

Local Hazard Mitigation Plan





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ABBREVIATIONS

ACS - American Community Survey **AFG** - Assistance to Firefighters Grant **BAER - Burned Area Emergency Response** BRIC - Building Resilient Infrastructure and Communities **Cal OES -** California Governor's Office of Emergency Services **CARB** - California Air Resources Board **CERT -** Community Emergency Response Team **CIP** - Capital Improvement Program **CRS** - Community Rating System **DMA** - Disaster Mitigation Act **DR** - Disaster Declaration **EM** - Emergency Declaration **EMPG** - Emergency Management Performance Grant ENSO - El Niño-Southern Oscillation **EOP** - Emergency Operations Plan **EQUIP - Environmental Quality Incentives Program** FEMA - Federal Emergency Management Agency FIRM - Flood Insurance Rate Map FM - Fire Management Assistance Declaration FMA - Flood Mitigation Assistance FRA - Federal Responsibility Area FSA - Farm Service Agency HMGP - Hazard Mitigation Grant Program HOA - Homeowners Association LHMP - Local Hazard Mitigation Plan LUP - Land Use Plan **MMI** - Modified Mercalli Intensity **MNWD** - Moulton Niguel Water District

NFIP - National Flood Insurance Program **NOAA - National Oceanic and Atmospheric** Administration **NWS** - National Weather Service **OCFA -** Orange County Fire Authority **OCSD** - Orange County Sheriff's Department **OCTA - Orange County Transportation Authority PDM - Pre-Disaster Mitigation RACES -** Radio Amateur Civil Emergency Service **SCWD -** South Coast Water District SDG&E - San Diego Gas & Electric SFHA - Special Flood Hazard Area SMWD - Santa Margarita Water District **USGS** - United States Geological Survey VHFHSZ - Very High Fire Hazard Severity Zone 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.

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.

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).

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.

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.

Rupture: See "Fault rupture"

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.

Social Threat: Encompasses the socioeconomic and demographic elements that have an impact on the resilience of communities.

Utility Area: Designated zones or locations where utility services, such as electricity, water, sewage, and telecommunications, are provided.

Utility Infrastructure: Physical structures and networks used to deliver utility services from the utility areas to the end-users.



Plan Purpose and Authority

Hazardous events can result in harm to individuals, including death and injuries, and have a negative impact on overall well-being and safety. Hazardous events can also cause damage to both public and private property, harm the environment, and disrupt essential services. While the actual hazard is usually what receives the most attention, it is only one aspect of the comprehensive emergency management cycle:

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



During the emergency management cycle (which includes the phases of response, recovery, mitigation, and preparedness), steps can be taken by emergency planners and responders to minimize the harm caused by disasters.

This Local Hazard Mitigation Plan (LHMP) concentrates specifically on enhancing the mitigation phase of the cycle. Mitigation encompasses measures taken to increase the resilience of a community to disasters, reducing the amount of damage caused, and facilitating a more effective recovery.

This is distinct from preparedness, which involves planning ahead for the best possible response when a disaster occurs or is imminent. For instance, reinforcing homes to withstand earthquakes is a mitigation action, while equipping emergency shelters to accommodate those who lose their homes during an earthquake is a preparedness action. Some measures may be classified as both mitigation and preparedness.

Like other communities, the City of Dana Point ("City") is vulnerable to natural and man-made events that can have a significant impact on the City. While it is not possible to eliminate the risks posed by such events, this Local Hazard Mitigation Plan can help make the City a safer place for residents, workers, and visitors. This LHMP conducts a thorough examination of the threats posed by both natural and human-made hazards to the City and outlines a coordinated strategy to minimize these threats. The LHMP offers access to information and resources that enable community members, City staff, and local officials to understand the local hazards and make informed decisions. It also aims to improve coordination and collaboration among

LHMP

the City, community stakeholders, service providers, and members of the public. This increased coordination and collaboration can be beneficial in bringing together various key stakeholders such as other public agencies, local employers, service providers, and community members to work together towards making the City safer.

Federal Authority

The preparation of a LHMP is not mandatory for the City but is encouraged by state and federal regulations. The Robert T. Stafford Disaster Relief and Emergency Act, amended by the Disaster Management Act of 2000, establishes a federal framework for local hazard mitigation planning. The act specifies that, to be eligible for federal hazard mitigation grant funding, jurisdictions must create a hazard mitigation plan that adheres to established guidelines and submit the plan to the Federal Emergency Management Agency (FEMA) for review and approval. These guidelines are defined in the Code of Federal Regulations, Title 44, Part 201, and are described in more detail in FEMA's Local Mitigation Plan Review Tool.

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.

In California, all cities and counties must include a Safety Element addressing various hazardous conditions and other public safety issues. The Safety Element may be a stand-alone chapter or incorporated into another section of the General Plan. California Government Code Section 65302.6 indicates that a community may adopt an LHMP into its Safety Element, if 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 the General Plan by reference creates a stronger mechanism for implementing the LHMP.

California Government Code Section 65302 (g)(4)

Under California Government Code Section 65302 (g)(4), or Senate Bill (SB) 379, the Safety Element in a community's General Plan must address hazards arising from or intensified by climate change. This element should detail the projected impact of climate change on local hazard conditions and incorporate adaptive measures for increased resilience. Integrating the Local Hazard Mitigation Plan (LHMP) into the Safety Element fulfills the state requirement. SB 379 mandates the inclusion of climate change considerations in the Safety Element during LHMP updates post-January 1, 2017, or by January 1, 2022, for communities without an LHMP. LHMP



This LHMP is consistent with current standards and regulations as outlined by the California Governor's Office of Emergency Services (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 the City eligible for opportunities or 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 an increased role in the governance of the City or authorize either agency to take any specific action in the community.

Plan Organization and Use

The City's LHMP is both a reference document and an action plan. This planning document will serve as the City's long-term roadmap for community resiliency and sustainability. This is achieved through promoting sound policy to protect life, critical infrastructure and facilities, private property, and the environment from various hazards. The LHMP has information and resources to educate readers and decision makers about hazard events and related issues and includes a comprehensive strategy the City and community members can utilize to improve resiliency in the City.

This plan cumulates the process of assessing vulnerabilities, measuring risk, identifying strategies for risk reduction, and assigning responsible parties to carry out appropriate action. This initiative involves a comprehensive study of multiple hazards that could impact the City including natural and human-caused hazards.

In order to create a comprehensive plan, many stakeholders, community members, business leaders, and specialists were involved to attain a common objective of mitigating future risks to the City. This collaborative effort included not only residents, but also Emergency Managers from neighboring districts, utility representatives, and representatives from neighboring colleges. By involving these key parties, the plan can draw upon their expertise and resources to ensure a more robust and resilient approach to addressing potential hazards.

Planning Process

State and federal guidance for local hazard mitigation plans do not require jurisdictions to follow a standardized planning process. FEMA encourages communities to create their own planning process that reflects local values, goals, and characteristics. FEMA suggests a general planning process as outlined in the 2013 Local Hazard Mitigation Planning Handbook:



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



Plan Resources

During the LHMP preparation and development, several other documents were reviewed to ensure consistency in planning efforts. Information from the following documents has been incorporated throughout this plan: the City's Emergency Operations Plan, General Plan (specifically, the City's Safety and Housing Elements of the General Plan), Storm Water Management Plan, the Strategic Business Plan, and the Community Wildfire Protection Plan. Reviewing the various methodologies used in these plans compared to the methodology in the LHMP was useful in evaluating the risk and impact associated with each hazard. Other plans and documents provided base level data, either for statistical purposes or based on scientific research surrounding potential hazard impacts in the City. Finally, state, and other local hazard mitigation plans were reviewed to evaluate format and content. Some of the key documents, reports, and studies reviewed by the Working Group are depicted in the Table 1 below:

Section	Key Resources	Example Uses		
Multiple sections	 Cal-Adapt California Geological Survey California State Hazard Mitigation Plan City of Dana Point General Plan FEMA Local Hazard Mitigation Plan Guidance National Oceanic and Atmospheric Administration National Weather Service United States Geological Survey US Census Bureau 2017-2021 American Community Survey 	 Science and background information on different hazard conditions Records of past disaster events in and around Dana Point Current and anticipated climate conditions in and around Dana Point Projections of future seismic conditions and events 		
Community Profile	 City of Dana Point financial and economic reports California Energy Commission San Diego Gas & Electric Southern California Gas Company Moulton Niguel Water District Santa Margarita Water District Orange County Transportation Authority County of Orange Public Works OC Parks State of California Department of Transportation South Orange County Wastewater Authority South Coast Water District 	 Demographic information for Dana Point History of the region Economic trends in Dana Point Commute patterns in Dana Point Local land uses patterns Background information on utilities serving Dana Point 		
Hazard Assessment (Tsunami)	 California Geological Survey Inundation Maps NOAA Tsunami Warning Center United States Geological Survey 	 Projected Inundation Scenarios Historical record of past tsunami events in California 		
Hazard Assessment (Flood)	 FEMA Map Service Center Capital Improvement Program Projects – Planned or In-Progress Storm Drain Improvement Projects City Capital Improvement Program Budget State of California Department of Transportation 	 Records of past flood events in and around Dana Point Locations of flood-prone areas in Dana Point 		

Table 1: Key Resources for Plan Development



	Draft Storm Drain Master Plan Update	
	Historic Storm Drain Master Plan Reports and Data	
	Orange County Flood Control District	
Hazard Assessment	Southern California Earthquake Data Center	Locations of fault zone
(Earthquake)	City Grading Manual	Records of past earthquakes
	California Building Code and Grading Code	
Hazard Assessment (Wildfire)	California Department of Forestry and Fire Prevention	Records of past fire events
		 Location of fire hazard zones in and
		around Dana Point
Hazard Assessment	City Grading Manual	Coast Highway Coastal Bluff Maintenance
(Landslide)	California Building Code and Grading Code	Strategies
		Resource Allocations/Needs for Clean Up
		Actions
Hazard Assessment	Historic Hazmat events data	 Records of past hazmat eventsCal OES
(Hazmat Release)		Hazardous Material Release Database
Radiological Release	Historical Radiological Release events data from the SONGS	Records of past radiological releases from
	facility	SONGS



Hazard Mitigation Working Group

The City established a Hazard Mitigation Working Group ("Working Group") consisting of representatives from key city departments, residents, business leaders, representatives from local and regional agencies, and companies crucial to hazard mitigation activities. The Working Group's primary mandate was to steer the planning process, coordinate meetings, plan community outreach initiatives, and facilitate communication between stakeholders, citizens, and City staff while integrating input for the plan. A comprehensive schedule of meetings was designed and executed to ensure accurate compilation of the LHMP (see Appendix A for details). Between meetings, Working Group members acquired relevant data, reviewed, and refined content to ensure the delivery of accurate and current information.

The City conducted extensive outreach to form the Working Group through multiple channels:

- Direct email invitations sent to department heads and key staff
- Announcements made during interdepartmental meetings
- Personal phone calls to critical external stakeholders including utility providers, school district representatives, and neighboring jurisdictions
- In-person visits to key community organizations like the Chamber of Commerce
- Follow-up emails and calls to confirm participation

Participation from the were provided through:

- Working Group meetings held virtually via Zoom
- Shared online document repositories for providing feedback via a collaborative SharePoint folder
- Individual 1:1 consultation as needed

Ongoing communication was maintained through:

- Email updates
- Virtual meetings detailed current accomplishments, obstacles, and next steps
- Collaborative SharePoint folder



Name (Last, First)	Department / Organization
Simmons, William	Jacob Green and Associates
Stauffacher, Robert	Jacob Green and Associates
Faulkner, Katrina	Jacob Green and Associates
Shadle, James	General Services / City of Dana Point (no longer with the City)
Larry Meyerhofer	General Services/City of Dana Point
Weamire, DyAnne	Community Development / City of Dana Point
Abrajano, Werner	Public Works / City of Dana Point
Adams, Dave	Red Cross
Ahmed, Mohammad	Infinity Technologies / IT
Anderson, Jennifer	Public Works / City of Dana Point
Anderson, Michelle	Orange County Sheriff Department
Ankley, Matt	Orange County Transit Authority
Johnson, Chris	Community Development / City of Dana Point
Etnyre, Bryan	California State Parks
Gallion-Scholler, Kelli	San Onofre Nuclear Generating Station SCE
Guerra, Daniel	South Coast Water District
Heaton, Guy	USCG Auxillary
Knodel, Jimmy	Capistrano Unified School District
Kreutnger, Bill	Tri-Cities RACES
Kunk, Matthew	Public Works / City of Dana Point
Manning, Brendan (Laguna Beach)	(Neighboring Jurisdictions Emergency Managers - Laguna Beach)
Maule, Cheyne	Orange County Fire Authority
McMurchie, Vickie	Chamber of Commerce / City of Dana Point
Melchor, Ashley (SJC)	(Neighboring Jurisdictions Emergency Managers - SJC)
Muriara, Melissa	Recreation / City of Dana Point
Peacher, Sean	South Orange County Wastewater Authority
Rinderknecht, Kelly	Dana Point Harbor and Marina
Robinson, Phil (Laguna Nigel)	(Neighboring Jurisdictions Emergency Managers – Laguna Nigel)
Romero, Joe	Community Development / City of Dana Point (no longer with the City)
Rosaler, Jeff	Community Center / City of Dana Point
Rupley, Michael	Orange County Sheriff's Department
Ruzich, Monica	Red Cross
Sharke, Shayna	City Clerk / City of Dana Point
Shelton, Sea	Administrative Services / City of Dana Point
Sinacori, Matt	Public Works / City of Dana Point
Vallone, Jeremy	Orange County Fire Authority
Vaughn, Sara	Ocean Institute

LHMP



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 Working Group chose to go beyond minimum standards and conduct more extensive community outreach to help ensure that the LHMP reflects community values, concerns, and priorities.

Identifying Vulnerable and At-Risk Populations

The City focused on engaging vulnerable and at-risk populations, including the elderly and Spanish-speaking residents, in the LHMP development process. To include Spanish-speaking community members, the community survey and information on the City's website were provided in both English and Spanish. A targeted outreach event at the Senior Center specifically addressed the concerns of the elderly, where over 50 senior members were reached out to during the October luncheon. Additionally, 200 seniors received information through the Agewell Newsletter in December. These strategic efforts, including providing materials in Spanish, ensured that the LHMP reflected the diverse needs and concerns of all segments of the community.

Online Engagement

The City recognized not all community members were able to attend public meetings and conducted public engagement through social media and online platforms. The Working Group set up an information page on the City's website on August 15th as a simple one-stop location for community members to learn about the LHMP. This information page included a community survey in both English and Spanish to engage more members of the community. The page included information about what an LHMP is and why the City was preparing one.

The Working Group also used social media accounts, such as Facebook (6.4K followers), Instagram (10.4K followers), and NextDoor (17K members) to send quick notifications or bursts of information about the Plan and the development process.

The community survey results showed that wildfire was the hazard of greatest concern to the largest number of respondents, followed by earthquakes. Approximately 18% of respondents have been affected by a disaster in their current home. 80% of survey participants expressed concern that their neighborhood could be impacted by a disaster. Public notification systems (smart phone apps), email, television, and the internet were cited as the most effective ways to provide emergency preparation information. 53% of survey participants expressed interest in learning more and being involved with the City's Local Hazard Mitigation Plan.

Public Outreach Events

In-person public meetings were a central component of the City's engagement efforts. The City organized several public outreach events including presentations, an open house, and in-person events. Notification of the outreach events was shared on the City's website, in the Dana Point Times, through the Community Risk Reduction (CRR) system, flyers, and advertisements. Each event was widely



distributed in advance to solicit as much participation as possible. Below are several key outreach events that occurred throughout 2024:

- A City Hall presentation on October 19th
- A Halloween City Event on October 28th
- A City Council meeting on November 7th
- The Dana Point Turkey Trot on November 23rd
- An Open House on November 9th
- A Psychological First Aid event on November 31st

Additional Engagement Conducted

Additional efforts were conducted by the Working Group to bring awareness and solicit as much participation from the community as possible. These included:

- Monthly newsletters sent out in August, October, and December
- Community Risk Reduction (CRR) system notifications distributed on September 7th, October 1st, and December 20th.
- An article was also published in the Dana Point Times on November 2nd.

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

Public Review Draft

The LHMP was made available for public review from 9-25 September 2024, on the City's website. The public review was broadcasted via social media, and messages to prior participants who expressed to be notified when the review process was taking place were distributed. Although there were no comments given by the public, additional recommendations were made by Stakeholders and incorporated into the final document.

Public Input Incorporation

Throughout the planning process, public input gathered from community surveys, outreach events, stakeholder meetings, and focused engagement with seniors and Spanish-speaking residents significantly shaped the LHMP's development. The community survey revealed wildfire as the hazard of greatest concern, followed by earthquakes, which reinforced the Working Group's hazard assessment and influenced mitigation strategy development.

This public feedback directly influenced several mitigation actions including, but not limited to:

• Partnering with OCFA to expand outreach regarding home fire safety inspections for residents and businesses in fire-prone areas



- Encouraging HOAs and property owners to replace vegetation with OCFA approved plants in high fire threat districts
- Establishing a wildfire hazard abatement program providing assistance and incentives for property owners
- Coordinating with HOAs and property owners to ensure creation of defensible spaces
- Supporting programs such as Neighborhood Watch and CERT Organizations to build community response capabilities
- Creating a public education campaign to inform residents about safety during hazard conditions
- Regularly meeting with community leaders to maintain continuous two-way communication.

Plan Revision and Adoption

The general process for Plan Revisions and Final Adoption includes Staff/Stakeholder Review, Public Review, Review by Cal OES and FEMA, and review by other state and federal agencies. Once comments are received from Cal OES and FEMA and all required revisions have been incorporated, the Final LHMP will be brought to the City Council for approval by Resolution. After City Council adoption, the document will be transmitted back to Cal OES and FEMA. **Appendix C** contains a copy of the adoption resolution.



Chapter 2 Community Profile

This chapter of the LHMP is a summary of the City 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**.

Overview

Before its official status as a City, Dana Point was an area deeply connected to its coastline and historical landmarks. Native Americans had long frequented its headlands, and by the late eighteenth century, European settlers marked their presence with the nearby Mission San Juan Capistrano. The location gained prominence in literature and commerce, particularly through Richard Henry Dana, Jr.'s memoir, "Two Years Before the Mast", and eventually the defining promontory was christened Dana Point in his honor.

In 1989, in a bid to take charge of its growth and planning, the community decided to incorporate. Soon after, it evolved from a serene beach town into a City that balanced historical preservation with modern advancement. The harbor, a prominent feature, has since become a commercial and recreational hub, drawing over two million annual visitors. The name Dana Point not only honors its historical literary figure but also its unique coastal topography and cultural heritage.

Currently, Dana Point stands as a bustling City with a commitment to both its past and its future. It offers an array of amenities, from a revitalized Town Center to the historically rich Dana Point Harbor. Catering to its ever-growing population, the City continually upgrades its services, balancing modernity with its deep-rooted history and ensuring the well-being of its residents and visitors. Just as the harbor is central to its identity, so too are its efforts in blending historical significance with contemporary progress.

Geography and Environment

Dana Point is situated in the southwest region of Orange County, poised between the Santa Ana Mountain range 33 miles to the east and the vast expanse of the Pacific Ocean. Covering an area of 6.5 square miles, Dana Point is bordered by Laguna Beach to the north, San Juan Capistrano to the east, and San Clemente to the south. The iconic Coast Highway winds through the heart of the City.



Dana Point benefits from an average annual rainfall of 12-13 inches and a humidity level of 4 percent. Thanks to its elevation of 148 feet and its prime location near the Pacific Ocean, the City boasts a pleasant summer average high of 75 degrees and a mild winter average high of 67 degrees. It's a rarity for temperatures to drop below 40 degrees. The City's temperate climate is further enriched by its lush parks and scenic trails that offer residents and visitors a refreshing green escape.

Demographics

The data used in this section comes from the American Community Survey (ACS), administered by the United States Census Bureau (US Census), completed in 2022. Based on this dataset, Dana Point's population was estimated to be 33,107 with a median age of 49, nine years older than the average median age in Orange County. Table 2 (below) shows the basic demographics of the City, which has lost on average .3% of residents annually over the past 20 years.

The latest data depicts a diverse community, as shown in Tables 2 and 3 below.

Percentage of Total Dana Point Population			
Persons under 5 years	4.9%		
Persons under 18 years	14.9%		
Persons between 18 - 65	54.1 %		
Persons 65 years and over	20.4%		
Source: US Census Bureau 2022			

Table 2: Basic Demographics

Table 3: Population By Race

Percentage of Total Dana Point Population	
Non-Hispanic White	62.0%
Hispanic of any race	21.2%
Non-Hispanic Asian	4.5%
Non-Hispanic Black	1.0%
All Other Non-Hispanic Races	0.8%
Source: US Census Bureau 2022	

83.1% of Dana Point residents speak only English. The remaining 16.9% of residents speak a language other than English as their primary language. Among those who speak a non-English language, the largest group, constituting 8.9% of the population, speaks Spanish. Other Indo-European languages are spoken by 4.1% of the population as their primary language, while Asian and Pacific Island languages are spoken by 2.4% of the population. The smallest non-English language group, making up 1.4% of the population, speaks other languages not categorized in the US Census Bureau.

In 2021, the U.S. Census Bureau estimated that 8.3% of the civilian noninstitutionalized



population in Dana Point was living with a disability. This percentage increases significantly among the older population, with 28.5% of those aged 65 and older having some form of disability, Table 4 contains amplifying details that were considered during the planning process.

Percentage of Total Dana Point Population	
Persons under 18	1.1%
Persons 18-64	5.8%
Persons over 64	28.5%
Ambulatory	4.9%
Cognitive	2.8%
Vision	1.3%
Hearing	3.8%
Source: US Census Bureau 2021	

Table 4: Disability Population

Note the percentages provided in Table 4, sourced from the U.S. Census Bureau, may not sum to exactly 100% due to rounding errors, statistical imprecision, or the possibility of respondents being able to select multiple categories.

Economy and Patterns

Dana Point has a diverse mix of industries, including tourism, hospitality, retail, and healthcare. The largest employer in the City is the Ritz-Carlton Laguna Niguel, a luxury resort employing hundreds of people as of 2022. Other major employers include the Monarch Beach Resort, the St. Regis Monarch Beach Resort & Spa, and various retail establishments at the Lantern District and Dana Point Harbor.

Commuting patterns in Dana Point are largely influenced by the City's location within Orange County, which is known for its extensive freeway system. Many residents commute to other cities within the County for work, such as Irvine, Santa Ana, and Newport Beach. The average commute time for Dana Point residents is around 27 minutes, slightly lower than the national average.

As a coastal City, Dana Point's economy is significantly driven by tourism and hospitality. The City's beautiful beaches, resorts, and recreational activities attract visitors from all over the world, contributing to the local economy and job market. Additionally, the Dana Point Harbor is a popular destination for boating, fishing, and water sports enthusiasts, further supporting the City's tourism industry.

Land Use Development and Trends

Dana Point has experienced significant growth and development in recent decades, transforming into a vibrant City with a diverse mix of land uses. The City's landscape features a harmonious



blend of residential neighborhoods, commercial centers, and recreational spaces, all carefully designed to create a balanced and sustainable community. Dana Point takes pride in its coastal character and natural resources, prioritizing their preservation and integration into the City's development plans. The City's commitment to maintaining its unique identity while accommodating growth has resulted in a thriving community that offers a high quality of life for its residents and a memorable experience for visitors.

Residential development in Dana Point consists primarily of single-family homes, multi-family homes, and apartments. The City has several distinct neighborhoods, such as Lantern Village, Sea Canyon, Dana Knoll, Capistrano Beach, Monarch Beach, and others, each with its unique character. In recent years, the City has seen some new residential developments, particularly in the Town Center area, which has been undergoing revitalization efforts to create a more vibrant and walkable downtown core.

Commercial development and shopping centers are sprinkled throughout the City including in Capistrano Beach, Dana Point Harbor, the Lantern District, Monarch Beach, Dana Knoll, along Coast Highway, and other areas. Dana Point Harbor is a major commercial and recreational hub, featuring a variety of shops, restaurants, and marine-related businesses. The Lantern District area, located along Del Prado Avenue, has been the focus of redevelopment efforts to create a more pedestrian-friendly and mixed-use environment, with a mix of retail, dining, and office spaces.

Unlike some other cities in Orange County, Dana Point does not have significant industrial development. The City's economy is primarily driven by tourism, hospitality, and retail sectors, capitalizing on its coastal location and natural assets. However, the City does have some light industrial and office uses sprinkled throughout the City, some examples being Doheny Village, Lantern Village, the Lantern District, and Camino De Estrella areas.



Infrastructure Assessment

Maintaining key infrastructure networks in Dana Point, as well as external partners supporting the community, is crucial. Any damage to these networks can result in additional hazards, such as a burst water tank causing flooding or downed power lines leading to a fire.

Electricity

Dana Point is powered by San Diego Gas & Electric (SDG&E), which is the primary electricity supplier for the City and much of southern Orange County. SDG&E is responsible for the ownership, maintenance, and operation of the power transmission and distribution infrastructure that serves Dana Point. This infrastructure includes a complex system of power lines, transformers, and substations that work together to deliver electricity to homes, businesses, and other facilities in the area.

Substations are a critical component of the electrical grid infrastructure, as they play a key role in transforming the voltage of the electricity to a level that can be safely and efficiently distributed to homes and businesses. There are several substations located near Dana Point that are owned and operated by SDG&E. These substations are responsible for regulating the flow of electricity, controlling voltage levels, and preventing power outages in the area.

Substations serving the Dana Point area include the Capistrano Substation located in San Juan Capistrano and the Laguna Niguel Substation located in Laguna Niguel.

Natural Gas

Southern California Gas Company (SoCalGas) is the provider of natural gas service in Dana Point. According to SoCalGas, there are several natural gas transmission lines running through Dana Point, particularly along the Coast Highway corridor. It is important to note that damage to these transmission lines or facilities in neighboring communities may impact the natural gas service in Dana Point. Due to the potential flammability and combustibility of natural gas, incidents such as a pipeline rupture or sparks near natural gas can lead to serious consequences, such as fire or explosion.

Water and Wastewater

Dana Point relies on robust and reliable water and wastewater infrastructure to support the needs of its residents, businesses, and visitors. This infrastructure is comprised of a complex network of pipes, pumps, treatment plants, and storage facilities designed to collect, treat, and distribute water and wastewater throughout the City.

Water Infrastructure: The primary water supplier for Dana Point is the South Coast Water District (SCWD). SCWD operates the Groundwater Recovery Facility (GRF), a state-of-the-art water treatment plant that produces up to 5 million gallons of drinking water per day from local groundwater sources. The GRF helps reduce the City's dependence on imported water and ensures a reliable, high-quality water supply for Dana Point residents and businesses.



SCWD manages the majority of the water and recycled water distribution system in Dana Point, including miles of pipelines, storage tanks and pumping stations. Moulton Niguel Water District (MNWD) provides service to the northerly portion of the City near Crown Valley and along the northerly portion of Golden Lantern, while Santa Margarita Water District (SMWD) also provides service to a portion of central Dana Point adjacent to Del Obispo Street and Stonehill Drive. The combined systems from MNWD, SMWD and SCWD delivers water and recycled water to thousands of customers citywide, including residential, commercial and industrial users. Recycled water for irrigation and other nonpotable purposes is available in a number of areas and is consistently expanding to reach other locations citywide.

Wastewater Infrastructure: SCWD is also responsible for collecting, treating, and disposing of wastewater generated in Dana Point. SCWD operates numerous sewer pipelines and wastewater lift stations that transport wastewater to two treatment plants, namely the J.B. Latham Wastewater Treatment Plant on Del Obispo Street and the Coastal Treatment Plant located in the City of Laguna Beach. The J.B. Latham Treatment Plant has a treatment capacity of 13 million gallons per day and serves the communities of Dana Point, South Laguna, and parts of San Clemente and San Juan Capistrano. The Coastal Treatment Plant has a capacity of 6.9 Million Gallons per day and serves the communities of Dana Point, Laguna Beach, Laguna Hills, Laguna Woods, Laguna Niguel and others.

The J.B. Latham Wastewater Treatment Plant is a modern facility that uses advanced technologies to treat wastewater to a high standard before discharging it into the ocean. The plant has a treatment capacity of 13 million gallons per day and serves the communities of Dana Point, South Laguna, and parts of San Clemente and San Juan Capistrano.

Transportation

Dana Point has a well-established transportation system that utilizes several major highways to provide convenient access to other cities and regions in Southern California. Arterial Highways serving Dana Point include Pacific Coast Highway, Coast Highway, Doheny Park Road, Stonehill Drive, Del Obispo Street, Dana Point Harbor Drive, Golden Lantern, Niguel Road and Crown Valley Parkway, many of which provide access to the coast.

Pacific Coast Highway connects Dana Point to nearby cities such as Laguna Beach to the north and San Clemente to the south. It also provides access to other major highways, such as Interstate 5, which runs inland and connects Dana Point to larger cities like Santa Ana, Anaheim, and Los Angeles.

Dana Point is also served by a network of local roads and streets that provide access to neighborhoods, commercial areas, and public facilities. The Orange County Transportation Authority (OCTA) provides public transit services in Dana Point and the surrounding areas. This includes bus routes and paratransit services that connect the City to other parts of Orange County.

Dana Point also operated a seasonal Trolley Program using two fixed routes providing service to



the community during the summer season and special events.

The nearest major airport to Dana Point is John Wayne Airport, located approximately 20 miles north in Santa Ana. Amtrak and Metrolink provide passenger rail service through Dana Point, with the nearest stations in the adjoining cities of San Juan Capistrano and San Clemente. Rail service provides an additional option for residents and visitors to transit through the area. Further, freight routinely uses the rail corridor to transport goods to San Diego, Los Angeles and other areas. The interstate 5 Freeway also runs through Dana Point.



Chapter 3 Hazard Assessment

This chapter discusses the types of hazards that might reasonably happen within the City. It describes these hazards and how they are measured, provides a history of these hazards in and around the City, identifies where they may occur, and discusses the risks they pose. The discussion of risks include any changes to the frequency, intensity, and/or location of these hazards as a result of climate change. This chapter also discusses how the Working Group identified and prioritized the hazards in this Plan. The prioritization was accomplished through a series of meetings involving the broader group, wherein open discussions were conducted among all Working Group members in a virtual setting. Various factors were considered in the decision-making process, including public concerns expressed through surveys, historical data, subject matter expert opinions, hazardous events impacting neighboring communities, and additional information contributed by the members.

Hazard Identification and Scoring

FEMA guidance identifies a number of hazards communities should evaluate for inclusion in a hazard mitigation plan. Communities may also consider additional hazards for their plans. The Working Group reviewed an extensive list of hazard events and excluded the ones that pose the least threat or are assessed to have the lowest probability of impact from the LHMP. Table 5 below indicates the hazards discussed and their ranking measured on the Hazard Matrix.

The following criteria, based on historical and recent events, were used to determine the rating of each potential hazard, validating their frequency and impacts:

Probability

- Likely: There may or may not have been historic occurrences of the hazard in the community or region, but experts feel that it is likely that the hazard will occur in the community. Between 50% and 100% annual probability.
- Possible: There may or may not have been a historic occurrence of the hazard in the community or region, but experts feel that it is possible the hazard could occur in the community. Between 20% 50% annual probability.
- Unlikely: There have been no historic occurrences of the hazard in the community or region and experts agree it is highly unlikely that the hazard will occur in the community. Less than 20% annual probability.

Impact

• High: Catastrophic/Critical. The consequences will be significant in terms of building damage and loss of life.



- Moderate: Limited. The consequences are thought to be modest in terms of building damage and loss of life, limited either in geographic extent or magnitude.
- Low: Negligible. Little building damage and trivial impact to infrastructure and critical facilities.

	Probability of Occurrence							
		Likely	Possible	Unlikely				
xtent	High	 Earthquake Coastal Erosion Landslides 	• Tsunami	 Radiological Release 				
Impact and E	Moderate	 Severe Weather Drought 	 Flood Wildfire Extreme Heat/Cold 					
	Low		• Hazmat Release					

Table 5: 2023 Working Group Hazard Matrix

The Working Group reviewed the results of the August 2023 Hazard Assessment, along with the Community Hazard & Risk Assessment Survey, and developed the following list of natural and human-caused hazards for inclusion in the 2024 LHMP:

- Earthquake
- Flood
- Severe Weather (Rain)
- Tsunami
- Wildfire
- Hazmat Release
- Radiological Release



The Working Group then followed FEMA guidance for hazard mitigation plans and prioritized each of the five natural hazards. A score of 1 to 4 was assigned to four criteria for each of the five natural hazards. The four criteria are:

- **Probability**: the likelihood that the hazard will occur in Dana Point 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 Dana Point.
- **Secondary impacts**: The severity of indirect damage of the hazard to Dana Point.

The Working Group 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 6 shows the rubric used to assign a score for each criterion.

Table 6: Criterion Scoring

Probability		Maximum Probable Extent (Primary Impact)	
The estimated likelihood of occurrence based on historica	al data.	The anticipated damage to a typical structure in	n 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 4 given year.		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 the 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 7 shows the individual criterion scores, the final score, and the threat level for each hazard based on the above prioritization process.

		Impact (2.0)				
Hazard	Probability (2.0)	Location (0.8)	Primary Impact	Secondary Impact (0.5)	Final Score	Threat Level
			(0.7)			
Earthquake	4 (Highly Likely)	4 (Extensive)	4 (Extreme)	4 (High)	48	High
Floods	3 (Likely)	4 (Extensive)	3 (Severe)	3 (Moderate)	30	Medium
Severe Weather	3 (Likely)	4 (Extensive)	3 (Severe)	3 (Moderate)	30	Medium
Tsunami	3 (Likely)	3 (Significant)	4 (Extreme)	4 (High)	33	Medium
Wildfire	3 (Likely)	3 (Significant)	3 (Severe)	3 (Moderate)	27	Medium
Hazmat Release (Significant Event)	2 (Occasional)	1 (Negligible)	2 (Moderate)	3 (Moderate)	12	Low
Radiological Release	1 (Unlikely)	4 (Extensive)	4 (Extreme)	4 (High)	12	Low

Table 7: Hazard Score and Threat Level

National Risk Assessment

The City of Dana Point has conducted a comprehensive assessment of the National Risk Index to ensure that the Local Hazard Mitigation Plan addresses all relevant hazards. After careful consideration, the City has decided not to include the following 14 hazards in the plan:

1. Dam Failure Justification: The Palisades Dam in the City of San Clemente poses a minor risk to the City of Dana Point in the event of imminent failure. Some residents in south DP would be impacted and would have to be evacuated. The City of DP just received 6/24 the Palisades Dam EAP form SCWD identifying DP as being at risk.

2. Drought Justification: While droughts can occur in this region, the water districts/agencies that serve the City have robust water supplies and management plans in place to address droughts, making the risk less significant.

3. Coastal Erosion / Sea Level Rise Justification: The City's coastline is closely monitored, and current erosion rates and sea level rise projections do not indicate a significant risk within the planning horizon.



4. Extreme Cold Justification: Dana Point's mild climate rarely experiences extreme cold temperatures that could pose a significant risk.

5. Extreme Heat Justification: While extreme heat events can occur, the City has measures in place to mitigate the impact on residents and infrastructure.

6. Hurricane Justification: Dana Point's location on the West Coast of the United States makes it unlikely to experience the direct impact of a hurricane.

7. Landslide Justification: While parts of Dana Point have experienced landslides, the overall risk and frequency of large-scale landslides affecting the City as a whole is considered low enough to not warrant inclusion as a primary hazard in this LHMP. However, the City will continue to monitor landslide activity and reassess this decision in future plan updates. Although coastal bluff erosion has been an issue along the coastline in Dana Point, the potential impact is moderate.

8. Radon Justification: The risk of radon exposure in Dana Point is considered low, and there have been no significant incidents reported.

9. Hail (Severe Weather) Justification: Severe hailstorms are uncommon in Dana Point due to its coastal location and climate.

10. High Winds (Severe Weather) Justification: While strong winds can occur during storms, the risk of sustained high winds causing significant damage is low.

11. Lightning (Severe Weather) Justification: The frequency and severity of lightning strikes in Dana Point do not pose a significant risk to public safety or infrastructure.

12. Tornadoes Justification: The risk of tornadoes in Dana Point is extremely low due to its location and the rarity of conditions conducive to tornado formation.

13. Volcanoes Justification: There are no active volcanoes in the vicinity of Dana Point, and the risk of volcanic activity affecting the City is negligible.

14. Winter Storm (Ice Storm, Nor'easters, Snow) Justification: Dana Point's mild coastal climate makes it unlikely to experience severe winter storms, ice storms, nor'easters, or significant snowfall.

The City of Dana Point will continue to monitor these hazards and reassess their inclusion in future updates to the Local Hazard Mitigation Plan as necessary.



Hazard Profiles

Earthquake

Description

An earthquake is the sudden movement of the earth's surface caused by the release of stress accumulated within or along the edge of the earth's tectonic plates, a volcanic eruption, or a manmade explosion. Most earthquakes occur at the boundaries where the earth's tectonic plates meet (faults); less than 10% of earthquakes occur within plate interiors.

According to the United States Geological Society (USGS) Earthquake Hazards Program, an earthquake hazard is any disruption associated with an earthquake that may affect residents' normal activities. This includes surface faulting, ground shaking, landslides, liquefaction, tectonic deformation, tsunami, and seiches. Ground shaking and liquefaction are the primary causes of earthquake damage to man-made structures.

Ground Shaking: Also known as "seismic shaking," ground shaking is caused by the movement of tectonic plates along fault lines. Dana Point, like most of California, lies on the North American plate, while the coastal areas south of San Francisco are on the Pacific plate. The major border between these plates is the San Andreas Fault, but additional fault lines, such as the Newport-Inglewood Fault and the Whittier Fault, can be detected in close proximity to Dana Point. These faults are responsible for the potential seismic shaking and other tectonic activity in the City.

Shaking can be powerful enough to cause widespread damage or so mild that only scientific instruments can detect it. The intensity of seismic shaking depends on the quantity of energy released by the fault rupture, the length of the rupture, and the depth at which the rupture occurs. The locations nearest to the rupture usually suffer the most shaking.

Seismic shaking can damage or destroy buildings and structures, resulting in partial and complete collapse. Infrastructure on or below the surface, such as roads, rail lines, power lines, and pipelines, can also be harmed or destroyed by ground movement. This can lead to hazardous material leaks, water line breaks that result in flooding, threats to human and environmental health due to broken wastewater lines, and other dangerous scenarios. There is also a possibility of fatalities or serious injuries due to falling objects and structures during seismic shaking.

Liquefaction: This occurs when water-saturated, loosely packed material, such as sand or silt, is violently disturbed. The saturated substance behaves less like solid ground and more like a liquid due to the force of the shaking. In Dana Point, the risk of liquefaction is influenced by the soil's composition as well as the



height of the groundwater table. The City's coastal location and the presence of alluvial soils in some areas increase the likelihood of liquefaction during a significant earthquake.

For liquefaction to occur, soils must be saturated with water. High water table areas typically have saturated soil because the distance between the shallowest aquifer and the surface is short. Alluvial soils—soft sands, silts, and clays—are similarly prone to liquefaction since they are fine grain and do not bind well together. Any structure built on liquefied earth may sustain damage since it has lost most or all stability. During some liquefaction events, buildings may be destroyed. Utility wires buried in the ground may be damaged or destroyed by liquefied soils. Additional risk considerations are flooding (if water lines are damaged), or fire (if natural gas lines are damaged). Additionally, liquefied soils may cause mudslides.

The risk of liquefaction in Dana Point is directly proportional to the likelihood of an earthquake occurring. The City is in close proximity to several local faults that run across Orange County, increasing the possibility of seismic activity. An earthquake along any of these faults has the potential to cause significant ground shaking that can trigger liquefaction in the City.

Location and Extent

The magnitude of ground shaking is determined by the amount of energy released during a seismic event, which is influenced by the length and depth of the fault rupture. Stronger shaking generally occurs when the fault rupture is longer and closer to the surface. Areas in close proximity to the fault rupture typically experience the most intense seismic effects, while regions further away experience less severe tremors. Seismic shaking can cause structural damage or destruction, leading to partial or complete collapse of buildings and infrastructure. Ground shaking can also damage or destroy subsurface infrastructure, such as pipelines, potentially resulting in hazardous material spills and flooding if water lines are compromised.

Dana Point, located in southern California, is situated in a region known for significant seismic activity due to the presence of major geological fault lines. Although minor faults exist within the City limits, their contribution to the overall seismic risk is relatively minimal. However, Dana Point's proximity to the Newport-Inglewood Fault, a more significant fault system located approximately 10-15 miles to the southwest, considerably elevates the potential for ground shaking during seismic events. The Newport-Inglewood Fault extends for about 47 miles from Beverly Hills to Newport Beach and has a history of generating destructive earthquakes, such as the 1933 Long Beach earthquake, which had a magnitude of 6.4. Seismologists estimate that this fault has the potential to produce earthquakes with magnitudes ranging from 6.0 to 7.4. Figure 1 illustrates Dana Point's proximity to the Newport-Inglewood Fault and highlights the areas susceptible to liquefaction, a phenomenon in which saturated, loosely packed soil loses strength and behaves like a liquid during strong ground shaking. The liquefaction zones, predominantly located along the coastal areas and near the San Juan Creek, pose an additional risk to structures and infrastructure during seismic events.





Figure 1 - Dana Point Fault Proximity & Liquefaction

Source: California Department of Conservation



The Modified Mercalli Intensity (MMI) scale is commonly used to measure the intensity of seismic shaking based on the extent of observed damage. The MMI scale replaced the Richter scale, which became less accurate for measuring larger earthquakes. Due to the attenuation of seismic energy as it travels further from the point of origin of the fault rupture, different parts of a City or region may experience varying MMI values. The intensity of shaking and the resulting damage generally decrease with increasing distance from the epicenter. Given the size of Dana Point, it is likely that different areas of the City would record varying MMI readings following a significant seismic event. The MMI scale consists of 12 degrees of shaking intensity, each represented by a Roman numeral, as shown in Table 8 below.

Modified Mercalli Intensity Scale		
Value	Shaking	Description
Ι	Not felt	Not felt, except by a very few under especially favorable conditions.
Ш	Weak	Felt only by a few persons at rest, especially on upper floors of buildings.
111	Weak	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
IV	Light	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.
V	Moderate	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
VI	Strong	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
VII	Very Strong	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
VIII	Severe	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.
IX	Violent	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
Х	Extreme	Most masonry and frame structures destroyed with their foundations. Some well-built wooden structures and bridges destroyed. Serious damage to dams, dikes, embankments. Large landslides. Water thrown on banks of canals, rivers, lakes, etc. Sand and mud shifted horizontally on beaches and flat land. Rails bent slightly.

Table 8: MII Scale

Liquefaction events do not have a standardized scale of measurement; instead, the extent of damage associated with a liquefaction event can be assessed using factors such as soil type, the intensity of ground shaking in the affected area, the size of the impacted region, and the degree of



destruction caused by the liquefaction. Soil type plays a crucial role in determining the susceptibility of an area to liquefaction, with loose, water-saturated sediments being the most prone to this phenomenon. The strength of ground shaking during an earthquake also influences the likelihood and severity of liquefaction.

Past Events

As of September 2023, the City of Dana Point has a high earthquake risk, with a total of 7,966 earthquakes recorded since 1931. The largest earthquake in recent history within 30 miles of the City was a magnitude 5.5 event. The Chino Hills Earthquake struck Southern California on July 29, 2008, causing damage to structures and resulting in eight injuries across the region. Although Dana Point was located 30 miles from the epicenter, the City experienced shaking and structural damage, including cracked walls, broken windows, and damaged chimneys in both residential and commercial buildings. The earthquake also caused temporary power outages and gas leaks, necessitating emergency repairs.

While the effects of the 2008 Chino Hills Earthquake on Dana Point were relatively moderate, the event serves as a stark reminder of the region's vulnerability to seismic activity and emphasizes the ongoing risk that earthquakes pose to the community.

Hazard Declarations – Between 1989 and 2023, the State of California was included in 22 earthquakerelated federal Disaster Declarations (DR) and Emergency Declarations (EM). These disasters typically cover a wide region of the state and may impact multiple counties. Orange County was included in one DR during this period, DR-845, which was declared on February 11, 1994, following the Northridge Earthquake. However, Orange County was not included in any DRs or Ems, therefore the City has not been included in any declarations (FEMA 2023).

Risk of Future Events

According to the United States Geological Survey (USGS), the City of Dana Point has a 96.02% chance of experiencing a magnitude 5.0 or greater earthquake within the next 50 years, and a 58.83% chance of experiencing a magnitude 6.0 or greater earthquake within the same timeframe. These probabilities are based on the historical seismic activity in the region and the proximity of the City to major fault lines, such as the Newport-Inglewood Fault and the Whittier Fault.

The USGS also estimates that the City has a 17.74% chance of experiencing a magnitude 7.0 or greater earthquake within the next 50 years. While less likely than smaller magnitude events, a earthquake of this size could cause significant damage to structures and infrastructure in Dana Point, as well as pose a serious risk to public safety.

Climate Change Considerations

Currently, there is no clear scientific evidence indicating a direct relationship between climate change and seismic activity that would significantly alter earthquake conditions in the City of Dana Point. As a result, climate change is not expected to have a substantial impact on the frequency or intensity of earthquake occurrences in the area. However, it is important to consider the potential indirect effects of



climate change on earthquake-related hazards, such as liquefaction.

Changes in precipitation patterns due to climate change may influence groundwater levels, which could potentially affect the vulnerability of the City's soils to liquefaction. Higher groundwater levels can increase the risk of liquefaction during seismic events, as water-saturated soils are more susceptible to this phenomenon. Nevertheless, there are no documented instances of liquefaction episodes within the City of Dana Point to date, and the extent to which climate change may influence liquefaction risk remains uncertain.



Floods

Description

Flooding in Dana Point can occur following periods of excessive rainfall, whether as a single severe event or as a succession of storms. Flooding can also result from the failure of a water control structure, such as a levee or dam failure, or from debris that jams a river or stream, causing it to overflow onto the surrounding area. If precipitation exceeds the capacity of drainage and stream channels, they may flood their banks and shores. Flooding is more likely when heavy rain falls in Dana Point when the ground is already saturated. The presence of pavement and other impermeable surfaces in urbanized regions of the City means that the earth is less able to absorb water, increasing the risk of flooding.

Floods endanger communities and public safety in Dana Point in various ways. Flooding may damage property, ruin homes, transport automobiles, and other large objects. Floodwater can wash away topsoil and plants, causing erosion in the natural areas surrounding the City. Floodwater may also obstruct the mobility of flood victims or first responders seeking to reach persons in need of assistance within Dana Point.

Location and Extent

Floods within Dana Point are influenced by several waterways, including Salt Creek, San Juan Creek, and the Pacific Ocean. These floods are characterized by their predicted frequency, such as a 100-year or 500-year event. Specifically, a 100-year flood indicates a 1% probability (1 in 100) of the event occurring in any given year, while a 500-year flood represents a 0.2% likelihood (1 in 500). Notably, 100-year floods are considered significant and are often referred to as "base floods." The Federal Emergency Management Agency (FEMA) is responsible for mapping flood zones, as depicted in Figure 2, which highlight these zones within Dana Point.

Flood plains are areas that flood frequently and are classified by the intensity of the flood projected. The 100-year flood plain, for example, refers to a region that may be flooded by a 100-year flood. In principle, any location in Dana Point can be flooded if the flood event is strong enough, but low-lying regions near natural or man-made bodies of water, such as the coastal areas and the areas near Salt Creek and San Juan Creek, are most vulnerable. FEMA defines flood plains as follows: the 100-year flood plain (or "special flood hazard area"), the area outside of the 100-year flood plain but within 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"). Table 9 below shows these detailed flood plain categories.


Table 9: FEMA Flood Plain Categories

Category	Description		
Α	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.		
В	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)		
С	Outside of the 500-year flood plain (found on older maps)		
Х	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.		
Μ	Within an area at risk of mudslides from a 100-year flood event.		
Ν	Within an area at risk of mudslides from a 500-year flood event.		
Р	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.		



Figure 2 - Dana Point Flood Hazard Areas



Source: FEMA Federal Insurance Flood Map



Past Events

Although Dana Point does not have a long and extensive history of major flooding, the City has experienced instances of flooding that have impacted its residents and infrastructure. Due to its coastal location and the presence of several creeks and streams, such as Salt Creek and San Juan Creek, Dana Point is vulnerable to flooding during periods of heavy rainfall.

In recent years, Dana Point has experienced flooding as a result of storm events that has impacted City roadways and properties, often causing the closure of City streets on a temporary basis to allow City resources to address issues caused by storms. Several roadways that were impacted in previous years as a result of storm events and flooding include Coast Highway, Del Obispo Street and Coast Highway, although all impacts were temporary.

More recently, in January 2017, another series of storms brought heavy rainfall to Dana Point, causing flooding and damage to homes and businesses. The flooding led to the closure of several streets in the City, including Coast Highway, and the Dana Point Harbor again experienced significant flooding, with water levels rising to the point where some boats were partially submerged.

While there is a countywide system of flood control facilities in place, many of these are inadequate for conveying runoff from major storms and the frequency of very large floods further compounds the County's flood hazard. Severe storms have occurred less than 10 times in the past 175 years, making it challenging to accurately assess the risk of flooding. Nonetheless, major floods in Orange County are documented in Table 10, demonstrating the potential for significant flooding events in the area.

Date	Description			
1770, Jan.	 Information regarding this flood is gathered from Father Juan Crespi's diary. 			
1780, Dec.	 Information regarding this flood is gathered from Father Juan Crespi's diary. 			
1825	Greatest flood of the previous 100 years.			
	Santa Ana River changed its main course from Anaheim Bay to Newport Bay.			
1862, Jan.	The greatest flood in California's history.			
	• The rain began on Christmas Eve 1861 and continued for 30 days. The sun shone for a			
	 total of 45 minutes in that thirty-day period. 			
	• Fifty inches of rain fell during December and January.			
	Water ran four feet deep through downtown Anaheim.			
1862	During the great flood, the entire population of Agua Mansa survived in a small			
	church, where granite monuments marked the highest water level. In 1967,			
	archeologists found the Agua Mansa Mission foundation near Route 60 in Riverside.			
	Water surface data from mission monuments and old irrigation works allowed for a			
	flow calculation of 315,000 Cubic Feet Per Second (cfs) at Agua Mansa. With nearly			
	700 square miles tributary to Prado Dam downstream, the estimated flow in Santa			
	Ana Canyon was 400,000 cfs.			
1884, Feb.	Santa Ana River created a new ocean outlet			
1888-1891	Annual floods			
1914	Heavy flooding			

Table 10: Orange County Major Flood Events



1916	 Hundreds of square miles inundated Orange County. The flow in the Santa Ana River was about 75,000 cfs, overflowing into Anabeim Bay.
	 Santiago Creek overflowed into El Modena and Tustin.
1921	Elooding
1021	
1927	Moderate Flood
1938, Mar.	Devastation to all of Orange County.
	Greatest flood since 1862 - about 100,000 cfs in Santa Ana River.
	• 22" of rain fell in 5 days in the San Bernardino Mountains.
	 Santa Ana River levees failed in many places and waters flowed into Anaheim Bay. 24 lives last in Oregon County
	 34 lives lost in Orange County. Damage reached \$14 million (1928)
1969	Great damage especially to governmental infractructure
1909	 The January storm was the greatest since 1938. There was one heavy flood after a 9-day.
	storm and another moderate flood.
	• February storm greater than January but both were moderate intensity, long duration
	(i.e., large volume) events. 1-hour intensity and 24-hour volume.
	Prado Dam inflow: 77,000 cfs, outflow 6,000 cfs.
	Maximum Santa Ana River capacity is 40,000 cfs.
	 1 ¬Ω million cubic yards of sediment carried by Santa Ana River nearly caused levee
	failure due to the invert rising over five feet near the river mouth.
1074	Prado Dam was 60% filled.
1974	 IUU-year raintall along the coast of Orange County. Damage limited by substantial flood control improvements and 2 hour duration of high
	• Damage inflited by substantial flood control improvements and 3-hour duration of high intensity rainfall.
1983	Damaging record-breaking storm.
	6-hours in duration, covering about 100 square miles of western Orange County.
	Severe property damage in Huntington Beach, Fountain Valley, and Costa Mesa.
1995	 The storm influenced the criteria published in the 1986 Orange County Hydrology Manual. A very damaging storm with record breaking intensities for 2- and 3-hour duration.
1007	A very damaging storm with record breaking intensities for 2- and 5-hour duration
1997	 The most severe storm ever measured in Orange County. New records set for 30-minute, 1 hour, 2-hour, 3-hour, 6-hour, 12-hour, and 24-hour.
	rainfall.
	• Severe damage to Laguna Beach, Dana Point, Irvine, and to the I-5 Freeway.
	 100-year rainfall covered over 200 square miles of our 948 square mile county.
	 This storm and the similar (but slightly less severe) 1983 and 1995 events revealed
	vulnerability of older flood control facilities built. It was thought this type of intense storm
	was too rare to consider protective measures.
2005	A series of "Dineannle Express" storms in January and February were the most significant
2005	since El Nino of 1998, causing mud flows and flooding throughout Orange County.
	 Both state proclamations and federal declarations of disaster were made for these storms.
2010	Significant storms occurring in January and December resulted in damage from flooding and
	mud flows in Laguna Beach.
	Levee damage occurred in San Juan Capistrano along Trabuco Creek.
2019	Significant storm occurred in February which resulted in channel lining failures in Laguna
	Beach alongside Laguna Canyon Rd and San Juan Capistrano alongside Trabuco Creek Rd.
2022	
2022	 California experienced a series of atmospheric rivers that brought heavy rainfall, flooding, and mudslides to many parts of the state, including Orange County. These storms occurred



	from late December 2022 through mid-January 2023, causing significant damage and prompting emergency declarations in many counties
2023/2024	 December 2022 - January 2023: Series of atmospheric rivers caused widespread flooding and mudslides across California, including Orange County. Multiple storm systems brought record-breaking rainfall to many areas.
	 February 2024: Powerful atmospheric river event caused severe flooding, mudslides, and damage across Southern California, including significant impacts in Orange County and Dana Point area.

Source: Santa Ana River Mainstem Project - OC Public Works/Santa Ana River Division

National Flood Insurance Program (NFIP) History – The NFIP makes federally backed flood insurance available to homeowners, renters, and business owners in participating communities. For most communities participating in the NFIP, FEMA has prepared a detailed Flood Insurance Study. The study presents water surface elevations for floods of various magnitudes, including the 1-percent annual chance flood and the 0.2-percent annual chance flood (the 500-year flood). Base flood elevations and the boundaries of the 100- and 500-year floodplains are shown on Flood Insurance Rate Maps (FIRMs).

Dana Point entered the NFIP on September 15, 1989. The date of the City's current effective FIRM is March 21, 2019, which the City has adopted as its official flood hazard map.

As a participant in the NFIP, the City must, at a minimum, regulate development in its floodplain areas in accordance with NFIP criteria. Before a permit to build in a floodplain area is issued, the City must ensure that two basic criteria are met:

- All new buildings and developments undergoing substantial improvements must, at a minimum, be elevated to protect against damage by the 100-year flood.
- New floodplain development must not worsen existing flood problems or increase damage to other properties.

Properties constructed after a FIRM has been adopted are eligible for reduced flood insurance rates. Such structures are less vulnerable to flooding since they were constructed after regulations and codes were adopted to decrease vulnerability. Properties built before the FIRM was adopted may be more vulnerable to flooding and related damage because they do not meet code or are located in hazardous areas).

Implementation and Enforcement of Local Flood Management Regulations – The City of Dana Point implements and enforces local flood management regulations to regulate and permit development in Special Flood Hazard Areas (SFHA). The City's floodplain management regulations are designed to minimize the risk of flood damage to new and existing structures within the SFHA. These regulations include requirements for elevation, floodproofing, and other measures to reduce flood risk. The City's Building Division is responsible for reviewing building permit applications and ensuring compliance with the City's floodplain management regulations.

It should be noted that the City of Dana Point does not currently have any mapped SFHAs within its jurisdiction. However, the City recognizes the importance of maintaining and enforcing its floodplain management regulations to ensure that future development does not increase the risk of flooding.



Appointment of NFIP Designee – The Director of Public Works in coordination with the Community Development Director for the City of Dana Point is designated as the official responsible for implementing the addressed commitments and requirements of the NFIP. The Director of Public Works in coordination with the Community Development Director oversees the City's floodplain management program to ensure that the City remains in compliance with NFIP regulations.

Implementation of Substantial Improvement/Substantial Damage Provisions – In the event of a flood, the City of Dana Point will implement the substantial improvement/substantial damage provisions of its floodplain management regulations. These provisions require that any structure located within the SFHA that sustains damage or undergoes improvements that exceed 50% of the structure's market value must be brought into compliance with the City's floodplain management regulations. This may include elevating the structure, floodproofing, or other measures to reduce flood risk.

The City's Building Division will be responsible for conducting damage assessments and determining whether a structure has sustained substantial damage or is undergoing substantial improvements. Property owners will be required to obtain building permits and comply with the City's floodplain management regulations before rebuilding or repairing damaged structures.

National Flood Insurance Program Loss Analysis – A repetitive loss property is defined by FEMA as an NFIP-insured property that has experienced any of the following since 1978, regardless of any changes in ownership:

- Four or more paid losses in excess of \$1,000
- Two paid losses in excess of \$1,000 within any rolling 10-year period
- Three or more paid losses that equal or exceed the current value of the insured property.

A severe repetitive loss property is further defined as follows:

- Four or more paid losses in excess of \$5,000 each, with the cumulative amount of such claim payments exceeding \$20,000
- At least two separate claim payments made, with the cumulative amount of the building portion of such claims exceeding the market value of the building
- At least two of the above referenced claims occurring within any rolling 10-year period and more than 10 days apart.

Several federal government programs encourage communities to identify and mitigate "repetitive loss" properties. Nationwide, repetitive loss properties make up only 1 to 2 percent of the flood insurance policies currently in force, yet they account for 40 percent of the flood insurance claim payments. A report on repetitive loss structures by the National Wildlife Federation found that 20 percent of these structures are listed as outside the 100-year floodplain. In 1998, FEMA reported that the NFIP's 75,000 repetitive loss structures had already cost \$2.8 billion in flood insurance payments.

FEMA identifies repetitive loss structures based on flood insurance payments. A repetitive loss area is the portion of the floodplain where numerous buildings have been subject to repetitive flooding. The purpose of identifying repetitive loss areas is to identify structures that are subject to the same risk but are not on FEMA's list because a flood insurance policy was not in force at the time of loss.



The City of Dana Point does not participate in the Community Rating System (CRS) program. This is largely due to the City's successful management of flood risk, as evidenced by the absence of reported repetitive loss properties within its jurisdiction.

Since there are no repetitive loss properties in Dana Point, the City has not had to engage in the intensive flood projects that are common in other areas. This situation is beneficial for both the residents of Dana Point and federal flood insurance programs, as it minimizes the financial and emotional toll of flood-related damages and reduces the reliance on post-disaster assistance from the federal government and taxpayers.

Hazard Declarations – Between 1989 and 2023, the State of California was included in 9 flood-related federal DR, EM declarations. Generally, these disasters cover a wide region of the state; therefore, they may have impacted many counties. Orange County was included in six of the federal declarations for California, therefore the City has been included in six declarations (FEMA 2023); refer to Table 11.

Designation Number	Date Declared	Event Name
DR-935-CA	February 10, 1992	California Snow Storm, Heavy Rain, High Winds, Flooding, Mudslide
DR-979-CA	February 03, 1993	California Severe Storm, Winter Storm, Mud & Landslides, Flooding
DR-1952-CA	February 02, 1998	California Severe Winter Storms and Flooding
DR-4305-CA	March 16, 2017	Severe Winter Storms, Flooding, and Mudslides
EM-3591-CA	January 09, 2023	California Severe Storms, Flooding, and Mudslides
EM-3592-CA	March 10, 2023	California Severe Winter Storms, Flooding, Landslides, and Mudslides
Source: FEMA 2023		

Table 11: Flood Declarations Including Orange County Between 1989 and 2023

Risk of Future Events

Although Dana Point has not experienced significant flooding events in the past, it is essential to note that the risk of flooding is still present. This is particularly true for areas near Salt Creek and San Juan Creek, which can overflow during heavy rainfall, posing a significant threat to nearby residents and infrastructure.

Orange County has a documented history of flooding events, as shown in **Table 10**. The regular occurrence of heavy rainfall that produces floods is expected to continue in the region, including Dana Point, making it crucial to consider flood hazards in any hazard mitigation plan for the City.



The City Council has invested in storm drainage infrastructure improvements and master planning study and build improvements to prevent flooding citywide over the past two decades, and is encouraged to continue to do the same to avoid localized flooding. Further, it is recommended that the City support the County and State on drainage improvement endeavors that address flooding potential.

Climate change may have a significant impact on flooding in Dana Point and the surrounding areas, although that is unknown. The extent of these impacts will depend on several factors, including the local topography, land use patterns, and infrastructure. Sea -level rise due to climate change can increase the risk of coastal flooding in Dana Point. As sea levels rise, high tides and storm surges can reach further inland, inundating low-lying areas and causing damage to coastal infrastructure. This can also lead to increased erosion along the City's beaches and bluffs, further exacerbating the flood risk.

Climate change can impact vegetation in and around Dana Point over time, which stabilizes soil and absorbs excess water. Changes in temperature and precipitation patterns can alter the distribution and health of native plant species, reducing their ability to mitigate flood risks. These factors highlight the need for effective flood management and adaptation strategies to protect the City's residents and infrastructure in the face of a changing climate.



Severe Weather (Rain)

Description

Severe weather events, particularly those involving heavy rainfall, can have significant impacts on communities like Dana Point. These events can cause flooding, damage infrastructure, and pose risks to public safety. Heavy rainfall occurs when a substantial amount of precipitation falls over a short period, often leading to flash floods and urban flooding.

Several factors contribute to the occurrence of heavy rainfall events. One primary factor is the presence of moisture-laden air masses, which can be influenced by nearby bodies of water, such as the Pacific Ocean in the case of Dana Point. When these air masses encounter favorable atmospheric conditions, such as instability or convergence, they can produce intense rainfall.

Another factor that can contribute to heavy rainfall is the presence of slow-moving or stationary weather systems. These systems can cause prolonged periods of rain over a particular area, increasing the risk of flooding. In some cases, these weather systems can be influenced by larger-scale climate patterns, such as the El Niño-Southern Oscillation (ENSO).

The impacts of heavy rainfall can be substantial, particularly in urban areas like Dana Point. When rainfall exceeds the capacity of stormwater drainage systems, it can lead to urban flooding, causing damage to buildings, roads, and other infrastructure. Heavy rainfall can also cause erosion, landslides, and sinkholes, posing risks to public safety and property.

In addition to the direct impacts of heavy rainfall, these events can also have secondary effects. For example, flooding can lead to the contamination of water sources, increasing the risk of waterborne diseases. Heavy rainfall can also disrupt transportation networks, making it difficult for emergency responders to access affected areas.

Location and Extent

Severe weather events involving heavy rainfall can occur throughout Dana Point, although some areas may be more vulnerable than others. Low-lying areas, particularly those near water bodies or in areas with poor drainage, are at a higher risk of flooding during heavy rainfall events.

The extent of heavy rainfall events can vary widely, depending on the specific atmospheric conditions and the duration of the event. In some cases, heavy rainfall may be relatively localized, affecting only a small area. In other cases, heavy rainfall may be more widespread, affecting larger portions of the City or even the surrounding region.

The severity of heavy rainfall events is often measured by the amount of precipitation that falls over a given period. For example, a rainfall event that produces several inches of rain over a few hours would be considered more severe than an event that produces the same amount of rain over a more extended period.



In addition to the amount of rainfall, the severity of heavy rainfall events can also be influenced by other factors, such as the intensity of the rainfall and the antecedent soil moisture conditions. High-intensity rainfall events, where a large amount of rain falls in a short period, can be particularly damaging, as they can quickly overwhelm stormwater drainage systems and cause flash flooding.

Past Events

Dana Point has experienced several severe weather events involving heavy rainfall in the past.

- In January 2017, a series of storms brought heavy rainfall to the region, causing flooding in various parts of Dana Point. The heavy rainfall led to the temporary closure of several streets to allow flooding to subside and provide City resources time to conduct clean up operations, particularly in low lying areas and near creeks and storm drains.
- In December 2010, a severe storm system brought heavy rainfall to Southern California, including Dana Point. The heavy rain caused flooding in several parts of the City, leading to damage to homes and businesses. The Dana Point Harbor was also significantly impacted, with flooding causing damage to boats and infrastructure.
- In February 1998, a strong El Niño event brought heavy rainfall to the region, causing widespread flooding and damage. In Dana Point, the heavy rain led to the closure of several roads and the evacuation of some residents.

These events highlight the potential impacts of severe weather events involving heavy rainfall on Dana Point. While the City has taken steps to improve its stormwater management infrastructure and emergency response capabilities, the risk of heavy rainfall events remains a significant concern.

Hazard Declarations – Between 1989, when Dana Point was incorporated as a City, and 2023, the State of California was included in several severe weather-related federal DR (Major Disaster Declaration) and EM (Emergency Declaration) declarations involving heavy rainfall and flooding. Generally, these disasters cover a wide region of the state; therefore, they may have impacted many counties. Orange County was included in some of these declarations, which means that the City of Dana Point may have been included as well (FEMA 2023).



Hazard Declarations Including Orange County Between 1989 and 2023

Designation Number	Date Declared	Event Name
DR-935-CA	February 10, 1992	California Snow Storm, Heavy Rain, High Winds, Flooding, Mudslide
DR-979-CA	February 03, 1993	California Severe Storm, Winter Storm, Mud & Landslides, Flooding
DR-1044-CA	January 10, 1995	Severe Winter Storms, Flooding, Landslides, Mud Flows
DR-1046-CA	March 12, 1995	Severe Winter Storms, Flooding, Landslides, Mud Flows
DR-1952-CA	February 02, 1998	California Severe Winter Storms and Flooding
DR-1952-CA	January 26, 2010	Severe Winter Storms, Flooding, Debris Flows, and Mud Flows
DR-4305-CA	March 16, 2017	Severe Winter Storms, Flooding, and Mudslides
DR-4434-CA	March 01, 2019	Severe Winter Storms, Flooding, Landslides, and Mudslides
EM-3591-CA	January 09, 2023	California Severe Storms, Flooding, and Mudslides
EM-3592-CA	March 10, 2023	California Severe Winter Storms, Flooding, Landslides, and Mudslides
Source: FEMA 2023		·

Risk of Future Events

Severe weather events, particularly heavy rainfall, pose significant risks to various aspects of life in the City of Dana Point. The impacts of severe rainfall are complex and far-reaching, extending beyond the physical location experiencing the event and affecting diverse sectors of the community.

One of the significant impacts of severe rainfall is on the City's infrastructure. During heavy downpours, the risk of flooding increases, potentially leading to damage to roads, bridges, and buildings. Floodwaters can also overwhelm the City's drainage systems, causing backups and further damage. These infrastructure issues can disrupt daily life, impede transportation, and result in costly repairs for the City and its residents.

Apart from infrastructure, severe rainfall also has ramifications on other aspects of the community, such as public safety and the local economy. Heavy rain can create hazardous conditions, increasing the risk of accidents and injuries. Additionally, businesses may face temporary closures or reduced foot traffic during severe weather events, leading to economic losses.

Moreover, severe rainfall can have profound environmental impacts on Dana Point. Heavy downpours can lead to soil erosion, particularly in coastal areas, and increased runoff can carry pollutants into the ocean, affecting marine life and water quality. Landslides and mudslides are also potential risks, especially in hillside areas, which can threaten properties and public safety.



The threat of severe rainfall is expected to persist in Dana Point for the foreseeable future. This unpredictability makes it challenging to forecast the exact timing and severity of future heavy rainfall episodes in the City. The City is encouraged to continue investing in infrastructure to lessen the potential flooding impact.

Climate Change Considerations

Climate change may increase the frequency and intensity of severe weather events involving heavy rainfall in Dana Point. As global temperatures rise, the atmosphere can hold more moisture, leading to more intense precipitation events. This can result in an increased risk of flash floods, urban flooding, and soil erosion in the City.

Changes in precipitation patterns due to climate change can also result in more prolonged dry spells between rainfall events. While this may not directly contribute to the severity of individual heavy rainfall events, it can exacerbate the impacts of flooding when these events do occur. Dry, compacted soils are less able to absorb water, increasing runoff and the risk of flooding.

Rising sea levels due to climate change can also have an impact on heavy rainfall events in Dana Point. Higher sea levels can lead to more severe coastal flooding during storm events, as storm surges and high tides can reach further inland. This can be particularly problematic for low-lying areas near the coast, such as Beach Road, Capistrano County Beach and Doheny State Beach.

In addition to the direct impacts of heavy rainfall, climate change can also have secondary effects that can exacerbate the consequences of these events. For example, more intense rainfall can lead to increased soil erosion, which can damage infrastructure and reduce water quality in local streams and coastal waters.



Tsunami

Description

Tsunamis are a series of long, surge-like waves generated by sudden, large-scale disturbances of the sea floor. They can be caused by a variety of factors, including earthquakes, underwater landslides, and volcanic eruptions. Tsunamis can range in size from small, localized events to large, devastating events that can impact entire coastlines.

Tsunamis can occur suddenly and without warning, making them particularly dangerous. When a tsunami reaches shore, it can cause significant damage to coastal communities, destroying homes, businesses, roads, and other infrastructure. In addition, tsunamis can lead to loss of life and injury, as well as displacement of residents. The effects of tsunamis can be particularly devastating in low-lying coastal areas and in regions with high population density.

Location and Extent

The entire coastal area of Dana Point is potentially vulnerable to the impact of tsunamis. The risk is highest in low-lying areas near the shore, particularly in the harbor and along the City's beaches. The extent of a tsunami's impact on Dana Point would depend on several factors, including the size and source of the tsunami, the City's topography, and the effectiveness of warning and evacuation systems. Figure 3 depicts the tsunami inundation hazards for the City.

Tsunamis can be generated by distant events across the Pacific Ocean, such as major earthquakes in the "Ring of Fire," or by more localized events, such as underwater landslides or earthquakes occurring closer to the Southern California coast. In the case of a distant tsunami, Dana Point may have several hours of warning time before the waves reach the City's shores. However, a locally generated tsunami could reach the coast within minutes, leaving little time for warning and evacuation.

The size and speed of a tsunami can also greatly influence the extent of its impact on Dana Point. A larger, faster-moving tsunami would have the potential to cause more widespread damage and flooding, while a smaller, slower-moving tsunami may have a more limited impact.

The specific areas within Dana Point that are most at risk from tsunamis include the Dana Point Harbor, Doheny State Beach, Capistrano Beach, Beach Road, Doheny Village, and other low-lying coastal neighborhoods. The harbor, in particular, could be subject to significant damage from tsunami waves, as the force of the water could cause boats to break free from their moorings and damage docks and other infrastructure. Beaches and coastal parks could also experience severe erosion and flooding, potentially endangering beachgoers and damaging nearby structures.





Figure 3 - Dana Point Tsunami Hazard Zones

Source: Environmental System Research Institute



Past Events

The City of Dana Point has been fortunate enough to not have been directly impacted by a major, destructive tsunami in recent history. However, the City has experienced the effects of smaller tsunamis and has felt the impact of larger tsunamis generated by distant earthquakes in other parts of the Pacific Ocean. Additionally, nearby coastal communities in Southern California have been affected by tsunamis in the past, highlighting the ongoing risk and the importance of regional preparedness. The following tsunami accounts provide a glimpse into the tsunami history of Southern California and serve as examples for mitigation planning in Dana Point.

1877 Tsunami - On May 10, 1877, an earthquake with an estimated magnitude of 5.5 to 6.0 occurred off the coast of Santa Cruz, California. The earthquake generated a small tsunami that was observed along the Southern California coast, including the area that is now Dana Point. Although the tsunami was relatively minor compared to other historical events, it serves as a reminder of the ongoing risk of tsunamis in the region.

1960 Chilean Tsunami - On May 22, 1960, a massive earthquake with a magnitude of 9.5 occurred off the southern coast of Chile. The earthquake generated a tsunami that traveled across the Pacific Ocean, causing damage and casualties in several countries, including the United States. In Dana Point, the tsunami caused significant damage to the Dana Point Harbor, which was under construction at the time. The waves destroyed several small boats and caused erosion along the coastline.

1964 Alaskan Tsunami - On March 27, 1964, a powerful earthquake with a magnitude of 9.2 occurred in the Prince William Sound region of Alaska. The earthquake triggered a tsunami that caused damage along the West Coast of the United States, including Southern California. In Dana Point, the tsunami caused minor flooding and damage to boats in the Dana Point Harbor. The event served as a wake-up call for the City and highlighted the need for improved tsunami preparedness and warning systems.

Risk of Future Events

In the City of Dana Point, the risk of future tsunamis is closely tied to its coastal location and the seismic activity in the Pacific Ocean. The City, situated along the Southern California coast, is exposed to potential tsunamis generated by both distant and local sources. This inherent vulnerability is compounded by factors such as the presence of offshore fault lines, the potential for underwater landslides, and the City's low-lying topography in certain areas.

These conditions converge to create a situation where tsunamis are a significant concern. For instance, the Cascadia Subduction Zone off the coast of Northern California, Oregon, and Washington, and the Alaska-Aleutian Subduction Zone are potential sources of distant tsunamis that could impact Dana Point. While these tsunamis would take several hours to reach the City, giving residents some time to evacuate, they could still cause significant damage to coastal infrastructure and pose a risk to public safety.

In addition to distant sources, local seismic activity and underwater landslides also have the potential to



generate tsunamis that could affect Dana Point. Offshore faults, such as the Newport-Inglewood Fault and the Palos Verdes Fault, could produce tsunamis that would reach the City's coastline within minutes, leaving little time for warning and evacuation. Similarly, underwater landslides, which can be triggered by seismic activity or slope instability, could displace large volumes of water and generate local tsunamis.

The combination of these specific factors – the City's coastal location, the presence of both distant and local tsunami sources, and the potential for rapid inundation in low-lying areas – creates a situation in Dana Point where the risk of future tsunamis is an ongoing concern.

Climate Change Considerations

While there is no direct link between climate change and the occurrence of tsunamis, as they are primarily caused by seismic activity, underwater landslides, and volcanic eruptions, climate change may indirectly influence the impact of tsunamis on coastal communities like Dana Point.

One of the most significant ways climate change could affect the risk of tsunami damage is through sealevel rise. As global temperatures increase due to climate change, the melting of land-based ice sheets and the thermal expansion of ocean water are causing sea levels to rise. Higher sea levels could exacerbate the impact of tsunamis by allowing waves to penetrate further inland, causing more extensive flooding and damage to coastal infrastructure and low-lying areas.

Additionally, climate change may influence the frequency and intensity of underwater landslides, which can trigger tsunamis. Changes in ocean temperatures and circulation patterns could affect the stability of submarine slopes, potentially increasing the likelihood of underwater landslides in certain regions.



Wildfire

Description

Dana Point, like many other parts of California, is no stranger to the threat of large, destructive wildfires that occur almost every year. The City has experienced wildfires ranging from small, localized incidents to more extensive fires covering significant areas.

Wildfires primarily burn in the undeveloped and natural spaces surrounding Dana Point and are a common part of the ecosystems in the region. While these fires play a crucial role in removing brush and debris, supporting the health of ecosystems, and facilitating the life cycles of numerous species, the practice of suppressing naturally occurring fires in wilderness regions since the early twentieth century has led to an accumulation of dry plant materials and other fuels.

At the same time, human activity has altered the wildland-urban interface (WUI), the buffer zone between developed and undeveloped regions. The natural environment of the WUI makes these zones particularly appealing places to live, and as a result, many parts of Dana Point have seen increased development in these areas, albeit at lower densities than fully urbanized regions. This building activity has drawn more people into wildfire-prone areas, and combined with the abundance of fuel, wildfires have become one of the most prevalent and hazardous dangers facing Dana Point.

Wildfires can be started by either natural or man-made causes, such as lightning, accidents, or arson. The extent and intensity of each fire are determined by the availability of fuel, meteorological conditions, and geography. Even wildfires that are not enormous in size can be destructive in the WUI. Wildfires pose significant threats to property and life, and the smoke and particulate matter they generate are hazardous to health, even for those not in close proximity to the burn area. Additionally, burned areas may be more vulnerable to flooding and landslides due to the removal of vegetation that slows water flow and stabilizes slopes.

Location and Extent

Wildfires are not measured on a precise scale but rather by magnitude (e.g., acres burned) or impact (buildings destroyed or damaged, injuries or deaths, cost of damage, etc.). Wildfire risk in Dana Point is graded on a three-tier scale of fire hazard severity zones (FHSZs): extremely high, high, and moderate. These classifications are qualitative and take into account a variety of elements. The agency in charge of fire prevention also classifies fire-prone locations, with Federal Responsibility Areas (FRAs) managed by federal organizations such as the US Forest Service, the Bureau of Land Management, and the National Park Service.

The terrain of Dana Point's San Joaquin Hills and Santa Ana Mountain foothills is highly susceptible to wildfires. Directly northeast of the City, there are natural, undisturbed hillsides and mountains, while open space regions lie to the southwest. Most of Dana Point is situated between these two areas. Cal FIRE has labeled most of these untouched areas as Very High Fire Hazard Severity Zones (VHFHSZ). This zone covers the Santa Ana Mountain range located in the northeastern part of Dana Point, as shown in



Figure 4 - Dana Point Very High Fire Hazard Severity Zones

Source: Environmental System Research Institute

LHMP



Past Events

Holy Fire – The Holy Fire began on August 6, 2018, in the Holy Jim Canyon area of the Cleveland National Forest, which is located near Dana Point, as a result of arson. This fire ravaged over 23,000 acres and destroyed 24 structures. Thousands of residents in Dana Point were forced to evacuate, and although there were no major injuries reported, its impact was felt on the City and the surrounding communities. The fire's proximity to Dana Point and the resulting evacuations demonstrate the significant impact it had on the City and its residents.

Silverado Fire – On October 26, 2020, a fire began in the nearby City of Irvine when a lashing wire in one of Southern California Edison's telecommunications lines sparked. The fire quickly spread, burning thousands of acres of brush and chaparral, eventually reaching nearly 13,000 acres and forcing thousands of residents, including those in Dana Point, to evacuate. The fire caused significant damage, destroying at least 5 structures and injuring several people.

Bond Fire – In December of 2020, the Bond Fire burned nearly 7,500 acres in the Santiago Canyon area, which is located close to Dana Point, and destroyed more than 30 structures. The fire began from an explosion at a home with an electric generator, which had propane tanks stored nearby. The fire necessitated the evacuation of 25,000 residents, including those in Dana Point, and injured two firefighters.

Hazard Declarations – Between 1989 and 2023, the State of California was included in 278 wildfirerelated federal DR, EM, Farm Service Agency (FSA), or fire management (FM) declarations. Generally, these disasters cover a wide region of the state; therefore, they may have impacted many counties. Orange County, which includes Dana Point, was included in seventeen of the federal declarations for California. As a result, the City of Dana Point has been included in nine declarations (FEMA 2023); refer to Table 12.

Designation Number	Date Declared	Event Name
DR-1005-CA	October 28, 1993	California Fires, Mud & Landslides, Soil Erosion, Flooding
EM-3120-CA	October 23, 1996	California Severe Fires
FSA-2405-CA	May 14, 2002	California Antonio Fire
FM-2630-CA	February 06, 2006	California Sierra Fire
EM-3279-CA	October 23, 2007	California Wildfires
DR-1731-CA	October 23, 2007	California Wildfires
FM-2683-CA	March 11, 2007	California 241 Fire
FM-2737-CA	October 22, 2007	California Santiago Fire

Table 12: Wildfire Declarations Including Orange County Between 1989 and 2023



DR-1810-CA	November 18, 2008	California Wildfires	
FM-2792-CA	November 15, 2008	California Freeway Complex Fire	
FM-5213-CA	September 26, 2017	California Canyon Fire	
DR-4344-CA	October 10, 2017	California Wildfires	
FM-5268-CA	August 09, 2018	California Holy Fire	
FM-5380-CA	October 26, 2020	California Silverado Fire	
FM-5381-CA	October 26, 2020	California Blue Ridge Fire	
FM-5383-CA	December 03, 2020	California Bond Fire	
FM-5439-CA	May 12, 2022	California Coastal Fire	
Source: FEMA 2023			

Risk of Future Events

The likelihood of a wildland fire threat in Dana Point and Orange County rises in direct proportion to the number of buildings developed in the wildland-urban interface (WUI). As the population of Dana Point continues to grow, development encroaches further into the foothills of the Santa Ana Mountains and San Joaquin Hills. The expanded "interface" between urban/suburban areas and open spaces generated by new development has resulted in a significant increase in fire hazards to life and property, as well as challenges to the design and capability of fire prevention systems.

The extensive history of wildfires in the areas surrounding Dana Point, such as the Holy Fire (2018), Silverado Fire (2020), and Bond Fire (2020), as well as the presence of Very High Fire Hazard Severity Zones (VHFHSZs) in and around the City, underscores the tangible risk of similar incidents occurring in the future. The immediate risk is highest in the foothills of the Santa Ana Mountains and San Joaquin Hills, which are located directly northeast and southwest of Dana Point, respectively. These areas are particularly prone to wildfires due to their ideal conditions, including vegetation type, terrain, and climate.

Climate Change Considerations

Climate change exacerbates the risk of wildfires in Dana Point through various mechanisms. The rise in temperatures associated with climate change is anticipated to lead to more frequent and severe drought conditions in the region. This will likely result in greater amounts of dry plant matter available as fuel in the Santa Ana Mountains and San Joaquin Hills surrounding Dana Point, heightening the susceptibility to wildfires in the City. Additionally, climate change may lead to an increase in the frequency of lightning strikes, a well-known ignition source for wildfires, which could impact the natural areas in close proximity to Dana Point.

Dana Point is situated in a region of Southern California that is known for Santa Ana winds, which are a type of hot and dry wind that typically blows during the fall and winter months. These winds are characterized by their strong and gusty nature and their ability to rapidly dry out vegetation in the



foothills and canyons surrounding Dana Point, increasing the risk of wildfires spreading into the City. The Santa Ana winds are caused by high-pressure systems that develop over the Great Basin and flow towards the coast, accelerating and warming as they descend through mountain passes and canyons near Dana Point. These winds can reach speeds of up to 80 miles per hour and are often accompanied by low humidity levels, making them a significant hazard to the City and the surrounding region.

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Hazardous Materials Release

Description

Hazardous materials release refers to a hazard event whereby harmful concentrations of hazardous or toxic substances are released into the environment. This occurs when storage containers of hazardous materials leak or fail. It can happen due to industrial accidents, vehicle crashes, as a direct result of other disasters (e.g., a flood or earthquake), or as a deliberate act. The threat that hazardous materials pose to human health depends on the type of material, frequency, and duration of exposure, and whether chemicals are inhaled, penetrate the skin, or are ingested, among other factors. Exposure to hazardous materials can result in short- or long-term effects, including major damage to organs and systems in the body or death. Hazardous waste is any material with properties that make it dangerous or potentially harmful to human health or the environment. Hazardous materials can also cause health risks if they contaminate soil, groundwater, and air, potentially posing a threat long after the initial release.

Location and Extent

Hazardous materials pass through the City of Dana Point in route to other destinations via the City's freeway, rail, and surface street system. The major transportation routes through or near Dana Point include the San Diego Freeway (Interstate 5); Pacific Coast Highway (State Highway 1); and the Atchison, Topeka, and Santa Fe Railroad, maintained by OCTA and operated by SCRRA/Metrolink. However, the City has no direct authority to regulate the transport of hazardous materials on these state highways and rail lines. Transportation of hazardous materials by truck and rail is regulated by the U.S. Department of Transportation (DOT). DOT regulations establish criteria for safe handling procedures. Federal safety standards are also included in the California Administrative Code. The California Health Services Department regulates haulers of hazardous waste, but not of all hazardous materials. The South Orange County Water Authority (SOCWA) Wastewater Treatment Plant transports four to six truckloads of dried sludge to the Prima Deshecha landfill daily. The South Coast Water District also transports sludge to the landfill.

Past Events

Dana Point has experienced an average of 10 hazardous materials spills annually (2019-2023), reported to the Cal OES Spill Release Reporting database. Most of these incidents involve sewage and petroleum products. The table below identifies the yearly releases reported to Cal OES during this period.

Year	Hazmat Spill Releases
2023	8
2022	10
2021	13
2020	10
2019	8

Table 13: CalOES Hazmat Spill Releases Database Records – Dana Point



Risk of Future Events

Most release events within Dana Point have occurred due to human error, malfunctioning equipment, or deliberate acts. Given this, future events within the city are anticipated to include incidents like the past occurrences identified. Based on the historical average data provided by Cal OES in table above, the city can expect approximately one reported spill per month.

Climate Change Considerations

Climate-related natural hazard events, such as an intense flood, could cause hazardous material releases. These releases could occur due to traffic accidents associated with inclement weather, flooded roadway conditions, or leakage from storage containers due to intense weather events. Climate-related hazards could also exacerbate the effects and impacts of such events. For example, heavier rains could lead to more runoff from contaminated sites. Also, heavier rain tends to cause issues at wastewater treatment plants and pump stations through the infiltration of sewer pipes with water seeping into the ground. Wastewater spills tend to increase with heavier, longer duration, and more intense rainfall. Extreme heat could affect the storage of hazardous materials and is also a concern for the combustibility of these materials. These issues should be monitored during the 5-year implementation period of this plan.

Radiological Release



Description

The San Onofre Nuclear Generating Station (SONGS) is a decommissioned nuclear power plant located in San Diego County, California, near the city of San Clemente. It was situated along the Pacific coastline, providing a scenic backdrop to its industrial operations.

SONGS originally consisted of three reactors—Units 1, 2, and 3. Unit 1 began operation in 1968 and was shut down in 1992. Units 2 and 3 started operations in the early 1980s, with Unit 2 beginning in 1983 and Unit 3 in 1984. The plant's primary purpose was to generate electricity through nuclear fission.

Southern California Edison ceased operation of SONGS in 2013. The NRC granted the SONGS Facility Permanently Defueled Status and approved implementation of SONGS Permanently Defueled Emergency Plan in 2015. Dismantlement of SONGS began in 2020. Decommissioning activities have begun at SONGS and are expected to be completed by 2045. Decommissioning activities will involve removing radiological material from the facility, demolishing buildings and infrastructure, and return the site to the U.S. Navy. Now that SONGS is listed as Permanently Defueled, the possibility of significant offsite release of radioactive materials to the environment is considered very unlikely, although spent nuclear fuel is stored on site and potential for accidental release remains possible. Under the Permanently Defueled Status, radiological emergency response plans are no longer required to be implemented. Federal and state governments have established several levels of emergency zones in the area around SONGS. Reference to the Emergency Planning Zone (EPZ) is still needed for potential nuclear emergencies until the facility is completely decommissioned and returned to the U.S. Navy. Dana Point, like San Juan Capistrano and San Clemente, is located within the EPZ. Each jurisdiction has developed local emergency plans and procedures in response to an emergency. More distant cities, such as Laguna Beach, Oceanside, and Carlsbad, are located within a Public Education Zone (PEZ). Dana Point's system of radiation warning sirens have been removed due to the closure and decommissioning of SONGS.

Location and Extent

The San Onfre Nuclear Generating Station (SONGS) is located adjacent to San Onofre State Beach on the grounds of the U.S. Marine Corps Base at Camp Pendleton. SONGS is located approximately seven miles south of Dana Point.

Past Events

In January 2012, SONGS experienced a major issue with its steam generators in Units 2 and 3, leading to the discovery of significant wear and tear on the components. This prompted a long and complex process of repairs, evaluations, and regulatory reviews. Eventually, in June 2013, both units were taken offline, and despite efforts to return them to service, it was decided to permanently shut them down in 2013 and 2014, respectively.

The decommissioning process for SONGS involves safely removing and managing radioactive materials and dismantling plant structures. This process is expected to take several decades to complete. The



plant's closure and decommissioning have been significant due to the environmental and regulatory challenges involved, as well as the broader discussions about the future of nuclear power in California.

Risk of Future Events

With the decommissioning of SONGS in 2013, the threat of a radiological release has greatly decreased. However, it still presents potential risks to the City of Dana Point related to future radiological releases due to its spent fuel and decommissioning activities. The plant's spent nuclear fuel rods, which are highly radioactive, are currently stored in dry cask storage systems on-site. Although these systems are designed to be robust and safe, there is always a potential risk of accidental release due to natural disasters, such as earthquakes, tsunamis, or human error. However, the design and construction of these storage systems follow stringent safety regulations.

The process of decommissioning a nuclear power plant involves dismantling the reactors, removing radioactive materials, and cleaning up the site. This process can pose risks if not managed properly, including potential radiological releases. However, the decommissioning activities at SONGS are overseen by regulatory agencies such as the U.S. Nuclear Regulatory Commission (NRC) to ensure that they are carried out safely. The NRC and other regulatory bodies monitor the safety and environmental conditions at the site. This includes regular inspections and assessments to ensure that the storage and decommissioning processes comply with safety standards.

Climate Change Considerations

Climate change can impact the San Onofre Nuclear Generating Station (SONGS) in several ways, even though it was permanently shut down in 2013. Increased sea levels due to melting ice caps and thermal expansion can lead to higher risks of flooding for coastal nuclear facilities. Although SONGS is no longer operational, the storage on site of spent nuclear fuel rods and ongoing decommissioning activities could still be at risk if sea levels rise significantly. Climate change is expected to increase the frequency and severity of extreme weather events, such as hurricanes, storms, and heatwaves. These events can pose risks to SONGS, including damage to infrastructure, flooding where decommissioning activities are taking place resulting in a potential radiological release, and challenges in emergency response.

As climate change impacts become more pronounced, there may be increased regulatory scrutiny and changes in safety standards to address new risks. For decommissioned sites like SONGS, this could mean additional considerations for managing and securing the site.



Chapter 4 Threat and Vulnerability Assessment

The preceding chapter of the LHMP evaluated various hazards and their potential impacts on the City of Dana Point, taking into account the effects on people, structures, ecosystems, services, and other community assets. The frequency and scope of these hazards also play a crucial role in determining their overall impact on the area. While **Chapter 3** focused on analyzing the risks associated with these hazards, this chapter aims to assess their overall threat and identify specific populations and physical assets that may be vulnerable. This chapter examines the vulnerability of Dana Point based on the findings of the risk and threat assessments.

Threat Assessment Process

The threat assessment conducted within this chapter rigorously evaluates three fundamental aspects of each hazard. Specifically, the assessment considers the potential physical threat posed to critical facilities, the associated social threats to vulnerable populations, as well as the overall threat to any other community assets that may be affected by the hazard.

Critical Facilities

Critical facilities are essential properties that are vital to the effective functioning of the municipal government and the well-being of the Dana Point community. This category includes assets such as City facilities (Community Center, Administration Buildings, Maintenance Facilities, etc.), storm drain infrastructure, traffic signals, City streets and sidewalks, City parks, City medians and other assets. These facilities can play a crucial role in facilitating evacuations and supporting overall preparedness and recovery efforts. It is important to note that critical facilities may be owned by the City, other agencies, or private entities.

The Working Group identified 28 critical facilities for inclusion in the threat and vulnerability assessment. Table 14 and Figure 5 provide additional information on the ownership, location, and classification of these facilities.



Table 14: Critical Facilities & Infrastructure

Map ID	Name	Туре	Location		
	Response and Services Infrastructure				
1	Dana Point City Hall	Government	33282 Golden Lantern		
2	Dana Hills High School	Public School	33333 Golden Lantern		
3	Palisades Elementary School	Public School	26462 Via Sacramento		
4	RH Dana Elementary School	Public School	24242 La Cresta Dr.		
5	Dana Point Community Center	Government	34052 Del Obispo St.		
6	OCFA Station 29	Fire Station	26111 Victoria Blvd,		
7	OCFA Station 30	Fire Station	23831 Stonehill Dr.		
	Ut	tility Infrastructure			
8	SOCWMA Wastewater Plant	Sewer	34156 Del Obispo St.		
9	Gas Company Mainline Facility	Gas	34271 Del Obispo St.		
10	SCWD Water Tank (Aegean Sea Drive)	Water	33.466150, -117.708200		
11	SCWD Sea Canyon Water Tanks (St Kitts)	Water	33.467933, -117.719706		
12	SCWD Dana Point Tennis Center Water Tank	Water	33.466972, -117.705853		
13	SCWD Meridian Water Tank (Meridian Drive)	Water	33.463889, -117.699444		
14	Dana Hills Storm Drain Pump Station	Water	33.460833, -117.693611		
15	SCWD Sewer Lift Stations	Sewer	Various Locations		
16	SCWD Sewer, Water and Recycled Water Mainlines	Utility	Citywide		
17	City Storm Drain System	Water	Citywide		
18	Strand Beach Restroom/Sewer Lift Station	Sewer	Strand Beach		
19	Community Center Sewer Lift Station	Sewer	34052 Del Obispo St.		
	Transp	ortation Infrastruct	ure		
20	Stonehill Drive Bridge	Transportation	Alton/Exit 23 South to Aliso Creek Bridge (55-0704)		
21	PCH Pedestrian Bridge	Transportation	Del Obispo St		
22	Interstate 5 Freeway	Transportation	Portola Parkway to Jeronimo Road		
23	Coast Highway	Transportation	Bake Parkway/Rue De Valore to Interstate 5		
24	Arterial Highways	Transportation	PCH, Golden Lantern, Crown Valley, Niguel Road, Stonehill Drive (Over San Juan Creek), Doheny Park Road, Coast Highway, Dana Point Harbor Drive, Del Obispo Street		
25	City streetlights and electrical infrastructure	Utility	Citywide		
26	Traffic Signals	Transportation	Citywide		
27	Railroad Track and Infrastructure	Transportation	Citywide		
28	Local and Collector Streets	Transportation	Citywide		

The evaluation of the danger posed to critical facilities examines the quantity and categories of establishments situated in regions that are exposed to heightened risks from various hazards. Such hazards have the potential to cause harm or destruction to these facilities, resulting in their inability to operate normally or with restricted capacity. Repair or reconstruction efforts may be required to restore these facilities to full functionality. While facilities located outside of the hazard-prone areas may still be impacted by such hazards, the likelihood of damage is lower due to the reduced risk.



Figure 5 - Critical Facilities Map





Vulnerable Populations

Various factors, such as age, physical and/or mental health status, socioeconomic status, and access to essential services, can influence individuals' ability to prepare for and safeguard themselves and their assets from hazardous events. Although some hazardous events, like earthquakes, floods, severe rain, tsunamis, and wildfires, may equally affect all regions of Dana Point, the impact experienced by individuals can differ based on their circumstances. For instance, higher-income households are more likely to afford the cost of retrofitting their homes to withstand flooding or move to a less flood-prone area than lower-income households. Therefore, during a flood event, higher-income households are less likely to suffer significant damage than their lower-income counterparts, even if both receive the same amount of rainfall.

A social threat analysis entails a comprehensive evaluation of the potential impact of hazardous events on diverse demographic groups and their distribution within the City. This assessment involves scrutinizing whether individuals in high-risk areas are more likely to be classified as vulnerable populations than the general populace. The social threat analysis employs specific criteria to determine the level of risk to susceptible populations:

- Disability status: Persons with disabilities may often have reduced mobility and experience difficulties living independently. As a result, they may have little or no ability to prepare for and mitigate hazard conditions without assistance from others.
- Income levels: Lower-income households are less likely to have the financial resources to
 implement mitigation activities on their residences. They may also struggle with having the
 necessary time to find and access educational resources discussing hazard mitigation strategies.
 Furthermore, lower-income households are less likely to be able to afford to move to areas that
 are safer or less at risk of being impacted by a hazard.
- Seniors (individuals at least 65 years of age): Seniors are more likely to have reduced mobility, physical and/or mental disabilities, and lower income levels, all of which may decrease their ability to prepare for and mitigate a hazard event.

According to the National Risk Index data provided by the Federal Emergency Management Agency (FEMA), Census tract 06059042201 in Dana Point has a relatively moderate Social Vulnerability rating with a score of 58.4, which is higher than the other census tracts in the City (Figure 6). This indicates that the population in this census tract may be more susceptible to the adverse impacts of natural hazards, including disproportionate death, injury, loss, or disruption of livelihood.

The evaluation of social threats also considers the vulnerability of other at-risk groups, such as homeless individuals, those lacking access to transportation or communication, and undocumented immigrants. However, due to the lack of readily available data, it is difficult to accurately estimate the number of people in high-risk areas. Therefore, this assessment will provide a more general overview of how these vulnerable populations may be impacted.





Figure 6 - National Risk Index Assessment

Source: FEMA.gov/National Risk Index

Threat Profiles

Earthquake

Physical Threat

All structures within the City of Dana Point, encompassing critical facilities, are vulnerable to seismic shaking. The level of threat they face varies, largely dependent on which fault line triggers the seismic event. The Elsinore Fault Zone, found approximately 8 miles east of the City's boundary, extends for 180 miles north of Chino Hills running southeast ending near the Salton Sea and poses a significant risk due to its history of producing moderate to large earthquakes. A clear illustration of its potential occurred in 1987 when it generated a 6.0 magnitude earthquake that reverberated throughout Southern California. Despite its capacity for unleashing considerable force, it's noteworthy that the Elsinore Fault Zone, one of the largest fault zones, has not yet inflicted damage on Dana Point. However, this does not diminish the looming risk it represents due to its substantial seismic activity potential.

The San Andreas Fault, located about 45 miles to the east, is another major fault line capable of producing significant earthquakes, including the infamous 1906 San Francisco earthquake. While it is not immediately adjacent to Dana Point, it remains a potential seismic threat that requires continued monitoring and preparedness.

Several other active fault lines in the region, such as the Newport-Inglewood Fault and the Rose Canyon Fault, could also pose a significant seismic threat to Dana Point and surrounding areas.

Social Threat

Given the potential impact of earthquakes on the region, it is crucial to recognize that all members of the Dana Point community may face risks associated with such events. Senior citizens and individuals with disabilities may face additional challenges evacuating weakened buildings, thereby increasing their susceptibility to harm from falling debris.

In the event of an earthquake triggering a liquefaction event, these factors may exacerbate the vulnerability of those living in these areas, underscoring the importance of proactive risk management strategies to safeguard the community's well-being.

Other Threats

Earthquakes and seismic hazards can have severe consequences on the infrastructure networks within the City. In the event of an earthquake, critical infrastructure such as electricity, water and wastewater, transportation, natural gas, and communication services may be severely disrupted or even completely

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interrupted, leading to significant economic and societal repercussions. The damage to government facilities may hinder essential public services and administrative operations, while seismic damage to medical clinics could impede medical care and exacerbate health issues.

Vulnerable Populations

In Dana Point, earthquake vulnerability is particularly pronounced among socially vulnerable populations, including the very young, the elderly, and those experiencing poverty. These groups are more susceptible to the adverse impacts of earthquakes due to factors like their physical and financial limitations in responding to and recovering from such incidents. The City has specific concentrations of vulnerable populations in facilities such as The Fountains at Sea Bluffs senior living community (284 units), Dana Hills High School (2,300 students), and several daycare centers in the Town Center area. Additionally, older residential areas in Capistrano Beach and Doheny Village, which contain significant pre-1970s construction, may not meet current seismic building codes, increasing the risk for residents in these neighborhoods. The 8.3% of Dana Point residents with disabilities, concentrated primarily in senior living facilities and the 28.5% of residents aged 65 and older with disabilities face particular challenges during earthquakes, especially in hillside neighborhoods with limited evacuation routes. Homeless individuals, often seeking shelter in the Doheny State Beach area and under bridges, face heightened risk as well, due to their lack of stable shelter and potential proximity to hazardous structures.

Dana Point, recognizing the widespread risk of earthquakes, emphasizes the importance of preparedness and resilience. This includes strict enforcement of building codes to ensure seismic safety, public education initiatives, and support for vulnerable populations before, during, and after an earthquake. Ensuring that all community members, particularly those most at risk, have access to information, resources, and support is crucial in mitigating the impact of earthquakes and enhancing the City's overall resilience to such natural disasters.

Facility and Infrastructure Impact

Every critical facility in Dana Point is at risk of harm or interruption due to earthquakes. This includes all residents. Earthquakes can cause structural damage, break gas and water pipelines, cut off electricity, and disrupt communication systems.

Specifically, structures like the City Hall/Police building, OCFA fire stations, and water/wastewater facilities, as well as the transportation network located in seismic hazard areas, are expected to experience moderate to severe damage in the event of a powerful earthquake. Previous seismic incidents, such as the 1994 Northridge earthquake, have led to partial or complete destruction of similar structures in the area. Such damage would greatly hinder emergency response efforts, utility services, and transportation throughout Dana Point.

Land Use and Population Pattern Impacts

According to Dana Point's General Plan and recent development trends, the City's population has been relatively stable, showing a slight decline of 0.3% annually over the past 20 years. The City's current population of approximately 33,107 is expected to remain relatively stable over the next decade based



on current projections.

However, several significant development projects are planned or underway that will affect the City's vulnerability to earthquakes:

- The Lantern District revitalization project includes seismic retrofitting and updated building standards for new construction, which will reduce earthquake vulnerability in this key commercial area. All new structures are being built to the latest California Building Code seismic standards.
- The Doheny Village Zoning District Update project is expected to bring new mixed-use development to this area, replacing some older structures with modern buildings constructed to current seismic codes. This will gradually reduce the overall vulnerability of this neighborhood to earthquake damage.
- The City's ongoing Capital Improvement Program includes systematic assessment and retrofitting of aging infrastructure, particularly in areas identified as having higher seismic risk or liquefaction potential.

These development patterns are expected to generally decrease the City's overall vulnerability to earthquakes over time as older structures are replaced or retrofitted to meet current building codes. However, some challenges remain:

- Several older residential neighborhoods, particularly in the Capistrano Beach area, contain housing stock built before modern seismic codes. These areas may require focused outreach about voluntary retrofitting programs.
- The growing number of accessory dwelling units (ADUs) being added to existing properties must be carefully monitored to ensure they meet current seismic safety standards.
- The City's aging infrastructure, particularly in established neighborhoods, may require systematic assessment and upgrades to improve seismic resilience.

The City's stable population trend, showing a slight decline of 0.3% annually over the past 20 years, helps limit earthquake vulnerability by preventing major increases in exposed population. However, the concentration of vulnerable populations, particularly seniors who make up 20.4% of residents and people with disabilities who comprise 8.3% of the population, creates localized areas of higher risk. Several senior living communities, including The Fountains at Sea Bluffs with 284 units, represent areas of concentrated vulnerability requiring special consideration in earthquake planning and response.

The projected continuation of current population dynamics suggests earthquake vulnerability will remain focused around senior housing facilities with less mobile residents, areas with higher concentrations of older housing stock (particularly in Capistrano Beach), and more densely populated mixed-use areas being developed in the Lantern District. These population patterns and concentrations will require targeted mitigation efforts, particularly around emergency response planning and retrofit programs in areas with vulnerable populations.

Climate Change



Although earthquakes are primarily influenced by tectonic activities rather than climate change, the secondary effects of a changing climate could compound the risks and impacts associated with seismic events. Earthquakes have the potential to cause widespread structural damage, disrupt utilities like gas and water pipelines, and lead to electricity and communication breakdowns. Critical facilities in Dana Point, including the City Hall/Police building, OCFA fire stations, and water/wastewater facilities, are particularly vulnerable, especially those located in seismic hazard zones. The transportation network also faces significant risk, as earthquake damage could severely limit mobility and access, crucial for emergency response and recovery.

Given historical precedents, such as the 1994 Northridge earthquake, Dana Point recognizes the potential for moderate to severe damage to its infrastructure and facilities in the event of a major seismic event. Such incidents have previously resulted in extensive destruction of similar facilities, highlighting the need for enhanced structural resilience and emergency preparedness. In light of climate change, heightened precipitation and subsequent events like landslides may further exacerbate these vulnerabilities, particularly in post-earthquake scenarios.



Flood

Physical Threat

The City of Dana Point faces a substantial risk of flooding due to its coastal location and the presence of several flood-prone areas within its boundaries. The City's exposure to flooding is primarily attributed to its proximity to the Pacific Ocean, as well as the presence of several creeks and streams that can overflow during heavy rainfall events. The most significant flooding threat comes from the combination of high tides and storm surges, which can cause widespread inundation of low-lying coastal areas.

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs), several areas within Dana Point are designated as Special Flood Hazard Areas (SFHAs), which are subject to a 1% annual chance of flooding, also known as the 100-year flood. These areas are concentrated along the coastline and the banks of the creeks and streams that traverse the City.

Certain areas of the City are situated within the 100-year and 500-year Flood Hazard Zones (reference **Figure 2**), corresponding to a 1.0% and 0.2% Annual Chance of Flooding, respectively. Within these delineated boundaries, physical assets may be susceptible to inundation if precipitation surpasses the capacity of the storm drain infrastructure. Electronic or mechanical equipment situated on the ground may become waterlogged and rendered inoperative. Table 15 shows the critical facilities by category in the flood hazard zones.

Category	Facility Type
Palisades Elementary School	Public School
OCFA Station 29	Fire Station
Dana Point Community Center	Government
SOCWMA Wastewater Plant	Sewer
Gas Company Mainline Facility	Gas

Table 15: Facilities in Flood Hazard Zone

Social Threat

Flooding events can have severe social consequences for the residents of Dana Point, particularly for vulnerable populations such as the elderly, individuals with disabilities, and low-income households. These groups may face greater challenges in evacuating flood-prone areas, securing temporary shelter, and recovering from the impacts of flooding.

In addition to the direct impacts on human health and safety, flooding can also cause significant damage to homes, businesses, and critical infrastructure, leading to displacement, financial hardship, and disruption of essential services. The social fabric of the community can be further strained by the psychological stress and trauma associated with experiencing a major flood event.



Other Threats

Floodwaters in Dana Point have the potential to block roadways due to the relatively low threshold of water required to stall vehicles. Even shallow waters as little as a few inches can immobilize cars, and rushing water as shallow as one foot can sweep away small vehicles. Moreover, floodwaters may contain debris that can obstruct roadways, creating difficulties in transportation, hindering emergency response efforts, and impeding evacuations. Although rare, severe floods may erode the soil surrounding critical infrastructure such as water, wastewater, and natural gas pipes, which could lead to service disruptions.

Vulnerable Populations

In Dana Point, vulnerable populations, such as the elderly, individuals with disabilities, and low-income households, are at a higher risk of being adversely affected by flooding. These groups may have limited mobility, financial resources, and access to information, which can hinder their ability to prepare for, respond to, and recover from flood events.

For example, elderly residents and individuals with disabilities may face difficulties in evacuating quickly and safely during a flood, while low-income households may lack the financial means to implement flood-proofing measures or to relocate to safer areas. Homeless individuals are also particularly vulnerable, as they may lack access to secure shelter and be exposed to the elements during a flood.

Recognizing the disproportionate impact of flooding on vulnerable populations, the City of Dana Point must prioritize targeted outreach, resources, and support to ensure that these groups are adequately prepared and protected. This may include providing accessible emergency information, establishing accessible shelters, and offering financial assistance for flood mitigation and recovery efforts.

Facility and Infrastructure Impact

Critical facilities and infrastructure in Dana Point are at risk of damage and disruption due to flooding. Essential services such as water and wastewater treatment plants, electrical substations, and transportation networks are particularly vulnerable to flood impacts.

Flooding can cause structural damage to buildings, roads, and bridges, as well as short-circuit electrical systems and contaminate water supplies. The inundation of major roadways can severely hinder emergency response efforts and disrupt the movement of goods and services.

In addition, flooding can lead to the overflow of sewer systems and the release of untreated wastewater into the environment, posing significant public health risks. The City's stormwater infrastructure, including storm drains and culverts, may also be overwhelmed during heavy rainfall events, contributing to localized flooding.

Land Use and Population Pattern Impacts


Dana Point's current development patterns and flood vulnerability are significantly influenced by its coastal topography and existing storm drain infrastructure. Key development trends affecting flood risk include:

- The Doheny Village Area Plan, which is currently being developed, will incorporate new flood mitigation measures including improved drainage systems and elevated building pads in flood-prone areas.
- The ongoing revitalization of the Lantern District includes installation of new storm drain infrastructure and permeable surfaces to reduce flood risk in the area.
- The Town Center/Mixed-Use areas along Pacific Coast Highway have specific drainage requirements for new development to prevent increased runoff to downstream properties.

Particular attention needs to be paid to:

- Low-lying areas near Salt Creek and San Juan Creek, where development is limited due to flood risk
- The Dana Point Harbor revitalization project, which must account for both coastal and inland flooding scenarios
- Aging storm drain infrastructure in established neighborhoods that may require upgrading to handle increased intensity of storm events

While Dana Point's overall population has shown a slight decline of 0.3% annually over the past 20 years, specific development patterns and population concentrations affect flood vulnerability. The Doheny Village Area Plan incorporates enhanced flood mitigation measures including improved drainage systems and elevated building pads, which will reduce flood risk in this developing area. The Lantern District revitalization includes new storm drain infrastructure and permeable surfaces, helping offset flood risks from increased density. However, aging infrastructure in established neighborhoods may require systematic upgrades to handle increased storm intensity.

Population patterns also significantly impact flood vulnerability. Increased density in mixed-use developments, particularly in the Lantern District, creates concentrated areas requiring robust flood protection. Areas with higher concentrations of seniors and disabled residents, such as The Fountains at Sea Bluffs, require special consideration in flood evacuation planning. Additionally, low-lying coastal neighborhoods face increased flood exposure as development continues in these desirable areas. These patterns suggest the need for targeted flood mitigation efforts in areas of both new development and existing vulnerable populations

Climate Change

Climate change could increase the severity and frequency of flooding in Dana Point, posing significant Climate change is expected to exacerbate the flooding threat in Dana Point by increasing the frequency and intensity of extreme precipitation events and sea-level rise. As global temperatures continue to rise, the atmosphere's capacity to hold moisture increases, leading to more severe rainfall events and a higher risk of flash flooding.



Moreover, rising sea levels due to thermal expansion of the oceans and melting of land-based ice will increase the risk of coastal flooding and erosion. Higher sea levels can amplify the impacts of storm surges and high tides, causing more extensive and prolonged inundation of low-lying coastal areas.

The combination of more intense rainfall and rising sea levels may put additional strain on the City's stormwater infrastructure, increasing the likelihood of overflow and backflow. This can lead to more frequent and severe flooding of streets, homes, and businesses, particularly in areas with inadequate or aging drainage systems.



Severe Weather (Rain)

Physical Threat

The City of Dana Point, situated along the Southern California coast, is particularly susceptible to severe weather events, especially heavy rainfall. The City's unique topography, characterized by its coastal bluffs, canyons, and steep hillsides, can exacerbate the impacts of intense precipitation, leading to localized flooding, erosion, and landslides.

During severe rain events, areas like Dana Point Harbor, Doheny State Beach, and the City's low-lying streets and intersections may be particularly vulnerable to inundation. Stormwater runoff from the City's steep canyons, such as Capistrano Beach, Dana Point Headlands, and Salt Creek, can rapidly accumulate and overwhelm drainage systems, causing flash flooding and damage to nearby properties and infrastructure.

Moreover, heavy rainfall can saturate the soils on the City's coastal bluffs and hillsides, increasing the risk of slope failures and landslides. Areas like the Capistrano Beach bluff, Monarch Beach, and the Headlands are particularly susceptible to these hazards due to their steep gradients and erosive soils.

Social Threat

Severe rain events can have significant social impacts on the residents of Dana Point, particularly vulnerable populations such as the elderly, individuals with disabilities, and low-income households. These groups may face greater challenges in preparing for, responding to, and recovering from the impacts of severe weather.

In neighborhoods like Lantern Village, Dana Knoll, Sea Canyon, the Bible Belt, Doheny Village and Capistrano Beach, where there is a higher concentration of older housing stock and lower-income residents, the impacts of heavy rainfall and flooding can be particularly acute.

Severe weather events can also disrupt the City's vibrant tourism industry, which is a significant contributor to the local economy. Heavy rainfall and flooding can lead to the closure of streets and highways, beaches, parks, and recreational facilities, such as Doheny State Beach, Dana Point Harbor, and the Dana Point Headlands Conservation Area, impacting local businesses and employment.

Other Threats

Severe rainfall events can lead to various secondary threats in the City of Dana Point. Heavy precipitation can cause localized flooding, which may result in temporary road closures, impeding emergency response efforts and disrupting transportation networks. For example, Coast Highway, a major arterial road that runs through the City, has experienced flooding and closure during past severe rain events, causing significant traffic delays and impacts on local businesses.

In addition, intense rainfall can overwhelm the City's stormwater management systems, leading to the



overflow of sewers and the discharge of untreated wastewater into the environment. This can pose significant public health risks, as well as impact the water quality of the City's beaches and coastal waters, such as Doheny State Beach, Dana Point Tide Pools, Salt Creek Beach, Strands Beach, and Dana Point Harbor. Water contamination can lead to beach closures and restrictions on recreational activities, affecting the City's tourism industry and the overall quality of life for residents.

Vulnerable Populations

In Dana Point, vulnerable populations, including the elderly, individuals with disabilities, and low-income households, are disproportionately affected by severe rain events. These groups may have limited resources and capacity to prepare for and respond to the impacts of severe weather.

For example, in the City's senior living communities, such as Fountains at Sea Bluffs and Dana Point Senior Living, elderly residents may face difficulties in evacuating or seeking shelter during a severe rain event. Similarly, in neighborhoods with a higher concentration of low-income households, such as Capistrano Beach and parts of Lantern Village, residents may lack the financial means to stockpile emergency supplies or to repair damage to their homes.

The City's homeless population, which often seeks shelter in the City's parks, beaches, and canyons, is also particularly vulnerable to the impacts of severe weather. Heavy rainfall and flooding can force these individuals to seek alternative shelter, putting them at greater risk of exposure and health hazards.

Facility and Infrastructure Impact

Severe rain events can have significant impacts on Dana Point's critical facilities and infrastructure. The City's stormwater management system, which includes a network of storm drains, culverts, and detention basins, may be overwhelmed during intense precipitation events. This can result in localized flooding and damage to streets, sidewalks, and other public infrastructure.

The City's coastal facilities, such as the Dana Point Harbor and the Ocean Institute, are also vulnerable to the impacts of heavy rainfall and storm surges. Flooding and erosion can damage piers, docks, and other waterfront structures, disrupting maritime activities and recreational boating.

In addition, severe rainfall can lead to the saturation of soils on the City's coastal bluffs and hillsides, increasing the risk of landslides and slope failures. This can pose significant risks to buildings, roads, and utility lines located in areas like the Capistrano Beach bluff, Monarch Beach, and the Headlands.

Land Use and Population Pattern Impacts

Dana Point's vulnerability to severe weather, particularly heavy rainfall, is influenced by ongoing development patterns and infrastructure improvements:

- The City's Storm Drain Master Plan identifies priority areas for infrastructure upgrades, particularly in neighborhoods with aging drainage systems
- Recent and planned developments in the Lantern District incorporate modern stormwater



management systems including detention basins and permeable surfaces

• The Doheny Village redevelopment area requires all new construction to meet enhanced drainage standards

Critical areas of focus include:

- The Dana Point Harbor area, where drainage improvements are being incorporated into the harbor revitalization project
- Capistrano Beach, where erosion and drainage issues require ongoing management
- Monarch Beach neighborhoods, which have specific drainage requirements due to hillside locations

While overall population growth is minimal, the concentration of development in specific areas requires careful attention to stormwater management capacity. Dana Point's development patterns and population distribution significantly influence severe weather vulnerability. The Doheny Village Area Plan's incorporation of modern stormwater management systems will help reduce localized flooding during severe rain events. The Lantern District's increasing density requires enhanced drainage capacity to handle concentrated runoff, while older neighborhoods with aging infrastructure may experience increased flooding during intense storms.

The stable population trend (-.3% annual decline) helps limit expansion of exposed populations, but the concentration of senior residents (20.4%) and disabled persons (8.3%) in specific facilities and neighborhoods creates areas needing specialized emergency response during severe weather. Growing mixed-use areas face increased risk from rain impacts due to higher population density and impervious surfaces. These patterns highlight the need for targeted infrastructure improvements and emergency response planning for vulnerable populations during severe weather events

Climate Change

Climate change is expected to intensify the severity and frequency of extreme precipitation events in Dana Point, increasing the risk of flooding, erosion, and landslides associated with heavy rainfall. As global temperatures rise, the atmosphere's capacity to hold moisture increases, leading to more intense and prolonged rainfall events.

The City's coastal location also makes it particularly vulnerable to the impacts of sea-level rise, which can exacerbate the effects of heavy rainfall and storm surges. As sea levels continue to rise, low-lying areas like Doheny State Beach, Capistrano County Beach, and Beach Road may experience more frequent and severe flooding during extreme weather events.

Moreover, the increased frequency and intensity of severe rain events can accelerate erosion rates along the City's coastal bluffs and canyons, such as the Capistrano Beach bluff and the Dana Point Headlands. This can lead to the degradation of natural habitats and increased risks to nearby properties and infrastructure.



Tsunami

Physical Threat

The City of Dana Point, located along the Southern California coast, is exposed to the potential threat of tsunamis due to its proximity to the Pacific Ocean. Tsunamis are powerful, fast-moving waves generated by undersea earthquakes, landslides, or volcanic eruptions. When these waves reach the shore, they can cause significant damage to coastal communities, infrastructure, and the environment.

In Dana Point, areas most vulnerable to tsunami impacts are those located in low-lying coastal zones, such as Doheny State Beach, Capistrano Beach, and Dana Point Harbor. These areas are at risk of inundation, strong currents, and debris impacts during a tsunami event. The City's coastal bluffs and cliffs, while providing some natural protection, can also be subject to increased erosion and instability due to the force of the waves.

Social Threat

Tsunamis pose significant social threats to the residents and visitors of Dana Point. In the event of a tsunami, individuals in low-lying coastal areas, such as Doheny State Beach and Capistrano Beach, may have limited time to evacuate to higher ground, putting them at risk of injury or loss of life. Visitors to the City's beaches and coastal parks may be particularly vulnerable, as they may be unfamiliar with the local tsunami hazards and evacuation procedures.

A tsunami event can also cause significant damage to homes and businesses, leading to displacement, financial hardship, and disruption of social networks. The City's tourism industry, which relies heavily on its coastal attractions, such as Doheny State Beach and Dana Point Harbor, may be severely impacted by a tsunami, leading to economic losses and job disruptions.

Moreover, the social fabric of the community can be strained by the psychological trauma and stress associated with experiencing a tsunami event, particularly if it results in the loss of life, property damage, or prolonged disruption of essential services.

Other Threats

Tsunamis can pose several additional threats to the City of Dana Point beyond the immediate physical and social impacts. One of these threats is the potential for environmental damage. As powerful waves surge inland, they can erode coastlines, damage coastal ecosystems, and introduce debris and pollutants into the ocean and beaches. This can have long-lasting effects on the local marine life, water quality, and the overall health of the coastal environment.

Another significant threat associated with tsunamis is the potential for economic disruption. Dana Point's economy heavily relies on its coastal resources, such as its beaches, harbor, and tourism industry. A tsunami event can cause significant damage to these resources, leading to a prolonged recovery period. Businesses may face temporary or permanent closures, resulting in job losses and reduced



economic activity. The cost of repairing damaged infrastructure, such as roads, bridges, and public facilities, can also place a significant financial burden on the City and its residents.

Moreover, tsunamis can pose a threat to public health and safety beyond the immediate impact of the waves. In the aftermath of a tsunami, the City may face challenges in maintaining essential services, such as water supply, sanitation, and healthcare. Damaged infrastructure and disrupted transportation networks can hinder the delivery of emergency services and supplies, exacerbating the public health risks. Additionally, the psychological trauma experienced by residents and visitors during a tsunami event can have long-term mental health consequences, requiring ongoing support and resources.

Vulnerable Populations

In Dana Point, certain populations are more vulnerable to the impacts of tsunamis due to factors such as age, mobility, socioeconomic status, and access to resources. Elderly residents and individuals with disabilities may face greater challenges in evacuating quickly and safely during a tsunami warning, particularly if they reside in low-lying coastal areas like Capistrano Beach or near Dana Point Harbor.

Low-income households and individuals experiencing homelessness may also be disproportionately affected by tsunamis. These populations may have limited access to transportation, emergency supplies, and financial resources to recover from the impacts of a tsunami event. Homeless individuals who seek shelter in the City's coastal parks and beaches are particularly at risk, as they may be exposed to the direct impacts of tsunami waves and currents.

Visitors to Dana Point's coastal attractions, such as Doheny State Beach and Baby Beach, may also be vulnerable to tsunami hazards, as they may be unfamiliar with the local risks and evacuation procedures. Language barriers and cultural differences may further compound the challenges of ensuring the safety of diverse tourist populations during a tsunami event.

Facility and Infrastructure Impact

Tsunamis can have devastating impacts on Dana Point's critical facilities and infrastructure, particularly those located in low-lying coastal areas. The Dana Point Harbor, which serves as a significant economic and recreational hub for the City, is highly vulnerable to tsunami damage. The harbor's docks, piers, and boats may be damaged or destroyed by the powerful waves and currents, disrupting maritime activities and causing significant economic losses.

Coastal facilities, such as the Ocean Institute and the Dana Point Marine Life Refuge, are also at risk of tsunami impacts. These facilities may experience flooding, structural damage, and loss of valuable educational and scientific resources.

The City's lifeline infrastructure, including roads, bridges, and utility lines, is also vulnerable to tsunami damage. Coast Highway, a critical transportation artery that runs through Dana Point, may be inundated or washed out during a tsunami event, disrupting transportation and emergency response efforts. Water, sewer, and gas lines located in low-lying coastal areas may be damaged, leading to service disruptions and potential public health hazards.



Land Use and Population Pattern Impacts

Dana Point's coastal development patterns directly influence its tsunami vulnerability. Current development trends and population patterns include:

- The Dana Point Harbor Revitalization Project, which will affect approximately 276.8 acres of harbor area, incorporates tsunami safety measures and improved evacuation routes
- Beach Road area, which maintains strict development standards due to its location in the tsunami inundation zone
- Doheny State Beach and adjacent areas, where development is limited due to tsunami risk

Population exposure to tsunami risk is influenced by:

- Seasonal tourist populations, particularly in coastal hotels and vacation rentals
- Increasing density in the Lantern District, portions of which lie within the tsunami evacuation zone
- Daily population fluctuations in the Harbor area due to commercial and recreational activities

The City's development regulations in tsunami-prone areas focus on:

- Limiting new residential development in high-risk zones
- Requiring tsunami-resistant construction methods where development does occur
- Maintaining and improving evacuation routes from coastal areas.

Development and population patterns in Dana Point significantly affect tsunami vulnerability. The Dana Point Harbor Revitalization Project's enhanced design standards and evacuation routes will improve tsunami resilience, while continued development in the Beach Road area, despite tsunami risk, requires strict construction standards. Commercial and recreational development in the harbor area concentrates daytime population in the tsunami inundation zone.

Population patterns create varying levels of exposure throughout the day and seasons. Daily population fluctuations in the Harbor area due to tourism and commercial activity create variable exposure levels, while increasing density in the Lantern District's tsunami evacuation zone requires enhanced evacuation planning. Seasonal tourist populations in coastal hotels and vacation rentals create additional evacuation challenges, and special needs populations in coastal areas require targeted evacuation assistance. These patterns necessitate continued emphasis on evacuation planning and public education about tsunami risks

Climate Change

While tsunamis are not directly caused by climate change, the effects of a changing climate can exacerbate the impacts of tsunami events on Dana Point. Sea-level rise, a key consequence of climate change, can increase the inland reach and destructive power of tsunami waves. As sea levels continue to rise, low-lying coastal areas in Dana Point, such as Doheny State Beach and Capistrano County Beach,



may become more vulnerable to inundation and erosion during a tsunami event.

Climate change is also expected to increase the frequency and intensity of extreme weather events, such as storms and heavy rainfall. These events can compound the impacts of tsunamis by further eroding coastal bluffs, weakening infrastructure, and reducing the capacity of stormwater management systems to handle the additional water from tsunami inundation.

Moreover, climate change may influence the distribution and health of coastal ecosystems, such as beaches, wetlands, and kelp forests, which can play a role in buffering the impacts of tsunamis. The loss or degradation of these natural defenses due to climate stressors can increase the vulnerability of Dana Point's coastline to tsunami damage.



Wildfire

Physical Threat

Several critical facilities are situated on the perimeter or within the high-risk wildfire hazard zone. While these facilities may be built from non-flammable materials such as metal and concrete, the intense heat generated by a wildfire can result in significant damage to the structures and equipment housed within. Table 16 provides a breakdown of the number of critical facilities within the wildfire hazard zone, categorized by type.

Table16: Facilities in Wildfire Hazard Zone

Category	Facility Type
OCFA Station 30	Fire Station

Social Threat

Wildfires pose significant social threats to the residents and visitors of Dana Point. In the event of a wildfire, individuals in affected areas may need to evacuate quickly, causing stress, anxiety, and potential displacement. Smoke from wildfires can also have severe health impacts, particularly for vulnerable populations like the elderly, children, and those with respiratory conditions.

The social fabric of the community can be strained by the disruption caused by wildfires. Evacuations, road closures, and damage to homes and businesses can lead to financial hardship, job losses, and the interruption of daily life. The psychological trauma associated with experiencing a wildfire event can have long-lasting effects on individuals and the community as a whole.

Moreover, wildfires can impact the City's tourism industry, which relies on its natural beauty and outdoor recreational opportunities. The closure of parks, beaches, and trails due to wildfire risk or damage can lead to economic losses for local businesses and decreased visitation to the area.

Other Threats

Although Dana Point has not experienced significant wildfire events within the City limits in recent history, the City is no stranger to the potential impacts of wildfires occurring in nearby areas. These events can cause disruptions to the energy services in the community, as power lines may be damaged and natural gas supplies shut off. Emergency responders may face difficulties accessing the affected areas, and roadways can become blocked by flames or debris, making it challenging to move around. In the worst-case scenario, one or more wildfires in surrounding communities could lead to an influx of evacuees into Dana Point, straining local resources and infrastructure.

While the coastal sage scrub and chaparral ecosystems found in Dana Point are largely adapted to periodic wildfires, a major wildfire event in the region could still cause damage to the surrounding



habitat, resulting in a prolonged recovery period. Smoke and ash from nearby fires can impact air quality in the City, potentially causing health concerns for residents, particularly those with respiratory issues..

Vulnerable Populations

In Dana Point, certain populations are more vulnerable to the impacts of wildfires due to factors such as age, health status, socioeconomic conditions, and access to resources. Elderly residents and individuals with disabilities may face greater challenges in evacuating quickly and safely during a wildfire, particularly if they reside in neighborhoods near wildland-urban interfaces, such as Capistrano Beach or Monarch Beach.

Low-income households and individuals experiencing homelessness may also be disproportionately affected by wildfires. These populations may have limited access to transportation, emergency supplies, and financial resources to recover from the impacts of a wildfire event. Homeless individuals who seek shelter in the City's parks and open spaces are particularly at risk, as they may be directly exposed to the dangers of wildfires.

Outdoor workers, such as landscapers and construction workers, are also vulnerable to the health impacts of wildfires, particularly smoke inhalation. These individuals may face increased occupational risks during wildfire events, as they may be required to work in conditions with poor air quality.

Facility and Infrastructure Impact

Wildfires can have significant impacts on Dana Point's critical facilities and infrastructure. The City's public safety facilities, such as fire stations and emergency operations centers, are essential for responding to wildfire events. However, these facilities may also be at risk of damage or disruption if they are located in areas prone to wildfires.

Utility infrastructure, including electrical substations, power lines, and water treatment plants, can be damaged by wildfires, leading to service disruptions and potential public health hazards. The loss of power and communication networks can hamper emergency response efforts and make it more difficult for residents to access critical information and resources.

Transportation infrastructure, such as roads and bridges, can also be impacted by wildfires. Road closures due to active fires, smoke, or debris can disrupt evacuation efforts and the movement of emergency vehicles. In some cases, wildfires may cause direct damage to roads and bridges, requiring extensive repairs and reconstruction.

Land Use and Population Pattern Impacts

Dana Point's wildfire vulnerability is shaped by specific development patterns and population distribution, particularly in the wildland-urban interface areas:

Current development trends affecting wildfire risk include:

• Ongoing development in the Monarch Beach area, which borders natural open space



- The Dana Point Headlands Conservation Area, which serves as a buffer between development and natural vegetation
- Fuel modification requirements for new development adjacent to open space areas

Specific areas requiring focused attention include:

- Properties adjacent to Aliso and Wood Canyons Wilderness Park
- Developments near the Salt Creek corridor
- The interface between residential areas and preserved coastal sage scrub habitat

While Dana Point's overall population growth is minimal, development pressures in wildland interface areas require:

- Strict enforcement of fuel modification requirements
- Enhanced building standards for fire resistance
- Maintenance of adequate emergency access routes.

Dana Point's development and population patterns significantly influence wildfire vulnerability. Ongoing development in the Monarch Beach area bordering natural open space requires enhanced fire protection measures. The Dana Point Headlands Conservation Area serves as a critical buffer between development and fire-prone vegetation, and new developments must meet strict fuel modification requirements near wildland interface areas.

While overall population shows a slight decline (-0.3% annually), development pressure continues in wildland interface areas. The concentration of senior residents (20.4% of total population) is particularly high in neighborhoods like The Fountains at Sea Bluffs (284 units) and areas adjacent to open spaces along the city's eastern boundary near the San Joaquin Hills. These areas face unique evacuation challenges due to the reduced mobility of elderly residents and their proximity to potential wildfire zones. The growing mixed-use density in some areas requires enhanced evacuation planning and fire protection infrastructure. These patterns emphasize the need for strict enforcement of fuel modification requirements in new developments, enhanced building standards for fire resistance, maintenance of adequate emergency access routes, and special consideration for vulnerable populations in evacuation planning.

Climate Change

Climate change may exacerbate the frequency, intensity, and duration of wildfires in Dana Point and throughout Southern California. As temperatures rise and precipitation patterns change, the region is likely to experience more frequent and severe drought conditions, which can increase the flammability of vegetation and the risk of wildfire ignition.

The combination of prolonged drought, heat waves, and extreme wind events, such as Santa Ana winds, can create ideal conditions for the rapid spread of wildfires. These factors can also make wildfires more difficult to control and suppress, increasing the potential for widespread damage and impacts on the community.



Climate change may also lead to shifts in the distribution and composition of vegetation communities in Dana Point's open spaces and canyons. The alteration of native plant species and the potential increase in invasive, fire-prone species can further contribute to the City's wildfire risk.



Hazardous Material Release

Physical Threat

Hazardous materials can cause damage to physical assets in Dana Point if they are released into the environment. Corrosive hazardous materials can damage the exteriors of buildings or structures. Flammable hazardous materials can be ignited and cause damage to nearby structures. Generally, sites closer to the origin of the release of the hazardous materials are more at risk than those further away.

Social Threat

The threat of a hazardous materials release event affects those closest to a source of hazardous materials, including industrial sites, gas stations, gas transmission lines, or sewer mains. Dana Point residents living next to major transportation infrastructure such as highways or major roadways also face a greater risk of being affected by a hazardous materials release if vehicles transporting these materials accidentally release their contents into the environment. Groups such as the elderly, low-income, and renters face a greater risk of exposure since they may not have the financial resources necessary to retrofit their homes against infiltration by hazardous materials or relocate to a home farther from the potential sources of hazardous materials

Other Threats

Hazardous materials release could threaten the City of Dana Point and regional transportation networks. Portions of the local road or rail networks may be closed to prevent people from entering areas contaminated with hazardous materials to allow remediation and cleanup activities to occur. If a highly corrosive hazardous material is released, it could potentially cause significant damage to the exteriors of homes or businesses in the area or require evacuation. The City may experience additional personnelrelated costs to coordinate the evacuation of a large area.

Vulnerable Populations

In Dana Point, like in many coastal communities, hazardous material releases can pose significant risks to vulnerable populations in several ways. Vulnerable populations, such as the elderly, children, and people with pre-existing health conditions, are more susceptible to the adverse health effects of hazardous materials. Chemical spills or releases can lead to respiratory issues, skin irritations, or more serious long-term health problems, which can be particularly harmful to these groups. In the event of a significant hazardous material release, evacuations might be necessary. Vulnerable populations might face challenges in evacuating quickly or finding temporary housing, which can exacerbate their risk and discomfort. Vulnerable communities might have less access to information and resources related to hazardous material releases. This can hinder their ability to respond effectively or seek help, increasing their risk during such incidents. Addressing these risks involves proactive planning, robust emergency response systems, and targeted outreach to ensure that all community members, especially the most vulnerable, are well-informed and prepared.



Facility and Infrastructure Impact

Police, fire stations, and emergency management facilities might be directly affected if they are in proximity to the release. They could be overwhelmed by the immediate response needs and face operational challenges if their own facilities are compromised. The City of Dana Point OC Sheriff's Sub Station and the Emergency Operations Center are both located at City Hall and could be impacted by a hazmat release in it's in the area and the evacuation of the facility is necessary. There are also 2 OCFA Fire Stations in Dana Point that could be impacted if a hazmat release occurs in the vicinity of the facilities impacting response times. In addition, the City's Community Center, which is also used for mass care and sheltering in emergencies, could be impacted by a hazmat release if it occurs nearby impacting shelter operations.

Other critical facilities and infrastructure could also possibly be impacted in Dana Point from a radiological release. Although there are no hospitals in Dana Point, there are two medical urgent care clinics that could face contamination risks, which can compromise their ability to provide medical services. In the worst cases, these facilities might need to evacuate or shut down temporarily. There is a wastewater treatment plant in Dana Point that could be impacted if staff are forced to evacuate the facility because of a nearby hazmat release, the ability to treat the water may be impacted. Roads, bridges, and ports might be closed or restricted due to contamination, which can hinder the movement of emergency services and disrupt daily transportation needs for residents and businesses. Interstate 5 and PCH are major thoroughfares in or near Dana Point that a hazmat release could significantly impact local and regional traffic conditions in the area if a shutdown occurs. Schools may need to close temporarily to ensure the safety of students and staff if a release occurs nearby, and cleanup or decontamination processes can further disrupt their operations. There is 1 high school and 2 elementary schools in Dana Point that could be impacted if a hazmat release required evacuation of the facilities.

Parks, recreational areas, and beaches could be closed or restricted to prevent exposure to hazardous substances, impacting the community's quality of life and local economy. There are 28 parks in Dana Point and a hazmat release in the vicinity of any of them may impact their use. A release might also affect local ecosystems, including coastal areas and marine environments, which could have long-term implications for public health and the local economy, particularly if Dana Point's tourism relies on clean and healthy natural environments.

Land Use and Population Pattern Impacts

Hazardous materials releases are not expected to cause a change in population patterns or land use and development unless serious contamination to an area occurs.

Climate Change

Climate change can increase the likelihood of hazardous materials releases in several ways. Climate change leads to more frequent and severe weather events, such as high wind, floods, and heavy rainfall. These extreme conditions can overwhelm storage facilities, transportation infrastructure, and containment systems, leading to spills of hazardous materials. As sea levels rise due to melting glaciers and expanding seawater, coastal storage facilities and transportation routes become more vulnerable to



flooding. This increases the risk of spills from facilities and ships that handle hazardous materials. Higher temperatures can affect the stability and integrity of hazardous materials, especially those that are temperature-sensitive. For example, high temperatures can weaken storage containers or increase the volatility of certain chemicals, leading to a higher risk of spills or leaks. Higher temperatures and prolonged drought conditions can lead to more frequent and intense wildfires. These fires can damage facilities that store hazardous materials, causing spills and contamination. Prolonged heat waves and changing weather patterns can put additional stress on infrastructure, including roads, railways, and pipelines used for transporting hazardous materials. This stress can lead to accidents and spills



Radiological Release

Physical Threat

The San Onofre Nuclear Generating Station (SONGS), located in Southern California, poses several potential physical threats. The primary concern is the health of individuals exposed to radiation. High levels of radiation can cause acute radiation sickness, long-term health issues like cancer, and potentially fatal outcomes. Facilities with people working in them or nearby would need to implement emergency protocols to protect them. In the event of a significant accident or indirect damage to the facility from a catastrophic natural or human-caused event, there is a risk of radioactive materials being released into the environment. This could lead to contamination of air, water, and soil, with potential health impacts for nearby populations of Dana Point, San Clemente, and San Juan Capistrano.

The plant is situated near geological fault lines, making it vulnerable to seismic activity. A major earthquake could damage the facility's infrastructure, leading to potential releases of radiation. Being on the coast, SONGS is at risk from tsunamis generated by undersea earthquakes or other events. A severe tsunami could overwhelm safety barriers and impact the plant's decommissioning operations. As with any critical infrastructure, there's also a potential threat from terrorist attacks aimed at causing disruption or damage.

Social Threat

Although the likelihood of a significant radiation leak is low, any such incident could have serious health implications for nearby communities. Public fear of radiation and its long-term effects can lead to anxiety and stress. In the event of an accident, the adequacy of emergency preparedness and response plans is crucial. Concerns about whether local governments and the plant operators are sufficiently prepared to handle an emergency can create anxiety among residents. Issues such as the management of nuclear waste, potential leaks, potential accidents from the decommissioning process, and the storage of spent nuclear fuel rods can lead to public concern about long-term environmental impact for the area. The management and regulatory oversight of the plants decommissioning process can affect public trust in both the plant's owner (SCE) and government regulators. Scandals, mismanagement, or perceived inadequacies in oversight can exacerbate social tension and erode trust.

Vulnerable Populations

In the event of an accident in the decommissioning process or from the stored spent fuel rods on-site, radiation leaks could pose serious health risks. Vulnerable populations, such as children, the elderly, and people with pre-existing health conditions, are at higher risk of experiencing severe health effects from radiation exposure. Evacuating large numbers of people, especially those with mobility issues or who live in densely populated areas, can be challenging. Effective evacuation plans are crucial to minimize risk, but they may not always account for the needs of all individuals.

Any release of radioactive materials can have long-term effects on the environment, which in turn affects agriculture, water supplies, and ecosystems. Vulnerable populations that rely on local resources may face increased risks from contamination. The fear and anxiety associated with potential nuclear



accidents can also affect mental health, especially in communities near the plant. Ongoing concerns about safety can contribute to stress and other psychological issues.

Facility and Infrastructure Impact

Radiation can contaminate buildings, equipment, and other infrastructure. This contamination can make facilities unsafe for use and require extensive and costly decontamination efforts. It can also lead to long-term restrictions on the use of affected areas. While radiation itself doesn't typically cause physical damage to structures, the decontamination process can. High-pressure washing, chemical treatments, or other cleaning methods might damage building materials or systems.

Facilities near a radiological release might face operational disruptions due to safety evacuations, shutdowns, or restricted access. This can affect production, services, or critical operations depending on the nature of the facility. Radiological releases can contaminate the surrounding environment, impacting land, water, and air quality. This can affect local ecosystems and require extensive cleanup efforts.

The economic implications can be substantial. Costs may include emergency response, decontamination, loss of business, and potential legal liabilities. The impact can extend beyond the immediate area, affecting regional and national economies depending on the scale of the release. There can be significant public concern and scrutiny, leading to potential legal actions, regulatory changes, and reputational damage for organizations involved or affected.

Land Use and Population Pattern Impacts

A radiological release from SONGS would have a significant and long-lasting impacts on land use and population patterns in the nearby cities of San Clemente, Dana Point, and San Juan Capistrano. Initially, the area around the release may be evacuated to protect public health. This can lead to temporary or permanent displacement of residents. Land within the contaminated area may be unsuitable for agriculture, habitation, or industrial use for extended periods, depending on the level of contamination and the type of radioactive material released.

Climate Change

As global temperatures rise, polar ice melts and sea levels increase. The San Onofre plant, situated near the coast, could face risks from higher sea levels and potential flooding. This could affect the plant's infrastructure and safety systems. Climate change is linked to more frequent and severe weather events, such as heatwaves, high wind events, and severe storms. While the San Onofre plant has been decommissioned and is in the process of being dismantled, these climate change factors still offer important considerations for managing and mitigating risks associated with decommissioning and site cleanup.

Chapter 5 Hazard Mitigation Strategy

Strategy Development Process

Dana Point's hazard mitigation plan consists of a comprehensive collection of steps known as "mitigation actions" that are designed to lessen the effects of hazard events by enhancing the safety and well-being of residents and visitors, safeguarding critical facilities, protecting various buildings and structures, securing key services, bolstering the local economy, and preserving other substantial community assets. These efforts will also aid in emergency preparedness, enabling a more effective community response to disasters. Preparedness actions are not a required component of an LHMP, but they support and complement mitigation activities. The Hazard Mitigation Working Group ("Working Group") chose to include them as part of the overall hazard mitigation strategy.

Use of Hazard and Threat Assessment

The input of the community was critical in shaping the development of the mitigation strategy. The Working Group engaged in various community engagement activities, including public meetings, surveys, and outreach to local organizations and stakeholders. Through these efforts, the group obtained valuable insights into the needs and concerns of the community, which helped guide the development of mitigation actions.

The Working Group relied in part on the hazard profiles and threat assessments in this Plan to develop the actions in the mitigation strategy. The Working Group prepared a comprehensive set of mitigation actions that respond to the relevant hazard situations and provide protection to residents, businesses, and community assets in Dana Point. The Working Group 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 Working Group drafted initial mitigation actions that are intended to help protect the most vulnerable members of the community and the most vulnerable local assets. These were reviewed and added to by members of the Working Group.

Capabilities Assessment

The planning team in Dana Point performed a comprehensive inventory and analysis of existing authorities and capabilities, known as a "capability assessment." This assessment is crucial in creating an inventory of the jurisdiction's codes, programs, policies, and evaluating its capacity to implement them effectively. It serves as a toolkit for implementing the hazard mitigation plan and identifies opportunities to enhance the City's core capabilities to support mitigation actions. Additionally, this assessment helps in pinpointing potential gaps in core capabilities, which, when addressed, may become key mitigation actions in the plan.



Findings from the capability assessment were shared with various City departments, facilitating the development of recommended mitigation actions. Opportunities for adding or expanding capabilities identified by departments have been recognized as crucial mitigation actions. The adaptability of each core capability to meet the evolving needs and best interests of the City is a significant overarching capability, acknowledged by this reference.

Specific Capability Categories and Improvement Strategies:

- Planning and Regulatory:
 - Current Status: Dana Point currently implements various plans, policies, codes, and ordinances that mitigate impacts from hazards.
 - Improvement Strategies: The City aims to improve upon these by updating zoning laws, revising building codes for enhanced resilience, and integrating climate change projections into planning documents.
- Administrative and Technical:
 - Current Status: The City possesses skilled staff and technical tools for hazard mitigation.
 - Improvement Strategies: Strategies include staff training in advanced mitigation techniques, investment in technological tools, and forming partnerships for technical guidance.
- Financial:
 - Current Status: Dana Point has access to various funding sources for mitigation strategies.
 - Improvement Strategies: The City plans to explore additional funding avenues, such as state and federal grants, and public-private partnerships, as well as optimize budget allocations.
- Education and Outreach:
 - Current Status: Current programs in place focus on fire safety, earthquake awareness, and other hazard-related education.
 - Improvement Strategies: Expanding these programs to wider audiences, incorporating interactive educational methods, and regularly updating community information are key planned improvements.

 Table 17 shows the capabilities assessment for Dana Point, clearly presenting the current status and proposed improvements for each capability.



Table17: Capabilities Assessment

Planning and Regulatory		
Document Title	Projects / Updates for Hazards or Mitigation Strategies?	Mitigation Strategy Implementation Capability
Building Code	The City's Building Standards Code, including the Building Code, Mechanical Code, Electrical Code, and Plumbing Code, have been designed to mitigate against known hazards for new construction. The LHMP will be reviewed during the next scheduled update of City building codes, to update the codes as related to identified hazards and mitigations.	The City's Building Standards Code, including the Building Code, Mechanical Code, Electrical Code, and Plumbing Code, have been designed to mitigate against known hazards for new construction. These codes, required to construct buildings to safe standards, are part of triennial building code updates. These code updates may include measures to better resist damage during a hazard event. The LHMP will be reviewed during the next scheduled update of City building codes, to update the codes as related to identified hazards and mitigations.
Capital Improvement Plan	The Capital Improvement Projects Plan outlines construction projects for City- owned buildings, facilities, and infrastructure. It is updated annually as part of the budget.	The Capital Improvement Plan outlines construction projects for City-owned buildings, facilities, and infrastructure. It is updated annually as part of the budget. Future updates may include capital improvements that support identified mitigation factors as listed in the LHMP.
Emergency Operation Plan (EOP)	The current EOP describes the structure and processes used during an emergency event and utilizes an all-hazards approach.	The current Emergency Operation Plan (EOP) describes the structure and processes used during an emergency event and utilizes an all-hazards approach. During the next scheduled EOP update, Dana Point will consider how the LHMP mitigation strategies support EOP goals and Emergency Support Functions (ESF's).
General Plan	The Dana Point General Plan provides general guidance for future land use, transportation, infrastructure, environmental and resource decisions; hazards include seismic, fire, flooding, and climate change.	The Dana Point General Plan provides general guidance for future land use, transportation, infrastructure, environmental and resource decisions. Hazards addressed include seismic, fire, flooding, hazardous materials release, radiological release, and climate change. Public Safety Goals (Goal PS 4) identify policies and actions the City may deploy to mitigate risk. During the next update, the City will ensure the General Plan includes and maintains reference to the LHMP to inform future budget priorities.
Strategic Plan	The Strategic Plan's Strategic Goal 1 focuses on maintaining and ensuring public safety. Under this goal, one of the objectives is "Emergency preparedness and responsiveness so that the City is ready to respond to a disaster." The projects listed under this objective include ensuring the Emergency Plan is up-to-date and	The City of Dana Point's Strategic Plan emphasizes the importance of emergency preparedness and responsiveness to maintain and ensure public safety. By keeping the Emergency Plan up-to-date, conducting regular emergency response exercises, and maintaining relevant certifications and mapping, the City can better prepare for and respond to disasters. The Strategic Plan can be used to prioritize and allocate resources for these emergency preparedness efforts, ensuring that the City is ready to handle unforeseen incidents effectively. The inclusion of specific projects and measures related to emergency preparedness demonstrates the City's commitment to mitigating risks and protecting its residents and property.



	conducting biannual emergency response exercises. The measures for this objective include maintaining a current Emergency Plan per all applicable standards, maintaining Tsunami & Storm-Ready certification, keeping all flood & disaster mapping current, and conducting a specific number of emergency response exercises and CERT trainings.	
Storm Water/ Surface Runoff Water Quality Ordinance	The purpose of Chapter 15.10 is to protect the health and safety of the waters of the State of California and the United States by effectively prohibiting non-storm water discharges into the MS4, reducing pollutant loads in surface runoff to the maximum extent practicable, establishing minimum requirements for surface runoff management to prevent and reduce pollution, establishing requirements for development and redevelopment project site designs to reduce surface runoff pollution and erosion, and establishing requirements for the management of surface runoff flows from development and redevelopment projects to prevent erosion and protect and enhance existing water- dependent habitats. The intent of the Chapter is to enhance and protect the water quality of waters of the State and the United States in a manner consistent with the Clean Water Act and State law	The Storm Water/Surface Runoff Water Quality ordinance is a critical regulatory tool for the City of Dana Point to mitigate the impacts of urban runoff and protect water quality. The ordinance establishes legal authority for the City to prohibit illicit discharges, require best management practices, and enforce water quality requirements for new development and redevelopment projects. By reducing pollutant loads in stormwater runoff, preventing erosion, and managing runoff flows, the ordinance helps to minimize the negative impacts of urbanization on receiving waters. The ordinance also enables the City to meet its obligations under the NPDES Municipal Stormwater Permit and comply with state and federal clean water laws. Effective implementation and enforcement of this ordinance is essential for the City to achieve its water quality goals and protect the health of local waterways and coastal resources. The specific requirements, and development standards, provide a clear framework for the City to manage and regulate stormwater runoff and ensure that water quality is prioritized in land use planning and development decisions.
Sea Level Rise Study	The Dana Point Sea Level Rise (SLR) Study	The SLR Study and LCPA will aid the City in evaluating future coastal hazard impacts and identifying
and Local Coastal	and Local Coastal Program Amendment	new and enhanced coastal hazard adaptation strategies to combat sea level rise. The study will be
Program	(LCPA) directly address hazard mitigation	conducted using the best available information from science and modeling to identify hazards and
-	strategies related to sea level rise. The	vulnerabilities. Multiple coastal inundation scenarios will be evaluated to project future changes to
	project will include two phases: first, a SLR	the shoreline, beaches, bluff erosion, and coastal flooding. The findings from the SLR Vulnerability
	study (Vulnerability Assessment) that will	Assessment will be utilized in the second phase to develop policies and standards in the LUP and
	evaluate and model sea level rise scenarios	Implementation Plan to address the identified risks and mitigate the impacts of sea level rise on



	in conjunction with other coastal flooding factors, including storm waves, tsunamis, upland flooding sources, and inventory infrastructure that could be affected by sea level rise. The second phase will identify appropriate SLR policies for inclusion in the Coastal Land Use Plan (LUP) and standards to be incorporated into the Implementation Plan (Zoning Ordinance) that will make up the LCPA.	the community's coastline.
Zoning Code	The 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.	As part of a future comprehensive update to the Zoning Code and planned community documents, hazards and mitigations listed in the LHMP shall be reviewed as part of the approval and submission package. Mitigation actions that relate to the siting, construction, and operation of new developments may be implemented through the Zoning Code to ensure these projects address risks identified in the plan.
County of Orange General Plan	The Orange County General Plan is the long- term blueprint for growth and development primarily in the unincorporated areas of Orange County; hazards include: seismic, fire, flooding, dam, watercourses and generating nuclear power.	The Orange County General Plan is the long-term blueprint for growth and development primarily in the unincorporated areas of Orange County. Hazards addressed include seismic, fire, flooding, dam, watercourses and generating nuclear power. Mitigation actions that require coordination with the County may be supported by including these actions in the Orange County General Plan.
County of Orange Hazard Mitigation Plan	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.	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 Dana Point that may involve the County may require additional coordination with the County's Hazard Mitigation Program. This can help create a more unified approach to hazard mitigation in the region, as similar actions may be included in both plans, making them more effective together.
California State Hazard Mitigation Plan	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	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 City can use the State Hazard Mitigation Plan as a source of information to refine the hazard profiles and vulnerability assessments in future Dana Point's LHMPs.



	plan, the State Hazard Mitigation Plan is updated every five years.	
TsunamiReady & StormReady Program	The TsunamiReady & StormReady certification supports preparedness and mitigation actions for both tsunamis and storms. This program is audited by the National Oceanic and Atmospheric Administration (NOAA) and the National Weather Service (NWS). The City has passed certification in both areas for mitigation and preparedness actions.	The TsunamiReady & StormReady certification demonstrates that Dana Point has met rigorous criteria set by NOAA and NWS for tsunami and storm preparedness. This includes having established emergency operations and communications plans, multiple ways to receive and send severe weather warnings, a system to monitor local weather and ocean conditions, and public readiness education programs. This certification enhances the City's capability to implement effective mitigation strategies for these hazards.

Administrative and Technical			
Administration	Skills/Tools	Ability to Support Mitigation	
Hazard Mitigation Working Group	The Hazard Mitigation Working Group was formed in 2023 and consists of core City departments: Community Development, General Services, City Clerk, and Public Works. External partnerships also include representatives of public utilities, public safety agencies, fire services, school district, neighboring cities, etc.	The City of Dana Point has several administrative and technical capabilities that can support mitigation efforts. The Hazard Mitigation Working Group, formed in 2023, consists of core City departments, including; Community Development, General Services, City Clerk, and Public Works. External partnerships. Comprised of subject matter experts, this group provides current and relevant insights on capabilities within the City to inform mitigation planning and implementation efforts.	
Community Development	The Community Development Department plays a crucial role in managing the physical development of the community by overseeing the approval of building permits and ensuring that all buildings and properties comply with appropriate standards. These standards may include fire codes, building codes, and zoning regulations. To carry out its duties, the department conducts current and long-range planning activities, including land use planning, which involves developing comprehensive plans that	The Community Development Department plays a crucial role in managing the physical development of the community by overseeing the approval of building permits and ensuring that all buildings and properties comply with appropriate standards, including fire codes, building codes, and zoning regulations. The department conducts current and long-range planning activities, including land use planning, which involves developing comprehensive plans that determine the appropriate use of land within a community. The department also enforces all land use regulations. Mitigation actions related	



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Mutual Aid Agreements, Joint Power Authority, Inter-local Agreements, etc.	administering City elections. The City of Dana Point is a member of the Orange County Operation Area and the Orange County Emergency Management Organization. These affiliations provide the City with access to regional resources and support during emergencies. Additionally, the City's Public Works Department holds an agreement with the County of Orange, which sets pre-determined pricing for essential equipment rentals during an emergency. This agreement ensures that the City has access to necessary equipment and resources to respond effectively to disasters	Office. The City Clerk's Office ensures that essential City documents, such as ordinances, resolutions, and agreements, are properly stored and can be accessed during emergencies. The office also maintains the City's municipal code, which includes ordinances related to hazard mitigation and emergency management. In the event of a disaster, the City Clerk's Office plays a crucial role in ensuring continuity of government operations by facilitating the City Council's ability to hold meetings and make decisions. The City Clerk's Office works closely with other City departments, such as the Emergency Services Division, to ensure that City records and documents are included in the City's emergency management plans and procedures. To further enhance the City's mitigation capabilities, Dana Point can form partnerships with neighboring jurisdictions, state and federal agencies, and community organizations. For instance, the City can collaborate with the Orange County Fire Authority to develop and implement wildfire mitigation strategies tailored to the unique needs of Dana Point. This may include fuel reduction projects, defensible space education, and improved emergency response coordination.
Police Services	The Orange County Sheriff's Department (OCSD) is contracted to provide police services. OCSD is responsible for protecting citizens, enforcing laws, and crime prevention. Law enforcement services include patrol, traffic enforcement, accident analysis and investigation, parking enforcement, general and special investigations.	Mitigation actions related to traffic safety (e.g., during evacuations), public safety during emergencies, and counterterrorism efforts are overseen jointly by Dana Point's police department and OCSD. They coordinate with the City and other agencies to implement a wide range of mitigation measures.
Public Works	The Public Works Department is responsible for the oversight of constructing and maintaining City-owned facilities and infrastructure, including roadways, sidewalks, parks, and open space areas. Additionally, Public Works oversees issuing permits for all public and private construction projects in the City. The department handles the contract for solid waste collection activities in the community. Public Works also implements and enforces all building code regulations to ensure that all new construction in the City of Dana Point	Mitigation actions that involve constructing or retrofitting City- owned facilities and infrastructure may be implemented through Public Works Department staff. The department's role in permitting and enforcing building codes for all construction in the City directly supports hazard mitigation by ensuring that new structures are built to withstand various hazards. Their oversight of both public and private construction projects allows for the implementation of mitigation measures across the entire City, not just in public facilities.

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	meets the most stringent building codes and zoning requirements. Public Works also responds hand in hand with first responders to address emergency conditions such as landslides, accident clean ups, placing traffic control and other activities	
Fire Services	The Orange County Fire Authority (OCFA) provides contracted fire services to the community, encompassing fire protection, suppression, inspection, paramedic emergency medical assistance, and hazardous material response.	The Orange County Fire Authority (OCFA) provides contracted fire services to the community, encompassing fire protection, suppression, inspection, paramedic emergency medical assistance, and hazardous material response. Fire-related mitigation actions that require coordination with the County may be implemented in collaboration with OCFA staff.
SONGS Interjurisdictional Planning Committee (IPC)	Since the City was incorporated in 1989, it has been a member of the San Onfre Nuclear Generatoring Station (SONGS) Interjurisdictional Planning Committee (IPC). The IPC is made up of representatives from all the agencies responsible for radiological emergency preparedness and response in the Emergency Planning Zone around San Onofre.	State and Federal law mandate local governments maintain specific levels of preparedness and response capabilities to protect the public's health and safety in the event of an emergency at such a facility. There are seven primary Interjurisdictional Planning Committee (IPC) members: Counties of Orange and San Diego; the Cities of Dana Point, San Juan Capistrano and San Clemente; Camp Pendleton; California State Parks; and SCE. IPC members recognize that the decommissioning and dismantling process triggers changes to the emergency planning and response required for SONGS. Regardless of the changes in the operational status of San Onofre, the IPC jurisdictions and SCE agree that local jurisdictions should continue our radiological emergency planning efforts during the decommissioning process. IPC members intend to remain actively engaged in radiological emergency planning as long as there is spent nuclear fuel or radiologically contaminated materials on- site at SONGS.
The California Governor's Office of Emergency Services (Cal OES)	CalOES is the state agency responsible for reducing 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.	Cal OES is the state agency responsible for reducing 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. City staff can work with Cal OES to obtain future funding to implement LHMP mitigation strategies and to receive guidance on future updates. This could involve applying for grants through Cal OES's Hazard Mitigation Grant Program or Pre-Disaster Mitigation Program, which provide funding for a wide range of mitigation projects. Cal OES also offers technical assistance and

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		training to local governments on hazard mitigation planning and project implementation, which the City could take advantage of to build its internal capaCity.
The Federal Emergency Management Agency (FEMA)	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.	City staff can work with FEMA to obtain future funding to implement LHMP mitigation strategies and to receive guidance on future updates. This could involve applying for grants through FEMA's Building Resilient Infrastructure and Communities (BRIC) program, which provides funding for a wide range of mitigation projects, or the Flood Mitigation Assistance (FMA) program, which focuses specifically on flood mitigation. FEMA also offers technical assistance and training to local governments on hazard mitigation planning and project implementation, similar to Cal OES. In addition to these grant programs, the City could also work with FEMA to access other resources and tools, such as the National Risk Index, which provides data on natural hazard risk across the United States, and the Community Lifelines framework, which helps communities to identify and prioritize critical services and infrastructure. By leveraging these resources and collaborating closely with FEMA, the City can enhance its overall mitigation capabilities and better protect the community from future hazards.
San Diego Gas and Electric (SDG&E)	SDG&E is the natural gas provider and also owns the natural gas infrastructure in the community.	Mitigation actions that address the resiliency of natural gas infrastructure will be implemented through coordination with SDG&ES.
Water Districts	Dana Point's water services are provided by independent government agencies. Water and sewer services are managed by separate public agencies, not by the City. Most Dana Point residents are served by either the South Coast Water District (SCWD), the Moulton Niguel Water District (MNWD), or Santa Margarita Water District (SMWD).	Mitigation actions related to water use may be implemented with support and collaboration with the South Coast Water District (SCWD), the Moulton Niguel Water District (MNWD) or the Santa Margarita Water District (SMWD).



Financial			
Funding Resource	Current Hazard Mitigation Funding Sources	Future Mitigation Funding Opportunities	
Capital Improvement Project Funding	CIP funds are regularly budgeted for design and construction of improvements such as citywide traffic signal management.	The City of Dana Point has leveraged funding for hazard mitigation through various sources. CIP funds are regularly budgeted for design and construction of improvements such as citywide traffic signal management, storm drain improvements, street rehabilitation and other activities. Future CIP funds will be budgeted and utilized on an annual basis.	
Authority to levy taxes for specific purposes	Proposition 218, also known as the "Right to Vote on Taxes Act," impacts hazard mitigation funding by requiring local governments to obtain approval from affected property owners through a vote before imposing or increasing property-related fees.	This includes fees that could potentially fund hazard mitigation projects. The proposition ensures that any fees collected for hazard mitigation purposes are supported by the community and are used exclusively for that purpose.	
FEMA Hazard Mitigation Grant Program	The FEMA Hazard Mitigation Grant Program (HMGP) is a source of funding for hazard mitigation projects. Under this program, state, tribal, territorial, and local governments can apply for grants to implement long-term hazard mitigation measures after a major disaster declaration.	To expand and improve the City's financial capabilities for mitigation, the City could explore additional grant opportunities, such as the Building Resilient Infrastructure and Communities (BRIC) program and the Flood Mitigation Assistance (FMA) program, both administered by FEMA. Pursuing partnerships with private sector entities and nonprofits could also open up new funding streams for mitigation projects. For example, collaborating with a local business on a flood control project that benefits both the City and the business, or working with a community foundation to establish a mitigation grant program for local organizations.	
Other fees such as M2, gas tax, City sales tax, etc.	These fees contribute to the overall revenue available to local governments, which can then be allocated to various initiatives, including those aimed at mitigating hazards	Other fees such as M2, gas tax, City sales tax, etc., are utilized annually for funding. Some new development projects require a development agreement wherein public improvements are paid for by developers. These public improvements may include roadway and traffic control infrastructure,	

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		proposed as a component of a project and paid for
		by the developer. For example, the Opportunities
		Study was a comprehensive planning process that
		the City of Dana Point undertook to rezone nearly
		838 acres of land zoned for business and industrial
		use on 5 properties. The zoning changes allowed
		for a new plan with residential uses and public
		improvements and facilities such as a sports park
		and community / civic center which were paid for
		by the developers. A development agreement is
		required for any General Plan Amendment.
		Development agreements are intended to
		strengthen the public planning process, to
		encourage private participation in comprehensive
		planning and to reduce the economic costs of
		development by providing earlier vesting than
		otherwise available under California law.
Developer Fees	Some new development projects require a development agreement wherein	To expand the use of developer fees for hazard
	public improvements are paid for by developers. These public improvements may	mitigation, the City could consider updating its
	include roadway and traffic control infrastructure, proposed as a component of a	development agreement requirements to
	project and paid for by the developer.	specifically address mitigation needs. This could
		involve requiring developers to contribute funds to
		a mitigation project or program as part of their
		agreement or mandating that certain mitigation
		measures be incorporated into the design and
		construction of new developments. For example,
		the City could require that all new developments in
		flood-prone areas be built with elevated
		foundations or that developers install green
		infrastructure to manage stormwater runoff.
SCE SONGS MOU Funding	The IPC is made up of representatives from all the agencies responsible for radiological	In 2015, the Nuclear Regulatory Commission accepted
Source	emergency preparedness and response in the Emergency Planning Zone around San	the Permanently Defueled Emergency Plan for San
	Onofre. State and Federal law mandate local governments maintain specific levels of	Onofre. Due to this change of operating status, SCE is
	preparedness and response capabilities to protect the public's health and safety in the	no longer subject to the assessment of costs by the
	event of an emergency at such a facility. California Government Code Section 8610.5	State of California, and the City of Dana Point, along
	provides for the assessment of certain costs on the utilities operating nuclear power	with the other IPC jurisdictions, is no longer eligible to
	plants and the deposit of these funds into a special account. The Governor's Office of	receive reimbursement from the special account.
	Emergency Services is then responsible for the transfer of approved funds to the local	Notwithstanding the changes in the operational
	jurisdictions for the reimbursement of costs associated with radiological emergency	status of San Onofre, the IPC jurisdictions and SCE

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preparedness and response. The City of Dana Point has been a recipient of the SCE	agree that local jurisdictions should continue our
SONGS MOU Funding Source since it was incorporated in 1989.	radiological emergency planning efforts during the
	decommissioning process. The SCE MOU is a "mutual
	agreement" of the signatories to continue the
	interagency collaboration established under the joint
	policies of the Interjurisdictional Planning Committee
	and to establish a new funding agreement directly
	between the local governments and Southern
	California Edison for the reimbursement of costs
	associated with these ongoing activities. These funds
	will decrease gradually until the decommissioning
	process estimated to end in 2049.



Education and Outreach			
Program/Organization	Program's Relation to Resiliency & Mitigation	Process Overview	
CERT	CERT is a group of trained volunteers who specialize in disaster preparedness, public safety, traffic control, and emergency response. They are capable of performing light emergency response activities and conducting disaster preparedness activities when a disaster situation arises.	The City of Dana Point has several education and outreach programs that relate to resiliency and mitigation. The CERT program, which has been active since 2019, is a group of trained volunteers who specialize in disaster preparedness, public safety, traffic control, and emergency response. They are capable of performing light emergency response activities and conducting disaster preparedness activities when a disaster situation arises. Residents complete the FEMA CERT Basic Training Course. Upon completion, residents have an option to become a certified Dana Point CERT Volunteer. Requirements include completing 2 FEMA Classes, completing a City Volunteer application and background process.	
Tri-Cities RACES (Radio Amateur Civil Emergency Service)	Tri-Cities RACES is a volunteer organization that provides emergency communication support to the cities of Dana Point, San Clemente, and San Juan Capistrano. They play a crucial role in maintaining communication during disasters when normal communication channels may be disrupted.	The Tri-Cities RACES program is a collaborative effort between amateur radio operators and local government. Volunteers are trained to provide emergency communication services during disasters or other emergencies. The City of Dana Point hosts monthly RACES meetings on the last Thursday evening of each month, providing regular opportunities for training, coordination, and equipment checks. This ongoing engagement ensures that RACES volunteers are well-prepared to support the City's emergency communication needs during hazard events, thereby enhancing the overall resilience and mitigation capabilities of Dana Point.	
The Great Shake Out	The Great Shake Out is an annual earthquake preparedness drill held on the third Thursday of October. It is the world's largest earthquake drill, and participants all over the world use this opportunity to practice what they would do in case an earthquake occurred suddenly. The City participates annually, raising awareness among City staff and residents	The Great Shake Out is an annual earthquake preparedness drill held on the third Thursday of October. It is the world's largest earthquake drill, and participants all over the world use this opportunity to practice what they would do in case an earthquake occurred suddenly. The City participates annually, raising awareness among City staff and residents. The City conducts an annual test of the Alert OC system to provide awareness to the community. Information is also shared on social media sites.	
Emergency Preparedness Month	National Preparedness Month is an observance each September to raise awareness about the importance of	National Preparedness Month is an observance each September to raise awareness about the importance of preparing for disasters	

	preparing for disasters and emergencies that could	and emergencies that could happen at any time. The City Council
	happen at any time. The City Council proclaims	proclaims September as National Preparedness Month during the
	September as National Preparedness Month	first meeting in September. Preparedness tips and
		recommendations are shared on social media.
Disaster Service Worker	All full-time City employees are designated Disaster	Upon hiring, all full-time employees take an oath as Disaster
	Service Workers.	Service Workers. When a disaster affects the City or County,
		employees are required to report to the City. The DSW program in
		Dana Point includes comprehensive training requirements for all
		employees. All employees must complete basic DSW training
		within 30 days of hire and participate in annual refresher courses
		on emergency procedures and their roles during disasters.
		Specialized training is provided based on an employee's potential
		emergency response role, including incident command system
		(ICS) training, emergency operations center (EOC) operations, and
		specific hazard response protocols. Regular drills and exercises are
		conducted to practice emergency response procedures.
		Employees in leadership positions receive additional training on
		emergency management and decision-making during crises. All
		staff members are trained in basic first aid and CPR, and are
		familiarized with the City's emergency plans and procedures,
		including the Local Hazard Mitigation Plan. This comprehensive
		training program ensures that all City employees are prepared to
		effectively assist in emergency response and recovery efforts,
		significantly enhancing Dana Point's overall resilience and
		mitigation capabilities.



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Evaluation of Mitigation Actions

The Hazard Mitigation Working Group ("Working Group") has created a variety of potential mitigation measures based on the identified hazard profiles, threat, and capability evaluations, as well as the findings of community surveys. The Working Group then assessed these acts using predetermined standards.

Per FEMA guidelines, local governments are required to assess both the monetary and nonmonetary costs and benefits of proposed mitigation actions. While it is not mandatory to assign specific dollar values to each action, a general estimation of costs and benefits should be provided. The Working Group may consider measures with high costs or low benefits, but only if they are deemed to be of clear benefit to the community and an appropriate use of local resources.

Furthermore, FEMA stipulates that local governments should 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 Working Group elected to conduct a review and revision of the potential hazard mitigation actions based on a third set of criteria called STAPLE/E (Social, Technical, Administrative, Political, Legal, Economic, and Environmental). While the Working Group did not carry out a formal assessment of every potential mitigation action under all STAPLE/E criteria, they utilized these criteria as a reference and a basis for discussion. Furthermore, the group deliberated on how the criteria could be used to evaluate grant applications submitted by the City for the purpose of funding LHMP implementation. Please refer to Table 17 for the STAPLE/E criteria.



Table 18: STAPLE/E Criteria

Issue	Criteria	
Social	Is the action socially acceptable to Dana Point 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 Dana Point 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 or consultant services to lead and coordinate implementation of the measure? 	
	 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 Dana Point 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? 	


Hazard Mitigation Goals

The mitigation goals outlined below are essential for guiding the City's efforts in hazard mitigation and ensuring a resilient and safe community. These goals were pivotal in laying the foundation for the hazard mitigation plan, guiding the formulation of policies aimed at protecting community members, ecosystems, and other vital assets from hazard events. They also ensured alignment with the broader objectives of the City's General Plan Safety Element.

Moreover, these established goals were integral to the development and prioritization of targeted mitigation actions. They provided critical benchmarks for City staff, enabling consistent evaluation and tracking of the progress in implementing these actions. By serving this dual purpose – guiding policy formulation and acting as a measure of progress – the goals have been essential in shaping a robust and cohesive hazard mitigation strategy for the City.

- 1. Minimize loss of life, injuries, and property damage due to earthquakes, wildfires, floods, severe weather, tsunamis, hazardous material and radiological release.
- Maintain functionality of critical services and government operations by safeguarding infrastructure against earthquakes, wildfires, floods, severe weather, tsunamis, hazardous material and radiological release.
- 3. Preserve and adapt natural systems to be resilient against earthquakes, wildfires, floods, severe weather, tsunamis, hazardous material and radiological release.
- 4. Enhance coordinated efforts among City departments and neighboring jurisdictions for mitigation against earthquakes, wildfires, floods, severe weather, tsunamis, hazardous material and radiological release.
- 5. Strengthen the City's resilience through community partnerships, focusing on preparedness and response to earthquakes, wildfires, floods, severe weather, tsunamis, hazardous material and radiological release.

Prioritization

Building upon these mitigation goals, the Working Group focused on prioritizing the actions as part of the hazard mitigation action review. The prioritization process involved assessing risks and threats associated with each hazard, financial costs and benefits, technical feasibility, community values, and other considerations. Working Group members were asked to indicate their priority actions through a voting exercise. Actions that received prioritization from at least four members were classified as high priority, while those prioritized by one to three members were considered medium priority. Actions that did not receive prioritization from any Working Group member were classified as low priority.

Mitigation actions were prioritized and ranked on a scale from 1-4, with 1 being a priority for most immediate implementation and 4 being determined to have the least need for immediate implementation. It is important to note that this ranking does not reflect the overall worth of an action but rather its prioritization over time and whether it may serve as a foundation for other actions to build upon.



The following factors were considered when prioritizing mitigation projects:

- Hazards mitigated
- Political or community support
- Cost
- Effect on overall risk to life and property
- Ability and practicality of immediate implementation
- Whether an action would be foundational to other actions
- Other issues

The Working Group members' voting exercise, combined with the consideration of these factors, allowed for a comprehensive prioritization of mitigation actions, ensuring that the most critical and impactful actions were identified and given the appropriate level of attention for implementation.

Cost Estimates

To comply with the cost estimation requirements of the hazard mitigation planning process, the Working Group determined relative cost estimates by drawing on their comprehension of the intent of the mitigation action and their prior involvement in developing identical or similar programs/implementing projects. For budgeting purposes, three cost categories were adopted, which were in line with the City's usual cost criteria:

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

Timeline Definitions

- 1-2 Years: To be completed within two years of plan adoption
- 1-3 Years: To be completed within three years of plan adoption
- 1-5 Years: To be completed within five years of plan adoption
- Ongoing: Continuous implementation on a regular basis throughout the plan's lifecycle, with no specific end date. Activities marked as "Ongoing" are typically recurring actions that require regular or continuous attention.



Hazard Mitigation Actions

In the development of this Plan, the Working Group conducted a comprehensive review and analysis of a wide array of potential mitigation actions and projects for Dana Point. This thorough evaluation process included considering the full spectrum of possibilities, ranging from education and outreach initiatives to infrastructure projects. The criteria for selection encompassed various factors such as financial feasibility, administrative and technical capacity, and overall effectiveness in enhancing community resilience. Through careful deliberation, all mitigation actions that were considered by the Working Group were ultimately selected to pursue, as they were deemed both feasible and beneficial for the City. **Table 19** in the Plan encapsulates this comprehensive assessment, listing all the mitigation actions that were considered and selected to pursue for the City of Dana Point.



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Table 19: Mitigation Actions

Mitigation Action	Funding Source(s)	Responsible Department	Timeframe	Cost	Priority
Multiple hazards					
Capitalize on City-sponsored events to inform and educate the public regarding hazards with the potential to affect the community and ways they can protect themselves and reduce impacts from the hazards. Information will be gathered, then disseminated via handouts and other methods.	General Fund / HMGP / BRIC	General Services	Ongoing (Quarterly, aligned with major City events)	\$	1
Continue to update emergency related planning documents to ensure consistency with state and federal law, best practices, local conditions, and recent information and advances.	General Fund / HMGP / BRIC	General Services	Ongoing (Review annually and update as needed)	\$\$	1
Coordinate with the water districts on an as-needed basis to install and harden emergency backup generators at water pump stations and sewer lift stations.	General Fund / FMA	Public Works & Engineering	Ongoing	\$\$\$	2
Facilitate the deployment/expansion of fiber optic network throughout the City.	General Fund / HMGP / PDM	Public Works & Engineering	1 - 5 Years	\$\$\$	4
Work with Caltrans, OCTA, TCA, and neighboring jurisdictions to ensure emergency transportation routes are maintained, repaired, and strengthened, as necessary.	Capital Improvement Projects / General Fund	Public Works & Engineering	Ongoing (Semi-annual coordination meeting)	\$\$\$	3
Determine equipment deficiencies or extra requirements for the City's backup EOC if the main facility at City Hall becomes inoperable or inaccessible.	General Fund	General Services	1 - 2 Years	\$\$	4
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	General Fund / BRIC	General Services	Ongoing	\$\$	4



appliances, and purchase of additional insurances. Distribute information through social networking, websites, print media, radio, television, at special events and in City facilities, and/or other media as appropriate.					
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.	General Fund / HMGP / PDM	Community Development	Ongoing (Annual review and as new hazard data becomes available)	\$	1
Reference policy direction and other information from this LHMP into other City documents, including the General Plan Safety Element and Capital Improvements Program.	General Fund	Community Development	1 - 5 Years	¢	1
Continue to partner with the American Red Cross, the County, neighboring cities, public and private schools, and HOAs to provide evacuation and reunification locations and shelters in an emergency.	General Fund / HMGP / PDM	General Services	Ongoing (Annual review of agreements and quarterly coordination meetings)	¢	1
Seek funding to hire a consultant to assist in the implementation of mitigation strategies.	General Fund / HMGP / PDM / BRIC	General Services	1 - 2 Years	\$\$	2
Enforce all applicable and current building & land use codes and ordinances. Adopt and develop new codes and standards that provide protection beyond minimum standards. Develop partnerships with business community to develop and maintain businesses with emphasis on pre-mitigation practices. Continue efforts to ensure that Critical facilities meet minimum building code standards for seismic and critical events. The overall goal is to minimize deaths and injuries that could be caused by the impact from a disaster.	General Fund / HMGP / CDBG / BRIC	Community Development	Ongoing (Daily, as part of regular permitting process)	\$	2
Promote uptake of disaster insurance; consider community-embedded insurance or other new disaster insurance models.	General Fund	Administrative Services	1 – 5 Years	\$	3
Continue to study and monitor the conditions of existing evacuation routes with particular attention to traffic conditions to incorporate a range of emergency scenarios including differences in hazard types,	General Fund	General Services	Ongoing	\$\$	3



locations, and timing. Consider collaboration with neighboring jurisdictions for hazard scenarios that may cause regional evacuation.					
Repave roadways, fix broken and damaged sidewalks, upgrade traffic signal equipment, install ADA ramps at the corners of streets, add landscaped medians and storm drain catch basins at locations. When possible and deemed necessary, or during regular road maintenance, upgrade existing roads to meet minimum road widths, surface, grade, radius, and turnarounds to ensure emergency vehicle access is possible.	General Fund	Public Works & Engineering	Ongoing (According to CIP schedule and annual maintenance program)	\$\$\$	1
Support programs such as Neighborhood Watch and CERT Organizations to build and train teams of community residents, leaders, and stakeholders to assist with emergency response and first aid. Make use of existing community networks to enlist participants.	General Fund	General Services	Ongoing	\$	1
Regularly meet with community leaders that represent special needs populations to maintain continuous two- way communication. This should include surveys and other needs assessments to refine notification and response policies.	General Fund	General Services	1 - 2 Years	\$	2
Develop a voluntary vulnerable population registry and subsequent priority list to help first responders better provide services and meet the needs of those most in need.	General Fund	General Services	1 - 2 Years	\$\$	2
Earthquake					
Prepare an inventory of seismically vulnerable City- owned facilities. Explore feasible solutions to mitigate vulnerable buildings and structures to be retrofitted.	BRIC / HMGP / Earthquake Brace and Bolt Program	General Services	1 - 5 Years	\$	1
Secure earthquake insurance for all City facilities.	General Fund	Administrative Services	Ongoing	\$\$	1
Monitor changes/updates to building codes and seismic regulations to determine if City owned critical facilities may need seismic retrofits as they age and building codes are updated.	PDM	Community Development	Ongoing (Review annually and upon release of new state building codes)	\$	2



Encourage owners of Critical Facilities as outlined in Chapter 4 to ensure facilities are evaluated for seismic safety. If any critical facilities are determined to be seismically vulnerable, work with the owner to identify potential funding sources to implement seismic retrofits.	HMGP / CSMIP	Community Development	1 - 3 Years	\$\$	1
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.	NEHRP	Public Works & Engineering	Ongoing	\$\$	1
Encourage the installation of resilient (seismically appropriate) piping for new or replacement pipelines, in close coordination with local water, natural gas, and other utility service providers.	General Fund	Public Works & Engineering	1 - 5 Years	\$\$	2
Conduct an educational campaign to encourage the use of reinforced chimneys, anchored rooftop- mounted equipment, window film, and other preventative measures to reduce damage at private buildings.	General Fund / BRIC	Community Development	1 - 3 Years	\$	3
Educate community groups and industry representatives and assist in outreach to residents and businesses to obtain earthquake insurance through the California Earthquake Authority	General Fund	Community Development	1 - 3 Years	\$	3
Flood					
Encourage the use of porous surfaces on new and significantly retrofitted residential and commercial developments to reduce runoff.	FMA / PDM	Public Works & Engineering	1 - 5 Years	\$	1
Conduct periodic cleanings of City owned storm drain intakes in accordance with the City's NPDES permits. Similarly encourage HOAs and other property owners to proactively remove debris from their drainage systems.	FMA / PDM	Public Works & Engineering	Ongoing (Bi-annually, before and after rainy season)	\$	2
Educate citizens about safety during flood conditions, including the dangers of driving on flooded roads.	FMA / PDM	General Services	Ongoing (Annually before rainy season and as needed during flood events)	\$	2



Prioritize retrofit improvements along major arterials/ roadways throughout the City.	FMA / PDM	Public Works & Engineering	1 - 5 Years	\$\$	1
Encourage all property owners within 100-year and 500-year floodplains to obtain flood insurance and flood proof their structures.	FMA / PDM	Community Development	1 - 5 Years	\$	2
Severe Weather (Rain)	•				
Review and update stormwater plans; communicate recommendations to planning and emergency management departments.	FMA / BRIC / CWSRF / CDBG	Community Development / Public Works	1 - 5 Years	\$	1
Update stormwater infrastructure as identified in City's capital improvement program.	FMA / BRIC / CWSRF / CDBG	Public Works	Ongoing	\$\$\$	1
Create a public education campaign to inform residents about the importance of maintaining private drainage systems, such as clearing gutters and downspouts, to reduce localized flooding during heavy rain events.	BRIC / EE Grants	Community Development	1 - 5 Years	\$	3
Collaborate with local school districts to develop a severe weather preparedness curriculum that teaches students about flood risks, safety measures, and emergency procedures.	BRIC / LEA	General Services	1 - 5 Years	\$	3
Tsunami					
Expand the City's TsunamiReady designation and pursue certification to further enhance the community's preparedness for tsunamis.	NTHMP / BRIC / LCP / HMGP	General Services	1 - 5 Years	\$	1
Expand the beachfront mass notification siren and public address network to alert residents and visitors of potential coastal hazard events.	HMGP / BRIC / LCP	General Services	1 - 3 Years	\$\$	3
Collaborate with local hotels, resorts, and vacation rental companies to develop tsunami preparedness materials and evacuation procedures for tourists and visitors	HMGP / BRIC / LCP	General Services	Ongoing	\$	2



Wildfire					
Partner with OCFA to 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.	FMAG/ PDM / NFPA	General Services	1 - 5 Years	\$	1
Collaborate with local environmental groups and conservation organizations to develop post-fire restoration and erosion control strategies to help mitigate the long-term impacts of wildfires on the environment and community.	BRIC / CALFIRE / BAER	General Services	1 - 5 Years	\$	3
Conduct analysis of smoke impacts, trajectory, and best mitigation methods.	BRIC / HMGP / CARB /	General Services	1 - 5 Years	\$	3
Encourage HOAs and property owners in high fire threat districts to replace vegetation with those listed on the OCFA approved plant list.	California Climate Investments Fire Prevention Grant	Community Development	1 - 2 Years	\$	2
Establish a wildfire hazard abatement program that provides assistance and incentives for property owners to remove hazardous vegetation, install fire-resistant landscaping, and implement other wildfire mitigation measures.	BRIC / HMGP / CALFIRE / EQUIP	Community Development	1 - 5 Years	\$\$	2
Coordinate with the HOAs and property owners to ensure the creation of defensible spaces and fuel modification around homes and neighborhoods to reduce vulnerability and increase the success potential of fire fighters in the case of a wildfire emergency. Partner with the OCFA to ensure enforcement.	HMGP	Community Development	1 - 5 Years	\$\$	2
Coordinate with Cal Fire, OCFA, and OCSD during wildfire events to ensure areas of evacuation are clearly articulated to the community through social media, radio, television, and other platforms as necessary.	FEMA Public Assistance Fund / EMPG	General Services	Ongoing	\$	3
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	AFG	General Services	1 - 5 Years	\$	3



should be incorporated into new City policy and			
standards, if necessary.			

Hazardous Material Release

Discourage new sensitive land uses, including schools, parks, childcare centers, adult and senior assisted living facilities, and community centers, from locating near identified hazardous material facilities. Discourage or prohibit new hazardous material facilities from locating near sensitive land uses.	General Fund	Community Development	Ongoing	\$ 1
Continuously inspect businesses and other properties storing hazardous materials and create an inventory of storage locations that require updates, maintenance, or renovation.	General Fund	OCFA	Ongoing	\$ 4
Continue to work with solid waste service contractors to educate residents and businesses on the safe disposal of small quantities of hazardous materials.	General Fund	Public Works	Ongoing	\$ 4
Coordinate with hazardous materials generators/operators (So Cal Gas, Edison, etc.) regularly to understand changes to operations within the city.	General Fund	OCFA	Ongoing	\$ 4

Radiological Release

Participate in the update of the radiological emergency plan every two years and managing radiological related activities throughout the year.	SCE SONGS MOU Source Funding/General Fund	IPC/General Services	Ongoing	\$	2
Support the IPC continued development and maintenance of joint policies and procedures including the development of an Interjurisdictional Policy to address NPP funding guidance.	SCE SONGS MOU Source Funding	IPC/General Services	Ongoing	¢	3
Provide on-going training for Emergency Operations Center personnel relating to radiological responses.	SCE SONGS MOU Source Funding/General Fund	IPC/General Services	Ongoing	\$	2



Participate in training exercises related to the Offsite Dose Assessment Teams and first responders with responsibilities to respond near or into the SONGS site.	SCE SONGS MOU Source Funding/General Fund	IPC/General Services	Ongoing	\$ 2
Participate in emergency preparedness exercises and communications drills with the County of Orange, San Diego County, Camp Pendleton and the California Office of Emergency Services (Cal OES) 24/7 warning point in SONGS. This includes testing of notification procedures and exercising the joint information management system.	SCE SONGS MOU Source Funding/General Fund	IPC/General Services	Ongoing	\$ 2
Maintaining Emergency Operations Center communication capability using local government agencies' alert and notification methods to ensure ongoing capabilities of notifying community members and emergency responders of an active emergency situation at SONGS.	SCE SONGS MOU Source Funding/General Fund	IPC/General Services	Ongoing	\$ 2
Maintaining the Dana Point Emergency Operations Center and all equipment in the facility in order to efficiently and effectively respond to a radiological release associated with SONGS.	SCE SONGS MOU Source Funding/General Fund	IPC/General Services		\$ 2
Continue to provide ongoing public education and community liaison responsibilities including town hall meetings, community interaction, public information management, Decision Makers Symposium, ongoing support of Capistrano Unified School District, and support to the SONGS Community Engagement Panel.	SCE SONGS MOU Source Funding/General Fund	IPC/DP General Services	Ongoing	\$ 3



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Chapter 6 Plan Maintenance

This LHMP must be kept up to date to remain functional and relevant to the City. An updated LHMP will continue to guide hazard mitigation actions in the City and will help the City remain eligible for state and federal hazard mitigation funds. The LHMP was created by the Working Group with the intention of allowing the City to readily update specific parts as new information becomes available and new requirements arise, hence keeping this Plan up to date.

This chapter describes how to maintain this Plan to comply with applicable state and federal obligations. This chapter also discusses how the City may incorporate the mitigation efforts (indicated in Chapter 5) into current programs and planning procedures, as well as how public input will continue to play a vital role in Plan monitoring and future update activities.

Plan Maintenance and Update Methodology

Purpose and Authority

Section 201.6.(d)(3) of Title 44 of the Code of Federal Regulations requires that local hazard mitigation plans be reviewed, revised if appropriate, and resubmitted for approval in order to remain eligible for benefits awarded under DMA. To support maintenance and implementation, this Plan is supported by the Dana Point Mitigation Implementation Worksheet, provided in **Appendix C** for reference. The worksheet is intended to function as a stand-alone document that gives concise and accessible guidance to jurisdiction staff for implementing the Plan.

The City plans to review the plan every five years and incorporate updates as needed from the date of initial adoption. The update process will typically commence at least one year before the existing plan expires. City staff will continue to be in charge of maintaining and updating the Plan, as well as reviewing its efficacy as needed. This will be done in coordination with the Working Groups referenced in Chapter 1. In future years, personnel from the following City departments and contract agencies (existing members or others) should be included in maintenance and update activities:

- Dana Point General Services Department
- Dana Point Community Development Department
- Dana Point Public Works & Engineering Department
- Dana Point City Clerk's Department
- Dana Point City Manager
- Orange County Fire Authority



• Orange County Sheriff's Department

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

- Southern California Gas Company
- South Coast Water District
- Moulton Niguel Water District
- San Diego Gas Company
- Orange County Transportation Authority
- Red Cross
- Capistrano Unified School District
- Tri-Cities RACES
- Ocean Institute

The Director of General Services is responsible for future LHMP updates and shall coordinate the Working Group as necessary. The Director and his/her designee will serve as the project manager. The Working Group may alternatively be coordinated by the acting Emergency Manager or Emergency Services Coordinator. The Director of General Services or his/her designee will organize Plan maintenance, lead formal Plan review and evaluation processes, direct Plan updating, and delegate duties to other Working Group members to execute these efforts. Collecting data, establishing new mitigation activities, updating mitigation actions, providing presentations to City personnel and community groups, and rewriting portions of the Plan document are examples of such responsibilities. Details on Plan monitoring, maintenance update, approval, and adoption are outlined in the process below.

Annual Plan Monitoring and Maintenance

As described below, monitoring the progress of the mitigation actions will be ongoing throughout the five-year period between the adoption of the LHMP and the next update effort. The Working Group will meet on an annual basis to monitor the status of the implementation of mitigation actions and develop updates as necessary. Although FEMA guidance does not outline a monitoring schedule, the City will adopt an annual review model predicated on best practices modeled throughout the nation. In the event of a significant disaster within Dana Point, the Working Group will convene within 30 days of the disaster to review and update the LHMP as needed. In addition to City staff, partner agencies, organizations, and stakeholders, may be identified for participation.

These meetings should:

• Discuss the timing of implementing mitigation actions.



- Evaluate the actions that are being implemented and determine if these actions are succeeding.
- Revise, as needed, the prioritization of mitigation actions.
- Integrate the mitigation actions into other mechanisms as needed.

The first of these meetings will be held in the 2024 calendar year. To the extent possible, meetings should be scheduled at an appropriate time in the City's annual budgeting process, which will help ensure that funding needs for mitigation actions are considered.

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

- What hazard events, if any, have occurred in Dana Point 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 Dana Point?

Plan Update

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. 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.

The 5-year 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 Director of Community Development may also choose to begin the update process sooner, depending on the circumstances. Reasons for accelerating the update process may include:

- A Presidential disaster declaration for the City of Dana Point or for an area that includes part or the entire City.
- A hazard event that results in one or more fatalities in the City of Dana Point.



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 Director will determine the best process for updating the Plan, which should include the following steps:

- Involve at least one member from each City department in the Working Group or as a supporting role to contribute as needed.
- Contact non-City organizations that sat on the Working Group 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.
- City Council will adopt the final updated Plan within one year of beginning the update process and within five years of the adoption of the previous plan.

Adoption

The Dana Point 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 Community Development Department will transmit a copy of the adopted Plan to FEMA.

Plan Incorporation

The Local Hazard Mitigation Plan (LHMP) is integral to the City's strategic planning, underscoring our commitment to reducing hazard risks through well-coordinated, actionable measures. These measures are meticulously crafted to dovetail with the City's existing planning documents, policies, and regulatory frameworks. The LHMP's implementation is a multi-faceted process, keenly focused on weaving its recommendations into the operational fabric of the City's ongoing and forthcoming plans.

In alignment with the Safety Element of the City's General Plan, the LHMP serves as an actionable extension, detailing specific mitigation actions that build upon the General Plan's broader safety strategies. To articulate the integration of the LHMP into the City's planning mechanisms more explicitly,



we will establish procedural links that ensure the seamless incorporation of LHMP insights into the Safety Element revisions, zoning regulations, and other planning documents.

The project manager tasked with the LHMP's stewardship will ensure these connections are not merely theoretical but are actively pursued and reinforced through continuous inter-departmental collaboration. This includes, but is not limited to, the translation of LHMP's mitigation strategies into language and actions within the City's General Plan updates, Safety Element enhancements, and other related planning efforts.

Furthermore, the LHMP's actions, as identified in **Table 19** of Chapter 5, will inform and shape the direction of City initiatives. This approach ensures a strategic alignment with resources as they become available, fostering a resilient community structure. Regular updates, through annual reviews and progress reports, will highlight the integration milestones achieved and will be made accessible to the public through the City's communication channels.

By interlacing the LHMP with the City's General Plan and Safety Element, we reinforce a cohesive approach to hazard mitigation. This synthesis of plans fortifies the City's resiliency, actively safeguarding Dana Point's residents, businesses, visitors, infrastructure, and environmental treasures against the specter of hazards.

Public Involvement

The City will persist in its efforts to inform the public about updates to the LHMP, with particular attention to enhancing participation from vulnerable communities in Dana Point. Based on demographic data, key vulnerable populations include:

- Senior residents (20.4% of population)
- Spanish-speaking residents (8.9% of population)
- Residents with disabilities (8.3% of population)
- Low-income households in Doheny Village and portions of Capistrano Beach

To reach these populations, the City will:

- Provide materials in both English and Spanish
- Utilize the Senior Center newsletter and lunch program for outreach to elderly residents
- Post updates on the City website and social media platforms
- Share information through established community partners including faith-based organizations and service providers
- Continue coordination with CERT teams and Neighborhood Watch groups

Annual reviews summarizing mitigation actions, upcoming plans, funding secured, and forthcoming updates will be made available through:

• The City website



- Hard copies at City Hall and the Community Center
- Presentations at publicly accessible City Council meetings

Efforts will be made to incorporate products in both English and Spanish, with large print versions available upon request. This ensures information remains accessible to Dana Point's Spanish-speaking population and senior residents.

LHMP

POINT OF CONTACT

The primary point of contact for this Plan:

Lawrence Meyerhofer Emergency Services Coordinator City of Dana Point 33282 Golden Lantern Dana Point, CA 92629 (949) 234-2800 LMeyerhofer@danapoint.org

DyAnne Weamire Management Analyst City of Dana Point 33282 Golden Lantern Dana Point, CA 92629 (949) 248-3512 Dweamire@DanaPoint.org

AUTHORS/KEY CONTRIBUTORS

Jacob Green and Associates 13217 Jamboree Road, Suite 248 Tustin, CA 92782 (888) 454-2178 info@jacobgreenandassociates.com



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CITY OF DANA POINT

APPENDICES

LOCAL HAZARD MITIGATION PLAN



Appendix A Meeting Materials

- 1. Hazard Mitigation Working Group Meeting #1 Kick-Off
- 2. Hazard Mitigation Working Group Meeting #2 Community Outreach
- 3. Hazard Mitigation Working Group Meeting #3 Hazard Prioritization
- 4. Hazard Mitigation Working Group Meeting #4 Risk Assessment
- 5. Hazard Mitigation Working Group Meeting #5 Mitigation Actions

Appendix B Community Outreach Materials

- 1. Local Hazard Mitigation Plan (LHMP) Website
- 2. Social Media Outreach Information
- 3. Printed Flyer Distribution
- 4. EOC Open House
- 5. Community Outreach Meeting Presentation
- 6. Community Outreach Flyers (English and Spanish)
- 7. Community Outreach Survey (English)
- 8. Community Outreach Survey (Spanish)
- 9. Community Outreach Survey Results (English)
- 10. Community Outreach Survey Results (Spanish)
- 11. Dana Point Times LHMP Page
- 12. CCR Insert

Appendix C Adoption Resolution

City Council resolution of adoption