



Santa Cruz County

2025 Multi-Jurisdiction Hazard Mitigation Plan Update

Volume 2, Section 8: Santa Cruz Port District (SPD)

Special District Annex

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Adoption Resolution

To comply with the Federal Disaster Mitigation Act of 2000 (DMA 2000), the Santa Cruz Port District has officially adopted this 2025 Santa Cruz County Multi-Jurisdictional Hazard Mitigation Plan, including Volume 1 in its entirety as well as this Volume 2 Special District annex. The adoption of the MJHMP recognizes the district's commitment to reducing the impacts of natural hazards within its jurisdiction and across Santa Cruz County.

A copy of the district's adoption record is provided on the following pages. Adoption records for all jurisdictions are summarized in Volume 1, Table ES-1.



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Santa Cruz Port District
Resolution 26-02
April 28, 2026

**A RESOLUTION OF THE SANTA CRUZ PORT DISTRICT COMMISSION ADOPTING THE
SANTA CRUZ COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN
2025 UPDATE**

WHEREAS, Santa Cruz County Multi-Jurisdictional Hazard Mitigation Plan 2025 Update (“the Plan”) recognizes the threat that natural hazards pose to people, property infrastructure and natural resources within the Santa Cruz Port District; and

WHEREAS, the implementation of hazard mitigation actions can significantly reduce the risk of injury, loss of life, property damage, and disruption caused by future natural hazard events; and

WHEREAS, the federal Disaster Mitigation Act of 2000 (DMA 2000) requires all cities, counties, and special districts to have adopted a Hazard Mitigation Plan to receive pre-and post-disaster mitigation funding from the Federal Emergency Management Agency (FEMA); and

WHEREAS, Santa Cruz Port District fully participated in the FEMA-prescribed mitigation planning process to prepare the Plan; and

WHEREAS, a coalition of Santa Cruz County local governments and special districts embarked on a planning process to prepare for and lessen the impacts of specified hazards by updating the Plan; and

WHEREAS, each participating jurisdiction, including Santa Cruz Port District, has been responsible for reviewing and approving its respective Jurisdictional Annex within the Plan, and the Plan compiles individual annexes into a unified framework to ensure a comprehensive and coordinated hazard mitigation strategy for the entire Santa Cruz County planning area, aligned with the goals, objectives, and priorities of the Plan; and

WHEREAS, the Santa Cruz County Multi-Jurisdictional Hazard Mitigation Plan 2025 Update is comprised of two volumes, including Volume 1: Base Plan, which contains the countywide hazard mitigation framework and risk assessment, and Volume 2: Jurisdictional Annexes, which document the hazard profiles, vulnerabilities, and mitigation actions of participating jurisdictions; and

WHEREAS, a public involvement process consistent with the requirements of DMA 2000 was conducted to develop the Plan; and

WHEREAS, the California Governor’s Office of Emergency Services (Cal OES) has reviewed and approved the Plan and has forwarded the plan to FEMA Region IX for final review and approval; and

NOW, THEREFORE, BE IT RESOLVED AND ORDERED, that the Santa Cruz Port District Commission hereby adopts the Santa Cruz County Multi-Jurisdictional Hazard Mitigation Plan 2025 Update as an official plan of the jurisdiction, and adopts Volume 1 of the Plan in its entirety and acknowledges that the Port District’s Jurisdictional Annex contained in Volume 2 represents the jurisdiction’s specific hazard mitigation strategies and responsibilities.

BE IT FURTHER RESOLVED, the Santa Cruz Port District Commission authorizes the Port Director to make minor technical edits or administrative corrections to the Plan, as necessary to address FEMA review comments, prior to final adoption; and

BE IT FURTHER RESOLVED, the Santa Cruz Port District Commission further encourages the respective departments identified in the implementation strategy of the plan to carry out the recommended mitigation actions assigned to them; and

BE IT FURTHER RESOLVED, the proposed project is categorically exempt from the provisions of the CEQA Guidelines pursuant to the Provisions of Title 14 of the California Administrative Code, Section 15061(b)(3) (common sense exemption), and Section 15262 (Feasibility and Planning Studies); and

BE IT FURTHER RESOLVED, this Adoption Resolution will be submitted to Cal OES on behalf of the Santa Cruz Port District by Santa Cruz County staff to enable the Plan's final approval by Cal OES and FEMA.

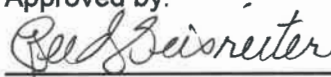
PASSED AND ADOPTED, by the Santa Cruz Port District Commission this 28th day of April 2026, by the following vote:

AYES: Geisreiter, DeWitt, Reed, Lee, Goddard

NOES: n/a

ABSENT: n/a

Approved by:



Reed Geisreiter, Chair
Santa Cruz Port District Commission

Section 8. Santa Cruz Port District

8.1 Scope & Purpose

This Jurisdictional Annex for the Santa Cruz Port District (SCPD) of the 2025 Santa Cruz County Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) details the hazard mitigation planning elements specific to the district's planning area. This annex is not intended to be a standalone document but appends to and supplements the information contained in the umbrella plan document (Volume 1). As such, all sections of the umbrella plan, including the planning process and other procedural requirements, apply to and were met by the SCPD. This annex provides additional information specific to the district, with a focus on hazard identification and risk assessment, vulnerability assessment, problem statements, mitigation strategy, and capabilities assessments.



Santa Cruz Port District Points of Contact

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8.2 Jurisdictional Setting

The Santa Cruz Port District (SCPD) was formed in 1950 under the California Harbors and Navigation Code to develop and manage the Santa Cruz Small Craft Harbor. The district's jurisdiction covers approximately 27.9 square miles, including most of the City of Santa Cruz and adjacent unincorporated areas. The harbor is a regional facility serving recreational, commercial, and emergency response needs across the Central Coast.

SCPD operates a full-service harbor comprising 38 acres of land and 52 acres of water. Facilities include over 800 wet berths, dry storage, launch ramps, commercial and marine service leases, public parking, and visitor-serving amenities. The harbor also maintains coastal access points, public restrooms, and coastal trails. The South Harbor opened in 1964, followed by the North Harbor in 1973.

The district is governed by a five-member Board of Commissioners and managed by a Port Director. SCPD coordinates closely with local and regional agencies on marine safety, dredging, and coastal resilience, and holds public trust lands for navigation, recreation, and visitor-serving uses.



8.2.1 Geography & Climate

The Santa Cruz Port District is located on the northern edge of Monterey Bay, within a natural coastal embayment formed from the former Woods Lagoon. The harbor is flanked by the San Lorenzo River to the west and coastal bluffs and residential neighborhoods to the east. It lies at sea level, making it highly exposed to coastal hazards.

The climate is Mediterranean, characterized by dry summers and wet, mild winters. From November through March, the region experiences intense winter storm activity driven by Pacific atmospheric river systems. These storms bring high surf, coastal storm surges, and prolonged rainfall, which can result in localized flooding, infrastructure damage, and sediment deposition within the harbor entrance channel.

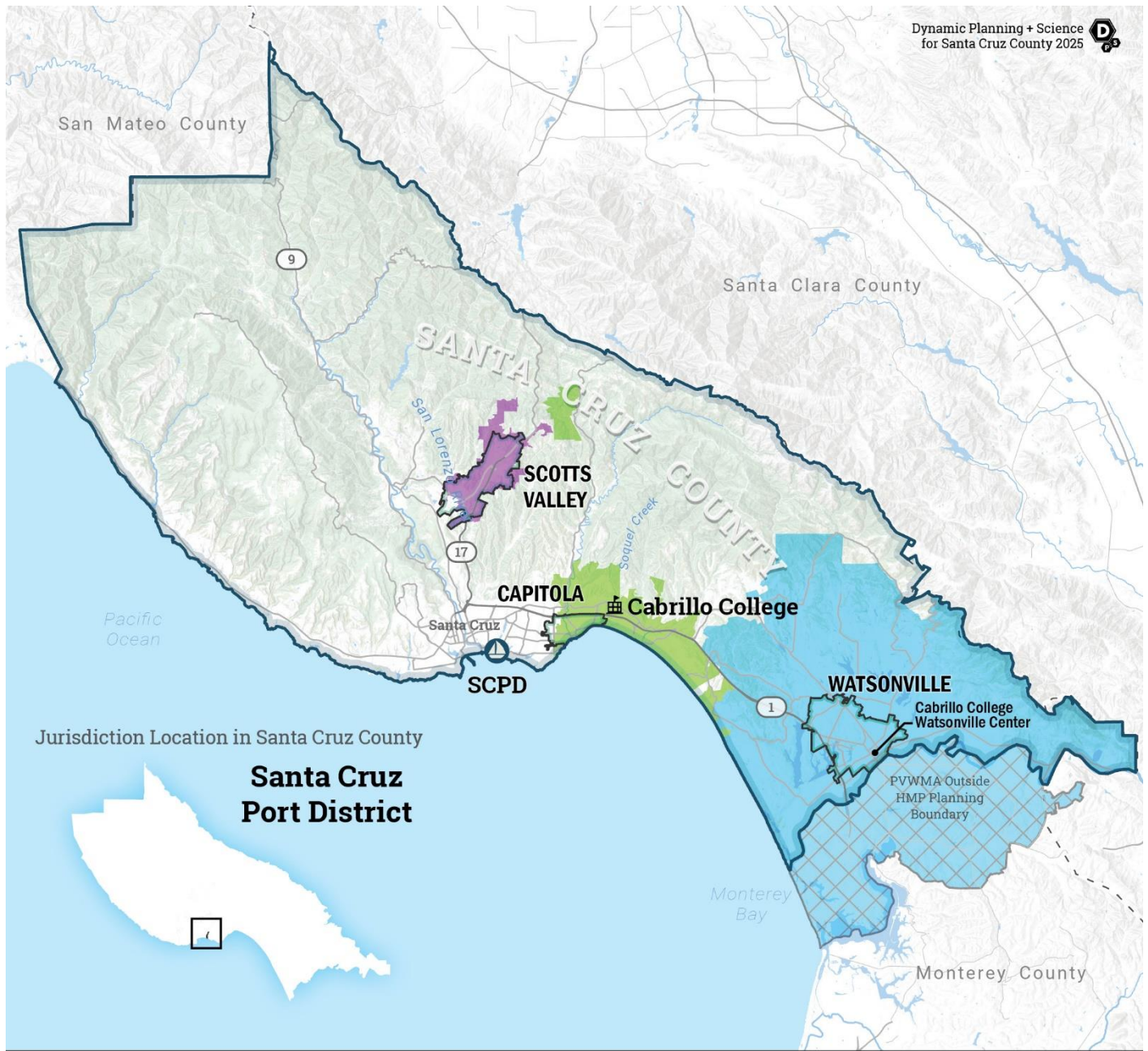
Due to its open exposure to the south and southeast, the Santa Cruz Harbor is particularly vulnerable to wave overtopping and shoaling during winter events. These conditions frequently require emergency dredging and coastal structure repairs to maintain safe navigation and access. Climate change is expected to increase the intensity and frequency of these winter storms, increasing risks to harbor operations and adjacent facilities. Figure 8-1 identifies the district boundary and fire station locations within Santa Cruz County.

8.2.2 Historic Overview

The Santa Cruz Port District was established by local voters in 1950 under the California Harbors and Navigation Code to plan, finance, and manage the construction of a small craft harbor. The selected site was Woods Lagoon, a natural coastal wetland historically used for small boat mooring. Construction of the South Harbor began in 1962 and was completed in 1964, followed by expansion into the North Harbor in 1973.

Initially funded by property tax assessments, the district used these revenues—along with federal and state grants—to build core harbor infrastructure, including breakwaters, dredge pipelines, berths, and public access facilities. In 1968, the State Lands Commission granted the Port District a series of tidelands held in trust for public navigation and recreation purposes.

Over the decades, the district transitioned from a tax-supported agency to a fully self-sustaining enterprise operation. It has since developed into a regional maritime hub, supporting commercial fishing, marine services, public safety operations, and recreational boating. The harbor has also played a key role in coastal resilience, emergency response, and regional tourism.



Geographic Overview - Santa Cruz County HMP Participants

- Cabrillo College
- Participating Jurisdiction
- Pajaro Valley Water Management Agency
- Santa Cruz Port District
- Scotts Valley Water District
- Soquel Creek Water District

Santa Cruz County Resource Conservation District

Geographic extent is generally coterminous with the unincorporated county, with various incorporated areas excluded from the District's jurisdiction.



Figure 8-1: SCDP Sphere of Influence and Station Locations



8.2.3 Demographics & Vulnerable Populations

This section describes the demographic characteristics of the Santa Cruz Port District to guide hazard mitigation planning efforts. While the Port serves a broad range of harbor users, a central concern for vulnerability assessment is the liveaboard population. These are residents who reside full time on vessels within the marina and are uniquely exposed to coastal hazards due to their location and dependence on marine infrastructure.

Liveaboards represent approximately eight percent of the total slip occupants in the harbor. Of this group, an estimated fifty-five to sixty percent are older adults, with about twenty percent experiencing functional or mobility limitations. A portion of the remaining residents may face challenges related to mental health, substance use, or housing insecurity. Many liveaboards have limited income, lack reliable transportation, and are not always connected through standard emergency alert systems.

These populations face increased risk during hazard events such as storm surge, wave overtopping, and tsunami. Issues such as dock access restrictions, power outages, vessel displacement, and failure of gangways can delay response and evacuation. During winter storms or seismic activity, the threat of isolation or infrastructure failure is a significant concern for those with health or mobility constraints.

Mitigation planning for this population must consider accessible evacuation routes, improved dock stability, surge event signage, and backup utility systems. Dedicated outreach and emergency communication strategies are also needed to support preparedness and response for liveaboard residents who may not receive conventional public safety messaging.

8.2.3.1 Dependent & Disabled Populations

The Santa Cruz Port District includes a small but important population of dependent and disabled individuals, primarily among the harbor's liveaboard residents. Port staff estimate that more than half of the liveaboard population is over the age of sixty-five, and approximately twenty percent of those individuals have mobility or functional limitations. These conditions may present challenges during emergency evacuations or service disruptions, especially during coastal storm events or tsunami warnings.

The confined geography of the harbor, limited vertical evacuation options, and variable dock conditions increase the vulnerability of these residents. Individuals with disabilities may require additional support to evacuate safely or to access communications during emergencies. Planning for these needs will require improved signage, accessible notification systems, and coordination with emergency services to ensure evacuation assistance is available when needed.

Although the overall district footprint is limited, targeted measures are essential to protect those with access and functional needs who may be most at-risk during hazard events.

8.2.3.2 Race, Ethnicity & Language

The Santa Cruz Port District supports a diverse harbor community that includes liveaboard residents, vessel maintenance workers, and harbor yard employees. Many of these workers support marine operations, including repair services, equipment handling, and commercial fishing activities. Some may be employed seasonally or informally, with limited access to employment benefits or stable housing, which can increase their vulnerability during hazard events.

Systemic disparities related to race, ethnicity, and income may influence both liveaboard and workforce exposure to risks. These populations may face greater challenges in preparing for and recovering from disasters due to economic instability, housing insecurity, or lack of access to hazard information. Language or cultural barriers, while not directly documented at the port, may also exist and can further complicate outreach and recovery efforts.

To ensure equity in hazard mitigation planning, outreach efforts should account for the full harbor population, including those who live and work in the marina. Engaging service workers and small business employees in preparedness activities and ensuring their inclusion in communication strategies can help strengthen overall community resilience.

8.2.3.3 Social Vulnerability Index (SVI)

As described in Volume 1, Section 1.4.3.6, the U.S. Centers for Disease Control and Prevention (CDC) developed the Social Vulnerability Index (SVI) to assess how various social factors may affect a community's ability to prevent, respond to, and recover from hazard events. The SVI incorporates sixteen variables across four categories: socioeconomic status, household composition and disability, minority status and language, and housing type and transportation access.

Within the boundaries of the Santa Cruz Port District, SVI values range from low to moderate. According to 2022 data, most of the Port District falls within the lowest two SVI quartiles, with scores between 0.0 and 0.5. However, the eastern portion of the district—east of the harbor and closer to Schwan Lagoon and 7th Avenue—shows elevated vulnerability with SVI values between 0.5 and 0.75. This area may reflect greater challenges related to income, housing cost burden, or access to transportation.

While the Port District is geographically compact, this variation in SVI highlights the need for focused outreach and preparedness strategies, particularly for residents and workers in higher-vulnerability zones. Special attention should be given to liveaboard residents and those working in the harbor yard who may face greater risk during coastal hazard events.

8.2.4 Economy

The economy of the Santa Cruz Port District is shaped by its coastal location and maritime infrastructure, with economic activity centered around commercial fishing, harbor-dependent businesses, and tourism. The Santa Cruz Small Craft Harbor serves as a working waterfront, supporting both recreational and commercial uses. It is home to a long-standing commercial fishing fleet, including vessels targeting salmon,



halibut, sablefish, Dungeness crab, and market squid, among other species. These operations contribute to the regional seafood supply chain and local food economy, with many catches sold directly to local distributors, fish markets, and restaurants.

In addition to the commercial fleet, the harbor supports a network of marine service businesses including vessel repair, fueling, hoist operations, charter services, and retail concessions. Many of these businesses are small and locally owned, forming a unique maritime economic cluster within the district. The harbor yard, which supports maintenance and dry storage operations, provides essential services to both recreational boaters and commercial users. These activities generate lease revenue for the Port District and help sustain local employment in skilled trades and support services.

The Port also benefits from tourism and visitor-serving amenities, including restaurants, cafes, sailing schools, kayak rentals, and public events. While smaller in scale compared to Capitola's tourism and retail economy, the Santa Cruz Harbor plays a critical role in regional economic resilience by maintaining a functional, self-supporting coastal infrastructure that supports both livelihoods and public recreation.

Hazard events that disrupt harbor access or damage waterfront facilities can have direct impacts on commercial fishing income, service employment, and the small businesses that depend on harbor activity. As such, mitigation planning for the Port District must account for the economic importance of maintaining operational continuity for maritime-dependent sectors.



CDC Social Vulnerability Index 2022

Santa Cruz Port District

*Data sources: ESRI Demographics Service, ACS.

CDC Social Vulnerability Index

0.0000 - 0.2500	0.7501 - 1.0000
0.2501 - 0.5000	No data
0.5001 - 0.7500	

Figure 8-2 SCPD Social Vulnerability Index Map



8.2.5 Growth Trends & Future Development

The Santa Cruz Port District is largely built out, with limited opportunity for significant expansion due to geographic constraints, land use zoning, and its location within the coastal zone. Future development within the Port District is expected to remain modest and focused on maintaining or enhancing existing facilities rather than expanding footprints. Unlike other special districts, the Port does not serve a growing residential population; instead, its growth outlook is tied to infrastructure reinvestment, harbor capacity upgrades, and the long-term viability of maritime and visitor-serving uses.

Future improvements identified in recent planning documents include phased maintenance of docks, electrical and utility system upgrades, seawall stabilization, dredging improvements, and adaptation to sea-level rise impacts. The district also anticipates continuing investments in harbor resiliency, shoreline protection, and modernization of public access infrastructure. These projects aim to support operational continuity and protect critical assets from coastal hazards, while also enhancing economic activity and visitor experience.

Commercial growth within the Port's jurisdiction is expected to remain stable, with most new development consisting of renovations, tenant improvements, or replacements of aging infrastructure. Leasing policies emphasize maritime-related uses, and any proposed land use change would be subject to review under the California Coastal Act and the Port District's Trust Land Use Plan.

Population growth or increased water and wastewater demand is not anticipated within the Port's boundaries, aside from minor fluctuations in liveaboard residency. As such, planning efforts focus on sustaining harbor functions, supporting climate adaptation, and ensuring that existing infrastructure can accommodate current and future operational needs without requiring expansion beyond the existing footprint.

8.3 Planning Process

SCPD followed the planning process detailed in Volume 1, Section 2, including participating in the county-wide Hazard Mitigation Planning Team (HMPT) and formulating their own internal planning group to support the broader planning process.

The district's representatives in the Steering Group led stakeholder and public engagement efforts alongside the Consultant Team, with assistance from the HMPT and their internal planning team. This engagement process is described in Volume 1. Specifically, for the Port District, this included postings to the district website and social media and outreach events, as documented in Appendix B. Examples of Key Stakeholders engaged by Santa Cruz County on behalf of the district with relevance to the development of SCPD's mitigation strategy include the USDA and other federal agencies; Cal OES and other state agencies; City of Santa Cruz and other neighboring jurisdictions; community-based organizations such as Community Bridges; utility providers like AT&T and Soquel Creek Water District; UC Santa Cruz and other academia; and local businesses.

All Key Stakeholders that were invited to participate in the planning process are listed in Volume 1, Section 2, and the input received from stakeholders was integrated into the district's annex, as described in Volume 1 Table 2-9. The district's internal planning participants, their positions, and how they participated in the planning process are shown in Table 8-1.

Table 8-1: SCPD Participants

Planning Group Members	Title	Description of Involvement
Holland MacLaurie	Port Director	Lead Point of Contact; attended Kickoff Meeting, HMPT Meetings #1, #2, and #3 and Breakouts #1 and #2
Blake Anderson	Harbor Master	Alternate Point of Contact; attended Breakouts #1 and #2
Carl Wulf	Facilities Maintenance & Engineering Manager	attended Breakout 1

SCPD staff participated in a comprehensive hazard mitigation planning process as part of the 2025 Santa Cruz County MJHMP update. This included a series of breakout meetings, listed in Table 8-1 that engaged the district's planning team, which included key district personnel and stakeholders in evaluating hazards, identifying local vulnerabilities, and prioritizing mitigation strategies

The kickoff meeting held on January 27, 2025, launched the planning process by introducing the project scope and clarifying the roles of the Steering Group and participating jurisdictional teams. In the months that followed, a series of structured meetings addressed foundational elements of the plan, including a review of key changes since the 2021 Local Hazard Mitigation Plan, an overview of hazard mitigation principles, and exercises to prioritize local hazards. On July 30, 2025, participants engaged in a hexagon mapping activity designed to visually identify mitigation actions that could benefit from or require inter-jurisdictional coordination. These collaborative efforts helped shape a refined set of mitigation alternatives, establish shared planning goals, and align local strategies with FEMA's Hazard Mitigation Assistance (HMA) funding framework.

Throughout the series of breakout meetings, SCPD engaged in a structured and collaborative planning process focused on assessing hazard risks, identifying vulnerabilities, and developing targeted mitigation strategies. The meetings began with recaps of the county-wide HMPT meetings to ensure alignment of goals and progress.

During the April 9, 2025, breakout out meeting, discussions concentrated on community engagement outcomes, initial risk assessments, and the integration of demographic data to better understand vulnerable populations. Jurisdictional teams reviewed their specific hazard exposures using the Risk Assessment Mapping Platform (RAMP) and participated in prioritization exercises to identify their top hazards.

The July 15, 2025, breakout meeting shifted toward reviewing local capabilities and defining specific areas of concern, which informed the drafting of problem statements. Teams worked collaboratively to refine



mitigation alternatives, align actions with FEMA guidelines, and develop a shortlist of priority mitigation actions and inter-jurisdictional collaboration opportunities.

The meetings also included consensus-building activities around hazard rankings, capabilities, and planned actions, while providing regular updates on the overall project schedule.

8.3.1 Public Input & Draft Review

As detailed in Volume 1, Section 2, the draft plan was available for public review and comment from September 29 to October 20, 2025. Public comments received during that time were similar to those gathered throughout the public engagement process, including the need for more equity in the distribution of mitigation activities and funding and the need for enhanced cooperation among jurisdictions, utility providers, and state agencies. These comments were incorporated into the city's mitigation strategy, as appropriate; although, most were already addressed by the Mitigation Action Plan which was based on previous public input.

Public and stakeholder input was gathered and incorporated throughout the plan development process, before the public review period, such as from the online public survey (see Volume 1, Section 2.1.2 and Appendix B, for details). During the review period, jurisdictional staff and stakeholders that participated in the plan development also reviewed the public draft and provided comments on minor corrections and revisions, which were addressed in the final plan.

8.4 What's New

This section offers an overview of the hazard mitigation planning efforts for the planning area and highlights the updates made in this 2025 MJHMP. This is the first time SCPD has participated in the MJHMP process. While not included in the 2021 plan, the district has since strengthened its focus on resilience through key efforts. Through this MJHMP process, SCPD has identified its highest-priority hazards, developed hazard-specific problem statements, and proposed actionable mitigation strategies.

8.4.1 Mitigation Activities

Although the Santa Cruz Port District has not previously adopted formal mitigation actions within a Hazard Mitigation Plan, the District has implemented numerous projects, programs, and operational protocols that function as hazard mitigation. These efforts reflect the Port's ongoing commitment to protecting critical harbor infrastructure, ensuring safe access to coastal facilities, and enhancing operational resilience to coastal storms, tsunamis, and sea-level rise.

Over the past decade, the district has made significant investments in infrastructure maintenance and resilience. These include upgrades to electrical and water systems on docks, pile and dock replacements, slope and shoreline stabilization efforts, and annual dredging operations that maintain safe navigation and reduce flooding risk. Many of these capital improvements have been designed to withstand coastal hazard impacts, such as wave run-up, sedimentation, and saltwater intrusion.

The Port District has also taken proactive steps to address sea-level rise and storm surge. Coastal adaptation planning is integrated into harbor maintenance cycles, and the district participates in regional initiatives focused on climate resilience. Projects such as the revetment repair at the harbor mouth, assessment of seawall conditions, and monitoring of tidal impacts support long-term mitigation of chronic inundation and infrastructure degradation.

From an operational standpoint, the district has enhanced emergency preparedness and response coordination. Staff regularly conduct safety and response training, and the Port maintains communication and mutual aid protocols with local fire, police, and coastal emergency response agencies. Equipment such as emergency pumps, vessel hoists, and backup generators provide redundancy in the event of power loss or storm damage.

Additionally, the district plays a role in protecting economic resilience through the maintenance of commercial fishing infrastructure and marina services. By ensuring continuity of harbor operations, the Port supports the livelihoods of working waterfront users during and after hazard events.

While not yet codified in a stand-alone mitigation policy, the Santa Cruz Port District's integrated approach to maintenance, capital planning, and hazard awareness provides a strong foundation for future mitigation strategies and climate adaptation actions.

As a first-time participant in a hazard mitigation plan, the SCPD had no formally adopted mitigation actions from a previous plan. However, the district continues to advance a range of ongoing and planned efforts that support hazard mitigation and climate resilience. These are highlighted in this section, reflecting the district's continued dedication to long-term risk reduction. From infrastructure improvements to public safety coordination and community outreach, these actions demonstrate the Port District's proactive approach to managing coastal hazards as funding and resources allow.

8.4.2 Mitigation Successes

Although SCPD is participating in a formal hazard mitigation plan for the first time, multiple important mitigation actions and other efforts to increase the district's resilience to hazards have been completed. Some of these endeavors in which the district collaborated with Santa Cruz County are described in Volume 1, Section 2. This section describes additional district-specific success stories, which highlight SCPD's commitment to reducing risks and building a more resilient community in the face of natural hazards.

Murray Street Bridge Seismic Retrofit & Barrier Replacement Project

The Murray Street Bridge Seismic Retrofit and Barrier Replacement Project represents a significant resilience investment for the Santa Cruz Small Craft Harbor. This project addresses a critical piece of infrastructure that connects the community while spanning the harbor. By upgrading the bridge to modern seismic standards and replacing aging barriers, the project will reduce risks from earthquakes, enhance public safety, and safeguard harbor operations.



The Port District will also play a key role, particularly with the reconstruction of FF-Dock, which lies directly adjacent to the project area. Close collaboration between the City of Santa Cruz and the Port District will help minimize disruption to harbor activities and ensure continuity of access during construction.

When complete, the Murray Street Bridge retrofit will stand as a major hazard mitigation success—protecting both transportation lifelines and harbor facilities from seismic hazards, while strengthening long-term resilience for the Santa Cruz waterfront.



Figure 8-3: Murray Street Bridge

Westside Seawall Replacement Project

The Santa Cruz Port District recently completed a conceptual design and cost study for the full replacement of the aging 1963 seawall. The proposed design calls for the installation of steel sheet piles in front of the existing wall, a method chosen to avoid destabilizing the current structure while ensuring long-term durability. The design incorporates a finished elevation of +11.0 feet, consistent with sea level rise projections through approximately 2070, providing a 35 to 45-year buffer against anticipated conditions. Importantly, the system is adaptable, allowing for additional height increases in the future if needed to address higher sea levels. With an estimated cost of \$14.5 to \$19 million, the project represents a major hazard mitigation investment aimed at reducing flooding and structural risks to critical harbor facilities.

Aldo's Seawall

A recent precedent project that was successfully constructed, demonstrating the district's ability to implement coastal defense upgrades and use them as a template for larger infrastructure resilience. Phase

2 of the Pile Removal & Replacement Project, which will replace approximately 80 worn & damaged piles throughout the harbor has commenced



Figure 8-4: Aldo's Seawall Project



North Harbor Transformer Replacement

The project involves relocating six North Harbor dockside transformers to landside locations, reducing their vulnerability to flooding and tsunami inundation. Electrical service to the existing docks will be maintained by routing conductors through a combination of new and existing conduits. This improvement enhances system reliability and protects critical harbor utilities against future power disruptions.



Figure 8-5: North Harbor Transformer Replacement

Flood, Sediment & Coastal Hazard Management

Since 1964, the SCPD has carried out annual dredging operations between November and April to prevent shoaling at the harbor entrance. Without this effort, the harbor would quickly become unusable due to sand deposition from littoral drift, effectively closing the facility. Notably, the District is the only small craft harbor in the United States that has assumed shared responsibility for dredging a federal navigation channel. This commitment is supported through a cooperative cost-sharing agreement with the U.S. Army Corps of Engineers, which reimburses approximately 35% of dredging expenses. By sustaining this long-

term program, the Port ensures continued harbor functionality, maintains natural coastal sediment transport, and strengthens resilience against storm impacts.



Figure 8-6: SCPD Dredging Operations.



8.5 Risk Assessment

This section focuses on profiling flooding, drought, coastal hazards, earthquake and other hazards specific to SCPD and assessing their vulnerability independent of the broader county-wide planning area, which has been evaluated in Section 3 of Volume 1. The hazard profiles in Volume 1 discuss overall impacts to the planning area and describe relevant plans, policies, and regulations; past events; location; frequency and probability of future occurrences; severity and extent; warning time; secondary hazards; and climate change impacts. For more information on risk assessment methodologies, see Volume 1, Appendix A.

This section includes a tailored vulnerability assessment, analyzing assets at risk such as population, property, and critical facilities and infrastructure unique to the district, and information on district-specific differences in hazard vulnerability across the planning area. It also identifies total district assets at risk, including people, property, and critical facilities and infrastructure within the district. In addition, this section presents growth and development trends for the communities served, offering insights into vulnerabilities and risks that represent the broader context of assets at risk.

8.5.1 Hazard Screening & Prioritization

Members of the planning team from each participating jurisdiction came together to collaboratively decide which county-wide hazards would be included in the MJHMP and which would be excluded. The hazard screening and prioritization took place early in the process and integrated historic data, local knowledge, and consensus opinions to create a risk assessment matrix for the county as well as for each participating jurisdiction. These matrices indicate the priority of hazards prior to further refinement. Details about this process, the results of the discussion, and in-depth profiles for county-wide hazards can be found in Volume 1, Sections 2 and 3.

The final results of the hazard screening and prioritization exercises are summarized in Table 8-3, including which specific subhazards were selected by SCPD's planning team.

The SCPD's internal planning group used the same hazard identification and prioritization process as the county-wide Planning Team. They reviewed previously prepared relevant documents and past events to determine the realm of natural hazards that have the potential to affect the district. Table 8-2 provides a crosswalk of hazards identified in select planning documents, including the 2025-2023 City of Santa Cruz LHMP/Climate Adaptation Plan (CAP), the 2021 Santa Cruz County LHMP, and the 2023 State of California HMP. The crosswalk was used to develop a preliminary hazards list, providing a framework for the group to evaluate which hazards were truly relevant to the district and which ones were not.

The internal planning group then ranked hazards based on their probability of affecting SCPD and potential impacts on the communities it serves. Figure 8-7 displays the results of the hazard risk ranking exercise that was performed before further refinement. All hazards have been profiled in Volume 1 of this document. The purpose of this annex is to specifically address SCPD's vulnerability to specifically identified hazards.



Table 8-2: SCPD Document Review Crosswalk

Hazard	2025-2030 City of Santa Cruz LHMP/CAP	Santa Cruz County LHMP 2021	2023 California SHMP
Agricultural Pests			■
Avalanche			■
Climate Change	■	■	■
Coastal	■	■	■
Dam Failure	■	■	■
Drought	■	■	■
Earthquake / Liquefaction	■	■	■
Extreme Cold		■	■
Extreme Heat	■	■	■
Extreme Weather / Storms		■	■
Flood	■	■	■
Geologic / Mass Movement	■	■	■
Human-Caused			■
Insects			■
Levee Failure			■
Pandemic Disease			■
Sea Level Rise	■		■
Soil			■
Subsidence			■
Tornado			■
Tsunami / Seiche Wave	■		■
Volcano			■
Wildfire	■	■	■



Risk Assessment Matrix Definitions

PROBABILITY RATING

The likelihood of a hazard event occurring within a time period?

PROBABILITY	Highly Likely	Highly likely - 100% annual probability. Or Likely to occur every year in your lifetime.
	Likely	Likely - between 10 & 100% annual probability. Or will occur several times in your lifetime.
	Possible	Possible - between 1 & 10% annual probability. Or Likely to occur some time in your lifetime.
	Unlikely	Unlikely - less than 1% annual probability. Or unlikely but possible to occur in your lifetime.

To concentrate resources, the jurisdictional planning team will focus on "High" and "Extreme" risk hazards. These hazards have the higher probability and greater impact as it relates to the jurisdictions planning area.

Hazard definitions are included in **Vol. 1** of this plan. Some hazards are discussed as subset hazards— e.g., "Dam Failure" within the "Flood" hazard profile. If a hazard is not present on the risk matrix or are grey in color, the jurisdictional planning team felt the hazard had a minimal footprint within their planning area and was not ranked.

Hazard Information / Legend:



Climate Change impacts will be addressed at the end of each hazard section and as a stand alone section for each jurisdiction.

For County and Municipal governments you will be required to address climate change impacts in the Safety Element of your General Plan. Climate change may change the frequency, duration and intensity of hazards listed above.

IMPACT RATING

In terms of injuries, damage, or death, would you anticipate impacts to be minor, limited, critical, or catastrophic when a significant hazard event occurs? The impact could be in terms of one hazard event (flooding from a culvert failure) or a large-scale event (multiple rivers flooding) in the same jurisdictional boundary.

IMPACT			
Minor	Limited	Critical	Catastrophic
Minor - very few injuries, if any. Only minor property damage & minimal disruption on quality of life. Temporary shutdown of critical facilities.	Limited - minor injuries only. Approx. 10% or less of property in disaster footprint damaged or destroyed. Complete shutdown of critical facilities for more than one day.	Critical - multiple deaths/injuries possible. Between 25% and 50% of property in disaster footprint is damaged or destroyed. Complete shutdown of critical facilities for more than one week.	Catastrophic - high number of deaths/injuries possible. More than 50% of property in affected area damaged or destroyed. Complete shutdown of critical facilities for 30 days or more.

Santa Cruz Port District Risk Matrix

		IMPACT			
		Minor	Limited	Critical	Catastrophic
PROBABILITY	Highly Likely	Medium	 FLOOD  COASTAL EROSION Extreme	Extreme	Extreme
	Likely	Medium	 DROUGHT  SEA LEVEL RISE  EARTHQUAKE Extreme	Extreme	Extreme
	Possible	Low	Medium	 TSUNAMI High	High
	Unlikely	Low	Low	Medium	Medium



Figure 8-7: SCPD Risk Assessment Matrix

Table 8-3: SCPD Hazards Prioritization Summary

Hazard	Priority	Explanation
Wildfire	-	Not a priority due to no exposure
Flood	High	Profiled in Volume 1, Section 3.2.2, and Section 8.5.2.1 in this annex (not including Levee Failure due to no exposure)
Earthquake	High	Profiled in Volume 1, Section 3.2.3, and Section 8.5.2.2 in this annex, including Liquefaction
Severe Weather	-	Not a priority due to low probability and impact, but discussed in the context of Coastal Storms in Section 8.5.2.3
Coastal Hazards	Extreme	Profiled in Volume 1, Section 3.2.5, and Section 8.5.2.3 in this annex, including Coastal Erosion, Coastal Storms, Wave Run-Up and Surge, and Tsunami
Slope Failure	-	Not a priority due to low probability and impact, but discussed in the context of Coastal Erosion in Section 8.5.2.3
Dam Failure	-	Not a priority due to no exposure
Drought	High	Profiled in Volume 1, Section 3.2.8, and Section 8.5.2.4 in this annex
Extreme Heat	-	Not a priority due to low probability and impact
Climate Change	High	Profiled in Volume 1, Section 3.2.10, and Section 8.5.2.5 in this annex, including Sea-Level Rise

8.5.2 Vulnerability to Specific Hazards

Assessing vulnerabilities exposes the unique characteristics of individual hazards and begins the process of narrowing down which areas within SCPD are vulnerable to specific hazard events. The vulnerability assessment considered unique local knowledge of hazards and impacts and a GIS overlaying method for examining such vulnerabilities in more depth. Using these methods, the district's planning group estimated vulnerable populations, properties, and assets, and potential losses, primarily to earthquake and wildfire. In addition, the exposure of district assets to drought, geological, and flood hazards were also considered.

Many of the hazard profiles include a snapshot map and damage estimation tables that illustrate the district's vulnerabilities to those specific hazards. These maps assisted the planning group in understanding the hazard exposure of populations, parcels, and critical facilities and infrastructure. Each snapshot map contains an exposure summary that displays the percentage of the population, the improvement and content value of parcels, and the amount of critical infrastructure that is exposed. For hazards without geospatial extents, such as drought and extreme weather, narratives are provided instead of exposure maps and tables.

Based on the hazard prioritization exercise, vulnerability assessment for the Port District focuses on five hazards, some of which encompass subhazards such as Liquefaction, Coastal Erosion, and Sea Level Rise.



Flood
SECTION 8.5.2.1



Earthquake
SECTION 8.5.2.2



Coastal Hazards
SECTION 8.5.2.3



Drought
SECTION 8.5.2.4



Climate Change
SECTION 8.5.2.5



8.5.2.1 Flood Hazard

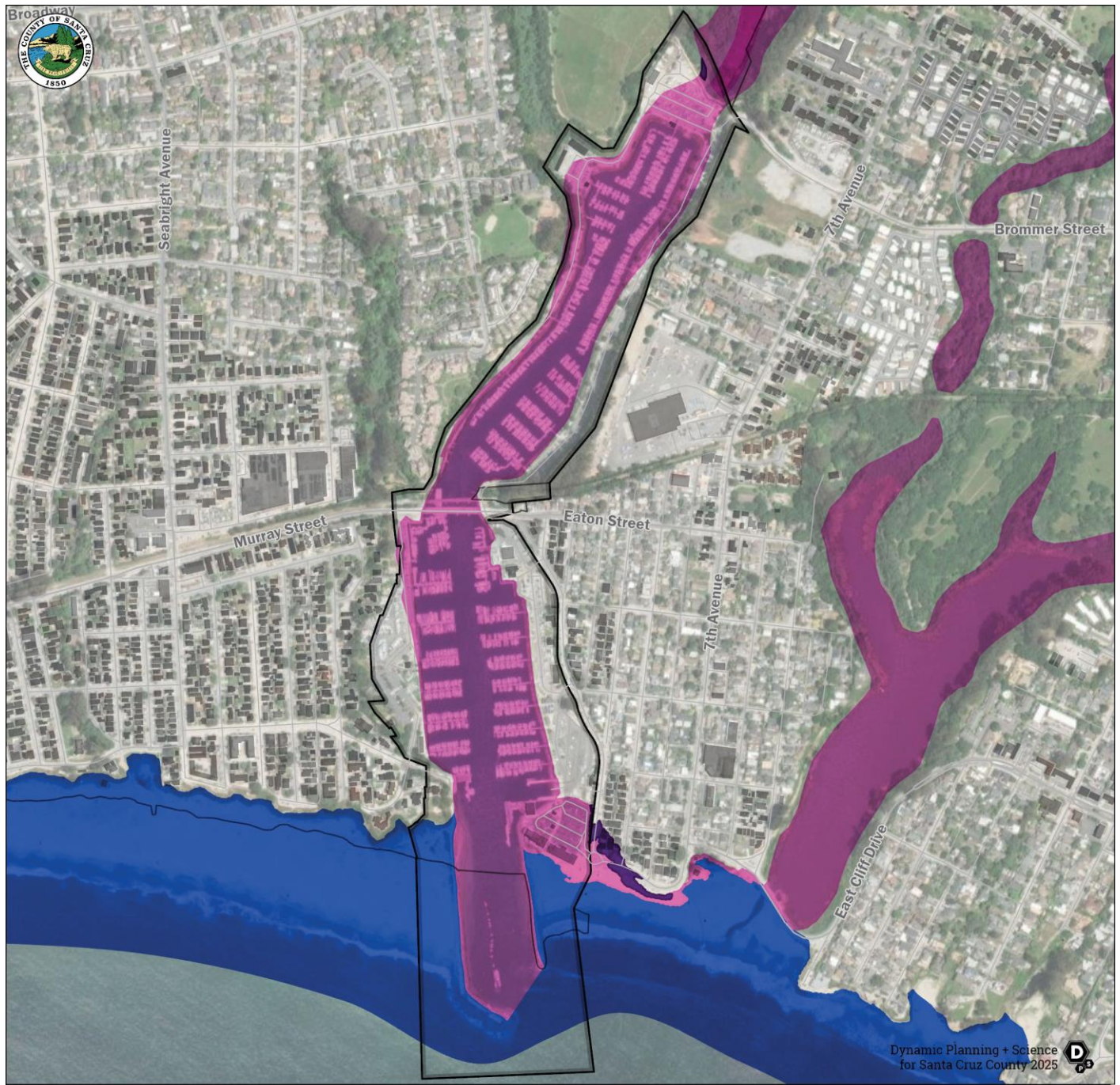
SCPD is vulnerable to tributary flooding driven by upstream stormwater runoff, flash flood events, and inflow from local drainage systems that discharge into the harbor or nearby beach areas. While much of the harbor's flood planning has focused on tidal and coastal hazards, several inland sources contribute to localized flooding risks, particularly during intense rain events or back-to-back winter storms.

Arana Gulch and other small tributaries draining the surrounding urban and hillside areas converge near the southern end of the harbor. These watercourses can quickly become overwhelmed during high-intensity rainfall, leading to overbank flows and increased runoff into harbor-adjacent low-lying areas. District staff noted that sediment deposits and limited drainage capacity around the 7th Avenue corridor can exacerbate flooding near parking lots, maintenance areas, and pedestrian pathways. Blocked storm drains and undersized culverts increase the risk of ponding, erosion, and damage to hardscape infrastructure.

Inundation from tributary sources poses both operational and safety challenges for SCPD. Access roads and staging areas may become impassable, delaying emergency response and disrupting harbor operations. Liveaboard residents and dockside workers are especially impacted by sudden flooding, which may arrive with little warning depending on watershed conditions upstream.

While tributary flooding does not typically affect deepwater berthing areas, it threatens electrical systems, dry storage zones, and landside utilities. These areas require periodic maintenance and targeted drainage improvements to maintain safe and functional operations. Stormwater system upgrades, sediment control measures, and coordination with upstream land use authorities will be key to reducing these localized but impactful flood risks.

As a special district and not a municipality, SCPD does not participate in the National Flood Insurance Program (NFIP); however, the SCPD complies with all minimum floodplain development standards and environmental review requirements established by the county and the City of Santa Cruz where its facilities are located.



FEMA Flood Risk Exposure Santa Cruz Port District

*Data sources: FEMA.



Figure 8-8 SCPD FEMA Flood Hazard Zones Map

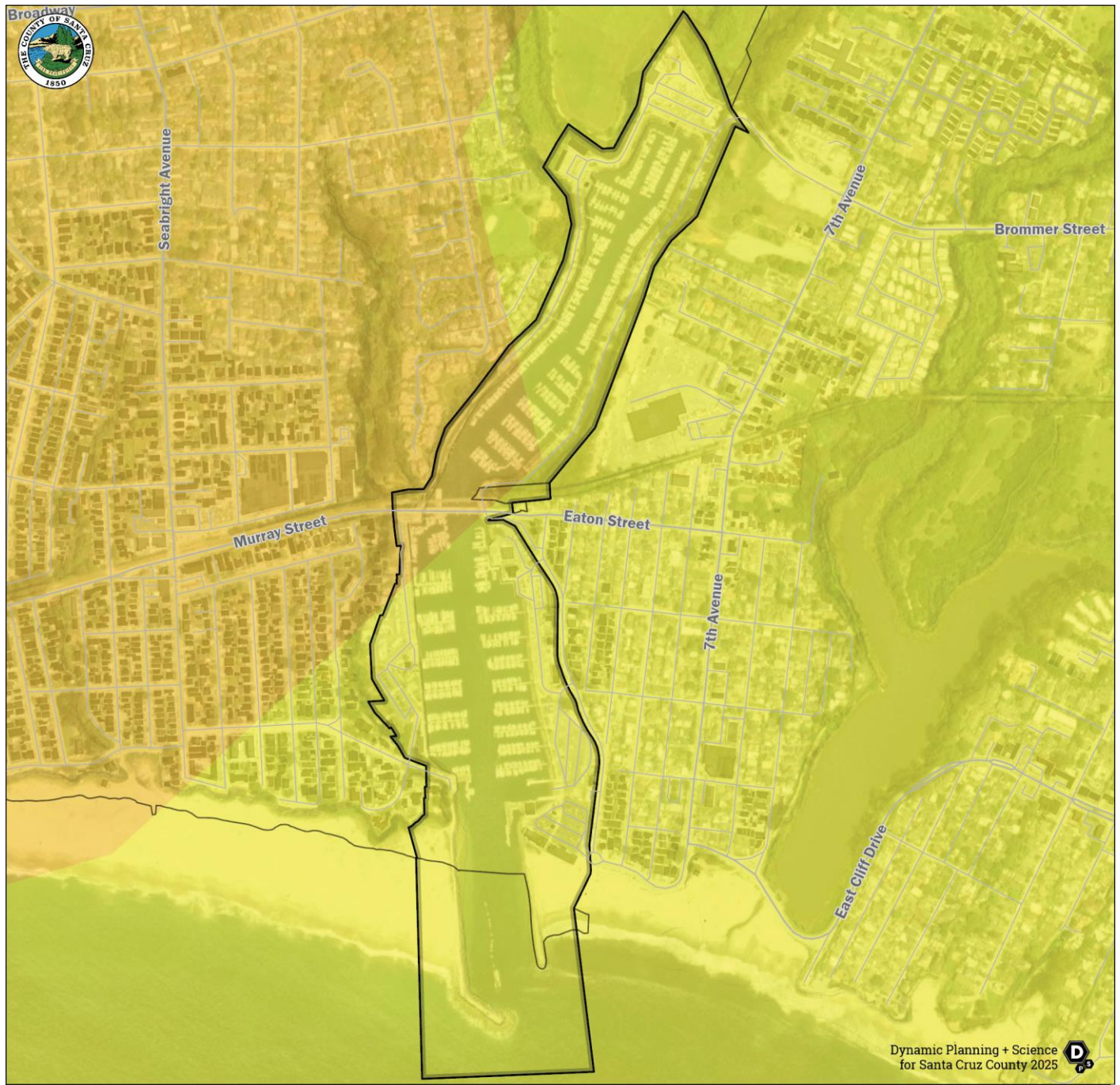
8.5.2.2 Earthquake Hazard

SCPD is situated in a seismically active region influenced by proximity to the San Andreas Fault system and other associated fault structures in the Santa Cruz Mountains. This location presents notable earthquake risks, especially to vulnerable waterfront infrastructure and the harbor's liveaboard and working populations.

According to the scenario developed by the U.S. Geological Survey for a magnitude 7.1 earthquake on the northern San Andreas Fault, the entire SCPD is expected to experience "very strong" to "severe" ground shaking, corresponding to Modified Mercalli Intensity (MMI) VII–VIII (Figure 8-9). While the number of permanent residents within the mapped district boundary is limited, the concentration of maritime operations, liveaboard residents, and visiting populations creates significant exposure to structural and lifeline impacts. Most of the district's assets serve tourists as well as the harbor residents; thus, a significant earthquake would likely cause severe economic damages in addition to actual physical impacts. The loss of functionality of harbor services, like parking, boat launches, restrooms, and commercial facilities, would be detrimental to harbor businesses that rely on tourism, including restaurants, kayak rentals, boat charters, and the district's RV park.

In addition to shaking, the area is also subject to very high liquefaction susceptibility, as shown in Figure 8-10. The harbor was dredged from the Wood's Lagoon, where Arana Creek empties into the Monterey Bay, and is constructed on fill and soft alluvial soils, which are prone to settlement or loss of bearing capacity during seismic events. This geologic condition amplifies the risk of structural damage to all of the Port District's facilities and infrastructure during a significant earthquake event, including docks, pilings, utilities, the maintenance shop, and multiple commercial facilities including tourist-serving uses like the district's RV park.

Without appropriate retrofitting or relocation, SCPD's assets are highly vulnerable to both ground shaking and severe liquefaction, and the district's entire operation and many local businesses that depend upon it are at risk.



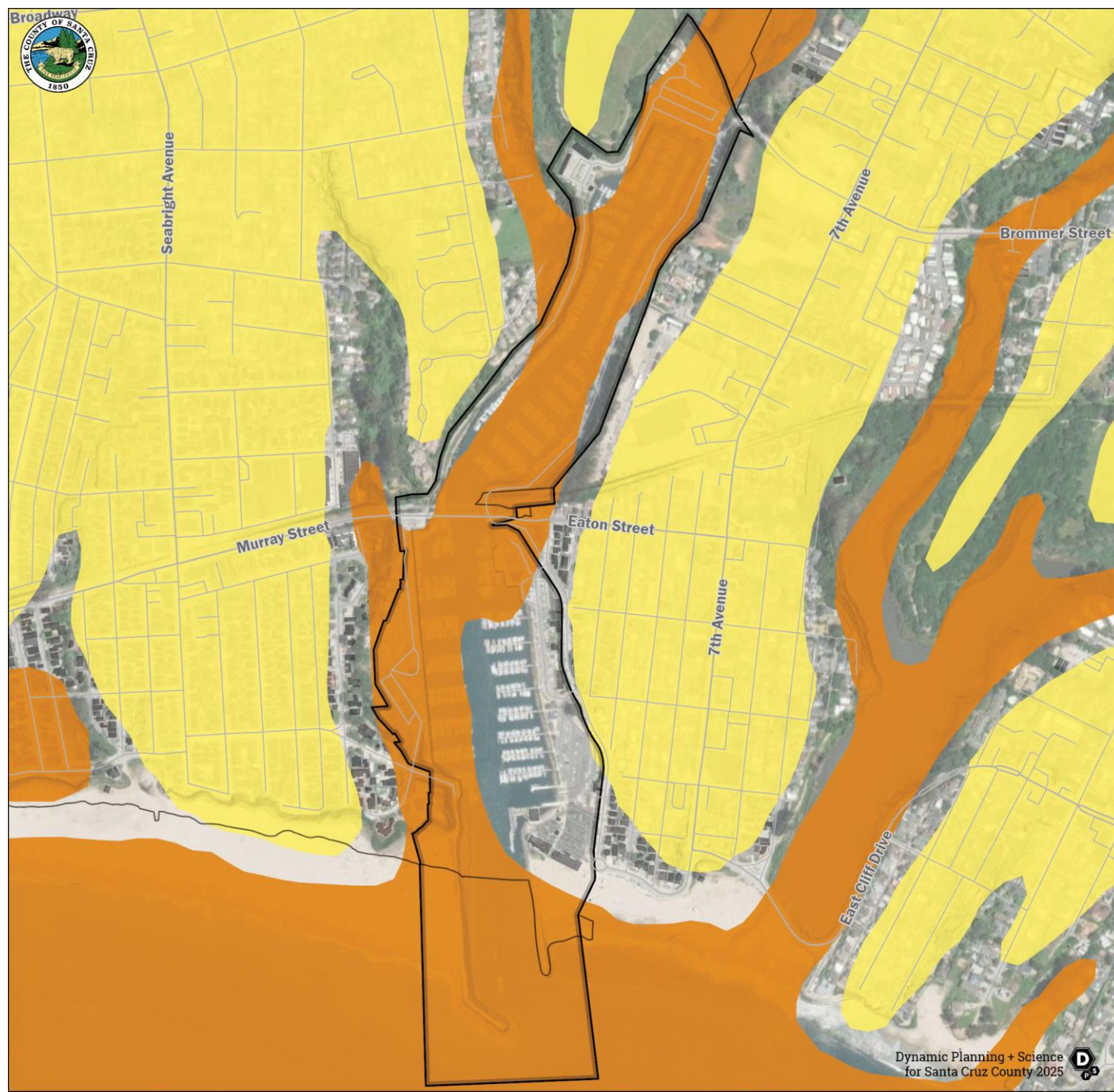
N San Andreas - Santa Cruz Mtn Earthquake Scenario M7.1

Santa Cruz Port District

*Data sources: USGS.



Figure 8-9: SCPD M7.1 San Andreas Earthquake Scenario Shaking Intensity Map



Areas with Potential for Liquefaction

Santa Cruz Port District

*Data sources: County, W.R. Dupre 1975.



Figure 8-10: SCPD Areas with Potential for Liquefaction Map



8.5.2.3 Coastal Hazards

SCPD faces a high degree of exposure to coastal hazards, including shoreline erosion, tsunami inundation, and wave run-up and surge during coastal storm events. These hazards are interrelated and intensified by the harbor's location at the mouth of Arana Gulch where it opens into Monterey Bay and by climate change and sea level rise, as discussed in Section 8.5.2.5.

Coastal Erosion

Coastal Erosion is actively degrading the structural integrity and long-term resilience of SCPD infrastructure. Shoreline retreat, scouring, and sediment instability are increasing exposure for harbor staff, liveaboard residents, and users throughout the marina. Seawalls, dock foundations, and adjacent access roads—particularly those located along steep or unconsolidated slopes—are increasingly at risk due to ongoing erosion and the cumulative effects of wave action and sea level rise.

Maintenance costs associated with erosion are also rising. SCPD continues to manage sediment accumulation, perform revetment repairs, and stabilize shoreline access routes where erosion and land loss have already begun to affect day-to-day operations. Locations such as the West Jetty remain particularly vulnerable due to their exposure to open wave energy and dynamic sediment transport processes. These forces reduce the effectiveness of existing coastal protections, especially during major storm events, requiring continual adaptation and infrastructure investment.

The Landslide Risk Exposure Map (Figure 8-11) provides an important proxy for identifying areas with elevated erosion potential. Slopes categorized as moderate or high risk for failure—particularly those flanking the inner harbor and beachside access areas—may be subject to future coastal erosion as wave action, storm runoff, and sea level rise intensify. These geologic conditions represent a combined hazard environment in which coastal erosion and slope failure intersect, compounding infrastructure vulnerability along the bluff-backed segments of the harbor.

Tsunami Hazards

Tsunami Hazards present a serious and well-documented threat to the Santa Cruz Port District. The entire harbor lies within the mapped tsunami runup zone as depicted in the Tsunami Runup Area Exposure Map (Figure 8-12). This area is susceptible to both near-field tsunami events, which may be generated by local offshore fault activity and arrive with little warning, and far-field events, such as those originating from across the Pacific Ocean.

Vulnerabilities include the potential for direct impacts to liveaboard residents and harbor visitors, who may face mobility limitations or lack sufficient awareness of evacuation protocols. These risks are heightened during night hours or inclement weather, when egress from the marina may be slower or more difficult. Communication challenges may also hinder effective evacuation, especially for transient harbor users unfamiliar with local emergency signage or alert systems.

Infrastructure throughout the harbor is at risk of catastrophic damage during a significant tsunami event. Floating docks, gangways, utility connections, and vessels may be dislodged, destroyed, or swept inland. A major event could leave the port inoperable for an extended period, disrupting commercial and recreational access, damaging critical facilities, and interfering with recovery operations.

The topographic configuration and limited vertical evacuation options within the port compound this risk. Proximity to open ocean waters and the lack of high ground within the district increase long-term vulnerability. The mapped tsunami runup zone highlights this concern, showing that much of the harbor's core facilities, access roads, and upland parking areas lie within the projected inundation footprint.

Given SCPD's exposure to both natural and operational impacts from a tsunami, continued investment in public awareness, signage, drills, and structural adaptation measures is essential. The tsunami hazard poses an acute risk to life safety, economic continuity, and environmental security within the harbor environment.

Coastal Storms, Wave Run-Up & Surge

Wave run-up and storm surge during winter storms are becoming more frequent and intense, driven by atmospheric river events and shifting coastal storm patterns. Sudden overtopping or dock failure during these events places liveaboard residents and harbor personnel at elevated risk. High-energy wave action can damage gangways, vessels, and shoreline infrastructure, resulting in hazardous conditions and service disruptions across the harbor.

Together, these coastal hazards underscore the importance of SCPD's ongoing investments in shoreline protection, emergency response planning, harbor maintenance, and community outreach. These risks will continue to increase as climate change accelerates sea level rise and amplifies extreme weather events. Targeted mitigation actions and adaptation strategies will be critical to preserving safe, functional, and resilient harbor operations.

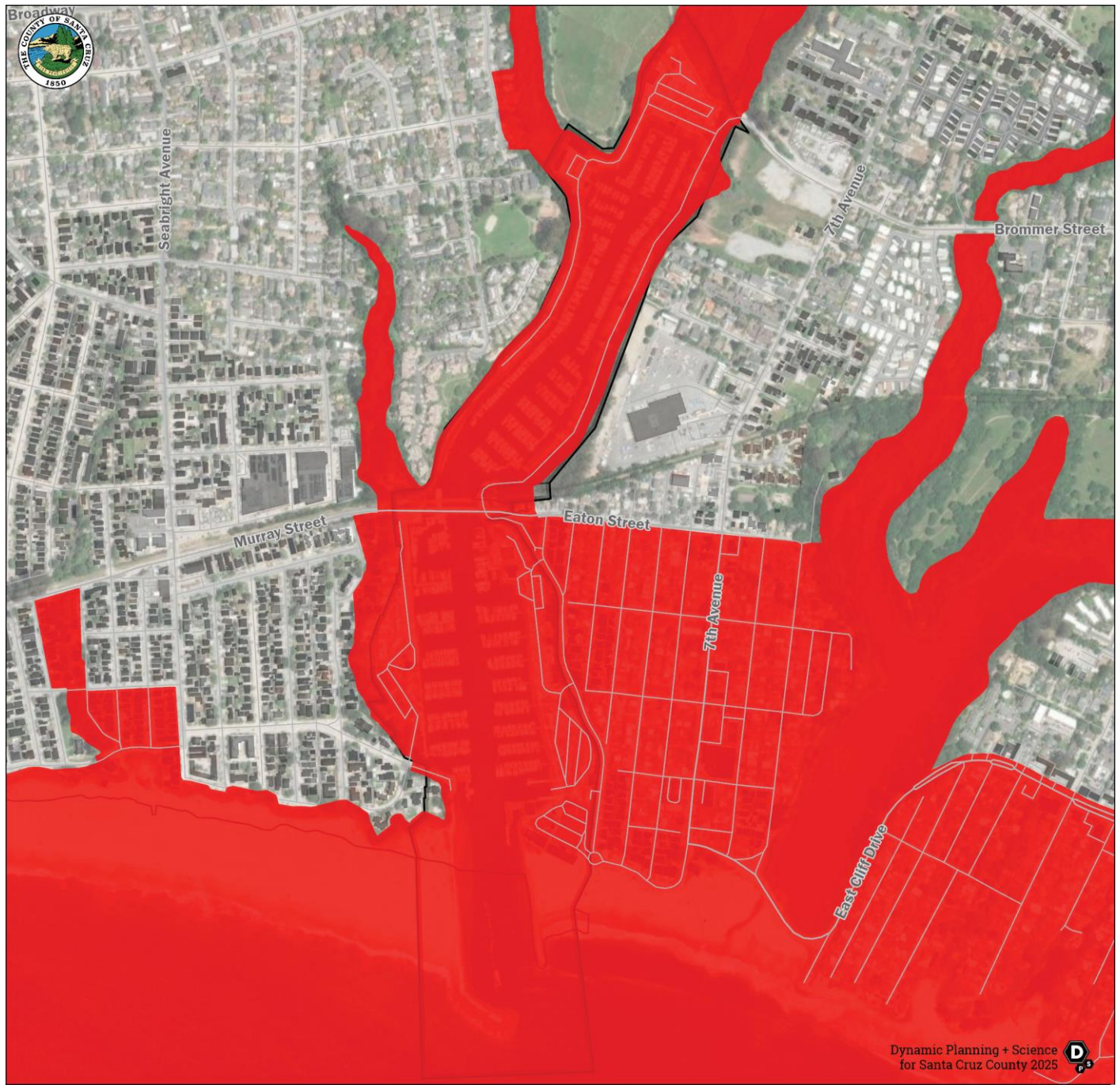


Landslide Risk Exposure Santa Cruz Port District

*Data sources: CGS, DPS.



Figure 8-11: SCPD Slope Failure Susceptibility Map



Tsunami Runup Area Exposure Santa Cruz Port District

*Data sources: County.

Tsunami Run-up

Figure 8-12: SCPD Tsunami Run-Up Areas Map



8.5.2.4 Drought Hazard

The National Drought Monitor provides drought data and maps nationally and on a localized, watershed scale. The National Drought Monitor is the product of 11 agencies, including the NDMC, NOAA and USDA, and is available at <http://droughtmonitor.unl.edu/>. The National Drought Monitor categorizes the level of drought from D0 through D4, with D4 being the highest “exceptional drought.” Table 8-4 depicts drought classifications and impacts from the level of drought occurrence in California, while Figure 8-13 shows a time series of the level of drought in Santa Cruz County from 2000 to 2025 according to the National Drought Monitor.

Drought is an increasing concern for SCPD due to its impacts on harbor operations, marine ecosystems, and the economic stability of fishing-dependent businesses. As regional droughts become more frequent and severe, they present both environmental and economic challenges to the harbor community.

Fishing workers and small commercial operators are among the most directly affected. Drought-driven ecosystem stress can reduce fish populations and limit commercial catch, resulting in income loss or economic displacement for those who rely on marine resources. These disruptions ripple through the harbor economy, especially in a port that supports commercial and recreational fishing activity.

Reduced freshwater outflows during prolonged drought degrade water quality within the harbor and alter the balance of salinity and nutrients needed to sustain healthy ecosystems. This can affect key species and habitats, further reducing the viability of fisheries. In some cases, fishery closures or the decline of specific species may force the suspension of commercial and recreational fishing activities.

Looking ahead, the risk to marine-dependent operations is expected to increase. Ongoing climate projections suggest that drought conditions along the central coast will intensify over time. These shifts may alter marine habitat structure, ecosystem function, and long-term access to viable fish stocks. With drought now considered a recurring hazard rather than a rare event, the port and its users will need to prepare for long-term hydrologic stress and its economic consequences.

Addressing drought in the SCPD context will require both ecological monitoring and coordination with state agencies on fisheries management. It will also be important to support affected harbor workers through resilience planning and economic recovery initiatives.



Table 8-4: Drought Classifications and Impacts

Category	Description	Possible Impacts
D0	Abnormally Dry	- Soil is dry; irrigation delivery begins early - Dryland crop germination is stunted - Active fire season begins - Winter resort visitation is low; snowpack is minimal
D1	Moderate Drought	- Dryland pasture growth is stunted; producers give supplemental feed to cattle - Landscaping and gardens need irrigation earlier; wildlife patterns begin to change - Stock ponds and creeks are lower than usual
D2	Severe Drought	- Producers increase water efficiency methods and drought-resistant crops - Grazing land inadequate - Fire season is longer, with high burn intensity, dry fuels, and large fire spatial extent; more fire crews on staff - Lake- and river-based tourism declines; boat ramps close - Trees are stressed; plants increase reproductive mechanisms; wildlife diseases increase - Water temperatures increase; programs to divert water to protect fish begin - River flows decrease; reservoir levels are low and banks are exposed
D3	Extreme Drought	- Federal water not adequate to meet irrigation contracts; extracting supplemental groundwater is expensive - Fire season lasts year-round; fires occur in typically wet parts of the state; burn bans are implemented - Ski and rafting business is low; mountain communities suffer - Low water levels impede fish migration and cause lower survival rates - Wildlife encroach on developed areas; little native food and water is available for bears, which hibernate less - Water sanitation is a concern; reservoir levels drop significantly; surface water is nearly dry, flows are very low; water theft occurs - Livestock need supplemental feed, cattle and horses are sold; little pasture remains - Well and aquifer levels decrease; homeowners drill new wells



Category	Description	Possible Impacts
D4	Exceptional Drought	- Fire season is very costly; number of fires and areas burned are extensive - Many recreational activities are affected - Fields are left fallow; orchards are removed; vegetable yields are low; honey harvest is small; agricultural unemployment is high, food aid is needed - Fish rescue and relocation begins; pine beetle infestation occurs; forest mortality is high; wetlands dry up; wildlife death is widespread; algae blooms appear - Poor air quality affects health; greenhouse gas emissions increase as hydropower production decreases; West Nile outbreaks rise - Water shortages are widespread; surface water is depleted; federal irrigation water deliveries are curtailed; water prices are extremely high; wells are dry, more and deeper wells are drilled; water quality is poor

Source: Adapted from U.S. Drought Monitor Drought Classifications and Impacts

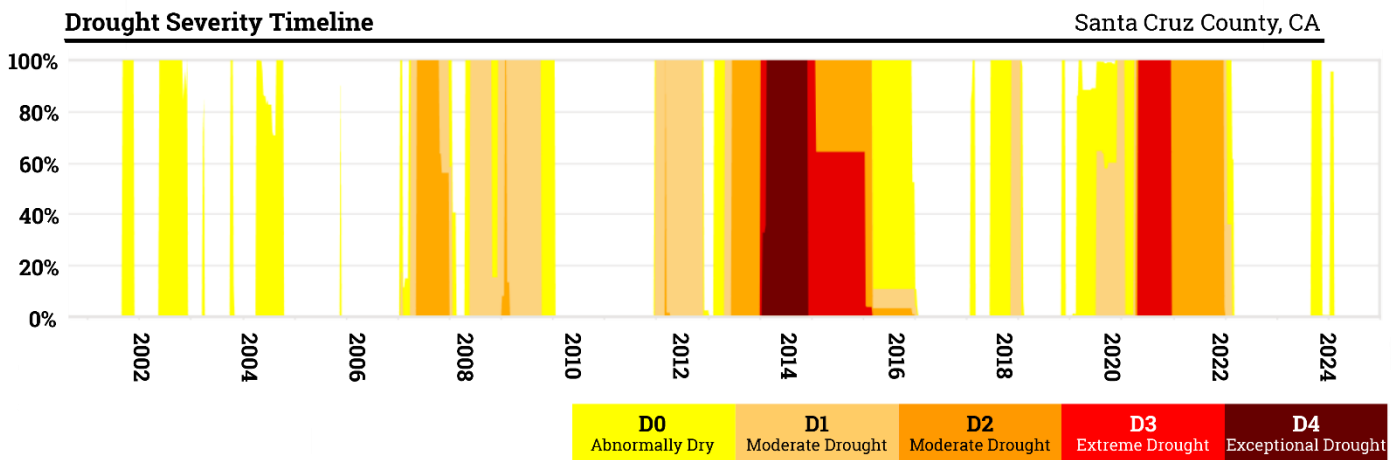


Figure 8-13: Drought Severity Timeline 2000-2024

8.5.2.5 Climate Change Hazard

Average annual temperatures across most of California have already increased by more than 1°F, with some areas experiencing rises of over 2°F when comparing the 1901–1960 average to that of 1986–2016. Daily maximum temperatures—a key indicator of extreme heat—are projected to increase by 4.4°F to 5.8°F by 2050 and by 5.6°F to 8.8°F by 2100. Heat waves that impact public health, known as heat-health events, are also expected to intensify across the state. By 2050, these events are projected to last up to two weeks longer in the Central Valley and occur four to ten times more often in the Northern Sierra region (California Natural Resources Agency, 2022).

California is already experiencing significant impacts from climate change, including prolonged drought, a lengthened wildfire season, increased coastal flooding and erosion, and widespread tree mortality. The state has observed rising average temperatures, more extreme heat days, fewer cold nights, a longer growing season, and shifts in the water cycle, with less winter precipitation falling as snow. In addition, summertime fog has declined by approximately 33%, and both snowmelt and rainwater runoff are occurring earlier in the year (Cal OES, 2018).

Long-term trends indicate a 12% to 20% decline in fog across California from 1900 through projections to 2070. Climate experts suggest that warming temperatures reduce the ability of air masses to cool enough to produce fog, which plays a critical role in supporting California's ecosystems (Grantham, Theodore; University of California, Berkeley, 2018).

Climate change is already influencing operations and hazard exposure within the Santa Cruz Port District. The Port is directly affected by changes in coastal conditions, including rising sea levels, stronger storm surge, accelerated erosion, and increased frequency of high tide flooding. These trends pose risks to dock infrastructure, access roads, shoreline revetments, and public safety operations within the harbor.

The Port is particularly vulnerable to compounding climate impacts such as back-to-back atmospheric river events and higher storm-driven wave action, which can increase sedimentation at the harbor entrance, limit safe navigation, and threaten the structural integrity of coastal defenses. Additionally, changing fog patterns, warmer ocean temperatures, and ecological shifts may affect marine operations, fisheries, and harbor-dependent businesses over time.

To address these challenges, this MJHMP integrates climate change as a cross-cutting consideration for each identified hazard. Each hazard chapter includes a discussion of projected climate influences, highlighting how increased variability, intensity, and exposure may alter the severity or frequency of future impacts on Port infrastructure, harbor operations, and coastal users.

Sea Level Rise

Sea level rise presents a growing hazard to SCPD, with chronic and long-term effects on harbor infrastructure, operations, and coastal resilience. As shown in the Sea Level Rise Exposure Map (Figure 8-14), large portions of the harbor are vulnerable to inundation. This includes low-lying areas around the entrance

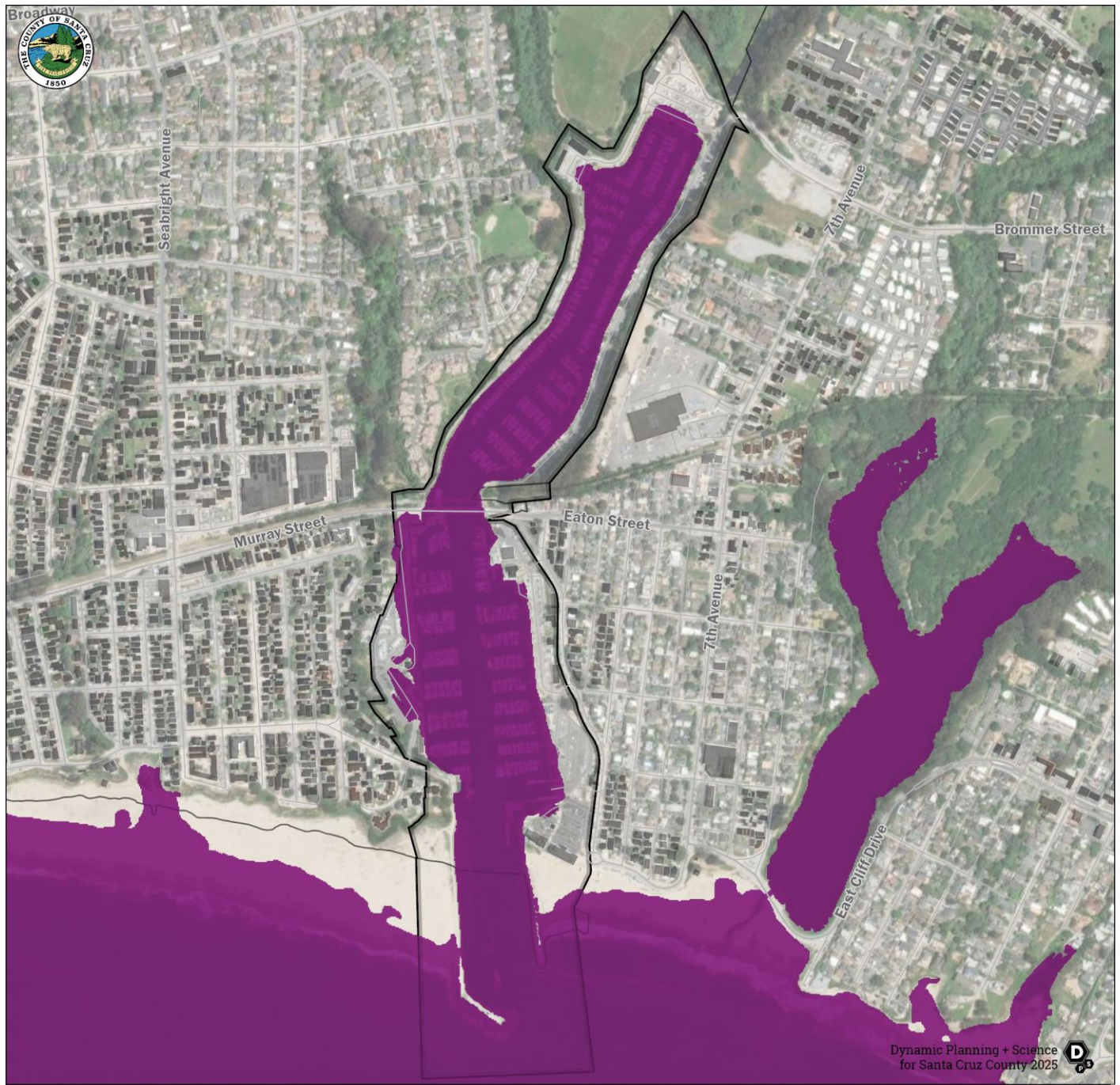


channel, docks, and nearby floodplains. These areas now experience more frequent flooding during high tides and minor storm surges.

Ongoing exposure to elevated water levels is already damaging port infrastructure. Dock structures and electrical systems are affected the most. These systems were not designed to withstand regular saltwater contact. As a result, infrastructure is degrading more quickly, which lowers reliability and increases maintenance demands.

Sea level rise also increases the impact of other hazards. By raising the baseline water level, even modest storms and high tides can trigger wave run-up and surge that reaches farther inland. This makes storm impacts stronger and causes more erosion along the edges of the harbor. Areas shown on the Landslide Risk Exposure Map with moderate to high slope risk may become less stable as water levels rise.

As protective barriers and revetments face more stress, damage to port infrastructure is likely to increase. The West Jetty and nearby slopes are especially exposed. Sea level rise is not only a direct hazard but also a factor that makes other coastal threats worse. Planning and reinforcing infrastructure will be necessary to protect harbor operations and nearby communities.



Sea Level Rise Exposure Santa Cruz Port District

*Data sources: COSMOS v3.1.

Sea Level Rise

Figure 8-14 SCPD Sea Level Rise Inundation Areas Map



8.5.3 Planning for Hazards & Growth

SCPD incorporates hazard awareness into long-term planning and infrastructure decisions to support resilience and sustainability. The district's planning documents provide a foundation for addressing future climate risks, emergency response, and resource management. These efforts focus on maintaining reliable operations under changing conditions.

Although SCPD does not manage water systems like utility districts, it takes a proactive approach to maintaining infrastructure that is essential to public safety and harbor operations. Capital improvement projects focus on upgrading aging facilities, strengthening critical systems, and reducing vulnerabilities. These upgrades improve performance during both daily operations and emergencies such as earthquakes, storms, and coastal flooding.

Future development in and around the port will continue to rely on hazard-informed strategies. As climate impacts increase, it will be important to align growth, infrastructure, and public safety planning with known risks. SCPD's investments in asset maintenance, coastal protection, and emergency readiness will help protect the harbor community and ensure long-term service continuity.

8.5.3.1 Development-Related Hazard Considerations

Development and redevelopment within the Santa Cruz Port District must address the full range of hazards present in this coastal setting. This includes risks from flooding, coastal erosion, tsunami run-up, and seismic activity. The harbor's location in the coastal zone also means that all development must comply with the California Coastal Act and obtain approval from the California Coastal Commission (CCC), which plays a central role in evaluating hazard exposure and resilience.

The CCC requires that projects in the coastal zone avoid or minimize exposure to known hazards, especially in areas with high risk from sea level rise or erosion. Proposals must consider long-term site safety, public access, and environmental protection. This means that any new construction or upgrades near the shoreline must be supported by hazard assessments and engineered solutions that reduce risk. The CCC also emphasizes the use of nature-based strategies where feasible, such as dune restoration or managed retreat.

Most port infrastructure, including docks, roadways, parking, and utilities, is located within mapped hazard areas. These include tsunami inundation zones, flood-prone lands, and steep slopes with moderate to high landslide risk. As shown in district hazard maps, many of these areas are already under stress from changing sea conditions. Development in these zones could intensify exposure unless proper site design and mitigation measures are used.

Changes in land use upstream also affect port conditions. Increased runoff from impervious surfaces can worsen tributary flooding, alter sediment loads, and reduce water quality. These effects place added stress on port facilities and increase maintenance costs. Sea level rise compounds the issue by pushing high tides further inland and increasing the extent of both flooding and erosion.

SCPD must continue integrating hazard data into site planning, design reviews, and permitting. Development proposals in sensitive areas should include flood protection, emergency access, and infrastructure resilience features. Coordination with the CCC, County of Santa Cruz, and other regulatory agencies is essential to ensure that projects align with both state coastal policy and local hazard mitigation goals.

8.5.4 Hazard Problem Statements

As part of the mitigation action identification process, the internal planning group for each jurisdiction identified areas of concern (aka problem statements) for their respective facilities based on the risk assessment and vulnerability analysis. Problem statements focused on the impact, victim, and the threat that the hazard could create in the jurisdiction, as described in Table 8-5. Identifying common issues and weaknesses through these problem statements assisted the planning group in understanding the realm of resources needed for mitigation.

The goal is to have at least one mitigation action for every problem statement. Projects or actions have been developed to mitigate each problem identified. See Table 8-7 for a full list of mitigation actions and corresponding problem statements that they address. Each problem statement is coded with a problem number for cross-referencing between Table 8-5 and Table 8-7.



Table 8-5: SCPD Problem Statements

Hazard	Sub-Hazard	Area of Concern	Problem IS	Description	Related Mitigation Actions
Climate Change		Threat	ps-CC-SPD-01	Swell and surge conditions are increasing in frequency and magnitude due to climate change and sea level rise, which is accelerating erosion of harbor embankments and contributing to the formation of sinkholes along the shoreline.	ma-CC-RCD-01
Coastal Hazards	Coastal Erosion	Victim	ps-CE-SPD-01	Long-term erosion may increase risks for harbor users and staff by exposing degraded shorelines and aging infrastructure.	ma-CE-SPD-01
Coastal Hazards	Coastal Erosion	Impact	ps-CE-SPD-02	Shoreline retreat and scouring threaten the structural integrity of seawalls, roadways, gangways and other marine infrastructure.	ma-CE-SPD-01
Coastal Hazards	Coastal Erosion	Impact	ps-CE-SPD-03	Maintenance costs for sediment management, revetment repair, and access stabilization are increasing due to erosion effects.	ma-AH-RCD-01
Coastal Hazards	Coastal Erosion	Threat	ps-CE-SPD-04	Wave energy and sediment dynamics are accelerating erosion along harbor embankments.	ma-CE-SPD-01
Coastal Hazards		Threat	ps-CH-SPD-01	Sea level rise and storm-driven wave activity are reducing the effectiveness of existing protective structures.	ma-CH-SCC-01
Coastal Hazards	Coastal Storm	Victim	ps-CS-SPD-01	Liveaboard residents, commercial operators, tenants, and Port District staff face heightened risk during sudden wave overtopping events or dock failures associated with major winter storms.	ma-AH-RCD-01
Coastal Hazards	Coastal Storm	Threat	ps-CS-SPD-02	Atmospheric river events and coastal storms are increasing in frequency and magnitude, intensifying wave energy impacts on harbor infrastructure and operations.	ma-AH-CPT-01
Drought		Victim	ps-DR-SPD-01	Fishing-dependent workers and small commercial operators may face reduced income or economic displacement due to reduced catch linked to drought-driven ecosystem stress and fishery closures.	ma-DR-SPD-01
Drought		Impact	ps-DR-SPD-02	Drought-related fishery closures or species decline may disrupt commercial and recreational harbor-based activities.	ma-DR-SPD-01



Hazard	Sub-Hazard	Area of Concern	Problem IS	Description	Related Mitigation Actions
Drought		Threat	ps-DR-SPD-03	Increasing frequency and duration of regional droughts are affecting aquatic systems and the economic viability of marine-dependent operations.	ma-DR-WTS-01
Drought		Threat	ps-DR-SPD-04	Climate projections show worsening hydrologic stress, altering marine habitat conditions along the central coast.	ma-DR-SPD-01
Earthquake		Victim	ps-EQ-SPD-01	Port District staff, tenants, and users may face injury risks from structural failures, falling debris, or dock collapse during seismic events.	ma-EQ-SPD-01
Earthquake		Victim	ps-EQ-SPD-02	Liveaboard residents and commercial operators may become stranded or injured due to dock separation or utility failure following an earthquake.	ma-EQ-SCW-03
Earthquake		Impact	ps-EQ-SPD-03	Critical port infrastructure?such as docks, pilings, and seawalls?is vulnerable to damage or collapse from strong ground shaking and liquefaction.	ma-EQ-SPD-01
Earthquake		Impact	ps-EQ-SPD-04	Electrical and communication systems may fail during seismic events, impairing response coordination and emergency operations.	ma-EQ-SPD-01
Earthquake		Threat	ps-EQ-SPD-05	The Port District is located in a region with known seismic faults and moderate to high liquefaction susceptibility.	ma-EQ-SPD-01
Earthquake		Threat	ps-EQ-SPD-06	Much of the harbor?s infrastructure is built on fill or sediment-prone areas that could amplify seismic shaking or settle unevenly.	ma-EQ-SPD-02
Flood		Impact	ps-FL-SPD-01	Sediment and debris from upstream flooding and the San Lorenzo River may shoal the harbor entrance, reducing navigability and requiring more extensive dredging efforts.	ma-FL-SPD-01
Flood		Threat	ps-FL-SPD-02	Major watershed events may overwhelm drainage systems and backwater into harbor infrastructure, particularly during concurrent coastal storms.	ma-FL-SPD-01
Flood		Victim	ps-FL-SPD-03	Crab fishing, sailing charter, and other commercial operators in the harbor can be economically impacted during the winter months due to shoaled conditions at the harbor entrance resulting from upstream flooding.	ma-FL-SPD-01



Hazard	Sub-Hazard	Area of Concern	Problem IS	Description	Related Mitigation Actions
Sea Level Rise		Impact	ps-SLR-SPD-01	Overtopping of seawalls and recurring inundation of docks and adjacent electrical systems from sea level rise may impact Port District assets and operations.	ma-SLR-SPD-01, ma-SLR-SPD-02
Sea Level Rise		Threat	ps-SLR-SPD-02	Long-term sea level rise is elevating baseline water levels, increasing exposure to even modest high tide and storm events.	ma-SLR-SCW-01, ma-SLR-SCW-02, ma-SLR-SPD-02
Coastal Hazards	Tsunami	Victim	ps-TS-SPD-01	Liveaboard residents, commercial operators, tenants, Port District staff, and users may be unable to evacuate the area in a timely manner due to limited awareness of evacuation routes, mobility constraints, and/or vehicular congestion of one-way access routes.	ma-TS-SPD-01, ma-TS-SPD-02
Coastal Hazards	Tsunami	Victim	ps-TS-SPD-02	Harbor users may not receive timely alerts or understand evacuation procedures due to limited awareness and desensitization to existing tsunami signage.	ma-TS-SPD-01
Coastal Hazards	Tsunami	Impact	ps-TS-SPD-03	A tsunami may cause severe damage to docks, gangways, and marine infrastructure, disrupting harbor operations and access.	ma-TS-SPD-02
Coastal Hazards	Tsunami	Impact	ps-TS-SPD-04	Harbor businesses and utility systems could be rendered inoperable for extended periods following tsunami inundation and debris damage.	ma-TS-SCC-01
Coastal Hazards	Tsunami	Threat	ps-TS-SPD-05	The Port District lies within the tsunami inundation zone and is exposed to both near-field and far-field tsunami events.	ma-TS-SPD-02
Coastal Hazards	Tsunami	Threat	ps-TS-SPD-06	Limited vertical evacuation options and the proximity to open ocean create elevated long-term exposure to tsunami risk.	ma-TS-SPD-01
Coastal Hazards	Wave Run-Up & Surge	Impact	ps-WV-SPD-01	High-energy wave run-up can damage docks, vessels, and gangways, causing hazardous conditions and service disruption.	ma-WV-SPD-02, ma-WV-SPD-01

8.5.4.1 Climate Change Impacts & Vulnerable Populations

The impacts of climate change in Santa Cruz County disproportionately burdens vulnerable populations, exacerbating challenges in water access, housing resilience, and emergency preparedness. Rising temperatures and extended droughts strain water supplies, with limited recharge mechanisms and insufficient mapping compounding the risks. These issues are particularly acute for low-income households, which often lack the resources to address water well failures, waterline repairs, or contingency planning. Many of these residents face financial barriers to implementing proactive mitigation measures or recovering from water shortages.

Disproportionately impacted communities within the Santa Cruz Port District are primarily concentrated among the harbor's liveaboard residents and the local maritime workforce. Unlike other jurisdictions with larger residential populations, the Port District serves a small but highly vulnerable group of individuals who live and work near coastal hazards. These include older adults, individuals with disabilities, and workers in harbor-dependent jobs who may face barriers during emergency events.

Port staff report that more than half of the liveaboard population is over the age of sixty-five, with approximately twenty percent experiencing mobility or functional limitations. Some liveaboards also face economic hardship, mental health challenges, or housing insecurity. Many rely on fixed incomes, do not own vehicles, and may not be easily reached through traditional emergency communications. Living on vessels within the marina increases their exposure to coastal storms, high surf, and potential tsunami impacts, especially when evacuation time is limited or access routes are compromised.

The Port's workforce includes individuals who perform critical operations such as vessel maintenance, yard services, fuel delivery, and support for commercial fishing and boating. These workers may not have secure employment protections or consistent income. Hazard events that damage docks, disrupt harbor access, or affect navigation can cause immediate income loss and job insecurity. Many workers rely on daily wages and may not have resources to withstand extended closures.

Although there is no formal data indicating the prevalence of language barriers among harbor users, equitable communication remains an important priority. All emergency information, including storm advisories and evacuation procedures, should be delivered clearly, understandable, and accessible to every member of the harbor community.

By acknowledging the unique risks faced by the Port District's liveaboard and working populations, the district can prioritize hazard mitigation strategies that address these vulnerabilities. These strategies support safety, resilience, and equitable recovery for all individuals who rely on the harbor for shelter, employment, and access to essential services.

The SCPD manages the Santa Cruz Harbor, which serves as a hub for commercial fishing, recreation, tourism, and marine operations. While the District's mission is focused on safe and efficient harbor operations rather than direct emergency response, its infrastructure and users are increasingly vulnerable to climate change-driven hazards. Harbor-based populations—including liveaboard residents, small commercial operators, and fishing-dependent workers—face heightened risk due to their reliance on



marine-dependent infrastructure, limited evacuation options, and economic sensitivity to disruption of harbor operations.

Coastal Erosion and Coastal Hazards: Shoreline retreat and erosion are accelerating due to stronger wave energy, storm activity, and sea level rise. These processes threaten seawalls, gangways, revetments, and harbor roadways, increasing maintenance costs for sediment management and structural repair. Harbor staff and users are at greater risk as degraded shorelines and aging infrastructure are exposed.

Sea Level Rise: Rising baseline water levels and more frequent high tide flooding are creating recurring inundation risks for docks, gangways, and adjacent electrical systems. Long-term sea level rise will reduce the effectiveness of existing seawalls and protective structures, compounding exposure to storm events and contributing to sinkhole formation along embankments.

Flooding and Watershed Events: Major storm events and upstream flooding from the San Lorenzo River contribute to shoaling at the harbor entrance, restricting navigability for commercial and recreational vessels. Sediment and debris accumulation require costly dredging and create economic impacts for fishing fleets, sailing charters, and harbor businesses. Drainage backwater during concurrent storm and tidal events further threatens harbor infrastructure.

Tsunamis: The Port District lies entirely within the tsunami inundation zone and faces exposure to both near-field and far-field tsunami events. Vulnerable populations include liveaboard residents, harbor staff, and tenants who may have limited awareness of evacuation routes, face mobility barriers, or encounter congestion along constrained access corridors. Tsunami inundation could severely damage docks, gangways, and utilities, rendering harbor operations and local businesses inoperable for extended periods.

Earthquakes and Liquefaction: Much of the harbor's infrastructure is built on fill and sediment-prone areas that could amplify seismic shaking or settle unevenly. Although not impacted by climate change, critical assets—including docks, seawalls, and utilities—are highly vulnerable to earthquake damage, with risks of dock collapse, utility disruption, and loss of access for liveaboard residents and harbor users.

Coastal Storms and Wave Run-Up: Atmospheric river events and winter storms increasingly subject the harbor to wave overtopping and high-energy run-up, damaging vessels, docks, and gangways. Liveaboard residents, commercial operators, and staff face direct safety risks during these events, particularly when storms cause dock failures or sudden flooding.

Drought and Marine Ecosystem Stress: Drought conditions indirectly affect the Port District by altering marine habitat conditions and triggering fishery closures. Fishing-dependent workers and small commercial operators may face reduced income or economic displacement when species decline or catch limits are imposed, compounding economic vulnerability in the working waterfront.

The Santa Cruz Port District's exposure to climate-driven hazards highlights the intersection of infrastructure resilience, marine-dependent livelihoods, and public safety. Addressing long-term risks from erosion, sea level rise, flooding, and seismic activity will require coordinated adaptation planning, infrastructure investments, and education and outreach to harbor users—particularly liveaboard residents and small operators—who are most vulnerable to disruptions.

8.6 Mitigation Strategy

The mitigation strategy is the guidebook to future hazard mitigation administration, capturing the key outcomes of the hazard mitigation planning process. The mitigation strategy is intended to reduce vulnerabilities outlined in the risk assessment (i.e., the problem statements) with a prescription of policies and physical projects. These mitigation actions should be compatible with existing planning mechanisms and should outline specific roles and resources for implementation success.

8.6.1 Aligning the Action Plan

This section connects the SCPD's mitigation actions with its existing capabilities and areas for growth. Capability assessments are a required element of hazard mitigation planning under the Disaster Mitigation Act of 2000 and FEMA's 2023 guidance, ensuring that actions are realistic, achievable, and aligned with available resources.

The section begins with a summary of the SCPD's capabilities across four areas: planning and regulatory, administrative and technical, fiscal, and education and outreach. This overview highlights the tools and strengths that the district already uses to reduce hazard risk. The section then provides a detailed analysis of each capability area, identifying both current practices and opportunities to expand resilience.

8.6.1.1 Capabilities & Opportunities Assessment

To develop a realistic and actionable mitigation strategy, it must account for existing jurisdictional capabilities and what future opportunities there are to enhance those capabilities for purposes of hazard mitigation. This section provides an assessment of SCPD's existing capabilities and future opportunities, including planning and regulatory, administrative and technical, fiscal, and public outreach and education capabilities. This assessment also identifies opportunities to integrate this MJHMP into future planning, policies, or programs to weave mitigation efforts into daily operations and address hazard problems holistically. Capabilities are categorized into four groups and include various mechanisms.

- **Planning and Regulatory Capabilities:** Existing long-range plans, emergency response plans, hazard-specific plans, land use policies, and building and development standards.
- **Administrative and Technical Capabilities:** Available expertise in emergency services, engineering, grant management, and community planning.
- **Fiscal Capabilities:** Budgetary capacity, taxing authority, grants, and other funding mechanisms that can support mitigation projects.
- **Outreach and Education Capabilities:** Existing programs for providing technical assistance, community education, public warnings, and stakeholder engagement.

The SCPD possesses foundational capabilities to support hazard mitigation, emergency preparedness, and infrastructure resilience. While some systems are mature and actively supporting operations, others remain



under development or would benefit from strategic investment and coordination. A full description of the process used to develop the capabilities assessment is provided in Volume 1, Section 2.3.3.

This capabilities and opportunities assessment for SCDP lists the various types of capabilities along with how they have been, currently are, or will in the future be integrated into hazard mitigation planning efforts. The three “HMP Integration” columns that identify the capability’s status and usage are color-coded with green, yellow, or orange shading to communicate the following:

- **Status:** If the capability is present at all and what level of use it has generally.
- **Current Mitigation Use:** If the capability is currently being used in mitigation efforts, specifically, and at what level.
- **Future Opportunity:** If there is a future opportunity to integrate the capability into mitigation efforts and at what level.

Planning & Regulatory Capabilities

As a special district with limited authority and not a municipality, SCPD does not maintain traditional planning or regulatory tools, such as hazard-specific ordinances or development standards. That said, the SCPD complies with all development standards and environmental review requirements for the State of California, including the California Environmental Quality Act (CEQA), and within the county and City of Santa Cruz where its facilities are located. These local regulatory environments are described in Volume 1 for Santa Cruz County and in the [City of Santa Cruz Municipal Code](#).

SCPD’s Capital Improvement Program (CIP) remains the district’s most robust tool for hazard mitigation and infrastructure resilience. The CIP funds essential upgrades such as dock replacements, seawall reinforcement, and maintenance of critical access areas. These projects directly reduce exposure to coastal hazards and improve safety for harbor users.

However, SCPD lacks other key hazard planning tools. Seismic safety programs, floodplain response plans, and stormwater management strategies are not formally established, leaving gaps in preparedness. While some emergency and resilience functions are supported through partnerships with City and County agencies, the Port remains vulnerable in areas outside its direct authority.

Regional planning efforts, such as the Arana Gulch Master Plan, provide a framework for sustainable land use and environmental management adjacent to the Port. Although this plan primarily guides habitat conservation and public access in the Arana Gulch corridor, its implementation reinforces broader goals of watershed health, coastal resilience, and multi-jurisdictional coordination. SCPD can benefit from aligning its own planning priorities with these regional strategies, especially where development or runoff influences tributary flooding, erosion, or sediment transport into the harbor.

Although SCPD does not manage water supply, climate-related issues like sea level rise, flooding, and drought all affect harbor infrastructure and operations. A formal Floodplain Response Plan is needed to address chronic transformer damage and dock inundation. Similarly, drought impacts on fisheries and marine businesses suggest a need for adaptation planning. Climate action planning remains in its early stages but is increasingly critical to sustaining long-term harbor operations.

Finally, SCPD has growing potential to expand hazard-related outreach. Current communication channels, including social media, newsletters, and signage, can be leveraged to share preparedness information and emergency updates with both residents and transient harbor users. These efforts support both public safety and community resilience.

Future integration of the MJHMP will occur through various processes and mechanisms outlined across multiple mitigation actions (Table 8-7). Key opportunities for future hazard mitigation integration with SCPD's existing planning mechanisms are to incorporate NOAA tidal benchmarks, Sea Level Rise Explorer, and Santa Cruz County coastal assessments into the district's monitoring program to inform adaptive triggers (ma-SLR-SPD-02) and to incorporate wave run-up, surge, and SLR scenario thresholds from the CAAP and SLRVA into SCPD's CIP design standards (ma-WV-SPD-02).

Administrative & Technical Capacity

The Port District maintains essential technical capabilities through in-house operational experience. While the District does not have in-house engineering staff, it relies on external engineering consultants to oversee capital projects and infrastructure maintenance. Daily operational needs are managed by Port staff with extensive experience in harbor systems and facility upkeep.

Emergency coordination is handled in partnership with the Santa Cruz County Office of Emergency Services (OR3), ensuring the Port remains connected to regional planning and response systems. The district has successfully pursued grant funding—particularly for infrastructure projects such as seawall replacement—and may benefit from expanding grant-writing capacity to support future resilience initiatives.

Geographic Information System (GIS) services are currently managed through outside partnerships, though building internal capacity may improve project planning and hazard analysis. Outreach and communications responsibilities are integrated into existing roles without dedicated personnel, presenting an opportunity for enhancement as the Port expands its public engagement and emergency preparedness efforts.

Warning Systems & Services

Emergency communications systems at the Port are basic but functional. There is a critical need to enhance coordination with the OR3 to improve alert and warning capabilities for both flood, tsunami and wave run up hazards. These threats pose direct risks to harbor infrastructure and the safety of liveaboard residents, visitors, and staff. Currently, no dedicated alerting systems exist for threats from tsunami despite known presence. Closer integration with OR3 would improve emergency notification protocols and help protect vulnerable populations and infrastructure.



Fiscal Capabilities

SCPD has a stable fiscal foundation with several revenue streams that support capital improvements and routine operations. Utilities fees collected from slip holders are a core funding mechanism. The CIP remains the primary tool for funding resilience projects. Other financial instruments—such as general obligation bonds, development fees, or voter-approved levies—are not fully implemented but could provide future support for mitigation if pursued.

Special tax bonds and withheld spending in hazard-prone areas are additional tools that remain untapped. Their development would require policy support and public engagement.

Education & Outreach Capabilities

Public education and communication channels are in place, though hazard-specific outreach is still evolving. The Port's social media presence is active and well-used, offering a strong foundation for future emergency communications.

There is also room to strengthen coordination with the City and County on hazard information, public safety events, and resource partnerships. Existing platforms such as newsletters and stakeholder meetings offer an opportunity to integrate preparedness messages. Additionally, collaboration with the Resource Conservation District could help SCPD explore nature-based solutions for erosion control and shoreline resilience.

The capabilities assessment is easily digestible and based on color coding to indicate which policies and plans are adequate, need improvement, or in which the hazard mitigation plan could be integrated. Included in the table is a legend that explains how the three questions are answered according to the color indicated: green, yellow, or orange. See Table 8-6 on the following pages.

CAPABILITY ASSESSMENT LEGEND HMP Integration

Status	Current Mitigation Use	Future Opportunity
Currently in use or present.	Used widely for mitigation.	Opportunity to expand and integrate.
(Sort of) Seldomly used or limited presence.	Limited use in mitigation planning.	Limited opportunity to expand and integrate.
(No) Not present or available.	Not used in mitigation planning.	No opportunity to expand or integrate.



Table 8-6: SCPD Capabilities Assessment

	HMP Integration			
Resource	Status	Current Mitigation Use	Future Opportunity	Notes / Additional Detail
Planning and Regulatory Capabilities				
Hazard Reduction Programs (Annually Conducted)				
Capital Improvements Program (CIP) or Plan				CIP includes infrastructure repair and maintenance, including seawall replacement, dock upgrades, etc.
Annual Fire Prevention Plan				No formal plan. Potential to coordinate with City fire services.
Seismic Safety Program (Non-structural)				No formal program.
Earthquake Modernization Plan (Building Safety)				No form plan. Structural safety guided by City/County codes.
Stormwater Management Program (Annual Inspections)				No current Stormwater Management Program (not under Port District's jurisdiction). A Stormwater Pollution Prevention Plan (SWPPP) is in place, with designated discharge points throughout the harbor, subject to applicable regulatory permits.
Hazard Plans and Programs				
Floodplain Response Plan				No formal plan. Assessment needed due to recurring flooding / overtopping associated with sea level rise, king tides, and similar events.
Community Wildfire Protection Plan (CWPP)	N/A	N/A	N/A	Not applicable to Port District.
Ground Water Management Planning / Plans	N/A	N/A	N/A	Not applicable to Port District.
Climate Action Plan				No formal plan (acknowledges climate impacts in strategy discussions).
Drought Mgmt/ Contingency Plan				No formal plan (acknowledges that drought impacts seasonal fisheries).
FireWise Communities within District	N/A	N/A	N/A	Not applicable to Port District.
Hazard-Related Public Outreach Program				Existing communications in place, with opportunity to expand to include hazard-related content.
Administrative and Technical				
Staff Capacity				
Emergency Manager				No dedicated full-time equivalent is assigned to serve in this role. Port Director and Harbormaster act as EM, in coordination with County OR3.
Civil Engineer				No dedicated full-time equivalent is assigned to serve in this role.



Resource	HMP Integration			Notes / Additional Detail
	Status	Current Mitigation Use	Future Opportunity	
Dedicated Public Outreach Personnel				No dedicated full-time equivalent is assigned to serve in this role. Port Director coordinates public outreach.
GIS Specialist and Capability				No dedicated full-time equivalent is assigned to serve in this role. Consultants and County GIS are utilized.
Grant Manager, Writer, or Specialist				No dedicated full-time equivalent is assigned to serve in this role. Port District staff have applied for and obtained smaller grants. Consultants are needed for larger opportunities.
Other				Port District staff manage daily operations and emergency maintenance.
Warning Systems/Services				
General				Basic communication systems exist. Potential to coordinate and improve emergency alerting.
Flood				Basic communication systems exist. Potential to coordinate and improve emergency alerting.
Wildfire	N/A	N/A	N/A	Not applicable to Port District.
Geological Hazards				Basic communication systems exist. Potential to coordinate and improve emergency alerting.
Fiscal Capabilities				
Financial Resources for Hazard Mitigation				
Levy for Specific Purposes with Voter Approval				Port District has authority to levy taxes with voter approval, though utilization of this option is unlikely.
Utilities Fees				Port Commission approves fee schedule for all service fees, including utility fees (currently being collected).
System Development Fee	N/A	N/A	N/A	Not under Port District purview.
General Obligation Bonds to Incur Debt				Potential to utilize for hazard funding.
Special Tax Bonds to Incur Debt				Port District has authority to levy taxes with voter approval, though utilization of this option is unlikely.
Withheld Spending in Hazard-Prone Areas				Not formalized; potential policy development.
Stormwater Service Fees	N/A	N/A	N/A	Not under Port District purview.
Capital Improvement Project Funding				Primary funding mechanism for resilience projects.
Education / Outreach Capabilities				
Education/Outreach Resources				
Website Dedicated to Hazard Topics				Website exists. Potential to improve mitigation and hazard-specific content.
Dedicated Social Media				Social media exists. Effective platform for public safety communications.



Resource	HMP Integration			Notes / Additional Detail
	Status	Current Mitigation Use	Future Opportunity	
Hazard Info. Avail. at Library/ Planning Desk				Opportunity to collaborate with City/County.
Annual Public Safety Events				No planned events. Potential to coordinate with stakeholder support.
Ability to Field Public Tech. Assistance Requests				Port District responds to and manages infrastructure concerns effectively.
Public Safety Newsletters or Printed Outreach				Newsletter exists. Potential to integrate hazard preparedness content.
Fire Safe Councils	N/A	N/A	N/A	Not applicable to Port District.
Resource Conservation Districts				Possible collaboration for erosion control and nature-based solutions.
Other				Port District staff manage daily operations and emergency maintenance.



8.6.2 Santa Cruz Port District Mitigation Action Plan

Mitigation actions were developed based upon the jurisdiction's priorities, risk assessment results, and mitigation alternatives. The mitigation action prioritization method used by all participating jurisdictions is described in Section 4 of Volume 1. Table 8-7 lists each priority mitigation action, responsible party, time frame, potential funding source, implementation steps, and resources need to implement based upon consensus among the SCPD's assessment team. All mitigation actions across jurisdictions are accessible through MAST (Mitigation Action Support Tool), providing comprehensive details including the mitigation goal, responsible party, timeline, potential funding sources, implementation steps, and required resources. As a dynamic document, hazard problem statements and mitigation activities will be regularly updated through MAST to reflect evolving needs and circumstances.

As a first-time participant in a hazard mitigation plan, SCPD did not have any existing mitigation actions from a prior plan to evaluate. Therefore, all mitigation actions identified

in this planning cycle are newly developed based on the district's updated risk assessment, local capabilities, and areas of concern identified during stakeholder engagement and interagency collaboration. These new actions were crafted to address the district's highest priority hazards, align with FEMA's hazard mitigation guidance, and reflect local infrastructure vulnerabilities and water resource challenges. The development of these mitigation strategies marks an important step in integrating resilience into the district's operations and long-term planning. All mitigation actions are documented in Volume 2, Table 8-7.

SCPD developed unique mitigation actions, tailored to their own unique priorities, vulnerabilities, and capabilities. Each action contains a level of detail that meets the regulatory requirements of FEMA and DMA 2000, including identifying the responsible party, time frame, potential funding source, implementation steps, and resources needed to implement. It is important to note that the SCPD is a small agency with a mostly horizontal structure. Therefore, there are no specific departments or divisions responsible for overseeing these mitigation actions; instead, responsibilities for actions will be shared across all positions in the district.

All actions are assigned a unique identification number, as illustrated in MAST and in Figure 8-15, using alphanumeric characters that denote specific attributes of the action, including the type of hazard being mitigated, facilitating easy reference and management. Table 8-7 lists each mitigation action for the district.

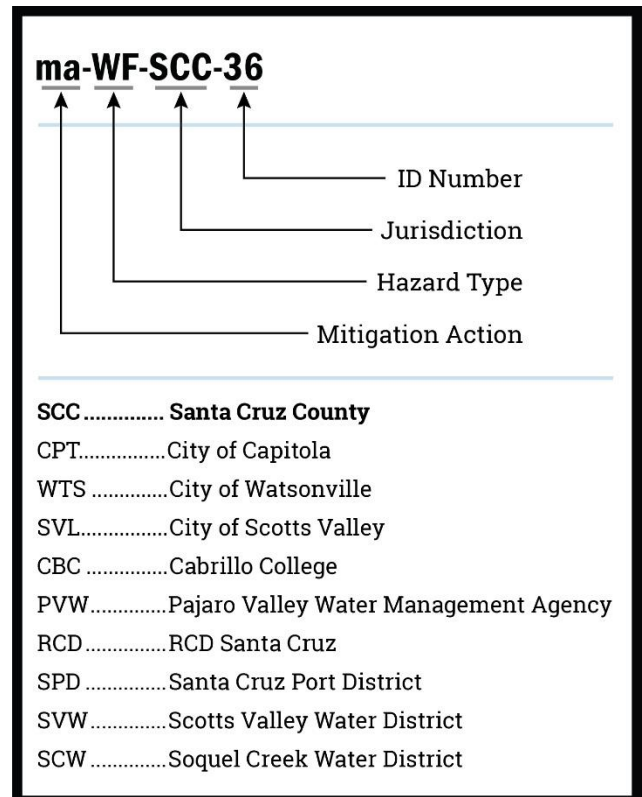


Figure 8-15: Mitigation Action Number Key

Table 8-7: SCPD Mitigation Action Plan

Hazard	Action ID	Action Title	Description	FEMA Mitigation Alternative	Timeline	Responsibility	Cost	Benefit	Internal Funding Source	External Funding Source	Priority (Based on Criteria)	Problems Addressed
Coastal Hazards (Coastal Erosion)	ma-CE-SPD-01	Shoreline Hardening Plan	Identify and strengthen at-risk segments of seawalls and other shoreline infrastructure within the Harbor using materials and methods resilient to long-term erosion and wave run-up.	SP, PRV	Long 5-10 Years	Port District	High	High	Agency Budget	HMGP, Prop 4, Measure Q	High	ps-CE-SPD-01, ps-CE-SPD-02, ps-CE-SPD-03, ps-CE-SPD-04, ps-CC-SPD-01, ps-CH-SPD-01, ps-CS-SPD-02
Coastal Hazards (All)	ma-CH-SPD-01	Coastal Hazard Event Response Protocols	For storm surge, erosion, and other coastal hazards, expand safety protocols, signage, and coordination to include liveaboards, tourists, and event visitors—integrating NWS Coastal Flood and TsunamiReady alerts.	ES, PE&A	Medium 3-5 Years	Port District + County, CalOES	Low	High	Agency Budget	HMGP, Prop 4, Measure Q	High	ps-CH-SCC-01, ps-CH-SPD-01, ps-CS-SPD-01
Drought	ma-DR-SPD-01	Internal Water Use & Infrastructure Audit	Evaluate Port facilities (e.g., wash stations, irrigation, utilities) for water use efficiency and identify infrastructure vulnerabilities under long-term drought and water rate increases.	SP, PRV	Long 5-10 Years	Port District	Low	Medium	Agency Budget	DWR, Measure Q	Medium	ps-DR-SCW-04, ps-DR-CBC-04, ps-DR-SPD-01, ps-DR-SPD-02, ps-DR-SPD-04, ps-DR-SPD-03
Earthquake	ma-EQ-SPD-02	Emergency Power Backup for Port Facilities	Install backup power generators and secure fuel supplies for essential operations including harbor patrol and communications.	SP, PPRO, ES	Medium 3-5 Years	Port District + consultants	High	High	Agency Budget	HMGP BRIC	Medium	ps-EQ-SPD-06, ps-EQ-SPD-03, ps-EQ-SPD-04, ps-EQ-SPD-05
Earthquake	ma-EQ-SPD-01	Phased Seismic Assessment & Retrofit of Critical Port Infrastructure	Implement a phased program beginning with a seismic and liquefaction vulnerability assessment of Port assets, followed by design and construction of retrofits for priority structures based on assessed risk.	SP, PPRO	Long 5-10 Years	Port District + engineering consultants	High	High	Agency Budget	HMGP BRIC	Medium	ps-EQ-SPD-03, ps-EQ-SPD-05, ps-EQ-SPD-01, ps-EQ-SPD-04, ps-EQ-SPD-02, ps-EQ-SPD-06
Flood	ma-FL-SPD-01	Watershed Coordination & Debris Management Planning	Collaborate with upstream watershed agencies and local jurisdictions to develop a debris management strategy that reduces sedimentation at the harbor entrance and north harbor culvert during major storm events.	PRV, NRP	Long 5-10 Years	Port District + interagency working groups, RCD	Low	High	Agency Budget	Measure Q DWR USACE	High	ps-FL-SPD-01, ps-FL-SPD-02, ps-FL-SPD-03, ps-CE-SPD-03
Sea Level Rise	ma-SLR-SPD-01	Adaptation Plan & Infrastructure Floodproofing	Develop and implement a phased adaptation plan to elevate or floodproof docks, electrical systems, and access pathways based on Port asset inventories and SLR projections (e.g., J Dock, FF Area).	SP, PRV	Medium 3-5 Years	Port District + consultants	High	High	Agency Budget	HMGP, Prop 4, Measure Q	Medium	ps-SLR-SPD-01, ps-SLR-SPD-02, ps-CC-SPD-01, ps-CE-SPD-02, ps-CE-SPD-04
Sea Level Rise	ma-SLR-SPD-02	Coastal Data & Vulnerability Monitoring Integration	Integrate NOAA tidal benchmarks, Sea Level Rise Explorer, and County coastal assessments into a Port monitoring program to inform adaptive triggers.	PRV, PE&A	Medium 3-5 Years	Port District	Low	Medium	Agency Budget	HMGP, Prop 4, Measure Q	High	ps-SLR-SPD-01, ps-SLR-SPD-02, ps-CC-SPD-01, ps-CE-SPD-01, ps-CE-SPD-02, ps-CE-SPD-04, ps-CH-SPD-01
Coastal Hazards (Tsunami)	ma-TS-SPD-01	Harbor-Wide Tsunami Evacuation & Signage Enhancement	Design and install standardized, multi-lingual tsunami evacuation signage across all public and operational areas of the Port. Include wayfinding to upland zones and dock-specific evacuation routes.	ES, PE&A	Medium 3-5 Years	Port District + County OR3/OES	Medium	High	Agency Budget	City / County Collaboration	Medium	ps-TS-SPD-01, ps-TS-SPD-02, ps-TS-SPD-03, ps-TS-SCC-02, ps-TS-SPD-06, ps-TS-SPD-04, ps-TS-SPD-05
Coastal Hazards (Tsunami)	ma-TS-SPD-02	Tsunami Notification & Harbor Training Program	Establish a local tsunami alert system (non-siren audible and digital) and conduct annual harbor-wide training drills for tenants, liveaboards, and Port staff.	ES, PE&A	Medium 3-5 Years	Port District + County OR3/OES	Low	High	Agency Budget	N/A	Medium	ps-TS-SPD-01, ps-TS-SPD-02, ps-TS-SPD-05, ps-TS-SPD-03, ps-TS-SPD-04, ps-TS-SPD-06
Coastal Hazards (Wave Run-Up & Surge)	ma-WV-SPD-01	Surge Resilient Dock & Gangway Retrofit	Retrofit docks and gangways with surge-resistant pilings and materials, timed to align with the FY26–FY30 CIP and designed using forthcoming SLRVA elevation data.	SP	Medium 3-5 Years	Port District	High	High	Agency Budget	HMGP, Prop 4, Measure Q	High	ps-WV-SPD-01, ps-CE-SPD-01, ps-CE-SPD-02, ps-CE-SPD-04, ps-CH-SPD-01, ps-CS-SPD-01, ps-CS-SPD-02

Hazard	Action ID	Action Title	Description	FEMA Mitigation Alternative	Timeline	Responsibility	Cost	Benefit	Internal Funding Source	External Funding Source	Priority (Based on Criteria)	Problems Addressed
Coastal Hazards (Wave Run-Up & Surge)	ma-WV-SPD-02	Surge & SLR Design Guidelines for CIP	Incorporate wave run-up, surge, and SLR scenario thresholds from the CAAP and SLRVA into Port’s CIP design standards.	PRV	Medium 3-5 Years	Port District + consultants	Low	High	Agency Budget	HMGP, Prop 4, Measure Q	High	ps-WV-SPD-01, ps-WV-CPT-01, ps-CC-SPD-01, ps-CE-SPD-01, ps-CE-SPD-02, ps-CE-SPD-04, ps-CH-SPD-01, ps-CS-SPD-01, ps-CS-SPD-02