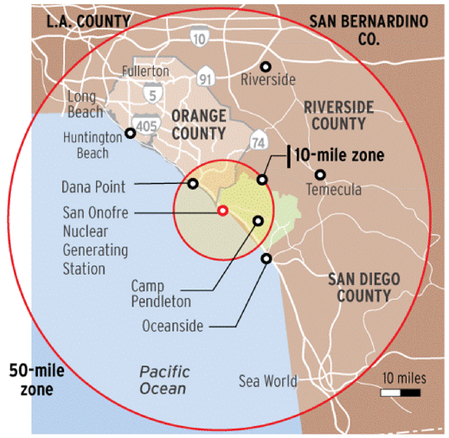
Failure can cause wildfires, landslides, flooding, and environmental health risks.

Nuclear Hazards

There is a potential but unlikely risk of radioactive material release from San Onofre. Laguna Beach is (just) outside of the 10-mile emergency planning zone.

What a 50-mile evacuation zone would look like here

The U.S.-recommended evacuation zone for the Fukushima nuclear power plant accident in Japan was 50 miles. A 10-mile emergency planning zone is currently in place for San Onofre.



Sources: The Associated Press, Southern California Edison **The Register**

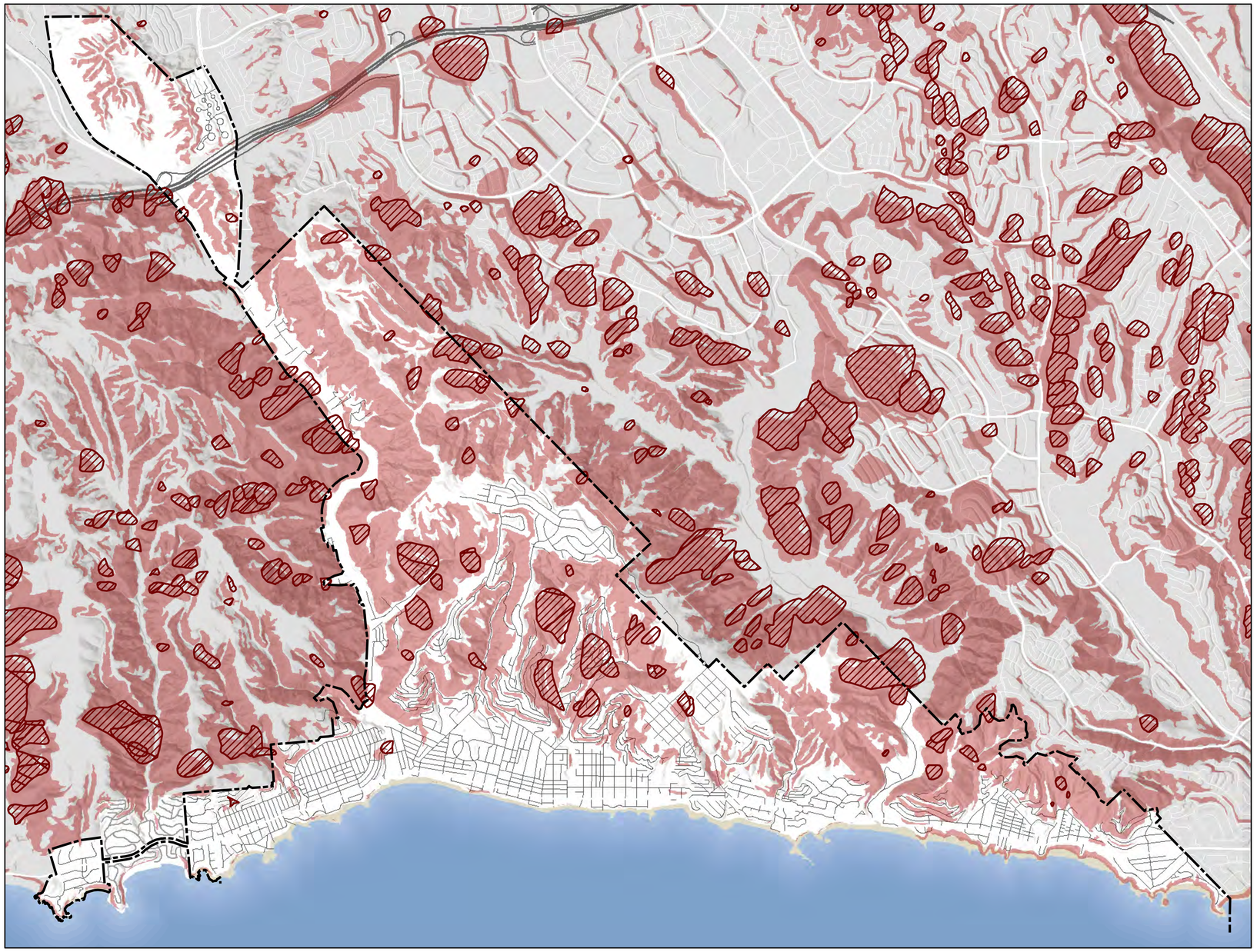
Terrorism

Threats associated with terrorism are difficult to predict. As a major destination for tourists, the City can be considered a potential target. Coordination with local and regional partners will be an important component of threat detection.

Landslides and Mudflow

High Concern

- Most hillside areas and some coastal bluffs are at risk of landslides
- Several landslides have occurred in the past, usually associated with significant rain events
- Mudflows can occur in many of the landslide-prone areas and can be exacerbated in wildfire impacted areas
- Climate change may cause heavier precipitation events that could increase this risk



Area Where Landslide Has Already Occurred

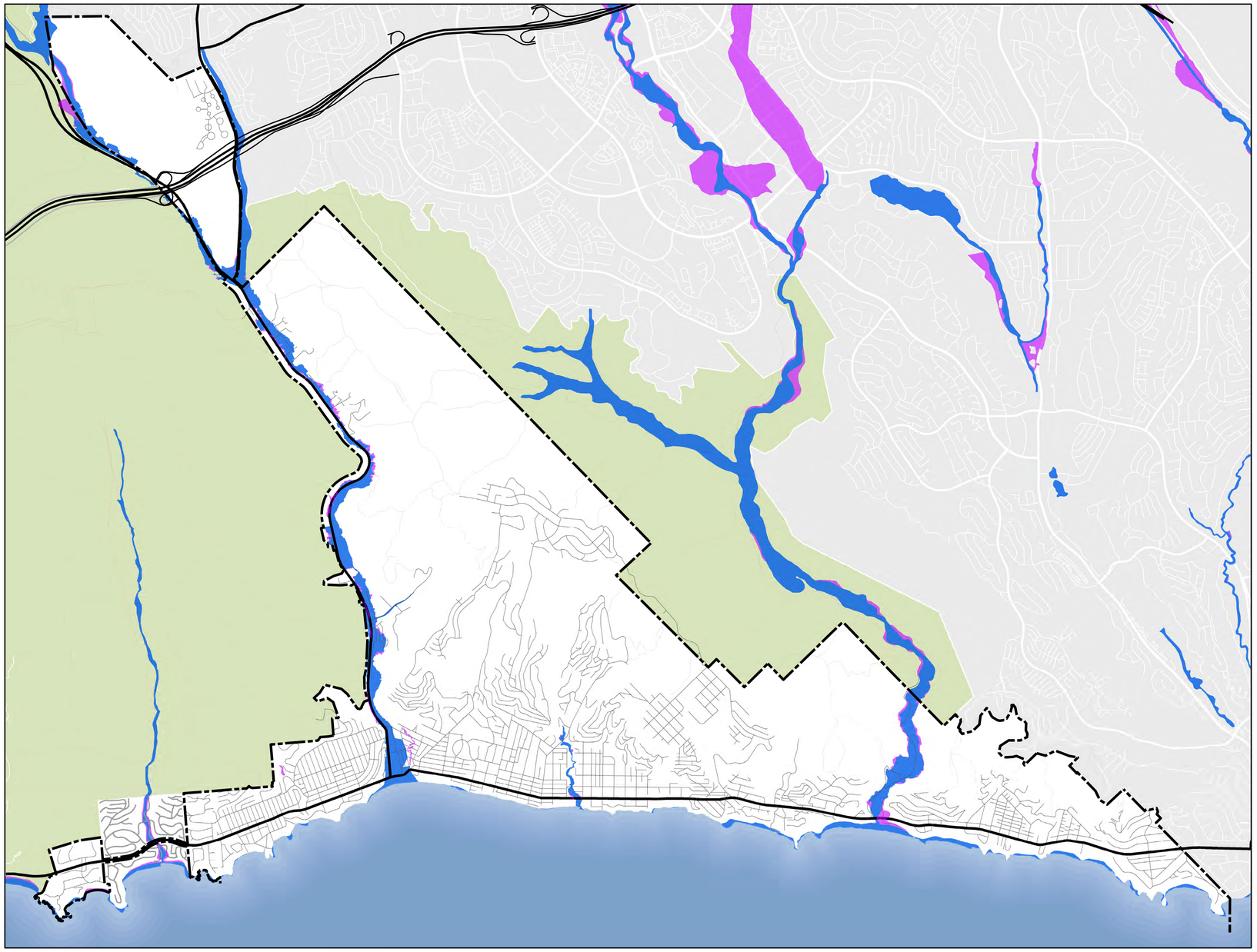
Earthquake-Induced Landslide Zones

City Boundary

Floods

High Concern

- Downtown and Aliso Canyon are the largest high-risk areas
- City storm drains are often overwhelmed by heavy rains
- Storm intensity may increase because of climate change, creating a risk of more frequent or intense floods



500-Year Flood Zone

100-Year Flood Zone

City Boundary

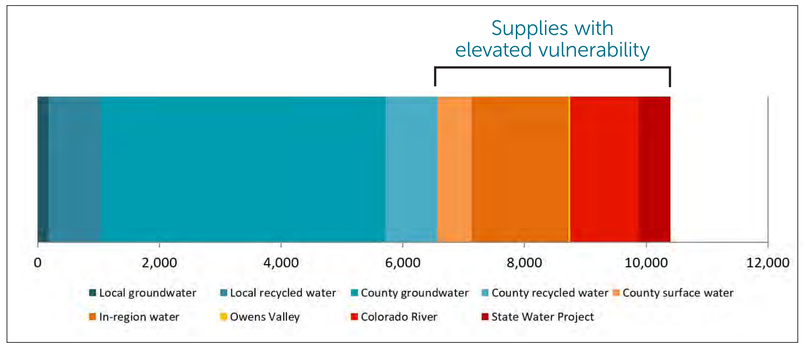
Extreme Weather

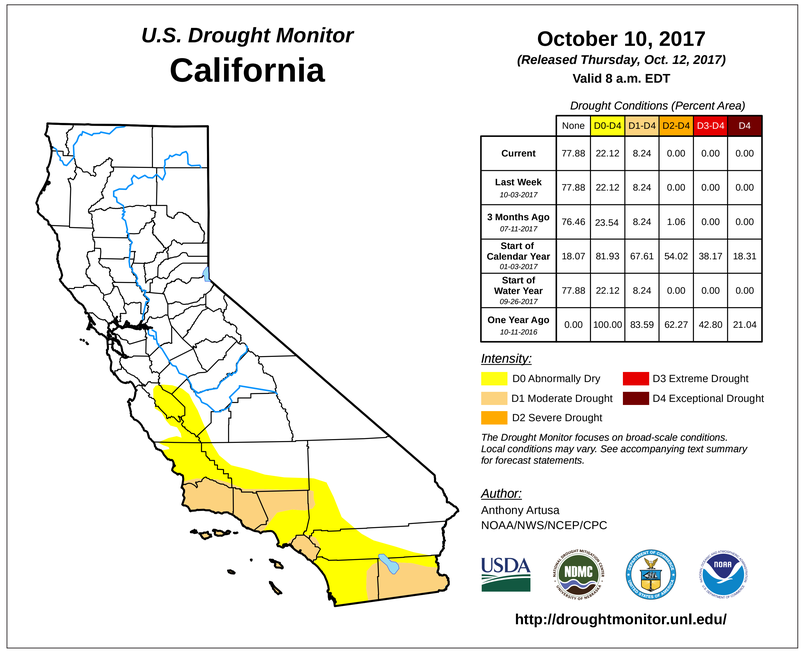
High Concern

- Climate change is expected to result in more extreme weather

Drought

Drought risk, especially for surface water supplies, remains high.





	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	77.88	22.12	8.24	0.00	0.00	0.00
Last Week *10-03-2017*	77.88	22.12	8.24	0.00	0.00	0.00
3 Months Ago *07-11-2017*	76.46	23.54	8.24	1.06	0.00	0.00
Start of Calendar Year *01-03-2017*	18.07	81.93	67.61	54.02	38.17	18.31
Start of Water Year *09-26-2017*	77.88	22.12	8.24	0.00	0.00	0.00
One Year Ago *10-11-2016*	0.00	100.00	83.59	62.27	42.80	21.04

Severe Storms

Severe storms occur occasionally, creating risks of flooding, power outages, landslides, and wildfires.

Wind

High winds occur occasionally, creating risks of flooding, power outages, landslides, and wildfires.

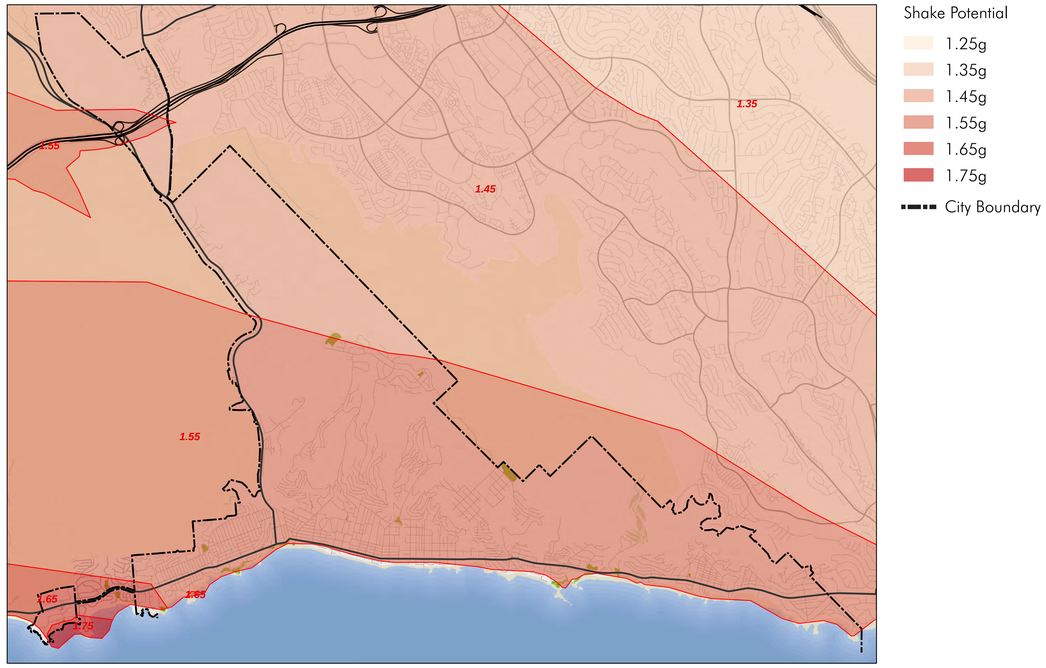
Seismic Hazards

High Concern

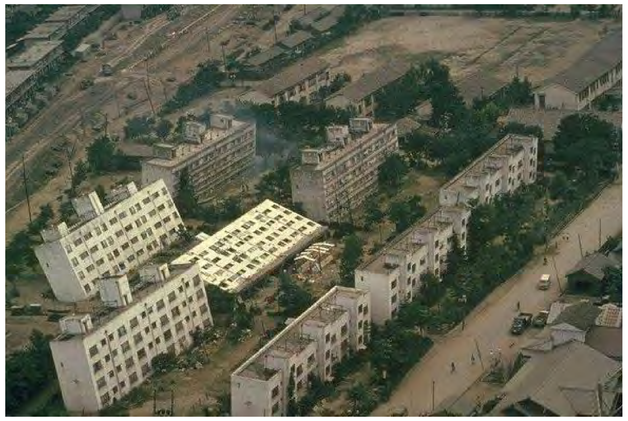
Ground Shaking

Earthquakes on the nearby Newport-Inglewood Fault would likely cause the most damage due to distance (~2 miles from City). The risk from a significant earthquake is lower along the Newport-Inglewood Fault than a major quake along the San Andreas Fault.

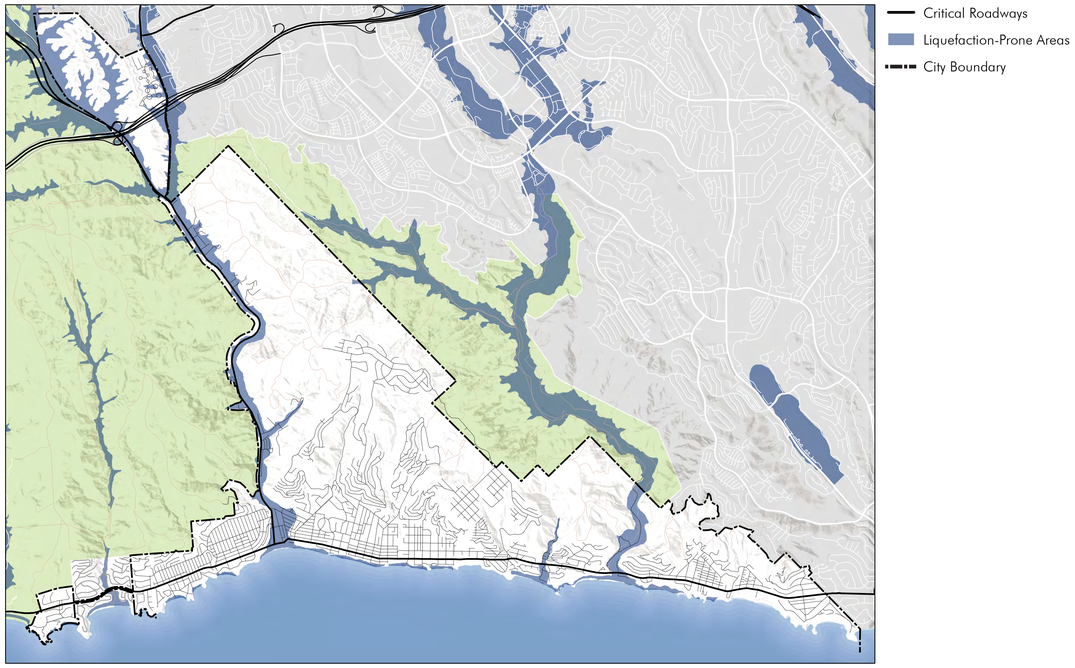
Earthquake risk is greater from large regional faults (i.e. San Andreas), but damage in Laguna Beach would be moderate due to distance from fault (greater than 50 miles).



Liquefaction



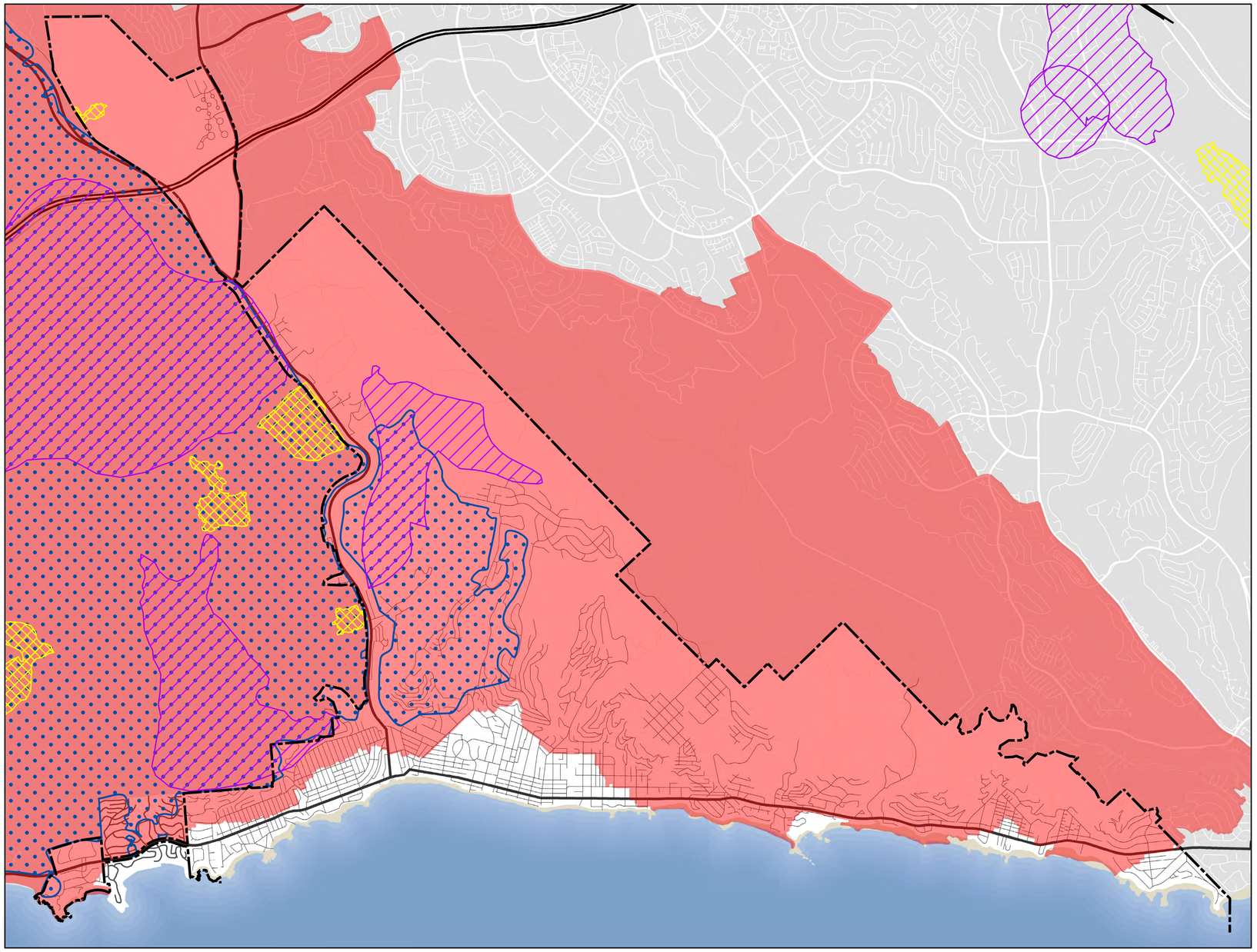
Risk of liquefaction greatest in Laguna and Aliso Canyons.



Wildfire

High Concern

- 1993 fire was one of the most damaging in state history
- Limited evacuation routes increases the threat from major wildfires
- Climate change is expected to increase temperature, cause more frequent droughts, and adjust precipitation patterns, potentially altering wildfire risks



Pre 1993 Fires Burn Areas
1993 Fire Burn Areas
Post 1993 Fires Burn Areas
Very High Fire Severity Zone
City Boundary

Hazard Ranking Worksheet

HAZARD TYPE	PROBABILITY	IMPACT			TOTAL SCORE	HAZARD PLANNING CONSIDERATION
		LOCATION	PRIMARY IMPACT	SECONDARY IMPACTS		
Seismic Hazards*	4	4	4	4	64.00	High
Seismic Shaking						
Liquefaction						
Wildfire*	4	4	4	4	64.00	**High**
Extreme Weather*	3	4	4	4	48.00	**High**
Drought						
Severe Winter Storms						
Wind						
Flood*	4	2	3	4	45.60	**High**
Landslide and Mudflow*	3	3	4	4	43.20	**High**
Human-caused Hazards*	4	2	3	3	41.60	**Medium**
Nuclear Hazards						
Terrorism						
Infrastructure Failure (Sewer Treatment Plant)						
Coastal Hazards*	3	2	3	2	28.20	**Medium**
Coastal Erosion						
Sea Level Rise						
Tsunami						
Disease / Pest Management*	2	4	2	3	24.40	**Medium**

*Climate change considerations discussed as appropriate under each hazard.

- The **probability** of each hazard is determined by assigning a level, from unlikely to highly likely, based on the **likelihood of occurrence** from historical data.
- The **total impact** value includes the affected area, primary impact and secondary impact levels of each hazard.
- Each level's score is reflected in this matrix. The **total score** for each hazard is the probability score multiplied by its importance factor times the sum of the impact level scores multiplied by their importance factors.
- Based on the total score, the hazards are separated into **three categories** based on the hazard level they pose to the communities: **High, Medium, Low.**

PROBABILITY	Importance
Based on estimated likelihood of occurrence from historical data	2.0
Probability	Score
Unlikely	1
Occasional	2
Likely	3
Highly Likely	4

LOCATION	Importance
Based on size of geographical area of community affected by hazard	0.8
Affected Area	Score
Negligible	1
Limited	2
Significant	3
Extensive	4

SECONDARY IMPACTS	Importance
Based on estimated secondary impacts to community at large	0.5
Impact	Score
Negligible: No loss of function, downtime, and/or evacuations	1
Limited: Minimal loss of function, downtime, and/or evacuations	2
Moderate: Some loss of function, downtime, and/or evacuations	3
High: Major loss of function, downtime, and/or evacuations	4

MAXIMUM PROBABLE EXTENT (PRIMARY IMPACT)	Importance
Based on percentage of damage to typical facility in community	0.7
Impact	Score
Weak: Little to no damage	1
Moderate: Some damage, loss of service for days	2
Severe: Devastating damage, loss of service for months	3
Extreme: Catastrophic damage, uninhabitable conditions	4

TOTAL SCORE = PROBABILITY x IMPACT, where:
Probability = (Probability Score x Importance)
Impact = (Affected Area + Primary Impact + Secondary Impacts), where:
Affected Area = Affected Area Score x Importance
Primary Impact = Primary Impact Score x Importance
Secondary Impacts = Secondary Impacts Score x Importance

City of Laguna Beach

Local Hazard Mitigation Plan | Hazard Profile Open House

Name	City of Residence	Did you attend the previous meeting?	How did you hear about this meeting?	What is your email address?	May we contact you with news and updates about the LHMP?
Jeanna Riley	Laguna Beach		friend	[redacted]	~~YES~~
Michael Webster	L.B	NO	ON-LINE	[redacted]	YES
Sandy C Jauregui	L.B.	No	on Line	[redacted]	Yes
Bill Lawson	L-B	NO	Web-	[redacted]	yes
Dave Pahnos	LB	NO	ON LINE	[redacted]	~~YES~~
Matt Lawson	LB	YES	EDPC	[redacted]	YES
Aegea Lee	Laguna Beach	No	Next Door	[redacted]	Yes
Judie Mancuso	LB	NO	Next door	[redacted]	~~yes~~
Karen Klammer	LB	Yes	email	[redacted]	yes

The email addresses of attendees have been redacted to protect their privacy

October 18, 2017

City of Laguna Beach
Local Hazard Mitigation Plan | Hazard Profile Open House

Name	City of Residence	Did you attend the previous meeting?	How did you hear about this meeting?	What is your email address?	May we contact you with news and updates about the LHMP?
Sonny Myers	Laguna Beach	yes	EDPC	[redacted]	✓
Leonard J. Porto	Laguna Beach	NO	J.W.	[redacted]	✓
Michael Hoag	LB	NO	email	[redacted]	
Tiffany Bates					
Deborah Nelson	LB	NO	email	[redacted]	yes
Beth Johnson	LB	Yes	LBPA Nextdoor	[redacted]	yes
Tamela Keefe	LB	yes	nextdoor	[redacted]	yes
Larry Ulvestad	LB	Yes	email	[redacted]	yes
Karen Jenks	Laguna Beach	yes	NextDoor	[redacted]	✓ yes

The email addresses of attendees have been redacted to protect their privacy

October 18, 2017

City of Laguna Beach

Local Hazard Mitigation Plan | Hazard Profile Open House

Name	City of Residence	Did you attend the previous meeting?	How did you hear about this meeting?	What is your email address?	May we contact you with news and updates about the LHMP?
Jordan Villwock	City of Laguna Beach	Yes	Aaron	[redacted]	X

The email addresses of attendees have been redacted to protect their privacy

October 18, 2017

From:	Villwock, Jordan PD
To:	Aaron Pfannenstiel
Subject:	FW: Laguna Beach Hazard Mitigation Survey
Date:	Thursday, September 28, 2017 8:57:48 AM
Attachments:	image004.png
Importance:	High

I meant to cc you on the below email. BTW – what is our survey count participation at now?

From: Villwock, Jordan PD
Sent: Thursday, September 28, 2017 8:41 AM
To: Barker, Sarah M <SBARKER@ocsd.org>; AARON ROSEN <AROSEN@DanaPoint.org>; Phil Robinson (PRobinson@cityoflagunaniguel.org) <PRobinson@cityoflagunaniguel.org>; Eing, Katie (keing@nbpd.org) <keing@nbpd.org>; Robert Simmons <RSimmons@cityofirvine.org>
Subject: Laguna Beach Hazard Mitigation Survey
Importance: High

Good Morning Neighboring Jurisdiction,

As you may already be aware, the City of Laguna Beach is developing our first ever Hazard Mitigation Plan. In order to ensure we have a well thought out and developed plan we need to reach out to our neighbors to provide input. Would you each, on behalf of your organization, be willing to complete the survey link below? The survey should only take you 10-15 minutes and we'd appreciate it if you would have it completed by October 15th.

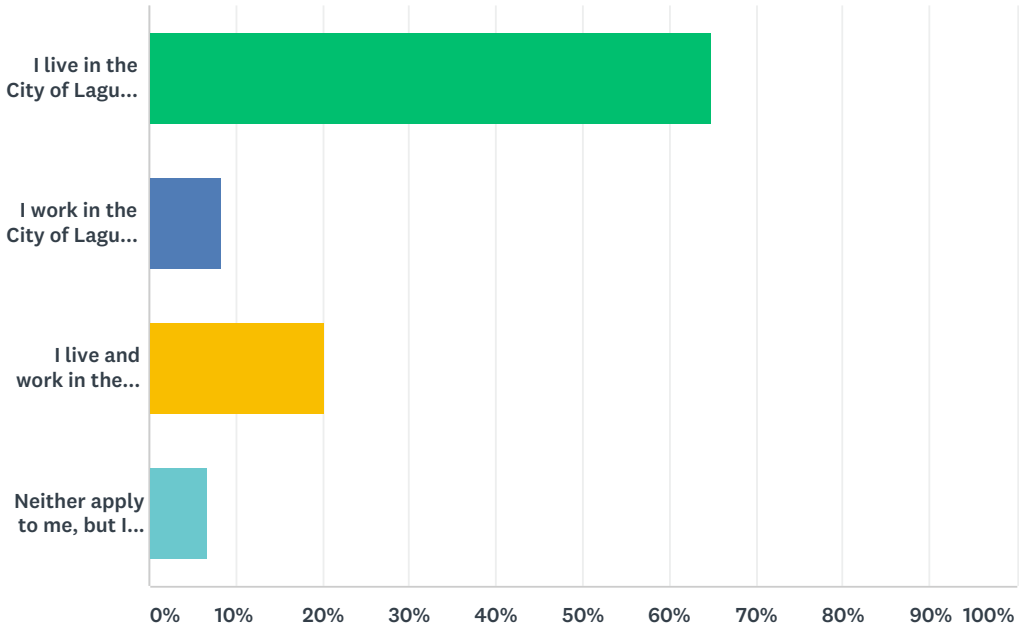
https://www.surveymonkey.com/r/VT9DJDT

Thank you,

Jordan Villwock
Emergency Operations Coordinator
Laguna Beach Police Department
505 Forest Avenue, Laguna Beach, CA 92651
Office: 949-497-0389

Q1 Do you live or work in the City of Laguna Beach?

Answered: 193 Skipped: 1



ANSWER CHOICES	RESPONSES	
I live in the City of Laguna Beach.	64.77%	125
I work in the City of Laguna Beach.	8.29%	16
I live and work in the City of Laguna Beach.	20.21%	39
Neither apply to me, but I am interested in the City's resiliency.	6.74%	13
TOTAL		193

Q2 What is the ZIP code of your home?

Answered: 192 Skipped: 2

#	RESPONSES	DATE
1	92651	10/25/2017 6:09 PM
2	92651	10/24/2017 9:45 AM
3	92651	10/24/2017 5:21 AM
4	92651	10/23/2017 6:42 PM
5	92651	10/23/2017 3:46 PM
6	92651	10/23/2017 2:32 PM
7	92651	10/23/2017 2:10 PM
8	92651	10/23/2017 2:03 PM
9	92651	10/23/2017 1:41 PM

10	92651	10/20/2017 4:36 PM
11	92651	10/20/2017 3:49 PM
12	92651	10/20/2017 12:59 PM
13	92651	10/19/2017 5:48 PM
14	92651	10/19/2017 6:43 AM
15	92651	10/18/2017 6:00 PM
16	92651	10/18/2017 5:24 PM
17	92651	10/18/2017 4:07 PM
18	92651	10/18/2017 3:39 PM
19	92651	10/18/2017 3:25 PM
20	92673	10/18/2017 2:06 PM
21	92651-2004	10/18/2017 10:02 AM
22	92651	10/18/2017 9:35 AM
23	92651	10/18/2017 8:27 AM
24	92651	10/18/2017 8:12 AM
25	92651	10/18/2017 8:03 AM
26	92651	10/18/2017 7:11 AM
27	92651	10/18/2017 7:02 AM
28	92651	10/18/2017 6:25 AM
29	92651	10/18/2017 6:15 AM
30	92651	10/18/2017 5:49 AM
31	92651	10/17/2017 11:45 PM
32	92651	10/17/2017 11:31 PM
33	92651	10/17/2017 10:17 PM
34	92651	10/17/2017 8:40 PM
35	92530	10/17/2017 8:19 PM
36	92656	10/17/2017 8:15 PM
37	92651	10/17/2017 8:13 PM
38	92651	10/17/2017 8:07 PM
39	92677	10/17/2017 7:50 PM
40	92651	10/17/2017 7:49 PM
41	92651	10/17/2017 7:42 PM
42	92651	10/17/2017 7:25 PM
43	92651	10/17/2017 6:52 PM
44	92651	10/17/2017 6:45 PM
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46	92651	10/17/2017 6:29 PM
47	92651-2081	10/17/2017 6:24 PM
48	92656	10/17/2017 6:23 PM
49	92651	10/17/2017 6:17 PM
50	92651	10/17/2017 6:17 PM

51	92629	10/17/2017 6:12 PM
52	92677	10/17/2017 6:11 PM
53	92651	10/17/2017 5:30 PM
54	92651	10/17/2017 5:28 PM
55	92651	10/17/2017 4:50 PM
56	92651	10/17/2017 4:34 PM
57	92651	10/17/2017 4:20 PM
58	92651	10/17/2017 4:08 PM
59	92651	10/17/2017 4:07 PM
60	92651	10/17/2017 4:03 PM
61	92651	10/17/2017 3:55 PM
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75	92651	10/17/2017 12:43 PM
76	92651	10/8/2017 8:49 AM
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78	92651	10/6/2017 3:36 PM
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81	92651	10/5/2017 7:54 PM
82	92651	10/5/2017 2:54 PM
83	92651	10/5/2017 2:44 PM
84	92677	10/5/2017 1:13 PM
85	92651	10/5/2017 9:55 AM
86	92651	10/5/2017 9:33 AM
87	92651	10/5/2017 9:21 AM
88	92651	10/5/2017 9:11 AM
89	92651	10/5/2017 8:38 AM
90	92651	10/4/2017 9:31 AM
91	926512552	10/4/2017 9:02 AM

92	92655	10/4/2017 6:40 AM
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94	92651	10/3/2017 3:20 PM
95	92651	10/3/2017 3:05 PM
96	92651	10/3/2017 3:04 PM
97	92651	10/3/2017 2:47 PM
98	92651	10/3/2017 2:42 PM
99	92651	9/30/2017 4:56 AM
100	92651	9/29/2017 2:44 PM
101	92651	9/29/2017 2:37 PM
102	92651	9/29/2017 2:31 PM
103	92688	9/28/2017 11:30 AM
104	92656	9/28/2017 7:47 AM
105	92651	9/27/2017 2:04 PM
106	92835	9/27/2017 12:18 PM
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111	92691	9/22/2017 2:10 PM
112	92651	9/22/2017 1:36 PM
113	92651	9/22/2017 7:21 AM
114	92651	9/22/2017 7:07 AM
115	92651	9/19/2017 7:37 PM
116	92651	9/19/2017 1:28 PM
117	92651	9/15/2017 6:00 PM
118	92651	9/15/2017 9:32 AM
119	92651	9/14/2017 10:28 PM
120	92677	9/14/2017 9:52 PM
121	92651	9/13/2017 10:14 AM
122	92651	9/13/2017 10:11 AM
123	92651	9/12/2017 8:12 PM
124	92651	9/12/2017 7:39 PM
125	92651	9/12/2017 4:42 PM
126	92651	9/12/2017 4:13 PM
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128	92651	9/12/2017 9:56 AM
129	92651	9/12/2017 9:26 AM
130	92614	9/12/2017 9:05 AM
131	92651	9/12/2017 8:30 AM
132	92651	9/11/2017 9:45 PM

133	92651	9/11/2017 8:03 PM
134	92673	9/11/2017 1:46 PM
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136	92651	9/10/2017 7:00 PM
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157	92651	8/31/2017 6:11 AM
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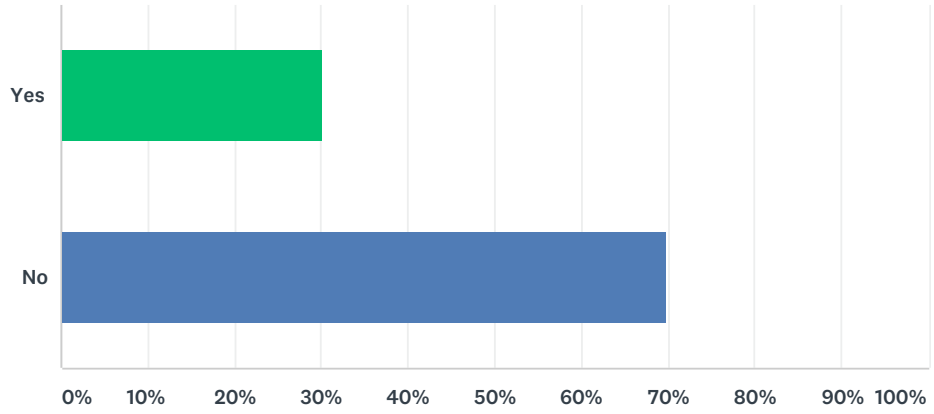
159	92651	8/30/2017 8:30 PM
160	92651	8/30/2017 7:21 PM
161	92651	8/30/2017 5:41 PM
162	92651	8/30/2017 5:38 PM
163	92651	8/30/2017 5:34 PM
164	93619	8/30/2017 4:15 PM
165	92651	8/30/2017 3:56 PM
166	92651	8/30/2017 11:39 AM
167	66757	8/30/2017 11:38 AM
168	92651	8/30/2017 11:06 AM
169	92651	8/30/2017 10:59 AM
170	92651	8/30/2017 10:54 AM
171	92651	8/30/2017 10:32 AM
172	92651	8/30/2017 9:23 AM
173	90505	8/30/2017 9:17 AM

174	92651	8/30/2017 8:46 AM
175	92651	8/30/2017 8:46 AM
176	92651	8/30/2017 8:37 AM
177	92651	8/30/2017 8:27 AM
178	92656	8/30/2017 8:09 AM
179	92651	8/30/2017 7:15 AM
180	92630	8/30/2017 7:02 AM
181	92656	8/30/2017 6:59 AM
182	92651	8/30/2017 6:48 AM
183	92651	8/30/2017 6:42 AM
184	92651	8/30/2017 6:36 AM
185	92651	8/30/2017 6:29 AM
186	92694	8/30/2017 6:19 AM
187	92651	8/30/2017 6:18 AM
188	92651	8/30/2017 6:15 AM
189	92651	8/30/2017 6:13 AM
190	92651	8/30/2017 6:09 AM
191	92651	8/30/2017 6:07 AM
192	92656	8/30/2017 6:00 AM

Q3 Have you been impacted by a disaster in your current residence?

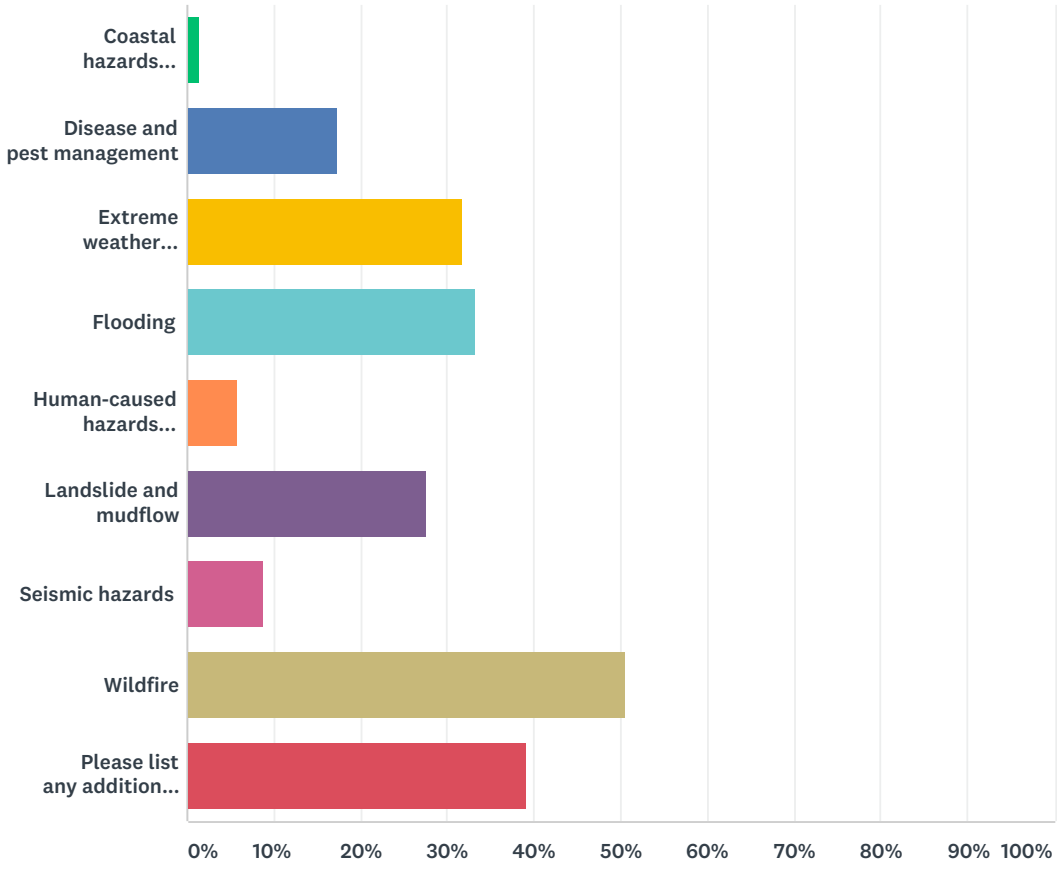
Answered: 192 Skipped: 2



ANSWER CHOICES	RESPONSES	
Yes	30.21%	58
No	69.79%	134
TOTAL		192

Q4 If you answered yes to the previous question, please select the type of disaster that you have been impacted by. Please select all that apply.

Answered: 69 Skipped: 125



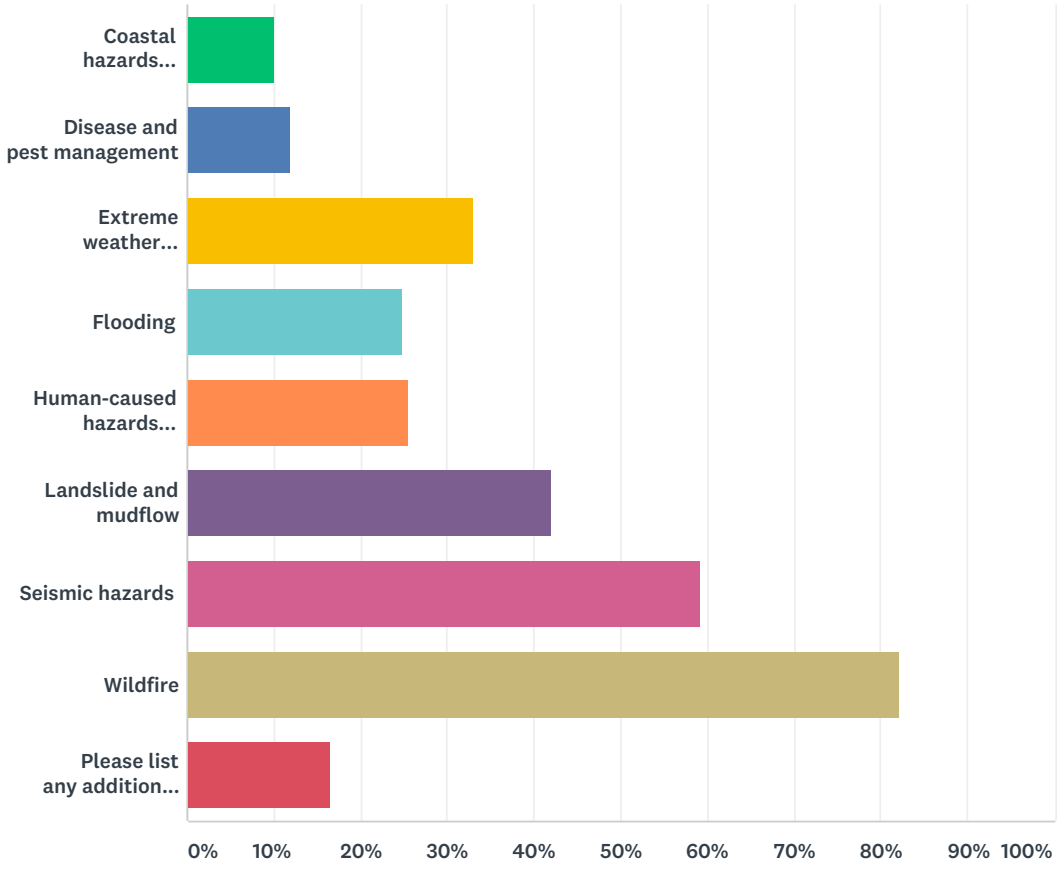
ANSWER CHOICES	RESPONSES	
Coastal hazards (erosion, sea level rise, and tsunamis)	1.45%	1
Disease and pest management	17.39%	12
Extreme weather (drought, wind, and winter storms)	31.88%	22
Flooding	33.33%	23
Human-caused hazards (infrastructure failure, nuclear hazards, and terrorism)	5.80%	4
Landslide and mudflow	27.54%	19
Seismic hazards	8.70%	6
Wildfire	50.72%	35
Please list any additional hazards that have previously impacted your neighborhood or home	39.13%	27
Total Respondents: 69		

#	PLEASE LIST ANY ADDITIONAL HAZARDS THAT HAVE PREVIOUSLY IMPACTED YOUR NEIGHBORHOOD OR HOME	DATE
1	Over 22 cellular antennas batteries stored in an office building 4” away	10/23/2017 6:42 PM
2	Power lines will eventually lead to a fire - it's a matter of time	10/18/2017 6:00 PM
3	Neighbor house caught on fire and City requiring native restoration on lots adjacent to my house and other property owners.	10/17/2017 7:25 PM
4	auto congestion	10/17/2017 4:34 PM

5	Not enough attention to clearing vegetation on hillsides.	10/17/2017 4:07 PM
6	Falling trees	10/17/2017 3:44 PM
7	None	10/17/2017 3:28 PM
8	fallen trees blocking our road for in/out access and damaging the garage/carport	10/17/2017 3:15 PM
9	utilities not underground	10/5/2017 2:44 PM
10	Falling trees	10/5/2017 9:55 AM
11	Parking	10/5/2017 8:38 AM
12	I use a wheelchair and will have evacuation issues, should there be an earthquake of large magnitude	10/4/2017 9:02 AM
13	Alien invasion. I also had the gray men reading my mind from their cars.	9/28/2017 11:30 AM
14	Lack of improvement of infrastructure on Laguna Canyon Rd and Canyon Acres.	9/26/2017 5:54 PM
15	Transformer fire	9/15/2017 9:32 AM
16	EROSION	9/12/2017 10:27 AM
17	pipe leakage, home fire	9/12/2017 9:26 AM
18	Flooding due to pipe failure	9/12/2017 9:05 AM
19	poria incresata(fungus/mold)	9/12/2017 8:30 AM
20	The 1980 Del Mar slide impacted our neighborhood, though not our home which wasn't completed until nearly 1/4 of a century later.	9/11/2017 9:45 PM
21	Recent gas leak in front of house, termites and subsequent roof repair,	9/11/2017 1:34 PM
22	Plumbing flooding	9/9/2017 2:34 PM
23	Flooding on the lower level. We live on the 2nd floor however.	9/9/2017 9:01 AM
24	Landslide and mudflow at ArtAFair	8/30/2017 9:17 AM
25	1993 Fire, Bluebird landslides	8/30/2017 8:46 AM
26	Power lines will eventually lead to a fire - it's a matter of time	8/30/2017 8:27 AM
27	1994 fire destroyed the home we are in but it was previous to us owning it	8/30/2017 6:48 AM

Q5 The following hazards could potentially impact the City. Please mark the three (3) hazards that are of most concern to your neighborhood or home.

Answered: 169 Skipped: 25



ANSWER CHOICES	RESPONSES	
Coastal hazards (erosion, sea level rise, and tsunamis)	10.06%	17
Disease and pest management	11.83%	20
Extreme weather (drought, wind, and winter storms)	33.14%	56
Flooding	24.85%	42
Human-caused hazards (infrastructure failure, nuclear hazards, and terrorism)	25.44%	43
Landslide and mudflow	42.01%	71
Seismic hazards	59.17%	100
Wildfire	82.25%	139
Please list any additional hazards that present a threat to your neighborhood or home.	16.57%	28
Total Respondents: 169		

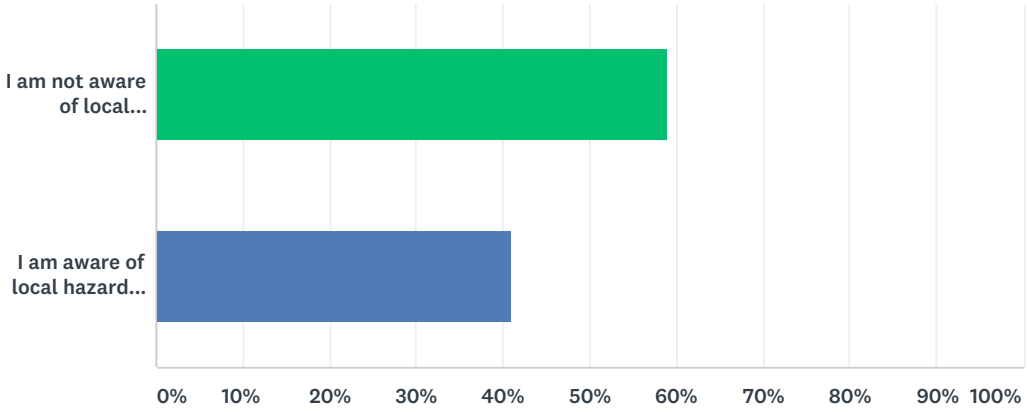
#	PLEASE LIST ANY ADDITIONAL HAZARDS THAT PRESENT A THREAT TO YOUR NEIGHBORHOOD OR HOME.	DATE
1	RF emissions and the storage of lithium batteries	10/23/2017 6:48 PM
2	In-maintained neighborhood trees. Trees are not taken care of by homeowners that require them to remove dead brush and bushes that could easily ignite by a fire.	10/20/2017 4:42 PM
3	Power lines are by far the #1 hazard. We WILL have another fire from downed powerlines	10/18/2017 6:03 PM
4	town will always be impacted by the limited routes out of the city for any needed evacuation	10/18/2017 8:06 AM
5	Falling power poles and lines on my house	10/18/2017 6:26 AM

6	limited access during an emergency	10/17/2017 3:59 PM
7	Our two most dangerous threats are the nuclear fuel storage hazard and seismic events. Also if we experienced a hurricane, most houses are wood and/or not up to hurricane standards. Landslides and mud flow could occur.	10/17/2017 3:46 PM
8	Transients started an arson fire 11/18/2016	10/17/2017 3:19 PM
9	Downed power lines could block evacuation from our home	10/8/2017 8:50 AM
10	Power lines falling	10/7/2017 9:02 AM
11	The importance of undergrounding utilities so that in event of a fire, power is maintained to support critical emergency services and their communications. Including police, fire, paramedics and the hospital. In the 2007 fires in San Diego County, the county came within minutes of losing power which would have been disastrous. Wood poles burn and as a result power is lost for extended periods of time (weeks to months) until they can be repaired.	10/6/2017 9:31 AM
12	I am very concerned with the overhead utility poles wires that during storms arc .we need to underground all utilities.	10/5/2017 7:58 PM
13	utilities not underground	10/5/2017 2:48 PM
14	Downed electric lines	10/5/2017 9:57 AM
15	Overflow street parking on Morningside Drive from Bluebird/Madison residents/tenants. Morningside was a 2-way street & has a sharp blind curve at this particular location. It is barely a one lane street now & I fear no emergency vehicle would be able to access that location. The neighborhood has seen a sizable increase in increase multi-car ownership with the overflow on the streets that exceeds the cities development guidelines. Also the upper Bluebird area has seen a major turnover of new homeowners in the area that are not familiar with the vulnerabilities of the area.	10/5/2017 9:34 AM
16	Overflow parking from Bluebird & Madison onto Morningside which limits a 2 way street to one way on a blind curve. No emergency truck would be able to pass. Please fix before someone is killed.	10/5/2017 8:47 AM
17	having a poorly run drug-rehabilitation house next door	10/4/2017 9:05 AM
18	Landslide and mudflow and disease and pest management unkept trees too big to handle wind with neighbors	10/3/2017 2:49 PM
19	Summer tourists	9/15/2017 6:02 PM
20	power poles falling	9/15/2017 9:34 AM
21	Earthquake, loss of grid power, disruptions to food & fuel import	9/12/2017 4:45 PM
22	FALLEN TREES	9/12/2017 10:32 AM
23	Tall trees	9/9/2017 7:16 PM
24	Over building up streem.	9/9/2017 3:39 PM
25	San Onofre nuclear waste still stored on site, a disaster like Fukushima waiting to happen when an earthquake or tsunami hits	9/1/2017 5:58 AM
26	Impossible evacuation during hazard event.	8/30/2017 10:34 AM
27	Unkept landscape in Open Space behind house is out of control. Trying to get County to call me back about it. It is watered by another neighbor, (previous owner of that property had planted and maintained a beautiful landscape on this property) but current property owner does not cut back or maintain what he's watering on public land or on his property either. Both are a fire hazard when the heat comes. Needs cut back. I'd like permission to do so and also, if I have to do so...	8/30/2017 6:28 AM
28	Runoff drainage into the ocean	8/30/2017 6:02 AM

Q6 The planning team is using various data sources to identify hazards in your community; however, some of these data sources do not provide data at a general citywide level. Are there any small-scale issues, such

as ponding at a certain intersection during rain, that you would like the planning team to consider?

Answered: 163 Skipped: 31



ANSWER CHOICES	RESPONSES	
I am not aware of local hazards.	58.90%	96
I am aware of local hazards. Please provide as much detail as possible, including location and type of hazard.	41.10%	67
TOTAL		163

#	I AM AWARE OF LOCAL HAZARDS. PLEASE PROVIDE AS MUCH DETAIL AS POSSIBLE, INCLUDING LOCATION AND TYPE OF HAZARD.	DATE
1	Corner of Crescent Bay and North Coast Hwy	10/23/2017 6:48 PM
2	I'm concerned about the electrical wires running parallel to the fire road between ABH and TOW. My concern is fire.	10/23/2017 2:36 PM
3	I can’t say enough about dead trees and brush on properties. Homeowners should be required to to remove dead brush and keep their landscape maintained. There is also a lot of dead grasses around the neighborhood. Code Enforcement needs to do a better job.	10/20/2017 4:42 PM
4	Elderly neighbor apparently heats home with wood burning, intermittently stores large amounts of wood, mostly scrap lumber, in garage.	10/20/2017 1:13 PM
5	South Laguna has significant water courses, but has no storm sewers to catch the surface flow. When the soil on the hillsides becomes saturated the subsurface flow, through the first 10 feet of soil, is three times the surface flow. The old houses here date back to the 1920s and 1930s. and were build directly on the water courses. While in most instances the surface flow has been diverted, the subsurface flow remains the main hazard to the old home built on floating slabs. The only means of stabilizing the soil is through the careful planting of trees and shrubs, creating root networks to a depth of 30 feet. The city's "view" ordinances, by policy, do not take flood/landslide/mudslide risk into account when ordering residents to severely trim or remove trees that are critical to holding the soil. The city applies this policy even to properties with a history of multiple mudslides, thus placing a higher public safety priority on aesthtics over life and limb.	10/19/2017 6:58 AM
6	Above ground power lines. These need to be put underground before a fire occurs!	10/18/2017 6:03 PM
7	Loma place near the police department becomes unusable due to mudslides. Our Fire Department main station is highly vulnerable to collapse from earthquakes	10/18/2017 5:28 PM
8	Are subjects of dialogue with city manager	10/18/2017 3:41 PM
9	Sewage Spills	10/18/2017 2:07 PM

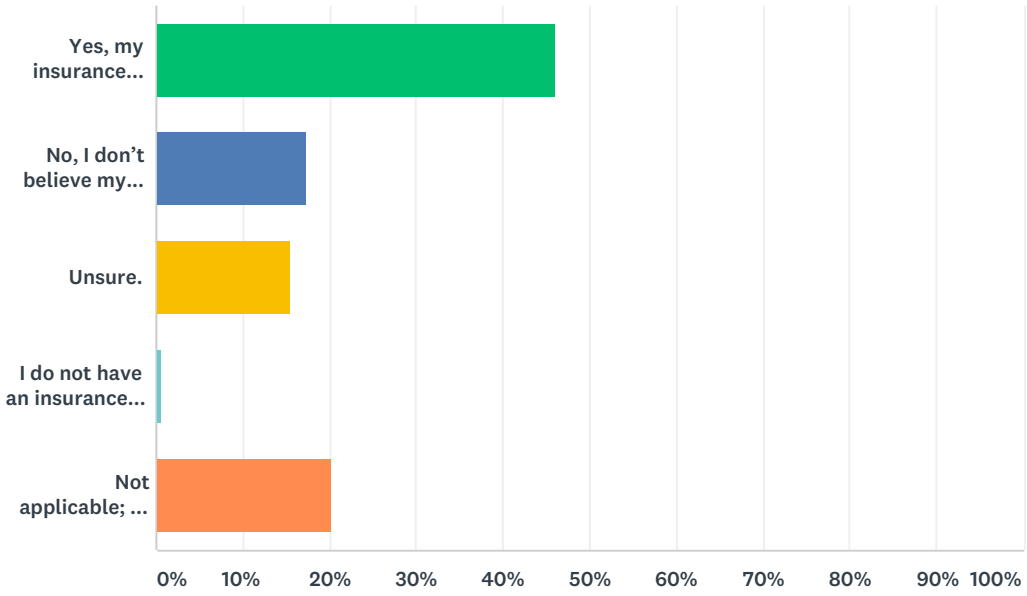
10	1. The wall across from 895 Baja Street is completely cracked. If this wall fails the hillside and house above it have the potential of sliding down. 2. When turning right off of La Mirada onto Capistrano cars park on the right hand corner which has cause many near miss accidents - either into the parked car, or into a car coming up Capistrano while you have to make a wide turn to avoid the parked car. Traveling further down Capistrano between Katella and Baja street cars often park on both sides of the street making it difficult to pass a car through as the street is too small. The biggest concern is if a Fire engine or other emergency vehicle needs to pass through, it will not be able to. Would fix the issue is parking is only on the south side of the street.	10/18/2017 7:18 AM
11	Multiple power lines 12feet from my house. I have had to report collapsed wood supports on nearby poles leading to sagging power lines above the road (5th Avenue SL) which could be sagged by high profile vehicles. Also, large diseased Eucalyptus trees that could fall on my house .	10/18/2017 6:26 AM
12	Flooding on PCH at Main Beach after heavy rain.	10/18/2017 5:55 AM
13	Utility wires in our dense neighborhood and the goats eating away too much rubbish making our homes below prove to mudslides and the goats aren't provided to eat away any of the brush surrounding the dense canyon acres / woodland homes	10/17/2017 11:48 PM
14	The drains in the ally behind my house are blocked and do not function right.	10/17/2017 11:35 PM
15	Ponding on PCH at Aliso Creek and other locations along PCH. Mud from unretained slopes.	10/17/2017 8:46 PM
16	Native restoration desire but city on lots in a designated Fuel Modification Zone in Oro Canyon, which has never burned. The City approach for this canyon was mild removal of invasive, noxious plants with hand crews. However other side of Noria has goats for fuel mitigation purposes. There are rules for Fuel Modification which are not being followed. The $1 Million grant given to Laguna Canyon for fire mitigation was not nearly enough and the canyon continues to be a huge fire risk for safety of homes and lives.	10/17/2017 7:30 PM
17	Fire	10/17/2017 6:18 PM
18	terrorism	10/17/2017 5:31 PM
19	Overhead powerlines, particularly in the Canyon, along PCH, and along Thalia and Bluebird	10/17/2017 5:29 PM
20	Wildfire danger near Valido Trail. Too much brush on hillsides and canyon area around creek	10/17/2017 4:12 PM
21	My back yard is currently considered to be an environmentally sensitive significant watercourse. In spite of the fact that an entire neighborhood was built above the area where I live where the entire watercourse was piped underground 30+ years ago, the map should be revised as virtually no water shed exists any longer	10/17/2017 3:59 PM
22	Flooding @ Aliso Beach	10/17/2017 3:30 PM
23	I live at the edge of Aliso Canyon and am petrified of fire with all the dense brush and trees	10/17/2017 3:22 PM
24	laguna canyon creek camping by transients	10/17/2017 3:19 PM
25	Water issues due to unmapped water courses in the city that undermine property and create slides.The city needs to update the Open Space maps.They are outdated.	10/17/2017 2:44 PM
26	Not really, but the S curve on Summit sheds rocks and when there is heavy rain it drains in a dangerous way across the asphalt, like in sheets at an angle.	10/17/2017 12:47 PM
27	Downed power-lines could inhibit an emergency evacuation	10/6/2017 3:38 PM
28	Water during rain storms accumulating at the end of Osgood	10/5/2017 7:58 PM
29	utilities not underground, no sidewalks for safe walking anywhere in our neighborhood	10/5/2017 2:48 PM
30	Overflow street parking on Morningside Drive from Bluebird/Madison residents/tenants. Morningside was a 2-way street & has a sharp blind curve at this particular location. It is barely a one lane street now & I fear no emergency vehicle would be able to access that location. The neighborhood has seen a sizable increase in increase multi-car ownership with the overflow on the streets that exceeds the cities development guidelines. Also the upper Bluebird area has seen a major turnover of new homeowners in the area that are not familiar with the vulnerabilities of the area. Also we lost our meeting location at the Luthern Church when it was purchased for a private residence.	10/5/2017 9:34 AM
31	Overflow Street parking at Morningside & Bluebird. What should be a 2 lane road is currently being used for overflow parking from Bluebird which causes the street	10/5/2017 8:47 AM

32	Overflow of Laguna canyon creek, brush on hillsides in Laguna Canyon	10/3/2017 5:08 PM
33	Non maintained trees that are historic and large concern about falling on cars, people, houses	10/3/2017 2:49 PM
34	Ponding at Wendt Terrace and Park. City is aware of this.	10/3/2017 2:44 PM
35	In my Arch Beach Heights neighborhood, the homes are only about 6' apart. Neighbors have planted trees, especially eucalyptus trees with eucalyptus oil, at the property line which I consider a serious fire hazard.	9/29/2017 2:41 PM
36	Better patrol of the fire trail and hills between Moulton meadows and TOW...kids smoking/hanging out at night off trail is a fire hazard	9/23/2017 6:41 AM
37	Power lines are our biggest risk. When they've fallen, access to our home plus all the homes above us is blocked	9/22/2017 1:39 PM
38	Coast highway flooding along the hill above Aliso Beach. Needs better drainage.	9/22/2017 7:24 AM
39	Upper Bluebird Canyon has a number of storm drain issues when we have heavy rains. We also have many large trees adjacent to the streets that can present a problem if not properly pruned.	9/19/2017 1:31 PM
40	Pedestrians crossing PCH	9/15/2017 6:02 PM
41	Flooding on Broadway/Main Beach and at Aliso Beach	9/14/2017 9:54 PM
42	Wind damage + electrical outages + rain damage+ difficulty in evacuating town	9/12/2017 7:44 PM
43	SE CORNER CRESS/BLUEBIRD	9/12/2017 10:32 AM
44	ponding at some of the low level sewers along ocean way during strong rains	9/12/2017 9:29 AM
45	sea rise into all canyons cutting off sections such as Laguna Can./Downtown and 133; Bluebird Can /PCH/Glenneyre, Aliso, El Morro	9/12/2017 8:35 AM
46	I think the local hazards are pretty well summarized in the Environmental Hazards section of the Diamond/Crestview Specific Plan.	9/11/2017 9:46 PM
47	Dip in the street asphalt around the water meter of 1048 Miramar Street	9/9/2017 7:16 PM
48	Limited evacuation routes	9/9/2017 3:39 PM
49	Trees or bushes blocking view at cross streets of oncoming cars.	9/9/2017 2:38 PM
50	fire, floods	9/9/2017 9:03 AM
51	flooding on Pacific Coast Hwy near Aliso Creel beach	9/8/2017 6:49 AM
52	Only one street out of the canyon	9/2/2017 5:55 AM
53	wildfire	9/1/2017 10:29 AM
54	cert prep	8/31/2017 7:39 AM
55	Blocking of empty lots and marked private property by non property owners, cutting off deer trails.	8/30/2017 4:00 PM
56	Yes pounding water on Woodland at Fairywood. Potential blockage of flood channel behind our home. Fires sparked by above ground utility lines	8/30/2017 11:41 AM
57	Gate at Sommet du Monde not open during evacuation.	8/30/2017 10:34 AM
58	Summit Dr. for BLuebird Cyn, to La Mirada has been know to flood and have debris flows in heavy rain. Has this been resolved by storm drain improvements? In the past, Rim Rock Cyn. Dr. would drain via culverts to Terrace Way below. This has caused my garge to flood 5 or 6 times since 1998. Has this been fully corrected?	8/30/2017 8:51 AM
59	Water run off from long steep driveway @ 287 Canyon Acres road, new building development and a drain should have been placed at end of driveway. Flooding results. Have called during last 2 rains to report this extreme water run off from a very steep paved long driveway. NEW CONSTRUCTION SITE	8/30/2017 8:50 AM
60	Water flow rate down our hilly streets during heavy rain events. Power lines in canyon cutting off emergency access. Aliso creek/pch road elevation during flooding.	8/30/2017 8:41 AM
61	Above ground power lines. These need to be put underground before a fire occurs.	8/30/2017 8:29 AM
62	Wildfires/arson are my biggest concern	8/30/2017 7:16 AM

63	all over town there are tree branches (some of them dead) hanging over wires, some on public roads and some on private property which create huge concern of fuel for wild fires	8/30/2017 6:51 AM
64	Overgrowth of Open Soace behind 346 High Drive needs attention! Overgrowth is also harming my expensive retainer wall and fence.	8/30/2017 6:28 AM
65	Drainage on Broadway near Alison creek water way. Pch (Main beach) @ Ocean water accumulation during storms. Huge water accumulation on Laguna Canyon Road during even minor storms.	8/30/2017 6:21 AM
66	Utility poles and downed lines in the canyon constantly and continually cause hazard	8/30/2017 6:13 AM
67	Water collection during rain at main beach intersection.	8/30/2017 6:02 AM

Q7 If you are a homeowner, do you have adequate homeowners' insurance to cover the hazards that could impact your home?

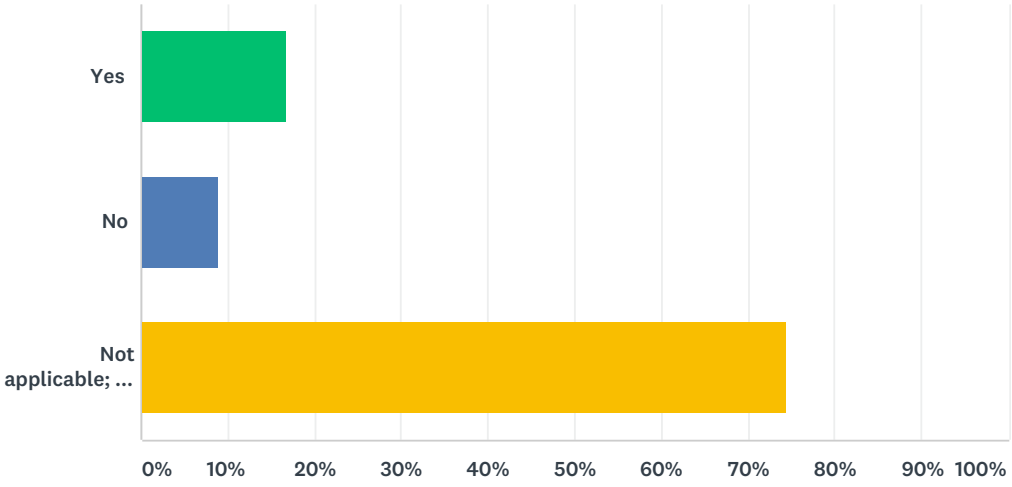
Answered: 167 Skipped: 27



ANSWER CHOICES	RESPONSES	
Yes, my insurance coverage should be adequate.	46.11%	77
No, I don't believe my insurance coverage would be adequate for a major disaster.	17.37%	29
Unsure.	15.57%	26
I do not have an insurance policy.	0.60%	1
Not applicable; I rent my current residence.	20.36%	34
TOTAL		167

Q8 If you rent your residence, do you have renters' insurance?

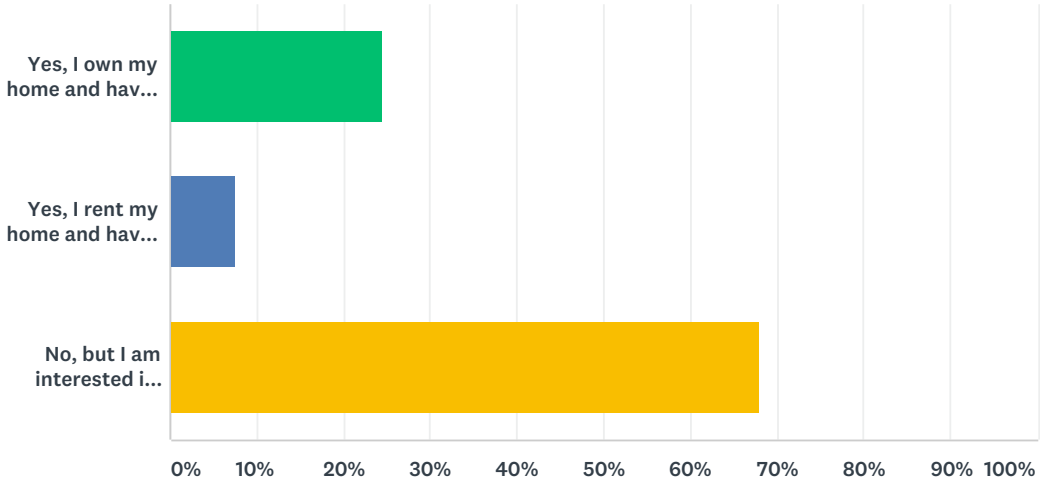
Answered: 168 Skipped: 26



ANSWER CHOICES	RESPONSES	
Yes	16.67%	28
No	8.93%	15
Not applicable; I own my residence.	74.40%	125
TOTAL		168

Q9 Do you have flood insurance for your home?

Answered: 147 Skipped: 47

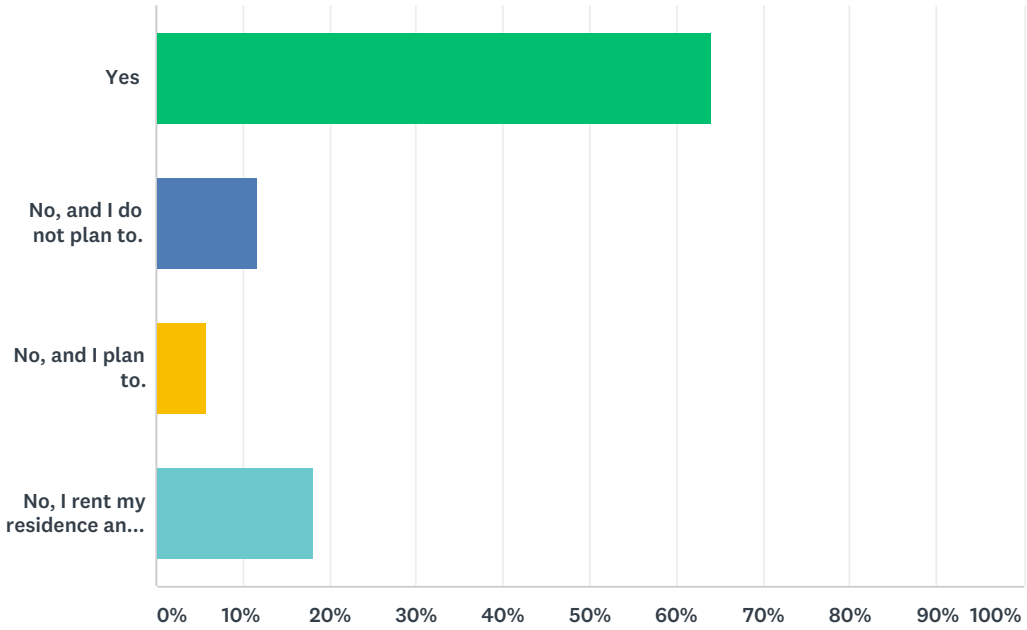


ANSWER CHOICES	RESPONSES	
Yes, I own my home and have flood insurance.	24.49%	36
Yes, I rent my home and have flood insurance.	7.48%	11
No, but I am interested in reviewing flood insurance options (http://www.floodsmart.gov/floodsmart/).	68.03%	100
TOTAL		147

Q10 Have you done anything to your home to make it less vulnerable to

hazards such as earthquakes, floods, and fires?

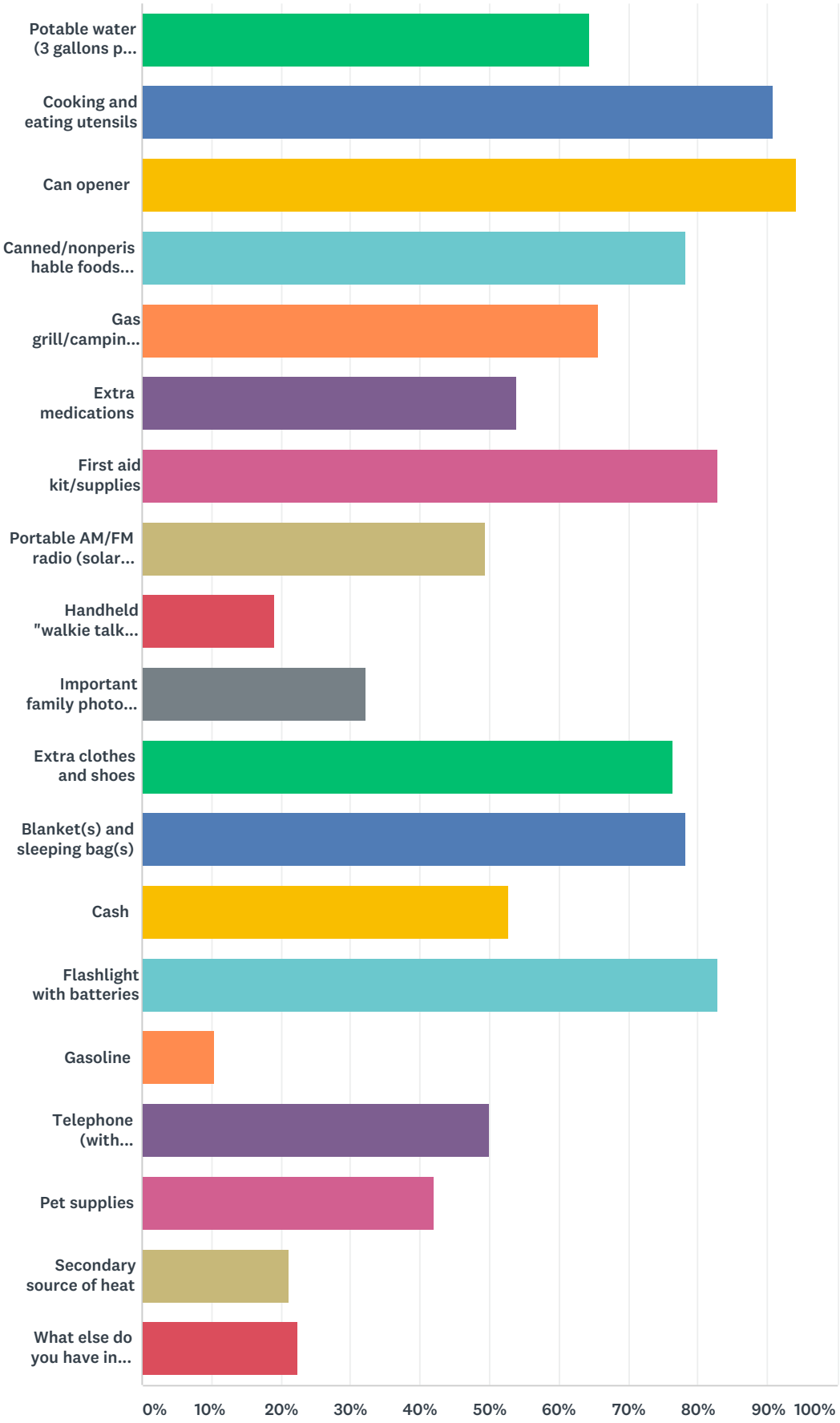
Answered: 153 Skipped: 41



ANSWER CHOICES	RESPONSES	
Yes	64.05%	98
No, and I do not plan to.	11.76%	18
No, and I plan to.	5.88%	9
No, I rent my residence and cannot.	18.30%	28
TOTAL		153

Q11 If a severe hazard event occurred today such that all services were cut off from your home (power, gas, water, sewer) and you were unable to leave or access a store for 72 hours, which of these items do you have readily available?

Answered: 152 Skipped: 42



ANSWER CHOICES	RESPONSES

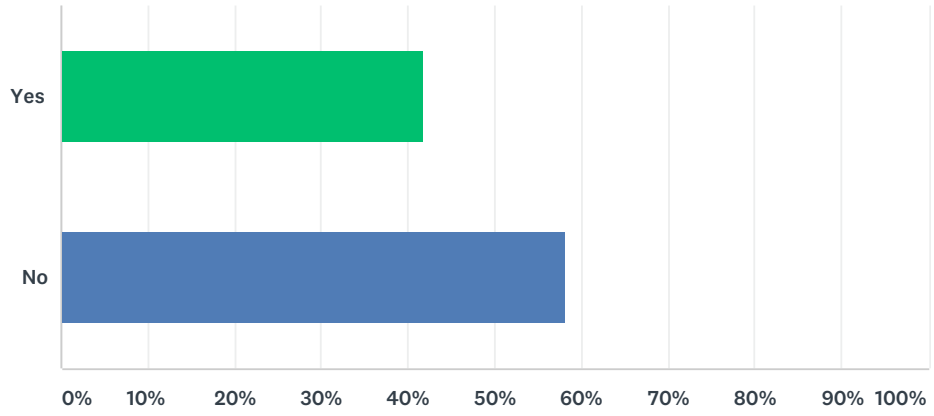
Potable water (3 gallons per person)	64.47%	98
Cooking and eating utensils	90.79%	138
Can opener	94.08%	143
Canned/nonperishable foods (ready to eat)	78.29%	119
Gas grill/camping stove	65.79%	100
Extra medications	53.95%	82
First aid kit/supplies	82.89%	126
Portable AM/FM radio (solar powered, hand crank, or batteries)	49.34%	75
Handheld "walkie talkie" radios (with batteries)	19.08%	29
Important family photos and documents in a water- and fire-proof container	32.24%	49
Extra clothes and shoes	76.32%	116
Blanket(s) and sleeping bag(s)	78.29%	119
Cash	52.63%	80
Flashlight with batteries	82.89%	126
Gasoline	10.53%	16
Telephone (with batteries)	50.00%	76
Pet supplies	42.11%	64
Secondary source of heat	21.05%	32
What else do you have in your emergency kit?	22.37%	34
Total Respondents: 152		

#	WHAT ELSE DO YOU HAVE IN YOUR EMERGENCY KIT?	DATE
1	Shelter (several tents), sleeping pads, water purification, dehydrated meals, 50 gallons of water, backpacks, hiking shoes and boots, rain gear.	10/24/2017 5:28 AM
2	Safety lights	10/23/2017 6:51 PM
3	Completed CERT training so everything they recommended	10/23/2017 2:42 PM
4	Vacuum sealed milk.	10/18/2017 5:31 PM
5	Power pack and solar chargers for cell phones, tablets/lap tops, and mp3 players.	10/18/2017 10:24 AM
6	power generator	10/18/2017 7:56 AM
7	We own a generator but do not yet know how to use it for our home. good reminder.	10/17/2017 4:11 PM
8	Toilet paper, paper towels	10/17/2017 3:33 PM
9	solar generator	10/17/2017 3:24 PM
10	Rope	10/17/2017 3:21 PM
11	I am a CERT responder and LART (Large Animal rescue Team) responder as well as a responder for several natuonal and local animal rescues, so i have go bags and all the things you need	10/17/2017 3:14 PM
12	We have all of it	10/8/2017 8:52 AM
13	Fire extinguishers	10/6/2017 3:41 PM
14	Financial, personal & insurance documents.	10/5/2017 10:00 AM
15	Insurance info.	10/5/2017 8:59 AM

16	generator & gas, tent, need to get the rest on the list above plus have masks, work gloves, nitrile gloves, hand warmers, feet warmers, ponchos	10/3/2017 3:26 PM
17	water filter	10/3/2017 2:47 PM
18	I guess we planned on staying with a friend like we did during the landslide or going to a hotel	9/30/2017 5:08 AM
19	Tools.	9/29/2017 2:50 PM
20	Ammo. Lots of ammo.	9/28/2017 11:33 AM
21	Generator for City Hall, cots, sanitation/cleaning supplies, etc.	9/28/2017 7:50 AM
22	Strobe lights, first aid items,	9/22/2017 7:29 AM
23	cell phones	9/19/2017 1:34 PM
24	Solar Shower, trash bags for dry toilet	9/12/2017 4:47 PM
25	Full CERT backpack.	9/11/2017 9:51 PM
26	I just today ordered emergency kit, thanks to the notice I received from the city this morning.	9/11/2017 1:39 PM
27	rubber boots. lug sole boots. backpack to carry supplies	9/1/2017 9:43 PM
28	Thick-soled shoes, eye protection, heavy gloves, sanitation supplies.	9/1/2017 8:46 AM
29	incect repelent	8/31/2017 7:43 AM
30	Red Cross large kit, pantry protein bars.	8/30/2017 4:05 PM
31	Tools, axe, crowbar, saw, tent, portable sanitary facility,	8/30/2017 8:54 AM
32	Weapons, flares, tent.	8/30/2017 7:06 AM
33	Emergency gas shut off tool, tarps & sandbags, hip waiter pants/flood water resistant clothing, solar generator w/battery + converter, protective eye wear, dust masks, fire extinguishers, etc	8/30/2017 6:33 AM
34	Hard hat, knee pads, whistle,	8/30/2017 6:20 AM

Q12 Are you familiar with the special needs of your neighbors in the event of a disaster situation (special needs may include limited mobility, severe medical conditions, memory impairments)?

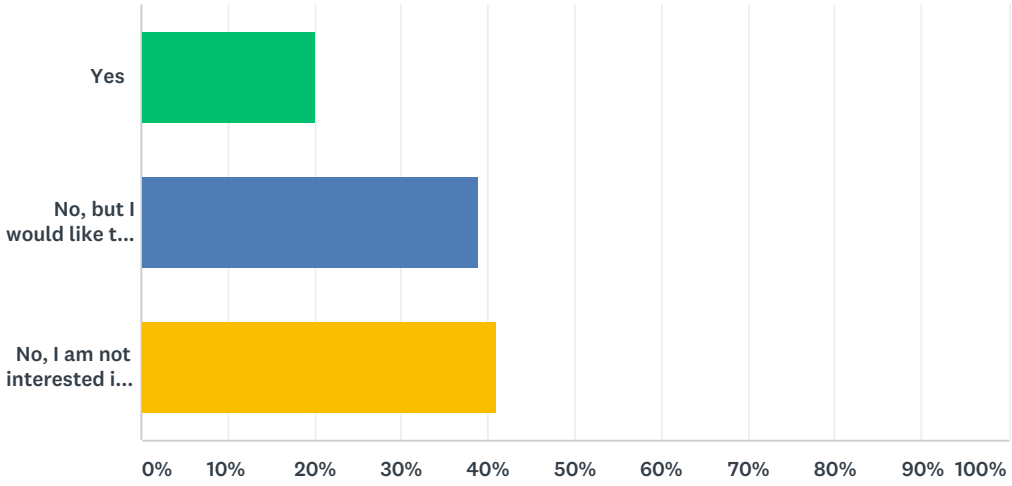
Answered: 153 Skipped: 41



ANSWER CHOICES	RESPONSES	
Yes	41.83%	64
No	58.17%	89
TOTAL		153

Q13 Are you a trained member of your Community Emergency Response Team (CERT)?

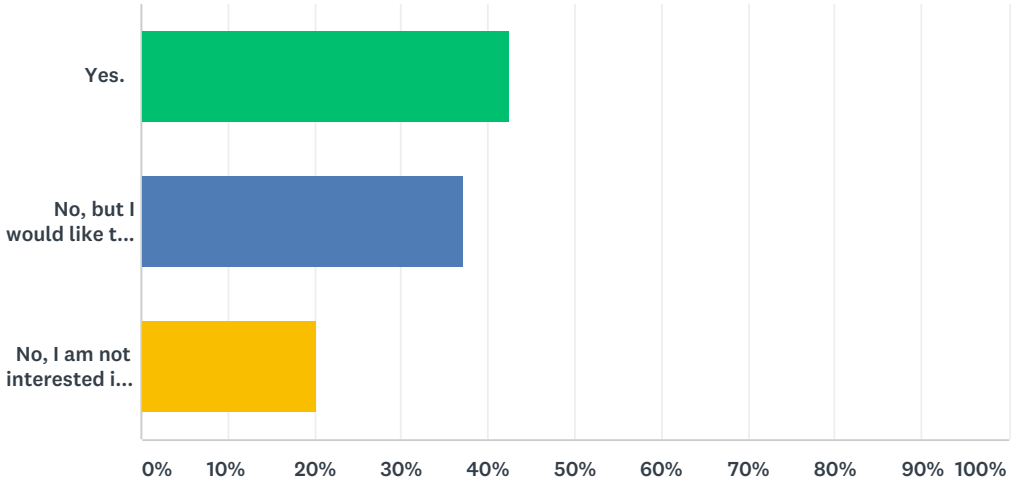
Answered: 154 Skipped: 40



ANSWER CHOICES	RESPONSES	
Yes	20.13%	31
No, but I would like to learn more about CERT.	38.96%	60
No, I am not interested in being a trained CERT member.	40.91%	63
TOTAL		154

Q14 Are you familiar with the Emergency and Disaster Preparedness Committee (EDPC)?

Answered: 153 Skipped: 41

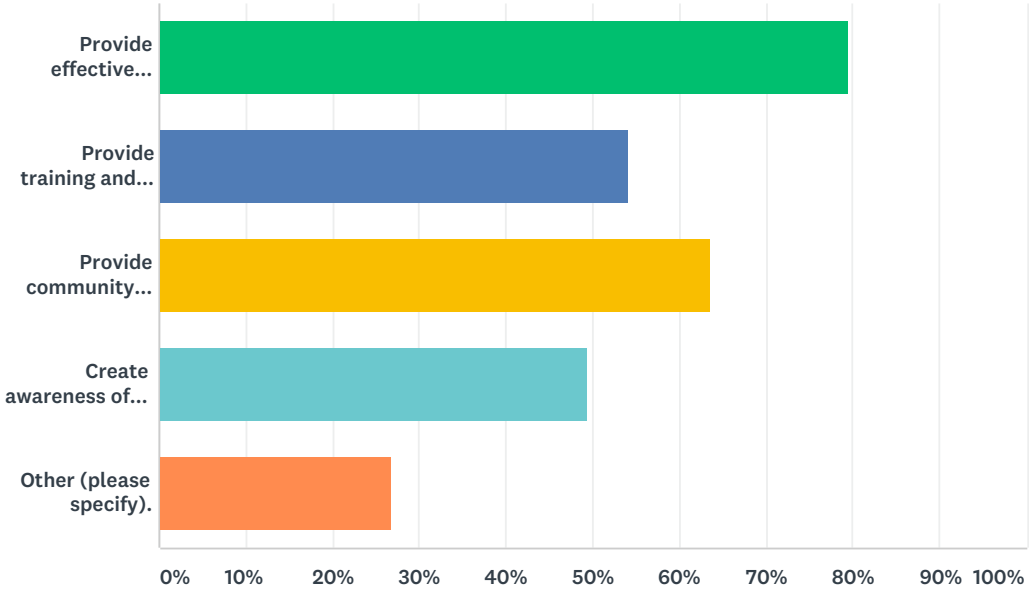


ANSWER CHOICES	RESPONSES

Yes.	42.48%	65
No, but I would like to learn more about the EDPC.	37.25%	57
No, I am not interested in attending an EDPC meeting or learning more about it.	20.26%	31
TOTAL		153

Q15 How can the City help you become better prepared for a disaster? (choose all that apply)

Answered: 146 Skipped: 48



ANSWER CHOICES	RESPONSES	
Provide effective emergency notifications and communication.	79.45%	116
Provide training and education to residents and business owners on how to reduce future damage.	54.11%	79
Provide community outreach regarding emergency preparedness.	63.70%	93
Create awareness of special needs and vulnerable populations.	49.32%	72
Other (please specify).	26.71%	39
Total Respondents: 146		

#	OTHER (PLEASE SPECIFY).	DATE
1	Listen to the community rather then just thinking you know better then the people that actually live in the neighborhoods	10/23/2017 1:44 PM
2	Invest in infrastructure. Bring the political agendas of City Council and the Dept. of Community Development in line with scientific and engineering reality. Educate the city attorneys, who currently go to court asserting the opposite of scientific truth.	10/19/2017 7:55 AM
3	Bury the power lines. That is the #1 way to prepare my family for disaster because preventing the disaster is most important	10/18/2017 6:07 PM
4	Upgrade fire department for earthquake survival.	10/18/2017 5:31 PM

5	City needs to close a rather large gap between its technical haz and emergency skills and practices and the standards for best practices. Public communications... surrounding municipalities hold neighborhood meetings - the city goes to the residents - which are publicized by putting up 6'x3.5" banners in high viz spots 2 wks in advance.	10/18/2017 3:50 PM
6	Better emergency communication	10/17/2017 8:11 PM
7	Use past disaster to outline what has happened here and what may be likely to happen again	10/17/2017 6:58 PM
8	More support for the fire department.	10/17/2017 6:15 PM
9	Discuss evacuation plans and procedures for all residential locations.	10/17/2017 4:08 PM
10	I have substantial red cross disaster response experience and will be happy to support this iniatitive. Question #9 needs to be reviewed	10/17/2017 4:02 PM
11	Register pets on Next Door or Facebook	10/17/2017 3:21 PM
12	Undergrounding can help the community be better prepared because down power lines are a major hazard in LAGUNA.	10/17/2017 2:47 PM
13	blockage to escape routes...ie power poles falling	10/7/2017 9:08 AM
14	ensure clear and unobstructed evacuation paths in the event of wildfires or earthquakes;	10/6/2017 2:23 PM
15	put utilities underground and have the city have a major emergency back up stock and plan	10/5/2017 2:52 PM
16	As I mentioned before, upper Bluebird has many new residents that are not aware of our particular vulnerabilities. Please help this area find a meeting location for our neighborhood as the Luthern Church is not available to us now. Do we have a point person for our area?	10/5/2017 10:00 AM
17	Our neighborhood has had a major change in home ownership of uninformed individuals who really know nothing about the hazards that can & have occurred in our neighborhood. We lost our meeting spot at the Lutheran Church & there seems to be a lack of interest in what vulnerabilities we have. Just my observation.	10/5/2017 8:59 AM
18	maybe have specific meetings/information for those of us who are mobility impaired/in wheelchairs	10/4/2017 9:12 AM
19	Include family pets other animals/livestock in evacuation and sheltering plans	10/3/2017 5:10 PM
20	mail list of information of what to gather to prepare vs just downloading and website to guarantee each resident has one. Help folks get ER kits together maybe have several sessions where a person can build an emergency kit? Hold one a month not just one. Involve schools and kids so they are educated	10/3/2017 3:26 PM
21	A plan to coordinate private resources on ad hoc basis.	9/29/2017 2:50 PM
22	Provide defensible space around my home and good fields of fire.	9/28/2017 11:33 AM
23	Peristent communications is key, as it was with the "Buckle Up" campaigns back in the day.	9/27/2017 2:09 PM
24	Facilitate plans for neighborhoods...maybe even provide storage for neighborhood supplies...like at the parks	9/23/2017 6:45 AM
25	Underground all of our above ground utilities	9/22/2017 1:42 PM
26	Taking down telephone poles that could fall and block streets is important	9/15/2017 6:04 PM
27	Transition to solar power for emergency police trailer. Purchase additional solar power trailers for neighborhood cell phone charging	9/12/2017 4:47 PM
28	Create a database of the disabled and those with special needs that need help in an emergency	9/12/2017 9:32 AM
29	coordinate emergency communications, signage and volunteers, especially exit strategies, helicopter evac & ER service	9/12/2017 8:39 AM
30	Adequately fund our emergency services through PD/FD and prioritize emergency/disaster prevention, planning and preparedness investments as part of our City budget.	9/11/2017 9:51 PM
31	Have routes mark or mapped for evacuations	9/2/2017 5:58 AM
32	maintain transportation systems	9/1/2017 9:43 PM
33	alternate dhelter locations that allow pets;not everyone can afford to evacuate to a hotel.	9/1/2017 8:46 AM
34	Clear brush	8/30/2017 4:05 PM

35	Train business owners in emergency preparedness. Ask EVERYONE in Laguna Beach to take a CERT Class	8/30/2017 8:54 AM
36	Remove exclusivity and bias within CERT	8/30/2017 8:53 AM
37	Put the power lines underground	8/30/2017 8:33 AM
38	Create emergency preparedness teams, not just city wide, but per neighborhood.	8/30/2017 6:33 AM
39	Help get problem behind our house taken care of properly. Frustrated that I'm not getting responses from those that are to help.	8/30/2017 6:32 AM

Q16 What is the ZIP code of your workplace?

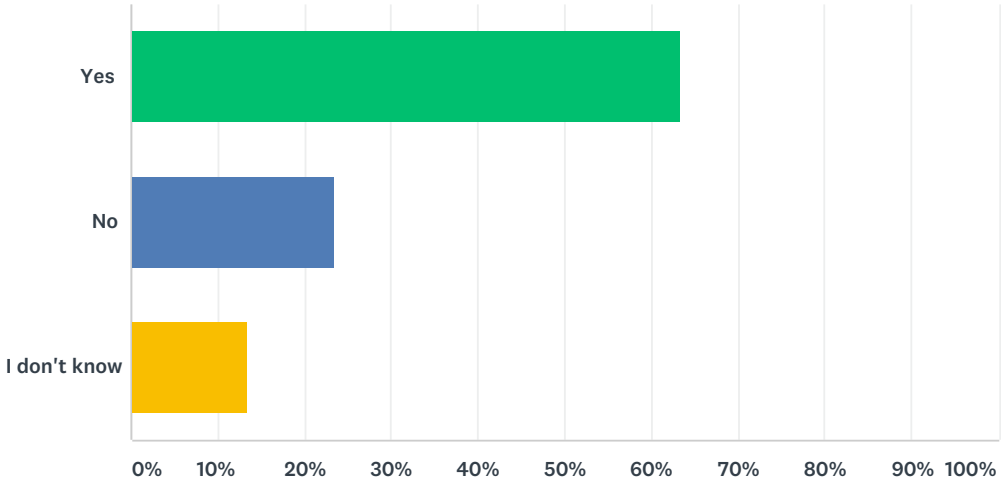
Answered: 60 Skipped: 134

#	RESPONSES	DATE
1	92651	10/25/2017 6:12 PM
2	926551	10/24/2017 5:30 AM
3	92653	10/23/2017 6:55 PM
4	92651	10/23/2017 2:35 PM
5	92561	10/23/2017 1:44 PM
6	92651	10/20/2017 3:52 PM
7	92651	10/18/2017 5:34 PM
8	92651	10/18/2017 3:51 PM
9	92561	10/18/2017 2:10 PM
10	I'm Retired	10/18/2017 10:30 AM
11	92651	10/18/2017 8:10 AM
12	92651	10/17/2017 11:40 PM
13	92651	10/17/2017 10:26 PM
14	92703	10/17/2017 8:57 PM
15	92651	10/17/2017 8:24 PM
16	92614	10/17/2017 8:20 PM
17	92651	10/17/2017 7:54 PM
18	92614	10/17/2017 7:36 PM
19	92651	10/17/2017 4:13 PM
20	92651	10/17/2017 4:10 PM
21	92651	10/17/2017 3:57 PM
22	92651	10/17/2017 3:42 PM
23	92651	10/17/2017 3:34 PM
24	92651	10/17/2017 3:34 PM
25	92651	10/17/2017 3:16 PM
26	92651	10/17/2017 2:48 PM
27	92651	10/17/2017 12:55 PM
28	92618	10/6/2017 3:43 PM
29	92651	10/6/2017 2:24 PM

30	92612	10/6/2017 9:33 AM
31	92651	10/5/2017 10:02 AM
32	92652	10/5/2017 9:19 AM
33	92623	10/4/2017 6:51 AM
34	92651	10/3/2017 5:11 PM
35	92651	9/27/2017 12:25 PM
36	92651	9/25/2017 1:31 PM
37	92651	9/22/2017 1:46 PM
38	Retired	9/15/2017 6:06 PM
39	92651	9/15/2017 9:39 AM
40	92651	9/12/2017 4:51 PM
41	92651	9/12/2017 4:15 PM
42	92651	9/12/2017 10:36 AM
43	92651	9/12/2017 10:03 AM
44	92651	9/12/2017 8:41 AM
45	92651	9/11/2017 1:49 PM
46	92651	9/10/2017 7:09 PM
47	92651	9/9/2017 9:06 AM
48	92651	9/5/2017 9:59 PM
49	92651	9/5/2017 12:39 PM
50	92651	9/2/2017 6:03 AM
51	92651	9/1/2017 8:46 AM
52	92651	8/31/2017 7:46 AM
53	92651	8/30/2017 5:45 PM
54	92651	8/30/2017 10:37 AM
55	92651	8/30/2017 8:55 AM
56	92651	8/30/2017 8:46 AM
57	92651	8/30/2017 7:18 AM
58	92691	8/30/2017 7:09 AM
59	92651	8/30/2017 6:35 AM
60	92651	8/30/2017 6:24 AM

Q17 Does your employer have a plan for disaster recovery in place?

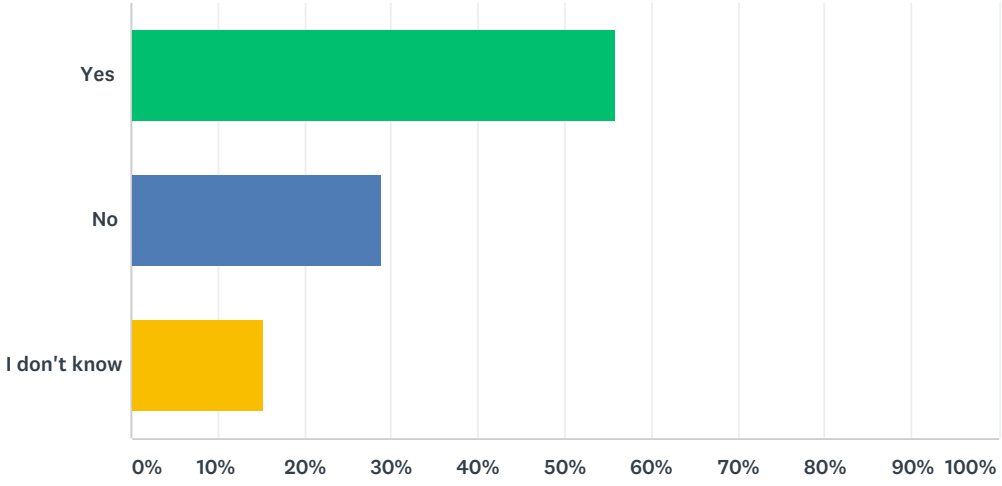
Answered: 60 Skipped: 134



ANSWER CHOICES	RESPONSES	
Yes	63.33%	38
No	23.33%	14
I don't know	13.33%	8
TOTAL		60

Q18 Does your employer have a workforce communications plan to implement following a disaster so they are able to contact you?

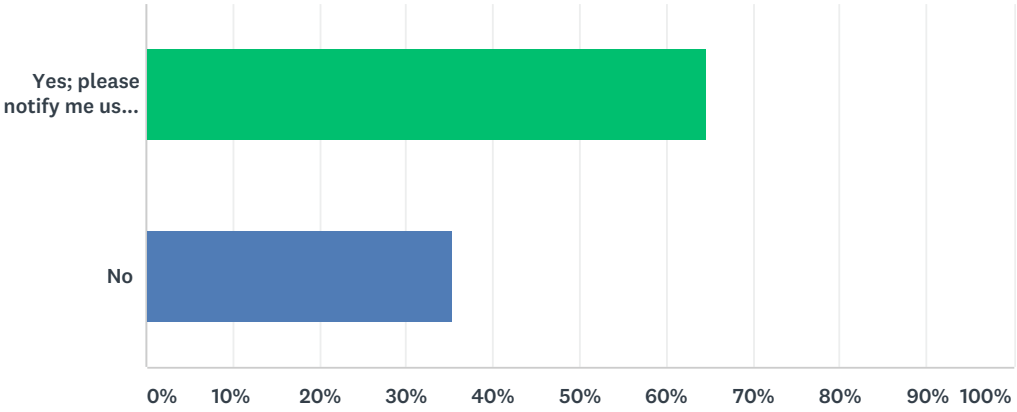
Answered: 59 Skipped: 135



ANSWER CHOICES	RESPONSES	
Yes	55.93%	33
No	28.81%	17
I don't know	15.25%	9
TOTAL		59

Q19 Would you like to be contacted when the Draft 2018 Laguna Beach Hazard Mitigation Plan is available for review?

Answered: 130 Skipped: 64



ANSWER CHOICES	RESPONSES	
Yes; please notify me using my contact information in the next question.	64.62%	84
No	35.38%	46
TOTAL		130

Q20 If you would like to be notified of future opportunities to participate in hazard mitigation and resiliency planning, please provide your name and e-mail address. If you do not have an e-mail address, please provide your mailing address.

Answered: 84 Skipped: 110

ANSWER CHOICES	RESPONSES	
Full name	94.05%	79
E-mail (or mailing) address	94.05%	79
Street address	79.76%	67
City, state, and zip code	86.90%	73

#	FULL NAME	DATE
1		10/23/2017 6:55 PM
2		10/23/2017 2:35 PM
3		10/23/2017 2:07 PM
4		10/20/2017 4:51 PM
5		10/18/2017 6:13 PM
6		10/18/2017 2:10 PM

The names, email addresses, and street addresses of respondents have been redacted to protect their privacy.

7		10/18/2017 10:30 AM
8		10/18/2017 8:10 AM
9		10/18/2017 7:58 AM
10		10/18/2017 7:13 AM
11		10/17/2017 11:51 PM
12		10/17/2017 10:26 PM
13		10/17/2017 8:57 PM
14		10/17/2017 8:24 PM
15		10/17/2017 7:36 PM
16		10/17/2017 7:00 PM
17		10/17/2017 6:34 PM
18		10/17/2017 5:33 PM
19		10/17/2017 4:27 PM
20		10/17/2017 4:17 PM
21		10/17/2017 4:15 PM
22		10/17/2017 4:13 PM
23		10/17/2017 4:10 PM
24		10/17/2017 4:07 PM
25	The names, email addresses, and street addresses of respondents have been redacted to protect their privacy.	10/17/2017 3:42 PM
26		10/17/2017 3:34 PM
27		10/17/2017 3:34 PM
28		10/17/2017 3:27 PM
29		10/17/2017 3:24 PM
30		10/17/2017 3:21 PM
31		10/17/2017 3:16 PM
32		10/6/2017 3:43 PM
33		10/5/2017 2:57 PM
34		10/5/2017 1:13 PM
35		10/5/2017 10:02 AM
36		10/5/2017 9:19 AM
37		10/4/2017 9:41 AM
38		10/4/2017 9:16 AM
39		10/4/2017 6:51 AM
40		10/3/2017 5:11 PM
41		10/3/2017 3:30 PM
42		9/29/2017 2:56 PM
43		9/28/2017 7:50 AM
44		9/27/2017 12:25 PM
45		9/23/2017 6:47 AM
46		9/22/2017 1:46 PM
47		9/19/2017 1:35 PM

48		9/15/2017 6:06 PM
49		9/15/2017 9:39 AM
50		9/14/2017 10:42 PM
51		9/14/2017 9:58 PM
52		9/13/2017 10:24 AM
53		9/13/2017 10:19 AM
54		9/12/2017 8:17 PM
55		9/12/2017 4:51 PM
56		9/12/2017 10:36 AM
57		9/12/2017 8:41 AM
58		9/11/2017 9:53 PM
59		9/11/2017 8:06 PM
60		9/11/2017 1:44 PM
61		9/9/2017 6:35 PM
62		9/9/2017 9:06 AM
63		9/5/2017 9:59 PM
64		9/5/2017 12:39 PM
65		9/2/2017 6:03 AM
66		9/1/2017 10:31 AM
67		9/1/2017 6:08 AM
68		8/31/2017 7:46 AM
69		8/30/2017 8:32 PM
70		8/30/2017 5:48 PM
71		8/30/2017 5:45 PM
72		8/30/2017 11:45 AM
73		8/30/2017 10:37 AM
74		8/30/2017 8:55 AM
75		8/30/2017 8:46 AM
76		8/30/2017 8:45 AM
77		8/30/2017 7:09 AM
78		8/30/2017 6:40 AM
79		8/30/2017 6:24 AM
#	**E-MAIL (OR MAILING) ADDRESS**	**DATE**
1		10/23/2017 6:55 PM
2		10/23/2017 2:35 PM
3		10/23/2017 2:07 PM
4		10/20/2017 4:51 PM
5		10/18/2017 6:13 PM
6		10/18/2017 5:34 PM
7		10/18/2017 3:51 PM
8		10/18/2017 2:10 PM

The names, email addresses, and street addresses of respondents have been redacted to protect their privacy.

9	10/18/2017 10:30 AM
10	10/18/2017 8:10 AM
11	10/18/2017 7:58 AM
12	10/18/2017 7:13 AM
13	10/17/2017 11:51 PM
14	10/17/2017 10:26 PM
15	10/17/2017 8:57 PM
16	10/17/2017 8:24 PM
17	10/17/2017 8:20 PM
18	10/17/2017 7:36 PM
19	10/17/2017 7:00 PM
20	10/17/2017 6:34 PM
21	10/17/2017 5:33 PM
22	10/17/2017 4:27 PM
23	10/17/2017 4:17 PM
24	10/17/2017 4:15 PM
25	10/17/2017 4:13 PM
26	10/17/2017 4:10 PM
27	10/17/2017 4:07 PM
28	10/17/2017 3:42 PM
29	10/17/2017 3:34 PM
30	10/17/2017 3:34 PM
31	10/17/2017 3:27 PM
32	10/17/2017 3:24 PM
33	10/17/2017 3:21 PM
34	10/17/2017 3:16 PM
35	10/6/2017 3:43 PM
36	10/5/2017 2:57 PM
37	10/5/2017 1:13 PM
38	10/5/2017 10:02 AM
39	10/5/2017 9:19 AM
40	10/4/2017 9:41 AM
41	10/4/2017 9:16 AM
42	10/4/2017 6:51 AM
43	10/3/2017 5:11 PM
44	9/29/2017 2:56 PM
45	9/28/2017 7:50 AM
46	9/27/2017 12:25 PM
47	9/23/2017 6:47 AM
48	9/22/2017 1:46 PM
49	9/19/2017 1:35 PM

The names, email addresses, and street addresses of respondents have been redacted to protect their privacy.

50		9/15/2017 6:06 PM
51		9/15/2017 9:39 AM
52		9/14/2017 10:42 PM
53		9/14/2017 9:58 PM
54		9/13/2017 10:24 AM
55		9/13/2017 10:19 AM
56		9/12/2017 8:17 PM
57		9/12/2017 4:51 PM
58		9/12/2017 10:36 AM
59		9/12/2017 9:33 AM
60		9/12/2017 8:41 AM
61		9/11/2017 9:53 PM
62		9/11/2017 8:06 PM
63		9/11/2017 1:44 PM
64		9/9/2017 6:35 PM
65		9/9/2017 9:06 AM
66		9/5/2017 9:59 PM
67		9/5/2017 12:39 PM
68		9/2/2017 6:03 AM
69		9/1/2017 10:31 AM
70		9/1/2017 6:08 AM
71		8/31/2017 7:46 AM
72		8/30/2017 8:32 PM
73		8/30/2017 5:48 PM
74		8/30/2017 5:45 PM
75		8/30/2017 10:37 AM
76		8/30/2017 8:46 AM
77		8/30/2017 8:45 AM
78		8/30/2017 6:40 AM
79		8/30/2017 6:24 AM
#	**STREET ADDRESS**	**DATE**
1		10/23/2017 6:55 PM
2		10/23/2017 2:35 PM
3		10/23/2017 2:07 PM
4		10/20/2017 4:51 PM
5		10/18/2017 6:13 PM
6		10/18/2017 2:10 PM
7		10/18/2017 10:30 AM
8		10/18/2017 8:10 AM
9		10/18/2017 7:58 AM
10		10/18/2017 7:13 AM

The names, email addresses, and street addresses of respondents have been redacted to protect their privacy.

11		10/17/2017 11:51 PM
12		10/17/2017 10:26 PM
13		10/17/2017 8:57 PM
14		10/17/2017 8:24 PM
15		10/17/2017 7:36 PM
16		10/17/2017 7:00 PM
17		10/17/2017 4:27 PM
18		10/17/2017 4:10 PM
19		10/17/2017 4:07 PM
20		10/17/2017 3:42 PM
21	.	10/17/2017 3:34 PM
22		10/17/2017 3:34 PM
23		10/17/2017 3:27 PM
24		10/17/2017 3:24 PM
25		10/17/2017 3:21 PM
26	.	10/17/2017 3:16 PM
27		10/5/2017 1:13 PM
28		10/5/2017 10:02 AM
29		10/5/2017 9:19 AM
30		10/4/2017 9:41 AM
31		10/4/2017 9:16 AM
32		10/4/2017 6:51 AM
33		10/3/2017 5:11 PM
34		10/3/2017 3:30 PM
35		9/29/2017 2:56 PM
36		9/28/2017 7:50 AM
37		9/27/2017 12:25 PM
38		9/23/2017 6:47 AM
39		9/22/2017 1:46 PM
40		9/19/2017 1:35 PM
41		9/15/2017 6:06 PM
42		9/15/2017 9:39 AM
43		9/14/2017 10:42 PM
44		9/14/2017 9:58 PM
45		9/13/2017 10:24 AM
46		9/13/2017 10:19 AM
47		9/12/2017 8:17 PM
48		9/12/2017 4:51 PM
49		9/12/2017 10:36 AM
50		9/11/2017 9:53 PM
51		9/11/2017 8:06 PM

The names, email addresses, and street addresses of respondents have been redacted to protect their privacy.

52		9/11/2017 1:44 PM
53		9/9/2017 6:35 PM
54		9/9/2017 9:06 AM
55		9/5/2017 9:59 PM
56		9/2/2017 6:03 AM
57		9/1/2017 6:08 AM
58		8/31/2017 7:46 AM
59		8/30/2017 8:32 PM
60		8/30/2017 5:48 PM
61		8/30/2017 11:45 AM
62		8/30/2017 10:37 AM
63	.	8/30/2017 8:46 AM
64		8/30/2017 8:45 AM
65		8/30/2017 7:09 AM
66		8/30/2017 6:40 AM
67		8/30/2017 6:24 AM

The names, email addresses, and street addresses of respondents have been redacted to protect their privacy.

#	CITY, STATE, AND ZIP CODE	DATE
1	Laguna Beach, Ca 92651	10/23/2017 6:55 PM
2	92651	10/23/2017 2:35 PM
3	Laguna beach, ca 92651	10/23/2017 2:07 PM
4	Laguna Beach, Ca. 92651	10/20/2017 4:51 PM
5	Laguna Beach, CA 92651	10/18/2017 6:13 PM
6	Laguna Beach CA 92651	10/18/2017 5:34 PM
7	San Clemente, CA 92673	10/18/2017 2:10 PM
8	LAGUNA BEACH, CA 92651-2004	10/18/2017 10:30 AM
9	Laguna Beach	10/18/2017 8:10 AM
10	LAGUNA BEACH	10/18/2017 7:58 AM
11	Laguna Beach Ca 92651	10/18/2017 7:13 AM
12	Laguna Beach	10/17/2017 11:51 PM
13	Laguna Beach, CA 92651	10/17/2017 10:26 PM
14	Laguna Beach, CA 92651	10/17/2017 8:57 PM
15	Lake Elsinore, ca 92530	10/17/2017 8:24 PM
16	Laguna Beach, Ca 92651	10/17/2017 7:36 PM
17	Laguna Beach ca 92651	10/17/2017 7:00 PM
18	Laguna beach, ca 92651	10/17/2017 4:27 PM
19	Laguna Beach	10/17/2017 4:15 PM
20	Laguna Beach, CA 92651	10/17/2017 4:10 PM
21	Laguna Beach, CA 92651	10/17/2017 4:07 PM
22	Laguna Beach ca 92651	10/17/2017 3:42 PM
23	Laguna Beach Ca. 92651	10/17/2017 3:34 PM
24	92651	10/17/2017 3:34 PM

25	Laguna Beach, Ca 92651	10/17/2017 3:27 PM
26	Laguna Beach ,CA 92651	10/17/2017 3:24 PM
27	Laguna Beach, CA 92651	10/17/2017 3:21 PM
28	Laguna Beach, CA 92651	10/17/2017 3:16 PM
29	Laguna Beach	10/5/2017 2:57 PM
30	Laguna Niguel, CA 92677	10/5/2017 1:13 PM
31	92651	10/5/2017 10:02 AM
32	Laguna beach ca 92652	10/5/2017 9:19 AM
33	Laguna Beach 92651	10/4/2017 9:41 AM
34	Laguna Beach, California 92651	10/4/2017 9:16 AM
35	Irvine, CA 92623	10/4/2017 6:51 AM
36	Laguna Beach, Ca	10/3/2017 5:11 PM
37	Laguna Beach, CA 92651	10/3/2017 3:30 PM
38	Laguna Beach. CA. 92651	9/29/2017 2:56 PM
39	Aliso Viejo, CA 92656	9/28/2017 7:50 AM
40	Laguna Beach, CA 92651	9/27/2017 12:25 PM
41	Laguna Beach CA 92651	9/23/2017 6:47 AM
42	Laguna Beach, CA, 92651	9/22/2017 1:46 PM
43	Laguna Beach CA 92651	9/19/2017 1:35 PM
44	Laguna Beach, CA, 92651	9/15/2017 6:06 PM
45	Laguna Beach	9/15/2017 9:39 AM
46	Laguna Beach	9/14/2017 10:42 PM
47	Laguna Niguel CA 92677	9/14/2017 9:58 PM
48	Laguna Beach	9/13/2017 10:24 AM
49	Laguna Beach, Ca 92651	9/13/2017 10:19 AM
50	Laguna beach, ca. 92651	9/12/2017 8:17 PM
51	Laguna Beach, CA 92651	9/12/2017 4:51 PM
52	laguna beach, ca 92651	9/12/2017 10:36 AM
53	Laguna Beach	9/12/2017 8:41 AM
54	Laguna Beach, CA 92651	9/11/2017 9:53 PM
55	92651	9/11/2017 8:06 PM
56	Laguna Beach, CA 92651	9/11/2017 1:44 PM
57	Laguna Beach	9/9/2017 6:35 PM
58	Laguna Beach, CA 92651	9/9/2017 9:06 AM
59	Laguna Beach, CA 92651	9/5/2017 9:59 PM
60	Laguna Beach CA 92651	9/2/2017 6:03 AM
61	Laguna Beach, CA 92651	9/1/2017 6:08 AM
62	Laguna Beach	8/31/2017 7:46 AM
63	LAGUNA BEACH 92651	8/30/2017 8:32 PM
64	Laguna Beach CA 92651	8/30/2017 5:48 PM
65	Laguna Beach CA 92651	8/30/2017 11:45 AM

66	Laguna Beach	8/30/2017 10:37 AM
67	Laguna Beach	8/30/2017 8:55 AM
68	Laguna beach CA 92651	8/30/2017 8:46 AM
69	Laguna Beach	8/30/2017 8:45 AM
70	92651	8/30/2017 7:18 AM
71	92630	8/30/2017 7:09 AM
72	LAGUNA BEACH	8/30/2017 6:40 AM
73	Laguna Beach, CA 92651	8/30/2017 6:24 AM

Q21 Please provide us with any additional comments/suggestions/questions that you have regarding your risk of future hazard events.

Answered: 38 Skipped: 156

#	RESPONSES	DATE
1	Please address Dead Brush and trees that are filled with dead brush in the city. It ignites so easy and I am very concerned about it. Keeping trees laced of dead brush and yards clear of dead grasses and bushes, would help if we come into contact with Fire in our city. Trees maintained will also help during high winds. Dangerous stuff!	10/20/2017 4:51 PM
2	My experience with high city officials is that they deny risk. I was told by the past Director of Community Development that the city manager and city attorney told him that "it is cheaper to litigate than to mitigate." He told me that he had been forbidden to acknowledge or discuss any natural hazards that are aggravated by current city law, policy, action, or inaction. He said that he was told to "treat hazard risk the same way as a person tripping on a broken curb." He also said the the city does not want requirements, such as environmental impact studies, to hinder the enforcement of municipal laws, so the unwritten policy is to not mention risk, deny their is a risk, or claim an exemption. While the city has many honest and dedicated staff, a fish rots from the head down. Given many years of experience with the city, I fear that FEMA grants will be used for selfish political purposes and not hazard mitigation. The city knows every trick in the book.	10/19/2017 8:17 AM
3	Above ground powerlines are the biggest disaster threat we have as a city, and also the most preventable. PLEASE BURY THEM!	10/18/2017 6:13 PM
4	No fire department review of property hazards due to disasters	10/18/2017 5:34 PM
5	Evacuation routes need to be clearly identified, especially if the 133 is closed. Will the fire road to Arch Beach Hgts. be open to allow evacuation from TOW if needed.	10/18/2017 10:30 AM
6	Can I please get a copy of the responses to this survey?	10/18/2017 7:58 AM
7	We live in Arch Beach Heights, with only 3 narrow roads off of the hill. What are the city's evacuation plans for residents on the hills?	10/17/2017 10:26 PM
8	I have concerns about traffic during summer weekends and ability of emergency vehicles to get through. City should ensure there are no encroachments into Laguna Cyn Channel that decreases its capacity. City needs to seriously work towards substantial improvements to Laguna Cyn Channel.	10/17/2017 8:57 PM
9	Stricter Fuel modifzation rules need to be enforced, irrigation should be allowed, firebreaks between canyon and homes need to be established. More comprehensive measures need to be in place for Oro Canyon fire mitigation.	10/17/2017 7:36 PM
10	Create emergency kits for sale. I would buy one. Also recommendations on generators.	10/17/2017 4:27 PM
11	We experienced a fast-moving fire in 1993. We were told to evacuate door to door by city personnel. Would we be warned if a tsunami were imminent?	10/17/2017 4:15 PM

12	Please consider reducing / eliminating the trees in lower Bluebird Canyon near the tennis courts as this represents a fire / fuel source nearly impossible to pass. This represents the most significant fire hazard to the people that live in the lower back section of Bluebird Canyon.	10/17/2017 4:07 PM
13	update the city web site and send mass texts/emails ; Caltrans signs are usually incorrect at the city limits	10/17/2017 3:24 PM
14	I have taught pet rescue classes in the past and could do so in the future.	10/17/2017 3:16 PM
15	Please underground the power lines to reduce the associated risks of fire, electrocution and blocking evacuation as well as power outages	10/8/2017 8:53 AM
16	Under ground power line is a priority in our neighborhood	10/6/2017 3:43 PM
17	fire is the big concern here and people taking responsibility for the care and maintenance of their property	10/5/2017 2:57 PM
18	Will there every be another emergency road out of Bluebird?	10/5/2017 10:02 AM
19	would like information on the risk my property has for floods. I cancelled my flood insurance because I believe this risk is minor. Hope I was correct. If not, I'd like to know this so I can again get such insurance.	10/4/2017 9:16 AM
20	Recent events show that local private resources are the first to respond to area-wide disasters. Think of resiliant ways to coordinate these effectively. Will cellphones still work? Stockpile talk-about radios?	9/29/2017 2:56 PM
21	Please don't spy on me.	9/28/2017 11:34 AM
22	I know people involved in this effort, and have great confidence in their abilities.	9/27/2017 2:10 PM
23	Once the LHMP is in place, it will be important for as much of the community including businesses to be aware of it, understand it, and know how to implement it within their own role as a community resident or employee.	9/27/2017 12:25 PM
24	Continue help with undergrounding.	9/22/2017 1:46 PM
25	Thank you.	9/19/2017 1:35 PM
26	I live on an arterial that was jammed with people evacuating during the 1993 fire. If the power poles fall, this important evacuation route will be useless.	9/15/2017 9:39 AM
27	Is there a plan in place for the Suzi Q to be used as an emergency shelter, should the need arise? Are Suzi Q Staff trained in how to ventilate the building in summer, should we have grid failure?	9/12/2017 4:51 PM
28	What training does the city/EM and public have for nuclear situations-SONGS, shelters,etc.?	9/12/2017 8:41 AM
29	We have four seasons in LB: fire, flood, landslide and earthquake. Let's plan and prioritize accordingly.	9/11/2017 9:53 PM
30	In light of all that is going on in our country right now, it is necessary, and realistic, to do all that we can to prepare ourselves for a possible hazard to occur in our town. Although we hope that Laguna never has to face a disaster, we are very pleased that our City is taking these possibilities seriously and doing all it can to assist its citizens in preparation. Thank you.	9/11/2017 1:44 PM
31	Eliminate as many sources that could trigger a citywide fire as humanly possible, keep the natural brush and fire fuels as low as humanly possible. Have more than adequate stores of water and infrastructure in place to deliver it to put out any large citywide fire. Incentivize homeowners to install "powewall" type electrical storage to provide basic power for a 72 hour loss of power.	9/9/2017 7:38 AM
32	Bluebird Canyon is a boxed canyon there used to be a fire road behind Madison that lead to Oriole from Madison. Due to the fact a second road is not possible walking trails should be mapped to get people out safe and handicapped could drive out	9/2/2017 6:03 AM
33	Engage SCE to properly and finally deal with its nuclear waste stored at the closed San Onofre plant and make this a priority as part of LHMP.	9/1/2017 6:08 AM
34	How can I start a carrier in community disaster preparation?	8/31/2017 7:46 AM
35	Regional response plan for major seismic events.	8/30/2017 5:48 PM
36	Significant risk of pedestrian crossing hazards by city overgrown brush that blocks pedestrian views	8/30/2017 8:55 AM
37	Thanks for preparing our beautiful city! Our cities evacuation routes are of main concern for me	8/30/2017 8:46 AM

38	When will they put the power lines underground? They're a fire waiting to happen	8/30/2017 8:45 AM

Aaron Pfannenstiel

From: Villwock, Jordan PD <jvillwock@lagunabeachcity.net>
Sent: Tuesday, October 3, 2017 2:53 PM
To: Aaron Pfannenstiel
Subject: FW: LIVING IT UP: October E-News from the Susi Q

From: Laguna Beach Seniors [mailto:info=thesusiq.org@mail48.sea21.rsgsv.net] **On Behalf Of** Laguna Beach Seniors
Sent: Friday, September 29, 2017 3:25 PM
To: Villwock, Jordan PD <jvillwock@lagunabeachcity.net>
Subject: LIVING IT UP: October E-News from the Susi Q

VIEW THIS IN YOUR BROWSER

LIVING IT UP

AT THE SUSI Q

OCTOBER 2017 E-NEWSLETTER

ETTY: A one-woman play

Monday, October 23
3:30 p.m. - 5:30 p.m. | Free

Etty is a touring, 50-minute play drawn from the diaries of **Etty Hillesum**, an intelligent and poetic young Dutch jewish woman searching for the meaning of her life — and all life — during the terror of Nazi occupation. The performance is followed by an audience generated discussion that becomes the second act of the play. Space is limited. Sign up at the front desk, call **949-464-6645** or register **online** — click on Recreation Classes. Visit **ettyplay.org**.

ANNUAL FREE FLU SHOT
Health+Wellness Senior Expo

Friday, October 27
8:30 a.m. - 11:00 a.m. | Free

This year's Susi Q Senior Health + Wellness Expo is refreshed and rejuvenated! Discover all things fun, informative and preventative with lots of health resources from the City, the Susi Q and our local community. Free blood pressure and glucose screenings, demos and a chance to investigate and interact with the latest and greatest in nutrition, brain health, emergency preparedness, balance, exercise and **more**!

Join us at Gallery Q's Artist Reception

Friday, October 13 | 4:30 p.m. - 6:00 p.m. | Free

Explore the art-nature connection in Gallery Q's final exhibition of the season**, Nature as Muse**, in partnership with the **Laguna Art Museum**. Come mingle with the artists and meet **Malcolm Warner**, the museum's executive director, who will talk about our collaboration. Free reception with light refreshments. The exhibit will be on display at the Susi Q through November 17 from 9:00 a.m. to 5:00 p.m.

Become a Mentor
"Special You" Reading Club

Information Session: Wednesday, November 1
2:00 p.m. - 3:30 p.m. | Free

A child's life can be changed by a positive connection with one, caring adult. This fall marks the 4th year that the tri-lingual book "**You are a Very Special You**", by **Elsa Brizzi**, is used for this popular, community project. Call the Susi Q's **Christine Brewer** at **949-715-8105** for more details and to reserve your space.

LIFELONG LAGUNA UPDATES

Solve a Problem and Make Money

Wednesday, October 11 | 6:00 p.m. - 7:30 p.m. | Free
Homeowner? Want to make a dent in an affordable housing crisis that is impacting other longtime locals? Sign up for **Lifelong Laguna's** free **Accessory Dwelling Unit Education Workshop**, co-hosted by the Laguna Board of Realtors. Contact our program specialist **John Fay** at **949-715-8107** or johnfay@thesusiq.org to register.

Lifelong Laguna Link of the Month

Our colleagues at the City are working on a **Local Hazard Mitigation Plan** that could save our lives in a natural disaster or other emergencies. They need us to do our part by taking this **short survey**. Check out the City's **website page** for more information or contact project lead **Jordan Villwock**, jvillwock@lagunabeachcity.net or **949-497-0389**.

SUSI Q CLUB + CLASS HAPPENINGS

NEW Quest Discussion Group

5th Tuesday | October 31 | 10:00 a.m. - 12:00 noon | Free
The quest for understanding can better enrich our lives. At **Quest** — facilitated by **Al Gumb** — we'll dive into significant topics to promote deeper insight into complex issues. Next up: "**Iran: Yesterday and Today**" presented by Susi Q executive director **Nadia Babayi**. Email algumb@earthlink.net for more information.

Ancestry "A" Club

Wednesdays | 3:00 p.m. - 5:00 p.m.

A journey into the past can help you discover what makes you uniquely you and uncover your distinctive heritage. Join popular and professional genealogist **Beth Sand**, and meet others who have a common interest in learning more about their family history. Email **elizasand@aol.com** for more details. Drop in.

Current Events

Fridays | 10:00 a.m. - 11:30 a.m.

Bring in a current news item to spark friendly discussion and spirited debate with the guidance of an experienced facilitator. Reservations not required, just drop in. For questions, email **Bill Allen** at **collector11@cox.net**.

Ballroom Dance

Mondays | 1:30 p.m. - 2:30 p.m. | $7/Class Drop-in

Have a special event or a wedding coming up and want to make your steps swoon-worthy? Learn the art of social dance with Candis Davis and learn everything from slow to quick to ballroom to swing and Latin. No partner needed. Call **949-464-6645** for more information or just drop in.

Camera iPhone + iPad Basics

Thursday | November 2 | 1:00 p.m. - 2:00 p.m. | Free

From selfies to group portraits, you can learn to take great pictures with your iPhone and/or iPad. Popular instructor Linda Simpson will show you how and give you great everyday essential tips. Call the front desk **949-464-6645** or register **online**. Click on Recreation Classes.

Smart Gardening with Local Master Gardeners

Saturdays | 9:00 a.m. - 10:00 a.m. | Free
October 14 | Creating Pumpkin Succulent Centerpieces
November 11 | Beautiful Bulbs
Learn how to grow and maintain healthy plants and landscapes that improve both our community and the environment. Visit or call the front desk **949-464-6645** or register **online**. Click on Recreation Classes.

Learn Calligraphy — Copperplate

Thursdays | October 5 - 19 | 6:30 p.m. - 8:30 p.m.
3-week series | $120 + $30 material fee
Calligraphy is having a renaissance. Learn everything you need to begin — or enhance — your practice in lettering, starting with the alphabet and numbers and how to work with various papers, inks and gouache. All levels welcome. Visit or call the front desk **949-464-6645** or register **online**. Click on Recreation Classes.

SUPPORT ALWAYS NEARBY

Laguna Beach Seniors Men's Group

Fridays | 11:00 a.m. - 12:30 p.m. | Free
For men 50+, get support from the general stress of everyday living and any other issues affecting your well-being. Open group, drop ins welcome. Contact facilitator Clint Christie, M.A., Registered MFT Intern, at **949-715-8104** for details.

Protect Against Hearing Loss

2nd Thursday Monthly | 1:30 p.m. - 3:30 p.m. | Free
Age is a risk factor in hearing loss. Early detection can help protect your hearing for the future Find out how you're doing by scheduling a free screening and consultation with audiologist **Dr. Rose Marie Davis**. Call **949-464-6645** and make an appointment today.

Scams, Schemes and Lies: What is Financial Elder Abuse?

Brought to you by your local U.S. Bank branch

Discover how financial elder abuse can sneak into your life through a phone call, email or by using social media. Education is key to protecting yourself and stopping crooks. Take less than 3 minutes and watch the video **here**.

Your Donations Help Seniors Age Gracefully in Laguna Beach

We'd Love to Hear From You

We appreciate any comments you might have that can help us serve you better.

Please **email us** anytime! If you know someone who would like to be informed of our events and programs, please have them visit our **home page** where they can subscribe to this monthly e-Newsletter!

LAGUNA BEACH SENIORS AT THE SUSI Q

380 THIRD STREET | LAGUNA BEACH CA 92651 | 949.464.6645

Website **Email Us** **Facebook** **YouTube** **Instagram**

APPENDIX C
ADOPTION RESOLUTION

1. City Council resolution of adoption

The adoption resolution will be added to the LHMP in the final version, pending adoption by the Laguna Beach City Council.

APPENDIX D
CRITICAL FACILITIES INVENTORY

1. Critical facilities inventory

Facility Type	Site	Asset_Name	City_1	State	Building Square Footage	Year Constructed	Type of Construction	Structure Value	Contents Value
Critical	1	Laguna Beach City Hall/ Police Station	Laguna Beach	CA	38,609	1931	ALL COMB (WOOD FRAME)	$ 9,770,448.00	$ 2,177,488.00
Critical	2	Laguna Beach Fire Station #1	Laguna Beach	CA					
Critical	3	Laguna Beach Fire Station #2/ OC Comm.	Laguna Beach	CA	4,798	1968	ALL COMB (WOOD FRAME)	$ 3,654,703.00	$ 215,603.00
Critical	4	Laguna Beach Fire Station #3/ OC Comm.	Laguna Beach	CA	3,381	1968	ALL COMB (WOOD FRAME)	$ 2,593,767.00	$ 69,651.00
Critical	5	Laguna Beach Fire Station #4	Laguna Beach	CA	4,200	1945	MASONRY CONST/WOOD ROOF	$ 3,202,166.00	$ 107,691.00
Critical	6	Lifeguard Headquarters	Laguna Beach	CA				$ 6,364,840.49	
Concern	7	Susi Q Center - Shelter	Laguna Beach	CA	20,500	2009	NON COMB STEEL FRAME	$ 10,079,661.00	$ 432,405.00
Critical	8	Mission Hospital Laguna Beach/ OC Comm.	Laguna Beach	CA					
Critical	9	City Corp Yard	Laguna Beach	CA	20,000	2008	NON COMB STEEL FRAME	$ 5,779,835.00	$ 3,393,194.00
Concern	10	Lang Park	Laguna Beach	CA				$ 2,757,018.00	
Critical	11	Borrego Substation	Laguna Beach	CA					
Concern	12	Laguna Beach County Water	Laguna Beach	CA					
Critical	13	Morro Substation	Laguna Beach	CA					
Concern	14	OC Comm. Moorhead	Laguna Beach	CA					
Concern	15	OC Comm. Moorhead Site	Laguna Beach	CA					
Concern	16	South Coast Water District	Laguna Beach	CA					
Concern	17	73/133	N/A	CA					
Concern	18	Aliso Bridge/ Aliso Beach Park	Laguna Beach	CA					
Concern	19	Anneliese School (Willowbrook)	Laguna Beach	CA					
Concern	20	Anneliese School (Manzanita)	Laguna Beach	CA					
Concern	21	Anneliese School (Aliso)	Laguna Beach	CA					
Concern	22	El Morro Elementary	Laguna Beach	CA	47,916	1953 & 2001-2004	Wood frame and CMU	$ 14,840,132.00	$ 4,452,039.60
Concern	23	Laguna Beach High School	Laguna Beach	CA	130,266	1930-1960	Wood frame and CMU	$ 41,873,859.00	$ 12,562,157.70
Concern	24	Laguna Beach School District	Laguna Beach	CA	6,717	1945	Wood & steel stud	$ 1,047,852.00	$ 314,355.60
Concern	25	Montessori School of Laguna	Laguna Beach	CA					
Concern	26	St. Catherine's School	Laguna Beach	CA					
Concern	27	Thurston Middle School	Laguna Beach	CA	63,144	1968	Wood frame and CMU	$ 20,245,412.00	$ 6,073,623.60
Concern	28	Top of the World Elementary	Laguna Beach	CA	51,840	1966	Wood & steel stud	$ 17,001,654.00	$ 5,100,496.20
Concern	29	Main Beach	Laguna Beach	CA		Acquired in 1968		$ 3,000,000.00	
Concern	30	Montage Laguna Beach	Laguna Beach	CA					
Concern	31	Laguna Beach Transit Center	Laguna Beach	CA		Acquired in 1978		$ 196,106.00	
Concern	32	Festival of Arts	Laguna Beach	CA	114,503	1960		$ 24,000,000.00	
Concern	33	Sawdust Festival	Laguna Beach	CA					
Critical	34	Fire Station 11 (County)	Laguna Beach	CA					
Critical	35	Water Tank	Laguna Beach	CA					
Critical	36	Water Tank	Laguna Beach	CA					
Critical	37	Water Tank	Laguna Beach	CA					
Critical	38	Water Tank	Laguna Beach	CA					
Critical	39	Water Tank	Laguna Beach	CA					
Critical	40	Water Tank	Laguna Beach	CA					
Critical	41	Water Tank	Laguna Beach	CA					
Critical	42	Water Tank	Laguna Beach	CA					
Critical	43	Water Tank	Laguna Beach	CA					
Critical	44	Water Tank	Laguna Beach	CA					
Critical	45	Water Tank	Laguna Beach	CA					
Critical	46	Water Tank	Laguna Beach	CA					
Critical	47	Water Tank	Laguna Beach	CA					
Critical	48	Water Tank	Laguna Beach	CA					

Facility Type	Site	Asset_Name	City_1	State	Building Square Footage	Year Constructed	Type of Construction	Structure Value	Contents Value
Critical	49	Water Tank	Laguna Beach	CA					
Critical	50	Water Tank	Laguna Beach	CA					
Critical	51	Water Tank	Laguna Beach	CA					
Critical	52	Water Tank	Laguna Beach	CA					
Critical	53	Water Tank	Laguna Beach	CA					
Critical	54	Water Tank	Laguna Beach	CA					
Critical	55	Water Tank	Laguna Beach	CA					
Critical	56	Water Tank	Laguna Beach	CA					
Critical	57	Water Tank	Laguna Beach	CA					
Critical	58	Water Tank	Laguna Beach	CA					
Critical	59	Water Tank	Laguna Beach	CA					
Critical	60	Water Tank	Laguna Beach	CA					
Critical	61	Coastal Treatment Plant - SOCWA	Laguna Beach	CA					
Critical	62	Former Location of Bluebird Cyn ByPass Lift Station	Laguna Beach	CA					
Critical	63	Bluebird SOCWA Lift Station #26	Laguna Beach	CA	2,800	1980	ALL REINFORCED CONCRETE	$ 15,000,000.00	$ 1,081,014.00
Critical	64	Laguna SOCWA Lift Station #25	Laguna Beach	CA	2,400	1980	ALL REINFORCED CONCRETE	$ 15,000,000.00	$ 1,081,014.00
Critical	65	Nyes Place Lift Station #24	Laguna Beach	CA		1993	ALL REINFORCED CONCRETE	$ 1,500,000.00	
Critical	66	Top of the World Lift Station #22	Laguna Beach	CA				$ 1,500,000.00	
Critical	67	Bonn Drive Lift Station #20	Laguna Beach	CA				$ 1,500,000.00	
Critical	68	Bernard Court Lift Station #19	Laguna Beach	CA				$ 1,500,000.00	
Critical	69	Santa Cruz Lift Station #18	Laguna Beach	CA				$ 1,500,000.00	
Critical	70	Irvine Cove Lift Station #17	Laguna Beach	CA				$ 1,500,000.00	
Critical	71	McKnight Drive Lift Station #16	Laguna Beach	CA				$ 1,500,000.00	
Critical	72	Cresent Bay Lift Station #15	Laguna Beach	CA				$ 1,500,000.00	
Critical	73	Shaw's Cove Lift Station #14	Laguna Beach	CA				$ 1,500,000.00	
Critical	74	Fisherman's Cove Lift Station #13	Laguna Beach	CA				$ 1,500,000.00	
Critical	75	Heisler Park Lift Station #12	Laguna Beach	CA				$ 1,500,000.00	
Critical	76	Main Beach Lift Station #11	Laguna Beach	CA		1966	ALL REINFORCED CONCRETE	$ 3,000,000.00	
Critical	77	Animal Shelter Lift Station #10	Laguna Beach	CA				$ 1,500,000.00	
Critical	78	Cleo Street Lift Station #9	Laguna Beach	CA				$ 1,500,000.00	
Critical	79	Anita Lift Station #8	Laguna Beach	CA				$ 1,500,000.00	
Critical	80	Brooks Street Lift Station #7	Laguna Beach	CA		2007	ALL REINFORCED CONCRETE	$ 1,500,000.00	
Critical	81	Bluebird Canyon Lift Station #6	Laguna Beach	CA		1988	ALL REINFORCED CONCRETE	$ 1,500,000.00	
Critical	82	Pearl Street Lift Station #5	Laguna Beach	CA				$ 1,500,000.00	
Critical	83	Miller's Lift Station #4	Laguna Beach	CA		2005	ALL REINFORCED CONCRETE	$ 1,500,000.00	
Critical	84	Rockledge Lift Station #3	Laguna Beach	CA				$ 1,500,000.00	
Critical	85	Victoria II Lift Station #2	Laguna Beach	CA		2007	ALL REINFORCED CONCRETE	$ 1,500,000.00	
Critical	86	Victoria I Lift Station	Laguna Beach	CA				$ 1,500,000.00	
Critical	87	Moorhead SCADA Radio Tower	Laguna Beach	CA					
Concern	88	Alternative Sleeping Location	Laguna Beach	CA	1,990			$ 161,280.00	
Critical	89	Outlet 2	Laguna Beach	CA					
Critical	90	Outlet 5	Laguna Beach	CA					
Critical	91	Outlet 6	Laguna Beach	CA					
Critical	92	Outlet 9a	Laguna Beach	CA					
Critical	93	Outlet 9b	Laguna Beach	CA					
Critical	94	Outlet 10	Laguna Beach	CA					
Critical	95	Outlet 11	Laguna Beach	CA					
Critical	96	Outlet 12	Laguna Beach	CA					

Facility Type	Site	Asset_Name	City_1	State	Building Square Footage	Year Constructed	Type of Construction	Structure Value	Contents Value
Critical	97	Outlet 13	Laguna Beach	CA					
Critical	98	Outlet 15	Laguna Beach	CA					
Critical	99	Outlet 15a	Laguna Beach	CA					
Critical	100	Outlet 15b	Laguna Beach	CA					
Critical	101	Outlet 16	Laguna Beach	CA					
Critical	102	Outlet 17	Laguna Beach	CA					
Critical	103	Outlet 20	Laguna Beach	CA					
Critical	104	Outlet 21	Laguna Beach	CA					
Critical	105	Outlet 22	Laguna Beach	CA					
Critical	106	Outlet 24	Laguna Beach	CA					
Critical	107	Outlet 27	Laguna Beach	CA					
Critical	108	Outlet 28	Laguna Beach	CA					
Critical	109	Outlet 33	Laguna Beach	CA					
Critical	110	Outlet 25	Laguna Beach	CA					
Critical	111	Outlet X	Laguna Beach	CA					

APPENDIX E
IMPLEMENTATION WORKBOOK

1. Implementation workbook

CITY OF LAGUNA BEACH

LOCAL HAZARD MITIGATION PLAN

IMPLEMENTATION HANDBOOK

JANUARY 2018

WHAT IS THIS WORKBOOK?

The City of Laguna Beach Local Hazard Mitigation Plan (LHMP) includes an assessment of the hazards in Laguna Beach and a suite of hazard mitigation actions organized by type of hazard. It is meant to protect community members and property from hazard events, keep key City operations functional during hazards, and strengthen partnerships and empower community members to improve hazard mitigation. This Implementation Workbook (Workbook) is intended for use by City staff and decision makers after the LHMP is adopted. It will:

- Provide clear direction for what to do after the LHMP is adopted.
- Streamline future updates to the LHMP.
- Help the City receive grant funding for mitigation activities.
- Guide annual plan review actions.

HOW DO I USE THIS WORKBOOK?

This Workbook can help City staff and decision makers in several different situations. If and when the events listed below occur, consult the respective section of this Workbook for advice on how to proceed.

1. **A disaster has been proclaimed/declared**
    - By the Laguna Beach City Council
    - By the State of California
    - By the federal government
2. **I want to apply for mitigation grant funding.**
3. **Laguna Beach is undergoing its budgeting process.**
4. **Laguna Beach is conducting its annual meeting of the Hazard Mitigation Planning Committee.**
5. **Laguna Beach is updating its annual policy and regulatory documents:**
    - The Local Hazard Mitigation Plan
    - The Safety Element of the General Plan
    - The Housing Element of the General Plan
    - The Zoning Code

WHO IS RESPONSIBLE FOR MAINTAINING THIS WORKBOOK?

The Laguna Beach Emergency Operations Coordinator, a staff member in the Laguna Beach Police Department, is responsible for maintaining this Workbook. The Emergency Operations Coordinator may delegate responsibilities to other City staff members as desired.

WHAT TO DO WHEN A DISASTER HAS BEEN PROCLAIMED/ DECLARED

Did the Laguna Beach City Council, the State of California, or the federal government proclaim/declare the disaster? If multiple groups have proclaimed/declared a disaster, consult all applicable lists.

THE LAGUNA BEACH CITY COUNCIL

If the Laguna Beach City Council (or if the City Council is not in session, the director of emergency services) proclaims a Local Emergency, take the following steps to help implement the LHMP.

☐	Update **Attachment 1** with information about the disaster.
☐	Discuss opportunities for local assistance with the representatives from the California Office of Emergency Services (Cal OES).
☐	If the disaster damages local infrastructure or other City-owned facilities, repair or rebuild the infrastructure or facility to be more resilient, following the appropriate hazard mitigation actions. A list of the actions, organized by hazard, is in **Attachment 4**.
☐	**Chapter 6** of the Laguna Beach LHMP states that the City should evaluate updating the LHMP if a disaster causes a loss of life in Laguna Beach, even if there is no state proclamation or federal disaster declaration that includes part or all of the community. If there is a loss of life in Laguna Beach, consider updating the LHMP. Consult the section in this Workbook on updating the LHMP.

THE STATE OF CALIFORNIA

If the State of California proclaims a disaster for Laguna Beach, or for any area that includes part or all of the community, take the following steps to help implement the LHMP.

☐	Update **Attachment 1** with information about the disaster. Be sure to collect information about cumulative damage, including any damage outside of Laguna Beach.

☐	Work with representatives from Cal OES to assess disaster damage.
☐	Discuss opportunities for local assistance with Cal OES representatives.
☐	If the disaster damages local infrastructure or other City-owned facilities, repair or rebuild the infrastructure or facility to be more resilient, following the appropriate hazard mitigation actions. A list of the actions, organized by hazard, is in **Attachment 4**.
☐	If a federal disaster declaration is a possibility, coordinate as necessary with representatives from the Federal Emergency Management Agency (FEMA).
☐	**Chapter 6** of the Laguna Beach LHMP states that the City should evaluate updating the LHMP if there is a state proclamation or federal disaster declaration that includes part or all of the community, even if there is no loss of life. Consider updating the LHMP. Consult the section in this Workbook on updating the LHMP.

THE FEDERAL GOVERNMENT

If the federal government declares a disaster for Laguna Beach, or any part of the area that includes part or all of the community, take the following steps to implement the LHMP.

☐	Update **Attachment 1** with information about the disaster. Be sure to collect information about cumulative damage, including any damages that occur outside of Laguna Beach.
☐	Work with representatives from Cal OES and FEMA to assess disaster damage.
☐	Determine if Laguna Beach is named in the federal disaster declaration as being eligible for public assistance funds to reimburse the City for response and recovery activities. If so, work with FEMA and Cal OES representatives to follow applicable requirements and receive funding.
☐	If the disaster damages local infrastructure or other City-owned facilities, repair or rebuild the infrastructure or facility to be more resilient, following the appropriate hazard mitigation actions. A list of the actions, organized by hazard, is in **Attachment 4**.
☐	The Hazard Mitigation Grant Program (HMGP) is a FEMA program that helps fund hazard mitigation activities following a disaster event. Laguna Beach may be eligible for this program because of the federal disaster declaration, although only certain activities may be eligible for funding. If so, work with FEMA to apply for funding.
☐	**Chapter 6** of the Laguna Beach LHMP states that the City should evaluate updating the LHMP if there is a state or federal disaster declaration that includes part or all of the community, even if there is no loss of life. Consider updating the LHMP. Consult the section in this Workbook on updating the LHMP.

I WANT TO APPLY FOR MITIGATION GRANT FUNDING

There are three potential grant funding programs that are administered by FEMA for hazard mitigation activities. Two programs, the Pre-Disaster Mitigation (PDM) and Flood Mitigation Assistance (FMA) funding sources, are available to communities with an LHMP that meets FEMA guidelines and has been adopted in the past five years. This section discusses these two funding sources and how to apply for them. The third, Hazard Mitigation Grant Program (HMGP), is available for communities included in a federal disaster declaration and is discussed under "What to Do When a Disaster Has Been Proclaimed/Declared," above.

PRE-DISASTER MITIGATION

The PDM grant program is a nationally competitive program that awards funding for both physical projects and planning activities that mitigate against all future natural hazards. Physical projects are only eligible if they are identified in a hazard mitigation plan that meets FEMA guidelines and was adopted within the past five years. Review the list of hazard mitigation actions in **Attachment 4** to see which projects may be eligible for the PDM program. Planning projects for communities without a valid hazard mitigation plan may be considered if the planning would create a valid hazard mitigation plan. All applications are processed through the State. To view more information, consult with representatives from Cal OES or visit the appropriate FEMA webpage (currently https://www.fema.gov/pre-disaster-mitigation-grant-program/).

Take the following steps to apply for PDM funding.

☐	Confirm that the program is currently accepting funding applications by checking with representatives from Cal OES or by visiting the appropriate Cal OES web page (currently http://www.caloes.ca.gov/cal-oes-divisions/hazard-mitigation/pre-disaster-flood-mitigation).
☐	Identify the items in the hazard mitigation actions list (see **Attachment 4**) that call on the City to apply for funding. Confirm that the actions are consistent with the requirements of the PDM grant.
☐	Coordinate with a Cal OES representative to compile and submit materials for the grant application.

FLOOD MITIGATION ASSISTANCE

The FMA grant program is a nationally competitive program that awards funding for both physical projects and planning activities that mitigate against long-term flood damage. The funding is only available to communities that participate in the National Flood Insurance Program (NFIP), which Laguna

Beach currently does. Communities must also have a valid hazard mitigation plan that meets FEMA guidelines in order to be considered, and all projects must be consistent with the list of actions in the hazard mitigation plan. Review the list of hazard mitigation actions in **Attachment 4** to see which projects may be eligible for the FMA program. As with the PDM program, all FMA applications are processed through the State. To view more information, consult with representatives from Cal OES or visit the appropriate FEMA webpage (currently https://www.fema.gov/flood-mitigation-assistance-grant-program).

Take the following steps to apply for FMA funding.

☐	Confirm that the program is currently accepting funding applications by checking with representatives from Cal OES or by visiting the appropriate Cal OES web page (currently http://www.caloes.ca.gov/cal-oes-divisions/hazard-mitigation/pre-disaster-flood-mitigation).
☐	Identify the items in the hazard mitigation actions list (see **Attachment 4**) that call on the City to apply for funding. Confirm that the actions are consistent with the requirements of the PDM grant.
☐	Coordinate with a Cal OES representative to compile and submit materials for the grant application.

LAGUNA BEACH IS IN THE BUDGETING PROCESS

Laguna Beach's budgeting process is a prime opportunity to secure funding for hazard mitigation activities, and to ensure that hazard mitigation is considered part of the City's fiscal priorities. The City currently operates on an annual budget cycle that starts on July 1 and ends on June 30 of the following year. During this process, staff should take the following steps to incorporate hazard mitigation into the City's budget:

☐	Incorporate hazard mitigation into the City's Capital Improvement Plan (CIP). Review the list of hazard mitigation actions in **Attachment 4** and identify the projects that can be included in the CIP or support CIP efforts. Review the hazard profiles and threat assessment in the LHMP to ensure that all items in the CIP are being planned, designed, and constructed so as to minimize their exposure to hazard events.
☐	Identify opportunities to implement stand-alone hazard mitigation actions through the budget process. Include appropriate actions from the list in **Attachment 4** in the budget as stand-alone line items, particularly items that the Hazard Mitigation Planning Committee (Committee) prioritized highly.

☐ Set aside staff to conduct hazard mitigation activities, including time to participate in Committee meetings as well as time to research, prepare, and submit PDM and FMA grant opportunities (see "I Want to Apply for Mitigation Grant Funding," above). Ensure that hazard mitigation activities are reflected in each department's priorities and earmarked time for specific goals.

LAGUNA BEACH IS CONDUCTING ITS ANNUAL MEETING OF THE HAZARD MITIGATION PLANNING COMMITTEE

The hazard mitigation planning process brings together representatives from multiple City agencies and other relevant stakeholders and provides a forum to discuss the hazards in Laguna Beach and how to effectively mitigate them. As discussed in **Chapter 6** of the LHMP, the Committee should meet at least once annually, beginning a year after adoption of the LHMP. During these meetings, the Committee should discuss implementation progress and integration of hazard mitigation actions into other City documents. At these meetings, the team can review the status of the actions and discuss whether the actions that are completed or in progress are having the desired effects. These annual meetings also allow the Committee to strategically plan for the upcoming year.

It can be effective for the Committee to meet earlier in the year, in advance of the annual budgeting activities. **Attachment 3** contains an example Committee meeting agenda.

The annual meeting should include representatives from the City departments and other agencies who prepared the LHMP itself. Representatives from other bodies should be invited as appropriate. The following individuals sat on the Committee during the preparation of the LHMP, as noted in **Chapter 1** of the Plan.

HAZARD MITIGATION PLANNING COMMITTEE MEMBERS

AGENCY	PARTICIPANT AND TITLE	CONTACT INFORMATION
City agencies		
Laguna Beach Administrative Services	Tiffany Bates: Human Resources & Risk Manager	tbates@lagunabeachcity.net
Laguna Beach City Manager's Office	Ryan Hallet: Senior Administrative Analyst	rhallet@lagunabeachcity.net
Laguna Beach Committee Development Department	Jennifer Gates: Senior Planner	jgates@lagunabeachcity.net
Laguna Beach Community Services Department	Adam Gufarotti: Senior Recreation Supervisor	agufarotti@lagunabeachcity.net
Laguna Beach Emergency/Disaster	Robert Elster: Vice Chair	relster@lagunabeachcity.net

AGENCY	PARTICIPANT AND TITLE	CONTACT INFORMATION
Preparedness Committee	Matt Lawson: Chair	mlawson@lagunabeachcity.net
Laguna Beach Fire Department	Tom Christopher: Fire Division Chief	tchristopher@lagunabeachcity.net
	Kirk Summers: Fire Chief	ksummers@lagunabeachcity.net
Laguna Beach Marine Safety Department	Tom Trager: Marine Safety Captain	ttrager@lagunabeachcity.net
Laguna Beach Police Department	Tim Kleiser: Police Lieutenant	tkleiser@lagunabeachcity.net
	Joe Torres: Police Lieutenant	jtorres@lagunabeachcity.net
	Jordan Villwock: Emergency Services Coordinator	jvillwock@lagunabeachcity.net
Laguna Beach Public Works	Wade Brown: Underground Director	wbrown@lagunabeachcity.net
Laguna Beach Water Quality Department	Hannah Johnson: Project Manager	hjohnson@lagunabeachcity.net
	David Shissler: Water Quality Director	dshissler@lagunabeachcity.net
Other agencies		
Laguna Beach County Water District	Leo Lopez: Safety Officer	llopez@lbcwd.org
Laguna Beach Unified School District	Jeff Dixon: Superintendent	jdixon@lbusd.org
	Ryan Zjada: Facilities Director	rzjada@lbusd.org
Orange County Fire Authority	Jeff Hoey: Battalion Chief	jeffhoey@ocfa.org
Orange County Health Care Agency	Drew Downing: Manager	ddowning@ochca.com
Orange County Intelligence and Assessment Center	Lance Larson: Reserve Officer	llarson@lagunabeachcity.net
Orange County Parks	William Fegley: Parks Manager	william.fegley@ocparks.com
	Kory McCain: Parks Supervisor	kory.mccain@ocparks.com
Orange County Sheriff's Department	Ethan Brown: Senior Emergency Coordinator	ebrown@ocsd.org
San Diego Gas and Electric Company	Duane Cave: External Relations Manager	dcave@semprautilities.com
South Coast Water District	Megan Tomasko: [CONFIRM TITLE]	mtomasko@scwd.org
	Trisha Wooslayer: Health and Safety Manager	twooslayer@scwd.org
South Orange County Wastewater Authority	Sean Preacher: Health and Safety Manager	spreacher@socwa.org
Southern California Edison	Karalee Darnell: Government Affairs Manager	karalee.b.darnell@sce.com
Southern California Gas Company	John Navarette: [CONFIRM TITLE]	jnavarette@semprautilities.com
	Paul Simonds: Public Affairs Manager	psimonds@semprautilities.com

In advance of the Committee meeting, consider using **Attachment 1** to maintain an accurate list of recent disaster events that have occurred in or around Laguna Beach since the LHMP was adopted in

2018. At the Committee meeting, review the Plan Maintenance Table (**Attachment 2**) to identify any gaps in the LHMP or any other component of the Plan that needs updating. This is also a chance to review the list of mitigation actions (**Appendix 4**) and ensure that they are being implemented as intended.

LAGUNA BEACH IS UPDATING ITS POLICY AND REGULATORY DOCUMENTS

Is Laguna Beach updating the LHMP, the Safety Element of the General Plan, the Housing Element of the General Plan, or the Zoning Code?

THE LOCAL HAZARD MITIGATION PLAN

LHMPs should be updated every five years. This ensures that the plan is kept up to date, and that it reflects the most recent science, requirements, and best practices. It also helps maintain Laguna Beach's eligibility for certain hazard mitigation grants that require a valid and recent LHMP (see "I Want to Apply for Mitigation Grant Funding" in this Workbook), along with an increased amount of post-disaster recovery funds.

An update to the LHMP takes approximately one year to complete, and the update process for Laguna Beach's LHMP should begin no later than four years after the Plan is first adopted. This will allow one year for update activities before the existing Plan expires. Updates may occur sooner at the City's discretion, including if a state or federal disaster declaration covers part or all of Laguna Beach, or if a disaster leads to loss of life in Laguna Beach (see the "What to Do When a Disaster Has Been Proclaimed/Declared" section of this Workbook), as discussed in **Chapter 6** of the LHMP.

To update the LHMP, take the following steps:

ASSEMBLE THE HAZARD MITIGATION PLANNING COMMITTEE

☐ Convene an HMPC meeting no later than four years after the LHMP is adopted. Invite the regular HMPC members, along with representatives from any other organizations or agencies who may have a role to play in the update process. Review the current status of the LHMP mitigation actions, including if any are not being implemented as planned or are not working as expected. Determine if there have been any changes in hazard events, regulations, best practices, or other items that should be incorporated into an updated LHMP. Decide if there is a need for a technical consultant, and conduct selection activities if there is. If a consultant is desired, the selection process should be initiated several months before the update gets underway.

☐ Create and implement a community engagement strategy, building off of the strategy prepared for the existing Plan as appropriate. Describe in-person and online engagement strategies and materials, including ideas for meetings and workshops, draft surveys,

	content for websites and press releases, and other materials.

UPDATE THE HAZARD PROFILES AND THREAT ASSESSMENT

☐	Review and update the hazard profiles to reflect the most recent conditions in Laguna Beach, seeking assistance from a technical consultant if needed. Consider recent hazard events, new science associated with hazards and climate change, and new development and land use patterns.
☐	Evaluate the status of all critical facilities and facilities of concern. Update the list if new facilities have been constructed or if existing facilities have been decommissioned. Determine if the vulnerability of any of these facilities have changed.
☐	Review the demographics of community residents, and update the social threat assessment for all of Laguna Beach and for the areas within defined hazard zones.
☐	Assess any changes to the vulnerability of other community assets, including key services, infrastructure networks, ecosystems, and economy.

UPDATE THE MITIGATION ACTIONS

☐	Update existing mitigation actions to reflect actions in progress. Remove actions that have been completed, or revise them to expand their effectiveness. Revise actions that have been abandoned or delayed so as to make them more feasible, or remove them if they are no longer relevant.
☐	Develop mitigation actions to improve the status of hazard mitigation in Laguna Beach by addressing issues not covered by the existing Plan.
☐	Ensure that feedback from the community engagement activities are reflected in the new and updated mitigation actions.

REVIEW AND ADOPT THE UPDATED PLAN

☐	Review the additional chapters and appendices of the LHMP to reflect the update process and other items as necessary.
☐	Release the updated Plan to HMPC members, and revise the Plan to incorporate HMPC comments.
☐	Distribute the updated Plan to the appropriate external agencies not represented on the HMPC for comment, and revise the plan as appropriate in response to comments.
☐	Release the plan publicly for review, and make revisions to the Plan to reflect public comments.

☐	Submit the plan to Cal OES and FEMA for approval, and make revisions as needed.
☐	Submit the plan to the Laguna Beach City Council for adoption.

THE SAFETY ELEMENT OF THE GENERAL PLAN

The Safety Element is a required component of the Laguna Beach General Plan. It can be updated by itself, or as part of a more comprehensive process to update multiple sections or the entirety of the General Plan. Safety Elements do not need to be updated to follow any specific schedule, but updates should be frequent enough for the element to remain current and applicable to the community.

Section 65302.6 of the California Government Code allows local communities to incorporate their local hazard mitigation plan into their Safety Element, provided the LHMP meets minimum federal requirements. As per Section 8685.9, this allows communities to be eligible for a larger share of post-disaster relief funding from the state if a hazard situation occurs.

To incorporate the LHMP into the Safety Element, take the following steps.

INCORPORATE NEW REQUIREMENTS INTO THE SAFETY ELEMENT, AND ENSURE THE LHMP IS CONSISTENT

☐	Review the requirements for Safety Elements in Section 65302 (g) 1 of the California Government Code, and for LHMPs in Section 65302.6 of the California Government Code. Ensure that both documents meet state standards.
☐	Make certain that the information in either plan (including community descriptions, hazard profiles, and analyses of threats or vulnerability) do not contradict each other, and that any inconsistencies are corrected to use the most accurate and appropriate information.
☐	Ensure that the policies in the Safety Element support the LHMP and provide a planning framework for specific hazard mitigation actions.

THE HOUSING ELEMENT OF THE GENERAL PLAN

The Housing Element is a required component of the Laguna Beach General Plan. Under Section 65583 of the California Government Code, a Housing Element must analyze and plan for new residential growth in a community, including residential growth for households with an annual income below the area median. Similar to an LHMP, regulations require that Housing Elements must be updated regularly to remain current and valid.

A Housing Element is not required to contain any information or policies that related to hazards, although it may include policies that address retrofitting homes to improve resiliency. However, because of the regular schedule of Housing Element updates, many new requirements for other General Plan elements, such as the Safety Element, are triggered by updates to the Housing Element. For example, Section 65302(g)(3) of the California Government Code required that communities that update their Housing Element on or after January 1, 2014 also update their Safety Element to include specific information and policies related to wildfire protection. As the LHMP is incorporated into the Safety Element, updates to the Housing Element may indirectly trigger updates to the LHMP.

To update the LHMP concurrent with updates to the Housing Element, take the following steps.

ENSURE THAT THE LHMP MEETS ANY NEW REQUIREMETNS FOR THE SAFETY ELEMENT THAT MAY BE TRIGGERED BY A HOUSING ELEMENT UPDATE

☐	Section 65302(g) of the California Government Code lists a number of requirements for the Safety Element of the General Plan. Some of these requirements are triggered by updates to the Housing Element. Check to see if there are any new requirements of this nature. Note that the requirement is linked to the date of adoption of the new Housing Element, not the date the update process begins.
☐	Since the LHMP is incorporated into the Safety Element, any amendments or revisions to the Safety Element triggered by the Housing Element update may be made directly in the LHMP. While this is unlikely to require a full rewrite of the LHMP, the process should fully involve the HMPC and include community engagement as appropriate.
☐	Adopt the updated LHMP and incorporate it into the Safety Element. If necessary, amend the Safety Element to ensure the two documents are consistent with each other.

THE LAGUNA BEACH MUNICIPAL CODE

Laguna Beach's Municipal Code contains a set of standards that guide land uses and development in the community. These standards include where different types of activities and buildings may be located, how these structures must be built, and how they must be operated and maintained. The Municipal Code can include requirements that new or renovated structures must incorporate hazard-resistant features, be located outside of the most hazard-prone areas, or take other steps to reduce hazard vulnerability.

All communities in California are required to adopt the minimum state Building Standards Code (BSC), which includes some hazard mitigation requirements for new or significantly renovated structures. The BSC is updated on a regular basis (every three years, with supplemental code updates halfway into each updated cycle). Laguna Beach can include additional standards that go beyond the state minimum (for example, Section 14.50.098 of the Laguna Beach Municipal Code requires that building walls be constructed so as to better resist fires). As a participant in the National Flood Insurance Program (NFIP),

Laguna Beach is required to include a Floodplain Management section in its Municipal Code, establishing standards for development and operation of facilities within mapped flood-prone areas. All communities, including Laguna Beach, have a Zoning Code as part of the overall Municipal Code, implementing the land use and development standards of the General Plan. Other sections of the Municipal Code may include additional standards for hazard mitigation.

Laguna Beach's Building Code (Title 14), Zoning Code (Title 25), and other sections of the Municipal Code are not required to contain hazard-related requirements (with the exception of the Floodplain Management ordinance, which is part of the Zoning Code and required for the community's participation in NFIP. For more information on NFIP, see **Chapter 5** of the LHMP). However, the Municipal Code can be an effective tool for implementing hazard mitigation measures that relate to the siting, construction, and operation of new buildings and other structures. Substantial updates to the Municipal Code, including the Building Code and the Zoning Code, should be done in a way that is consistent with the LHMP.

INCLUDE HAZARD-RELATED REQUIREMENTS IN THE BUILDING CODE, ZONING CODE, AND OTHER APPLICABLE SECTIONS OF THE MUNICIPAL CODE

☐	If the Building Code is being updated, evaluate the hazard-related requirements of all sections of the new BSC. Note any areas where it is feasible to strengthen the standards to help reduce the threat of hazard events. These heightened standards may apply to all structures, or they may be limited to certain types of structures or structures located in specific areas (such as hazard zones). Ensure that the standards are consistent with the LHMP.
☐	If the Zoning Code is being updated, ensure that all requirements do not expose buildings or community members to excess risk or threats. Where feasible, use the requirements to enhance community resiliency to hazard events. Consider the use of overlay zones that strengthen zoning requirements in hazard-prone areas, building siting and design requirements that reduce exposure to hazard events, landscaping that is resilient to hazards such as floods or wildfires, or other strategies as appropriate. Ensure that the standards are consistent with the LHMP.

Use this table to fill out information about any disaster events that have occurred either in Laguna Beach, or nearby and have had an effect on the community. Include the date and location of the disaster, the damages associated with it, and information about any disaster declarations resulting from the event.

ATTACHMENT 1: DISASTER INFORMATION TABLE

DATE	**LOCATION**	**DAMAGES** (injuries, deaths, and cost of physical damage)	**DECLARATION DETAILS** (if declared a federal, state, and/or local disaster)

Use this table when reviewing the LHMP as part of the Committee's annual activities. For each section of the LHMP, note if anything is factually incorrect, if any important information is missing, and if any other

changes should be made to the Plan to make it more effective for the community. Make revisions that are consistent with these comments as part of the next update to the LHMP.

ATTACHMENT 2: PLAN MAINTENANCE TABLE

SECTION	IS ANYTHING INCORRECT?	IS ANYTHING MISSING?	SHOULD ANY OTHER CHANGES BE MADE?
Multiple sections or throughout			
Chapter 1 – Introduction			
Chapter 2 – Community Profile			
Chapter 3 – Hazard Assessment			
Chapter 4 – Threat Assessment			
Chapter 5 – Hazard Mitigation Strategy			
Chapter 6 – Plan Maintenance			
Appendices			

This attachment includes a sample agenda and discussion topics for the annual meeting of the HMPC. Meetings do not have to precisely follow this order or structure, but the items included in this

attachment should be addressed in the annual meeting. More frequent meetings of the HMPC, held during the update process for the LHMP, will be organized as needed.

ATTACHMENT 3: SAMPLE AGENDA AND TOPICS FOR THE HAZARD MITIGATION PLANNING COMMITTEE

Item 1: Recent Hazard Events

1.1. What hazard events have occurred this past year in Laguna Beach, or nearby in a way that impacted the community? Include events that caused loss of life or substantial injury, significant property damage, or widespread disruption or other substantial community impacts. More minor events may also be included if there is sufficient needs for the community to take action.
1.2. What are the basic facts of any hazard events? Consider the size and location of the affected area, any measurement of severity, any injuries or deaths, the cost of any damage, the number of people displaced or impacted, and other relevant summary information. Ensure that this data is clearly recorded for future Plan updates, such as using the Disaster Information Table (**Attachment 1** of this Workbook).

Item 2: Mitigation Action Activities

2.1. What mitigation actions have been fully implemented? Are they working as expected, or do they need to be revised?
2.2. What mitigation actions have started to be implemented since the last HMPC meeting? Is implementation of these actions proceeding as expected, or are there barriers or delays? If so, how can these barriers or delays be addressed?
2.3. What mitigation actions are scheduled to begin implementation in the next year? Are there any factors that could delay implementation, or weaken the effectiveness of the actions? How can these factors be addressed?
2.4. What resources are needed to support planned, in-process, or ongoing mitigation actions? Does the City have access to these resources? If not, how can they be obtained?

Item 3: Information Sharing

3.1. Is the City communicating with all appropriate local jurisdictions, including neighboring communities, Orange County, and special districts? Is the City sharing information on district-specific hazard situations, mitigation actions, or other relevant information? Are there any opportunities to improve coordination of hazard mitigation activities between Laguna Beach and other local jurisdictions?
3.2. Is the City communicating with the appropriate state and federal agencies? Is the City receiving information about new regulations, best practices, and data that related to hazard mitigation activities?

Item 4: Budgetary Planning

4.1. What are the financial needs for Laguna Beach to support implementation of planned and in-process mitigation actions, and support continued implementation of ongoing actions? Is there

sufficient funding for all measures in the LHMP that are planned for the next year, in-process, or ongoing? If not, how can the City obtain funding?

4.2. If it is not feasible for the City to support all planned, in-process, or ongoing mitigation actions, which ones should be prioritized?

4.3. Are there hazard-related activities not included in the LHMP that should be budgeted for? Can the City obtain the necessary funding for these activities?

Item 5: Strategic Planning

5.1. Which grants are available for hazard mitigation activities? Which activities are best positioned to secure funding? How should the agencies and other organizations represented on the HMPC coordinate to maximize the chances of receiving funding?

5.2. Are there any scheduled or anticipated updates to the City documents such as sections of the General Plan, the Building Code, or the Zoning Code? How can HMPC members share information with the staff and technical consultants responsible for these updates, and ensure that these updates enhance community resiliency?

5.3. What capital projects are scheduled or anticipated? Are these capital projects being designed and built to be resistant to hazard events? Are there opportunities for these projects to support hazard mitigation actions? How can HMPC members coordinate efforts with those responsible for capital projects to take advantage of economies of scale (e.g. discounts for bulk purchases) that will make hazard mitigation activities easier?

5.4. Has it been four years since the adoption of the LHMP? If so, lay out a timeline for Plan update activities, including additional meetings of the HMPC. Identify if a technical consultant is needed, and if so, begin the contracting process.

5.5. Are there any other opportunities for HMPC members and the organizations they represent to coordinate efforts?

Item 6: New Business

6.1. Are there any other items related to the HMPC's mission?

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ATTACHMENT 4: HAZARD MITIGATION ACTIONS

[Table to be added before adoption, following approval by City staff, members of the public, and Cal OES/FEMA].