

Beach Cities Health District

LOCAL HAZARD MITIGATION PLAN

2024-2025



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ACRONYMS

Acronym	Definition
AFN	Access and Functional Needs
APA	Approval Pending Adoption
ASOS	Automated Surface Observing System
BCHD	Beach Cities Health District
BRIC	Building Resilient Infrastructure and Communities
CCC	California Coastal Commission
CDC	Center for Disease Control
CDPH	California Department of Public Health
CERT	Community Emergency Response Team
CFR	Code of Federal Regulations
CIP	Capital Improvement Plan
CVI	Climate Vulnerability Index
DMA	Disaster Mitigation Act
EHP	Environmental and Historic Preservation
EOC	Emergency Operations Center
FEMA	Federal Emergency Management Agency
FHSZ	Fire Hazard Severity Zones
FIRM	Flood Insurance Rate Map
FMA	Flood Mitigation Assistance
FPA	Flood Plain Administrator
HB	Hermosa Beach
HMA	Hazard Mitigation Assistance
HMGP	Hazard Mitigation Grant Program
HMPC	Hazard Mitigation Planning Committee
LHMP	Local Hazard Mitigation Plan
LOMC	Letters of Map Change
LRA	Local Responsibility Areas
MB	Manhattan Beach
MMI	Modified Mercalli Intensity
MYN	Map Your Neighborhood
NCDC	National Center for Environmental Information
NDMC	National Drought Mitigation Center

Acronym	Definition
NFIP	National Flood Insurance Program
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NWS	National Weather Service
OES	Office of Emergency Services
PACE	Programs for All-inclusive Care for the Elderly
PCH	Pacific Coast Highway
PDSI	Palmer Drought Severity Index
PSPS	Public Safety Power Shutoff
RAWS	Remote Automatic Weather Station
RB	Redondo Beach
SCE	Southern California Edison
SFHA	Special Flood Hazard Area
SPI	Standard Participation Index
SRA	State Responsibility Areas
SVI	Social Vulnerability Index
WUI	Wild Urban Interface

SECTION 1: INTRODUCTION

1.1 Plan Purpose

The purpose of hazard mitigation is to implement and sustain actions that reduce vulnerability and risk from hazards, minimizing their effects on people and property, and the natural environment. Mitigation actions include both short-term and long-term activities to lessen hazard impacts, reduce exposure, or reduce effects of hazards through preparedness, response, and recovery efforts. By reducing the impacts and costs of future disasters, effective mitigation strengthens community resilience.

To support these efforts, the Beach Cities Health District (BCHD) developed this Local Hazard Mitigation Plan (LHMP) to guide district wide efforts in enhancing the protection of people and property from the effects of hazard events. The plan identifies, assesses, and addresses risks, establishing strategies and actions to reduce risk and minimize future losses. It provides a structured approach as defined by FEMA, with elements such as hazard identification, impact and vulnerability assessments, mitigation goals, and prioritized strategies. Created through a collaborative process with BCHD representatives and community stakeholders, this LHMP serves as a valuable tool for decision-makers to allocate resources and direct mitigation activities effectively.

1.2 Goal of Hazard Mitigation

This LHMP focuses on developing long-term strategies to enhance community resilience against natural hazards, aiming to minimize economic impacts and human suffering throughout BCHD. It acknowledges the different phases of emergency management—preparedness, response, and recovery—but emphasizes mitigation as its core objective. This plan is designed to reduce or eliminate the long-term impacts of natural hazards, rather than detailing preparedness activities like planning and education, response actions such as firefighting and rescue operations, or recovery efforts including debris removal and restoring utilities.

Annually, natural disasters in the United States result in the loss of hundreds of lives and injure thousands, imposing significant financial burdens on taxpayers, communities, organizations, businesses, and individuals. The cost to Special District budgets for disaster recovery is substantial. However, as many natural disasters are predictable, implementing effective mitigation measures can significantly reduce or even prevent much of the damage these events cause. There is a financial benefit in completing this plan and addressing natural hazards within the community. Natural hazard mitigation saves \$6 on average for every \$1 spent on federal mitigation grants, according to an analysis by the National Institute of Building Sciences.

1.3 Authority

This Plan was created per federal rules and other pertinent state and municipal codes that may require mitigation planning integration. Although BCHD is not required to prepare an LHMP, state and federal regulations encourage Special Districts to do so. To remain eligible for hazard mitigation grants, the Plan shall be reviewed annually and go through a complete update process every five years. The following regulations and guidelines apply to this plan.

1.3.1 Federal Authority

The Disaster Management Act of 2000 (DMA 2000) provides the legal basis for the FEMA mitigation planning requirements for local, state, and tribal governments as a condition of mitigation grant assistance. The DMA 2000 mitigation planning provisions, along with other sections of the Act, provide a significant opportunity to reduce disaster losses across the nation. The language in DMA 2000, taken as a whole, emphasizes the importance of strong state, tribal, and local planning processes, and comprehensive mitigation program management at the State level. FEMA strongly believes that with hazard mitigation planning, as with most similar efforts, the actual process of planning is as important as the resultant plan. Hence, BCHD regards this LHMP as the official written record and documentation representing the planning process and development of elements such as mitigation goals or hazard identification.

Table 1: Federal Laws, Regulation and Guidance

Federal Laws, Regulations and Guidance	
Law/Regulation/Guidance	Description
The Disaster Mitigation Act of 2000	This Act creates the framework for state, local, tribal and territorial governments to engage in hazard mitigation planning to receive certain types of non-emergency disaster assistance.
44 Code of Federal Regulations (CFR) Part 201 Mitigation Planning	The purpose of this code is to provide information on the policies and procedures for mitigation planning as required by the provisions of section 322 of the Stafford Act, 42 U.S.C. 5165 , and section 1366 of the National Flood Insurance Act of 1968, 42 U.S.C. 4104c .
Local Mitigation Planning Policy Guide (Effective April 11, 2025)	This guide is FEMA's official policy on and interpretation of the applicable statutes and mitigation planning regulations in 44 Code of Federal Regulations (CFR) Part 201.
Local Mitigation Planning Handbook (2023)	This Local Mitigation Planning Handbook (Handbook) guides local governments, including special districts, as they develop or update a hazard mitigation plan.

[Robert T. Stafford Disaster Relief and Emergency Assistance Act](#), PL 100-707, signed into law November 23, 1988; amended the Disaster Relief Act of 1974, PL 93-288.

This Act constitutes the statutory authority for most Federal disaster response activities especially as they pertain to FEMA and FEMA programs.

1.4 Hazard Mitigation Grant Assistance Programs

FEMA's Hazard Mitigation Assistance Grant Program provides funding for eligible mitigation measures that reduce disaster losses. It is necessary to have a FEMA approved plan to qualify for these grants. Project eligibility is based on criteria that reduce long-term risk. Response, Recovery and Preparedness measures are not covered by these grants.

1.4.1 Stafford Grant Programs

Funding is provided to local, state and tribal governments that have an approved hazard mitigation plan through the following programs.

Hazard Mitigation Grant Program

The Hazard Mitigation Grant Program (HMGP) provides grants to implement long-term hazard mitigation measures after declaration of a major disaster. The purpose of the HMGP is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster. To qualify for HMGP funding, projects must provide a long-term solution to a problem, and the project's potential savings must exceed the cost of implementing the project.

HMGP funds may be used to protect either public or private property, or to purchase property that has been subjected to, or is in danger of, repetitive damage. The amount of funding available for the HMGP under a particular disaster declaration is limited. Under the program, the Federal Government may provide a State or tribe with up to 20% of the total disaster grants awarded by FEMA under Stafford Act programs and may provide up to 75% of the cost of any projects approved under the program.

1.5 Plan Adoption

This Local Hazard Mitigation Plan will be adopted by the BCHD Board of Directors in accordance with the authority granted to local communities by the State of California and the Federal Emergency Management Agency after Approval Pending Adoption (APA) is obtained by FEMA. The formal adoption will be in [Appendix G](#).

1.6 Hazard Mitigation Plan Use

Each Plan section provides information and resources to assist plan users in understanding the hazard-related issues facing residents, businesses, and critical facilities in BCHD's Planning Area boundaries. The structure of the Plan enables users to review each section

as needed and allows BCHD to review and update sections as new data becomes available. This increases the ease of new data entry and can keep the Plan current.

BCHD's LHMP is composed of the sections described below:

Section 1- Introduction: Describes an overview of hazard mitigation planning, including the purpose, scope, goal, priorities, authority, and grants available.

Section 2- Planning Process: Describes the procedures and approach of the planning process including documentation of the participating key stakeholders and community engagement.

Section 3- Community Profile: Shares the history of location, demographics, climate and land use development trends of the cities where BCHD facilities are located. Cities include Hermosa Beach, Manhattan Beach, and Redondo Beach.

Section 4- Risk Assessment: Describes the process in which relevant data was identified and compiled regarding potential hazards that threaten BCHD facilities as well as discussing the historical occurrences of each hazard and the probability for future events.

Section 5-Vulnerability Assessment: Identifies the threat of hazards among BCHD facilities potentially impacting BCHD constituents including populations, housing, and critical facilities.

Section 6- Mitigation Strategy: Describes the list of mitigation goals, objectives, and actions to reduce the vulnerability of BCHD to hazard events and provides an overview of the Special District's existing capabilities to improve hazard resilience.

Section 7- Plan Maintenance: Describes the formal plan maintenance process to ensure the LHMP remains an active and applicable document that is monitored, evaluated and updated with continued public involvement.

SECTION 2: PLANNING PROCESS

FEMA Regulation Checklist: Planning Process	
44 CFR § 201.6(c)(1)	Documentation of the Plan Update Requirements: A1. Does the plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction?
Elements	
A1-a.	Q: Does the plan document how the plan was prepared, including the schedule or timeframe and activities that made up the plan's development, as well as who was involved? A: See Hazard Mitigation Planning Process below
A1-b	Q: Does the plan list the jurisdiction(s) participating in the plan that seek approval, and describe how they participated in the planning process? A: See Hazard Mitigation Planning Process below

Source: FEMA, *Local Mitigation Planning Policy Guide, Effective April 11, 2025*

2.1 Planning Methodology

This section describes each stage of the planning process used to develop the LHMP. This LHMP follows a prescribed series of planning steps which includes organizing resources, assessing risk, developing the mitigation strategy, drafting the plan, reviewing/revising the plan, and adopting and submitting the plan for approval. Each step is further described in this section including the comprehensive outreach strategy used throughout the planning process. The goal of the comprehensive outreach strategy was to ensure the general population and the socially vulnerable were actively engaged to ensure inclusivity.

Proactive mitigation and whole community planning conducted by BCHD during this planning process will help reduce the cost of disaster response and recovery to the Special District and their clients by protecting critical community facilities, reducing liability exposure, and minimizing overall community impacts and disruptions.

The initial stage of the planning process entailed resource organization, which encompassed tasks such as establishing the LHMP Project Management Team, identifying the supporting LHMP Consultant Team, assembling the Hazard Mitigation Planning Committee (HMPC) and conducting document reviews.

2.2 Government and Other Stakeholder Participation

FEMA Regulation Checklist: Planning Process	
44 CFR § 201.6(b)(2)	Documentation of the Plan Update Requirements: A2. Does the Plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process?
A2-a	Q: Does the plan identify all stakeholders involved or given an opportunity to be involved in the planning process, and how each stakeholder was presented with this opportunity?

FEMA Regulation Checklist: Planning Process	
	A: See Planning Team Formation and Engagement below

Source: FEMA, *Local Mitigation Planning Policy Guide*, Effective April 11, 2025

2.2.1 Planning Participation Guidelines

The planning regulations and guidance stress that each local government seeking FEMA approval of their mitigation plan must participate in the planning effort in the following ways:

- Participate in the process as part of the HMPC.
- Detail risks and vulnerabilities to assets.
- Identify potential mitigation actions.
- Formally adopt the plan.

This Hazard Mitigation Plan was developed under the guidance of a HMPC listed in **Table 2**. For BCHD HMPC, "participation" included the following:

- Attending and participating in the HMPC meetings.
- Collecting and providing other requested data (if/as available).
- Identifying mitigation actions (projects) for the plan.
- Reviewing and providing comments on plan drafts.
- Informing the public, local officials, and other interested parties about the planning process and providing opportunities for them to participate in the process and comment on the plan.
- Coordinating and participating in the public input process.
- Coordinating the formal adoption of the plan by the appropriate governing body.

The HMPC met all the above-stated participation requirements with the support of the LHMP Consultant Team throughout the development of the LHMP. The Consultant Team, from Constant Associates provided guidance and support to BCHD in the facilitation of the LHMP planning process, data collection, community engagement, development of meeting materials, and the Plan development.

2.3 Planning Team Formation and Engagement

The BCHD Project Management Team worked with the LHMP Consultant Team, Constant Associates, to identify BCHD Departments, regional and local agencies and stakeholders to participate in the LHMP that have authority in regulating BCHD development, individuals representing community populations, as well as those that are responsible for responding to the identified hazards of prime concern. Participants that represented a specific community lifeline were also invited. These partners included jurisdictional emergency management, police, fire, public works, community-based organizations (CBOs),

nonprofit, and faith-based organizations (FBOs), the business community, local floodplain management administrations, schools/academia, elected officials, utility companies, and other interested parties, along with several external entities including the Los Angeles County Disaster Management Area G Coordinator. A listing of invited participants is located in [Appendix A 1.1](#).

Stakeholders were notified via email, advising of BCHD's efforts to prepare a LHMP and requesting their involvement in preparation of the Plan, including an invitation to attend the HMPC meetings virtually.

HMPC members provided key information to recognize and mitigate hazards of prime community concern. All other committee participation was conducted via email or phone to gather the needed details. Meeting attendance and the list of individuals invited is included in Appendix A.

Members of the HMPC represented the following BCHD representatives and external stakeholders:

- City of Redondo Beach (including Fire and Police Departments)
- City of Hermosa Beach (including Fire and Police Departments)
- City of Manhattan Beach (including Fire and Police Departments)
- City of Torrance (including Police Department)
- City of Palos Verdes Estates
- Greater Long Beach and South Bay American Red Cross
- Redondo Beach Salvation Army
- Beach Cities Health District Community Services
- Good Box Organics
- LA County Department of Health, Emergency Preparedness & Response
- Providence Little Company of Mary
- Torrance Memorial

Table 2 HMPC Planning Team Members identifies both the Project Management Team and HMPC members, along with their roles in plan development.

Table 2: Hazard Mitigation Planning Committee Members

Name	Title/Role	Organization	Community Lifeline	HMPC Role
Project Management Team				
Cindy Foster	General Manager for AdventurePlex and the Center for Health & Fitness	Beach Cities Health District	Health and Medical	Primary Point of Contact for HMPC. Organization of HMPC and planning meetings, development of and participation in community outreach and engagement, hazard identification, capabilities assessment, mitigation actions and prioritization, and plan coordination/review.
Megan Vixie	Chief Engagement Officer	Beach Cities Health District	Health and Medical	Executive oversight for HMPC. Organization of HMPC and planning meetings, development of and participation in community outreach and engagement, hazard identification, capabilities assessment, mitigation actions and prioritization, and plan coordination/review.
Dan Smith	Project Manager	CONSTANT	N/A	Assist with scheduling and facilitation of HMPC and planning meetings; development of meeting materials and survey; collection of HMPC data for the LHMP; support with community outreach and in-person engagement; facilitation of

Name	Title/Role	Organization	Community Lifeline	HMPC Role
Project Management Team				
				hazard identification, risk assessment, and project prioritization.
Dylan Yates	Deputy Project Manager	CONSTANT	N/A	Assist with scheduling and facilitation of HMPC and planning meetings; development of meeting materials and survey; collection of HMPC data for the LHMP; support with community outreach and in-person engagement; facilitation of hazard identification, risk assessment, and project prioritization.
Mona Bontty	Project Sponsor	CONSTANT	N/A	Assist with scheduling and facilitation of HMPC and planning meetings; development of meeting materials and survey; collection of HMPC data for the LHMP; support with community outreach and in-person engagement; facilitation of hazard identification, risk assessment, and project prioritization.
Tracy To	Project Support	CONSTANT	N/A	Assist with scheduling and facilitation of HMPC and planning meetings; development of meeting materials and survey; collection of HMPC data for the LHMP; support with community

Name	Title/Role	Organization	Community Lifeline	HMPC Role
Project Management Team				
				outreach and in-person engagement; facilitation of hazard identification, risk assessment, and project prioritization.
Kevin Koller	Project Support	CONSTANT	N/A	Assist with scheduling and facilitation of HMPC and planning meetings; development of meeting materials and survey; collection of HMPC data for the LHMP; support with community outreach and in-person engagement; facilitation of hazard identification, risk assessment, and project prioritization.
HMPC Planning Team				
Name	Title/Role	Organization	Community Lifeline	HMPC Role
Mike Witzansky	City Manager	City of Redondo Beach	Safety and Security	Project goals and objectives identification, hazard identification and prioritization, vulnerability summary, mitigation strategy discussion, draft LHMP review/comment.
Suja Lowenthal	City Manager	City of Hermosa Beach	Safety and Security	Project goals and objectives identification, hazard identification and prioritization, vulnerability summary, mitigation strategy discussion, draft LHMP review/comment.
Bruce Moe	City Manager	City of Manhattan Beach	Safety and Security	Project goals and objectives identification, hazard identification and prioritization,

Name	Title/Role	Organization	Community Lifeline	HMPC Role
Project Management Team				
				vulnerability summary, mitigation strategy discussion, draft LHMP review/comment.
Aram Chaparyan	City Manager	City of Torrance	Safety and Security	Project goals and objectives identification, hazard identification and prioritization, vulnerability summary, mitigation strategy discussion, draft LHMP review/comment.
Kerry Kallman	City Manager	City of Palos Verdes Estates	Safety and Security	Project goals and objectives identification, hazard identification and prioritization, vulnerability summary, mitigation strategy discussion, draft LHMP review/comment.
Patrick Butler	Fire Chief	City of Redondo Beach Fire	Safety and Security	Project goals and objectives identification, hazard identification and prioritization, vulnerability summary, mitigation strategy discussion, draft LHMP review/comment.
Maurice Wright	Emergency Management Coordinator	City of Hermosa Beach Fire	Safety and Security	Project goals and objectives identification, hazard identification and prioritization, vulnerability summary, mitigation strategy discussion, draft LHMP review/comment.
Mike Lang	Fire Chief	City of Manhattan Beach Fire	Safety and Security	Project goals and objectives identification, hazard identification and prioritization, vulnerability summary, mitigation strategy discussion, draft LHMP review/comment.

Name	Title/Role	Organization	Community Lifeline	HMPC Role
Project Management Team				
Joe Hoffman	Police Chief	City of Redondo Beach Police	Safety and Security	Project goals and objectives identification, hazard identification and prioritization, vulnerability summary, mitigation strategy discussion, draft LHMP review/comment.
Paul LeBaron	Police Chief	City of Hermosa Beach Police	Safety and Security	Project goals and objectives identification, hazard identification and prioritization, vulnerability summary, mitigation strategy discussion, draft LHMP review/comment.
Rachel Johnson	Police Chief	City of Manhattan Beach Police	Safety and Security	Project goals and objectives identification, hazard identification and prioritization, vulnerability summary, mitigation strategy discussion, draft LHMP review/comment.
Jay Hart	Police Chief	City of Torrance Police	Safety and Security	Project goals and objectives identification, hazard identification and prioritization, vulnerability summary, mitigation strategy discussion, draft LHMP review/comment.
Luke Hellinga	Police Chief	City of Palos Verdes Estates	Safety and Security	Project goals and objectives identification, hazard identification and prioritization, vulnerability summary, mitigation strategy discussion, draft LHMP review/comment.
Amanda MacLennan	Emergency Coordinator	City of Manhattan Beach	Safety and Security	Project goals and objectives identification, hazard identification and prioritization,

Name	Title/Role	Organization	Community Lifeline	HMPC Role
Project Management Team				
				vulnerability summary, mitigation strategy discussion, draft LHMP review/comment.
Isaac Yang	Division Chief-Operations	Redondo Beach Fire Department	Safety and Security	Project goals and objectives identification, hazard identification and prioritization, vulnerability summary, mitigation strategy discussion, draft LHMP review/comment.
Brandy Villanueva	Area G Disaster Management Area Coordinator	Area G Disaster Management	Safety and Security	Project goals and objectives identification, hazard identification and prioritization, vulnerability summary, mitigation strategy discussion, draft LHMP review/comment.
Andrew Winje	Public Works Director	City of Redondo Beach	Food, Water, and Shelter	Project goals and objectives identification, hazard identification and prioritization, vulnerability summary, mitigation strategy discussion, draft LHMP review/comment.
Joseph Sanclemente	Public Works Director	City of Hermosa Beach	Food, Water, and Shelter	Project goals and objectives identification, hazard identification and prioritization, vulnerability summary, mitigation strategy discussion, draft LHMP review/comment.
Erick Lee	Public Works Director	City of Manhattan Beach	Food, Water, and Shelter	Project goals and objectives identification, hazard identification and prioritization, vulnerability summary, mitigation strategy discussion, draft LHMP review/comment.

Name	Title/Role	Organization	Community Lifeline	HMPC Role
Project Management Team				
Craig Bilezerian	Public Works Director	City of Torrance	Food, Water, and Shelter	Project goals and objectives identification, hazard identification and prioritization, vulnerability summary, mitigation strategy discussion, draft LHMP review/comment.
Steve Loriso	Public Works City Engineer	City of Palos Verdes Estates	Food, Water, and Shelter	Project goals and objectives identification, hazard identification and prioritization, vulnerability summary, mitigation strategy discussion, draft LHMP review/comment.
Amy Papageorges	Executive Director	Greater Long Beach and South Bay American Red Cross	Food, Water, and Shelter	Project goals and objectives identification, hazard identification and prioritization, vulnerability summary, mitigation strategy discussion, draft LHMP review/comment.
Fabio Simoes	Executive Director	Redondo Beach Salvation Army	Food, Water, and Shelter	Project goals and objectives identification, hazard identification and prioritization, vulnerability summary, mitigation strategy discussion, draft LHMP review/comment.
Emily Brosius	Director	Beach Cities Health District Community Services	Food, Water, and Shelter	Project goals and objectives identification, hazard identification and prioritization, vulnerability summary, mitigation strategy discussion, draft LHMP review/comment.
Stella Fogelman	Director	LA County Department of Health, Emergency Preparedness &	Health and Medical	Project goals and objectives identification, hazard identification and prioritization,

Name	Title/Role	Organization	Community Lifeline	HMPC Role
Project Management Team				
		Response		vulnerability summary, mitigation strategy discussion, draft LHMP review/comment.
Amy Herold	Chief Medical Officer	Providence Little Company of Mary	Health and Medical	Project goals and objectives identification, hazard identification and prioritization, vulnerability summary, mitigation strategy discussion, draft LHMP review/comment.
Zachary Gray	Chief Medical Officer	Torrance Memorial	Health and Medical	Project goals and objectives identification, hazard identification and prioritization, vulnerability summary, mitigation strategy discussion, draft LHMP review/comment.
Kurt Kainsinger	Director	UCLA Health, Office of Emergency Preparedness	Health and Medical	Project goals and objectives identification, hazard identification and prioritization, vulnerability summary, mitigation strategy discussion, draft LHMP review/comment.
Christina Ghaly	Director	LA County Department of Health, Emergency Medical Services	Health and Medical	Project goals and objectives identification, hazard identification and prioritization, vulnerability summary, mitigation strategy discussion, draft LHMP review/comment.
Kevin Niehaus	Executive & Clinical Director	Beach Cities Mental Health	Health and Medical	Project goals and objectives identification, hazard identification and prioritization, vulnerability summary, mitigation strategy discussion, draft LHMP review/comment.

Name	Title/Role	Organization	Community Lifeline	HMPC Role
Project Management Team				
Marc Ulrich	VP & Chief Safety Officer	Southern California Edison	Energy (Power + Fuel)	Project goals and objectives identification, hazard identification and prioritization, vulnerability summary, mitigation strategy discussion, draft LHMP review/comment.
Rachel Peterson	Executive Director	CA State Public Utilities Commission- LA Office	Energy (Power + Fuel)	Project goals and objectives identification, hazard identification and prioritization, vulnerability summary, mitigation strategy discussion, draft LHMP review/comment.
Sara Wilson	Manager	Torrance Refinery	Energy (Power + Fuel)	Project goals and objectives identification, hazard identification and prioritization, vulnerability summary, mitigation strategy discussion, draft LHMP review/comment.
Bruce Moe	City Manager	South Bay Regional Public Communications Authority	Communications	Project goals and objectives identification, hazard identification and prioritization, vulnerability summary, mitigation strategy discussion, draft LHMP review/comment.
Kevin Chan	BCHD IT Manager	Beach Cities Health District	Communications	Project goals and objectives identification, hazard identification and prioritization, vulnerability summary, mitigation strategy discussion, draft LHMP review/comment.
Laura Rubio-Cornejo	General Manager	Los Angeles Department of Transportation	Transportation	Project goals and objectives identification, hazard identification and prioritization,

Name	Title/Role	Organization	Community Lifeline	HMPC Role
Project Management Team				
				vulnerability summary, mitigation strategy discussion, draft LHMP review/comment.
Cameron Harding	Director	Beach Cities Transit	Transportation	Project goals and objectives identification, hazard identification and prioritization, vulnerability summary, mitigation strategy discussion, draft LHMP review/comment.
John Ackerman	CEO	Los Angeles World Airports	Transportation	Project goals and objectives identification, hazard identification and prioritization, vulnerability summary, mitigation strategy discussion, draft LHMP review/comment.
Cary Samourkachian	President & CEO	Speed Commerce	Transportation	Project goals and objectives identification, hazard identification and prioritization, vulnerability summary, mitigation strategy discussion, draft LHMP review/comment.
Michael Regan	Administrator	United States Environmental Protection Agency-Region 9	Hazardous Materials	Project goals and objectives identification, hazard identification and prioritization, vulnerability summary, mitigation strategy discussion, draft LHMP review/comment.
Stacy Houston	Founder	The BioClean Team	Hazardous Materials	Project goals and objectives identification, hazard identification and prioritization, vulnerability summary, mitigation strategy discussion, draft LHMP review/comment.

Name	Title/Role	Organization	Community Lifeline	HMPC Role
Project Management Team				
Biren Gandhi	Key Principal	Gradiant Chemical Corporation	Hazardous Materials	Project goals and objectives identification, hazard identification and prioritization, vulnerability summary, mitigation strategy discussion, draft LHMP review/comment.

Note: *Indicates an HMPC member that provides services to socially vulnerable populations or other "high-risk" populations within the planning area.

2.4 Hazard Mitigation Planning Process

The 2024 BCHD LHMP was created following guidance put forth by FEMA in the Local Mitigation Planning Policy Guide which became effective on April 19, 2023. This guidance emphasized the need for a whole community planning approach to include representatives from all sectors of the community with an emphasis on the increased need for vulnerable and underserved population representation. The guidance also highlighted increased emphasis on risk, vulnerability, and resilience assessments, and climate change.

During the final stages of the development of this LHMP FEMA released updated guidance on April 11, 2025. While the new policy postdates much of the plan's development, BCHD has incorporated elements of the 2025 guidance to align with evolving federal standards while ensuring this LHMP remains responsive and inclusive to community needs as well as compliant with California legislations.

FEMA guidance requires a structured five-phase approach to completing a Hazard Mitigation Plan as follows:

- Planning Process
- Risk Assessment
- Vulnerability and impact assessments for hazards and projects.
- Mitigation Strategy
- Plan Maintenance

2.4.1 Phase I – Planning Process

FEMA Regulation Checklist: Planning Process	
44 CFR § 201.6(b)(1)	Documentation of the Plan Update Requirements: A3. Does the plan document how the public was involved in the planning process during the drafting stage and prior to plan approval?
Element	
A3-a	<p>Q: Does the plan document how the public was given the opportunity to be involved in the planning process and how their feedback was included in the plan?</p> <p>A: See Community Outreach Activities below</p>

Source: FEMA, Local Mitigation Planning Policy Guide, Effective April 11, 2025

Organize to Prepare the Plan

The initiation of the planning process commenced with a meeting held on Friday, August 16, 2024, between Constant Associates, the consulting firm engaged for plan development, and BCHD. The primary objectives of this meeting were to collaboratively formulate the HMPC and conduct targeted outreach to neighborhoods identified as socially vulnerable. Prior to the initial HMPC meeting and throughout the planning process, BCHD ensured comprehensive stakeholder inclusion, which extended to neighboring jurisdictions. Details of the committee outreach efforts can be found in [Appendix C](#).

During the plan development process thorough research effort was conducted to gain

information for natural hazard previous occurrences, changes in weather patterns, plan integrations, local laws and regulatory requirements, and notable areas of potential future impact and probability for committee consideration.

BCHD recognized the importance of maximizing participation and ensuring broad access to planning meetings. To support this, meetings were held in a hybrid format accessible via Microsoft Teams and in person at the Beach Cities Health Center. Accessibility accommodations were also announced to the community to be available as needed. Four (4) meetings were held throughout the planning period on September 12, 2024; December 5, 2024; February 13, 2025; and April 17, 2025. [Appendix C: Community Outreach](#) provides a summary of the presentations for each committee meeting which includes the agenda. The section below highlights the key discussions and feedback from the HMPC during each meeting.

Hazard Mitigation Planning Committee (HMPC) Meetings

Table 3: HMPC Meetings

HMPC Meeting	Discussion Topics
Meeting #1: September 12, 2024	<ul style="list-style-type: none"> • Introduction of members and project team. • Overview of the plan's development process. • Hazard Mitigation education including definitions, regulatory requirements, and grants. • Identification of hazards of prime concern, emphasizing environmental impacts and natural hazards. • Presentation of vulnerable neighborhoods and their integration into decision-making. • Introduction of potential mitigation goals. • Preview of next steps including the Risk Assessment process.
Meeting #2: December 5, 2024	<ul style="list-style-type: none"> • Presentation of hazards of prime concern as voted by the committee. • Definition of community lifelines and assets. • Review of previous occurrences for all hazard of prime concern. • Completion of the Risk Assessment survey with the HMP to prioritize hazards and assign a risk value for each hazard.
Meeting #3: February 13, 2025	<ul style="list-style-type: none"> • Briefing on Hazard Mitigation Assistance grant program eligibility. • Review of vulnerability and impact assessment on each hazard of prime concern. • Revisiting the definition of vulnerable assets. • Completion of vulnerability and impact assessments for hazards of prime concern and identifying mitigation actions.
Meeting #4: April 17, 2025	<ul style="list-style-type: none"> • Review submitted hazard mitigation projects, distinguishing between preparedness and mitigation projects.

	<ul style="list-style-type: none"> • Completion of project prioritization through STAPLE-E process and survey with HMPC members to rank projects. • Discussion on next steps including review period, plan adoption and submission to Cal OES and FEMA for review.
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Community Outreach Activities

BCHD conducted an extensive public outreach campaign to engage the communities it serves throughout the planning process. The diverse outreach strategy included the use of print and digital media, in-person engagement via community presentations, project flyer distribution at community-based events, meetings and events. A summary of the comprehensive outreach activities are noted in Table 4 with specific details located in [Appendix C](#).

Table 4: Outreach Activities

Outreach Type	Outreach Activities
Print Media	<ul style="list-style-type: none"> • Flyers were created to provide information on the LHMP project, including details about planning committee meetings and the purpose of the project. • Key information included the definition of hazard mitigation, FEMA requirements, and the project's mission to address community needs.
Digital Media	<ul style="list-style-type: none"> • Flyers encouraged staying informed via BCHD website, BCHD newsletters (reaching over 30K subscribers) and social media platforms, such as Facebook and LinkedIn (beachcitieshealth). • Virtual meeting links were provided, allowing community members to participate in the planning process online.
In-Person Engagement	<ul style="list-style-type: none"> • Project flyers were distributed at various community events and locations: <ul style="list-style-type: none"> ○ allcove Beach Cities Open House (10/1/24) ○ MB Hometown fair (10/6/24-10/7/24) ○ Beach Cities Partnership for Youth Coalition Meeting (10/17/24) ○ Skechers Pier to Pier Walk (10/20/24) ○ BCHD Strategic Development Half Day (12/6/24) ○ Hermosa Holiday Movie Night (12/13) ○ Screenagers Movie Event (1/23/25) ○ Screenagers Movie Event (1/28/25) ○ Screenagers Movie Event (2/4/25) ○ Screenagers Movie Event (2/10/25) • Engaged BCHD staff, volunteers, and program leaders across health, wellness, and support services during the Strategic Development Half Day Session on April 25, 2025.

Outreach Type	Outreach Activities
<p style="text-align: center;">Community Survey</p>	<ul style="list-style-type: none"> • An online survey was made available to the public from Monday, September 16 2024 to Friday, May 2, 2025. • The survey collected feedback on hazards affecting the community and informs the development of the LHMP and its mitigation strategies. • Access to the survey was facilitated via a QR code included on the flyer.

Whole Community Approach

The LHMP development process utilizes the Whole Community approach to hazard mitigation planning. For this LHMP project, significant efforts were made to identify and engage the appropriate community members and groups to support the Plan development process. BCHD prioritized engagement of the whole community in the development of the 2024-2025 LHMP. They did so by utilizing a multi-faceted outreach strategy which included outreach to various service organizations that support underserved and vulnerable populations as well as the use of a variety of engagement and communication tools and methods outlined further below.

How Community Feedback Informed Plan Development

Public feedback received was systematically reviewed and directly informed the development of mitigation actions, the identification of community vulnerabilities, and the refinement of planning priorities. These efforts ensured that community input was not only gathered but actively incorporated into the decision-making process.

Coordination with Service Organizations

In an effort to ensure that diverse service organizations were included and their perspectives considered throughout the planning process, the following organizations were contacted seeking their participation and input into the development of the LHMP.

- Beach Cities Health District Community Services
- Beach Cities Mental Health
- Redondo Beach Salvation Army

Additionally, as part of the public outreach effort, all groups were invited to attend the HMPC and public meetings, as well as to review and provide feedback on the draft LHMP before its submission to Cal OES and FEMA.

Communication Tools and Methods

The comprehensive outreach strategy also encompassed a wide variety of community engagement methods, including print media, digital media, in-person engagement, community surveys, and a dedicated public review period for the LHMP.

The extensive use of print and digital media ensured that the message reached a broad audience. A list of outreach activities can be found in Table 4: Outreach Activities.

Also, an online survey was made available, to gather feedback from community members related to their awareness and concerns regarding natural hazards, with 120 participants providing valuable insight.

- Of the survey respondents: 42% of them were of age 65 and older thereby representing a vulnerable population.

The community survey played a pivotal role in identifying and understanding the specific needs and concerns of individuals within BCHD Planning Area regarding hazard mitigation. By providing a platform for feedback and participation, BCHD fostered a sense of ownership and involvement among the community, ensuring that the LHMP reflects the diverse perspectives and priorities of the broader community. These efforts aimed to incorporate a wide range of perspectives in the decision-making process. More details regarding Whole Community outreach conducted can be found in [Appendix C](#).

Integrating Existing Information, Policies, Plans and Municipal Code

FEMA Regulation Checklist: Planning Process	
44 CFR § 201.6(b)(3)	Documentation of the Plan Update Requirements: A4. Does the Plan describe the review and incorporation of existing plans, studies, reports, and technical information?
Elements	
A4-a	Q: Does the plan document what existing plans, studies, reports and technical information were reviewed for the development of the plan, as well as how they were incorporated into the document? A: See Tables 6-9 below

Source: FEMA, *Local Mitigation Planning Policy Guide, Effective April 11, 2025*

Table 5: Existing State/Federal Planning Mechanisms provides an overview of key data sources, plans, and tools from state and federal agencies that informed the development of this BCHD LHMP. These mechanisms were utilized throughout various stages of the planning process to ensure a comprehensive understanding of hazard risks, community vulnerabilities, and resilience opportunities. By integrating these established frameworks and datasets into relevant sections of the LHMP, the planning team aligned local mitigation strategies with broader regional, state, and national efforts to reduce disaster risk and promote community resilience.

Table 5: Existing State/Federal Planning Mechanisms

Existing State/Federal Planning Mechanisms		
Type of Plan	Description	Planning Process/Area of Document Inclusion
California's Fourth Climate Change Assessment	Provides a summary of relevant climate impacts and adaptation solutions.	Multiple Plan Sections
CDC Social Vulnerability Index	Analyzes vulnerable populations.	Community Profile
County of Los Angeles Local Coastal Programs	Requires coastal cities and counties to establish coastal resource conservation and development programs.	Hazard profile
FEMA Flood Insurance Rate Maps	Analyzes flood prone areas within the communities.	Appendix D
FEMA's National Risk Index	Analyzes natural hazard risk.	Vulnerability Assessment
Global Historical Tsunami Database	Provides information on tsunami hazards and previous events.	Hazard Profiles
Los Angeles County Hazard Mitigation Plan, 2021	Identifies hazards.	Hazard Profiles
NOAA Archives, Storm Events Database	Analyzes weather data and trends.	Hazard Profiles
State Hazard Mitigation Plan	Identifies hazards, assesses vulnerabilities and mitigation	Hazard Profiles

Existing State/Federal Planning Mechanisms		
	strategies.	
U.S Census Bureau	Analyzes community demographic data and trends.	Multiple Plan Sections
US Climate Change and Vulnerability Index	Visualizes how drivers of cumulative vulnerability disadvantage communities across the United States. Better understanding of the intersections between growing climate risks and pre-existing, long-term health, social, environmental, and economic conditions is critical to effectively building climate resilience for everyone and deploying targeted adaptation efforts.	Multiple Plan Sections
US Drought Monitor	Defines drought levels and current or previous events.	Multiple Plan Sections

Table 6: Beach Cities Health District Planning Documents highlights key internal plans, reports, and evaluations developed by BCHD that informed the development of the LHMP. These documents provide critical insight into BCHD’s organizational priorities, seismic risk assessments, emergency procedures, strategic health initiatives, and community health data. Together, they support the LHMP’s understanding of local vulnerabilities, health and safety priorities, and structural risk, while also reinforcing the integration of hazard mitigation efforts into BCHD’s ongoing planning and operational frameworks.

Table 6: Beach Cities Health District Planning Documents

Beach Cities Health District Planning Documents		
Planning Document	Description	Planning Process/Area of Document Inclusion
Del Amo EAP	This is the Emergency Action Plan and Safety Procedures for BCHD. It provides emergency contacts as well as procedures with pictures/examples and checklists/forms to follow. Sections include medical emergencies, intercom system, evacuation & emergency procedures, conflict, facility safety & issues, staff safety.	Multiple Plan Sections
EOP Earthquake Annex	This Annex supplements the EOP. It provides the general characteristics/impacts of earthquakes on BCHD, concept of operations, and priorities and objectives dependent on severity and scope of an earthquake as well as its impact on BCHD.	Hazard Profiles

Beach Cities Health District Planning Documents		
Planning Document	Description	Planning Process/Area of Document Inclusion
BCHD Emergency Operations Plan	Identifies hazard concerns to develop mitigation strategies.	Hazard Profiles
Community Health Report 2022-2025	Provides 2019-2022 health priorities and accomplishments and lists the new 2022-2025 health priorities (mental health, physical and brain health, public health and safety, substance use) along with community data. Note: This report was in the process of being updated during the development of this LHMP.	Community Profile Vulnerability and Impact
Seismic Evaluation of BCHD Medical Office Building (MOB)	Provides building description (with building codes and images of beam/column connections). The field observations by the 3rd party noted the building to be in good condition but this observation was limited to visible areas of the structure.	Hazard Profiles
Seismic Evaluation of BCHD Parking Structure	Provides structure description. The field observations by the 3rd party noted the building to be in good condition but this observation was limited to visible areas of the structure.	Hazard Profiles
Seismic Risks – Beach Cities Health District MOB and Parking Structure Report	A follow up report on the 4-story medical office tower in BCHD that was conducted in 2021 stating an increased probability of collapse over time. ImageCat, Inc. stated the findings from 2021 remains unchanged, but there was a discussion of the schedule for demolition of these buildings and construction of new replacement facilities.	Hazard Profiles
Seismic Risk Update – Beach Cities Health Center	Report on MOB and Parking Structure - surface fault rupture, landslide, liquefaction, tsunami hazards, fire/blast likely not to affect. There are in-depth details on the building structure and floor plans as well as images. Page 17 depicts Seismic Risk Results - Loss estimates to the MOB and Parking Structure, recommending seismic retrofits.	Hazard Profiles
Seismic Evaluation of BCHD	The report identified deficiencies in the north tower, south tower, and central plant. There are recommendations on seismic	Hazard Profiles

Beach Cities Health District Planning Documents		
Planning Document	Description	Planning Process/Area of Document Inclusion
	strengthening to address those issues.	
BCHD Strategic Plan 2022 - 2025	Provides a 3-year strategic plan describing the goals and objectives. There are 4 goals: Programs & Services, People & Partnerships, Transparency, Physical Assets, Infrastructure & Financials. An updated Strategic Plan is currently in development as of April 2025.	Community Profile
FY21-22 Strategic Roadmap FINAL	<p>This fiscal year (FY) included COVID objectives.</p> <p>This spreadsheet identifies the priorities for each objective, associated goal, health priority addressed, team responsible/# employed, current status, Quarter(s) occurring, start date/due date, carry over to next FY, Accomplishments.</p> <p>For each quarter the activities took place, there is a column that provides updates/accomplishments.</p>	Community Profile
FY22-23 Strategic Roadmap FINAL	<p>This spreadsheet identifies the priorities for each objective, associated goal, health priority addressed, team responsible/# employed, current status, Quarter(s) occurring, start date/due date, carry over to next FY, Accomplishments, metric/outcome description, target metric, and FY metric outcome.</p> <p>For each quarter the activities took place, there is a column that provides updates/accomplishments.</p>	Community Profile
FY23-24 Strategic Roadmap FINAL	<p>This spreadsheet identifies the priorities for each objective, associated goal, health priority addressed, team responsible/# employed, current status, Quarter(s) occurring, start date/due date, carry over to next FY, Accomplishments, metric/outcome description, target metric, and FY metric outcome.</p> <p>For each quarter the activities took place, there is a column that provides updates/accomplishments.</p>	Community Profile
FY 24-25 Strategic Roadmap in	This FY roadmap is in progress but has updated up to Jan-Mar 2025.	Community Profile

Beach Cities Health District Planning Documents		
Planning Document	Description	Planning Process/Area of Document Inclusion
Progress	<p>This spreadsheet identifies the priorities for each objective, associated goal, health priority addressed, team responsible/# employed, current status, Quarter(s) occurring, start date/due date, carry over to next FY, Accomplishments, metric/outcome description, target metric, and FY metric outcome.</p> <p>For each quarter the activities took place, there is a column that provides updates/accomplishments.</p>	

These and other documents were reviewed and considered, as appropriate, during the collection of hazard identification, vulnerability assessment, and capability assessment. Data from these plans were incorporated into the risk assessment and hazard vulnerability sections of the plan as appropriate. The data was also used in determining the capability of the community in being able to implement certain mitigation strategies.

2.4.2 Phase II – Risk Assessment

Identify the Hazard, Assess the Risk and Vulnerabilities

The HMPC undertook a thorough process to identify, update, document, and profile all hazards that have impacted, or could potentially impact BCHD's communities. A comprehensive overview of the risk assessment methodology and findings can be found in [Section 4: Risk Assessment](#). Based on this analysis, the plan focuses on the following hazards of concern listed alphabetically (in the sequence does not reflect their level of severity):

The HMPC identified the following hazards of prime concern for BCHD:

- Drought
- Earthquake
- Extreme Heat
- Inland Flooding
- Landslide
- Tsunami
- Urban Wildfire
- Wind

The HMPC reviewed the previous occurrence data to help evaluate future probability and risk. Each hazard was discussed in relation to community assets and to determine potential impacts. This process resulted in a completed risk analysis and vulnerability and impact assessment for all hazards of prime concern.

2.4.3 Phase III – Mitigation Strategy

Set Goals, Assess Capabilities and Review Actions

A capabilities assessment is a comprehensive review of all the various mitigation capabilities and tools currently available to BCHD for the mitigation action implementation prescribed in the LHMP. The HMPC identified the technical, financial, and administrative capabilities to implement mitigation actions, as detailed in [Section 6.3: Capabilities Assessment](#). The HMPC then reviewed proposed mitigation actions and prioritized them through the STAPLE-E process in HMPC meeting #4.

Plan Draft

An initial first draft of the LHMP was developed using information and feedback gathered through HMPC meetings and public surveys. Planning notifications and updates were shared through BCHD website, emails lists and local outreach to encourage broad participation. Feedback received during this period was incorporated into the final version of the Plan.

2.4.4 Phase IV – Plan Maintenance

Plan Adoption and Submittal

This Plan was submitted to Cal OES and FEMA for formal review. Upon receiving an “Approvable Pending Adoption” notification from FEMA, the Plan was presented to BCHD’s Board of Directors for consideration and official adoption. Following the approval, a copy of the resolution was placed in [Appendix H, Beach Cities Health District Adoption Resolution](#).

Plan Maintenance: Implement, Evaluate, and Revise the Plan

Ongoing implementation and maintenance of the plan is essential to ensuring the LHMP remains effective and relevant over time. These efforts help maintain the Plan as a practicable and actionable guide for hazard mitigation planning within the community. [Section 7: Plan Maintenance](#), outlines the specific procedures BCHD will follow to support the long-term implementation of the LHMP. These procedures also include regular monitoring, reporting, evaluation, and updates to ensure the Plan continues to reflect current conditions, priorities and strategies of BCHD.

2.5 Incorporating Existing Mitigation Efforts into the 2025 Plan

FEMA Regulation Checklist: Plan Update	
44 CFR § 201.6(d)(3)	Documentation of the Plan Update Requirements: E1 & E2. Was the plan revised to reflect changes in development?
Elements	
E1-a	Q: Does the plan describe the changes in development that have occurred in hazard-prone areas that have increased or decreased each community's vulnerability since the previous plan was approved? A: See Key Features of 2025 Plan
E2-a	Q: Does the Plan describe how it was revised due to changes in community priorities? A: See Progress on Local Mitigation Efforts
E2-c	Q: Does the Plan describe how jurisdiction integrated the mitigation plan, where appropriate, into other planning mechanisms? A: See 7.5 Integration into Other Planning Mechanisms

Source: FEMA, *Local Mitigation Planning Policy Guide*, Effective April 11, 2025

The BCHD 2025 LHMP marks a significant milestone as the inaugural comprehensive hazard mitigation strategy for BCHD. This foundational plan establishes a structured framework to identify, assess, and mitigate risks associated with natural hazards, thereby enhancing the resilience of our community.

Key Features of the 2025 Plan:

- Integration of Climate Change Considerations:** Recognizing the escalating impact of climate change, this plan incorporates comprehensive assessments of how shifting climate patterns influence local hazard profiles. By evaluating potential future scenarios, BCHD has developed adaptive strategies to mitigate emerging risks effectively.
- Enhanced Community Engagement:** This 2025 plan emphasizes inclusive community participation, integrating feedback from a diverse range of stakeholders. This collaborative approach ensures that the mitigation strategies reflect the community's needs and priorities, fostering a shared commitment to resilience.
- Alignment with Federal and State Guidelines:** This LHMP aligns with the latest federal and state hazard mitigation guidelines, ensuring compliance and positioning our community for potential funding opportunities. By adhering to current standards, we enhance the plan's effectiveness and credibility.

As BCHD's first LHMP, this plan lays a solid foundation for ongoing hazard mitigation efforts, demonstrating BCHD's commitment to safeguarding the health and safety of the Beach Cities community.

2.5.1 Environmental Impact Overview

Climate Change Initiatives

BCHD has proactively implemented several initiatives aimed at enhancing community resilience and promoting environmental sustainability. These efforts, while primarily focused on public health, also contribute significantly to climate change mitigation and

adaptation.

Table 7: Climate Change Initiatives

Climate Change Initiative	Description	Year Completed
Blue Zone Project	<p>In 2010, BCHD launched the Blue Zones Project across the Beach Cities—Hermosa Beach, Manhattan Beach, and Redondo Beach. This initiative seeks to improve community well-being through environmental and policy changes that make healthy choices more accessible. Key components include:</p> <p>Active Transportation: Enhancing walkability and bike ability by developing bike lanes and pedestrian pathways. For instance, the adoption of the South Bay Bicycle Master Plan in 2011 aimed to create a more bike-friendly environment.</p> <p>Healthy Eating: Collaborating with local restaurants to offer healthier menu options, thereby encouraging nutritious dietary habits.</p> <p>Community Engagement: Organizing programs that foster social connections and a sense of purpose among residents.</p> <p>These measures not only enhance public health but also reduce environmental impact by encouraging sustainable transportation and lifestyle choices.</p>	2010
Active Transportation Programs (2010-2016)	<p>Between 2010 and 2016, BCHD promoted active transportation through programs like "Bike to Lunch" events and the establishment of "Walking School Bus" routes. These programs encouraged residents to choose walking or cycling over driving, thereby reducing vehicle emissions and promoting a healthier lifestyle.</p>	2010 - 2016
South Bay Bicycle Master Plan	<p>The South Bay Bicycle Master Plan, adopted in 2011, is a collaborative effort among seven South Bay cities, including El Segundo, Gardena, Hermosa Beach, Lawndale, Manhattan Beach, Redondo Beach, and Torrance. The plan outlines a comprehensive strategy to develop a regional network of over 200 miles of interconnected bikeways, aiming to make cycling a safe, convenient, and attractive transportation option.</p> <p>The South Bay Bicycle Master Plan reflects BCHD's commitment to sustainable transportation and public health by creating infrastructure that supports and encourages cycling as a viable mode of transportation.</p>	2011

Climate Change Initiative	Description	Year Completed
<p>Beach Cities Livability Plan</p>	<p>In 2011, the Beach Cities of Hermosa Beach, Manhattan Beach, and Redondo Beach adopted the Beach Cities Livability Plan, developed in collaboration with the Blue Zones Project. This comprehensive plan aims to enhance community well-being by creating environments that support healthy lifestyles and sustainable living. Key strategies include:</p> <p>Active Transportation: Improving walkability and bike ability through the development of pedestrian-friendly infrastructure and interconnected bikeways. This approach encourages residents to engage in physical activity and reduces reliance on automobiles, thereby decreasing greenhouse gas emissions.</p> <p>Policy Development: Implementing policies that promote health and sustainability, such as Living Streets Policies, which prioritize safe and accessible streets for all users, including pedestrians, cyclists, and motorists. These policies support the reduction of vehicle emissions and contribute to climate change mitigation.</p> <p>Community Engagement: Fostering a sense of community through programs and events that encourage social interaction and collective participation in health-promoting activities. Engaging the community in sustainable practices enhances resilience to climate-related impacts.</p>	<p>2011</p>
<p>Diamond Street Bike & Pedestrian Path</p>	<p>BCHD, in partnership with the City of Redondo Beach, completed the Diamond Street Bike & Pedestrian Path adjacent to BCHD's Prospect Avenue campus. This project, funded by a Measure M grant from Los Angeles County Metro, provides a vital connection between commercial, residential, and recreational areas, promoting non-motorized transportation and reducing carbon emissions.</p>	<p>2024</p>

2.5.2 Progress on Local Mitigation Efforts

In 2024, BCHD launched the development of this comprehensive LHMP to identify potential hazards and establish strategies to mitigate their impacts on the communities of Hermosa Beach, Manhattan Beach, and Redondo Beach. This proactive effort reflects BCHD's ongoing commitment to enhancing community resilience against natural hazards.

To support the LHMP's development, BCHD secured a grant of \$160,000 from the California Governor's Office of Emergency Services and FEMA's Hazard Mitigation Grant Program. This funding facilitates planning and implementation of mitigation strategies tailored to the specific needs of the Beach Cities.

In addition to the LHMP, BCHD has been actively involved in climate change initiatives that contribute to hazard mitigation. Notably, the Blue Zones Project, launched in 2010, focuses on improving community well-being through environmental and policy changes. By promoting active transportation, healthy eating, and community engagement, this initiative not only enhances public health but also reduces environmental impact, thereby mitigating hazards associated with climate change.

BCHD's collaboration on the South Bay Bicycle Master Plan in 2011 aimed to develop a comprehensive network of bike lanes and routes. This effort encourages cycling as a mode of transportation, reducing reliance on automobiles and decreasing greenhouse gas emissions, which are key factors in climate-related hazards.

Through these initiatives, BCHD demonstrates a holistic approach to hazard mitigation, integrating health promotion, environmental sustainability, and community resilience to effectively address and reduce potential risks.

SECTION 3: COMMUNITY PROFILE

3.1 History and Location

BCHD is a healthcare district focused on preventive health and serves the communities of Hermosa Beach, Manhattan Beach, and Redondo Beach. Established in 1955 as a public agency, it offers an extensive range of dynamic health and wellness programs, with innovative services and facilities to promote health and prevent diseases across the lifespan.

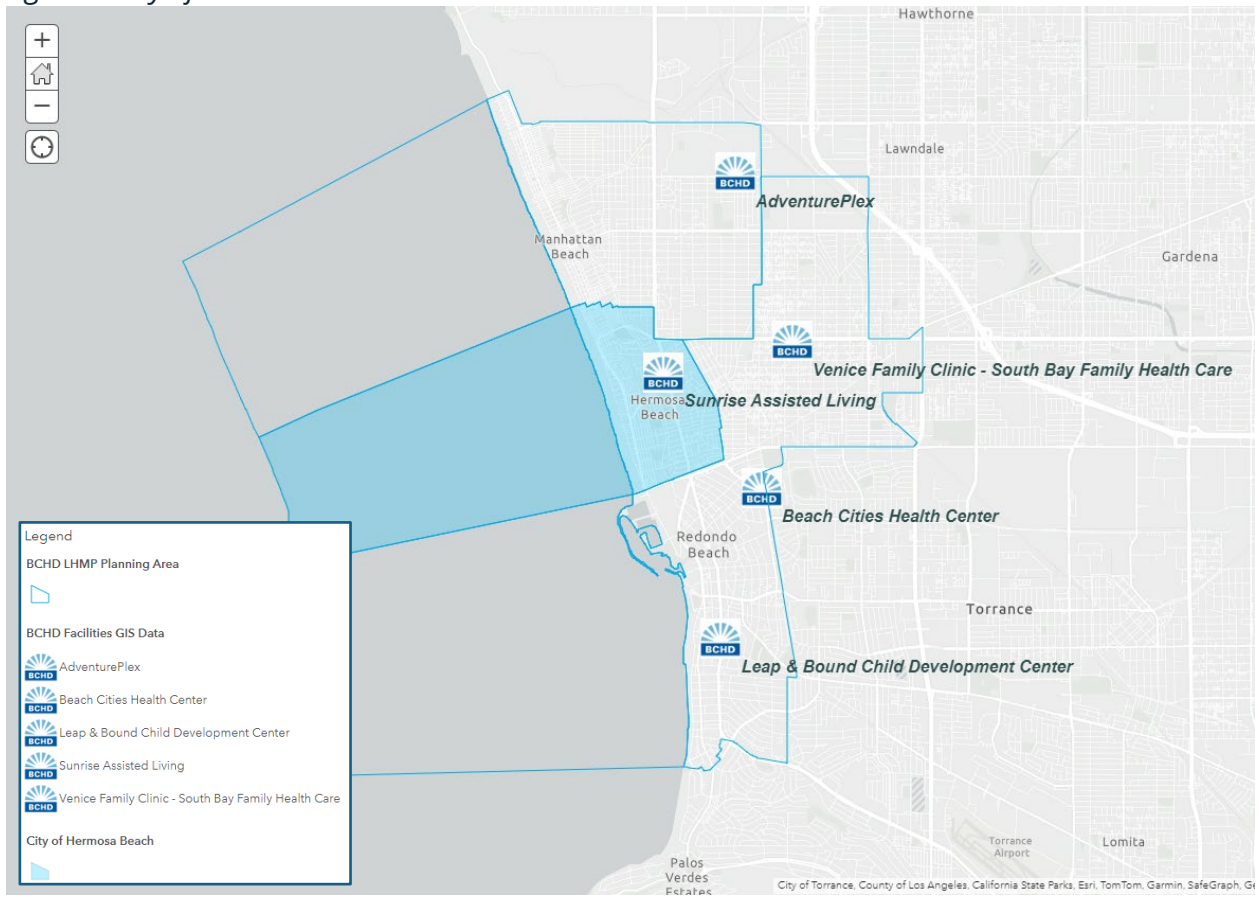
Focusing on wellness, not sickness, BCHD encourages people to make wiser healthcare decisions. Preventative causes of illness and death, like tobacco smoking, poor diet, and physical inactivity, are estimated to be responsible for nearly 1 million deaths annually – almost 40% of total mortality in the United States. According to the Center for Disease Control (CDC), about 90% of today's healthcare costs are for treating people with chronic yet preventable diseases. BCHD's wellness and healthy living programs and services are aimed at making prevention an integral part of the classrooms, workplaces, and homes of the beach cities.

The following sections below detail the community profiles of BCHD.

3.1.1 Hermosa Beach

The City of Hermosa Beach is located along the southern end of Santa Monica Bay in Los Angeles County. Covering an area of 1.4 square miles with topographic features including Santa Monica Bay, Mountains, and the Palos Verdes Peninsula. The Pacific Ocean serves as the western city boundary, while the city is bordered by Manhattan Beach to the north, and Redondo Beach to the south and east.

Figure 1: City of Hermosa Beach Boundaries

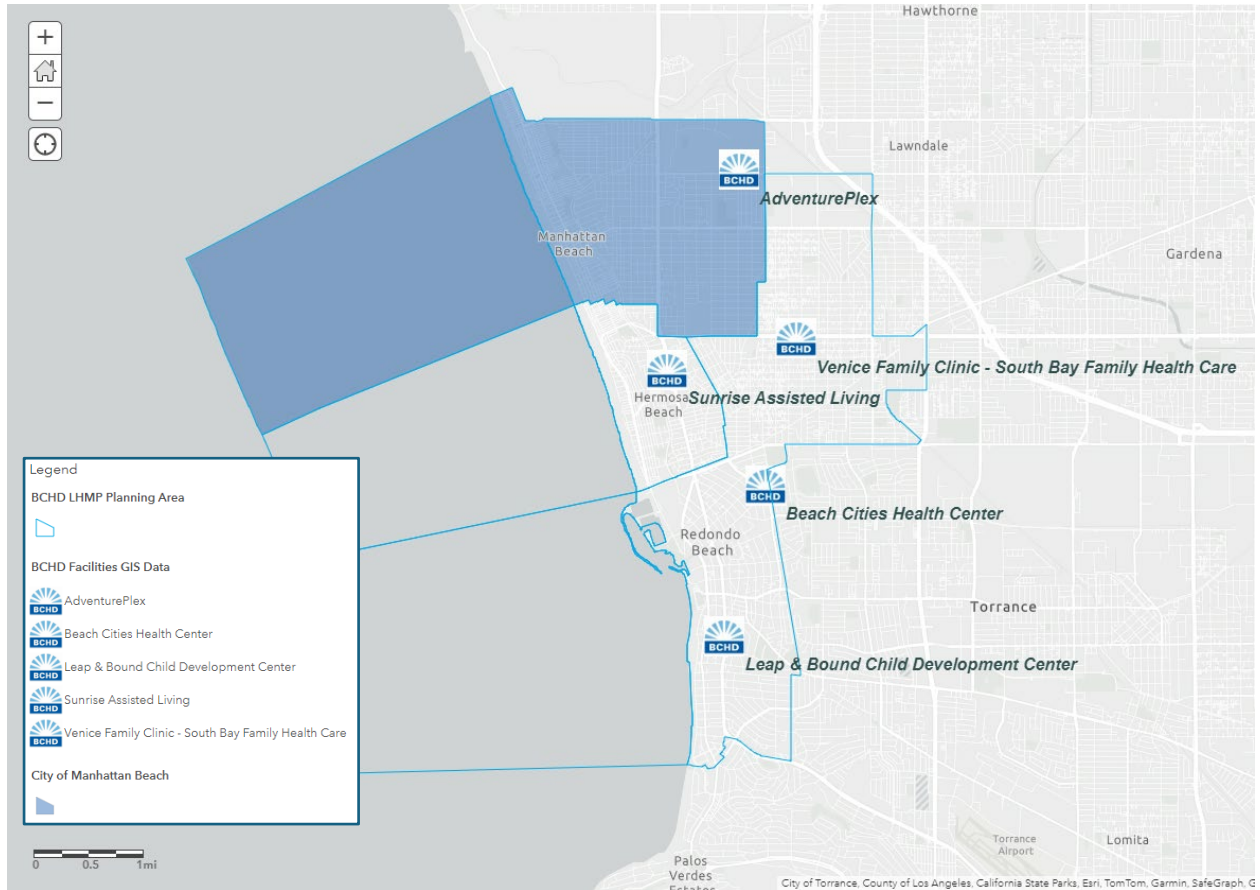


Source: BCHA LHMHP Project Map

3.1.2 Manhattan Beach

The City of Manhattan Beach, located in southwestern Los Angeles County along the Pacific coast, covers an area of 3.88 square miles with elevations ranging from sea level to 245 feet. The geography includes both hills and flat lands, bordered by Hermosa Beach, Redondo Beach, Hawthorne, and El Segundo. The city's location within California and Los Angeles County, along with its boundaries, are detailed in the plan's figures.

Figure 2: City of Manhattan Beach Boundaries

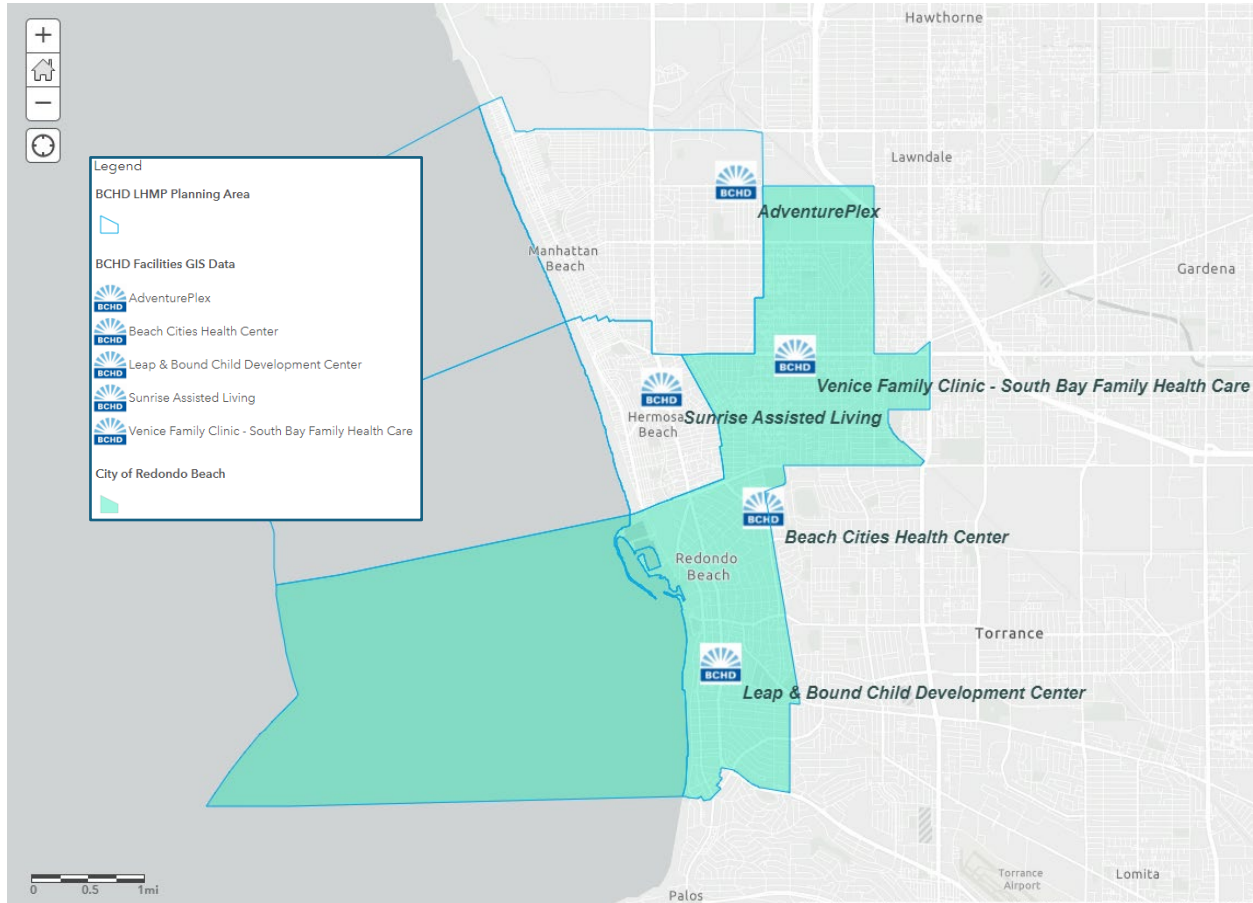


Source: BCHA LHMHP Project Map

3.1.3 Redondo Beach

The City of Redondo Beach is in the southwestern Los Angeles Basin. It is bordered by the cities of Hawthorne, Lawndale, Torrance, Manhattan Beach, and Hermosa Beach. 2.7 square miles of the City's southernmost section is along the coast. The city's total land area is 6.2 square miles.

Figure 3: General Boundaries of Redondo Beach



Source: BCHD LHMHP Project Map

3.2 Climate and Weather Patterns

BCHD is in the Los Angeles Basin, where the weather trends are described as semi-arid. Temperatures vary from around 49 degrees Fahrenheit in the winter months to 75 degrees in the summer months. Rainfall in the region averages 13.1 inches per year. But the term “average” means very little in Los Angeles County as the annual rainfall during this time has ranged from only 4.35 inches in 2001-2002 to 38.2 inches in 1883-1884. (Los Angeles County). Due to its proximity to the ocean, the air holds more moisture than inland regions. During the fall to early spring, the region receives winds that travel from the northwest. In the summer, the pressure differences between the cool ocean water and unevenly heated land surfaces modify the northwesterly wind circulation, bringing eastward-moving winds.

A common weather pattern in the region is the El Niño-Southern Oscillation (ENSO), also known as El Niño and La Niña. These are irregular phases of global weather patterns that are caused by fluctuations in the ocean and atmospheric temperatures in the Pacific. They occur, on average, every 2 to 7 years and can last for 9 to 12 months.

During El Niño years, the westerly trade winds that normally pull warm water to the western Pacific, near Southeast Asia, are weak. This causes normally cool sea surfaces throughout the central and east-central Equatorial Pacific to warm. The warmer ocean temperature causes strong storms with heavy rainfall in the Western United States and Central and South America.

El Niño storms are part of a global climate system linked to atmospheric and ocean changes in other regions of the globe. Therefore, climate changes in other regions of the world may impact the severity and frequency of heavy storms. As average global temperature increases, scientists predict storms will be more frequent and severe.

3.3 Governing Body

The Beach Cities Health District provides health and wellness services to the residents of Hermosa Beach, Manhattan Beach, and Redondo Beach. The voters of the three beach cities elect the five-member Board of Directors to 4-year terms. As one of 76 California Health Districts, it was created in 1955 as South Bay Hospital and took on its current name in 1998.

3.4 Demographics

According to the US Census, Los Angeles County is home to approximately 9.6 million people, making it the most populous county in the state. Table 12 summarizes key demographics of the district's service territory.

Table 8: Key Demographics, Beach Cities (Hermosa Beach, Manhattan Beach, Redondo Beach)

Population	Hermosa Beach	Manhattan Beach	Redondo Beach
Population Estimates, July 1, 2022, (V2022)	18,641	34,137	67,749*
Population estimates base, April 1, 2020, (V2022)	19,736	35,503	71,569*
Population, percent change - April 1, 2020 (estimates base) to July 1, 2022, (V2022)	-5.5%	-3.8%	-5.3%*
Population, Census, April 1, 2020	19,728	35,506	71,576
Population, Census, April 1, 2010	19,506	35,135	66,748
Age and Sex			
Persons under 5 years, percent	5.0%	4.9%	7.1%

Population	Hermosa Beach	Manhattan Beach	Redondo Beach
Persons under 18 years, percent	19.3%	27.6%	22.9%
Persons 65 years and over, percent	14.0%	15.7%	14.0%
Female persons, percent	46.0%	50.7%	49.7%
Race			
White alone, percent	77.9%	74.8%	62.3%
Black or African American alone, percent	0.6%	0.5%	3.1%
American Indian and Alaska Native alone, percent	0.0%	0.3%	0.3%
Asian alone, percent	7.3%	14.7%	16.7%
Native Hawaiian and Other Pacific Islander alone, percent	0.1%	0.1%	0.3%
Two or More Races, percent	11.6%	8.0%	13.4%
Hispanic or Latino, percent	11.4%	7.6%	15.8%
White alone, not Hispanic or Latino, percent	73.4%	71.3%	55.5%
*Redondo Beach Population Estimates, bases, and change is from July 1, 2023 (V2023)			

3.5 Socially Vulnerable Populations

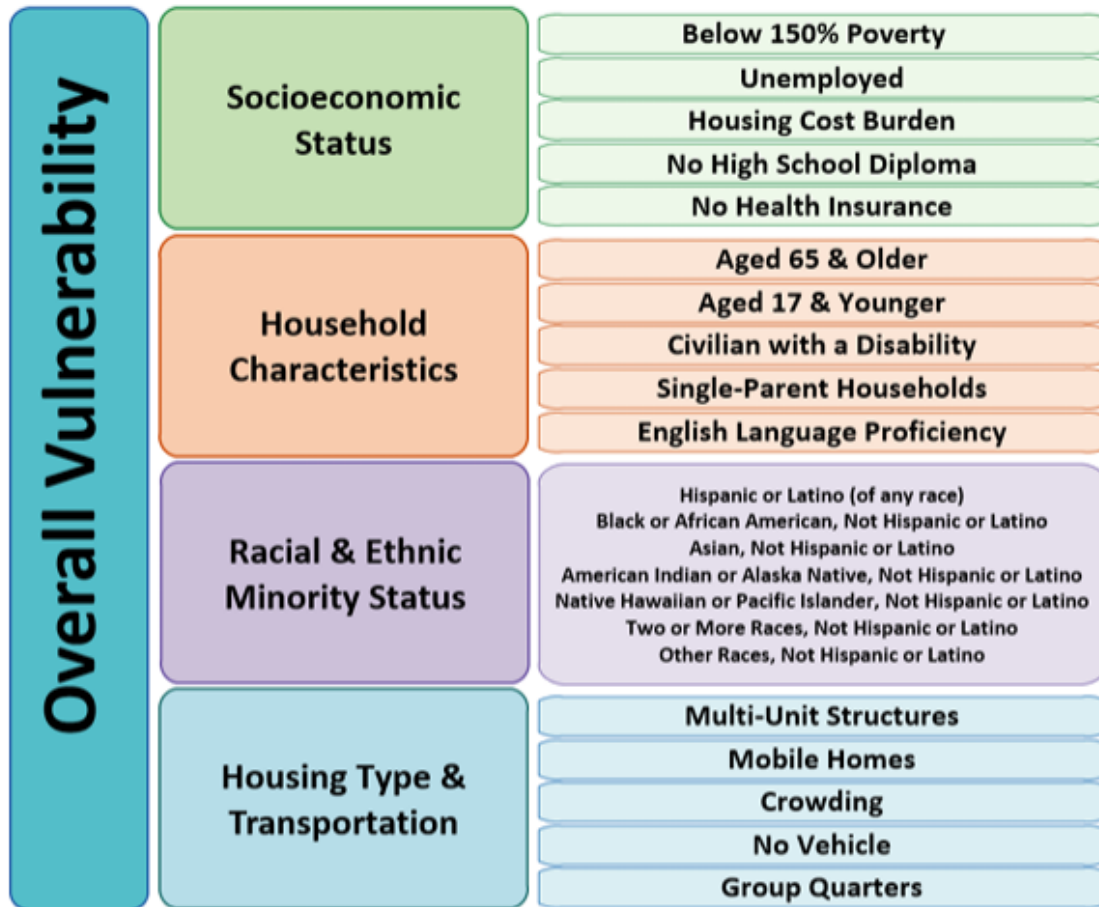
The inclusion and incorporation of Socially Vulnerable Populations (SVP) into the hazard mitigation planning process represents a recent addition mandated by the updated Local Mitigation Planning Policy, effective as of April 2025, by FEMA. This section of LHMP aims to identify vulnerable populations within the planning area, along with identifying traits that render individuals more susceptible to both natural and human-caused hazards.

Social vulnerability, as defined by the CDC, pertains to the characteristics of a person or group that impact their ability and capacity to prepare for, respond to, cope with, resist, and recover from the effects of a distinct and identifiable disaster, whether in the realm of nature or society. Numerous socioeconomic factors and other attributes influence social vulnerability, as described in **Figure 4** provided below.

The CDC has developed a Social Vulnerability Index (SVI) to measure the resilience of communities when confronted by external stresses such as natural or human-caused disasters or disease outbreaks. The SVI is broken down to the census tract levels and provides insight into vulnerable populations to assist emergency planners and public health

officials in identifying communities more likely to require additional support before, during, and after a hazardous event. The SVI index combines four main themes of vulnerability, which are, in turn, broken down into subcategories for 16 vulnerability factors. The themes are outlined in **Figure 4** below.

Figure 4: Overall Vulnerability



Source: CDC Social Vulnerability Index

3.6.1 Social Vulnerability Factors

Individual vulnerability factors refer to characteristics or circumstances of individuals that make them more susceptible to negative outcomes or impacts from various hazards or stressors. These factors can vary widely depending on the specific context and the type of hazard being considered. Some common types of individual vulnerability factors include:

- Age
- Access to housing
- Socio-economic status
- Health status and access to healthcare
- Employment status

- Language and communication barriers
- Cultural background
- Mobility and transportation

3.6.2 Social Vulnerability Determination

BCHD HPMC utilized the CDCs Social Vulnerability Index to evaluate the presence of socially vulnerable populations. This index is commonly utilized in federal grant evaluations and decision-making, including FEMA hazard mitigation grants. BCHD does not contain any disadvantaged communities as defined by SB 535 and CalEnviroScreen, nor any low-income communities as defined by AB1550. However, the map noted below in **Figure 5**, as well as local feedback and knowledge from the BCHD HPMC, further identified vulnerable populations within the planning area. Highlighted in light green below, Census Tracts 620801, 621301, and 620601 were identified as having the highest level of potential social vulnerability within BCHD and therefore targeted for outreach by BCHD.

Within this Census Tract 620801 (Manhattan Beach), the total population is 4,019 individuals and 1,318 households. 39% identify as a minority. There is a 6.8% unemployment rate, and 71 households were reported to be living below poverty. 19.7 % of households identified as low-income renter severe housing cost burden (50% of income spent on housing costs) for tract 6208, which includes tract 62801. The population identified with a disability was 6.9% and 75 identified as 25+ with no high school diploma.¹

Within Census Tract 621301 (Redondo Beach), the total population is 7,160 individuals and 2,961 households. 40% identify as a minority. There is a 7.4% unemployment rate, and 269 households were reported to be living below poverty. 20.4% of households identified as low-income renter severe housing cost burden (50% of income spent on housing costs). The population identified with a disability was 7.8% and 152 identified as 25+ with no high school diploma.²

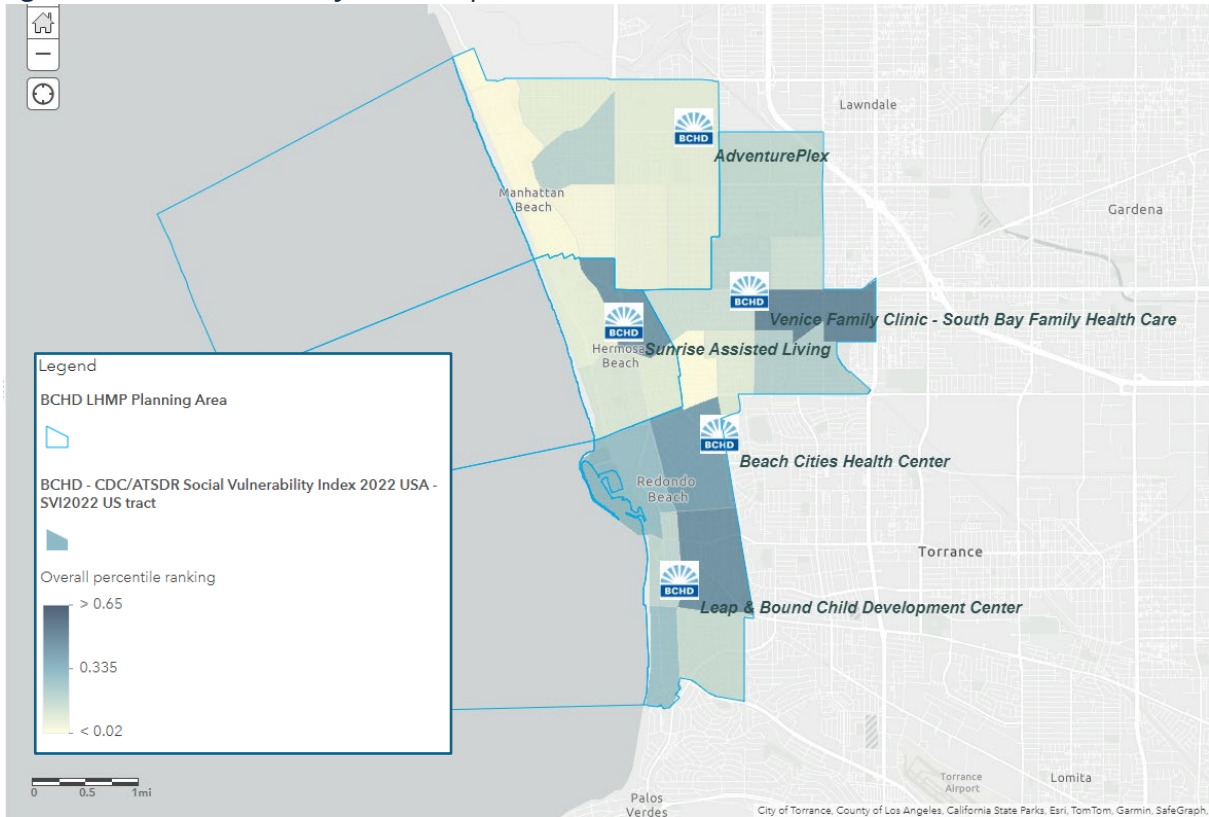
Within this Census Tract 620601 (Redondo Beach), the total population is 5,841 individuals and 2,221 households. 60.5% identify as a minority. There is a 7.4% unemployment rate, and 218 households were reported to be living below poverty. 30.1% of households identified as low-income renter severe housing cost burden (50% of income spent on housing costs). The population identified with a disability was 7.8% and 268 identified as 25+ with no high school diploma.³

¹ California Healthy People Index and CDC SVI Interactive Map

² California Healthy People Index and CDC SVI Interactive Map

³ California Healthy People Index and CDC SVI Interactive Map

Figure 5: Social Vulnerability Index Map



Source: BCHA LHMP Project Map, CDC/ATSDR Social Vulnerability Index 2020 USA

The BCHA Planning Committee relied on CDC SVI data, reporting the following categories and groups as influencing the higher vulnerability determination in Census Tract 620801:

- Persons living in poverty
- Cost-burdened households (households with annual income below \$75,000 spending 30 percent or more of income toward housing costs).
- Persons with a disability
- Minority households
- Age 25+ with no high school diploma

More information can be found in Appendix [C: Community Outreach](#) on the completed Vulnerable Community Outreach.

Collective feedback from these stakeholders and the BCHA Planning Committee regarding socially vulnerable populations was included in each hazard profile which supported the development of focused mitigation actions related to the whole community inclusive of vulnerable communities and individuals.

Figure 6: BCHD Health Priorities 2022-2025



BCHD developed a three-year strategic plan for 2022 to 2025 to address key health priorities within the community. During the development of this LHMP, BCHD was also in the process of updating its strategic plan, with new health focus areas being finalized and presented to the Board in early 2025. The updated strategic priorities focus on two core areas: Mental Health & Substance Use and Physical Health. These new focus areas reflect ongoing community needs and build upon lessons learned from the COVID-19 pandemic, during which Public Health & Safety was temporarily elevated as a strategic priority but has since been retired from the core framework. Every few years, BCHD conducts a survey as well as utilizes a variety of state and open resources to inform their Community Health Reports and strategic plan. These reports help BCHD stay informed of who comprises their community, prioritize their goals over the next three years, and reflect on accomplishments of the past planning period. The latest Community Health Report covers 2022 to 2025. At a glance, BCHD is comprised of 122,462 people with 23% youth (under 18 years old) and 14% older adults (65+ years old). 25% of the population identifies as minorities. BCHD reported 4% of the population living below the poverty level. Within those living below the poverty level, 6% also reported living with a disability. The median income is above \$100,000 for 61% of households. Overall, about half the population across BCHD rent their homes with the largest gap between renters (31%) and homeowners (69%) seen in Manhattan Beach. Of adults ages 25+, 97-99% reported having a high school diploma and 58-75% reported having a bachelor's degree or higher—putting BCHD's levels of education well above L.A. County's 78% and 31%, respectively.

The table below captures activities that are in progress or completed to address vulnerable

populations in their district for each fiscal year.

Table 9: BCHD Activities Addressing Vulnerable Populations by Fiscal Year

Fiscal Year	Activities
2021 - 2022	<ul style="list-style-type: none"> • Programming and interventions that address mental health consequences of COVID-19 • Conduct 514 Seismic Risk Assessment Review for Healthy Living Campus • Support access to COVID-19 testing for school staff and students, city employees and BCHD employees. • Health promotion: COVID-19 vaccine education and messaging • Integrate COVID 19 strategies and protocols into BCHD programming and community events.
2022 - 2023	<ul style="list-style-type: none"> • Help keep care management clients safe and independent at home by utilizing volunteers to provide services for errands, exercise, companionship and well-being checks • Provide community partners and city partners with funding to support health related programming such as ambulance service, domestic violence advocacy, homeless services, eyeglasses for low-income students, and bicycle safety programming. • Ensure BCHD facilities and operations are following all safety measures and protocols as well as completing requests for safety assistance and needs from the Safety Committee.
2023 - 2024	<ul style="list-style-type: none"> • Deliver mental health trainings to community partners and public to enhance the community's capacity to support mental health, including Mental Health First Aid training and QPR Suicide Prevention training. • Execute grant funding to develop a Local Hazard Mitigation Plan (LHMP). • Deliver health and wellness education in aging services in partnership with beach cities senior centers on the topics of exercise, senior nutrition and cognitive health.
2024 - 2025	<ul style="list-style-type: none"> • Provide policy subject matter expertise on a variety of substance use areas including alcohol, opioids, tobacco, and cannabis. Collaborate with the Youth Services Department and the Drug-Free Communities grant to provide community education and awareness, implement harm-reduction activities, and assess opportunities for policy adoption. • Provide free resources, education and connection for parents around parenting issues and challenges (e.g., substance use, social media, mental health, bullying) in their efforts to help their children lead healthy lives and reach their full potential. • Activate the Youth Advisory Council to create opportunities for students to serve as touchstones for health issues on the minds of teens, provide recommendations and feedback on youth-centered programming, and provide peer-to-peer education and outreach on topics to include substance use prevention, social media and mental health.

3.6.3 Community Lifelines

Community lifelines refer to the critical systems and infrastructure that support the health, safety, and well-being of a community. They are essential for maintaining the functionality of a community during and after a disaster or emergency. Evaluating the vulnerability of the BCHD Planning Area to natural hazards and disasters also involves reviewing and inventorying the community lifelines in place that could be impacted. It is important to include these elements into hazard discussions, to ensure the continuous operation of vital services and functions, which are necessary for human health, safety, economic security, and the recovery process.

FEMA defines community lifelines as the following:

- The most fundamental services in the community that, when stabilized, enable all other aspects of society to function.
- The integrated network of assets, services, and capabilities that provide lifeline services are used day-to-day to support the recurring needs of the community and enable all other aspects of society to function.
- When disrupted, decisive intervention (e.g., rapid re-establishment or employment of contingency response solutions) is required to stabilize the incident.

The specific Community Lifelines reviewed with the HMPC were as follows:



Safety and Security - Law Enforcement/Security, Fire Service, Search and Rescue, Government Service, Community Safety



Food, Hydration, Shelter - Food, Hydration, Shelter, Agriculture



Health and Medical - Medical Care, Public Health, Patient Movement, Medical Supply Chain, Fatality Management



Energy - Power Grid, Fuel



Communications - Infrastructure, Responder Communications, Alerts Warnings and Messages, Finance, 911 and Dispatch



Transportation - Highway/Roadway/Motor Vehicle, Mass Transit, Railway, Aviation, Maritime



Hazardous Materials - Facilities, HAZMAT, Pollutants, Contaminants



Water Systems - Potable Water Infrastructure, Wastewater Management

The purpose of maintaining and protecting these community lifelines is to ensure that in a disaster situation, a community can continue to function, respond effectively to emergencies, and recover more quickly. In the BCHD Planning Area, these community lifelines are all in place and functional as part of regular district operations. Specific information on these community lifelines in the BCHD Planning Area and how they may be affected by a hazard event or disaster are discussed in more detail in each hazard section of this LHMP.

3.7 Infrastructure Systems

3.7.1 Critical Facilities/Infrastructure

As part of the hazard mitigation planning process, BCHD identified critical facilities and infrastructure that are essential to maintaining public health, safety, and continuity of services during and after a disaster. These assets play key roles in supporting community lifelines such as health and medical care, food, water, and shelter. **Table 10** provides an overview of BCHD-owned or affiliated facilities, including their locations, estimated asset values, and associated lifeline categories. It is important to note that potential loss data are estimates only and may not reflect full replacement costs.

Table 10: Beach Cities Health District Critical Facilities/Infrastructure

Name of Facility	Address	Asset Value/Potential Loss Data	Community Lifeline Category
Beach Cities Health Center (Owned)	514 N. Prospect Ave.; Redondo Beach, CA 90277	\$62,592,873	Health and Medical
AdventurePlex (Owned)	1701 Marine Ave.; Manhattan Beach, CA 90266	\$7,707,276	Food, Water, Shelter
Sunrise Assisted Living (Land Lease & Joint Venture Limited Partner)	1837 Pacific Coast Highway, Hermosa Beach, CA 90254	\$2,408,000	Health and Medical
Leap & Bound Child Development Center	601 S. Pacific Coast Highway Redondo Beach, CA 90277	\$2,530,649	Food, Water, Shelter

Name of Facility	Address	Asset Value/Potential Loss Data	Community Lifeline Category
(Building and Land Lease)			
Venice Family Clinic - South Bay Family Health Care (Building and Land Lease)	2114 Artesia Boulevard Redondo Beach, CA 90278	\$192,000	Health and Medical
512 Parking Structure (Owned)	512 N. Prospect Ave.; Redondo Beach, CA 90277	\$10,149,276	Health and Medical
520 Parking Structure (Owned)	520 N. Prospect Ave.; Redondo Beach, CA 90277	\$18,296,150	Health and Medical
514 Surface Parking (Owned)	514 N. Prospect Ave.; Redondo Beach, CA 90277	\$100,000	Health and Medical
BCHD Total	\$103,976,224.00		

Vulnerability and Risk Reduction

BCHD is committed to integrating hazard vulnerability and risk reduction measures into all new developments within its jurisdiction. This commitment aligns with BCHD's strategic goals and the broader objectives of the communities it serves.

All new development occurring in the planning area identified in **Figure 7** below will incorporate hazard vulnerability and risk reduction for BCHD. BCHD's 2022–2025 Strategic Plan outlines goals that include enhancing programs and services, fostering partnerships, ensuring transparency, and effectively managing physical assets and infrastructure. These goals are designed to improve community health and resilience.⁴

As BCHD undertakes new infrastructure projects, it aims to balance the demands on utilities and other service systems. This approach ensures that developments do not exacerbate existing vulnerabilities or create new ones, thereby contributing to the overall safety and resilience of the community.

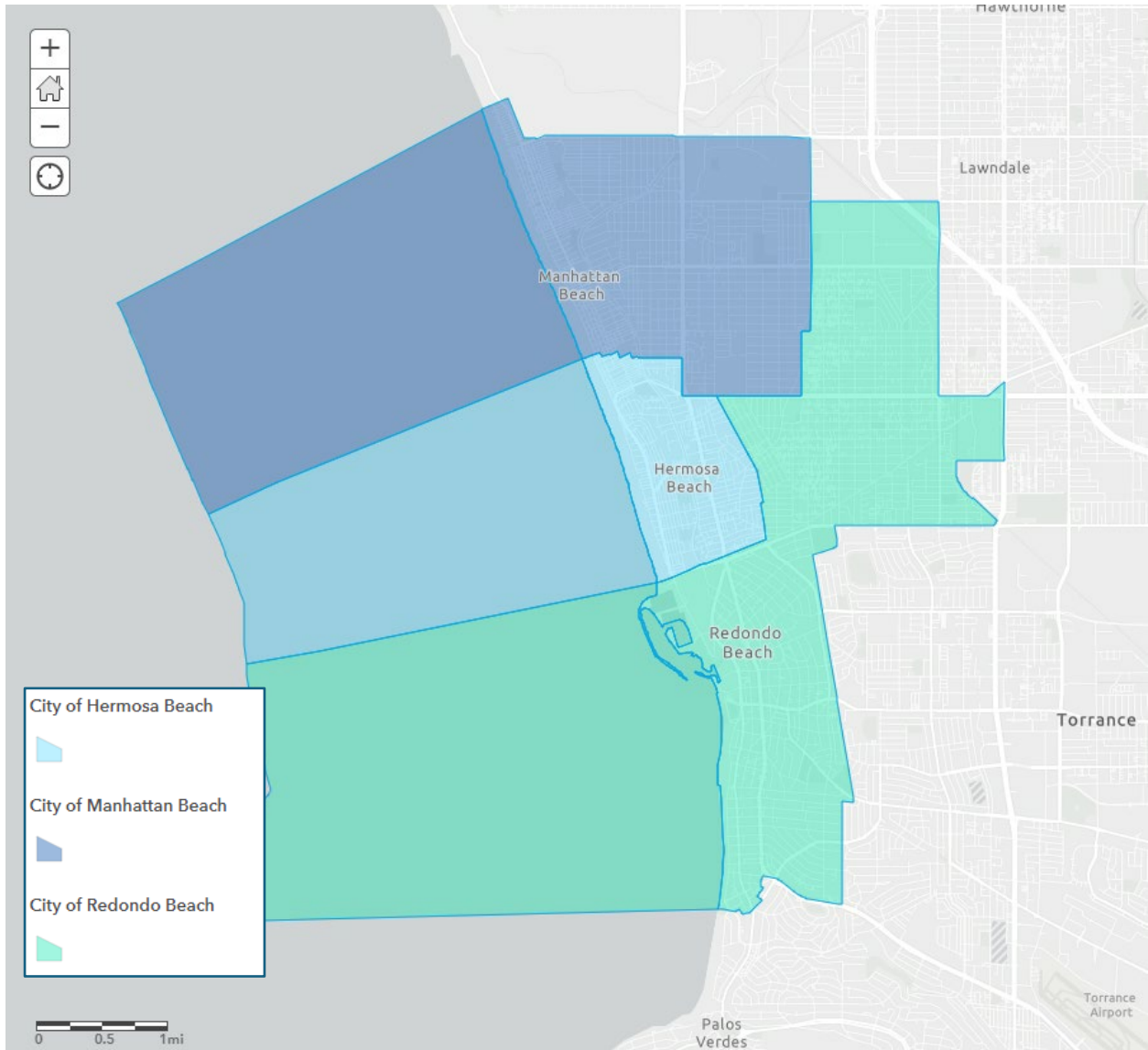
To inform planning and identify potential vulnerabilities, BCHD maintains detailed information on its critical facilities and infrastructure. This includes:

- **BCHD Facilities:** Locations and functions of BCHD-owned and operated facilities. A map of these facilities is located in **Figure 8**.
- **Partner Facilities:** Sites operated in partnership with other organizations, such as assisted living centers and health clinics. These partner facilities are also mapped in **Figure 8**.
- **Community Resources:** Key community assets, including parks, schools, and emergency shelters, that play a role in public health and safety.

By systematically incorporating hazard vulnerability assessments and risk reduction strategies into its planning and development processes, BCHD demonstrates its dedication to fostering a safer and more resilient community.

⁴ BCHD's 2022–2025 Strategic Plan:
https://bchd.blob.core.windows.net/docs/bchd/BCHD_Strategic%20Plan_2022-2025.pdf

Figure 7: BCHD LHMP Planning Area



Source: BCHD LHMP Project Map

3.8 Land Use and Existing Development

BCHD operates within the South Bay region of Los Angeles County, encompassing the cities of Hermosa Beach, Manhattan Beach, and Redondo Beach. Established in 1955 as the South Bay Hospital, BCHD has evolved into a comprehensive health and wellness organization, focusing on preventive care and community health initiatives.

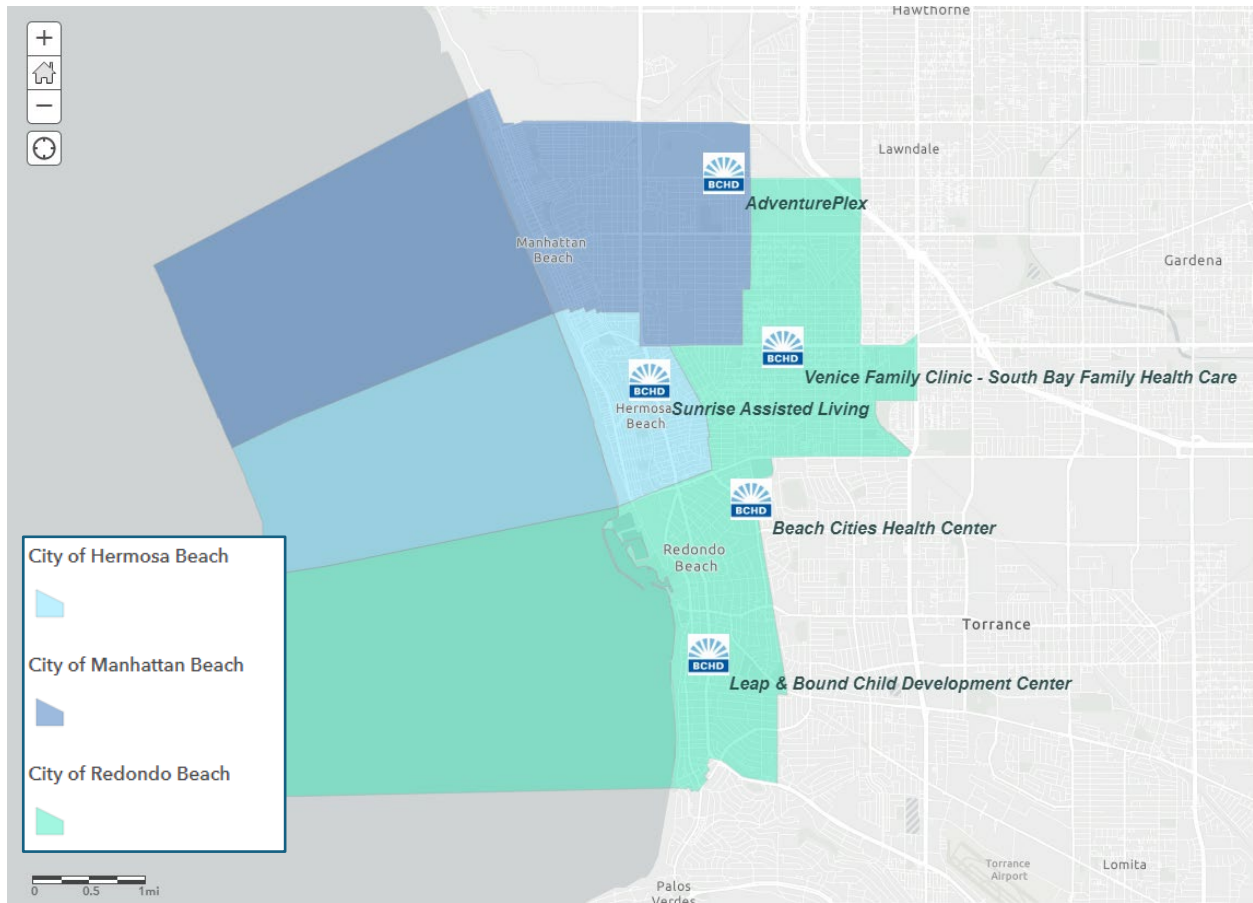
Land Use Designations

BCHD's primary facility is located at 514 North Prospect Avenue in Redondo Beach, occupying an 11-acre campus. This site is designated for public and institutional use, aligning with BCHD's mission to provide health services and programs to the community. The campus includes allcove Beach Cities, the Center for Health & Fitness, and various medical offices and community health programs.

Below is a map highlighting the facilities associated with BCHD, along with details regarding their ownership and lease arrangements:

- **Beach Cities Health Center:** This facility is owned by BCHD and serves as a hub for health and wellness services in the community.
- **AdventurePlex:** Also owned by BCHD, AdventurePlex offers a variety of health and fitness programs designed for children and families.
- **Sunrise Assisted Living:** BCHD holds a land lease and is a joint venture limited partner in this assisted living facility, providing supportive services for seniors.
- **Leap & Bound Child Development Center:** This center operates under a building and land lease agreement with BCHD, offering early childhood education and development programs.
- **Venice Family Clinic - South Bay Family Health Care:** Operating through a building and land lease with BCHD, this clinic provides comprehensive health care services to the community.

Figure 8: BCHD Critical Facilities Map



Source: BCHD LHMP Project Map

Completed and Current Development

BCHD has undertaken a range of development projects to support its mission of improving community health and well-being. These efforts reflect BCHD’s commitment to creating spaces and services that promote active lifestyles, mental and physical health, and sustainable infrastructure. **Table 11** highlights recent completed projects that enhance access to health resources and active transportation. **Table 12** outlines current development efforts, including the major Healthy Living Campus initiative, which is designed to serve the long-term needs of the Beach Cities community through expanded wellness facilities, open space, and integrated health services.

Table 11: Completed Development

Completed Development	
Location	Development
Diamond Street Bike & Pedestrian Path (2023)	In collaboration with the City of Redondo Beach, BCHD completed a bicycle and pedestrian improvement project adjacent to its Prospect Avenue campus. This path provides a vital connection between commercial, residential, and recreational areas, promoting active

	transportation and reducing vehicular traffic.
allcove Beach Cities Youth Wellness Center (2022)	BCHD established the allcove Beach Cities center to offer mental and physical health services, education and employment assistance, peer and family support, and substance use prevention programs for individuals aged 12–25. This initiative addresses the growing need for youth mental health services in the community.

Table 12: Current Development

Current Development	
Location	Development
Healthy Living Campus Project	<p>BCHD is in the planning and design stages of creating a Healthy Living Campus on its Redondo Beach property at 514 North Prospect Avenue. The 11-acre site aims to serve as a hub of well-being, offering health and wellness services, programs, and facilities for residents of all ages. The project currently includes the construction of a permanent location for allcove Beach Cities youth wellness center, Center for Health & Fitness, and Programs for all-inclusive care for the elderly (PACE)</p> <p>The Center for Health & Fitness will be moved from the 514 North Prospect Avenue location to the 510 North Prospect Avenue location.</p>

3.9 Development Trends and Future Development

BCHD is actively engaged in initiatives aimed at enhancing community health and resilience. These efforts are informed by current development trends and strategic planning to address future needs.

Current Development Trends

- **Modernization of Health Facilities:** BCHD is focusing on upgrading existing health facilities to meet contemporary standards, ensuring they are equipped to provide comprehensive health services to the community.
- **Integration of Sustainable Design:** Incorporating sustainable design principles, such as energy-efficient systems and environmentally friendly materials, is becoming a standard practice in BCHD's infrastructure projects.
- **Expansion of Community Spaces:** Developments are increasingly designed to serve as community hubs, offering diverse services that cater to various demographics, thereby fostering inclusivity and engagement.

Future Development

- **Healthy Living Campus Project:** BCHD is progressing with the Healthy Living Campus project, which aims to transform the existing campus into a modern, intergenerational health and wellness center. The project currently includes the construction of a permanent location for allcove Beach Cities youth wellness center, Center for Health

& Fitness, and Programs for all-inclusive care for the elderly (PACE). This development is designed to meet the evolving health needs of the community and promote sustainable living.

- **Environmental Sustainability Initiatives:** Future projects will incorporate sustainable design principles, such as energy-efficient buildings and green infrastructure, to reduce environmental impact and enhance resilience to climate change.
- **Expansion of Mental Health Services:** Recognizing the growing need for mental health support, BCHD plans to expand services, particularly for youth and vulnerable populations, through dedicated facilities and community programs.
- **Community Engagement and Education:** BCHD intends to increase community outreach and education efforts to promote healthy lifestyles and inform residents about available resources and services.

SECTION 4: RISK ASSESSMENT

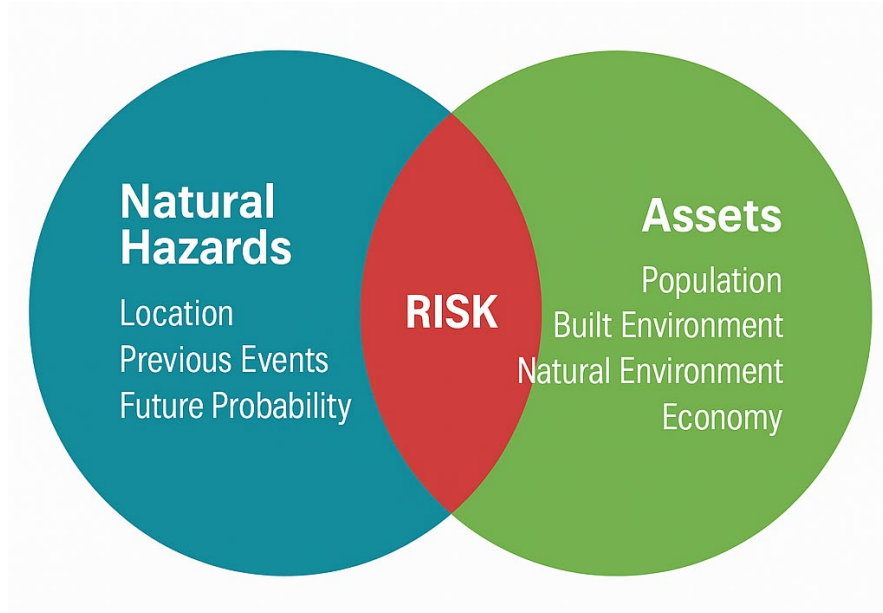
4.1 Risk Assessment Overview

A thorough risk assessment is a foundational step in the hazard mitigation planning process. As defined by the Federal Emergency Management Agency (FEMA), risk is a combination of hazard, vulnerability, and exposure. It represents the potential impact a hazard could have on people, services, facilities, and structures in a community, and the likelihood of such an event resulting in injury or damage.

This section identifies and profiles the natural hazards relevant to BCHD and evaluates the exposure of lives, property, and infrastructure to those hazards. The assessment also quantifies vulnerable assets, including populations, critical facilities, and key infrastructure, using the best available data.

The risk assessment provides a clearer understanding of where and how the community is most at risk, and serves as the basis for developing and prioritizing effective mitigation actions. For example, if the assessment reveals that a specific area is highly susceptible to earthquake damage, strategies can be developed to protect essential services and support populations in that area.

Figure 9: Risk Assessment



Source: FEMA, *State Mitigation Planning Key Topics Bulletin: Risk Assessment*

The HPMC engaged in discussions regarding which hazards to prioritize based on past

occurrences, social vulnerability, and climate change to assist with developing priorities. This process is also known as identifying the City's Hazards of Prime Concern, which then enables the development of targeted strategies to mitigated risks within the City. Consequently, the actions outlined in the mitigation strategy are tailored to reflect these priorities. Through these discussions, the Hazards of Prime Concern were determined to include *Drought, Earthquake, Extreme Heat, Inland Flooding, Landslide, Tsunami, Urban Wildfire, and Wind.*

4.1.1 Risk Assessment Sources

A variety of data sources noted below were used to inform the risk assessment process and guide the development of the LHMP, ensuring that the analysis reflects both current and projected hazard conditions across the BCHD Planning Area.

Primary Hazard Data Sources

- FEMA
- National Oceanic and Atmospheric Administration (NOAA)
- NOAA National Centers for Environmental Information (NCEI) Storm Events Database
- National Weather Service (NWS)

Climate Change Information Sources

- Center for Climate Resilience and Decision Science by Argonne National Laboratory
- Climate Vulnerability Index
- Climate Assessments from cities within the BCHD Planning Area

Historical and Supplemental Data Sources

- Historical records and planning efforts from cities within the BCHD Planning Area
- Last approved LHMPs from cities within the BCHD Planning Area

Existing hazard data from FEMA, NOAA, NWS, and other reputable sources were reviewed to assess the significance of hazards within the BCHD Planning Area. The NWS provided key insights into hazard-specific data, including frequency and severity of extreme weather events, as well as localized climate trends. Climate change data was drawn from the Center for Climate Resilience and Decision Science by the Argonne National Laboratory, the Climate Vulnerability Index, and various climate assessments from the cities within the District, including Manhattan Beach, Hermosa Beach, and Redondo Beach. These resources incorporated findings from previous planning efforts, enabling a comprehensive analysis.

The significance of hazards was measured based on key criteria such as frequency, severity, and potential impacts, including fatalities, injuries, property damage, and economic losses. NOAA's NCEI Storm Events Database, which provides hazard data dating

back to 1950, was a key source, though gaps in older data were acknowledged. Additionally, storm events that did not match the exact criteria were not included.

To supplement this data, historical records and prior planning efforts from Beach Cities municipalities were integrated into the analysis. The risk assessment also accounted for hazard extent and impacts, with particular attention to socially vulnerable populations and land use patterns across the district. A comprehensive, HMPC-driven analysis further refined the assessment, aligning it with the district's unique demographics, geography, and community priorities.

4.1.2 Limitations

The vulnerability assessment and hazard-specific impact evaluations in this plan are based on the best available data and methodologies. However, inherent uncertainties remain in any risk assessment and loss estimation methodology due to several factors, including limitation in scientific knowledge and data availability. These uncertainties result in estimates that are approximate and should be used primarily to understand relative risk rather than precise projections.

Key sources of uncertainty and limitations include:

- Data Availability and Quality
 - Incomplete, outdated, or inconsistent inventory, demographics, or economic parameter data.
 - Variations in the quality and resolution of hazard-specific data, such as floodplain maps, seismic data, or historical storm records.
 - Inconsistent hazard data across jurisdictions within the BCHD Planning Area.
- Limitations of Federal Agency Data
 - Federal datasets, such as NOAA's NCEI Storm Events Database, provide historical hazard data but often on broader geographic regions rather than the specific, localized impacts experienced within the BCHD Planning Area.
 - National datasets may lack granularity, such as detailed information on neighborhood-level impacts or specific vulnerabilities unique to small communities like those in Manhattan Beach, Hermosa Beach, and Redondo Beach.
 - Reporting thresholds for federal datasets may exclude smaller-scale events that still cause significant local impacts, such as minor flooding or windstorms.
- Gaps in Local-Level Data
 - Limited availability of detailed, localized data on disaster impacts, such as property damage estimates, infrastructure disruptions, and social vulnerabilities, can affect the precision of the analysis.

- Municipal data on past events may be inconsistent, outdated, or incomplete, particularly for events that occurred before systematic tracking was implemented.
- Social vulnerability data often lack specificity at the district or neighborhood level, making it difficult to fully understand how hazards disproportionately affect certain populations.
- Methodological Simplifications
 - Loss estimation models require approximations and generalizations to simplify complex systems.
 - Simplified assumptions may overlook localized factors, such as neighborhood-level vulnerabilities, and impacts of certain populations.
 - Hazard modeling tools often cannot account for cascading effects, such as power outages or transportation disruptions, which can amplify impacts.
- Hazard Characteristics
 - The geographic extent and severity of hazard events can vary widely and are often unpredictable.
 - Rare or unprecedented events, such as high-magnitude or extreme heat waves, may not have sufficient historical data for accurate modeling.
 - Climate-driven changes in hazard patterns introduce additional vulnerability, particularly for hazards such as inland flooding and urban wildfires.
- Mitigation Measures
 - Existing mitigation strategies may reduce vulnerability, but:
 - Data on the effectiveness and condition of these measures may be limited.
 - Some measures are not uniformly implemented across the planning area.
 - BCHD may not hold ownership of these mitigation measures, rather ownership is placed on planning area jurisdictions.
 - Community-level resilience strategies, such as emergency training and drills, are often difficult to quantify in risk assessments.
- Human Factors and Preparedness
 - Community preparedness and response capacity can vary significantly based on:
 - Awareness of hazard risk.

- Accessibility of warning systems (e.g., alerts in multiple languages, alerting methods).
 - Individual ability to evacuate or shelter-in-place, particularly for AFN populations.
 - The timing and reliability of early warning systems may influence the extent of losses in some hazard events, such as tsunamis or urban wildfires.
- Future Changes
 - Population growth and urban development can increase exposure to hazards, particularly in areas with limited open space or high-density housing.
 - Changing economic conditions may alter the availability of resources for mitigation and preparedness.
 - Environmental changes are expected to exacerbate certain hazards, such as extreme heat, and flooding, but the rate and magnitude of these changes remain uncertain.

These factors collectively influence potential loss estimates, which are inherently approximate. While these estimates provide a valuable framework for understanding relative risk, they should be supplemented with local expertise and regularly updated to reflect new data and changing conditions. By recognizing these limitations, BCHD decision-makers can better prioritize mitigation strategies and enhance community resilience.

4.2 Emergency and Disaster Declaration History

One method to identify hazards is to look at the events that have triggered federal and/or state disaster declarations. The HMPC was able to identify the chronology of past hazard events. It is important to note that the planning period for this LHMP spans from 2019 to 2023, therefore, **Table 18** contains a history of State and Federal Disaster Declarations in Los Angeles County (2019-2023) that occurred within or are relevant to this timeframe.

Table 13: State and Federal Disaster Declarations for Los Angeles County (2019-2023)

Disaster Declaration	Hazard	Date	Details
California Severe Winter Storms, Flooding, Landslides, and Mudslides EM-3592-CA	Snowstorm/ Flooding/ Landslides/ Mudslides	March 2023	Incident Period: Mar. 9, 2023 – Jul. 10, 2023 Declaration Date: Mar. 10, 2023

Disaster Declaration	Hazard	Date	Details
California Severe Winter Storms, Straight-line Winds, Flooding, Landslides, and Mudslides DR-4699-CA	Snowstorm/ Straight-line Winds/ Flooding/ Landslides/ Mudslides	February 2023	Incident Period: Feb. 21, 2023 – Jul. 10, 20213 Declaration Date: Apr. 3, 2023
California Severe Winter Storms, Flooding, Landslides, and Mudslides DR-4683-CA	Snowstorm/ Flooding/ Landslides/ Mudslides	December 2022	The state declared an emergency during a severe winter storm lasting from December 27, 2022 – January 31, 2023. Disaster was declared on January 14, 2023.
California Severe Winter Storms, Flooding, and Mudslides EM-3591-CA	Snowstorm/ Flooding/ Mudslide	January 2023	Incident Period: Jan. 8, 2023 – Jan. 31, 2023 Declaration Date: Jan. 9, 2023
California Wildfires DR-4569-CA	Fire	September 2020	Incident Period: Sept. 4, 2020-Nov. 17, 2020 Declaration Date: Oct. 16, 2020
California Bobcat Fire FM-5374-CA	Fire	September 2020	Incident Period: Sept. 13, 2020 Declaration Date: Sept. 13, 2020
California Covid-19 Pandemic DR-4482-CA	Pandemic	January 2020	Incident Period: Jan. 20, 2020, and continuing Declaration Date: Mar. 22, 2020
California Covid-19 EM-3428-CA	Pandemic	January 2020	Incident Period: Jan. 20, 2020, and continuing Declaration Date: Mar. 13, 2020
California Tick Fire FM-5296-CA	Fire	October 2019	Incident Period: Oct. 24, 2019 Declaration Date: Oct. 24, 2019
California Saddleridge Fire FM-5293-CA	Fire	October 2019	Incident Period: Oct. 10, 2019 Declaration Date: Oct. 11, 2019
Records of Disaster Declarations found at FEMA Disaster Information			

4.3 Hazard Identification

BCHD is susceptible to a range of natural hazards that could impact public health services and infrastructure. As this is the first LHMP developed for BCHD, identifying and profiling hazards that present the greatest risk was a foundational component of the planning process.

The HMPC established the initial list of hazards through a comparative review of existing Local Hazard Mitigation Plans from the three cities that make up BCHD's Planning Area: Hermosa Beach, Manhattan Beach, and Redondo Beach. This comparative analysis ensured that BCHD's plan is informed by existing local hazard knowledge and planning priorities.

Following this initial analysis, the HMPC verified and refined the hazard list through a series of collaborative planning meetings and stakeholder discussions. The final hazard identification was guided by the following considerations:

- HMPC members' expertise and understanding of local risks associated with each hazard.
- Historical hazard events affecting BCHD's Planning Area.
- The feasibility and community interest in developing meaningful mitigation strategies for each hazard.

Through this process, and with consensus from the planning team, the following natural hazards were identified as having the greatest potential to impact BCHD operations, facilities, and populations served:

- Drought
- Earthquake
- Extreme Heat
- Inland Flooding
- Landslide
- Tsunami
- Urban Wildfire
- Wind

Weather patterns and changes in climate influence the frequency, intensity, and duration of many of these hazards. Accordingly, each hazard profile within this plan includes a discussion of how these changes may affect future risk.

The hazard identification process also recognized that many hazards are interconnected. Where applicable, hazard profiles include references to related hazards. In cases where multiple hazards share similar causes, effects, or mitigation strategies, they have been combined under broader categories for clarity and efficiency in planning.

Table 14 summarizes the hazards identified in the 2025 BCHD LHMP alongside those included in the LHMPs for Hermosa Beach, Manhattan Beach, and Redondo Beach.

Table 14: Summary of Hazards for 2025 BCHD LHMP Compared to Jurisdictional LHMPs

Hazards	Hermosa Beach LHMP	Manhattan Beach LHMP	Redondo Beach LHMP
Coastal Hazards		Included	Included
Coastal Inundation (Seal			Included

Level Rise / Storm Surge / Coastal Flooding)			
Disease	Included		
Drought	Included as Weather	Included	Included
Earthquake (Seismic / Geological)	Included	Included	Included
Extreme Heat	Included as Weather	Included as Severe Weather	Included as Severe Weather
Fire/Wildfire		Included	
Flood	Included	Included	Included
Hazard Materials Release			Included
High Wind		Included as Severe Weather	Included
Hurricane / Tropical Storm	Included as Weather		
Tsunami	Included	Included in Coastal Hazards	Included in Seismic Hazards

4.4 Hazard Scoring and Prioritization

For the 2025 LHMP, to determine an identified hazard's priority ranking, the HMPC reviewed the hazard's historical occurrences, environmental impacts, and vulnerability and impacts on assets. A quantitative risk assessment was conducted for each hazard which included the following:

- **Human Impacts** - Risk of injuries and deaths from the hazard.
- **Property Impacts** - Amount of residential property damage associated from the hazard.
- **Business Impacts** - Amount of business damage associated from the hazard.
- **Probability** - Likelihood of the hazard occurring within a given span of years.
- **Social Vulnerability** – Utilizing the CDC's Social Vulnerability Index, which provides a rating based on the potential negative effects a hazard can have on communities caused by external stresses on human health.

The HMPC used the rating criteria outlined in **Tables 15-18**, below, to determine their rating values.

Table 15: Human Impacts

HUMAN	
Risk of injuries and death from the hazard.	
1	Death very unlikely, injuries are unlikely.
2	Death unlikely, injuries are minimal.
3	Death unlikely, injuries may be substantial.
4	Death possible, injuries may be substantial.
5	Deaths probably, injuries will likely be substantial.

Table 16: Property Impacts

PROPERTY - RESIDENTIAL	
Amount of residential property damage associated with the hazard.	
1	Less than \$500 in damages.
2	\$500 - \$10,000 in damages.
3	\$10,000 - \$500,000 in damages.
4	\$500,000 - \$2,000,000 in damages.
5	More than \$2,000,000 in damages.

Table 17: Business Impacts

PROPERTY - BUSINESS	
Amount of business damage associated with the hazard.	
1	Less than 3 businesses closed for only a day.
2	More than 3 businesses closed for a week.
3	More than 3 businesses closed for a few months.
4	More than 3 businesses closed indefinitely or relocated.
5	A top-10 local employer closed indefinitely.

Table 18: Probability of Hazard Occurring

PROBABILITY	
Likelihood of the hazard occurring within a given span of years.	
1	Less than once every 10 years.
2	About once every 5-10 years.
3	About once every 2-5 years.
4	About once a year.
5	More than once a year.

Subsequently for each hazard, an index value was assigned for each category from 0 to 5, with 0 being the least hazardous and 5 being the most hazardous situation. This value was then assigned a weighting factor, and the result was the hazard risk ranking score.

A hazard's overall vulnerability value was determined by taking the sum of the Impacts to Assets (Human Impact, Property Impact and Business Impact) values and dividing it by 3.

$$\frac{\text{Human Impact} + \text{Property Impact} + \text{Business Impact}}{3} = \text{Vulnerability}$$

A hazard's risk values were then determined by the sum of the vulnerability value, probability of occurrence value, and the social vulnerability value.

$$\text{Vulnerability} + \text{Probability} + \text{Social Vulnerability} = \text{Risk Value}$$

The hazard's Risk Value was further categorized based on the determined final score. Hazards with a Risk Value between **1-3** was **low risk** and thus a low threat hazard, **4-6** a **moderate risk** value, 7-9 a medium risk value, **10-12** a **high-risk** value, and **13-15** a **severe risk** value as noted in the table below.

Low (Risk Value: 1–3): Hazards in this category are unlikely to cause significant damage or disruption. They pose minimal threat to life, property, or operations and typically require minimal mitigation or preparedness efforts. These risks are monitored but are not a primary focus of mitigation planning.

Moderate (Risk Value: 4–6): These hazards may occasionally impact the community, causing limited disruption or damage. While not frequent or severe, they warrant some level of preparedness and mitigation planning to reduce future vulnerability.

Medium (Risk Value: 7–9): Hazards in this range are more likely to occur and could cause moderate damage or operational impacts. They represent a meaningful threat to the community's assets and populations and should be actively addressed through mitigation actions and preparedness efforts.

High (Risk Value: 10–12): High-risk hazards are both likely to occur and capable of causing significant damage, disruption, or harm to public health and safety. These are a top priority for mitigation planning and require the development of targeted strategies to reduce risk.

Severe (Risk Value: 13–15): These represent the most critical hazards that are severe and potentially catastrophic in impact. They can lead to widespread loss of life, infrastructure failure, or long-term recovery challenges. Severe risks require immediate and

comprehensive mitigation measures and ongoing community preparedness.

Table 19: Hazard Risk Scale/Values

Risk Scale	Risk Value	Scale Description
Low	1 - 3	Hazards in this category are unlikely to cause significant damage or disruption. They pose minimal threat to life, property, or operations and typically require minimal mitigation or preparedness efforts. These risks are monitored but are not a primary focus of mitigation planning
Moderate	4 - 6	These hazards may occasionally impact the community, causing limited disruption or damage. While not frequent or severe, they warrant some level of preparedness and mitigation planning to reduce future vulnerability.
Medium	7 - 9	Hazards in this range are more likely to occur and could cause moderate damage or operational impacts. They represent a meaningful threat to the community's assets and populations and should be actively addressed through mitigation actions and preparedness efforts.
High	10 - 12	High-risk hazards are both likely to occur and capable of causing significant damage, disruption, or harm to public health and safety. These are a top priority for mitigation planning and require the development of targeted strategies to reduce risk.
Severe	13 - 15	These represent the most critical hazards that are severe and potentially catastrophic in impact. They can lead to widespread loss of life, infrastructure failure, or long-term recovery challenges. Severe risks require immediate and comprehensive mitigation measures and ongoing community preparedness.

The results from the HMPC Meeting #2 survey were compiled and presented during HMPC Meeting #3 for further evaluation and discussion surrounding vulnerability and risk. **Table 19**, Hazard Risk Scales/Values, identifies the final scores and the hazard planning consideration (threat level) for each hazard based on discussions with the LHMP Planning Team and the prioritization process described above. **Table 20** Hazard Prioritization Ranking identifies the final scores and overall hazard prioritization utilizing the scoring and ranking method described above.

Table 20: Hazard Prioritization Ranking

Hazard	Impact to Assets			Vulnerability (H+P+B=#) (V=#/3)	Probability (Pb)	Social Vulnerability (SV)	Risk Value (R=V+Pb+SV)	Risk Level
	Human Impact (H)	Property Impact (P)	Business Impact (B)					
Drought	2	1.8	1.5	1.7	2.8	1	5.5	Moderate
Earthquake	4.1	2.8	1.5	1.7	2.8	1	8.4	Medium
Extreme Heat	2.7	1.8	1.2	1.9	3.7	1	6.6	Moderate
Inland Flooding	2.7	4.3	3	3.3	2.8	1	7.2	Medium
Landslides	3	4.4	2.9	3.4	2.1	1	6.5	Moderate
Tsunami	3.6	4.4	3.3	3.8	2.1	1	6.9	Moderate
Urban Wildfire	3.3	3.3	2.7	3.1	1.7	1	5.8	Moderate
Wind	2.1	2.9	2.1	2.4	4.1	1	7.5	Medium

4.5 Hazard of Prime Concern Profiles

4.5.1 Hazard Risk Profiles

In compliance with the Disaster Mitigation Act of 2000 (DMA 2000) and its implementing regulations, the hazards selected by the HMPC for this LHMP have been thoroughly profiled using a range of federal, state, regional, and local data sources. These profiles are designed to provide a comprehensive understanding of each hazard's characteristics and potential impact on the BCHD Planning Area. Each profile includes information on the hazard's type, location, extent, history of past occurrences, and the probability of future events. Where applicable, the profiles also consider the effects of future conditions, including climate change. The following sections meet the requirements outlined in FEMA's Regulation Checklist (44 CFR § 201.6(c)(2)(i)) and are structured accordingly to ensure consistency and completeness.

FEMA Regulation Checklist: Risk Assessment	
44 CFR § 201.6(c)(2)(i):	Documentation of the Plan Update Requirements: B1. Does the plan include a description of the type, location, and extent of all natural hazards that can affect the jurisdiction. The plan shall also include information on previous occurrences of hazard events and on the probability of future hazard events?
Elements	
B1-a	Q: Does the plan include a description of all natural hazards that can affect the jurisdiction(s) in the planning area, including hazards and assets such as dams located outside of the planning area? A: See Hazard Description section(s) below
B1-b	Q: Does the plan include information on the location of each identified hazard? A: See Location & Extent section(s) below
B1-c	Q: Does the plan describe the extent for each identified hazard? A: See Location & Extent section(s) below
B1-d	Q: Does the plan include the history of previous hazard events for each identified hazard? A: See Previous Events sections(s) below
B1-e	Q: Does the plan include the probability of future events for each identified hazard, including the type, location and range of anticipated intensities? A: See Probability of Future Events section(s) below

Source: FEMA, *Local Mitigation Planning Policy Guide*, Effective April 11, 2025

Hazard Description

This section describes the general characteristics of the specified hazard.

Location and Extent

This section contains information about the location, i.e., the geographic area(s) within the

planning area that are affected by the hazard, along with the extern (strength and magnitude) of the specific hazard.

Previous Events

This section contains a history of previous hazard events for the potential hazard.

Note: The planning process for the BCHD LHMP began in August 2024, and all hazard data utilized in the development of this plan reflects the five-year period from 2019 to 2023.

Probability of Future Events

Probability of Future Events can be defined in a variety of plans to account for the long-term changes in weather patterns of an identified hazard during the hazard mitigation planning process.

Calculating future probability is one of many predictors of future occurrence: This section will utilize hazard prioritization and previous occurrence calculations to define the probability of future events for the City.

Mathematical Equation for calculating Annual Probability Percentage:

$$\frac{\text{Number of Events}}{\text{Time Frame (5 years)}} \times 100 = \frac{\text{Hazard Percentage over given Time Frame}}{\text{HMP Planning Time Frame (5 Years)}}$$

Calculating future probability using qualitative data: This method describes the likelihood, or probability, of the identified hazard occurring within the planning area. The probability of future events occurrence, within the next planning cycle, will be derived utilizing data from multiple sources including the U.S. Drought Monitor, the NCEI/NOAA Storm Events Database, and the equation below. See the table below for additional information on the probability of future events.

Table 21: Annual Hazard Probability

Hazard	Annual Probability of Occurrence Percentage	Hazard Probability
Drought	12%	Likely
Earthquake	100%	Highly Likely
Extreme Heat	0%	Unlikely
Inland Flooding	28%	Likely
Landslide	0%	Unlikely
Tsunami	0%	Unlikely
Urban Wildfire	32%	Likely
Wind	100%	Highly Likely

Table 22: Hazard Probability Categories

Probability Categories	Unlikely	Occasional	Likely	Highly Likely
Range (Per Year)	>1%	1-10%	11-50%	51-100%

Vulnerability & Impact Assessment

This section describes the potential impacts of the hazard and provides an overall summary of the vulnerability to the hazard through structures, systems, populations, and community assets that are susceptible to damage/loss from the hazard.

FEMA Regulation Checklist: Risk Assessment	
44 CFR § 201.6(c)(2)(ii)	Documentation of the Plan Update Requirements B2. Does the plan include a summary of the jurisdiction's vulnerability and the impacts on the community from the identified hazards?
Element	
B2-b	<p>Q: For each participating jurisdiction, does the plan describe the potential impacts of each of the identified hazards on each participating jurisdiction?</p> <p>A: See Vulnerability & Impact section(s) below</p>

Source: FEMA, *Local Mitigation Planning Policy Guide, Effective April 11, 2025*

Critical Facilities & Infrastructure

This section identifies the critical facilities and infrastructure vulnerable to the impacts of the hazard within the planning area based on hazard characteristics, previous occurrences, and mapped vulnerability areas. This section will also list the asset value to provide an estimate for replacement.

Environmental Impacts

This section provides a general description of the environmental impacts associated with the hazard, including how climate change may influence the frequency, intensity, or duration of the hazard within the planning area.

Land Use & Development Trends

This section provides a general description of land use and development trends within BCHD in reference to the hazard.

4.5.2 Hazard Risk Ranking

Table 23 outlines the general risk to this plan's profiled hazards. The rankings are based on a composite evaluation of this plan's risk assessment, namely a hazard's probability of occurring in the future, the vulnerability of BCHD to a specific hazard, the intensity of past hazard impacts, and a joint evaluation from the participating members and stakeholders within the HMPC.

Table 23: Hazard Risk Summary

Hazard	Hazard Risk Ranking Level	Probability of Future Occurrence	Climate Change Influence	Vulnerability Change
Drought	Moderate	Likely	High	Increase
Earthquake	Medium	Highly Likely	Low	Increase

Hazard	Hazard Risk Ranking Level	Probability of Future Occurrence	Climate Change Influence	Vulnerability Change
Extreme Heat	Moderate	Unlikely	High	No Change
Inland Flooding	Medium	Likely	High	Increase
Landslide	Moderate	Unlikely	Medium	No Change
Tsunami	Moderate	Unlikely	Low	No Change
Urban Wildfire	Moderate	Likely	High	Increase
Wind	Medium	Highly Likely	High	No Change
Note: Climate Change Influence Categories Low: Minimal potential impact Medium: Moderate potential impact High: Widespread potential impact				

4.6 Drought

4.6.1 Hazard Description

Drought is a normal, recurrent feature of virtually all climatic zones, including areas of both high and low rainfall, although characteristically it will vary significantly from one region to another. Drought is a gradual phenomenon. Drought differs from normal aridity, which is a permanent feature of climate in areas of low rainfall. Drought is the result of a natural decline in the expected precipitation over an extended period of time, typically one or more seasons in length. Other climatic characteristics, such as high temperature, high wind, and low relative humidity, impact the severity of drought conditions. Normally, one dry year does not constitute a drought in California but rather serves as a reminder of the need to plan for droughts. California's extensive system of water supply infrastructure (reservoirs, groundwater basins, and interregional conveyance facilities) generally mitigates the effects of short-term dry periods for most water users. Four common definitions commonly used to describe drought include:

- **Agricultural** – drought is defined principally in terms of naturally occurring soil moisture deficiencies relative to water demands on plant life, usually arid crops.
- **Hydrological** – drought is related to the effects of precipitation shortfalls on stream flows, reservoir, lake, and ground water levels.
- **Meteorological** – drought is defined solely on the degree of dryness, expressed as a departure of actual precipitation from an expected average or normal amount based on monthly, seasonal, or annual time scales.
- **Socioeconomic** – drought associates the supply and demand of economic goods or services with elements of meteorological, hydrologic, and agricultural drought. Socioeconomic drought occurs when the demand of water exceeds the supply as a result of weather-related supply shortfalls. It may also be referred to as a water management drought

A drought's severity depends on numerous factors, including duration, intensity, and geographic extent, as well as regional water supply demands by humans and vegetation. Due to its multi-dimensional nature, drought is difficult to define in exact terms and poses

difficulties in terms of comprehensive risk assessments.

Drought differs from other natural hazards in three ways:

1. The onset and end of a drought are difficult to determine due to the slow accumulation and lingering effects of an event after its apparent end.
2. The lack of an exact and universally accepted definition adds to the confusion of its existence and severity.
3. In contrast with other natural hazards, the impact of drought is less obvious and may spread over a larger geographic area. These characteristics have hindered the preparation of drought contingency or mitigation plans by many governments.

Droughts are regularly monitored by multiple federal agencies using several different indices and classifications. Among them are the U.S. Drought Monitor, the Palmer Drought Index, and the Standardized Precipitation Index. The U.S. Drought Monitor summarizes drought conditions across the U.S. and Puerto Rico and is developed and maintained by the National Drought Mitigation Center (www.drought.unl.edu). Often described as a mix of science and art, the map is updated weekly by combining a variety of drought databases and indicators and local expert input into a single composite drought indicator.

4.6.2 Location and Extent

Extended periods without adequate rainfall frequently occur across Southern California, and the BCHD Planning Area—which includes Manhattan Beach, Hermosa Beach, and Redondo Beach—is no exception. Droughts are regional events that affect the entire BCHD area simultaneously, impacting every constituent and local service provider. The West Basin Municipal Water District supplies over 80 percent of the area's water, including all three Beach Cities.

Droughts often occur on a large geographic scale, spanning multiple counties, regions, and even states. While the impacts can be particularly severe for agriculture and water-intensive industries, urban communities like those within BCHD also face challenges, including increased water restrictions, strain on infrastructure, and heightened public health concerns. There is no consistent or predictable onset for droughts—they may develop over weeks or months, and it can be difficult to determine precisely when a drought begins or ends. Rainfall alone is not a sufficient indicator; rather, multiple data points such as snowpack levels, stream flows, and groundwater reserves must be assessed.

To monitor drought conditions in the BCHD Planning Area, researchers and agencies use several standardized tools and indices. The Palmer Drought Severity Index (PDSI), Standard Precipitation Index (SPI), and Crop Moisture Index (CMI) are among the most widely used. These indices compile large volumes of climate and hydrologic data into clear metrics to identify the presence, severity, and duration of drought. For instance, during significant drought periods, the BCHD Planning Area may register values between 0.0 and -4.0 on the PDSI and between -1.0 and -2.0 on the SPI. The SPI, in particular, is valuable for detecting emerging drought conditions, as it focuses solely on precipitation patterns over different time scales. A drought event is typically identified when the SPI remains below -1.0, and it ends once the index turns positive. The magnitude and duration of a drought can then be assessed based on the cumulative SPI values.

Table 24: Standard Precipitation Index (SPI)

Standard Precipitation Index	
Extremely Wet	2.0+"
Very Wet	1.5" to 1.99"
Moderately Wet	1.0" to 1.49"
Near Normal	-0.99' to 0.99"
Moderately Dry	-1.0" to -1.49"
Severely Dry	-1.5" to -1.99"
Extremely Dry	-2" and less

The **Palmer Drought Severity Index (PDSI)** is the primary indicator of drought for the U.S Drought Monitor and has been the longest for monitoring drought. The PDSI allows for categorization of various levels of wetness and dryness that are prominent over an area. The PDSI is calculated based on precipitation and temperature data as well as the local Available Water Content (AWC) of the soil. Palmer values may lag emerging droughts by several months and are less well suited for mountainous land or areas of frequent climatic extremes.

Table 25: Palmer Drought Severity Index (PDSI)

Palmer Drought Severity Index	
Extremely Wet	4.0" or more
Very Wet	3.0" to 3.99"
Moderately Wet	2.0" to 2.99"
Slightly Wet	1.0" to 1.99"
Incipient Wet Spell	0.5" to 0.99"
Near Normal	0.49" to -0.49"
Incipient Dry Spell	-0.5" to -0.99"
Mild Drought	-1.0" to -1.99"
Moderate Drought	-2.0" to -2.99"
Severe Drought	-3.0" to -3.99"
Extreme Drought	-4.0" or less

Crop Moisture Index (CMI), a derivative of the PDSI is the CMI. It looks at moisture supply in the short term for crop producing regions. The CMI monitors week-to-week crop conditions, whereas the PDSI monitors long-term meteorological wet and dry spells. The CMI was designed to evaluate short-term moisture conditions across major crop producing regions. Because it is designed to monitor short-term moisture conditions affecting a developing crop, the CMI is not a good long-term drought monitoring tool. The CMI's rapid response to changing short-term conditions may provide misleading information about long-term conditions. The CMI uses the same index as the PDSI, but in its own redefined context.

Figure 11 depicts the severity classifications for the [U.S. Drought Monitor \(USDM\)](#). The USDM identifies areas in drought and labels them by intensity. The drought map uses four categories of drought, from D1 – the least intense – to D4, the most intense. It also highlights areas with no drought and uses the D0 category to indicate abnormally dry areas that could be entering or recovering from drought.

Figure 10: U.S. Drought Monitor, Drought Classifications

Drought Classification

[Home](#) > [About](#) > [About the Data](#) > Drought Classification

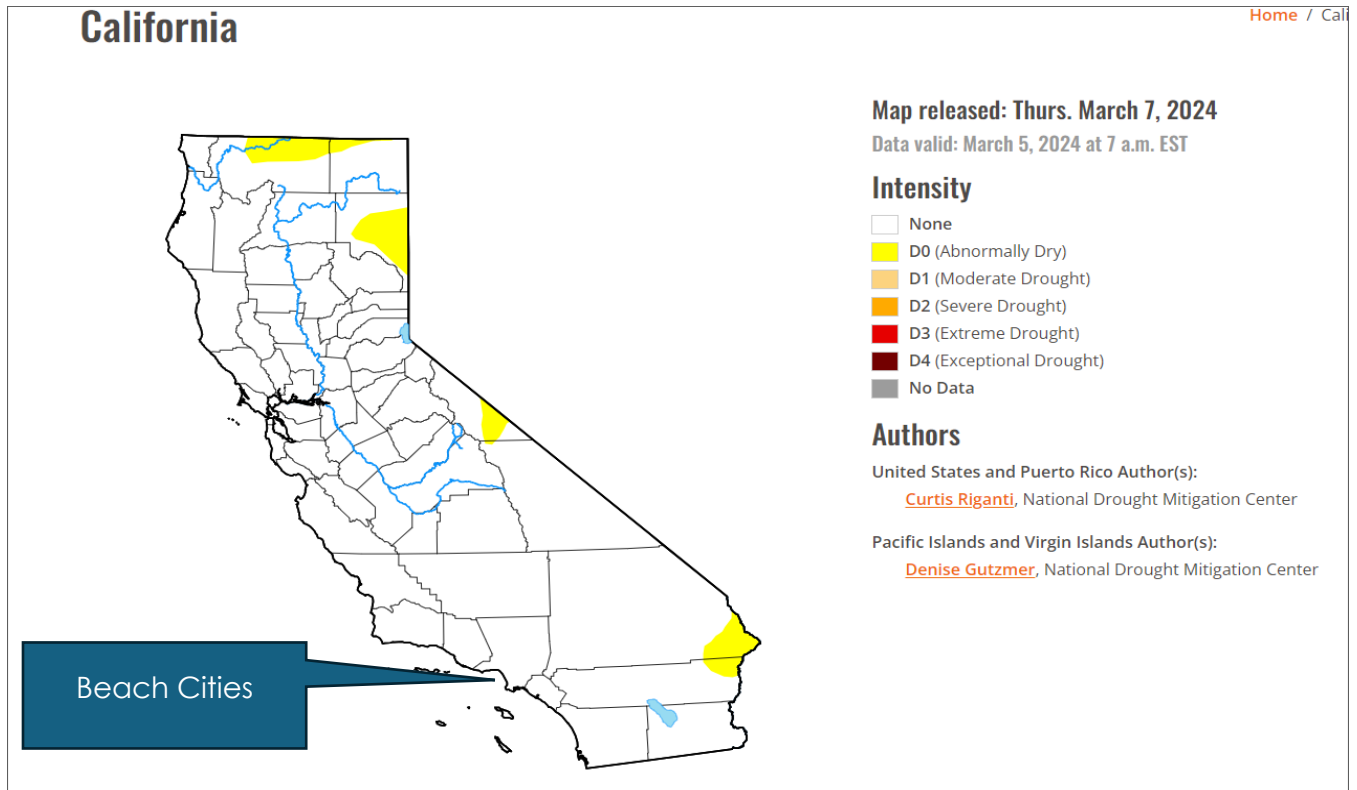
Category	Description	Possible Impacts	Ranges				
			Palmer Drought Severity Index (PDSI)	CPC Soil Moisture Model (Percentiles)	USGS Weekly Streamflow (Percentiles)	Standardized Precipitation Index (SPI)	Objective Drought Indicator Blends (Percentiles)
D0	Abnormally Dry	Going into drought: <ul style="list-style-type: none"> short-term dryness slowing planting, growth of crops or pastures Coming out of drought: <ul style="list-style-type: none"> some lingering water deficits pastures or crops not fully recovered 	-1.0 to -1.9	21 to 30	21 to 30	-0.5 to -0.7	21 to 30
D1	Moderate Drought	<ul style="list-style-type: none"> Some damage to crops, pastures Streams, reservoirs, or wells low, some water shortages developing or imminent Voluntary water-use restrictions requested 	-2.0 to -2.9	11 to 20	11 to 20	-0.8 to -1.2	11 to 20
D2	Severe Drought	<ul style="list-style-type: none"> Crop or pasture losses likely Water shortages common Water restrictions imposed 	-3.0 to -3.9	6 to 10	6 to 10	-1.3 to -1.5	6 to 10
D3	Extreme Drought	<ul style="list-style-type: none"> Major crop/pasture losses Widespread water shortages or restrictions 	-4.0 to -4.9	3 to 5	3 to 5	-1.6 to -1.9	3 to 5
D4	Exceptional Drought	<ul style="list-style-type: none"> Exceptional and widespread crop/pasture losses Shortages of water in reservoirs, streams, and wells creating water emergencies 	-5.0 or less	0 to 2	0 to 2	-2.0 or less	0 to 2

Source: U.S. Drought Monitor

While developing this LHMP, as of August 2024, the planning area is not experiencing drought according to the United States Drought Monitor. The Drought Monitor is not a forecast but looks backward; providing a weekly assessment of drought conditions based

on how much precipitation did or did not fall. A series of ten storms during December 2022 to January 2023 brought record breaking levels of precipitation to California, breaking the dry spell experienced between 2019 – 2022. California received record levels of snowpack in the northern Sierra Nevada and many major reservoirs show signs of recovery. Drought conditions in the Beach Cities are currently categorized as “none”, showing no developing or imminent water shortages.

Figure 11: US Drought Monitor, California



Source: Source: U.S. Drought Monitor, California, <https://droughtmonitor.unl.edu/CurrentMap/StateDroughtMonitor.aspx?CA>, accessed March 10, 2024

As per NOAA (<https://www.drought.gov/what-is-drought/drought-basics>), the following table provides examples of additional impacts that can potentially occur within Manhattan Beach as a result of Drought conditions.

Table 26: Potential Drought Impacts to BCHD

Drought Impacts	
Transportation	Drought impacts port and waterway transportation and supply chains, resulting in increased transportation costs. Higher temperatures that coexist with drought can impact roads, airport runways, and rail lines.

Drought Impacts	
Wildfire	Drought can be a contributing factor to wildfire. Dry, hot, and windy weather combined with dried out (and more flammable) vegetation can increase the probability of large-scale wildfires.
Public Health	Drought can cause significant human health outcomes, including decreased water quantity and quality, increased incidence of illness and disease (e.g., Valley Fever), adverse mental health outcomes as livelihoods are challenged, and overall, increased mortality rates.
Ecosystems	Drought can alter or degrade critical functions of healthy ecosystems, including reduced plant growth, reduction or extinction of local species, and landscape-level transitions (e.g., a forest being replaced by a grassland).
Water Quality	During drought, decreased water levels, warmer temperatures, and soil runoff can lead to algal growth, lower dissolved oxygen levels, and increased turbidity, posing health risks for human and aquatic life.

4.6.3 Previous Events

Per the National Drought Mitigation Center, California, including Los Angeles County, was in some form of drought for 376 consecutive weeks from December 20, 2011, to March 14, 2019. Within the Los Angeles County All-Hazards Mitigation Plan lists droughts experienced in California over the past 100 years:

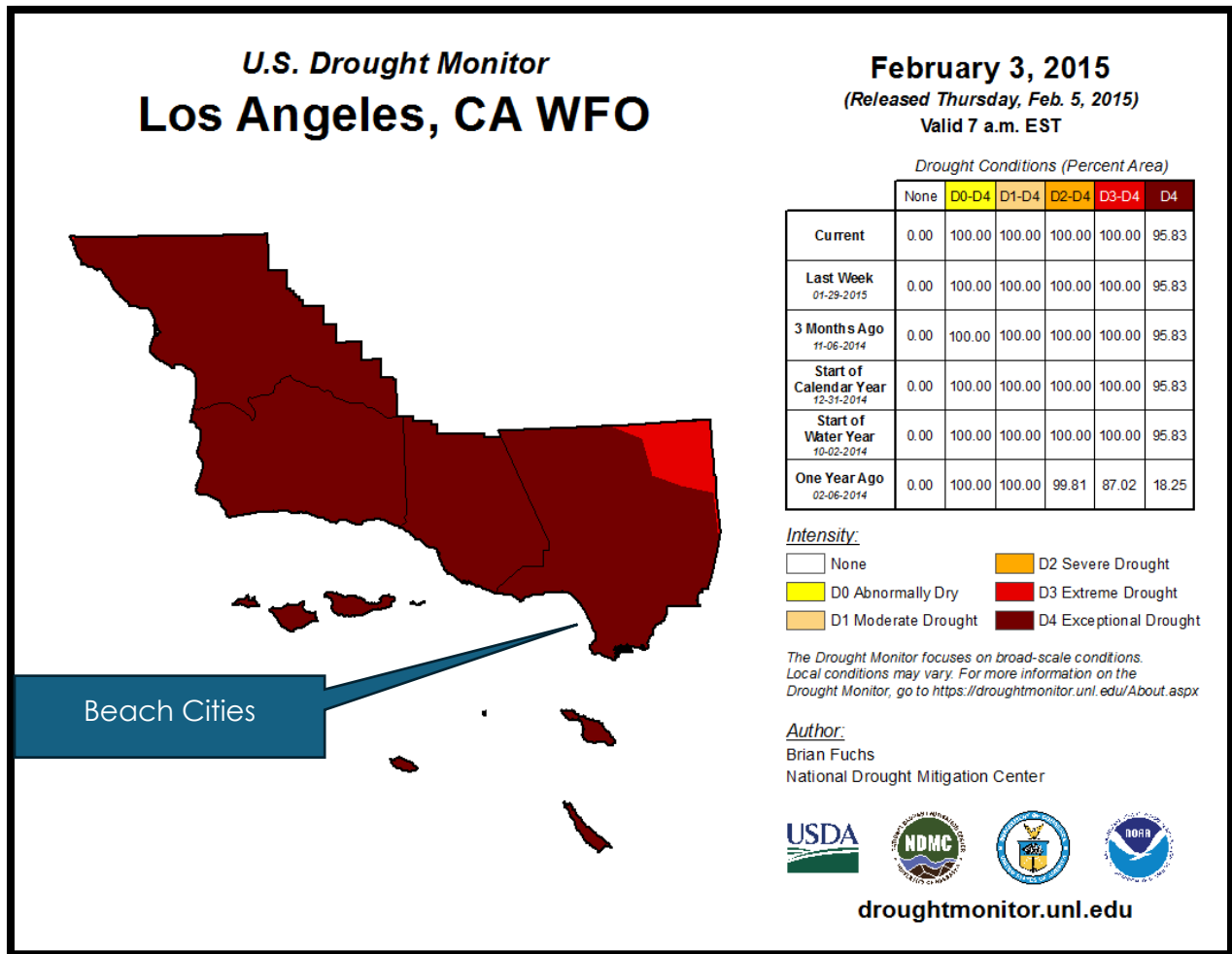
Table 27: Previous Events, Drought

Drought Duration	Drought Location
1917-1921	Statewide, except for central Sierra Nevada and North Coast
1922-1926	Statewide, except for central Sierra Nevada
1928-1937	Statewide
1943-1951	Statewide
1959-1962	Statewide
1976-1977	Statewide, except for Southwest Deserts
1987-1922	Statewide
2007-2009	Statewide, particularly Central Coast
2011-2015	Statewide
2020-2023	Statewide, with severe impacts in Southern California, including Los Angeles County

Between the years of 2014, to January 23, 2017, Los Angeles County, which includes BCHD, experienced a D4 Drought with the highest Drought percentage coverage of 87.92% from July 15, 2014, to February 1, 2016. **Figure 12** below provides details about this drought during

the height of this disaster.

Figure 12: US Drought Monitor, Los Angeles



Source: www.Droughtmonitor.unl.edu

California entered another prolonged drought period beginning in 2020, which persisted through much of 2023. This drought was marked by historic dry conditions, reduced snowpack, record-breaking heatwaves, and major water conservation mandates statewide. Los Angeles County was under Severe to Exceptional Drought (D2–D4) for extended periods during this time. These impacts were felt across the Beach Cities, intensifying the strain on water systems, public health, and the natural environment.

The US Drought Monitor provides weekly updates on the status of Drought throughout the United States. Data can be pulled for a specific County only. City/Town/Tribal data is not able to be calculated. Typically, impacts from a Drought are across the entire County, not a particular jurisdiction. The data provides percentages to indicate how severe the Drought is for that locale which is often documented in partial percentage based on land impacts. **Table 28** provides the number of days in a Drought level for all of Los Angeles County since the previous LHMP update.

Table 28: Los Angeles County Drought Monitor Days

Year	None	DO	D1	D2	D3	D4
2019	42	17	5	3	2	0
2020	48	25	6	3	0	0
2021	0	51	51	51	36	29
2022	0	53	53	53	43	29
2023	28	16	12	8	1	0
Total Days:	118	192	127	118	82	58

The cities of Manhattan Beach, Hermosa Beach, and Redondo Beach have each implemented a range of measures to manage water resources and address drought conditions. In Manhattan Beach, the city experienced a five-year drought from 2011 to 2015 and maintained sufficient water supplies throughout that period. To support long-term water sustainability, the city launched the Peck Reservoir Replacement Project to increase local storage capacity and improve groundwater use. Permanent water conservation requirements were adopted in 2015, and the city remains in Stage 2 drought restrictions, which include limits on landscape irrigation and expanded use of recycled water in public areas.

Hermosa Beach has adopted drought response measures through its municipal code. In June 2022, the city declared a Level 2 Drought Critical Condition and implemented targeted water use restrictions. The city provides outreach and education to encourage conservation among residents and businesses and continues to enforce local water efficiency standards.

Redondo Beach, which receives its water from West Basin Municipal Water District, participates in regional drought response strategies. These include limiting outdoor irrigation to two days per week, promoting drought-tolerant landscaping, and implementing the state's Model Water Efficient Landscape Ordinance. The city also supports public education campaigns focused on reducing water consumption.

BCHD has also integrated water conservation and sustainability into its planning and facility design. In its Healthy Living Campus Master Plan, BCHD committed to using increased pervious surfaces, infiltration systems, and water-efficient landscaping to reduce stormwater runoff and support groundwater recharge. These efforts align with regional strategies to improve drought resilience and ensure the continued delivery of health and wellness services during future water shortages.

Disaster Declaration History

There have been no FEMA or Cal OES disaster declaration for Los Angeles County related to Drought, as shown in Section 4.1 Emergency and Disaster Declaration History.

4.6.4 Probability of Future Events

Calculating future probability is one of many predictors of future occurrences. **Table 29** provides a summary of drought events recorded by NOAA Integrated Drought Information System for Los Angeles County, where BCHD resides, between January 2019 and 2023:

Table 29: Previous Events, Drought

Previous Events, Drought, Los Angeles County, CA	
Event Year	Event Count
2019	0
2020	0
2021	1
2022	1
2023	1
Total Recorded Events =	3
Total Years =	5
Annual Probability =	12%

Annual Probability:

$$\frac{3}{5} \times 100 = \frac{60\%}{5} = 12\%$$

Using the NOAA NIDIS database, and calculating probability based on the past events, the likelihood of a single drought event occurring in the Operational Area on an annual basis during the next HMP planning cycle is 12%. This categorizes the hazard's probability as **Likely**.

4.6.5 Hazard Risk Ranking

The HMPC's hazard prioritization process, which assessed Drought, resulted in an overall risk level being classified as Medium with a rank score of 6. It is important to note that the HMPC's feedback and risk determination, as outlined in **Table 30**, are reflective of the committee's perspectives and judgments.

Table 30: Risk Ranking for Drought

Hazard	Impact to Assets			Vulnerability (H+P+B=#) (V=#/3)	Probability (Pb)	Social Vulnerability (SV)	Risk Value (R=V+Pb+SV)	Risk Ranking
	Human Impact (H)	Property Impact (P)	Business Impact (B)					
Drought	2	1.8	1.5	1.7	2.8	1	5.5	Moderate

4.6.6 Vulnerability and Impact Assessment

Change in Drought Vulnerability

As this is the first LHMP developed for BCHD, there is no prior assessment available for comparison of drought vulnerability over time. However, recent regional and statewide

drought events have underscored the growing importance of water conservation and infrastructure resilience, particularly in the context of climate change.

The BCHD Planning Area has experienced multiple drought declarations over the past decade, including statewide emergency regulations and local water use restrictions. While the region benefits from access to imported water and recycled water infrastructure, continued pressure on statewide supplies and fluctuating hydrologic conditions present an ongoing vulnerability. In response, BCHD has incorporated water efficiency and sustainability practices into its planning and facility design, including the use of drought-tolerant landscaping, pervious surfaces, and stormwater management features.

While there has been no measurable increase in direct vulnerability to drought, future development and facility upgrades will continue to prioritize water efficiency and conservation. BCHD will remain engaged with city and regional partners to ensure its facilities and services can adapt to prolonged drought conditions and support the health and well-being of the community during water supply challenges.

Table 31: Summary of Change to Vulnerability, Drought

2024 LHMP Update Hazards	Decrease in Vulnerability	No Change in Vulnerability	Increase in Vulnerability
Drought		X	

HMPC Vulnerability and Impact Assessment Feedback

Drought poses significant risks to both populations and BCHD-operated systems, from direct impacts on water availability to cascading challenges such as increased health service demands and economic strain. To mitigate these vulnerabilities, BCHD should prioritize water conservation, enhance public education efforts, and ensure its facilities have contingency plans for operating under prolonged drought conditions. Proactive measures, such as securing emergency water supplies and implementing efficient water use practices, will enhance BCHD's ability to support the community during periods of drought. Additionally, BCHD should take a proactive role in resource acquisition and distribution to ensure at-risk populations have access to essential amenities and subsistence resources necessary for sheltering-in-place during prolonged drought events.

Impacts on Population

Vulnerability to drought depends on access to reliable water supplies, the ability to adapt to reduced availability, and the resilience of the community to the cascading impacts of water shortages. Drought conditions also lead to secondary impacts such as increased stress, reduced access to fresh food (due to agricultural impacts), and economic challenges, which can further strain populations. Populations most vulnerable to these effects include:

Low-Income Populations

- Droughts can increase water costs, which disproportionately affect low-income individuals and families who may already struggle to afford utility bills.

- Limited financial resources may also prevent these populations from accessing alternative water sources during shortages.
- Competition for basic resources may increase, making it harder for these populations to secure necessities.

Older Adults and Individuals with Pre-Existing Health Conditions

- Drought conditions can exacerbate chronic health conditions, including respiratory issues caused by increased dust and poor air quality from dry conditions.
- Older adults are particularly vulnerable to disruptions in water availability, as hydration and sanitation are critical to their health.
- BCHD wellness checks have revealed instances where individuals had empty refrigerators, emphasizing the need for resource provision to support shelter-in-place capabilities.

Individuals with Access and Functional Needs (AFN)

- Residents' dependent on home-based medical care or devices that require water (e.g., dialysis machines) are especially at-risk during drought-related water restrictions.
- Those with limited mobility may face challenges accessing emergency water distribution points or other resources.

Youth and Families Participating in Outdoor Activities

- Drought conditions can impact outdoor recreational programs, such as those offered by AdventurePlex. Reduced access to water for cooling, hydration, and outdoor amenities increases heat-related risks for children participating in these activities.

Agricultural Workers and Dependents

- Although not a primary focus within BCHD's urban setting, individuals commuting to or working in agricultural areas may face economic hardships due to drought-related job losses.

Unhoused Populations

- Individuals experiencing homelessness may have limited access to clean water for hydration and sanitation, increasing their risk of dehydration, heat-related illnesses, and waterborne diseases.

Vulnerability of Systems

The systems owned and operated by BCHD are also vulnerable to the impacts of drought, including water shortages, increased costs, and the cascading effects of limited water availability on health, operations, and infrastructure. Specific system vulnerabilities include:

BCHD Facilities and Operations

AdventurePlex

- Outdoor programming at AdventurePlex may be significantly impacted by water use restrictions. Reduced water availability for maintaining outdoor recreational spaces could limit activities and increase risks of heat-related illnesses for children.
- The absence of sufficient water for cooling systems or emergency hydration resources during outdoor activities could further exacerbate health risks.

alcove Beach Cities

- BCHD's youth mental health facility, alcove Beach Cities may experience increased demand during drought conditions as families seek relief from economic and mental health stressors caused by water shortages and rising costs.
- Limited water availability could affect the ability of these facilities to maintain safe and sanitary operations.

Healthcare and Community Support Programs

- Programs reliant on water for sanitation, cleaning, or direct medical care may face operational challenges during drought conditions.
- Increased water costs could strain BCHD's operational budgets, impacting its ability to deliver essential services.

Critical Infrastructure Supporting BCHD

- Water Supply Systems:
 - Prolonged drought can lead to reduced availability of potable water, placing significant pressure on BCHD facilities to conserve water while maintaining critical health and wellness operations.
 - Emergency water reserves or alternative water sources may be required to ensure continuity of operations during severe water restrictions.
- Cooling and HVAC Systems:
 - Many cooling systems rely on water for efficient operation. Reduced water availability during droughts could lead to operational inefficiencies or system failures, especially during extreme heat events.
 - Increased energy demand for air conditioning during drought-induced heat waves may further strain BCHD's power and cooling systems.
- Landscaping and Outdoor Areas:
 - Drought conditions may require strict water use restrictions, limiting BCHD's ability to maintain outdoor recreational spaces or landscaping at its facilities.

- Unmaintained outdoor areas could become dry and increase fire risk, particularly in the wildland-urban interface (WUI) areas within the district.

Public Health Services and Emergency Operations

- Increased Demand for Drought-Relief Services:
 - BCHD facilities may see an increase in community members seeking access to water distribution points, cooling centers, and other services during drought events.
 - Additional public outreach may be required to educate residents on water conservation, drought preparedness, and health impacts related to water scarcity.
- Sanitation and Hygiene Concerns:
 - Limited water availability during a drought can compromise sanitation and hygiene, increasing the risk of waterborne diseases. BCHD facilities must ensure adequate water supplies to prevent these issues.
- Mental Health Impacts:
 - Economic stress, food insecurity, and uncertainty caused by drought conditions can lead to increased mental health challenges, requiring BCHD to scale up its mental health services.
 - Proactive engagement and counseling programs can help address the psychological toll of prolonged drought conditions on community members.

4.6.7 Environmental Impacts

Warming temperatures and extended periods of low precipitation, both influenced by climate change, have increased the likelihood and severity of extreme droughts across California, including within the BCHD Planning Area. Regional geography and coastal climate patterns affect the extent of local drought conditions, though overall trends point toward drier conditions in Southern California. According to the Los Angeles County Hazard Mitigation Plan (2020), climate projections indicate that Southern California will become increasingly arid, while Northern California will experience rising temperatures. These changes are expected to reduce the Sierra Nevada snowpack, a critical water source for the entire state, impacting water availability for residents, public health facilities, utilities, agriculture, and ecosystems.

While drought cannot be prevented, it can be managed through proactive drought planning and informed water resource decision-making. According to the U.S. Geological Survey (USGS), building community resilience through preparedness, conservation strategies, and adaptive infrastructure is essential to minimizing the environmental and public health impacts of future drought conditions.

4.6.8 Critical Facilities and Infrastructure

Table 32: Beach Cities Health District Critical Facilities/Infrastructure

Name of Facility	Address	Asset Value/Potential Loss Data	Community Lifeline Category
Beach Cities Health Center (Owned)	514 N. Prospect Ave.; Redondo Beach, CA 90277	\$62,592,873	Health and Medical
AdventurePlex (Owned)	1701 Marine Ave.; Manhattan Beach, CA 90266	\$7,707,276	Food, Water, Shelter
Sunrise Assisted Living (Land Lease & Joint Venture Limited Partner)	1837 Pacific Coast Highway, Hermosa Beach, CA 90254	\$2,408,000	Health and Medical
Leap & Bound Child Development Center (Building and Land Lease)	601 S. Pacific Coast Highway Redondo Beach, CA 90277	\$2,530,649	Food, Water, Shelter
Venice Family Clinic - South Bay Family Health Care (Building and Land Lease)	2114 Artesia Boulevard Redondo Beach, CA 90278	\$192,000	Health and Medical
512 Parking Structure (Owned)	512 N. Prospect Ave.; Redondo Beach, CA 90277	\$10,149,276	Health and Medical
520 Parking Structure (Owned)	520 N. Prospect Ave.; Redondo Beach, CA 90277	\$18,296,150	Health and Medical
514 Surface Parking (Owned)	514 N. Prospect Ave.; Redondo Beach, CA 90277	\$100,000	Health and Medical
BCHD Total	\$103,976,224.00		

4.6.9 Land Use and Development Trends

Each city within the BCHD Planning Area has integrated water conservation requirements into its planning and permitting processes. These include adherence to the State of California's Model Water Efficient Landscape Ordinance, the use of drought-tolerant landscaping, and enforcement of water use restrictions during drought emergencies. New developments and major renovations must meet water efficiency standards that help reduce demand and increase long-term resilience to drought.

Although BCHD does not have authority over land use decisions, it incorporates water

sustainability into its own development and facility planning. Projects such as the Healthy Living Campus have been designed with features that support water conservation, including low-water landscaping, stormwater capture systems, and infrastructure that reduce reliance on potable water. These efforts align with broader regional trends to address drought vulnerability through sustainable land use practices and efficient site design.

4.7 Earthquake

4.7.1 Hazard Description

Earthquake

An earthquake is a sudden, rapid shaking of the Earth caused by the breaking and shifting of rock beneath the Earth's surface. Over hundreds of millions of years, plate tectonics have continuously reshaped the Earth, as the huge plates that form the Earth's surface move slowly over, under, and past each other. While some of this movement is gradual, stress can accumulate when plates lock together, eventually releasing energy in the form of an earthquake. These events can strike without warning, at any time of the day or night.

Globally, 70 to 75 damaging earthquakes occur annually. Their impacts can be severe: ground shaking may collapse buildings and bridges; disrupt utilities such as gas, electricity, and phone service; and sometimes trigger landslides, avalanches, flash floods, fires, and huge destructive ocean waves (tsunamis).

Critical vulnerabilities include structures built on unconsolidated landfill and other unstable soil, as well as mobile homes and buildings not anchored to foundations. In populated areas, earthquakes often result in fatalities, injuries and extensive infrastructure and property damage. Emergency managers must account for these hazards in mitigation strategies, response planning, public education, and resilience building efforts.

There are numerous characteristics measured when observing earthquake activity; however, the most influential in determining damage include:

- Force
- Depth
- Peak ground acceleration
- Distance to the epicenter

Two scales are used when referring to earthquake activity: the **Richter Scale**, which estimates the total force of the earthquake; and the **Modified Mercalli Intensity Scale**, which categorizes the observed damage from the earthquake.

Earthquakes can last from a few seconds to over five minutes; they may also occur as a series of tremors over several days. The actual movement of the ground in an earthquake is seldom the direct cause of injury or death. Casualties generally result from falling objects and debris, because the shocks shake, damage, or demolish buildings and other structures. Disruption to communications, electrical power, gas, sewer, and water lines should be expected. In addition, ground shaking, landslides, liquefaction, and amplification are the specific hazards associated with earthquakes. The severity of these hazards depends on several factors, including soil and slope conditions, proximity to the fault, earthquake magnitude and depth, and the type of earthquake:

Ground Shaking – Ground shaking is the motion felt on the Earth's surface caused by seismic waves from an earthquake. It is the primary cause of earthquake damage. The strength of ground shaking depends on the magnitude of the earthquake, the type of fault, and distance from the epicenter. Buildings on poorly consolidated and thick soils will typically see more damage than buildings on consolidated soils and bedrock.

Amplification – Soils and soft sedimentary rocks near the Earth's surface can modify ground shaking caused by earthquakes. One of these modifications is amplification. Amplification increases the magnitude of the seismic waves generated by the earthquake. The amount of amplification is influenced by the thickness of geologic materials and their physical properties. Buildings and other structures built on soft and unconsolidated soils can face greater risk. Amplification can also occur in areas with deep sediment-filled basins and ridge tops.

Earthquake-Induced Landslides – Earthquake-induced landslides are secondary earthquake hazards that occur from ground shaking. They can destroy roads, buildings, utilities, and other critical facilities necessary to respond to and recover from an earthquake and are common in areas with steep slopes.

Liquefaction – Liquefaction, a secondary earthquake hazard, occurs when ground shaking causes wet granular soils to change from solid to liquid. This results in the loss of soil strength and ability to support weight. Buildings and their occupants are at risk when the ground can no longer support these buildings and structures. In some cases, this ground may be subject to liquefaction, depending on the depth of the water table. Liquefaction occurs primarily in saturated and loose, fine- to medium-grained soils in areas where the groundwater table lies within 50 feet of the ground surface.

Expansive Soils – are those which contain high levels of materials that can absorb large amounts of water, such as certain types of clay. When the ground is wet, these materials absorb water and swell and then shrink as they dry out. This process can exert significant force on structures, and over repeated cycles of expansion and contraction this force can be sufficient to crack foundations, floors, and other ground-level or subterranean structures. Cracks may form in expansive soils when they are dry, potentially creating a safety hazard.

4.7.2 Location and Extent

Earthquake

As per the *2020 County of Los Angeles All-Hazards Mitigation Plan*, there are several active faults in or near BCHD and Los Angeles County.

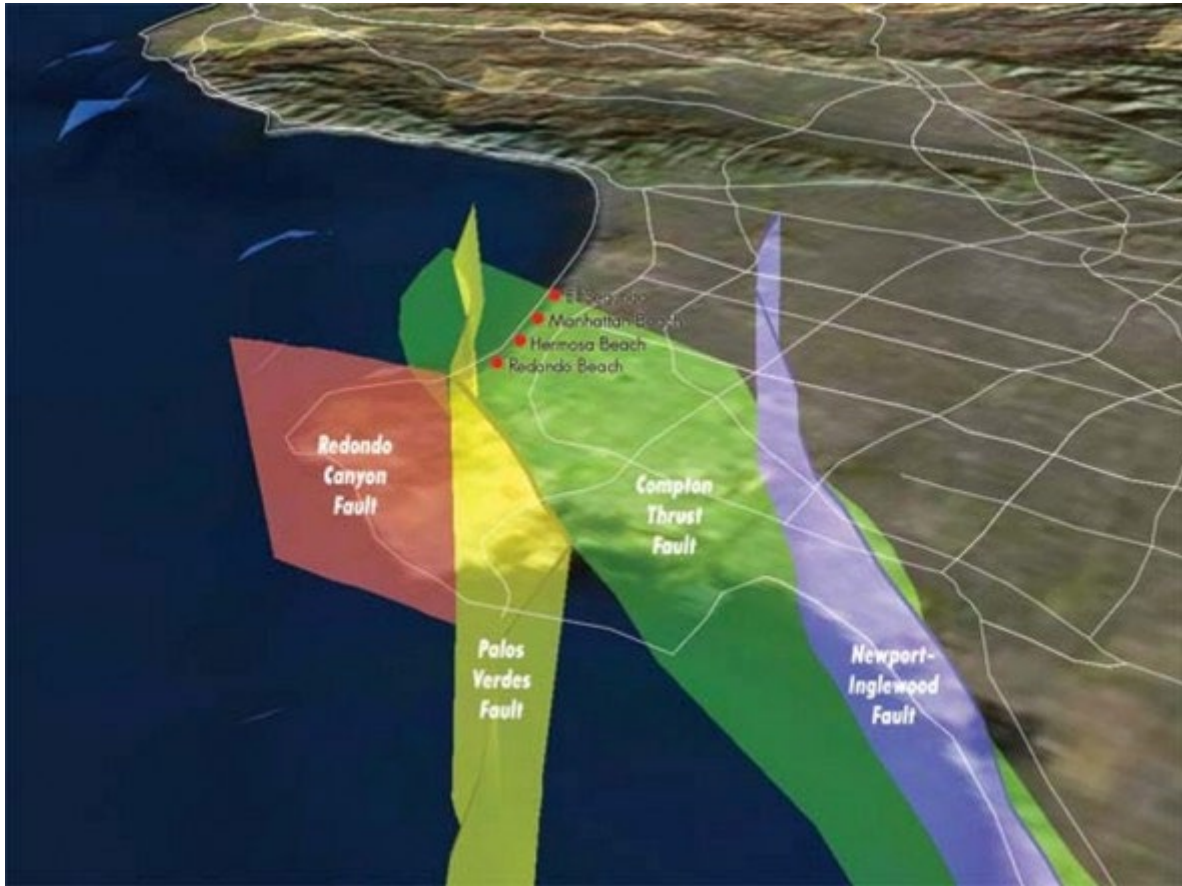
- **Malibu Coast Fault System:** The Malibu Coast fault system includes the Malibu Coast, Santa Monica, and Hollywood faults. The system begins in the Hollywood area, extends along the southern base of the Santa Monica Mountains, and passes offshore a few miles west of Point Dume. The 1973 Point Mugu earthquake is believed to have originated on this fault system.
- **Oak Ridge Fault System:** The Oak Ridge fault system is a steep (65 degrees) southerly dipping reverse fault that extends from the Santa Susana Mountains westward along the southerly side of the Santa Clara River Valley and into the Oxnard Plain. The system is more than 50 miles long on the mainland and may extend an equal or greater distance offshore. Several recorded earthquake epicenters on land and offshore may have been associated with the Oak Ridge fault system. Portions of the system are zoned by the state as active.
- **Pine Mountain Thrust Fault and Big Pine Fault:** These two large faults occur in the mountainous portion of Ventura County north of the Santa Ynez fault; the faults

are located 9 and 16 miles north of the city of Ojai, respectively. The Pine Mountain thrust fault is reported to have ruptured the ground surface 30 miles along its length during the northern Ventura County earthquakes of November 1852.

- **San Andreas Fault:** San Andreas is the longest and most significant fault in California. Because of clearly established historical earthquake activity, this fault has been designated as active by the State of California. The last major earthquake on this fault near Ventura County was the Fort Tejon earthquake of 1857, which was estimated at magnitude (M) 8.0 and would have caused considerable damage if there had been structures in the southern part of the County. There is a 59% chance that a M 6.7 quake or larger will occur on this fault in the next 30 years.
- **San Cayetano–Red Mountain–Santa Susana Fault System:** This fault system consists of a major series of north-dipping reverse faults that extend over 150 miles from Santa Barbara County into Los Angeles County. In this system, the San Cayetano fault is the greatest hazard to Ventura County; it is a major, north-dipping reverse fault that extends for 25 miles along the northern portion of the Ventura Basin. The San Fernando earthquake of 1971, described in the previous section, was caused by activity along this fault.
- **Simi–Santa Rosa Fault System:** This fault system extends from the Santa Susana Mountains westward along the northern margin of the Simi and Tierra Rejada valleys and along the southern slope and crest of the Las Posas Hills to their westerly termination.
- **Ventura-Pitas Point Fault:** The western half of this fault is known as the Pitas Point fault, and the eastern half is known as the Ventura fault. The Pitas Point fault extends offshore into the Pacific Ocean and is roughly 14 miles long. The Ventura fault extends into the communities of Ventura and Sea Cliff and runs roughly parallel to portions of U.S. 101 and State Route 126. The fault is roughly 12 miles long and is a left-reverse fault.

Figure 13 provides a depiction of the locations of the faults that can influence the Geological Hazards for BCHD.

Figure 13: Beach Cities Health District Fault Map

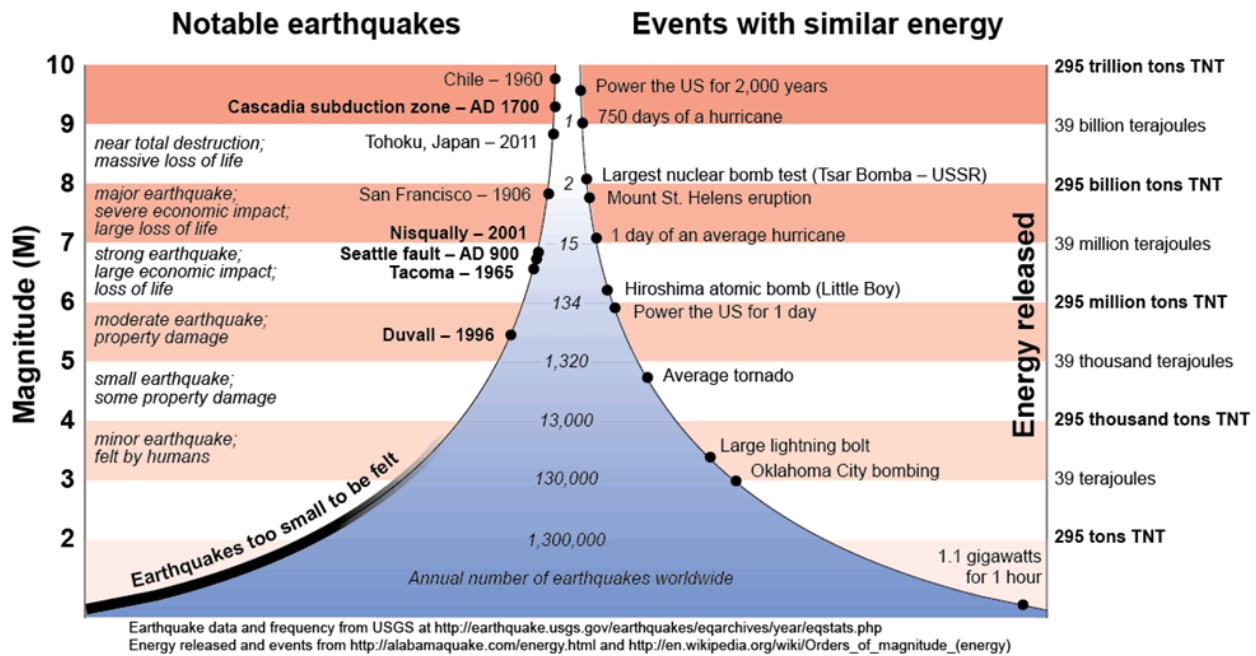


Source: Southern California Earthquake Center, USC

The Richter scale is often used to rate the strength of an earthquake and is an indirect measure of seismic energy released. The scale is logarithmic, with each one-point increase on the Richter scale corresponding to about a 32-fold increase in energy released. Therefore, a magnitude (M) 7.0 earthquake is 100 times (10×10) more powerful than an M5.0 earthquake and releases 1,024 times (32×32) the energy. The measurements of the Richter Scale using the USGS illustration of earthquake energy and frequency illustration below:

Figure 14: Earthquake Energy and Frequency

Earthquake energy and frequency



Source: [Trinidad and Tobago Weather Center](#)

The Modified Mercalli Intensity (MMI) scale, as shown in **Table 33**, quantifies the intensity of ground shaking. Intensity in this scale is a function of distance from the epicenter (the closer a site is to the epicenter, the greater the intensity at that site), ground acceleration, duration of ground shaking, and degree of structural damage. The MMI rates earthquake severity by the amount of damage and perceived shaking.

Table 33: Modified Mercalli Intensity Scale

MMI Value	Shaking Severity	Summary Damage	Description
I	Not Felt	Little to none	Not felt except by few under especially favorable conditions.
II	Weak	Little to none	Felt only by a few persons at rest, especially on upper floors of buildings.
III	Weak	Hanging objects move	Felt quite noticeably by people indoors. Many people do not recognize it as an earthquake. Standing cars may rock slightly, vibrations are similar to a passing truck. Duration estimated.
IV	Light	Hanging objects move	Felt indoors by many, outdoors by few. At night, some are awakened. Dishes, windows, and doors are disturbed. Sensation like heavy truck striking building. Standing cars rocked noticeably.
V	Moderate	Pictures move	Felt by nearly everyone; many awakened. Dishes and windows are broken. Unstable objects are overturned. Pendulum clocks may stop.

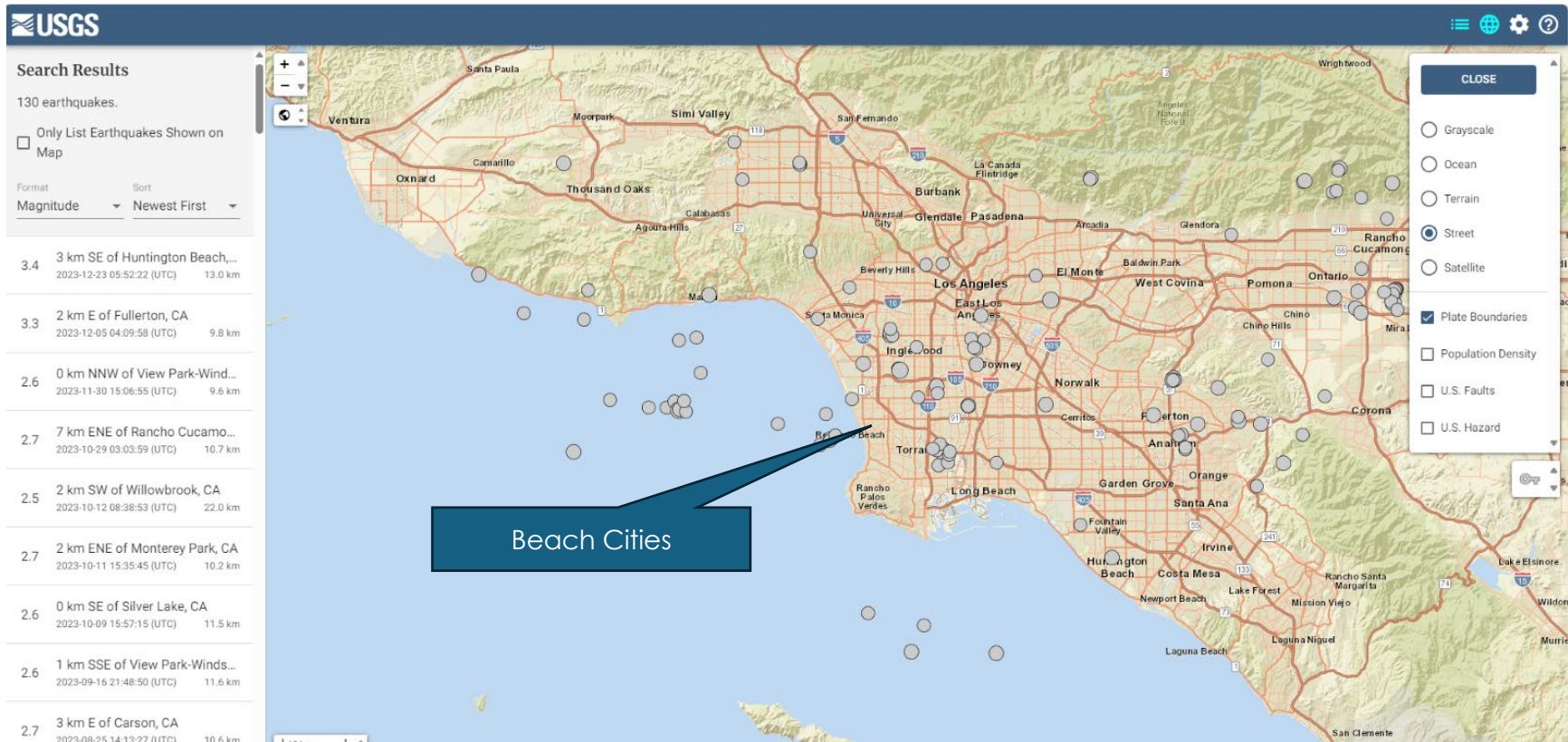
MMI Value	Shaking Severity	Summary Damage	Description
VI	Strong	Objects fall	Felt by all; many frightened. Some heavy furniture moved. A few instances of fallen plaster. Damage slight.
VII	Very Strong	Nonstructural damage	Negligible damage to buildings of good design/construction. Slight to moderate damage in well-built/ordinary structures. Considerable damage to poorly built/designed structures. Some chimneys broken.
VIII	Severe	Moderate damage	Slight damage to specially designed structures. Considerable damage to ordinary construction, including partial collapse. Damage is great in poorly built structures. Fall of chimneys, columns, monuments and walls. Heavy furniture overturned.
IX	Violent	Extreme damage	Considerable damage to specially designed structures; well-designed frame structures are thrown out of plumb. Damage is great in substantial buildings, with partial collapse. Buildings shifted off foundations.
X+	Extreme	Extreme damage	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails are bent.

Source: [United States Geological Survey](#)

4.7.3 Previous Events

As shown in **Figure 15**, there have been 130 earthquakes of a magnitude greater than 2.5 between January 1, 2019, and December 31, 2023, in and around Los Angeles County, where BCHD resides. Data from the California Department of Conservation indicates there have been no earthquakes in the BCHD Planning Area or on a neighboring jurisdiction with a magnitude greater than or equal to 6.5, that caused loss of life or more than \$200,000 in damage since the 1933 Long Beach Earthquake which was a 6.4 magnitude and occurred 15 miles from BCHD.

Figure 15: Earthquake >2.5 Intensity, 2019-2023



Source: USGS Earthquake Database

Disaster Declaration History

Since 2019, there have been no FEMA or Cal OES disaster declaration for Los Angeles County related to Earthquakes, as shown in [Section 4.1 Emergency and Disaster Declaration History](#).

4.7.4 Probability of Future Events

Calculating future probability is one of many predictors of future occurrences. **Table 34** provides a summary of the events for Earthquakes, as categorized, and recorded by NOAA/NCI for Los Angeles County between January 1, 2019, and December 31, 2023:

Table 34: Previous Events, Earthquakes

Previous Events, Earthquakes, Los Angeles County, CA	
Event Year	Earthquake
2019	12
2020	8
2021	17
2022	11
2023	6
Total Recorded Events =	54
Total Years =	5
Annual Probability =	100%

Source: NOAA/NCEI

Earthquake Annual Probability:

$$\frac{54}{5} \times 100 = \frac{1080\%}{5} = 216\%$$

Using the NOAA/NCEI database, and calculating probability based on past events, the likelihood of a single earthquake occurring in Los Angeles County, where BCHD resides, on an annual basis

over the next HMP planning cycle is 100%. This categorizes the hazard's future probability of occurrence as **Highly Likely**.

To provide additional context on the probability of future events for Earthquakes, **Table 35** provides the maximum likelihood of earthquake events by size and fault over the next 30 years. Ongoing field and laboratory studies suggest the likely maximum magnitudes and recurrence intervals for the major local faults are as follows:

Table 35: Maximum Likelihood of Earthquake Events by Size and Fault in the Next 30 Years

Fault	6.7 Mw	7.0 Mw	7.5 Mw	8.0 Mw
Palos Verdes	3.17%	2.84%	.01%	-
Puente Hills	0.78%	0.58%	0.19%	-
Puente Hills (Coyote Hills segment)	0.95%	0.65%	0.19%	-

Fault	6.7 Mw	7.0 Mw	7.5 Mw	8.0 Mw
Puente Hills (Los Angeles segment)	1.01%	0.51%	0.15%	-
Puente Hills (Santa Fe Springs segment)	0.96%	0.76%	0.29%	<0.01%
Newport-Inglewood (onshore only)	0.99%	0.88%	0.43%	-
Elysian Park	0.06%	0.05%	0.02%	-
Santa Monica	1.19%	1.02%	0.29%	<0.01%
Malibu Coast	0.75%	0.65%	0.37%	<0.01%
Hollywood	1.59%	1.18%	0.29%	<0.01%
Upper Elysian Park	1.26%	0.78%	0.07%	-
Anacapa-Dume	0.90%	0.66%	0.25%	<0.01%
Whittier	1.58%	1.43%	0.80%	<0.01%
Raymond	1.70%	1.18%	0.35%	<0.01%
Verdugo	0.51%	0.45%	0.32%	<0.01%
San Andreas *	22.34%	19.68%	18.74%	6.91%
* Only fault sections in the greater Los Angeles region are included. This does not represent the risk of future events on the entire San Andreas fault.				
Note: The magnitude of the events shown in this table are for the site of the earthquake. Depending on the location of the earthquake, the magnitude may be less severe within Manhattan Beach itself.				

Source: [Open-Source Seismic Hazard Analysis \(OpenSHA\)](#)

4.7.5 Hazard Risk Ranking

Table 36: Risk Ranking for Earthquake

Hazard	Impact to Assets			Vulnerability (H+P+B=#) (V=#/3)	Probability (Pb)	Social Vulnerability (SV)	Risk Value (R=V+Pb+SV)	Risk Ranking
	Human Impact (H)	Property Impact (P)	Business Impact (B)					
Earthquake	4.1	2.8	1.5	1.7	2.8	1	8.4	Medium

4.7.6 Vulnerability and Impact Assessment

Change in Earthquake Vulnerability

This is the first LHMP developed for BCHD. There is no prior version of the plan to compare changes in vulnerability over time. However, the development of this LHMP has provided an opportunity to formally assess and document the district's risk exposure and vulnerabilities to natural hazards based on the best available data.

Among the identified hazards, vulnerability to earthquakes remains notably high. BCHD operates within a region known for significant seismic activity, and existing seismic evaluation reports for critical district-owned facilities including the medical office building have identified structural deficiencies and elevated risk. These reports indicate a heightened probability of damage or collapse in the event of a major earthquake, reinforcing the need for continued monitoring, structural retrofitting, and risk mitigation strategies.

Although this plan does not reflect a change in vulnerability from a previous assessment, it establishes a baseline understanding of BCHD's hazard exposure and serves as a foundation for future updates and mitigation progress tracking.

Table 37: Summary of Change to Vulnerability, Earthquake

2025 LHMP Hazards	Decrease in Vulnerability	No Change in Vulnerability	Increase in Vulnerability
Earthquake		X	

HMPC Vulnerability and Impact Assessment Feedback

Based on the Mitigation Planning Team's risk assessment, Earthquakes represent a **moderate** risk to BCHD's population and critical systems. Potential future mitigation efforts should include prioritizing the retrofitting of facilities, securing backup power and water supplies, and establishing robust emergency communication systems. Training staff on earthquake response, conducting regular facility assessments, and collaborating with municipal agencies for coordinated planning will be essential for reducing vulnerabilities and ensuring BCHD's capacity to deliver critical health services during and after an earthquake.

Impacts on Populations

The BCHD Planning Area is highly vulnerable to earthquakes due to its location in a region with numerous active fault lines in Southern California, including the Newport-Inglewood Fault Zone, which runs near the district. The potential impacts on the population include injuries or fatalities caused by structural collapse, falling debris, and fires following an earthquake. Additionally, displacement due to uninhabitable homes and emotional trauma from the event can have long-term effects on community well-being.

Populations most vulnerable to earthquake hazards include:

- Elderly and Medically Fragile Individuals:
 - Constituents within BCHD may require medical care or rely on life-sustaining equipment that may be disrupted during an earthquake. This population may also face challenges evacuating or accessing emergency medical services.
 - The Mitigation Planning Team identified residents of Sunrise Assisted Living facility as particularly vulnerable due to their reliance on continuous care and mobility challenges.
- Economically Disadvantaged Populations:
 - Low-income constituents may live in older, unreinforced masonry buildings that are more likely to sustain severe damage during an earthquake.
 - Recovery may be especially difficult for this group due to limited financial resources, lack of insurance and slower access to disaster relief services.
- Children and Daycare Populations:
 - Earthquakes occurring during daytime work hours could pose risks to students, faculty, and staff, particularly if older school facilities are not retrofitted to seismic safety standards.
 - Facilities such as Leap & Bound Child Development Center could experience disruptions, preventing childcare services from operating.
- Tourists and Visitors:
 - Tourists unfamiliar with earthquake safety protocols or emergency response plans may be at heightened risk during an event, particularly in crowded public spaces.
- BCHD Staff:
 - Earthquake impacts on transportation systems could prevent staff from reporting to work, limiting BCHD's ability to provide services.
 - Staff injuries or personal losses could reduce available workforce capacity, requiring contingency staffing plans, such as leveraging BCHD's volunteer corps, while acknowledging that volunteers may also be personally impacted by the disaster.

Vulnerability of Systems

As a special district responsible for health and wellness services, BCHD operates critical facilities and systems that are integral to the community's health and emergency response. These systems are particularly vulnerable to earthquakes due to potential structural damage, loss of utilities, and cascading failures.

BCHD Facilities

- Primary Health and Wellness Centers:
 - BCHD-owned health facilities, such as Beach Cities Health Center (also housing alcove Beach Cities and Center for Health & Fitness), AdventurePlex, Venice Family Clinic and Sunrise Assisted Living, could suffer structural damage, especially if not retrofitted to modern seismic safety standards. Damage to these buildings could disrupt health services during a time of critical need.
 - Nonstructural hazards, such as falling equipment, unsecured furniture, and medical supplies, may pose risks to staff and patients and reduce the functionality of the facilities.
 - Beach Cities Health Center, identified as seismically unsafe, is slated for demolition, with new construction ensuring seismic safety.
- Community Programs and Service Locations:
 - Locations where BCHD delivers health programs, such as senior wellness classes or community outreach events, may face operational disruptions or closures due to facility damage.
 - If BCHD facilities or facilities of community partners are impacted, essential programs – such as those offered in schools – may be shut down, similar to the disruptions experienced during the COVID-19 pandemic.
- Financial Revenue and Insurance Impacts
 - Earthquake damage to BCHD facilities could result in significant financial losses due to facility closures, repair costs, and disruptions in revenue-generating programs.
 - Insurance claims processing and financial recovery efforts may be prolonged, impacting long-term operational stability and community perception of BCHD services.

Utilities and Communication Systems

- Electrical and Power Systems:
 - BCHD facilities rely on electricity to power medical equipment, lighting, and communication systems. Power outages caused by earthquakes could hinder service delivery and emergency operations.
 - Backup power systems (e.g., generators) may be vulnerable to failure if they are not regularly tested, maintained, or safely secured.
- Water and Sewer Systems:
 - Water supply interruptions caused by damaged pipelines could affect sanitation, hydration, and fire suppression systems at BCHD facilities.

- Sewer system failures could lead to health hazards, particularly in facilities where medical waste is generated.
- Communication Systems:
 - Earthquake damage to telecommunications infrastructure could impede BCHD's ability to coordinate with staff, clients, program participants, volunteers and emergency responders.
 - Disruptions in public information dissemination could impact resource distribution and community safety.

Public Health Services

- Emergency Response Capacity:
 - BCHD's ability to provide emergency health services could be hindered by facility closures, staff injuries, or transportation disruptions preventing staff from reaching work sites.
 - Access to medications, medical supplies, and first-aid resources may be delayed if supply chains are disrupted by road closures or damage to distribution centers.
 - BCHD's partnerships with healthcare providers present an opportunity for BCHD to act as a liaison between the cities and healthcare services during activations.

Transportation Systems Supporting BCHD Services

- Staff and Patient Access:
 - Earthquakes can damage transportation infrastructure, including roads, bridges, and public transit systems. This could prevent BCHD staff from reporting to work and clients and program participants from accessing essential health services.

4.7.7 Environmental Impacts

Earthquakes

Earthquakes are geologic events driven by tectonic processes, and their likelihood, magnitude, and ground shaking intensity are not directly influenced by climate change or other atmospheric conditions. The environmental impacts associated with earthquakes stem primarily from the physical disruption they cause, such as ground rupture, soil liquefaction, and landslides, which can lead to secondary environmental hazards. These may include hazardous material releases, damage to water and wastewater systems, and increased risks of coastal or hillside erosion. While climate change does not affect the geologic causes of earthquakes, the compounding effects of climate-related hazards, such as heavy rainfall weakening slopes prior to seismic activity, can exacerbate the environmental consequences of an earthquake. Effective land use planning, hazard mitigation measures, and infrastructure resilience are key to minimizing these cascading impacts.

4.7.8 Critical Facilities and Infrastructure

Table 38 outlines key BCHD assets and associated potential loss values in the event of a major seismic event. This table identifies essential facilities owned, leased, or operated by BCHD, categorized by their alignment with FEMA's Community Lifelines. These facilities support vital health, shelter, and community services. The asset values provided represent estimated replacement or repair costs based on available data. It is important to note that these figures are approximations; actual losses in a real-world event could exceed the estimates shown. This assessment supports BCHD's ongoing efforts to prioritize seismic mitigation and ensure continuity of services during and after a disaster.

Table 38: Critical Facilities and Potential Earthquake Loss Estimates

Name of Facility	Address	Asset Value/Potential Loss Data	Community Lifeline Category
Beach Cities Health Center (Owned)	514 N. Prospect Ave.; Redondo Beach, CA 90277	\$62,592,873	Health and Medical
AdventurePlex (Owned)	1701 Marine Ave.; Manhattan Beach, CA 90266	\$7,707,276	Food, Water, Shelter
Sunrise Assisted Living (Land Lease & Joint Venture Limited Partner)	1837 Pacific Coast Highway, Hermosa Beach, CA 90254	\$2,408,000	Health and Medical
Leap & Bound Child Development Center (Building and Land Lease)	601 S. Pacific Coast Highway Redondo Beach, CA 90277	\$2,530,649	Food, Water, Shelter
Venice Family Clinic - South Bay Family Health Care (Building and Land Lease)	2114 Artesia Boulevard Redondo Beach, CA 90278	\$192,000	Health and Medical
512 Parking Structure (Owned)	512 N. Prospect Ave.; Redondo Beach, CA 90277	\$10,149,276	Health and Medical
520 Parking Structure (Owned)	520 N. Prospect Ave.; Redondo Beach, CA 90277	\$18,296,150	Health and Medical
514 Surface Parking (Owned)	514 N. Prospect Ave.; Redondo Beach, CA 90277	\$100,000	Health and Medical
BCHD Total	\$103,976,224.00		

4.7.9 Land Use and Development

BCHD operates within the coastal cities of Manhattan Beach, Hermosa Beach, and Redondo Beach. These are urbanized communities characterized by limited open space, high-density development, and minimal opportunities for large-scale new construction. While BCHD is not a land use authority, it provides critical public health services and facilities within this environment and aligns its operational planning with local city policies, zoning ordinances, and Local Coastal Programs. Development trends in BCHD's Planning Area are largely centered on infill and redevelopment, as most available land has already been developed.

BCHD's facilities are located in areas with generally low risk of landslides, flooding, or wildfire, though seismic risk remains a prominent concern. Several key assets, including the Beach Cities Health Center, have undergone seismic evaluations, highlighting the need for structural improvements and mitigation investments. These assessments ensure that BCHD facilities remain functional and accessible during and after a disaster, particularly for vulnerable populations who rely on health and shelter services.

BCHD remains committed to integrating hazard mitigation into its planning, capital improvements, and interagency coordination efforts. Although it does not directly influence land use decisions, the district advocates for development that supports health resilience and infrastructure safety. As future upgrades and redevelopment projects occur, BCHD will continue to apply a risk-informed approach to protect its facilities, staff, and the broader communities it serves.

4.8 Extreme Heat

4.8.1 Hazard Description

Extreme heat is a severe weather hazard characterized by prolonged periods of excessively hot weather, often accompanied by high humidity. In the BCHD Planning Area, extreme heat events have become increasingly concerning due to rising temperatures, urban heat island effects, and climate change. Although the region's coastal location typically moderates temperatures, prolonged heat waves still pose serious public health risks—particularly to older adults, children, outdoor workers, and individuals with underlying health conditions. This LHMP identifies extreme heat as a key hazard for BCHD due to its potential to cause heat-related illness, increased energy demand, and impacts on healthcare and emergency services.

Extreme Heat

The definition of extreme heat varies based on many different factors, such as location, weather conditions (e.g., temperature, humidity, and cloud cover), and the time of year. Extreme heat conditions are defined as weather that is much hotter than average for a particular time and place. Humidity contributes to the effects of heat. Tropical air and Santa Ana winds can contribute to extreme heat events.

The threat of extreme heat can be higher in urban areas, where dark-colored roofs and paving materials cause the air temperature to be hotter. The dense concentrations of pavement, buildings and other surfaces that absorb and retain heat is known as the urban heat island effect.⁵

4.8.2 Location and Extent

Extreme heat can affect the entire BCHD planning area, including the cities of Manhattan Beach, Hermosa Beach, and Redondo Beach. While the coastal location typically provides moderate temperatures, heat waves have become more frequent, longer in duration, and more intense in recent years. The entire BCHD Planning Area is vulnerable to extreme heat events, which can elevate health risks, particularly for sensitive populations, and strain local health systems and energy infrastructure. Although inland areas generally experience higher peak temperatures, even modest increases in temperature along the coast can lead to significant health impacts when sustained over multiple days.

Extreme Heat

Extreme heat events are widespread regional occurrences that would affect the entire planning area, and likely the larger southern California region. The geographic extent of extreme heat conditions would extend to every BCHD constituent. Extreme heat events typically last for a few days. Extreme heat would not likely result in physical damage to

⁵<https://www.epa.gov/green-infrastructure/reduce-urban-heat-island-effect#:~:text=%22Urban%20heat%20islands%22%20occur%20when,heat%2Drelated%20illness%20and%20mortality>

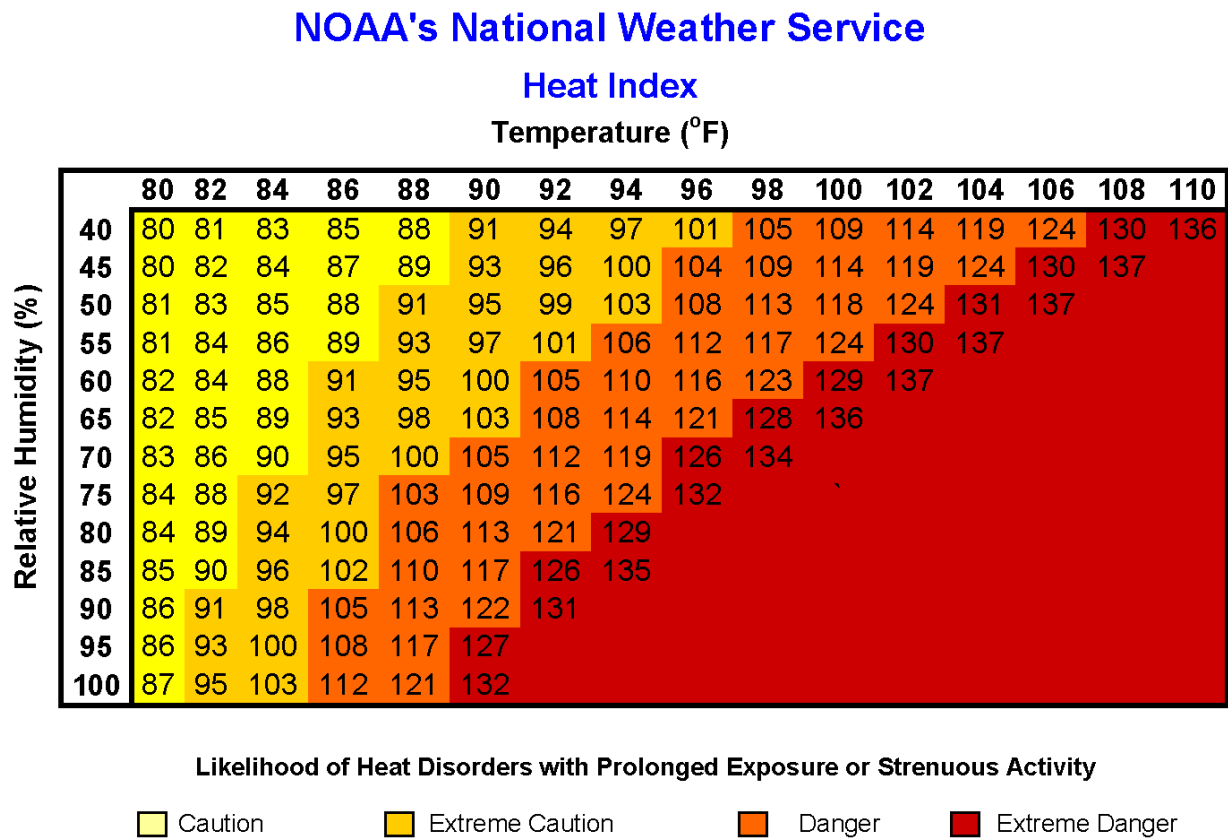
structures; however, BCHD constituents may experience the effects of heat exhaustion or heat stroke. Additionally, the increased use of air conditioning may put stress on the power grid and lead to power outages.

To measure Extreme Heat temperatures, the NWS has a system to initiate alert procedures (advisories, watches, and warnings) when high temperatures are expected to impact public safety significantly. The heat index is a measure of how hot it feels when relative humidity is factored in with the actual air temperature. Relative humidity is the percentage of moisture in the air compared with the maximum amount of moisture the air can hold. Humidity is an important factor in how hot it feels because when humidity is high, water doesn't evaporate as easily, so it's harder for your body to cool off by sweating, making this a hazard that can cause serious impacts on a person's health.

National Weather Center Heat Index

According to the National Weather Service, the Heat Index (**Figure 16**), also known as the Apparent Temperature, is a subjective measure of what it feels like to the human body when relative humidity is factored into the actual air temperature. Relative humidity is a measure of the amount of water in the air compared with the amount of water that air can hold at the current temperature.

Figure 16: NWS Heat Index



Source: [NOAA - National Weather Service](#)

As the heat index rises, so do health risks. Specifically:

- When the heat index is 90°F, heat exhaustion is possible with prolonged exposure and/or physical activity.
- When it is 90° to 105°F, heat exhaustion is probable with the possibility of sunstroke or heat cramps with prolonged exposure and/or physical activity.
- When it is 105° to 129°F, sunstroke, heat cramps or heat exhaustion is likely, and heatstroke is possible with prolonged exposure and/or physical activity.
- When it is 130°F and higher, heatstroke and sunstroke are extremely likely with continued exposure. Physical activity and prolonged exposure to heat increase the risks.

The primary impacts of extreme heat in the BCHD Planning Area are related to health risks, utility outages, and broader climate change effects. Extreme heat can exacerbate chronic health conditions and pose serious risks to populations, including older adults, individuals with disabilities, and low-income residents. Heat-related illnesses are of particular concern in coastal communities where residents may not be accustomed to prolonged high temperatures or may lack air conditioning.

Electrical power across the BCHD Planning Area is managed by Southern California Edison (SCE). While SCE is responsible for mitigating risks to the electric grid, BCHD jurisdictions must focus on identifying and protecting critical infrastructure, essential health services, and community lifelines that could be impacted by power outages during extreme heat events. When high fire or heat conditions are forecasted, SCE conducts predictive modeling and monitors National Weather Service alerts to assess potential impacts.

In the case of a planned Public Safety Power Shutoff (PSPS), SCE typically begins coordination with local governments, emergency management officials, healthcare providers, and other critical service operators approximately three days in advance. Notices are issued to registered customers two days prior to the anticipated shutoff, with follow-up notifications one day before the outage. However, sudden or severe weather changes may disrupt these communication timelines.

Beyond PSPS events, unplanned power outages may also occur in the BCHD Planning Area due to factors such as equipment failure, strong winds, or other weather-related events. While less frequent, these outages can still affect essential services and increase health risks during high heat conditions, particularly if cooling centers, medical facilities, or personal cooling resources are impacted.

4.8.3 Previous Events

BCHD resides within Los Angeles County. Based on information obtained from NOAA/NCEI, the following incidents of Extreme Heat occurred in Los Angeles County between January 1, 2019, and December 31, 2023:

Extreme Heat

The last event recorded in the NOAA/NCEI database resulting in 8 deaths occurred in September 2007.

Disaster Declaration History

No disaster declaration was declared that included Los Angeles County for an Extreme Heat event.

4.8.4 Probability of Future Events

Calculating future probability is one of many predictors of future occurrences. **Table 39** provides a summary of the events for Extreme Heat, as categorized, and recorded by NOAA/NCI for Los Angeles County between January 1, 2019, and December 31, 2023:

Table 39: Previous Events, Extreme Heat

Previous Events, Severe Weather, Los Angeles County, CA	
Event Year	Extreme Heat
2019	0
2020	0
2021	0
2022	0
2023	0
Total Recorded Events =	0
Total Years =	5
Annual Probability =	0%

Source: NOAA/NCEI

Extreme Heat Annual Probability:

$$\frac{0}{5} \times 100 = \frac{0\%}{5} = 0\%$$

Using the NOAA/NCEI database, and calculating probability based on the past events, the likelihood of a single Extreme Heat event occurring in Los Angeles County, where BCHD resides, on an annual basis over the next

HMP planning cycle is 0%. This categorizes the hazard's future probability of occurrence as **Unlikely**.

4.8.5 Hazard Risk Ranking

Table 40: Risk Ranking for Extreme Heat

Hazard	Impact to Assets			Vulnerability (H+P+B=#) (V=#/3)	Probability (Pb)	Social Vulnerability (SV)	Risk Value (R=V+Pb+SV)	Risk Ranking
	Human Impact (H)	Property Impact (P)	Business Impact (B)					
Extreme Heat	2.7	1.8	1.2	1.9	3.7	1	6.6	Moderate

4.8.6 Vulnerability and Impact Assessment

Change in Extreme Heat Vulnerability

As this is BCHD's first LHMP, there is no prior assessment to compare changes in vulnerability to extreme heat events. However, recent trends and climate data indicate that the region is experiencing longer and more frequent periods of extreme heat, including during times of year that have historically maintained moderate coastal temperatures.

While the BCHD Planning Area benefits from a marine climate that traditionally mitigates extreme heat impacts, populations—such as older adults, individuals with pre-existing health conditions, and those with limited access to cooling—remain at elevated risk. BCHD's role as a public health agency positions it to address these vulnerabilities through coordinated outreach, education, and resource distribution during extreme heat events.

Given these evolving climate conditions, the vulnerability to extreme heat within the BCHD Planning Area is increasing. BCHD will continue to prioritize preparedness actions that protect at-risk populations, including evaluating the need for cooling centers, public health messaging, and partnerships that support heat-related risk reduction across its facilities and service delivery areas.

Table 41: Summary of Change to Vulnerability, Extreme Heat

2024 LHMP Update Hazards	Decrease in Vulnerability	No Change in Vulnerability	Increase in Vulnerability
Extreme Heat		X	

HMPC Vulnerability and Impact Assessment Feedback

Extreme heat events are becoming increasingly frequent and severe, posing significant risks to the BCHD Planning Area. Vulnerability to extreme heat depends on exposure to elevated temperatures, the ability to access cooling mechanisms, and the resilience of individuals and communities to heat-related health impacts. Extreme heat poses a growing risk to both populations and BCHD systems, requiring proactive strategies,

including improving access to cooling centers, ensuring facilities are heat-resilient, and conducting public outreach on heat safety.

Impacts on Populations

Extreme heat can result in heatstroke, heat exhaustion, dehydration, and exacerbation of existing health conditions. Additionally, it can cause secondary impacts such as increased mental health challenges, reduced productivity, and economic strain on vulnerable populations. Populations most vulnerable to extreme heat include:

Children and Participants in Summer Camps

- BCHD's AdventurePlex, which offers summer camps for children aged 4–12, has outdoor activity rotations. Lack of sufficient shade or cooling options during extreme heat events puts children at risk of heat-related illnesses such as heat exhaustion or heatstroke.
- Cooling stations, hydration stations, and shade structures are necessary to protect children and staff.

Older Adults and Those with Pre-Existing Health Conditions

- Older adults, particularly those with limited mobility or chronic conditions such as cardiovascular or respiratory illnesses, are highly susceptible to heat stress due to diminished thermoregulation.

Individuals with Access and Functional Needs (AFN)

- Residents with disabilities or mobility issues may face challenges accessing cooling centers, staying hydrated, or monitoring their health during extreme heat events.
- Those reliant on power-dependent medical devices may be further impacted by heat-related power outages.

Low-Income and Unhoused Populations

- Individuals without access to air conditioning or living in poorly insulated housing are particularly vulnerable to heat-related illnesses.
- Unhoused individuals lack access to consistent shelter and may face direct exposure to extreme temperatures, increasing their risk of dehydration and heat-related health complications.

Youth and Families Seeking Cooling Centers

- BCHD's youth health facilities see an uptick in participants during hot months, as families and individuals seek spaces to cool down. This reflects a growing demand for accessible cooling centers in the Beach Cities.

Outdoor Workers and Athletes

- Workers in outdoor industries, such as landscaping or construction, and individuals participating in outdoor sports or recreation are at higher risk of heat-related illnesses due to prolonged exposure to high temperatures and physical exertion.

Community Mental Health Impacts

- Extreme heat can exacerbate stress, anxiety, and other mental health challenges, increasing the demand for BCHD's mental health services.

Vulnerability of Systems

BCHD operates key facilities and systems that may be impacted by extreme heat, either directly through heat-related stress or indirectly through cascading effects such as increased energy demand and power outages.

BCHD Facilities and Operations

- AdventurePlex:
 - As noted by the Mitigation Planning Team, the outdoor activity areas for summer camps lack sufficient shade. Extreme heat could disrupt camp activities and increase the risk of heat-related illnesses for participants.
 - Cooling stations, hydration stations, and shade structures are essential to ensure the safety of children and staff during hot weather.
- Youth Health Facilities:
 - BCHD's youth health facilities experience an increase in visitors during extreme heat events, as families seek relief from high temperatures. This increased demand can strain facility resources and staffing.
 - Heat-related stress and discomfort may exacerbate underlying mental health conditions, requiring additional interventions.
- Energy Demand and Cooling Systems:
 - Prolonged heat waves can lead to overburdened HVAC systems in BCHD facilities, increasing energy costs and the risk of system failures.
 - Backup power systems may be necessary to ensure continuity of operations during heat-related power outages.

Critical Infrastructure Supporting BCHD

- Electricity and Power Supply:
 - Extreme heat events increase regional energy demand, particularly for air conditioning. Rolling blackouts or power grid failures could disrupt BCHD operations and compromise the ability to provide cooling and essential services.
 - Renewable energy sources, such as solar panels, may be impacted by extreme temperatures, potentially reducing efficiency.
- Water Supply and Hydration:
 - Heat events may increase water demand, straining local water systems. BCHD must ensure an adequate supply of water for hydration and cooling measures at its facilities.

- Transportation Systems:
 - Extreme heat can damage transportation infrastructure, such as roads and railways, potentially disrupting access to BCHD facilities and services.
 - Heat-related delays in public transportation could hinder staff, participants, volunteers, and residents from reaching BCHD cooling centers or facilities.

Public Health Services and Emergency Operations

- Increased Demand for Cooling Centers:
 - BCHD may need to expand its role in providing cooling centers, particularly for vulnerable populations without access to air conditioning.
 - Coordinating transportation to cooling centers for those with mobility challenges or limited resources is critical.
- Heat-Related Illness Response:
 - BCHD facilities may see an increase in clients and program participants presenting with heat-related illnesses, including dehydration, heat exhaustion, and heatstroke.
 - Health education campaigns focused on extreme heat preparedness, hydration, and early warning signs of heat stress are essential to mitigate health impacts.
- Economic Impacts:
 - Increased energy and water costs during heat events could strain BCHD budgets and resources.
 - Heat-related workforce disruptions may also impact BCHD operations and service delivery.

4.8.7 Environmental Impacts

Climate change is a key driver in the intensification of extreme heat events across California, including in the coastal communities of Manhattan Beach, Hermosa Beach, and Redondo Beach. These communities are experiencing more frequent, longer-lasting, and more severe heat waves, which present growing environmental and public health challenges.

In Hermosa Beach, studies project that the number of extreme heat days will quadruple by 2050 if greenhouse gas emissions remain unchecked.⁶ This escalation in temperature not only endangers public health but also exacerbates existing environmental vulnerabilities.

The Los Angeles County Department of Beaches and Harbors has recognized the dual threats of extreme heat and coastal erosion exacerbated by climate change. In a 2024 report, the department highlighted that residents from inland areas often seek relief from extreme heat by flocking to coastal beaches. However, these beaches face challenges due to limited natural sand supply and increased erosion from coastal storms and projected sea-level rise. To combat these issues, the department is developing a coastal resilience strategy in collaboration with cities including Manhattan Beach, Hermosa Beach, and Redondo Beach. This strategy focuses on implementing hybrid living shoreline adaptations to mitigate extreme erosion while preserving public access and native ecosystems.⁷

The urban infrastructure of the Beach Cities further intensifies heat-related challenges. Dense residential development and heat-absorbing materials contribute to the urban heat island effect, leading to elevated temperatures compared to surrounding areas. This effect amplifies the health risks associated with extreme heat, particularly for vulnerable populations such as older adults, young children, outdoor workers, and individuals with pre-existing health conditions.

Projections indicate that without significant mitigation efforts, extreme heat events in BCHD's communities will become more frequent and severe in the coming decades. Addressing these challenges requires comprehensive adaptation strategies, including enhancing coastal resilience, reducing greenhouse gas emissions, and implementing urban planning measures that mitigate the urban heat island effect. Collaborative efforts among local governments, community organizations, and residents are essential to protect public health and preserve the environmental integrity of BCHD's communities.

4.8.8 Critical Facilities and Infrastructure

While the BCHD Planning Area has historically benefited from a coastal climate that moderates high temperatures, recent heat waves have demonstrated that even coastal communities are not immune to the impacts of extreme heat. These events pose risks to both the health of vulnerable populations and the continued operation of critical facilities.

⁶ [Heat Waves to Quadruple in Hermosa Beach, Study Finds | Hermosa Beach, CA Patch](#)

⁷ [1155949_02.07.2490-dayBoardReport_ProtectingLACOBeaches.pdf](#)

BCHD operated facilities such as the Beach Cities Health Center and AdventurePlex provide essential services to the community and must remain functional during high-heat conditions. Although structural damage from extreme heat is unlikely, facilities may experience stress on HVAC systems, increased energy costs, and disruptions to service delivery. In addition, facilities that serve vulnerable populations must be equipped to provide cooling and support during heat emergencies.

Table 42 identifies key BCHD assets, estimated values, and associated Community Lifeline categories. This information supports planning for facility upgrades, energy resilience, and the continuity of operations during extreme heat events.

Table 42: Beach Cities Health District Critical Facilities/Infrastructure

Name of Facility	Address	Asset Value/Potential Loss Data	Community Lifeline Category
Beach Cities Health Center (Owned)	514 N. Prospect Ave.; Redondo Beach, CA 90277	\$62,592,873	Health and Medical
AdventurePlex (Owned)	1701 Marine Ave.; Manhattan Beach, CA 90266	\$7,707,276	Food, Water, Shelter
Sunrise Assisted Living (Land Lease & Joint Venture Limited Partner)	1837 Pacific Coast Highway, Hermosa Beach, CA 90254	\$2,408,000	Health and Medical
Leap & Bound Child Development Center (Building and Land Lease)	601 S. Pacific Coast Highway Redondo Beach, CA 90277	\$2,530,649	Food, Water, Shelter
Venice Family Clinic - South Bay Family Health Care (Building and Land Lease)	2114 Artesia Boulevard Redondo Beach, CA 90278	\$192,000	Health and Medical
512 Parking Structure (Owned)	512 N. Prospect Ave.; Redondo Beach, CA 90277	\$10,149,276	Health and Medical
520 Parking Structure (Owned)	520 N. Prospect Ave.; Redondo Beach, CA 90277	\$18,296,150	Health and Medical
514 Surface Parking (Owned)	514 N. Prospect Ave.; Redondo Beach, CA 90277	\$100,000	Health and Medical
BCHD Total	\$103,976,224.00		

4.8.9 Land Use and Development

Extreme heat is an emerging hazard of increasing concern across the BCHD Planning Area. While the cities of Manhattan Beach, Hermosa Beach, and Redondo Beach have historically maintained mild coastal temperatures, climate change has led to more frequent and prolonged periods of elevated heat. These conditions can place additional strain on infrastructure, energy systems, and public health services, particularly in densely developed urban areas with limited green space or tree canopy.

BCHD does not control land use or zoning, but it works in coordination with city partners that manage local development and climate adaptation efforts. As infill development and redevelopment occur, it is important that design standards consider the urban heat island effect and promote heat-resilient infrastructure such as cool roofing, shade structures, and energy-efficient building systems. These measures can reduce exposure to extreme heat and support long-term community resilience.

Future BCHD planning and facility investments will continue to prioritize cooling access, energy efficiency, and climate-adaptive design. By aligning health service delivery with broader development trends and climate mitigation goals, BCHD supports efforts to protect vulnerable populations and maintain essential services during high-heat events.

4.9 Inland Flooding

4.9.1 Hazard Description

According to the National Weather Service, a flood is an overflow of water onto normally dry land. The inundation of a normally dry area caused by rising water in an existing waterway, such as a river, stream, or drainage ditch. Ponding of water at or near the point where the rain fell. Flooding is a longer-term event than flash flooding. Flash flood is a flood caused by heavy or excessive rainfall in a short period of time, generally less than 6 hours. Flash floods are usually characterized by raging torrents after heavy rains that rip through riverbeds, urban streets, or mountain canyons sweeping everything before them. They can occur within minutes or a few hours of excessive rainfall. They can also occur even if no rain has fallen, for instance after a levee or dam has failed, or after a sudden release of water by a debris or ice jam.

The National Flood Insurance program (NFIP) defines Flooding as a general and temporary condition of partial or complete inundation of two (2) or more acres of normally dry land area or of two (2) or more properties (at least one (1) of which is the policyholder's property) from:

- Overflow of inland or tidal waters; or
- Unusual and rapid accumulation or runoff of surface waters from any source; or
- Mudslides (i.e., mudflows) which are proximately caused by flooding and are akin to a river of liquid and flowing mud on the surfaces of normally dry land areas, as when earth is carried by a current of water and deposited along the path of the current.; or
- Collapse or subsidence of land along the shore of a lake or similar body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels that result in a flood as defined above.

Floods can rise slowly or quickly but generally develop over hours or days. Inland flooding, also known as "urban flooding" or "flash flooding," can be caused by intense, short-term rain or moderate rainfall over several days, which can overwhelm existing drainage infrastructure. Other factors that affect the dynamics of this type of flood include slope, width, and vegetation in place along the watercourse banks. The slope that a flash flood traverse has a definite relationship to the overall speed at which the water will travel. The incline on which the water moves affects the width of the flooding area. Generally, the faster the water moves, the narrower that channel will be created since the water digs the channel deeper as it flows. When water flows over the shallower slope, it spreads out more, decreasing its potential to cause mass damage but still considered dangerous. Finally, the type of vegetation located along the flood's path can prevent further erosion of the channel banks. A structure that lies along a flood channel with no surrounding vegetation is at risk of having its foundation undercut, which can cause structural damage, or in some cases, a building's complete collapse.

Riverine or alluvial flooding occurs when excessive rainfall over an extended period causes a river to exceed its capacity. Typical flooding causes, both inland and riverine, include tropical cyclonic systems, frontal systems, and isolated thunderstorms, combined with other environmental variables such as changes to the physical environment, topography, ground saturation, soil types, basin size, drainage patterns, and vegetative cover. The rate of onset and duration of flooding events depends on the type of flooding (typical flood or flash flood). The spatial extent of a flooding event depends on the amount of overflowing water but can usually be mapped because of existing floodplains.

Mitigation includes any activities that prevent an emergency, reduce the chance of an emergency happening, or lessen the damaging effects of unavoidable emergencies. Investing in mitigation measures now, such as: engaging in floodplain management activities, constructing barriers such as levees, and purchasing flood insurance, will help reduce the amount of structural damage to structures and financial loss from building and crop damage should a flood or flash flood occur. The standard for flooding is the 1% annual chance of flood, commonly called the 100-year flood, and 0.2% annual chance of flood, called a 500-year flood, are used to classify flooding by FEMA. The 100-year flood is the national minimum standard to which communities regulate their floodplains through the FEMA NFIP.

4.9.2 Location and Extent

The State of California Hazard Mitigation Plan (2023) mentions that Floods represent one of California's most destructive sources of hazard, vulnerability, and risk regarding recent state history and the probability of future destruction at greater magnitudes than previously recorded. Flood events can wash away soils, weakening foundations and increasing the risk of structures collapsing. Flood events also risk personal injury or drowning, particularly in flash floods that may occur too fast for people to escape. Flood events are frequent in California and have been the cause of more disaster declarations than any other type of emergency except for fire.

The State plan also mentions these flooding types in California: riverine flooding, alluvial fan, coastal, engineered structure failure, and tsunami. Los Angeles County, where the City of Manhattan Beach resides, can experience the following flooding types, defined by the NOAA National Severe Storms Laboratory:

- **Coastal Flooding:** inundation of locations typically above high tide, often caused by storm surge occurring with high tide and exacerbated over time with climate change-induced sea-level rise. Increased coastal erosion can also result from these conditions.
- **Flash Flooding:** the most dangerous kind of flood because they combine the destructive power of a flood with incredible speed. Flash floods occur when heavy rainfall exceeds the ability of the ground to absorb it. They also occur when water fills normally dry creeks or streams or enough water accumulates for streams to overtop their banks, causing rapid water rises in a short amount of time. They can

happen within minutes of the causative rainfall, limiting the time available to warn and protect the public.

- **Engineered Structure Failure:** flooding resulting from a dam or levee failure. More information related to engineered structure failure/dam failure can be found in the Dam Failure hazard profile of this plan update.
- **Tsunamis:** high-speed seismic ocean waves triggered by earthquakes and underwater landslides. More information about Tsunamis can be found under the Tsunami hazard profile of this plan update.

Related to Coastal Flooding, the Los Angeles County All Hazards Mitigation Plan (2020) mentions that waves generated by winter storms cause coastline/coastal flooding within the County. Such a storm event occurs in the planning area because a combination of high astronomical tides and strong winds can cause a significant wave runup and allow storm waves to reach higher-than-average elevations along the coastline. The entirety of Manhattan Beach's 2.1 miles of beach is vulnerable to Coastal Flooding.

The Los Angeles Flood Risk Report (2016) mentions the Los Angeles County Open Pacific Coast Study. The study's flood risk area project summary indicated that the study used detailed coastal modeling and analysis to determine coastal hazards and this product would help community officials and the public understand their local flood risk and other hazards. BCHD was listed in this report as a community that lies along the open coast of Los Angeles County.

Table 43: Flood Risk Report Community Profile, Beach Cities Health District

Community Name	CID	Total Community Population	Total Community Land Area (sq mi)	NFIP	CRS Rating	Mitigation Plan
City of Hermosa Beach	060124	1.4	1.4	Y	10	Y
City of Manhattan Beach	060138	35,135	3.9	Y	10	Y
City of Redondo Beach	060150	66,748	6.2	Y	10	Y

Source: [Flood Risk Report, Los Angeles County, California Report 01, 9/30/2016](#)

Additionally, wave heights are computed along transects near coastal areas for FEMA's coastal flooding analyses. The transects are continued inland until the wave dissipates or until flooding from another source with equal or greater elevation is reached. Along each transect, wave heights and elevations are computed considering the combined effects of changes in ground elevation, vegetation, and physical features. With the Pacific Ocean bordering the West of the planning area, the following Coastal Transect Parameters

(including coastal transect map) for the Pacific Ocean portion of Beach Cities as identified by the FEMA Flood Insurance Study, June 2021, are as follows:

Table 44: Coastal Transect Parameters

Flood Source	Coastal Transect	X, Y Coordinates (Meters, NAD83 UTM Zone 11 N)		Total Water Level (feet NAVD88)				
		X	Y	10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Pacific Ocean	68	367676.71	3752149.6 748	14.7	15.3	15.8	16.2	17.3
Pacific Ocean	69	367779.00 22	3751892.9 293	14.6	15.2	15.6	16.0	16.9
Pacific Ocean	70	367989.00 33	3751439.3 17	15.5	16.2	16.7	17.2	18.3
Pacific Ocean	71	368433.40 19	3750380.6 531	15.4	16.1	16.6	17.0	18.1
Pacific Ocean	72	368645.63 18	3749934.7 334	16.9	17.6	18.1	18.7	19.8
Pacific Ocean	73	368856.34 97	3749546.2 682	18.0	18.9	19.5	20.1	21.4
Pacific Ocean	74	369261.43 17	3748704.2 873	16.0	16.9	17.6	18.3	20.1

Source: [FEMA Flood Insurance Study](#)

Table 45 explains each of the flood insurance rate zones related to coastal flooding in detail. Based on the FEMA FIRMs for the Beach Cities coastlines, the entire area is classified as VE.

Table 45: FEMA Coastal Flood Zones

FEMA Coastal Flood Zone Classifications		
High Risk – Coastal Areas	V	Coastal areas with a 1% or greater chance of flooding and an additional hazard associated with storm waves. These areas have a 26% chance of flooding over the life of a 30-year mortgage. No base flood elevations are shown within these zones.
High Risk – Coastal Areas	VE, V1-30	Coastal areas with a 1% or greater chance of flooding and an additional hazard associated with storm waves. These areas have a 26% chance of flooding over the life of a 30-year mortgage. No base flood elevations are shown within these zones.
Moderate to Low-Risk Areas	X	Area of minimal flood hazard, usually depicted on FIRMs as above the 500-year flood level. Zone C may have ponding and local drainage problems that don't warrant a detailed study or designation as base floodplain. Zone X is the area determined to be outside the 500-year flood and protected by levee from 100-year flood.

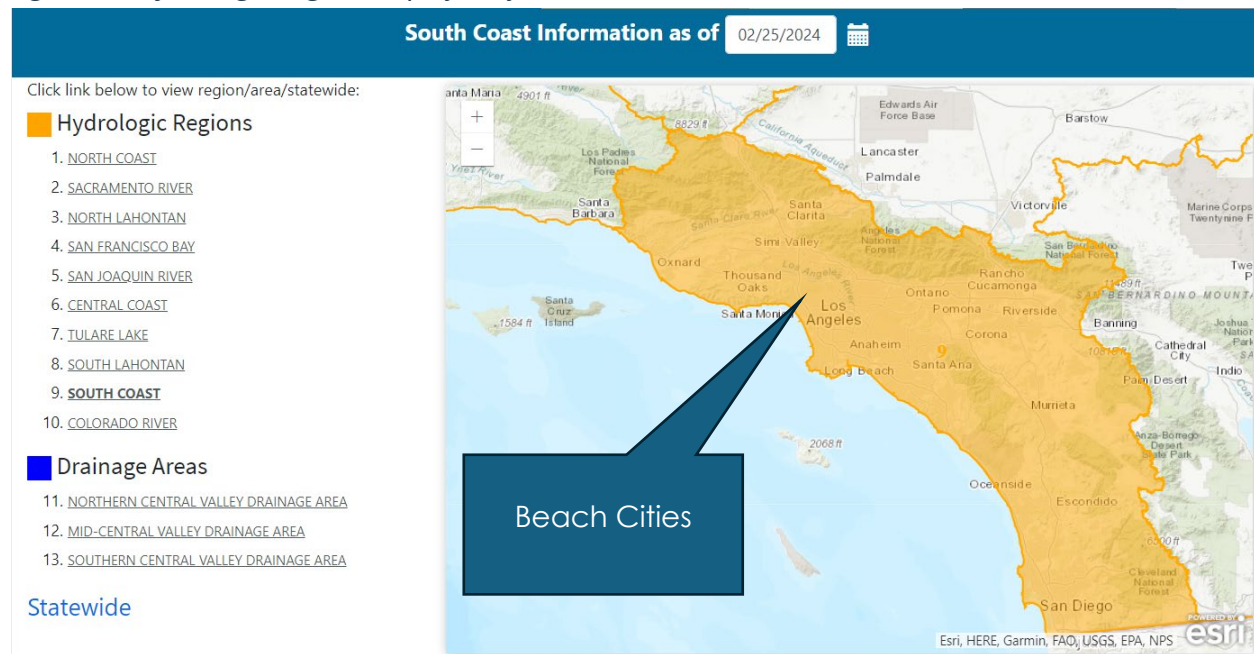
Source: [FEMA Flood Zone Classifications](#)

The Los Angeles County HMP (2018) mentioned that floods can occur anytime but are most familiar with annual winter storms packed with subtropical moisture. Severe Flooding that is most likely to occur during strong El Niño events, generally ranging from 2 to 7 years and lasting from as little as six months to as long as four years. Although BCHD does not have a history of significant Flooding, a particularly severe storm or series of intense storms may cause more widespread flooding emergencies. Localized Flooding will likely continue within the planning area, especially during significant storm events. Major storms in California, including BCHD, frequently result from meteorological phenomena called atmospheric rivers, which are narrow bands of air that act as pathways for heavy precipitation.

According to the California State Hazard Mitigation Plan (2023) in relation to hydrologic/watershed regions, there are ten (10) hydrologic regions within the State of California. As identified in **Figure 17** below, Los Angeles County (where BCHD resides) lies in the South Coast Hydrologic Region. The South Coast Hydrologic Region extends north from the U.S.-Mexico border to the Tehachapi, San Bernardino, San Gabriel, and San

Jacinto mountains. Nearly one-third of the area is a coastal plain. This region contains major urban centers, including Los Angeles, Orange, and San Diego counties.

Figure 17: Hydrologic Region Map of California, South Coast



Source: [California Water Watch](#)

FEMA's FIRM map can provide more detailed information about the risk associated with flooding in BCHD. It's important to note that the only Special Flood Hazard Area (SFHA) noted for BCHD by FEMA is the coast. There are no inland risks.

4.9.3 Previous Events

While flooding has been an occasional hazard in the Los Angeles Basin, it has been mostly limited to the areas near major natural rivers such as the Los Angeles, San Gabriel, and Santa Ana Rivers. A series of major flood events in the first half of the 1900s sparked the beginning of widespread flood control efforts, including the channelization of the area's major rivers. These efforts have reduced the frequency and severity of flood events although they have not removed the risk of flood entirely, as Los Angeles County still has seen declared flood-related disasters.

BCHD facilities are not located near the major waterways of the Los Angeles Basin and have largely been free of significant flood events. However, to gain a better understanding of previous occurrences and accurately calculate future probability, the following information was taken into consideration. **Table 46** depicts the occurrences of flooding within Los Angeles County, where the City of Manhattan Beach resides, since the previous LHMP update. Overall, NOAA/NCEI recorded 83 flooding (coastal flood, flood/flash flood) events.

Table 46: NOAA/NCEI Events, Flood Events, Los Angeles County

Flood Events (Coastal, Flash Flooding, Flooding), Los Angeles County: 2000-2023					
Location	Date	Event Type	Injuries/Death	Property Damage	Crop Damage
Los Angeles County	08/15/2020	Flash Flood	0/0	0.00K	0.00K
Los Angeles County	08/18/2020	Flash Flood	0/0	0.00K	0.00K
Los Angeles County	09/11/2022	Flash Flood	0/0	0.00K	0.00K
Los Angeles County	01/09/2023	Flash Flood	0/0	0.00K	0.00K
Los Angeles County	02/24/2023-02/25/2023	Flash Flood	0/0	0.00K	0.00K
Total – 5 Flood Events (Coastal/Flash Flooding/Flood)			0/0	\$0.00K	\$0.00K
<p>Note: NOAA NCEI Storm Events Database mentioned Los Angeles County, where the City of Manhattan Beach resides, contains the following zones: Los Angeles County Coast including Downtown Los Angeles, Santa Monica Mountains Recreational Area, Los Angeles County Mountains excluding the Santa Monica Range, Antelope Valley, Catalina Island, Santa Clarita Valley, Los Angeles County San Fernando Valley, Los Angeles County San Gabriel Valley.</p>					

Disaster Declaration History

According to the most recent [Los Angeles County Flood Risk Report \(2016\)](#), the Cities of Hermosa Beach, Manhattan Beach, and Redondo Beach have had 52 to 53 past Federal Disaster Declarations for Flooding. Since 2019, three (3) disaster declarations have been declared that included Los Angeles County, where BCHD resides, for flood. The events for flood that resulted in a state or federal disaster declaration are shown in **Table 47**.

Table 47: Los Angeles County - Disaster Declaration - Flood

Disaster Declaration	Hazard	Date	Details
California Severe Winter Storms, Flooding, Landslides, and Mudslides DR-4683-CA	Snowstorm/ Flooding/ Landslides/ Mudslides	December 2022	The state declared an emergency during a severe winter storm lasting December 27, 2022 – January 31, 2023. Disaster was declared on January 14, 2023.

Disaster Declaration	Hazard	Date	Details
California Severe Winter Storms, Flooding, and Mudslides EM-3591-CA	Snowstorm/ Flooding/ Mudslide	January 2023	Incident Period: Jan. 8, 2023 – Jan. 31, 2023 Declaration Date: Jan. 9, 2023.
California Severe Winter Storms, Flooding, and Mudslides EM-3592-CA	Snowstorm/ Flooding/ Landslides/ Mudslides	March 2023	Incident Period: Mar. 9, 2023 – Jul. 10, 2023 Declaration Date: Mar. 10, 2023
California Severe Winter Storms, Flooding, Landslides, and Mudslides DR-4769-CA	Snowstorm/ Flooding/ Landslides/ Mudslides	April 2024	Incident Period: Jan 31, 2024 - Feb 9, 2024 Declaration Date: Apr 13, 2024

4.9.4 Probability of Future Events

Calculating future probability is one of many predictors of future occurrences. **Table 48** provides a summary of the events for flooding, as categorized, and recorded by NOAA/NCI for Los Angeles County between January 1, 2019, and December 31, 2023:

Table 48: Previous Events, Inland Flooding

Previous Events, Inland Flooding, Los Angeles County, CA		
Event Year	Coastal Flooding	Flash Flood/Inland Flood
2019	0	0
2020	0	2
2021	0	0
2022	0	1
2023	0	4
Total Recorded Events =	0	7
Total Years =	5	5
Annual Probability =	0%	28%

Source: NOAA/NCEI

Annual Probability:

$$\frac{7}{5} \times 100 = \frac{140\%}{5} = 28\%$$

Using the NOAA/NCEI database, and calculating probability based on past events, the likelihood of a single flooding event occurring in Los Angeles County, where BCHD resides, on an annual basis over the next HMP planning cycle is 28%. This categorizes the hazard's future probability of occurrence as **Likely**.

4.9.5 Hazard Risk Ranking

Table 49: Risk Ranking for Inland Flooding

Hazard	Impact to Assets			Vulnerability (H+P+B=#) (V=#/3)	Probability (Pb)	Social Vulnerability (SV)	Risk Value (R=V+Pb+SV)	Risk Ranking
	Human Impact (H)	Property Impact (P)	Business Impact (B)					
Inland Flooding	2.7	4.3	3	3.3	2.8	1	7.2	Medium

4.9.6 Vulnerability and Impact Assessment

Change in Inland Flooding Vulnerability

As this is the first LHMP developed for BCHD, there is no previous assessment available to measure changes in vulnerability to inland flooding over time. However, recent severe weather events in Southern California have underscored the potential for localized flooding in urban coastal communities, especially in areas with aging stormwater infrastructure or poor drainage.

The BCHD Planning Area includes highly developed cities with a significant amount of impervious surfaces, which can increase runoff during periods of intense rainfall. While most BCHD facilities are not located within designated FEMA flood zones, localized flooding remains a concern due to blocked drainage systems, overwhelmed storm drains, and sea-level rise that may influence inland flood behavior in low-lying areas.

Although the direct vulnerability of BCHD facilities to inland flooding has not significantly increased, climate change and more frequent heavy rain events may elevate future risk. BCHD continues to incorporate stormwater management and flood resilience measures into its facility planning, and coordinates with local jurisdictions to support infrastructure improvements that reduce localized flood impacts.

Table 50: Summary of Change to Vulnerability, Inland Flooding

2024 LHMP Update Hazards	Decrease in Vulnerability	No Change in Vulnerability	Increase in Vulnerability
Inland Flooding		X	

HMPC Vulnerability and Impact Assessment Feedback

Inland flooding, while less frequent than other hazards in the BCHD Planning Area, poses significant risks to vulnerable populations, BCHD-operated systems, and critical infrastructure. Past flooding incidents have resulted in facility closures, such as the temporary closure of a BCHD building due to flooring repairs. The district's facilities and programs must be prepared to address direct flooding impacts and cascading consequences, such as health crises, utility disruptions, and increased service demand. Proactive mitigation measures, robust emergency response plans, and effective community engagement will be essential in reducing the impacts of flooding events on BCHD's operations and the populations it serves.

Impacts on Populations

Inland flooding, caused by heavy rainfall, storm surges, or infrastructure failure, poses significant risks to the BCHD Planning Area. While Beach Cities' coastal geography reduces the likelihood of large-scale riverine flooding, localized flooding from overwhelmed stormwater systems and urban runoff can still create vulnerabilities for residents and critical populations. Populations most vulnerable to the impacts of Inland Flooding include:

Low-Income and Housing-Insecure Populations

- These populations often live in areas with inadequate drainage systems, increasing their exposure to flooding.
- Limited financial resources can make it more difficult to recover from flood damage or access temporary housing during displacement.
- Housing-insecure individuals, including those experiencing homelessness, are at risk of direct exposure to floodwaters and loss of personal belongings.

Older Adults and Individuals with Limited Mobility

- Evacuation challenges due to physical limitations or reliance on caregivers make older adults particularly vulnerable during flood events.
- Flooding can interrupt access to necessary medical care or medications, compounding health risks for this group.

Children and Youth

- Floodwaters often carry debris, pathogens, and other hazards, putting children at increased risk of injury or illness.
- Disruptions to childcare and educational facilities, such as AdventurePlex summer camps, may create challenges for families during flood events.

Individuals with Access and Functional Needs (AFN)

- Individuals relying on durable medical equipment or in-home care are particularly vulnerable to power outages or transportation barriers caused by flooding.
- Communication barriers can limit AFN populations' ability to receive timely warnings or evacuation instructions.

Residents of Flood-Prone Areas

- Those living in areas with poor drainage systems, low-lying terrain, or near stormwater infrastructure are at greater risk of property damage and health impacts.
- Sump pumps help mitigate flooding, but maintenance and functionality must be ensured.
- Repeat flooding events can exacerbate long-term vulnerabilities and create cumulative stress for affected communities.

Health and Secondary Impacts on Population from Inland Flooding include

- Waterborne Illness and Contamination:
 - Floodwaters often carry contaminants, including sewage, industrial chemicals, and pathogens, increasing the risk of waterborne diseases.
 - Standing water also creates breeding grounds for mosquitos, contributing to the spread of vector-borne illnesses.
- Mental Health Impacts:
 - The stress of property loss, displacement, and uncertainty can lead to anxiety, depression, or post-traumatic stress disorder (PTSD), particularly for populations with pre-existing mental health conditions.
- Economic Vulnerability:
 - Flood damage to homes, vehicles, and personal belongings disproportionately impacts low-income populations who lack the financial resources to recover or relocate.

Vulnerability of Systems

Systems owned and operated by BCHD are also vulnerable to inland flooding, including damage to facilities, disruptions to service delivery, and cascading impacts on public health operations.

BCHD Facilities and Operations

- Venice Family Clinic - South Bay Family Health Care
 - Facilities must be prepared to prevent and withstand flooding, as past incidents have required repairs and closures.
 - Ensuring evacuation plans are sufficient and flood prevention measures are in place and maintained will be essential.
- AdventurePlex:
 - Flooding can disrupt outdoor and indoor operations, particularly in facilities located in low-lying areas with inadequate stormwater drainage.

- Outdoor play areas, a key feature of AdventurePlex, are especially vulnerable to water accumulation and damage, which could limit recreational programming.
- allcove Beach Cities:
 - Flooding events may lead to increased demand for mental health services as families experience displacement, property loss, and related stressors.
 - Facilities may face operational challenges, such as staff shortages or access issues, if flooding impacts local transportation or infrastructure.
- Public Health Program Offices:
 - BCHD offices and public health programs may be impacted by flooding if located in areas prone to water intrusion or power outages.
 - Facilities will need to ensure continuity of operations, including the protection of medical supplies and sensitive equipment.

Critical Infrastructure Supporting BCHD Operations

- Stormwater Management Systems:
 - Urbanized areas of the Beach Cities are heavily reliant on stormwater systems, which may become overwhelmed during heavy rainfall, leading to localized flooding around BCHD facilities.
 - Backflow from overloaded systems could directly impact facility basements or ground floors, requiring mitigation measures such as sump pumps or flood barriers.
- Power and Utilities:
 - Flooding often leads to utility disruptions, including power outages, which can hinder the operation of BCHD facilities. Backup power systems are essential to maintain critical operations.
 - Flooding can also contaminate or disrupt water supply systems, impacting BCHD's ability to provide services requiring clean water.
- Transportation Networks:
 - Flooded roads may limit access to BCHD facilities for both staff and residents seeking services. Evacuation and emergency response efforts could also be hindered by road closures or washouts.

Public Health Services and Emergency Operations

- Increased Demand for Emergency and Recovery Services:
 - BCHD may see an increase in demand for emergency shelter operations, clean water distribution, and public health education following flooding events.

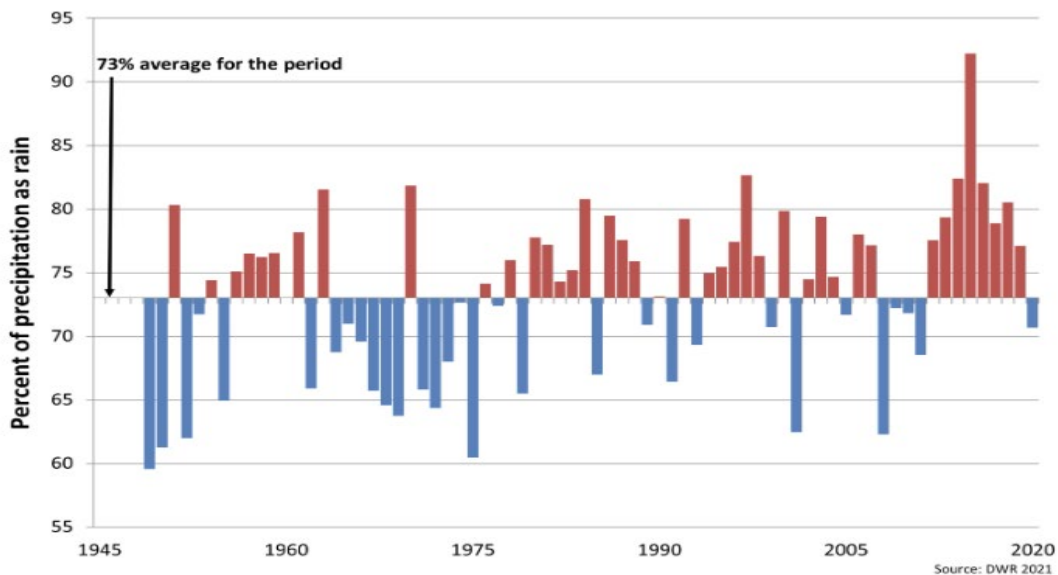
- Outreach will be critical to ensuring they receive timely assistance and recovery support.
- Facility Resilience and Adaptation:
 - Floodproofing measures, such as elevating electrical systems and improving drainage around facilities, are necessary to reduce the risk of operational disruptions.
 - Planning for temporary relocations or alternate service delivery methods will help maintain continuity of care during flooding events.

4.9.7 Environmental Impacts

Climate change is contributing to increasingly variable precipitation patterns and more severe inland flooding across California, including within the BCHD Planning Area. The past decade has seen dramatic fluctuations in precipitation, consistent with climate projections. For example, 2012 to 2015 marked the driest consecutive four-year period on record, while 2017 was among the wettest years. These extremes are projected to intensify in frequency and magnitude.

Figure 18 presents the percentage of yearly precipitation falling as rain over the 33 watersheds that provide most of the state's water supply (shown on map). The bars show values relative to 73 percent, the average percentage of rain for the period 1979-2020: red bars are years with a higher percentage of rain than average (and thus less snow); blue bars are years with less rain and more snow than average.

Figure 18: Annual Rain Percentages



Source: California Department of Water Resources

Recent data from the California Department of Water Resources shows an increasing percentage of annual precipitation falling as rain rather than snow in key watersheds,

reducing snowpack and leading to more direct runoff. When storms do occur, hardened soil from prior droughts limits absorption, increasing surface water runoff and the likelihood of flash flooding. Projections from California's Fourth Climate Change Assessment (2018) indicate that more intense storm events will result in higher runoff volumes, further elevating flood risk.

In BCHD's communities, flooding whether from direct precipitation or stormwater system overflow, can result in prolonged water accumulation. Standing water can lead to the growth of mold and biohazards, especially in facilities housing vulnerable populations. In such cases, significant remediation and sanitization are required before spaces can be safely reoccupied.

The California State Hazard Mitigation Plan (2023) highlights how climate change contributes to inland and coastal flooding, with sea-level rise intensifying storm surges, high tides, and wave impacts. These effects, in combination with El Niño events, increase flood severity and frequency, threatening both natural systems and the built environment. Flooding also poses long-term challenges such as infrastructure damage, erosion, loss of coastal access, and saltwater intrusion into aquifers.

Due to the compounding effects of extreme precipitation, hardened soils from drought, and sea-level rise, the HMPC has identified inland flooding as a hazard of prime concern. The risk is expected to grow, requiring integrated planning strategies that include stormwater system upgrades, resilient land use planning, and coastal flood mitigation efforts to reduce vulnerability in BCHD's communities.

4.9.8 Critical Facilities and Infrastructure

Inland flooding can occur during periods of heavy rainfall when stormwater systems are overwhelmed, or drainage infrastructure is obstructed. While the BCHD Planning Area is not highly susceptible to riverine flooding, urban flooding caused by intense storms and runoff remains a concern, particularly in low-lying or poorly drained areas.

Most BCHD-owned and operated facilities are located outside of FEMA-designated Special Flood Hazard Areas. However, as climate change contributes to more intense and unpredictable precipitation events, there is a growing need to evaluate localized flood risks that may impact access, operations, or infrastructure. Urban areas with high percentages of impervious surfaces can experience flash flooding, even in zones not previously identified as flood prone.

Table 51 identifies BCHD facilities, associated asset values, and their Community Lifeline classifications. While the risk of catastrophic inland flooding remains low, this assessment supports ongoing efforts to implement drainage improvements, maintain facility resilience, and ensure operational continuity during high rainfall events.

Table 51: Beach Cities Health District Critical Facilities/Infrastructure

Name of Facility	Address	Asset Value/Potential Loss Data	Community Lifeline Category
Beach Cities Health Center (Owned)	514 N. Prospect Ave.; Redondo Beach, CA 90277	\$62,592,873	Health and Medical
AdventurePlex (Owned)	1701 Marine Ave.; Manhattan Beach, CA 90266	\$7,707,276	Food, Water, Shelter
Sunrise Assisted Living (Land Lease & Joint Venture Limited Partner)	1837 Pacific Coast Highway, Hermosa Beach, CA 90254	\$2,408,000	Health and Medical
Leap & Bound Child Development Center (Building and Land Lease)	601 S. Pacific Coast Highway Redondo Beach, CA 90277	\$2,530,649	Food, Water, Shelter
Venice Family Clinic - South Bay Family Health Care (Building and Land Lease)	2114 Artesia Boulevard Redondo Beach, CA 90278	\$192,000	Health and Medical
512 Parking Structure (Owned)	512 N. Prospect Ave.; Redondo Beach, CA 90277	\$10,149,276	Health and Medical
520 Parking Structure (Owned)	520 N. Prospect Ave.; Redondo Beach, CA 90277	\$18,296,150	Health and Medical
514 Surface Parking (Owned)	514 N. Prospect Ave.; Redondo Beach, CA 90277	\$100,000	Health and Medical
BCHD Total	\$103,976,224.00		

4.9.9 Land Use and Development

While BCHD does not have land use authority, the cities within its Planning Area manage development and infrastructure planning through stormwater regulations, low-impact development (LID) requirements, and compliance with the National Pollutant Discharge Elimination System (NPDES) program. These practices help reduce localized flooding by encouraging improved drainage design, permeable surfaces, and on-site stormwater retention in new developments and major redevelopments.

BCHD incorporates these flood-resilient design principles into its facility planning where feasible. Recent projects such as the Healthy Living Campus include increased use of pervious materials, green infrastructure, and stormwater capture systems. These efforts

align with regional strategies to reduce flood risk and adapt to more frequent high-intensity rainfall events associated with changing climate conditions.

4.9.10 Repetitive Loss Properties

Repetitive Loss Properties (RLPs) are most susceptible to flood damages; therefore, they have been the focus of flood mitigation programs. Unlike a countrywide program, a Floodplain Management Plan (FMP) for repetitive loss properties involves highly diversified property profiles, drainage issues, and property owner's interest. It also required public involvement processes unique to each RLP area. The objective of an FMP is to provide specific potential mitigation measures and activities to best address the problems and needs of communities with repetitive loss properties. A repetitive loss property is one of which two or more claims of \$1,000 or more have been paid by NFIP within any given ten-year period. According to FEMA resources, none of the Repetitive Loss Properties are owned by BCHD or located in the LHMP project area.

4.10 Landslides

4.10.1 Hazard Description

According to the USGS National Landslide Information Center (NLIC), the term “landslide” is defined as the movement of a mass of rock, debris, or earth down a slope. The force of gravity acting upon a steep (or sometimes, even a moderately steep) slope is the primary cause of a landslide. Slope failure occurs when the force of gravity pulling the slope downward exceeds the strength of the earth materials that comprise the slope to hold it in place. In addition to the force of gravity, other contributing factors to landslides can include rainfall, earthquakes, changes in groundwater, and human-induced modifications to existing slopes. The potential for a landslide to occur exists in every state wherever very weak or fractured materials are resting on a moderate to steep slope.

Landslides can be broken down into two categories: (1) rapidly moving and (2) slow moving. Rapidly moving landslides present the greatest risk to human life, and people living in or traveling through areas prone to rapidly moving landslides are at increased risk of serious injury. Slow moving landslides can cause significant property damage but are less likely to result in serious human injuries.

Saturation of slopes by precipitation (rain or snowmelt) weakens soil and rock by reducing cohesion and increasing the pressure in pore spaces, pushing grains away from each other. Erosion and undercutting of slopes by streams, rivers, glaciers, or waves increase slope angles and decrease slope stability. Earthquakes create stresses that weaken slopes and physically cause slope movement.

Perhaps most significant, the over weighting, and/or under cutting of slopes for facilities, roads, trails, mines, and other man-made structures change the natural slope equilibrium and cause slopes to fail. According to the U.S. Geological Survey, landslides can, and do, occur in every state and territory of the U.S.; however, the type, severity, and frequency of landslide activity varies from place to place, depending on the terrain, geology, and climate. Major storms have caused widespread landslides in the State of California.

When the environment is favorable for a landslide, an advisory, watch, or warning may be issued.

- An advisory is a general statement about the potential of landslide activity in a given region relative to developing rainfall predictions. An advisory may include general statements about rainfall conditions that can lead to debris-flow activity, and list precautions to be taken in the event of heavy rainfall.
- A watch means that landslide-activity will be possible but is not imminent. People in, or planning to travel through, a watch area should know landslide preparedness and stay informed about developing weather patterns.
- Warnings indicate that landslide activity is presently occurring, and extreme caution should be taken.

Watches and warnings may be issued for discrete areas and include advice about contacting an area's local emergency centers. Watches and warnings for rainfall-induced debris flows are weather dependent and will closely track National Weather Service watches and warnings for flash flooding.

Debris flows are fast-moving landslides that are particularly dangerous to life and property because they move quickly, destroy objects in their paths, and often strike without warning. They occur in a wide variety of environments throughout the world, including all 50 states and U.S. Territories.

Debris flows generally occur during periods of intense rainfall or rapid snowmelt and usually start on hillsides or mountains. Debris flows can travel at speeds up to and exceeding 35 mph and can carry large items such as boulders, trees, and cars. If a debris flow enters a steep stream channel, they can travel for several miles, impacting areas unaware of the hazard. Areas recently burned by a forest fire are especially susceptible to debris flows, including the areas downslope and outside of the burned area. Debris flows are a type of landslide and are sometimes referred to as mudslides, mudflows, lahars, or debris avalanche.

According to the U.S. Geological Survey, **Post-Fire Landslide** hazards include fast-moving, highly destructive debris flows that can occur in the years immediately after wildfires in response to high intensity rainfall events, and those flows that are generated over longer time periods accompanied by root decay and loss of soil strength. Post-fire debris flows are particularly hazardous because they can occur with little warning, can exert great impulsive loads on objects in their paths, can strip vegetation, block drainage ways, damage structures, and endanger human life. Wildfires could potentially result in the destabilization of pre-existing deep-seated landslides over long time periods.

Similar to landslides, **Subsidence** is the sinking of the ground because of underground materials movement, most often caused by the removal of water, oil, natural gas or mineral resources out the ground by pumping, fracking, or mining activities.

4.10.2 Location and Extent

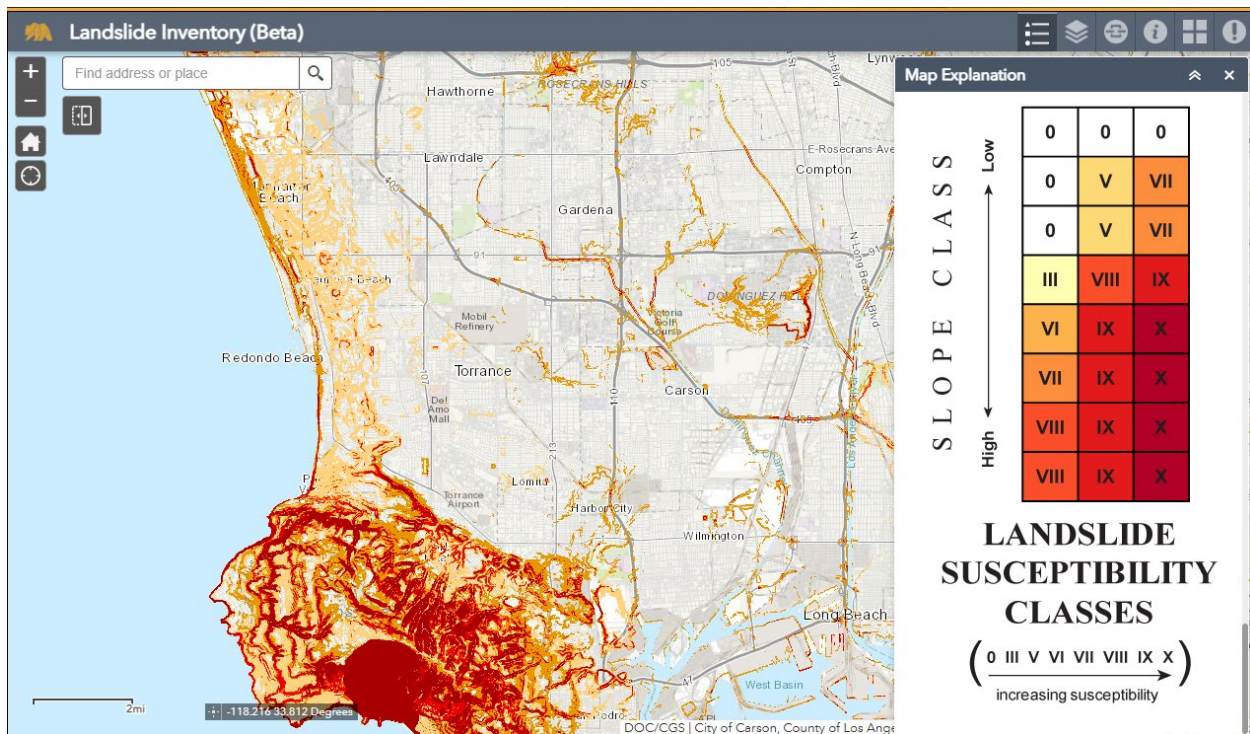
The severity of a landslide depends in large part on the degree of development in the area in which it occurs and the geographic area of slide itself. Generally speaking, landslides often result in devastating consequences, but in very localized areas. A landslide occurring in an undeveloped area would be less severe because lives and property would not be affected; the only impacts would be to land, vegetation, and possibly some wildlife. On the contrary, a landslide occurring in a developed area could have devastating effects, ranging from structure and infrastructure damage to injury and/or loss of life. Structures or infrastructure built on susceptible land would likely collapse as their footings slide downhill, while those below the land failure would likely be crushed. Landslides around roadways could have the potential to fall and damage or destroy vehicles and force other drivers to have accidents.

Within the BCHD Planning Area—which includes the cities of Manhattan Beach, Hermosa Beach, and Redondo Beach—landslide risk is generally considered low due to the predominantly flat, coastal terrain. However, isolated areas near bluffs, sloped roadways, or sites with previous grading and development may present localized susceptibility, particularly during heavy rainfall or seismic activity. While no major landslide events have been recorded in recent history within the district's primary service locations, the potential

for slope instability remains a consideration, especially near coastal edges or hillside-adjacent infrastructure. Given BCHD’s role in supporting community health and critical services, continued awareness of these site-specific risks is essential, particularly when evaluating facility safety, land use planning, or emergency response access routes.

According to the California Department of Conservation’s Landslide Inventory, including the "Deep-Seated Landslide Susceptibility" layer as shown in Figure X, portions of the BCHD service area, especially along the coastal bluffs in southern Redondo Beach, are identified as having moderate susceptibility to deep-seated landslides. These areas are primarily concentrated along elevated coastal edges where natural slopes interface with older developed neighborhoods or roadways. The susceptibility classifications provided by the State range from “low” to “very high,” with the BCHD Planning Area falling mostly within the “low” to “moderate” categories. These data further reinforce the importance of targeted slope stability assessments during major rain events or seismic activity and can be used to guide mitigation strategies such as slope reinforcement, drainage improvements, and hazard signage in known susceptible zones.

Figure 19: Deep-Seated Landslide Susceptibility



Source: California Department of Conservation – Landslide Inventory

4.10.3 Previous Events

According to the [USGS Landslide Inventory](#) and the California Department of Conservation’s [Landslide Inventory](#), there have not been any recorded recent landslides within BCHD.

Disaster Declaration History

There have been no FEMA or Cal OES disaster declaration for Los Angeles County related to Landslides, as shown in [Section 4.1 Emergency and Disaster Declaration History](#).

4.10.4 Probability of Future Events

Calculating future probability is one of many predictors of future occurrences. **Table 52** provides a summary of the events for Landslides, as categorized, and recorded by NOAA/NCEI for Los Angeles County between January 1, 2019, and December 31, 2023:

Table 52: Previous Events, Landslides

Previous Events, Landslides, Los Angeles County, CA	
Event Year	Landslide
2019	0
2020	0
2021	0
2022	0
2023	0
Total Recorded Events =	0
Total Years =	5
Annual Probability =	0%

Source: NOAA/NCEI

Landslide Annual Probability:

$$\frac{0}{5} \times 100 = \frac{0\%}{5} = 0\%$$

Using the NOAA/NCEI database, and calculating probability based on past events, the likelihood of a single landslide event occurring in Los Angeles County, where BCHD resides, on an annual basis

over the next HMP planning cycle is 0%. This categorizes the hazard's future probability of occurrence as **Unlikely**.

4.10.5 Hazard Risk Ranking

Table 53: Risk Ranking for Landslides

Hazard	Impact to Assets			Vulnerability (H+P+B=#) (V=#/3)	Probability (Pb)	Social Vulnerability (SV)	Risk Value (R=V+Pb+SV)	Risk Ranking
	Human Impact (H)	Property Impact (P)	Business Impact (B)					
Landslides	3	4.4	2.9	3.4	2.1	1	6.5	Moderate

4.10.6 Vulnerability and Impact Assessment

Change in Landslides Vulnerability

As this is the first LHMP developed for BCHD, there is no prior assessment against which to measure changes in landslide vulnerability. However, the development of this plan has enabled a formal examination of potential landslide risks across BCHD's Planning Area.

Based on current data and the region's geographic characteristics, landslide vulnerability remains low to moderate for BCHD facilities. The Beach Cities are largely situated on flat coastal terrain, and no BCHD-owned or operated facilities are located in historically active or high-risk landslide zones. Nonetheless, localized vulnerabilities may exist in areas near bluffs, slopes, or older developments with altered grading. These risks, while limited, could pose access challenges or infrastructure disruptions during severe weather or seismic events.

While there has been no significant change in landslide vulnerability, this assessment reinforces the importance of site-specific evaluation, particularly for any future development or retrofitting of BCHD facilities. Incorporating slope stability, landslide detection and soil condition considerations into planning and facility maintenance processes will support the district's resilience against even low-probability hazards.

Table 54: Summary of Change to Vulnerability, Landslides

202 LHMP Hazards	Decrease in Vulnerability	No Change in Vulnerability	Increase in Vulnerability
Landslides		X	

HMPC Vulnerability and Impact Assessment Feedback

While the BCHD Planning Area faces a relatively limited overall risk from landslides, understanding specific vulnerabilities to populations and systems is essential for targeted mitigation strategies. Based on the HMPC's assessment the landslide overall risk is categorized as Moderate, resulting in the need for heightened awareness and implementation of mitigation projects to reduce the overall vulnerability. Prioritizing projects such as slope stabilization, community awareness, and regular maintenance of drainage and transportation infrastructure will help reduce the risk and mitigate potential impacts.

Impacts on Populations

While there haven't been any documented cases of landslide in the planning area, its predominantly flat topography and coastal location indicate that the planning area will generally remain at a low risk of landslides. However, localized vulnerabilities exist in areas with slopes, bluffs, or engineered retaining walls, particularly near the coastal cliffs or steep embankments in Hermosa Beach, Redondo Beach, and parts of Manhattan Beach. These areas could pose a risk to populations living, working, or recreating nearby, especially during or after heavy rainstorms, seismic events, or when exacerbated by human activity such as construction or vegetation removal.

Potential impacts on the population include injury or loss of life, temporary or permanent displacement, and mental health effects resulting from the trauma of the event or loss of homes and belongings. Populations most vulnerable to these impacts to landslides include:

Older Adults and Individuals with Disabilities

- Evacuating quickly from landslide-prone areas can be challenging for individuals with mobility limitations or those reliant on assistance.

Low-Income and Unhoused Populations

- Renters or homeowners without adequate insurance or financial resources may struggle to recover from landslide impacts. Displaced homeless individuals may require sheltering and assistance.

Individuals with Mental Health and Substance Use Challenges

- Displacement or loss of stability may exacerbate mental health conditions and substance use challenges, requiring additional support services.

Youth Populations

- Schools and recreational areas near coastal bluffs may be impacted, posing risks to children and students during school hours or outdoor activities.

Residents Living Near Slopes or Unstable Terrain

- Homes located at the base or crest of slopes face potential damage or destruction, particularly during heavy precipitation events or after wildfires have destabilized vegetation.

Tourists and Recreationists

- Coastal cliffs and hiking areas in the district attract visitors, who may be unaware of landslide risks during storm events or after heavy rainfall.

Vulnerability of Systems

Critical systems and infrastructure within the BCHD Planning Area are also vulnerable to landslides, though the overall risk is moderate due to the district's relatively stable terrain. Damage or loss of these systems could greatly impact BCHD's ability to carry out its

operations. The following primary and secondary systems may be affected:

Transportation Systems

- Landslides along steep embankments or coastal cliffs could block critical transportation routes, including the Pacific Coast Highway (PCH), which serves as a vital thoroughfare for residents and emergency response.
- Road closures or debris on minor local roads may delay emergency response times and disrupt daily commutes.

Utility Infrastructure

- Landslides can damage underground utilities, including water mains, gas lines, and sewer systems, leading to service disruptions.
- Overhead power lines located near slopes could be at risk of damage from sliding debris or falling trees, resulting in localized power outages.

Stormwater and Drainage Systems

- Heavy rains that trigger landslides may overwhelm stormwater systems, particularly in areas where drainage channels intersect unstable slopes.
- Landslide debris can block culverts and drainage pathways, exacerbating localized flooding risks and erosion issues.

Public Facilities and Services

- Parks, beaches, and recreational areas near coastal bluffs may be temporarily or permanently closed due to landslide activity, disrupting community access and tourism revenue.
- Emergency services could face operational challenges if landslide events block access routes or require resource allocation for evacuations and cleanup.

4.10.7 Environmental Impacts

Landslides in the BCHD Planning Area are typically triggered by seismic activity or soil saturation following periods of heavy precipitation. While earthquakes themselves are not influenced by climate change, extreme weather patterns linked to climate change, particularly more intense and frequent rainfall, directly impact landslide risk.

California already experiences some of the most variable year-to-year precipitation levels in the contiguous United States, and this variability is expected to increase with ongoing climate change. More severe and erratic storm events can cause soils on slopes to become overly saturated, weakening their structural integrity and increasing the likelihood of slope failure, erosion, and landslides or mudslides.

As intense precipitation events become more common, especially following prolonged drought periods that destabilize soil structures, the risk of landslides in hillside and coastal bluff areas is likely to grow. These events pose significant threats to infrastructure, transportation corridors, and residential areas near steep slopes.

Given these conditions, the potential for landslides to become more frequent and damaging has prompted the HMPC to consider landslides as a key hazard of concern.

Future adaptation strategies may include improved stormwater management, slope stabilization projects, and the integration of geotechnical risk assessments into local development and land use planning.

4.10.8 Critical Facilities and Infrastructure

Table 55 presents key BCHD facilities and their potential exposure to landslide hazards. While the overall landslide risk within BCHD's Planning Area is considered low, this table identifies critical assets that may be located near sloped terrain, coastal bluffs, or areas with past grading activity that could present localized vulnerabilities. Each facility is categorized by its Community Lifeline function, supporting essential health and human services. Although no BCHD facilities have been identified within known high-risk landslide zones, this assessment helps ensure continued awareness and monitoring of site conditions that could impact structural integrity or access during extreme weather or seismic events.

Table 55: Critical Facilities and Potential Landslide Loss Estimates

Name of Facility	Address	Asset Value/Potential Loss Data	Community Lifeline Category
Beach Cities Health Center (Owned)	514 N. Prospect Ave.; Redondo Beach, CA 90277	\$62,592,873	Health and Medical
AdventurePlex (Owned)	1701 Marine Ave.; Manhattan Beach, CA 90266	\$7,707,276	Food, Water, Shelter
Sunrise Assisted Living (Land Lease & Joint Venture Limited Partner)	1837 Pacific Coast Highway, Hermosa Beach, CA 90254	\$2,408,000	Health and Medical
Leap & Bound Child Development Center (Building and Land Lease)	601 S. Pacific Coast Highway Redondo Beach, CA 90277	\$2,530,649	Food, Water, Shelter
Venice Family Clinic - South Bay Family Health Care (Building and Land Lease)	2114 Artesia Boulevard Redondo Beach, CA 90278	\$192,000	Health and Medical
512 Parking Structure (Owned)	512 N. Prospect Ave.; Redondo Beach, CA 90277	\$10,149,276	Health and Medical
520 Parking Structure (Owned)	520 N. Prospect Ave.; Redondo Beach, CA 90277	\$18,296,150	Health and Medical
514 Surface Parking (Owned)	514 N. Prospect Ave.; Redondo Beach, CA 90277	\$100,000	Health and Medical

Name of Facility	Address	Asset Value/Potential Loss Data	Community Lifeline Category
BCHD Total	\$103,976,224.00		

4.10.9 Land Use and Development

BCHD's Planning Area includes the cities of Manhattan Beach, Hermosa Beach, and Redondo Beach. These communities are primarily built on flat coastal terrain with limited areas of steep slope. As a result, the overall risk of landslides is low. Most BCHD facilities are located on stable ground and are not within mapped landslide hazard zones. However, there may be localized exposure in areas near coastal bluffs or sites with modified grading, particularly during periods of intense rainfall or seismic activity.

BCHD does not have land use authority but coordinates closely with city partners who manage zoning, permitting, and slope stability requirements. The cities in the Planning Area require seismic review and apply hillside management policies to reduce development in potentially unstable areas. These existing practices help minimize the risk of landslides affecting public health infrastructure.

As BCHD continues to evaluate and maintain its facilities, slope stability and safe site access remain important considerations. Although landslide hazards are not a major concern at present, changes in weather patterns and seismic activity may influence future risks. Ongoing coordination with local jurisdictions will support proactive planning and hazard mitigation.

4.11 Tsunami

4.11.1 Hazard Description

The U.S. Geological Survey describes Tsunamis as large, potentially deadly, and destructive sea waves, most of which are formed as a result of submarine earthquakes. They can also result from the eruption or collapse of island or coastal volcanoes and from giant landslides on marine margins. These landslides, in turn, are often triggered by earthquakes. Tsunamis can be generated on impact as a rapidly moving landslide mass enters the water or as water displaces behind and ahead of rapidly moving underwater landslide.

In the open ocean, tsunami waves travel at speeds of up to 600 miles per hour, but their wave height is generally too small to be observed. As waves enter shallow water, they slow down and may rise to several feet, or in rare cases, tens of feet. There are two types of tsunamis defined:

- **Local tsunami (also called near-source):** If a large earthquake or undersea landslide occurs at or near the California coast, the first waves may reach coastal communities within minutes. There may be little or no time for authorities to issue a warning. An offshore earthquake or landslide with a magnitude of 6.8 has the potential to create a near-source.
- **Distant tsunami (also called distant source):** Very large earthquakes in other areas of the Pacific Rim may also cause tsunamis, which could impact California's coast. The first waves would reach Los Angeles County's coastline many hours after the earthquake occurred.

Response Plans for Tsunamis are all addressed in the member municipality's own EOPs. Any Hazard Annexes that deal with BCHD facilities and/or operations will be added to the District's EOP, as needed. Due to the extensive earthquake risk in and away from BCHD, this is an important hazard to address.

4.11.2 Location and Extent

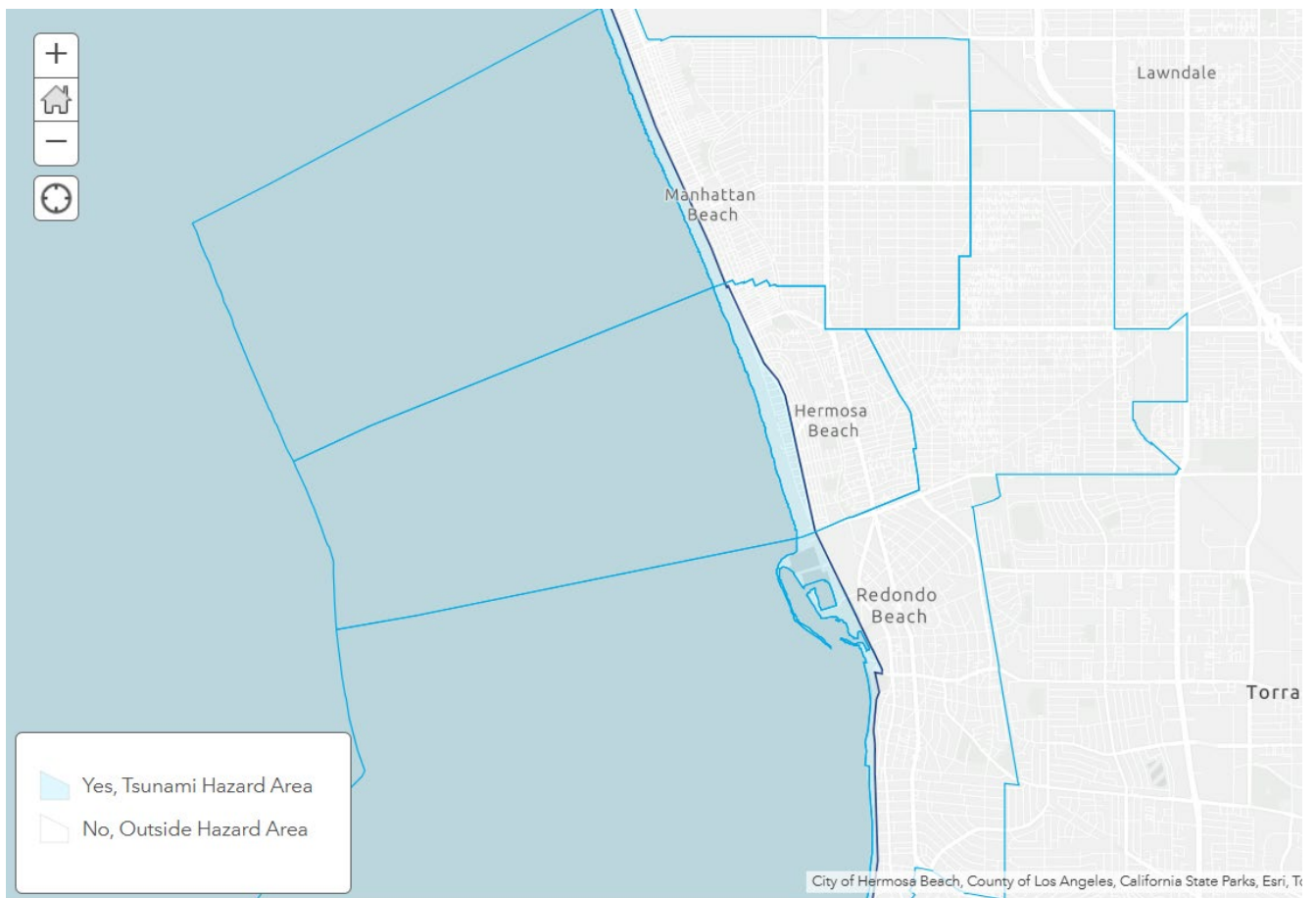
Tsunami

A local tsunami is possible at many points along the Southern California coast and provides little time for warning the population and even less time for evacuation. Studies have identified the Palos Verdes, Santa Cruz Island, and Santa Rosa Island faults as active and could potentially generate a tsunami. A University of Southern California study concludes that the Southland would experience "grave economic consequences," with losses reaching \$43 billion, from a tsunami-caused landslide off the Palos Verdes Peninsula. The USC study estimates that a submarine landslide off the Peninsula could generate a wave ranging from about 15 feet to 60 feet in height that would reach land in less than a minute. The study examines four different scenarios of increasing severity.⁸ Depending on the scenario, economic losses could range from \$7 billion to \$43.5 billion. In the worst case, both the ports of Los Angeles and Long Beach would be out of commission for a year. Losses in the Harbor Area, Carson, Rancho Palos Verdes, and Palos Verdes Estates alone could exceed \$450 million.

⁸ Sawyer.T. 2005. [A TSUNAMI HIT ON CALIFORNIA COULD BE QUICK AND COSTLY \(trb.org\)](http://trb.org)

A worst-case tsunami scenario for the BCHD Planning Area—based on modeling from the California Tsunami Safety Committee—assumes a Southern California tsunami triggered by a submarine landslide off Palos Verdes, with estimated wave heights reaching up to 42 feet and extending 25 miles along the coast. Under this scenario, low-lying coastal areas within Hermosa Beach, Manhattan Beach, and Redondo Beach could experience significant inundation. In particular, beachfront zones west of major coastal roadways such as Highland Avenue and Harbor Drive are at greatest risk. Critical assets located within the potential inundation area include public beach infrastructure, piers, sewage pump stations, beach access roads, and recreational facilities. **Figure 20** provides a graphical representation of this scenario, identifying the expected inundation area across the BCHD Planning Area.

Figure 20: BCHD Planning Area, Tsunami Inundation Area



Source: BCHD LHMP Project Map

4.11.3 Previous Events

Tsunami

According to the FEMA Multi-Hazard Risk Assessment, Since 1770, more than 46 remote-source generated, and 18 local tsunamis have been observed along the west coast.

Additionally, as noted in the Los Angeles County All Hazards Mitigation Plan (2020), the county where BCHD resides, between 1923 and 2011, 11 major tsunami events have occurred in Los Angeles County.

Most recently, the following tsunami affected the planning area:

- March 11, 2011, a M 9.0 earthquake in Japan caused tsunamis with run-up amplitudes ranging from 2 to 3 feet in Cataline Island, Los Angeles, Long Beach, Redondo Beach, and Santa Monica, damaging docks and boats.

Disaster Declaration History

There have been no FEMA or Cal OES disaster declaration for Los Angeles County related to Tsunamis, as shown in Section 4.1 Emergency and Disaster Declaration History.

4.11.4 Probability of Future Events

Calculating future probability is one of many predictors of future occurrences. **Table 56** provides a summary of the previous events for tsunami, as categorized and recorded by NOAA/NCI for Los Angeles County between January 1, 2019, and December 31, 2023:

Table 56: Previous Events, Tsunami

Previous Events, Coastal Hazards, Los Angeles County, CA	
Event Year	Event Count
2019	0
2020	0
2021	0
2022	0
2023	0
Total Recorded Events =	0
Total Years =	5
Annual Probability =	0%

Source: NOAA/NCEI

Annual Probability

$$\frac{0}{5} \times 100 = \frac{0\%}{5} = 0\%$$

Using the NOAA/NCEI database, and calculating probability based on the past events, the likelihood of a single Tsunami event occurring in the Los Angeles Operational Area on an annual basis over the next HMP planning cycle is 0%. This categorizes the hazard's future probability of occurrence as **Unlikely**.

4.11.5 Hazard Risk Ranking

The HMPC's hazard prioritization process, which assessed Tsunami, resulted in an overall risk level being classified as Medium with a rank score of 7.14. It is important to note that the HMPC's feedback and risk determination, as outlined in **Table 57**, are reflective of the committee's perspectives and judgments.

Table 57: Risk Ranking for Tsunami

Hazard	Impact to Assets			Vulnerability (H+P+B=#) (V=#/3)	Probability (Pb)	Social Vulnerability (SV)	Risk Value (R=V+Pb+SV)	Risk Ranking
	Human Impact (H)	Property Impact (P)	Business Impact (B)					
Tsunami	3.6	4.4	3.3	3.8	2.1	1	6.9	Moderate

4.11.6 Vulnerability and Impact Assessment

Change in Tsunami Vulnerability

Since this is the first LHMP prepared for BCHD, there is no previous baseline for comparison regarding changes in tsunami vulnerability. However, through this planning process, BCHD has evaluated the potential exposure of its critical facilities using the latest tsunami inundation maps and hazard modeling data provided by state and regional agencies.

The vulnerability of BCHD to tsunami hazards remains low. Most BCHD facilities are located inland and outside of mapped tsunami inundation zones. While direct damage from a tsunami is unlikely, there may still be secondary impacts such as disrupted transportation routes or delays in service delivery if coastal access routes are affected.

Although there has been no measurable increase in vulnerability, BCHD will continue to monitor hazard zone updates and engage with local emergency management partners to ensure staff and facilities remain prepared for low-probability, high-consequence tsunami events. This includes maintaining awareness of evacuation procedures, coordinating with local jurisdictions, and supporting public information efforts related to coastal hazard awareness.

HMPC Vulnerability and Impact Assessment Feedback

The BCHD Planning Area is highly vulnerable to tsunamis due to its coastal location along the Pacific Ocean. While tsunamis are infrequent, their potential to cause catastrophic damage to life, property, and infrastructure warrants focused analysis. By collaborating with local municipalities and emergency response agencies, BCHD can enhance its capacity to protect the community and its critical systems from the devastating impacts of a tsunami.

Impacts on Populations

Tsunamis pose a complex and multifaceted threat to BCHD and the population it serves. The overall vulnerability on population varies by constituents' proximity to the coastline, elevation, and their level of preparedness. Populations most vulnerable to tsunamis include:

Coastal Residents:

- Those living in low-lying areas of Hermosa Beach, Manhattan Beach, and Redondo Beach are at greatest risk of inundation from tsunami waves. Coastal residents may have limited time to evacuate following a near-shore earthquake that triggers a tsunami.

Older Adults and Individuals with Access and Functional Needs (AFN):

- Elderly residents, as well as individuals with disabilities or limited mobility, may face significant challenges evacuating quickly to higher ground during a tsunami event. Access to transportation and caregiver support may further complicate evacuation.
- Individuals with mental health or substance use challenges may also face difficulties responding effectively to evacuation orders.

Economically Disadvantaged Populations, including Low-Income and Homeless Individuals:

- Low-income individuals may lack access to vehicles or resources to evacuate promptly. Additionally, they are more likely to reside in housing that may not be resilient to flooding or wave impact.
- Homeless individuals may not have immediate access to emergency alerts or evacuation resources, increasing their risk.

Tourists and Visitors:

- Visitors unfamiliar with tsunami evacuation routes or warning systems are highly vulnerable. Many may not recognize tsunami warning signs, such as rapidly receding water, or may underestimate the speed at which a tsunami can strike.

Children in Coastal Schools:

- Schools and childcare facilities located near the coastline may face challenges in evacuating large groups of children in a timely manner, especially if tsunami waves are generated by a local earthquake.

Vulnerability of Systems

BCHD's critical systems and facilities that are near the coast are particularly vulnerable to tsunamis. These systems must be evaluated for their ability to withstand inundation and support emergency response efforts during and after a tsunami event. Mitigation measures, such as ensuring critical facilities are located outside tsunami inundation zones, securing reliable backup power and water systems, and conducting regular tsunami evacuation drills, are essential to reducing vulnerabilities. These systems must be evaluated for their ability to withstand inundation and support emergency response efforts during and after a tsunami event:

BCHD Facilities

- Primary Health and Wellness Centers:
 - BCHD-owned facilities located within tsunami inundation zones are at risk of flooding, structural damage, and the loss of critical equipment and supplies. Even facilities outside the immediate inundation zone could be indirectly impacted by damaged utilities and access routes.
 - Flooding may render health facilities inoperable for extended periods, compromising BCHD's ability to deliver essential health services to the community.

Utilities and Critical Infrastructure Supporting BCHD

- Electrical Systems:
 - Tsunami waves can cause widespread power outages by damaging substations, transformers, and power lines near the coastline. BCHD facilities reliant on external power may face operational challenges if backup generators are not available or are insufficiently maintained.
- Water and Wastewater Systems:
 - Saltwater intrusion and damage to pipelines can disrupt water supplies to BCHD facilities. This could limit sanitation, drinking water availability, and the functionality of medical equipment that relies on water systems.
 - Flooded wastewater systems may pose additional health risks due to exposure to untreated sewage, affecting both staff and patients.
- Transportation Systems:
 - Roadways, bridges, and public transit systems within the planning area may be heavily damaged or blocked by tsunami debris. This would hinder staff from reaching BCHD facilities and delay the delivery of medical supplies and resources.
- Communication Systems:
 - Tsunami-induced damage to telecommunications infrastructure could disrupt BCHD's ability to communicate with staff, residents, and emergency response partners. This could delay evacuation orders, coordination of resources, and public health messaging.

Public Health Services

- Medical Response and Emergency Sheltering:
 - BCHD's ability to provide emergency health services, including first aid, mental health support, and sheltering, may be compromised if facilities or staff are affected by the tsunami.
 - BCHD may also face challenges accommodating evacuees with access and functional needs at shelters, especially if resources are overwhelmed.

- Extended shelter-in-place scenarios require sustainability measures, such as backup powers, food, and medical supplies, to support displaced individuals and maintain essential services.
- Emergency Preparedness Systems:
 - Tsunamis can overwhelm BCHD's emergency preparedness plans, particularly if scenarios such as simultaneous earthquake and tsunami events occur. Coordination with city, county, and state emergency response teams will be critical to ensuring effective disaster management.
 - Identifying and preparing for peripheral impacts, such as long-term utility disruptions, will be essential for sustaining community response efforts and minimizing health risks.

4.11.7 Environmental Impacts

Tsunamis are typically caused by undersea earthquakes, not directly by climate change. However, climate change significantly exacerbates the impacts of tsunamis and other coastal hazards. Rising sea levels and increasingly frequent high tide events can amplify the reach and destructive potential of tsunami waves and associated coastal flooding.

Sea-level rise increases baseline water levels along the coast, which in turn allows tsunami waves to travel further inland, affecting a broader area than they might have in the past. Additionally, sea-level rise increases the likelihood of beach erosion and reduces the natural buffering capacity of coastal systems. These risks are of particular concern for the BCHD Planning Area, where dense urban development, active recreation zones, and critical infrastructure are concentrated along the coastline.

Prior to this plan update, the City of Manhattan Beach was already addressing the realities of climate change. In 2018, the City initiated an update to the Local Coastal Program (LCP) to address climate change, specifically sea level rise. Pursuant to the City's adopted Environmental Work Plan priorities, adopted Strategic Plan goals, and in compliance with State and General Plan mandates, the City has created a Climate Resiliency Program called Climate Ready Manhattan Beach.⁹ In 2017, the California State Lands Commission sent notices to the City highlighting their responsibility to complete a sea level rise assessment.

In 2021, the City Council of Hermosa Beach authorized the amendment and update of the Certified Coastal Land Use Plan to be submitted to the California Coastal Commission. The City of Hermosa Beach continues to work on updates to their LCP.¹⁰ Similarly, City of Redondo Beach have been working to update their LCP to align with the General Plan and Zoning Codes.¹¹

In Assembly Bill 2140, the general plan safety element is incentivized to contain hazard and risk reduction strategies that are complementary with the LHMP. These LCP updates will be integrated with an update to BCHD's LHMP to ensure consistency and City compliance.

⁹ [Climate Ready Manhattan Beach](#)

¹⁰ <https://www.hermosabeach.gov/our-government/community-development/applications-forms-handouts/local-coastal-plan>

¹¹ https://redondo.org/departments/community_development/planredondo/index.php

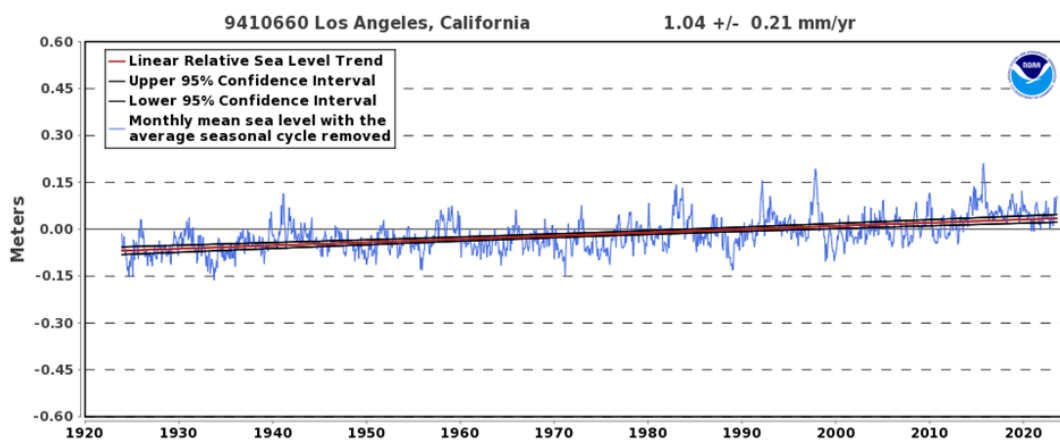
This effort produced a Sea Level Rise Vulnerability Assessment, Sea Level Rise Adaptation Plan, and Coastal Hazards Local Coastal Program Chapter.

According to a Manhattan Beach Vulnerability Assessment¹² study completed in May 2021, identifying the City's Sea Level Rise Risk, Hazards, and Vulnerability, the City's beach area consists of a 2.1-mile shoreline, extending from 45th Street to 1st Street, and is a coastline that is largely urbanized, developed by residential and commercial properties. Some adaptation strategies have already been implemented to reduce vulnerabilities to coastal hazards along the City's shoreline. There are also other adaptation strategies used by adjacent jurisdictions, such as building seasonal sand berms, beach nourishment, and wetlands restoration.

The 2021 study also noted historic previous occurrences of coastal hazards impacting Manhattan Beach resulting flooding and erosion damage. In the late fall and winter of 1982/1983, California experienced an El Niño that produced significant precipitation, strong winds, and high surf along southern California. The storms damaged coastal structures and eroded beaches. Waves reached the Pier deck and damaged the iconic Pier. The Pier deck, Roundhouse Aquarium, and lifeguard station at the beginning of the Pier were completely replaced. Other notable El Niño seasons occurred in 1998 and 2010. In 2017, surf reached 15 feet at El Porto Beach in North Manhattan Beach. At the time of this update, Manhattan Beach is experiencing another El Niño event anticipated to be over in 2024 according to NOAA.

Figure 21 illustrates the long-term trend in sea level rise based on NOAA data from the past 100 years at the Los Angeles tide gauge. Sea levels at the nearby Santa Monica Pier NOAA gauge (9410840) have already risen by approximately 0.51 feet over the last century. The trend is expected to accelerate due to climate-related impacts, such as thermal expansion of warming oceans and melting land-based ice. **Figure 22** provides projections of future sea level rise for the Los Angeles region based on emission scenarios developed by the California Ocean Protection Council.

Figure 21: Sea Level Rise



Source: [NOAA Tides & Currents - Sea Level Rise](#)

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https://cms6ftp.visioninternet.com/manhattanbeach/commissions/planning_commission/2022/20220223/20220223-2.pdf

Sea Level Rise Projections

The two major climate change processes that result in sea level rise are melting of land-based ice (e.g., glaciers and ice sheets) and thermal expansion caused by warming of the ocean (i.e., warmer water molecules take up more space than cooler water molecules).

Sea levels at the Santa Monica Pier tide gage, which is the closest NOAA tide gauge to Manhattan Beach, have increased by 0.51 feet in the last 100 years (NOAA Tides and Currents Station #9410840). However, the rate of sea level rise is expected to increase over time because of climate change and global warming. Sea level rise not only increases typical tidal water levels, but it also raises storm water levels. The flood extent due to storm surge and waves are made worse by sea level rise and flooding can occur further inland. Additionally, higher sea levels combined with riverine flooding or water coming from a stormwater outfall can increase flooding by backing up water into the channel or pipe. California's Ocean Protection Council released a probabilistic projection for sea level rise based on emissions, is depicted in **Figure 22** below.

Figure 22: Projected Sea-Level Rise (in feet) for Los Angeles

		Probabilistic Projections (in feet) (based on Kopp et al. 2014)				H++ scenario (Sweet et al. 2017) *Single scenario
		MEDIAN <i>50% probability sea-level rise meets or exceeds...</i>	LIKELY RANGE <i>66% probability sea-level rise is between...</i>	1-IN-20 CHANCE <i>5% probability sea-level rise meets or exceeds...</i>	1-IN-200 CHANCE <i>0.5% probability sea-level rise meets or exceeds...</i>	
				Low Risk Aversion	Medium - High Risk Aversion	Extreme Risk Aversion
High emissions	2030	0.3	0.2 - 0.5	0.6	0.7	1.0
	2040	0.5	0.4 - 0.7	0.9	1.2	1.7
	2050	0.7	0.5 - 1.0	1.2	1.8	2.6
Low emissions	2060	0.8	0.5 - 1.1	1.4	2.2	
High emissions	2060	1.0	0.7 - 1.3	1.7	2.5	3.7
Low emissions	2070	0.9	0.6 - 1.3	1.8	2.9	
High emissions	2070	1.2	0.8 - 1.7	2.2	3.3	5.0
Low emissions	2080	1.0	0.6 - 1.6	2.1	3.6	
High emissions	2080	1.5	1.0 - 2.2	2.8	4.3	6.4
Low emissions	2090	1.2	0.7 - 1.8	2.5	4.5	
High emissions	2090	1.8	1.2 - 2.7	3.4	5.3	8.0
Low emissions	2100	1.3	0.7 - 2.1	3.0	5.4	
High emissions	2100	2.2	1.3 - 3.2	4.1	6.7	9.9
Low emissions	2110*	1.4	0.9 - 2.2	3.1	6.0	
High emissions	2110*	2.3	1.6 - 3.3	4.3	7.1	11.5
Low emissions	2120	1.5	0.9 - 2.5	3.6	7.1	
High emissions	2120	2.7	1.8 - 3.8	5.0	8.3	13.8
Low emissions	2130	1.7	0.9 - 2.8	4.0	8.1	
High emissions	2130	3.0	2.0 - 4.3	5.7	9.7	16.1
Low emissions	2140	1.8	0.9 - 3.0	4.5	9.2	
High emissions	2140	3.3	2.2 - 4.9	6.5	11.1	18.7
Low emissions	2150	1.9	0.9 - 3.3	5.1	10.6	
High emissions	2150	3.7	2.4 - 5.4	7.3	12.7	21.5

Source: California Ocean Protection Council. [State of California Sea-level Rise Guidance. \(2018\)](#)

4.11.8 Critical Facilities and Infrastructure

Tsunamis are rare but potentially devastating hazards along the Southern California coastline. Although the overall tsunami risk within the BCHD Planning Area is low compared to more seismically active coastal zones, the proximity of critical BCHD facilities to the Pacific Ocean requires continued evaluation of potential exposure and loss.

Based on current tsunami inundation maps provided by the California Geological Survey and local emergency management agencies, the majority of BCHD-owned and operated facilities are located outside of mapped tsunami hazard zones. However, due to the coastal setting of Manhattan Beach, Hermosa Beach, and Redondo Beach, facilities located within or near evacuation zones may be subject to access limitations, transportation disruptions, or secondary impacts such as flooding or debris flow during a tsunami event.

Table 58 identifies BCHD facilities along with their estimated asset values and Community Lifeline designations. While direct structural damage from a tsunami is unlikely for most BCHD properties, BCHD acknowledges the importance of maintaining emergency operations, continuity of care, and public communication capabilities during such events. BCHD will continue to coordinate with city and county partners to monitor hazard mapping updates and integrate tsunami considerations into facility preparedness, emergency response, and long-term planning.

Table 58: Critical Facilities and Potential Tsunami Loss Estimates

Name of Facility	Address	Asset Value/Potential Loss Data	Community Lifeline Category
Beach Cities Health Center (Owned)	514 N. Prospect Ave.; Redondo Beach, CA 90277	\$62,592,873	Health and Medical
AdventurePlex (Owned)	1701 Marine Ave.; Manhattan Beach, CA 90266	\$7,707,276	Food, Water, Shelter
Sunrise Assisted Living (Land Lease & Joint Venture Limited Partner)	1837 Pacific Coast Highway, Hermosa Beach, CA 90254	\$2,408,000	Health and Medical
Leap & Bound Child Development Center (Building and Land Lease)	601 S. Pacific Coast Highway Redondo Beach, CA 90277	\$2,530,649	Food, Water, Shelter
Venice Family Clinic - South Bay Family Health Care (Building and Land Lease)	2114 Artesia Boulevard Redondo Beach, CA 90278	\$192,000	Health and Medical

Name of Facility	Address	Asset Value/Potential Loss Data	Community Lifeline Category
512 Parking Structure (Owned)	512 N. Prospect Ave.; Redondo Beach, CA 90277	\$10,149,276	Health and Medical
520 Parking Structure (Owned)	520 N. Prospect Ave.; Redondo Beach, CA 90277	\$18,296,150	Health and Medical
514 Surface Parking (Owned)	514 N. Prospect Ave.; Redondo Beach, CA 90277	\$100,000	Health and Medical
BCHD Total	\$103,976,224.00		

4.11.9 Land Use and Development

Tsunami hazard exposure within the BCHD Planning Area is limited due to the region's gently sloping coastline and the location of most development on elevated ground. While the cities of Manhattan Beach, Hermosa Beach, and Redondo Beach include low-lying coastal zones identified within tsunami evacuation areas, the majority of BCHD facilities are situated outside of these mapped inundation zones. This reduces the likelihood of direct damage to BCHD property from a tsunami but does not eliminate the potential for secondary impacts such as transportation disruption or reduced access to facilities.

BCHD does not control land use or zoning decisions, but it remains engaged with local jurisdictions that enforce development regulations in identified tsunami-prone areas. Coastal cities within the district incorporate tsunami risk into their Local Coastal Programs and emergency planning efforts, ensuring that new development in hazard zones meets appropriate siting, elevation, and evacuation standards.

Future BCHD facility planning will continue to consider tsunami exposure, particularly with respect to site access and operational continuity. Although the risk of a damaging tsunami remains low, continued coordination with city and county partners helps ensure preparedness measures are in place to protect staff, clients, and community members who rely on BCHD services.

4.12 Urban Wildfire

4.12.1 Hazard Description

The National Weather Service (NWS) defines a wildfire as “any free-burning, uncontrollable wildland fire not prescribed for the area which consumes the natural fuels and spreads in response to its environment.” The Los Angeles County All-Hazards Mitigation Plan mentions that wildfires can be caused by human activities (e.g., unattended burns, campfires, or off-road vehicles without spark arresting muffles) or by natural events such as lightning. The predominant dangers of wildfire are the injury or loss of life to people in the affected area and the destruction of vegetation, property, and wildlife. Wildfires can be categorized into four types:

1. **Wildland fires** occur mainly in areas under federal control, such as national forests and parks, and are fueled primarily by natural vegetation. Generally, development in these areas is nonexistent, except for roads, railroads, power lines, and similar features.
2. **Interface or intermix fires** occur in areas where both vegetation and structures provide fuel. These are also referred to as Wildland/Urban Interface (WUI) fires.
3. **Firestorms** occur during extreme weather (e.g., high temperatures, low humidity, and high winds) with such intensity that fire suppression is virtually impossible. These events typically burn until the conditions change, or the fuel is exhausted.
4. **Prescribed fires and prescribed natural fires** are intentionally set or natural fires that are allowed to burn for beneficial purposes.

The following factors contribute significantly to wildfire behavior and can be used to identify wildfire hazard areas:

- **Topography:** As slope increases, the rate of wildfire spread increases. South-facing slopes are also subject to more solar radiation, making them drier and thereby intensifying wildfire behavior. However, ridgetops may mark the end of wildfire spread because fire spreads more slowly or may even be unable to spread downhill.
- **Fuel:** is the type and condition of vegetation that plays a significant role in wildfire spread and occurrence. Certain plant types are more susceptible to burning or will burn with greater intensity. Dense or overgrown vegetation increases the amount of combustible material available as fire fuel (referred to as “fuel load”). The living-to-dead plant matter ratio is also important. Certain climate changes may increase wildfire risk significantly during prolonged drought periods, as both living and dead plant matter moisture content decreases. Both the horizontal and vertical fuel load continuity is also an important factor.
- **Weather:** is the most variable factor affecting wildfire behavior. Important weather variables are temperature, humidity, wind, and lightning. Weather events ranging in scale from localized thunderstorms to large fronts can have major effects on wildfire occurrence and behavior. Extreme weather, such as high temperatures and low humidity, can lead to extreme wildfire activity. By contrast, cooling and

higher humidity often signals reduced wildfire occurrence and easier containment. Wind has probably the largest impact on a wildfire's behavior and is also the most unpredictable. Winds supply the fire with additional oxygen, further dry potential fuel, and push fire across the land at a quicker pace. The threat of wildfire increases in areas prone to intermittent drought, or that are generally arid and dry. Also, since the mid-1980s, earlier snowmelt and associated warming due to global climate change has been associated with longer and more severe wildfire seasons in the western United States.

Other hazards addressed in this risk assessment, drought, and wind, can have an impact on wildfire potential or severity. According to the Western Fire Chief's Association, the following play into wildfire.

- **Drought:** Since wildfire thrives in hot and dry climates, drought elevates fire risk significantly. Drought leaves trees, grasses, shrubs, and soil with very little moisture, making the landscape extremely flammable. Ongoing droughts in California pose a serious threat for fire season. A recent report by the US Drought Monitor found more than 97% of the state is in severe or extreme drought, causing concern for the year ahead.
- **Wind:** When winds are paired with hot, dry weather, they pose a major fire hazard. For example, the Santa Ana winds in Southern California (also known as Diablo winds in Northern California) are strong, dry, downslope winds that blow from the mountains towards the coast and can cause wildfires to ignite and spread rapidly. Consequently, these winds reach up to 40 miles per hour and in some cases can reach hurricane strength, exponentially increasing in the speed of fire spread and triggering extreme destruction in short amounts of time.
- **Human Activity:** As much as 90% of wildfires are started by humans. Three common reasons for wildfire ignition include unattended campfires, fallen power lines, discarded cigarettes, vehicle crashes or the use of equipment that creates sparks, like metal grinders.

If not promptly controlled, wildfires may grow into an emergency or disaster. Even small fires can threaten lives and resources and destroy improved properties. Communities throughout California and Los Angeles County are increasingly concerned about wildfire safety as increased development in the foothills and mountain areas have affected the natural cycle of the ecosystem. Wildfire risk is predominately associated within WUI areas; however, significant wildfires can also occur in heavily populated areas. Although urbanized and developed areas such as BCHD are not bordering vast areas of wildlands, BCHD is typically considered safer from wildfires. This does not take away the other secondary effects of wildfires, including erosion, landslides, introduction of invasive species, and changes in water quality, are often more disastrous than the fire itself. Wildfires increase the potential for flooding, debris flows, and landslides. Smoke and other emissions contain pollutants that can cause significant health problems. Short-term effects: destruction of timber, forage, wildlife habitats, scenic vistas, and watersheds.

Long-term effects are reduced access to recreational areas, destruction of community infrastructure and cultural and economic resources.

While the Beach Cities (Hermosa Beach, Manhattan Beach, and Redondo Beach) are not prone to large wildfires due to their coastal location, the risk of urban fires still exists. Urban wildfires, or fires that occur in densely populated areas, pose significant threats due to high building density, electrical infrastructure, and the proximity of homes and businesses. These fires can spread quickly due to flammable building materials, older infrastructure, and human activity.

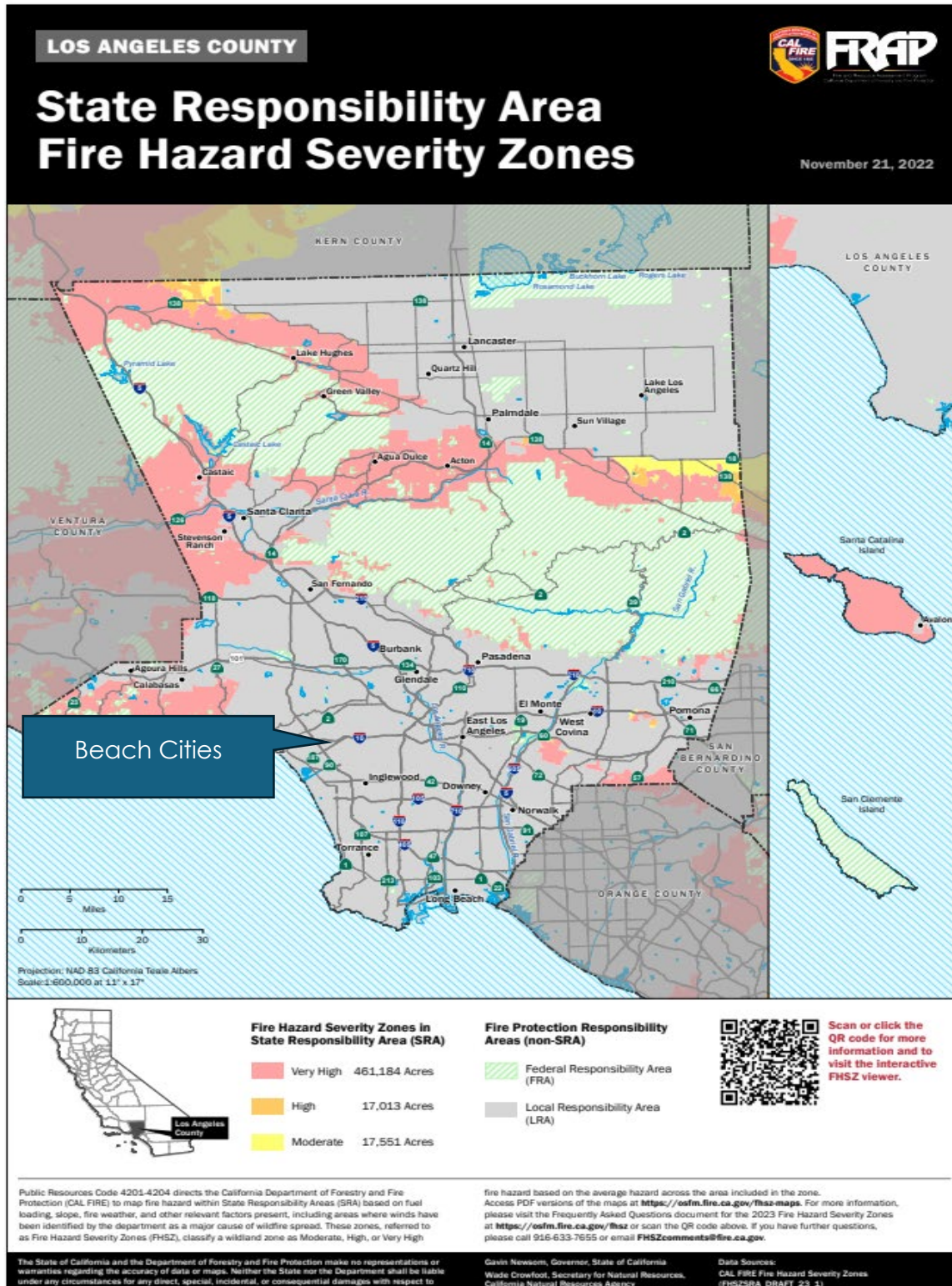
Urban fires also have broader consequences for air quality, as dense smoke can create hazardous breathing conditions, particularly for vulnerable populations such as the elderly or those with respiratory conditions. In addition, the secondary effects of urban fires, such as power outages, evacuation needs, and disruption to critical services, can strain emergency response and healthcare systems. Short-term effects: property destruction, release of smoke and pollutants, displacement of residents, disruption of utilities, and air quality issues.

Long-term effects: potential lasting health issues from smoke exposure, prolonged displacement, and financial strain from rebuilding infrastructure.

4.12.2 Location and Extent

BCHD is exposed to a variety of wildfire hazard conditions that vary based on fuels, topography, weather, and human behavior. Cal FIRE, as required by Government Code Section 51181, has undertaken a statewide program to map areas of potential wildfire severity, and to describe the potential for wildfires to occur in each area. The resulting Fire Hazard Severity Zones (FHSZs) were adopted in November 2007 for the State Responsibility Areas (SRA) and adopted in September 2007 for the Local Responsibility Areas (LRA). These zones were updated in 2022, and **Figure 23** below depicts the SRA FHSZs for Los Angeles County.

Figure 23: Cal FIRE State Responsibility Area Fire Hazard Severity Zone, Los Angeles County



Source: Fire Hazard Severity Zones Maps 2022 (ca.gov)

As indicated by the blue arrow above, BCHD resides in a local responsibility area and is not located within a high hazard severity zone.

BCHD has dry summers where little to no rain falls from early June through late October. While developing the LHMP, BCHD has experienced an average of 9 inches of annual rainfall depending on location and weather patterns. The fire season is a time of increased risk to damage to residential property and other development within the Beach Cities.

According to the Western Fire Chief's Association, Southern California's fire season begins in late spring (May-June) and runs until October. However, climate change has caused the wildfire season to get longer each year.

Figure 24: California Fire Season, Western Fire Chiefs Association



Source: Western Fire Chiefs Association

The fire rating system, as shown in **Table 59**, describes the characteristics and potential intensity of fires, including the effect on the ability to manage and suppress fires. Fire conditions up through Class 1 are possible in BCHD.

Table 59: Fire Rating System

Rating	Basic Description	Detailed Description
Class 1: Low Danger (L) Color Code: Green	Fires not easily started	Fuels do not ignite readily from small firebrands. Fires in open or cured grassland may burn freely a few hours after rain, but wood fires spread slowly by creeping or smoldering and burn in irregular fingers. There is little danger of spotting
Class 2: Moderate Danger (M) COLOR CODE: Blue	Fires start easily and spread at a moderate rate	Fires can start from most accidental causes. Fires in open cured grassland will burn briskly and spread rapidly on windy days. Wood fires spread slowly to moderately fast. The average fire is of moderate intensity, although heavy concentrations of fuel—especially draped fuel may burn hot. Short distances spotting may occur but is not persistent. Fires are not likely to become serious and control is relatively easy.
Class 3: High Danger (H) COLOR CODE: Yellow	Fires start easily and spread at a rapid rate	All fine dead fuels ignite readily, and fires start easily from most causes. Unattended brush and campfires are likely to escape. Fires spread rapidly, and short-distance spotting is common. High intensity burning may develop on slopes or in concentrations of fine fuel. Fires may become serious and their control difficult, unless they are hit hard and fast while small.
Class 4: Very High Danger COLOR CODE: Orange	Fires start very easily and spread at a very fast rate	Fires start easily from all causes and immediately after ignition, spread rapidly and increase quickly in intensity. Spot fires are a constant danger. Fires burning in light fuels may quickly develop high-intensity characteristics such

Rating	Basic Description	Detailed Description
		as long-distance spotting and fire whirlwinds when they burn into heavier fuels. Direct attack at the head of such fires is rarely possible after they have been burning for more than a few minutes.
Class 5: Extreme (E) COLOR CODE: Red	Fire situation is explosive and can result in extensive property damage	Fires under extreme conditions start quickly, spread furiously, and burn intensely. All fires are potentially serious. Development into high intensity burning will usually be faster and occur from smaller fires than in the Very High Danger Class (4). Direct attack is rarely possible and may be dangerous, except immediately after ignition. Fires that develop headway in heavy slash or in conifer stands may be unmanageable while the extreme burning condition lasts. Under these conditions, the only effective and safe control action is on the flanks, until the weather changes or the fuel supply lessens.

Source: <http://www.wfas.net>

4.12.3 Previous Events

No documented wildfires occurred within the BCHD Planning Area during the LHMP's planning period of 2019–2023. However, multiple significant wildfire events have taken place elsewhere in Los Angeles County, highlighting the region's continued exposure to wildfire-related impacts. Multiple Federal declarations in the County of Los Angeles since 2019 for fires impacting jurisdictions near BCHD. Since 2019, according to the NOAA/NCEI database 8 wildfire events have occurred within Los Angeles County, resulting in 3 deaths and 24 injured:

- In October 2019, The Saddleridge Fire burned 8799 acres across the foothills of the San Fernando Valley as well as the Santa Clarita Valley and the Los Angeles County mountains. The combination of warm and dry Santa Ana winds and critically dry vegetation allowed for significant fire growth. The fire destroyed 19 residences and damaged 88 additional residences. One civilian death was reported (due to cardiac arrest) and eight firefighters were injured.

- Also in October 2019, the Tick Fire burned 4615 acres in the Canyon County area of Los Angeles county. The combination of warm and dry Santa Ana winds and critically dry vegetation allowed for significant fire growth. The fire destroyed 23 homes and damaged 40 other residences. During the incident, four firefighter injuries were reported.
- In August 2020, the Lake Fire burned 31,089 acres in the Angeles National Forest, northeast of the community of Azusa. In total, twelve structures were destroyed and another three were damaged. Four firefighter injuries were reported.
- Also in August 2020, The Ranch 2 Fire burned 4,237 acres in the Angeles National Forest. No structures were destroyed, but eight firefighter injuries were reported.

Disaster Declaration History

In the past, four (4) disaster declarations for fire have been declared that included Los Angeles County. The events for fire that resulted in a state or federal disaster declaration are shown in **Table 60**. It is important to note that the planning period for this LHMP covers 2019 to 2023, therefore, the declarations and events included in this section reflect wildfire incidents that occurred within or have relevance to this timeframe.

Table 60: Disaster Declarations – Urban Wildfire, Los Angeles County

Disaster Declaration	Hazard	Date	Details
California Wildfires DR-4569-CA	Fire	September 2020	Incident Period: Sept. 4, 2020-Nov. 17, 2020 Declaration Date: Oct. 16, 2020
California Bobcat Fire FM-5374-CA	Fire	September 2020	Incident Period: Sept. 13, 2020 Declaration Date: Sept. 13, 2020
California Tick Fire FM-5296-CA	Fire	October 2019	Incident Period: Oct. 24, 2019 Declaration Date: Oct. 24, 2019
California Saddleridge Fire FM-5293-CA	Fire	October 2019	Incident Period: Oct. 10, 2019 Declaration Date: Oct. 11, 2019

4.12.4 Probability of Future Events

Calculating future probability is one of many predictors of future occurrences. **Table 61** provides a summary of the probability of future events for Urban Wildfire, as categorized, and recorded by NOAA/NCI for Los Angeles County between January 1, 2019, and December 31, 2023:

Table 61: Previous Events, Urban Wildfire

Previous Events, Urban Wildfire, Los Angeles County, CA	
Event Year	Event Count
2019	3
2020	5
2021	0
2022	0
2023	0
Total Recorded Events =	8
Total Years =	5
Annual Probability =	32%

Source: NOAA/NCEI

Annual Probability:

$$\frac{8}{5} \times 100 = \frac{160\%}{5} = 32\%$$

Using the NOAA/NCEI database, and calculating probability based on the past events, the likelihood of a single Wildfire event occurring in Los Angeles County, where BCHD resides, on an annual basis over the next HMP planning cycle is 32%. This categorizes the hazard's future probability of occurrence as **Likely**.

Based on HMPC feedback, BCHD exhibits a lower wildfire risk compared to the greater Los Angeles County, primarily due to its urbanized setting and unique geographical features. The cities' extensive urban sprawl significantly reduces the presence of large, continuous areas of flammable brushland, which are a common feature in more wildfire-prone regions of the county. Additionally, the coastal location includes natural sand dunes, which not only lack substantial vegetation but also serve as natural barriers against the spread of fires. The absence of significant brushland, combined with these sand dune characteristics, plays a crucial role in mitigating the city's wildfire susceptibility, making it an area of comparatively lower risk within the broader, more fire-prone Los Angeles County landscape.

4.12.5 Hazard Risk Ranking

The HMPC's hazard prioritization process, which assessed Urban Wildfire, resulted in an overall risk level being classified as Low with a rank score of 5.13. It is important to note that the HMPC's feedback and risk determination, as outlined in **Table 62**, are reflective of the committee's perspectives and judgments.

Table 62: Risk Ranking for Fire, Wildland Urban Interface (Wildfire)

Hazard	Impact to Assets			Vulnerability (H+P+B=#) (V=#/3)	Probability (Pb)	Social Vulnerability (SV)	Risk Value (R=V+Pb+SV)	Risk Ranking
	Human Impact (H)	Property Impact (P)	Business Impact (B)					
Fire/Wildfire	2.7	1.8	1.2	1.9	3.7	1	6.6	Moderate

4.12.6 Vulnerability and Impact Assessment

Change in Urban Wildfire Vulnerability

As this is the first LHMP developed for BCHD, there is no previous benchmark available to compare changes in vulnerability to urban wildfire. Based on current hazard data and fire mapping resources, the BCHD Planning Area remains at low risk for wildfire due to its coastal location, dense urban development, and limited wildland-urban interface. However, secondary impacts such as poor air quality, temporary evacuation routes, and power disruptions are increasingly relevant considerations.

In recent years, the growing intensity of wildfires across California has heightened awareness of indirect risks, even in low-exposure areas. Coastal cities like Manhattan Beach, Hermosa Beach, and Redondo Beach may still experience regional smoke impacts, utility shutoffs, or emergency response coordination challenges during large-scale fire events.

Although direct vulnerability to wildfire has not increased, BCHD recognizes the need to evaluate potential service disruptions and health impacts associated with nearby wildfires. Continued coordination with local jurisdictions and regional emergency management partners will support preparedness and continuity planning, especially for vulnerable populations who may be affected by air quality or access limitations during wildfire seasons.

Table 63: Summary of Change to Vulnerability, Urban Wildfire

2024 LHMP Update Hazards	Decrease in Vulnerability	No Change in Vulnerability	Increase in Vulnerability
Urban Wildfire		X	

HMPC Vulnerability and Impact Assessment Feedback

Urban wildfires pose a growing threat to BCHD facilities, operations, and the community it serves. While the urban environment reduces the likelihood of direct wildfire impacts compared to wildland areas, the dense population, proximity to the wildland-urban interface (WUI), and regional interdependencies make wildfire a critical hazard to address. The nearby Palos Verdes region is a designated high-risk fire zone, meaning Beach Cities communities could face significant secondary impacts such as degraded air quality, increased public health needs, and cascading infrastructure disruptions.

As wildfires in the Palos Verdes region could drive evacuees into Beach Cities, BCHD must prepare for an increased demand for shelter and medical assistance at evacuation sites. Additionally, public concern about environmental contamination such as potential wildfire-related toxins affecting sand and beach areas, must be addressed through proactive education and communication strategies.

To mitigate these risks, BCHD should prioritize investments in air quality monitoring and filtration, emergency power systems, staff training, and community outreach. Establishing a social media and education program can help alert residents about air quality hazards, provide information on available resources, and answer critical public health questions related to wildfire impacts.

Impacts on Populations

Older Adults and Individuals with Chronic Health Conditions

- Older adults and individuals with respiratory conditions (e.g., asthma, COPD) are particularly vulnerable to smoke and poor air quality caused by wildfires. Prolonged exposure to particulate matter can worsen pre-existing conditions and increase hospitalizations.
- Limited mobility and reliance on caregivers may hinder timely evacuation during a wildfire event.

Low-Income and Housing-Insecure Populations

- Financial constraints can limit access to safe evacuation options, temporary housing, or air filtration systems during wildfire events.
- Individuals living in older, less fire-resistant structures are at greater risk of direct fire impacts.

Youth and Outdoor Recreation Participants

- Children participating in outdoor programs, such as those at AdventurePlex, may face heightened exposure to smoke and degraded air quality during wildfire events.
- The absence of robust indoor activity options could exacerbate risks during wildfire-related air quality advisories.

Unhoused Populations

- Individuals experiencing homelessness are particularly at-risk during wildfire events due to direct exposure to fire, smoke, and hazardous conditions.
- Limited access to emergency shelters may further increase their vulnerability.

Individuals with Access and Functional Needs (AFN)

- Those who rely on medical devices, mobility aids, or in-home care may face significant challenges during evacuation or extended disruptions caused by wildfires.
- Power outages, often accompanying wildfires, can further complicate the ability to meet essential needs.

Secondary Impacts on Population Vulnerability

- Air Quality and Health Impacts:
 - Wildfire smoke contains fine particulate matter (PM2.5) and other toxic pollutants that can severely affect respiratory and cardiovascular health. Vulnerable populations may require access to clean air shelters or filtration systems.
- Mental Health Impacts:

- The stress of evacuation, property loss, and uncertainty associated with wildfires can lead to increased mental health challenges, including anxiety, depression, and post-traumatic stress disorder (PTSD).
- Increased Risk of Chronic Health Issues:
 - Prolonged exposure to wildfire smoke can have long-term health consequences, including increased rates of asthma and other respiratory illnesses, particularly in children and older adults. BCHD must plan for ongoing care needs related to these conditions.

Vulnerability of Systems

Systems owned and operated by BCHD are vulnerable to the direct and indirect impacts of urban wildfires, including damage to facilities, service disruptions, and increased demand for public health services.

BCHD Facilities and Operations

- AdventurePlex:
 - Outdoor recreational spaces at AdventurePlex may be directly impacted by wildfire events or require closures during poor air quality conditions.
 - Emergency planning for this facility should consider indoor alternatives to ensure safe programming during wildfire events.
- allcove Beach Cities:
 - This facility supporting youth health services may experience an influx of participants during and after wildfire events, as families and individuals seek assistance in coping with trauma, displacement, or stress caused by the fires.
 - Air quality concerns may necessitate additional filtration systems or designated clean air spaces within these facilities.
- Healthcare Programs and Services:
 - BCHD's healthcare programs may face operational disruptions due to power outages, facility closures, or evacuation orders caused by nearby wildfires.
 - Increased demand for respiratory care and public health services during wildfire events will require operational flexibility and preparedness.

Critical Infrastructure Supporting BCHD Operations

- Power Supply and HVAC Systems:
 - Wildfires often cause power outages, either from direct damage to infrastructure or through preemptive public safety power shutoffs (PSPS)

implemented by utility companies. BCHD facilities must have backup power systems to ensure continuity of operations.

- HVAC systems may be strained during wildfire events, particularly if tasked with maintaining indoor air quality under heavy smoke conditions.
- Water Supply Systems:
 - Wildfires can disrupt local water systems, either through damage to infrastructure or increased demand for firefighting. BCHD facilities must plan for potential water shortages or contamination issues.
- Transportation Networks:
 - Road closures caused by wildfires may limit access to BCHD facilities, affecting both staff and residents seeking services.
 - Emergency evacuation routes must be clearly identified, and transportation support should be considered for populations with limited mobility.

Public Health Services and Emergency Operations

- Increased Demand for Emergency Services:
 - BCHD may need to establish clean air shelters or provide access to portable air filtration systems for vulnerable populations during wildfire events.
 - Outreach and education campaigns to inform the public about health risks and protective measures during wildfire smoke events will be critical.
- Mental Health and Recovery Support:
 - Wildfire events often lead to long-term recovery needs, including mental health support for displaced residents or those affected by property loss. BCHD's facilities and staff must be prepared to meet these demands.
- Staffing and Resource Constraints:
 - Prolonged wildfire events may strain BCHD's staffing capacity, particularly if employees are personally affected or unable to access facilities due to evacuations or road closures.

4.12.7 Environmental Impacts

Climate change is having a serious impact on the prevalence of wildfires in California. The changes in climate are creating warmer, drier seasons, which are ideal conditions for fires to burn. Not only does this increase the frequency of fires but also increases the severity and amount of damage done.

According to the Los Angeles County Hazard Mitigation Plan (2020), the climate in Los

Angeles County is characterized as Mediterranean dry summer featuring cool, wet winters and warm, dry summers. High moisture levels during the winter rainy season significantly increase the growth of plants. However, the vegetation dried during the long, hot summers, decreasing plant moisture content, and increasing the ratio of dead fuel to living fuel. As a result, fire susceptibility increases dramatically, particularly in late summer and early autumn. In addition, the presence of chaparral, a drought-resistant variety of vegetation that is dependent on occasional wildfires, is expected in Mediterranean dry-summer climates. The history of plant succession in Los Angeles County is important in predicting fire susceptibility. For several years after a fire has occurred, easily flammable herbaceous species thrive and increase the likelihood of new fires. When woody species become re-established, they contribute to a lower overall level of fire susceptibility for approximately 10 years. However, after this period, the slow aging plant community becomes ever more likely to burn because of increased levels of dead plant material and lowered plant moisture levels.

Additionally, a local meteorological phenomenon, known as the Santa Ana winds, contributes to the high incidence of wildfires in Los Angeles County. These winds originate during the autumn months in the hot, dry interior deserts to the north and east of Los Angeles County. They often sweep west into the County, bringing extremely dry air and high wind speeds that further desiccate plant communities during the period of the year when the constituent species have very low moisture content. The effect of these winds on existing fires is particularly dangerous; the winds can greatly increase the rate at which fires spread. Based on the conditions described above and the history of occurrence in Los Angeles County (1,000-acre plus fires every 1-3 years), future events are very likely to occur. The extent of future events will depend on specific conditions at the time of the fire.

Decreased rainfall means that vegetation remains dryer and more flammable into the late fall and winter months, increasing the likelihood of extreme, late-season wildfires. According to wildfirerisk.org, Manhattan Beach has a medium risk of wildfire—higher than 51% of communities in the US.

Continuing to examine the history of California wildfires, a key trend that emerges is the lengthening of the season. With fires happening throughout the winter months, a year-round fire season is swiftly becoming the norm. A drier and hotter climate isn't just increasing the frequency of wildfires in California, it makes it harder to fight due to their increased size and intensity. Eight of the state's ten largest fires on record—and twelve of the top twenty—have happened within the past five years. In 2020 alone, five of California's top 20 biggest wildfires occurred.

4.12.8 Critical Facilities and Infrastructure

The risk of direct wildfire damage to BCHD-owned and operated facilities is considered low based on current fire hazard mapping and the coastal, urbanized nature of the Planning Area. The cities of Manhattan Beach, Hermosa Beach, and Redondo Beach are not located within designated Very High Fire Hazard Severity Zones, and there is limited wildland-urban interface within or near BCHD property locations.

However, urban wildfire events in surrounding regions can still impact BCHD operations through indirect effects. These may include degraded air quality, road closures, emergency resource reallocation, and public health strain. Facilities that serve

vulnerable populations, such as the elderly or those with respiratory conditions, may be particularly affected by smoke and poor air quality during regional wildfire events.

Table 64 summarizes BCHD facilities, their estimated asset values, and associated Community Lifeline categories. Although the probability of direct wildfire loss is minimal, this assessment helps BCHD plan for secondary impacts and maintain service continuity during regional fire emergencies.

Table 64: Beach Cities Health District Critical Facilities/Infrastructure

Name of Facility	Address	Asset Value/Potential Loss Data	Community Lifeline Category
Beach Cities Health Center (Owned)	514 N. Prospect Ave.; Redondo Beach, CA 90277	\$62,592,873	Health and Medical
AdventurePlex (Owned)	1701 Marine Ave.; Manhattan Beach, CA 90266	\$7,707,276	Food, Water, Shelter
Sunrise Assisted Living (Land Lease & Joint Venture Limited Partner)	1837 Pacific Coast Highway, Hermosa Beach, CA 90254	\$2,408,000	Health and Medical
Leap & Bound Child Development Center (Building and Land Lease)	601 S. Pacific Coast Highway Redondo Beach, CA 90277	\$2,530,649	Food, Water, Shelter
Venice Family Clinic - South Bay Family Health Care (Building and Land Lease)	2114 Artesia Boulevard Redondo Beach, CA 90278	\$192,000	Health and Medical
512 Parking Structure (Owned)	512 N. Prospect Ave.; Redondo Beach, CA 90277	\$10,149,276	Health and Medical
520 Parking Structure (Owned)	520 N. Prospect Ave.; Redondo Beach, CA 90277	\$18,296,150	Health and Medical
514 Surface Parking (Owned)	514 N. Prospect Ave.; Redondo Beach, CA 90277	\$100,000	Health and Medical
BCHD Total	\$103,976,224.00		

4.12.9 Land Use and Development Trends

Urban wildfire risk within the BCHD Planning Area is considered low due to the highly developed nature of Manhattan Beach, Hermosa Beach, and Redondo Beach. These

coastal cities have limited vegetated open space and are not located within designated Very High Fire Hazard Severity Zones as identified by Cal Fire. Most of the land within these jurisdictions is used for residential, commercial, or public infrastructure, which reduces exposure to wildland fuels.

Local planning and zoning policies across the three cities include vegetation management requirements and fire-safe development standards in accordance with California Fire Code. While BCHD does not oversee land use decisions, it benefits from its facilities being located in communities that prioritize emergency preparedness and enforce fire mitigation standards in redevelopment and construction.

Future development within the BCHD Planning Area is expected to occur through infill and redevelopment, which is unlikely to increase direct wildfire exposure. However, BCHD will continue to monitor regional wildfire trends and coordinate with local jurisdictions to address indirect impacts, such as air quality degradation, evacuation planning, and continuity of operations during regional fire events.

4.13 Wind

4.13.1 Hazard Description

High wind events are a form of severe weather that can cause significant damage to structures, utility infrastructure, and vegetation, and pose safety risks to people and property. While severe weather can take many forms, this LHMP focuses specifically on high wind as a priority hazard for the BCHD Planning Area. High wind events in coastal Southern California are often driven by Santa Ana winds or strong frontal systems, and their impacts can be intensified by the region's coastal topography and dense urban environment. These events can result in power outages, transportation disruptions, and increased risk of wildfire ignition and spread.

Wind is simply moving air that is caused by differences in air pressure within the Earth's atmosphere. Air under high pressure moves toward areas of low pressure. The greater the difference in pressure, the faster the air flows. The [NOAA/NCEI Storm Database](#) indicates there are three types of wind events:

- **High Wind:** Sustained non-convective winds of 40 mph or greater lasting for one hour or longer or winds (sustained or gusts) of 58 mph for any duration on a widespread or localized basis.
- **Strong Wind:** Non-convective winds gusting less than 58 mph or sustained winds less than 40 mph, resulting in a fatality, injury, or damage.
- **Thunderstorm Wind:** Winds arising from convection (occurring within 30 minutes of lightning being observed or detected), with speeds of at least 58 mph, or winds of any speed (non-severe thunderstorm winds below 58 mph) producing a fatality, injury, or damage.

Additionally, BCHD can be impacted by the Santa Ana Winds. The Santa Ana Winds occur when air from a region of high pressure over the dry, desert region of the southwestern U.S. flows westward towards low pressure located off the California coast. This creates dry winds that flow east to west through the mountain passages in Southern California. These winds are most common during the cooler months of the year, occurring from September through May. Santa Ana winds typically feel warm (or even hot) because as the cool desert air moves down the side of the mountain, it is compressed, which causes the temperature of the air to rise. These strong winds can cause major property damage. They also increase wildfire risk because of the dryness of the winds and the speed at which they can spread a flame across the landscape.

4.13.2 Location and Extent

Wind Events are common across the U.S., including the State of California. Wind Events are not spatially confined to any single location. Therefore, the entire State of California, including Los Angeles County and BCHD, are equally at risk of events like high wind.

High Wind

Wind observations or measurements are required to determine the probability of wind damage and the estimation of wind energy. To help with the planning, design, and construction of buildings for residential and commercial purposes, as well as mitigation efforts, the American Society of Civil Engineers (ASCE) calculates Average Hazard Wind Scores. The wind speeds correspond with the assigned hazard score with values ranging from one to five, as shown in **Table 65**.

Table 65: ASCE Average Hazard Winds Scores

ASCE Average Hazard Wind Scores	
Wind Score (s)	Wind Speeds (mph)
1	<90
2	91-100
3	101-110
4	111-120
5	>120

Source: ASCE

One of the first scales to estimate wind speeds and the effects was created by Britain's Admiral Sir Francis Beaufort. He developed the scale in 1806 to help sailors estimate the winds via visual observations. The Beaufort Scale, as shown in **Figure 25**, is still used today to estimate wind strengths.

Figure 25: Beaufort Wind Scale

BEAUFORT WIND SCALE

Beaufort Number	Description	Wind speed	Wave height	Sea conditions	Land conditions	
0	Calm	< 1 knot < 1 mph < 2 km/h	0 ft 0 m	Sea like a mirror	Smoke rises vertically	
1	Light air	1-3 knots 1-3 mph 2-5 km/h	0-1 ft 0-0.3 m	Ripples	Direction shown by smoke drift	
2	Light breeze	4-6 knots 4-7 mph 6-11 km/h	1-2 ft 0.3-0.6 m	Small wavelets	Wind felt on face	
3	Gentle breeze	7-10 knots 8-12 mph 12-19 km/h	2-4 ft 0.6-1.2 m	Large wavelets	Leaves and small twigs in constant motion	
4	Moderate breeze	11-16 knots 13-18 mph 20-28 km/h	3.5-6 ft 1-2 m	Small waves	Raises dust and loose paper	
5	Fresh breeze	17-21 knots 19-24 mph 29-38 km/h	6-10 ft 2-3 m	Moderate waves	Small trees and leaves begin to sway	
6	Strong breeze	22-27 knots 25-31 mph 39-49 km/h	9-13 ft 3-4 m	Large waves	Large branches in motion	
7	High wind, moderate gale, near gale	28-33 knots 32-38 mph 50-61 km/h	13-19 ft 4-5.5 m	Sea heaps up	Whole trees in motion	
8	Gale, fresh gale	34-40 knots 39-46 mph 62-74 km/h	18-25 ft 5.5-7.5 m	Moderately high waves	Twigs break off trees	
9	Strong/severe gale	41-47 knots 47-54 mph 75-88 km/h	23-32 ft 7-10 m	High waves	Slight structural damage	
10	Storm, whole gale	48-55 knots 55-63 mph 89-102 km/h	29-41 ft 9-12.5 m	Very high waves	Trees uprooted, considerable structural damage	
11	Violent storm	56-63 knots 64-72 mph 103-117 km/h	37-52 ft 11.5-16 m	Exceptionally high waves	Widespread damage	
12	Hurricane force	≥ 64 knots ≥ 73 mph ≥ 118 km/h	≥ 46 ft ≥ 14 m	Exceptionally high waves, sea is completely white	Devastation	

Image Source: Science Sparks

Severe storm winds most commonly occur as straight-line winds; a downburst of wind created by an area of significantly rain-cooled air that spreads out in all directions after hitting the ground. All jurisdictions are vulnerable to receiving damage from these severe storm winds.

High wind events often lead to other damaging impacts to including, but not limited to:

- **Wildfire Spread:** When strong winds meet dry vegetation, they can carry embers for miles, igniting new fires in their path and rapidly expanding existing ones. This

wind-driven wildfire phenomenon has been responsible for some of California's most destructive blazes.

- **Power Outages:** Windstorms can damage power lines and utility infrastructure, leading to widespread power outages. These outages can disrupt communication, healthcare, transportation, and daily life, especially when they coincide with other emergencies.
- **Structural Damage:** High winds can wreak havoc on buildings and structures, causing roof damage, shattering windows, and even toppling trees onto homes and vehicles. The structural damage can lead to injuries and property loss.
- **Transportation Disruptions:** Wind gusts can create hazardous conditions on the road, making it difficult for vehicles to maintain control. This can lead to accidents and road closures, further complicating evacuation efforts during emergencies.
- **Debris Propagation:** High winds can turn everyday objects, such as outdoor furniture, debris, and vegetation, into projectiles. These flying objects pose a significant threat to both people and property.

4.13.3 Previous Events

BCHD resides within Los Angeles County. Based on information obtained from NOAA/NCEI, the following incidents of Wind occurred in Los Angeles County between January 1, 2019, and December 31, 2023:

High Wind

137 reported events of High Wind or Thunderstorm Wind events have occurred within Los Angeles County from January 1, 2019 and December 31, 2023 according to the NOAA/NCEI Storms Events Database. 1 death was reported from a Thunderstorm Wind event in March 2023.

Disaster Declaration History

Since 2019, one (1) disaster declaration was declared that included Los Angeles County for a Wind event.

Table 66: Los Angeles County - Disaster Declaration – Wind

Disaster Declaration	Hazard	Date	Details
California Severe Winter Storms, Straight-line Winds, Flooding,	Snowstorm/ Straight-line Winds/ Flooding/ Landslides/ Mudslides	February 2023	Incident Period: Feb. 21, 2023 – Jul. 10, 2023 Declaration Date: Apr. 3, 2023

Disaster Declaration	Hazard	Date	Details
Landslides, and Mudslides DR-4699-CA			

4.13.4 Probability of Future Events

Calculating future probability is one of many predictors of future occurrences. **Table 67** provides a summary of the events for Wind, as categorized, and recorded by NOAA/NCI for Los Angeles County between January 1, 2019, and December 31, 2023:

Table 67: Previous Events, Wind

Previous Events, Wind, Los Angeles County, CA	
Event Year	High Wind/Strong Wind
2019	11
2020	21
2021	27
2022	32
2023	46
Total Recorded Events =	137
Total Years =	5
Annual Probability =	100%

Source: NOAA/NCEI

High Wind Annual Probability:

$$\frac{137}{5} \times 100 = \frac{2,740\%}{5} = 548\%$$

Using the NOAA/NCEI database, and calculating probability based on past events, the overall probability of a high wind event occurring in Los Angeles County, where BCHD resides, on an annual basis over the next HMP

planning cycle is 100%. Statistically, there is a 548% chance of a single high wind event occurring on an annual basis, or furthermore BCHD can expect at least 5 wind events to occur in a single year. This categorizes the hazard's future probability of occurrence as **Likely**.

4.13.5 Hazard Risk Ranking

Table 68: Risk Ranking for Wind

Hazard	Impact to Assets			Vulnerability (H+P+B=#) (V=#/3)	Probability (Pb)	Social Vulnerability (SV)	Risk Value (R=V+Pb+SV)	Risk Ranking
	Human Impact (H)	Property Impact (P)	Business Impact (B)					
Wind	2.1	2.9	2.1	2.4	4.1	1	7.5	Medium

4.13.6 Vulnerability and Impact Assessment

Change in Wind Vulnerability

This is the first Local Hazard Mitigation Plan developed for BCHD, so there is no previous benchmark available to assess changes in vulnerability to wind hazards over time. However, the planning process has provided an opportunity to evaluate the potential for wind-related impacts to critical BCHD facilities and operations.

Wind hazards, including strong seasonal wind events and Santa Ana winds, occur intermittently in the region. Although the BCHD Planning Area does not typically experience severe windstorms, high winds can still lead to property damage, falling tree limbs, and power outages that affect facility access and service delivery. BCHD campuses with aging trees or above-ground utility lines may be more vulnerable to these localized impacts.

While there has been no documented increase in wind-related incidents affecting BCHD facilities, changing weather patterns and increasing storm variability may elevate future risk. BCHD has recognized the importance of preventive measures such as tree maintenance and infrastructure hardening to reduce the potential for wind-related disruptions. Continued coordination with utility providers and public works partners will support long-term facility resilience to wind events.

Table 69: Summary of Change to Vulnerability, Wind

2024 LHMP Update Hazards	Decrease in Vulnerability	No Change in Vulnerability	Increase in Vulnerability
Wind		X	

HMPC Vulnerability and Impact Assessment Feedback

Strong winds, whether associated with severe weather systems such as Santa Ana winds, thunderstorms, or other extreme wind events, pose significant risks to the BCHD Planning Area. The overall impact on populations and systems to wind hazards underscores the need for proactive mitigation and preparedness measures. Strategies such as ensuring facilities meet wind-resistant construction standards, maintaining robust backup power systems, and developing contingency plans for service continuity are critical. Additionally, the potential for high wind events to exacerbate urban fire risks, as seen in disasters such as the Los Angeles and Lahaina fires, must be considered. By addressing

these vulnerabilities, BCHD can enhance its ability to protect the health and well-being of the community during and after high wind events.

Impacts on Populations

The population's vulnerability depends on exposure to hazards caused by high winds, including flying debris, structural damage, and cascading impacts like power outages or transportation disruptions. The impacts of wind hazards on the population primarily include injuries caused by flying debris, structural collapses, or fallen trees. Secondary risks include exposure to extreme weather conditions if evacuation or sheltering is required, as well as psychological stress from displacement or damage to homes and communities. Populations most vulnerable to wind hazards include:

Constituents in Older or Poorly Maintained Housing

- Homes with older construction that do not meet modern wind-resistant building codes are more likely to experience roof damage, shattered windows, and structural failure.
- Mobile home constituents are particularly at risk, as these structures are more susceptible to severe wind damage.

Individuals with Access and Functional Needs (AFN)

- Individuals with disabilities or limited mobility may face greater challenges during wind events, including evacuation and access to emergency services if transportation systems are disrupted.
- Power outages caused by strong winds may interrupt critical medical devices, such as ventilators, dialysis machines, and refrigeration for medications.
- Individuals with low vision may experience additional challenges navigating darkened or debris-filled environments during outages.

Homeless Populations

- Individuals experiencing homelessness are particularly at risk due to their exposure to the elements and lack of safe shelter during high wind events.

Children and School Populations

- Schools may be vulnerable to wind damage if mitigation measures like shatter-resistant windows and reinforced roofs are not in place. Children in schools or childcare centers could face injury risks if facilities are damaged.

Outdoor Workers

- Workers in outdoor environments, such as construction workers or landscapers, are at risk of being struck by debris, falling equipment, or unstable structures during high winds.

Individuals Living Alone

- Individuals who live alone may face difficulties in securing shelter, evacuating, or receiving assistance in the event of power outages or other cascading impacts.

Sheltering in Place

If individuals must shelter in place during a wind event, preparedness measures become critical. BCHD clients may need additional resources and support to ensure they can remain safe. Access to backup power, emergency supplies, and communication systems should be assessed. BCHD should continue to link residents to relevant resources, including sheltering assistance if evacuation becomes necessary.

Vulnerability of Systems

BCHD operates critical facilities and services that may be impacted by wind hazards. These systems must be assessed for vulnerabilities to ensure continuity of operations during and after wind events.

BCHD Facilities

- Structural Damage:
 - High winds can damage roofs, windows, and exterior walls of BCHD-owned buildings, especially older structures.
 - Flying debris may break windows or damage HVAC systems, impacting indoor air quality and rendering facilities unsafe for staff and patients.
 - Facilities that may be at risk or have experienced past losses include:
 - Beach Cities Health Center (Owned)
 - AdventurePlex (Owned)
 - Sunrise Assisted Living (Land Lease & Joint Venture Limited Partner)
 - Leap & Bound Child Development Center (Building and Land Lease)
 - Venice Family Clinic - South Bay Family Health Care
- Loss of Power:
 - Wind-related damage to power lines or transformers can cause prolonged outages, disrupting operations at BCHD facilities.
 - Backup generators may be necessary to maintain critical services, but extended outages could strain fuel supplies.
 - Power disruptions can have significant impacts on individuals relying on medical devices, oxygen, and refrigerated medications.
- Access to Facilities:
 - Fallen trees, power poles, or other debris may block roads leading to BCHD facilities, delaying staff, patients, or emergency responders from reaching key locations.

Utilities and Infrastructure Supporting BCHD

- Electrical Systems:
 - Overhead power lines are particularly vulnerable to strong winds, increasing the likelihood of outages.
 - BCHD facilities that rely on consistent electricity for medical equipment, lighting, and communication systems may face operational challenges.
- Communication Systems:
 - Wind damage to telecommunications infrastructure, such as cell towers or fiber optic lines, could disrupt BCHD's ability to communicate with staff, emergency responders, and the public during a wind event.
- Water and Wastewater Systems:
 - Wind events may lead to indirect impacts on water infrastructure, such as pump stations losing power, affecting sanitation and water supply for BCHD facilities.

Public Health Services

- Emergency Health Services:
 - BCHD facilities may face increased demand for medical services during wind events, particularly for treating injuries from flying debris or structural damage.
 - Sheltering operations may be complicated by wind damage to facilities or transportation disruptions.
- Mental Health and Long-Term Recovery:
 - Wind events can create long-term psychological stress for affected residents, increasing demand for BCHD's mental health services.

Critical Resources and Supplies

- Disruption of Supply Chains:
 - Transportation delays caused by debris or road closures may affect BCHD's ability to receive critical medical supplies and equipment.
 - If high winds disrupt fuel deliveries, backup power systems may be compromised.
- Transportation Systems:
 - Wind events can disrupt public transportation systems, including bus routes and transit access, which are critical for residents relying on public transit to reach BCHD facilities.
 - Damage to traffic signals or signage can further complicate access for emergency responders and staff.

- Economic Impacts:
 - Wind-related damages to infrastructure, homes, and businesses can lead to increased demands on BCHD resources for recovery assistance, public health support, and community outreach.

Preparedness and Staff Readiness

BCHD must also ensure its own staffing and facilities are prepared for wind events. Having contingency plans for staff sheltering in place and ensuring buildings are adequately prepared for extreme wind events is necessary to maintain operations and provide community support.

4.13.7 Environmental Impacts

The effect of climate change on wind conditions is not yet fully understood, although there is some evidence that climate change will increase the intensity of coastal wind and high wind events in California. Climate change's impact on the Santa Ana winds remains unknown, it is possible that strong winds associated with storms may occur more frequently, as climate change is expected to cause already intense storms to become more intense in the Southern California area, further exacerbating the primary and secondary impacts winds have on certain hazards.

4.13.8 Critical Facilities and Infrastructure

Critical facilities and infrastructure exposed to high winds are vulnerable to damage. The amount of damage sustained can differ based on the structural components of facilities making them more damage resistant than others. The electrical infrastructure has the potential to face failures as transmission lines become damaged due to high winds. Given the fact that the hazards associated with high wind events are regional in nature, no one area within the BCHD Planning Area is more susceptible to the occurrence of or vulnerability to a high wind incident. As a result, the overall potential for loss to Critical Facilities and Infrastructure encompasses all locations identified.

Table 70: Beach Cities Health District Critical Facilities/Infrastructure

Name of Facility	Address	Asset Value/Potential Loss Data	Community Lifeline Category
Beach Cities Health Center (Owned)	514 N. Prospect Ave.; Redondo Beach, CA 90277	\$62,592,873	Health and Medical
AdventurePlex (Owned)	1701 Marine Ave.; Manhattan Beach, CA 90266	\$7,707,276	Food, Water, Shelter
Sunrise Assisted Living (Land Lease & Joint Venture Limited Partner)	1837 Pacific Coast Highway, Hermosa Beach, CA 90254	\$2,408,000	Health and Medical

Name of Facility	Address	Asset Value/Potential Loss Data	Community Lifeline Category
Leap & Bound Child Development Center (Building and Land Lease)	601 S. Pacific Coast Highway Redondo Beach, CA 90277	\$2,530,649	Food, Water, Shelter
Venice Family Clinic - South Bay Family Health Care (Building and Land Lease)	2114 Artesia Boulevard Redondo Beach, CA 90278	\$192,000	Health and Medical
512 Parking Structure (Owned)	512 N. Prospect Ave.; Redondo Beach, CA 90277	\$10,149,276	Health and Medical
520 Parking Structure (Owned)	520 N. Prospect Ave.; Redondo Beach, CA 90277	\$18,296,150	Health and Medical
514 Surface Parking (Owned)	514 N. Prospect Ave.; Redondo Beach, CA 90277	\$100,000	Health and Medical
BCHD Total	\$103,976,224.00		

4.13.9 Land Use and Development

Severe wind events, including Santa Ana winds and seasonal windstorms, occasionally impact the BCHD Planning Area. These events can result in downed trees, damaged infrastructure, and temporary power outages. While high winds are less frequent and less destructive than other regional hazards, they still pose a risk to above-ground utilities, facility access, and exterior building components.

Development patterns within Manhattan Beach, Hermosa Beach, and Redondo Beach consist largely of dense urban residential and commercial areas with limited open space. BCHD facilities are primarily located in these built environments and are constructed to meet local building codes, which include wind-load requirements designed to minimize structural vulnerability. Because BCHD does not hold land use authority, it relies on local jurisdictions to enforce building code compliance and manage vegetation near structures and critical utility corridors.

As redevelopment or facility upgrades occur, BCHD will continue to ensure that wind resistance is considered in the design, construction, and maintenance of structures. While wind hazards may not drive long-term land use changes, integrating wind resilience into facility planning helps support uninterrupted health services and protects vital infrastructure from avoidable damage.

4.14 Excluded Hazards

During the HMPC discussions on hazard identification, the primary focus was on natural hazards that pose the greatest risk to the BCHD Planning Area. Since this is the first LHMP developed for BCHD, the identified hazards were those deemed of prime concern based on their potential impact on BCHD operations, facilities, and the populations served. While several additional hazards were discussed, they were ultimately excluded from this LHMP due to their nature, eligibility for mitigation funding, or their indirect relationship to natural hazard mitigation.

The following hazards were considered but excluded from this plan:

- **Hazardous Materials:** The release of hazardous materials, whether due to transportation accidents or facility-related incidents, was discussed. However, since hazardous materials incidents are primarily human-caused, they do not qualify for mitigation assistance under FEMA's Hazard Mitigation Assistance (HMA) programs. The potential for hazardous materials releases as a secondary impact of natural disasters (such as earthquakes or flooding) is addressed within relevant hazard sections.
- **Pandemics and Infectious Disease:** While the COVID-19 pandemic highlighted the importance of preparedness for infectious disease outbreaks, pandemics are not considered a hazard that can be mitigated in the same manner as natural disasters. However, secondary public health impacts of natural hazards, such as vector-borne diseases following inland flooding events, are addressed in the relevant hazard sections. BCHD will continue to incorporate infectious disease preparedness within its public health and emergency response planning efforts.

SECTION 5: VULNERABILITY ASSESSMENT

5.1 Vulnerability and Impact Assessment

A risk assessment determines the vulnerability of assets within the BCHD Planning Area by evaluating the inventory of existing property and the population exposed to hazard(s). A quantitative vulnerability assessment is limited to the exposure of buildings and infrastructure to the identified hazards. The vulnerabilities addressed are based upon a risk assessment that includes only natural hazards.

Vulnerability refers to the description of assets within hazard prone areas, including structures, systems, populations, and other community-defined assets, which are susceptible to the effects of identified hazards. This encompasses future assets, considering Capital Improvement Projects, new commercial constructions, or anticipated changes in land use development.

- **Impacts** represent the consequences and effects on each hazard on the assets identified in the vulnerability assessment.
- **Risk**, within the context of hazard mitigation planning, is the potential for damage or loss resulting from the interaction with natural hazards with assets, such as buildings, infrastructure, or natural and cultural resources.

Each identified hazard undergoes a vulnerability and impact assessment utilizing the asset criteria outlined below.

By referring to FEMA's Local Mitigation Planning Policy Guide 2025, the HMPS identified a systematic approach to addressing vulnerabilities and their resulting impacts in the event of a disaster affecting the assets. In certain instances, the impact can only be translated into cost if that particular asset needs to be replaced.

According to FEMA, the assets are:

- People (including underserved communities and socially vulnerable populations)
- Structures (including facilities, community lifelines, and critical infrastructure)
- Systems (including networks and capabilities)
- Natural, historic, and cultural resources
- Activities that have value to the community

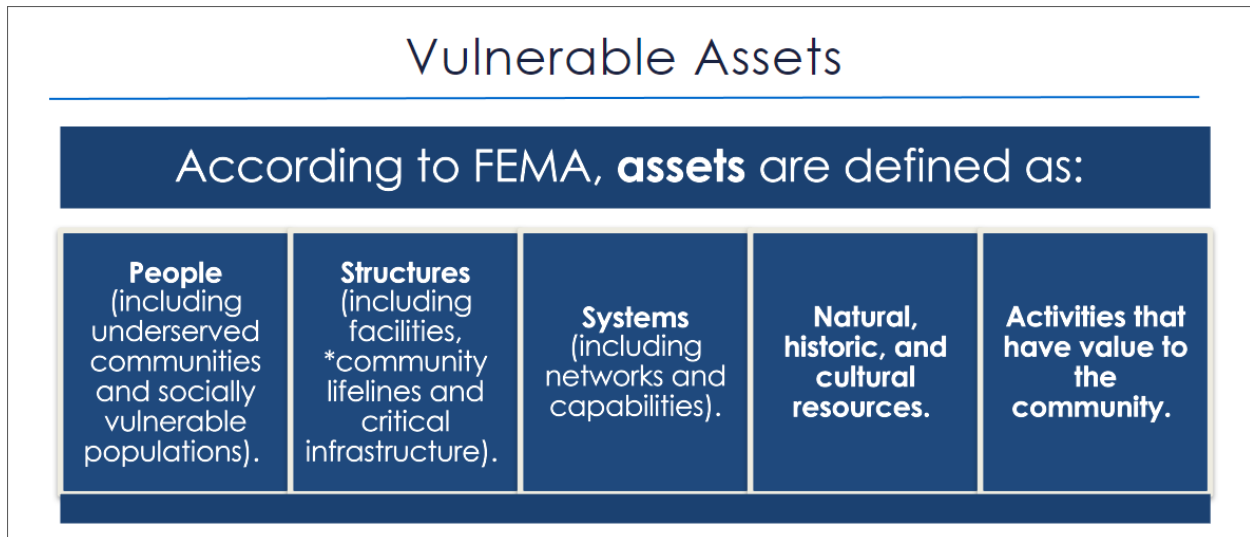
5.1.1 HMPC Engagement

Prior to HMPC Meeting #3, a Vulnerability and Impact Assessment Worksheet was provided to the committee to guide the discussion.

During HMPC Meeting #3 on February 13, 2025, the HMPC was asked to identify the most vulnerable assets in their communities, describe the impacts of natural hazards on those assets, and identify up to three mitigation project suggestions to reduce the impacts of natural hazards on those vulnerable assets. The definition of assets was discussed with the HMPC and can be found in Figure 11. The HMPC reviewed regulation B2-a pertaining to

the Vulnerability and Impact Assessment and discussed the purpose of the worksheet.

Figure 26: Vulnerable Assets Definitions



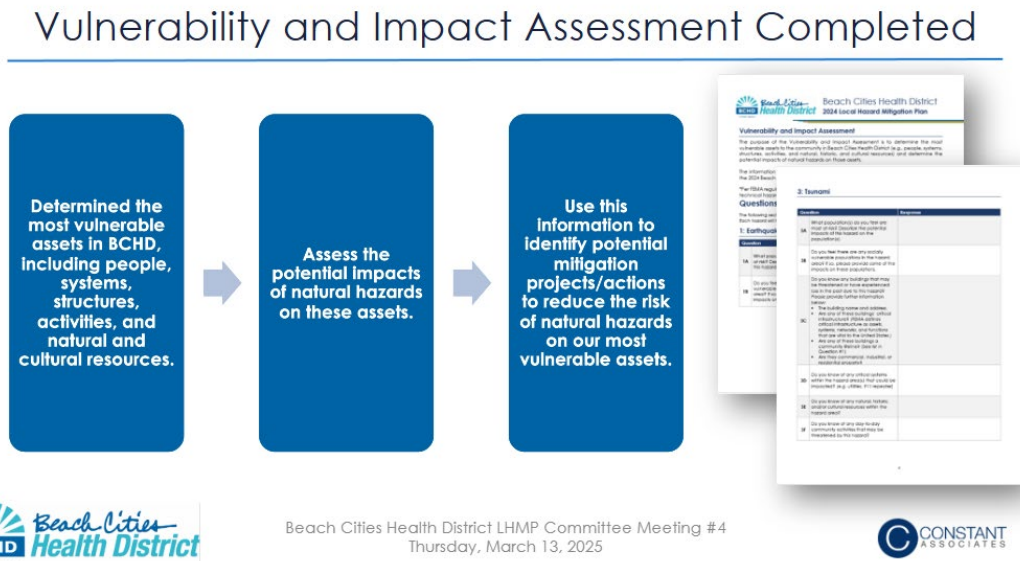
Source: HMPC Meeting #3 Presentation

At the HMPC Meeting #3, a series of questions were discussed to determine the vulnerability and impacts of natural hazards on Beach Cities assets and services. The questions included the following:

1. Identify the most vulnerable assets to each hazard of prime concern
2. Describe the impacts of natural hazards on those assets
3. Identify up to three mitigation projects that could reduce the impacts of natural hazards on the assets you have identified.

Between HMPC Meeting 3 and 4, a vulnerability and impact assessment table was provided to the HMPC with their feedback organized by specific questions relating to vulnerable populations, structures, systems, historical and cultural resources, and activities that have value to the community. During HMPC Meeting 4, the committee reviewed their progress towards completing the Vulnerability and Impact Assessment Worksheet and how that information was relevant to developing hazard mitigation strategies. **Figure 27** shows the progress made towards completing the Vulnerability and Impacts Assessment displayed during HMPC Meeting 4.

Figure 27: Steps Taken Towards the Vulnerability and Impact Assessment



Source: HMPC Meeting #4 Presentation

During Hazard Mitigation Planning Committee (HMPC) Meeting #4, the committee reviewed and provided feedback on the vulnerability and impact assessment, focusing on how various hazards affect BCHD's people, properties, and systems.

Committee members identified the following vulnerable assets:

- People: Older adults, individuals with disabilities, low-income and homeless populations, youth, and individuals with mental health and substance use challenges.
- Structures: BCHD-owned facilities such as the Health Center, AdventurePlex, Center for Health & Fitness, and allcove Beach Cities.
- Systems and Activities: Health programs, support services, emergency preparedness resources, and free community initiatives like the Blue Zones Project and the LiveWell Initiative.

This session helped validate BCHD's understanding of hazard exposure and reinforced the importance of tailoring mitigation strategies to BCHD's specific community needs and service infrastructure.

5.2 Climate Change Vulnerability

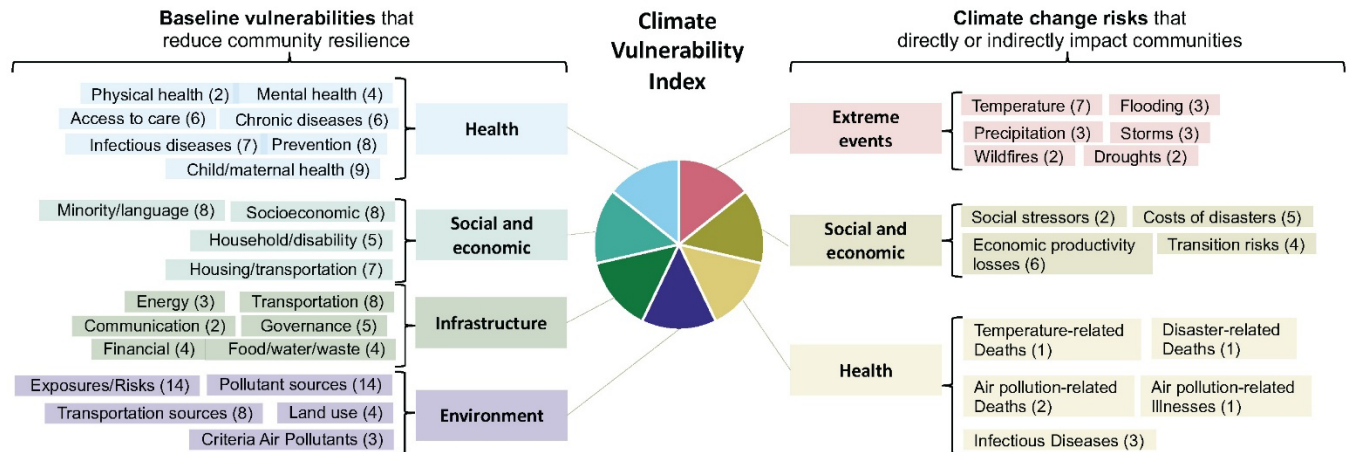
To assess vulnerabilities related to climate change, the HMPC applied the Climate Vulnerability Index (CVI) approach. This methodology evaluates a community's

susceptibility to climate impacts by examining two primary areas: baseline vulnerabilities and projected climate-related risks.

1. **Baseline Vulnerabilities:** These indicators identify pre-existing conditions that may heighten community sensitivity to climate impacts or reflect historical patterns of social inequity. They are grouped into four domains:
 - **Health:** Includes disparities in rates of chronic and infectious illnesses, access to healthcare services, maternal and child health outcomes, mental health, life expectancy, and utilization of preventive care.
 - **Social & Economic:** Builds upon the CDC/ATSDR Social Vulnerability Index, supplemented with additional data such as redlining history in urban communities, populations facing increased risks (e.g., individuals experiencing homelessness or veterans), crime rates, incarceration statistics, housing conditions, and availability of non-profit service providers.
 - **Infrastructure:** Covers critical systems including transportation, power, food supply, water and wastewater services, governance, and public access to physical, financial, and digital resources.
 - **Environment:** Focuses on longstanding environmental burdens, including exposure to pollutants from both area-wide and specific point sources, land use patterns, and overall environmental health risks.
2. **Climate Change Risks:** These risk indicators address both immediate and longer-term climate impacts, grouped into three categories.
 - **Health:** Evaluates projected increases in climate-sensitive illnesses and health issues linked to temperature changes, extreme weather, and pollution.
 - **Social & Economic:** Reflects how climate change may worsen existing social challenges, damage property, reduce productivity, and create economic strain, including through transitions in the energy sector and emissions patterns.
 - **Extreme Events:** Captures the increasing occurrence and intensity of disasters and severe weather conditions related to climate change.

Each domain includes several subcategories, offering a more nuanced view of the various contributing factors. These detailed layers of analysis are illustrated in **Figure 28**.

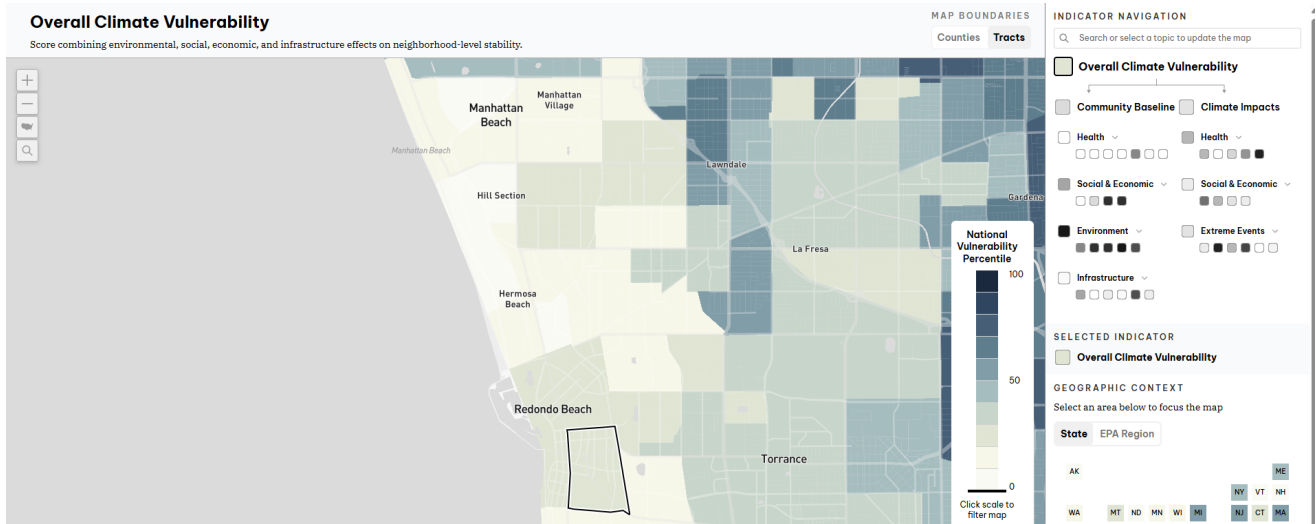
Figure 28: U.S. Climate Vulnerability Index Indicators



Source: [Methodology - The U.S. Climate Vulnerability Index](#)

Based on the CVI Indicators the census tracts within Manhattan Beach, Hermosa Beach, and Redondo Beach, where BCHD resides, range between 9th and 29th on the National Vulnerability Percentile, these rankings place the cities where BCHD resides in the lowest vulnerability nationally. **Figure 29** provides visual representation of the Overall Climate Vulnerability for the highest-ranking census tract between the three cities.

Figure 29: CVI: Census Tract 0603762130



Source: Overall Climate Vulnerability in South Redondo, Redondo Beach, CA | The U.S. Climate Vulnerability Index

5.3 National Flood Insurance Program

FEMA Regulation Checklist: Planning Process	
44 CFR § 201.6(c)(2)(ii)	Documentation of the Plan Update Requirements: B2. Does the plan include a summary of the jurisdiction's vulnerability and the impacts on the community from the identified hazards? Does this summary also address NFIP-insured structures that have been repetitively damaged by floods?
44 CFR § 201.6(c)(3)(ii)	Documentation of the Plan Update Requirements: C2. Does the plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate?
Elements	
B2-c	Q: Does the plan address NFIP-insured structures within each jurisdiction that have been repetitively damaged by floods? A: See Repetitive Loss Properties below
C2-a	Q: Does the plan contain a narrative description or a table/list of their participation activities? A: See NFIP Participation below

Source: FEMA, *Local Mitigation Planning Policy Guide*, Effective April 11, 2025

Established in 1968, the NFIP provides federally backed flood insurance to homeowners, renters, and businesses in communities that adopt and enforce floodplain management ordinances to reduce future flood damage.

NFIP Participation

Beach Cities Health District is exempt from implementing or purchasing flood insurance through NFIP.

Repetitive Loss Properties

RLPs are most susceptible to flood damages; therefore, they have been the focus of flood mitigation programs. Unlike a countrywide program, an FMP for repetitive loss properties involves highly diversified property profiles, drainage issues, and property owner's interest. It also required public involvement processes unique to each RLP area. The objective of an FMP is to provide specific potential mitigation measures and activities to best address the problems and needs of communities with repetitive loss properties. A repetitive loss property is one of which two or more claims of \$1,000 or more have been paid by NFIP within any given ten-year period. According to FEMA resources, none of the Repetitive Loss Properties are owned by BCHD or located in the LHMP project area.

5.4 Planning Area Overall Vulnerability

FEMA Regulation Checklist: Risk Assessment	
44 CFR § 201.6(c)(2)(ii)	Documentation of the Plan Update Requirements: B2. Does the plan include a summary of the jurisdiction's vulnerability and the impacts on the community from the identified hazards?
Element	
B2-a.	Q: Does the plan provide an overall summary of each jurisdiction's vulnerability to the identified hazards? A: See Planning Area Overall Vulnerability below

Source: FEMA, *Local Mitigation Planning Policy Guide, Effective April 11, 2025*

As this is the first LHMP developed for Beach Cities Health District, it establishes a foundational framework for the Special District to assess, mitigate, and manage risks associated with natural hazards. By identifying hazards and vulnerabilities within the planning area, this LHMP enhances BCHD's understanding of the risks it faces, ultimately **increasing** the overall awareness of vulnerability across BCHD's facilities, operations, and the communities it serves.

Since there is no prior LHMP for comparison, this plan does not assess changes in vulnerability from a previous baseline. However, the hazard identification and risk assessment process has revealed key areas where BCHD may be particularly susceptible to natural disasters. Factors such as population trends, changes in climate, and the critical services provided by BCHD further shape the overall vulnerability within the planning area.

By implementing the mitigation actions outlined in this LHMP, BCHD will work to reduce the impacts of natural hazards, strengthen its resilience, and build a more prepared and adaptable framework for future hazard mitigation planning cycles. Future LHMP updates will allow BCHD to measure progress and assess whether mitigation efforts have successfully reduced overall vulnerability across the planning area.

SECTION 6: MITIGATION STRATEGY

6.1 Hazard Mitigation Strategy

The 2025 BCHD LHMP marks BCHD's first formal effort to develop a comprehensive strategy for reducing hazard-related risks across its Planning Area. This plan reflects BCHD's commitment to protecting the health, safety, and well-being of the community by proactively identifying vulnerabilities and implementing long-term, sustainable mitigation actions.

The Mitigation Strategy outlines a coordinated set of measures aimed at minimizing the impacts of natural hazards on residents, critical facilities, infrastructure, essential services, and natural resources. These actions were developed based on the vulnerabilities identified in each hazard profile and tailored to address the specific needs and priorities of the community.

As a foundational document, the 2025 LHMP introduces new mitigation actions designed to fill existing gaps in planning, enhance community resilience, and build a framework for future risk reduction. Each action is aligned with existing planning and policy mechanisms and includes clear roles, responsibilities, and resource considerations to guide implementation and ensure long-term success.

6.2 Mitigation Goals and Actions

Establishing a clear set of hazard mitigation goals provides the foundation for BCHD's vision of creating a safer, healthier, and more resilient community. These goals articulate the district's long-term commitment to reducing risks, safeguarding public health, and minimizing the impacts of disasters on people, property, and essential services.

Mitigation goals serve as guiding principles that shape the development of actionable strategies and projects. Developed collaboratively by the HMPC these goals reflect shared community values, public and stakeholder input, and the district's mission to promote health and well-being across its Planning Area.

Because this is BCHD's first LHMP, the goals were developed from the ground up, drawing on best practices in public health and emergency management, hazard-specific vulnerability assessments, and alignment with relevant regional and local planning frameworks.

All recommended mitigation actions in this plan are designed to support or advance at least one of these goals. The goals are listed in priority order, with the first goal representing the highest strategic importance for BCHD.

FEMA Regulation Checklist: Mitigation Strategy	
44 CFR § 201.6(c)(3)(i)	Documentation of the Plan Update Requirement: C3. Does the plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards?
Element	
C3-a	Q: Does the plan include goals to reduce the risk from the hazards identified in the plan? A: See Mitigation Goals and Actions below

Source: FEMA, *Local Mitigation Planning Policy Guide*, Effective April 11, 2025

Table 71: BCHD LHMP Mitigation Goals and Objectives

BCHD LHMP Mitigation Goals and Objectives	
Goal 1	Significantly reduce risk to life, community lifelines, the environment, property, and infrastructure by planning and implementing whole community risk reduction and resilience strategies.
Goal 2	Build capacity and capabilities to increase disaster resilience among historically underserved populations, individuals with access and functional needs, and communities disproportionately impacted by disasters and climate change.
Goal 3	Incorporate equity metrics, tools, and strategies into all mitigation planning, policy, funding, outreach, and implementation efforts.
Goal 4	Apply the best available science and authoritative data to design, implement, and prioritize projects that enhance resilience to natural hazards and climate change impacts.
Goal 5	Integrate mitigation principles into laws, regulations, policies, and guidance to support equitable outcomes to benefit the whole community.
Goal 6	Significantly reduce barriers to timely, efficient, and effective hazard mitigation planning and action.

6.3 Capabilities Assessment

FEMA Regulation Checklist: Mitigation Strategy	
44 CFR § 201.6(c)(2)(ii)	Documentation of the Plan Update Requirements: C1. Does the plan document each participant's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs?
Elements	
C1-a.	<p>Q: Does the plan describe how the existing capabilities of each participant are available to support the mitigation strategy? Does this include a discussion of the existing building codes and land use and development ordinances or regulations?</p> <p>A: See Capabilities Assessment below</p>
C1-b.	<p>Q: Does the plan describe each participant's ability to expand and improve the identified capabilities to achieve mitigation?</p> <p>A: See Tables 72-75 below</p>

Source: FEMA, Local Mitigation Planning Policy Guide, Effective April 11, 2025

Federal regulations (44 CFR § 201.6(c)(3)(i)) require local hazard mitigation plans to identify goals for reducing long-term vulnerabilities to identified hazards and to describe the capabilities available to support mitigation activities.

As part of the 2025 LHMP, BCHD is committed to integrating hazard mitigation into its ongoing operations and public health programs. This commitment includes collaborating across departments and with partner agencies to ensure that mitigation strategies are woven into planning documents, decision-making processes, and day-to-day operations.

The HMPC assessed BCHD's existing capabilities to identify strengths, gaps, and opportunities for advancing mitigation goals. This assessment also provides a foundation for selecting and implementing feasible and effective mitigation actions.

FEMA identifies four categories of capabilities that support mitigation planning and implementation:

- **Planning and Regulatory Capabilities:** Plans, policies, ordinances, and regulations that guide development, land use, and public health programming, including partnerships with local jurisdictions on General Plans and safety-related initiatives.
- **Administrative and Technical Capabilities:** Staff expertise, technical tools, and resources available to support mitigation actions such as public health professionals, emergency preparedness coordinators, GIS systems, and partnerships with city and county emergency managers.
- **Financial Capabilities:** Access to funding sources such as local budgets, state and federal grants, public health funding streams, and cost-sharing opportunities with regional partners.
- **Education and Outreach Capabilities:** Community health education programs, wellness initiatives, public engagement strategies, and communication

platforms that can be leveraged to increase awareness of hazards and support community resilience.

The table below outlines BCHD's current capabilities within these categories and highlights the resources available to support successful mitigation planning and implementation.

6.3.1 Planning and Regulatory Capabilities

Table 72: Planning and Regulatory Capability Assessment

PLANS	Yes/No	Does the plan address hazards? Can the plan be used to implement mitigation actions? Include date of the most recent plan.
Community Wildfire Protection Plan	No	N/A
Comprehensive/Master Plan	No	N/A
Continuity of Operations (COOP) Plan	No	
Capital Improvement Plan (CIP)	Yes	Hazards are addressed as identified Yes, Capital Investments required for mitigation activities would be incorporated into the District CIP Plan. May 2024 Presented to the Board as part of a 5-Year Financial Outlook.
Economic Development Plan	No	N/A
Emergency Operations Plan (EOP)	Yes	EOP (6/28/23); Earthquake annex also included
Stormwater Management Plan	No	N/A
Transportation Plan	No	N/A
How can these capabilities be expanded and improved to reduce risk?		
BUILDING CODES, PERMITTING, INSPECTIONS	Yes/No	What type of codes? Are codes adequately enforced?
Building Codes	Yes	While BCHD does not have its own building codes, it adheres to the applicable building codes enforced by the Cities of Manhattan Beach, Hermosa Beach, and Redondo Beach, which follow California Building Standards Code (Title 24). Enforcement is managed by each city's Building and Safety Division.

Site plan review requirements	Yes	Site plan reviews are conducted in accordance with local municipal requirements. BCHD projects are subject to the permitting and review processes of the respective city where the project is located.
How can capabilities be expanded and improved to reduce risk?		BCHD can continue to coordinate closely with city planning and building departments to ensure compliance with updated codes, incorporate climate-resilient design standards into future facility projects, and pursue hazard mitigation strategies during renovations or new construction.
LAND USE PLANNING & ORDINANCES	Yes/No	Is the ordinance effective for reducing hazard impacts? Is the ordinance adequately administered and enforced?
Floodplain ordinance	No	N/A
Subdivision ordinance	No	N/A
Zoning ordinance	No	N/A
How can capabilities be expanded and improved to reduce risk?		N/A

6.3.2 Administrative and Technical Capabilities

Administrative and technical capabilities refer to internal personnel, skillsets, tools, and partnerships that support the development and implementation of hazard mitigation strategies. For BCHD, these capabilities are vital for integrating public health expertise into community resilience planning.

Although BCHD is a non-land-use agency, it contributes significant administrative capacity through its public health infrastructure and augments its technical capacity through strategic partnerships with city, county, and regional entities.

See **Table 73** below for details.

Table 73: Administrative and Technical Capabilities

ADMINISTRATION	Yes/No	Describe capability.
Public Health Leadership and Program Managers	Yes	Lead strategic planning, resource allocation, and integration of mitigation efforts into BCHD's broader health and wellness initiatives.
Emergency Preparedness Coordinators	Yes	Responsible for continuity of operations planning (COOP), emergency response coordination, and facilitating collaboration with local jurisdictions and LA County Public Health.
Community Engagement and Outreach Specialists	Yes	Skilled in building relationships with residents, stakeholders, and community-based organizations, particularly those serving vulnerable and underserved populations.
Grant Administrators and Policy Advisors	Yes	Support the pursuit and management of mitigation funding, oversee compliance with federal and state requirements, and align mitigation efforts with BCHD's mission and regional planning efforts.
TECHNICAL STAFF	Yes/No and include if Full Time (FT) or Part Time (PT) position	Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective? Have skills/expertise been used to assess/mitigate risk in the past?
Health Data Analysts and Evaluation Specialists	Yes	Analyze health disparities, demographic data, and social vulnerability indicators to inform risk reduction strategies that address population-specific needs.
GIS and Mapping Support (via partnerships)	Yes	While BCHD does not maintain a dedicated GIS team, it partners with local cities (e.g., Redondo Beach, Hermosa Beach, Manhattan Beach), Los Angeles County, and consultants to access mapping tools and geospatial analysis critical to hazard identification and risk visualization.
Emergency Response Technical Experts	Yes	Through collaboration with fire departments, EMS, and emergency managers in local jurisdictions, BCHD accesses technical knowledge on hazard exposure, facility vulnerability, and response infrastructure.

Public Health Subject Matter Experts	Yes	Specialists in areas such as mental health, environmental health, and chronic disease prevention provide insight into the long-term health impacts of disasters and help develop health-centered mitigation strategies.
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6.3.3 Financial Capabilities

Financial capabilities refer to the fiscal resources a jurisdiction can access to support the development, implementation, and sustainability of hazard mitigation efforts. For BCHD these capabilities include internal funding mechanisms as well as the ability to pursue and manage external funding sources through partnerships, grants, and cost-sharing opportunities.

While BCHD does not have the same revenue-generating authority as a municipality, it leverages its organizational structure, partnerships, and programmatic funding streams to support mitigation-related activities.

Table 74: Financial Capability Assessment

FINANCIAL	Yes/No	Has the funding resource been used in the past and for what type of activities? Could the resource be used to fund future mitigation actions?
General Operating Budget	Yes	<p>Past Use: Supports core staff positions, educational campaigns, wellness programs, and emergency preparedness efforts. Has funded community outreach related to heat, air quality, and COVID-19.</p> <p>Future Use: Yes. Can support staff time, public education, and coordination activities related to mitigation planning, including extreme heat outreach, climate resilience education, and continuity of operations planning (COOP).</p>
Program-Specific Funds (e.g., grant-funded initiatives)	Yes	<p>Past Use: Used to implement PHEP-funded emergency preparedness activities, senior wellness outreach, mental health programs, and chronic disease prevention—many of which reduce vulnerability to hazards.</p> <p>Future Use: Yes. These funds can continue to support preparedness, heat and air quality resilience, evacuation support for at-risk populations, and mental health recovery programs tied to disaster mitigation.</p>
Board-Approved Strategic Funding	Yes	<p>Past Use: The BCHD Board has allocated funds for strategic health initiatives, such as the development of the allcove Beach Cities youth mental health center, which received additional state and federal funding.</p> <p>Potential for Future Use: The Board can approve funding for future mitigation projects aligned with BCHD's strategic priorities, including infrastructure enhancements and community resilience programs.</p>
Federal and State Grants	Yes	<p>Past Use: BCHD has successfully secured grants from various agencies. Notably, the California Department of Health</p>

FINANCIAL	Yes/No	Has the funding resource been used in the past and for what type of activities? Could the resource be used to fund future mitigation actions?
		<p>Care Services awarded \$6.3 million for the construction of the allcove Beach Cities center.</p> <p>Potential for Future Use: BCHD can pursue grants from FEMA, the CDC, and other agencies to fund mitigation projects such as hazard assessments, infrastructure improvements, and community preparedness programs.</p>
Local and Regional Partnerships	Yes	<p>Past Use: Collaborations with local cities and Los Angeles County have facilitated joint health initiatives, including regional preparedness events and health education campaigns.</p> <p>Potential for Future Use: These partnerships can be leveraged for cost-sharing in mitigation projects, coordinated emergency response planning, and shared resources for community resilience efforts.</p>

6.3.4 Education and Outreach Capabilities

Table 75 below lists education and outreach capabilities. These capabilities include programs such as fire safety programs, hazard awareness campaigns, public information, or communications offices. Education and outreach capabilities can be used to inform the public on current and potential mitigation activities. BCHD supports a wide array of education and outreach programs that directly and indirectly contribute to disaster resilience. These initiatives promote public awareness, preparedness, mental health, and wellness all of which are essential components of community-based mitigation.

Table 75: Education and Outreach Capability Assessment

PROGRAM / ORGANIZATION	Access / Eligibility (Yes/No)	Describe program/organization and how it relates to disaster resilience and mitigation. Could the program/organization help implement future mitigation activities?
Free Community Programs ¹³	Yes	<p>BCHD offers free workshops and events focused on physical fitness, mental wellness, healthy eating, and mindfulness. These programs build personal and community resilience by strengthening physical and mental health—factors critical for enduring and recovering from disasters.</p> <p>Relevance to Disaster Resilience: A healthier, more informed population is better equipped to manage stressors associated with hazards and recover more quickly.</p> <p>Potential for Future Use: Yes. These programs could be leveraged for mitigation education campaigns (e.g., preparing for extreme heat or poor air quality) or integrated with mental health preparedness outreach.</p>

¹³ <https://www.bchd.org/>

PROGRAM / ORGANIZATION	Access / Eligibility (Yes/No)	Describe program/organization and how it relates to disaster resilience and mitigation. Could the program/organization help implement future mitigation activities?
Classes and Workshops	Yes	<p>BCHD regularly hosts in-person and virtual classes on stress reduction, chronic disease prevention, emotional resilience, and emergency preparedness.</p> <p>Relevance to Disaster Resilience: These classes enhance public knowledge and provide tools that residents can use to stay safe and self-sufficient during emergencies.</p> <p>Potential for Future Use: Yes. Emergency-specific workshops could be expanded or tailored to specific hazards (e.g., wildfire smoke, extreme heat events, coastal storms).</p>
LiveWell Kids Program	Yes	<p>A school-based curriculum focused on nutrition, physical activity, mindfulness, and social-emotional learning.</p> <p>Relevance to Disaster Resilience: Builds long-term community resilience by equipping children with coping skills and awareness of health and safety—skills that are vital during emergencies.</p> <p>Potential for Future Use: Yes. Hazard-specific content (e.g., earthquake safety or heat awareness) could be incorporated into the curriculum, fostering early awareness and resilience among youth and parents.</p>
Substance Use Prevention & Mental Health Support (School Programs)	Yes	<p>Programs delivered in schools focused on reducing risk behaviors and strengthening mental health through awareness and support services.</p> <p>Relevance to Disaster Resilience: Mental health is a crucial factor in coping with disasters. Reducing pre-existing stressors makes youth and families more resilient.</p> <p>Potential for Future Use: Yes. These platforms could integrate trauma-informed care education, post-disaster stress management, and mental health recovery strategies for school communities.</p>
Health Resource Directory	Yes	<p>A centralized directory of health and social service resources available to the public. Includes listings for mental health, housing, medical care, and emergency response.</p> <p>Relevance to Disaster Resilience: Provides crucial access to support services before, during, and after emergencies. Helps vulnerable populations navigate aid and recovery services.</p> <p>Potential for Future Use: Yes. The directory could include hazard-specific resources (e.g., cooling centers, evacuation transport, air quality shelters) and be promoted as part of BCHD's mitigation</p>
allcove Beach Cities	Yes	<p>A youth-focused integrated care center offering mental health support, physical health services, substance use counseling, and educational/workforce support.</p> <p>Relevance to Disaster Resilience: Builds psychological resilience among youth—a population vulnerable to trauma during and after disasters.</p> <p>Potential for Future Use: Yes. Programming could include disaster mental health education, resilience training, and serve as a post-disaster recovery hub for young people.</p>

How can capabilities be expanded and improved to reduce risk?	See Opportunities for Enhancement below.
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6.3.5 Opportunities for Enhancement

Based on the capability assessment, BCHD possesses a range of administrative, technical, educational, and financial mechanisms that support hazard mitigation and community resilience. In addition to these existing strengths, BCHD has several opportunities to expand and refine its capabilities to further reduce risks, particularly for vulnerable and health-impacted populations.

The following opportunities for enhancement are organized into four categories: planning and policy, administrative/technical, financial, and outreach.

Planning and Policy Opportunities

Integrate Mitigation into Strategic Planning

BCHD can incorporate key findings from the 2025 LHMP—such as community vulnerabilities, health equity impacts, and public health-specific mitigation actions—into its next Strategic Plan update. Aligning this LHMP with BCHD’s vision for healthy, resilient communities will institutionalize mitigation as a health protection strategy.

Preparedness and Resilience Framework for Facilities

BCHD can explore adopting a formal resilience framework for its owned and operated facilities (e.g., the 514 building and future Healthy Living Campus) to ensure continuity of operations, energy resilience, and hazard-safe design.

Administrative and Technical Opportunities

Training and Capacity Building

BCHD staff involved in preparedness, planning, and wellness outreach can benefit from hazard mitigation training through Cal OES and FEMA programs. These include:

- Cal OES Hazard Mitigation Grant Program (HMGP) application workshops
- Prepare California Jumpstart grant readiness training
- FEMA’s Emergency Management Institute courses on public health and mitigation integration

Cross-training staff ensures broader institutional awareness of risk reduction strategies.

Designate a Mitigation Lead

BCHD can revise internal job descriptions or designate a Mitigation Coordinator to serve as a point of contact for LHMP implementation, future updates, and interagency coordination.

Enhance GIS and Data Tools

While BCHD does not currently maintain in-house GIS staff, it can partner with local cities or

county departments to expand access to spatial analysis tools. Story Maps, the CDC's Social Vulnerability Index, and platforms like Climate Mapping for Resilience and Adaptation (CMRA) could be used to target risk reduction interventions.

Financial Opportunities

Align Mitigation Goals with Grant Planning

BCHD can expand its capacity to pursue funding for public health resilience by aligning LHMP strategies with available funding streams, such as:

- FEMA and HMGP grants
- CDC or HHS preparedness and climate-health funds
- State funding through Cal OES, including Prepare California Jumpstart
- Public-private partnerships with health-focused foundations

Dedicated Grant Support

BCHD may appoint or train staff members to monitor mitigation-related grant opportunities and support Notice of Intent (NOI) submissions, grant writing, and post-award management.

Cost-Sharing and MOUs

BCHD can formalize cost-sharing arrangements with partner cities and agencies to co-fund mitigation education, sheltering initiatives, continuity of care planning, and capital improvements that benefit multiple jurisdictions.

Outreach Opportunities

Enhance Public Education and Community Engagement

Building on existing outreach capacity, BCHD can:

- Publish the adopted LHMP on its website and link it through its Health Resource Directory
- Present plan goals and updates at public events, stakeholder forums, and partner meetings
- Share mitigation tips and updates via newsletters, social media, and wellness campaigns

These strategies help normalize mitigation as part of overall health protection.

Expand Partnerships with Vulnerable Population Advocates

BCHD already serves many high-risk populations. Future efforts can enhance mitigation equity by deepening engagement with:

- Senior centers (e.g., Joslyn Center)
- Behavioral health providers
- South Bay paratransit and mobility services
- School-based wellness coordinators

- Cultural and language-specific community organizations

These partners can help co-design mitigation strategies, distribute risk communication materials, and ensure inclusive planning.

Use Diverse Communication Tools

To increase accessibility and participation, BCHD will continue using hybrid formats (virtual/in-person) for outreach and meetings. Written materials, video content, and infographics may be translated into Spanish and other prevalent languages. Communications will be distributed through BCHD's website, newsletters, social media, local news outlets, and direct outreach with trusted community partners.

Commitment to Continuous Improvement

BCHD is committed to maintaining a dynamic and inclusive mitigation planning process. After-action reviews of public health emergencies (e.g., COVID-19) and environmental events (e.g., heat waves, wildfire smoke) will be used to identify lessons learned and inform future LHMP updates. Through consistent engagement, training, and collaboration, BCHD will ensure that hazard mitigation remains a central component of public health protection and community well-being.

6.4 Hazard Mitigation Projects/Actions

FEMA Regulation Checklist: Mitigation Strategy	
44 CFR § 201.6(c)(3)(ii)	Documentation of the Plan Update Requirement: C4. Does the plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure?
Elements	
C4-a	Q: Does the plan include an analysis of a comprehensive range of actions/projects that each jurisdiction considered to reduce the impacts of hazards identified in the risk assessment? A: See BCHD Hazard Mitigation Strategy below

Source: FEMA, Local Mitigation Planning Policy Guide, Effective April 11, 2025

During the project identification process for the 2025 plan update, the HMPC completed a vulnerability and impact assessment on each project. This assessment provided a summary of the key elements addressed for the assessment of each project proposed:

- Description of the project
- Natural hazard associated with the project
- Critical infrastructure addressed
- Impacts of the project due to a natural hazards
- Community lifelines aligned with the project
- Essential systems aligned and impacted

- Impacts to natural, historical and cultural resources
- Associated activities of value to the community
- Project alignment with a building or structure
- Project completion time
- Responsible party
- Potential funding sources

All mitigation actions considered during this planning cycle are included in **Table 77** below. As this is the first LHMP developed for BCHD, no mitigation actions were removed or excluded from the list following consideration by the HMPC. Each entry in **Table 77** reflects either a current priority action or a longer-term strategy that aligns with BCHD's hazard reduction goals and capabilities.

6.5 Prioritization Process

FEMA Regulation Checklist: Mitigation Strategy	
44 CFR § 201.6(c)(3)(iv)	Documentation of the Plan Update Requirement: C5. Does the plan contain an action plan that describes how the actions identified will be prioritized (including a cost-benefit review), implemented, and administered by each jurisdiction?
Element	
C5-a	Q: Does the plan describe the criteria used for prioritizing actions? A: See Table 76: STAPLE+E Criteria

Source: FEMA, *Local Mitigation Planning Policy Guide*, Released Effective April 11, 2025

The prioritization process was necessary as most mitigation projects represent a significant investment of financial and personal resources. By evaluating each project's degree of feasibility and the level of costs versus benefits, BCHD could determine which projects should be included based on the available resources. The HMPC used the STAPLE-E method to prioritize these projects. This rating system uses seven variables to evaluate each project's overall feasibility and appropriateness. These variables assisted in prioritizing the actions by weighing the cost of the action versus the benefits the action will produce, in addition to other prioritization factors. **Table 76** describes the Project Prioritization Criteria: STAPLE-E in detail.

The identification and analysis process of mitigation actions allowed the HMPC to reach consensus as to where the collective priorities exist. The priority of the HMPC was to focus on saving lives and property first with consideration to the benefit-cost aspect of a project. This was not a quantitative analysis. HMPC members were asked to identify their priority actions through a rating exercise. A rating value was collected from each HMPC member for each mitigation strategy based on the STAPLE-E evaluation criteria (Social, Technical, Administrative, Political, Legal, Economic, and Environmental). A three-point scale was used to determine the priority level for each criterion. An average of these values was calculated to provide the STAPLE-E value or prioritization value for that mitigation action. A calculation was used to combine the overall Risk Value and STAPLE-E Value to determine the project prioritization value.

The prioritization of the actions helps guide future efforts in determining where funds should be spent. A formalized benefit cost analysis will be completed when/if the HMPC chooses to apply for mitigation grant funding.

Table 76: STAPLE+E Criteria

STAPLE+E Criteria	
Evaluation Category	Source of Information
Social: 1 - Low community acceptance/priority 2 - Moderate community acceptance/priority 3 - High community acceptance/priority	Mitigation actions are acceptable to the community if they do not adversely affect a particular segment of the population, do not cause relocation of lower income people, and if they are compatible with the communities' social and cultural values.
Technical: 1 - Short-term fix 2 - Medium-term fix 3 - Long-term fix	Mitigation actions are technically most effective if they provide long-term reduction of losses and have minimal secondary adverse impacts.
Administrative: 1 - High staffing, outside help needed 2 - Some staffing, no outside help needed 3 - Low staffing, no outside help needed	Mitigation actions are easier to implement if the jurisdiction has the necessary staffing and funding.
Political: 1 - Low political support/acceptance 2 - Moderate political support/acceptance 3 - High political support/acceptance	Mitigation actions can truly be successful if all stakeholders have been offered an opportunity to participate in the planning process and if there is public support for the action.
Legal: 1 - Many legal barriers 2 - Some legal barriers 3 - Minimal legal barriers	It is critical that the jurisdiction or implementing agency have the legal authority to implement and enforce a mitigation action.
Economic: 1 - High Cost (\$\$\$): Greater than \$250,000 2 - Medium Cost (\$\$): \$100,001 to \$250,000 3 - Low Cost (\$) : \$100,000 or less	Budget constraints can significantly deter the implementation of mitigation actions. Hence, it is important to evaluate whether an action is cost-effective, as determined by a cost-benefit review, and possible to fund.

STAPLE+E Criteria

Environmental:

1 - Many environmental impacts

2 - Some environmental impacts

3 - Few environmental impacts

Sustainable mitigation actions that do not have an adverse effect on the environment, that comply with Federal, State, and local environmental regulations, and that are consistent with the community's environmental goals, have mitigation benefits while being environmentally sound.

6.5.1 Cost Estimates

To meet the cost estimation requirements of the hazard mitigation planning process, the HMPC identified relative cost estimates based on their understanding of the mitigation action intent and their experience developing identical or similar programs/implementing projects. Three cost categories based on the City's typical cost criteria were used for budgeting purposes:

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

Based on the criteria and evaluation processes used during Plan development, the HMPC prepared a prioritized list of mitigation actions to improve BCHD's resilience to hazard events. **Table 77** lists the mitigation actions, the prioritization of each action, and other details related to implementation.

6.6 Mitigation Action Plan

6.6.1 Previous Mitigation Actions

This Local Hazard Mitigation Plan represents the first formal hazard mitigation planning effort undertaken by BCHD. As such, there are no previously documented mitigation projects or actions that were developed, funded, or implemented under a prior LHMP.

Although BCHD has not previously engaged in hazard mitigation planning under FEMA guidelines, the organization has taken meaningful steps to enhance facility resilience, improve operational continuity, and support community well-being during hazard events. Recent capital projects, such as the design of the Healthy Living Campus, incorporate resilience-focused elements including seismic safety considerations, stormwater management infrastructure, and sustainable design strategies that align with hazard mitigation best practices.

With the adoption of this plan, BCHD will begin tracking mitigation actions in a formal and structured manner. Future updates to the LHMP will include evaluations of project implementation progress, effectiveness, and adjustments based on evolving risk conditions and organizational priorities.

FEMA Regulation Checklist: Plan Update	
44 CFR § 201.6(d)(3)	Documentation of the Plan Update Requirement: E2. Was the plan revised to reflect changes in development and was the plan revised to reflect changes in priorities and progress in local mitigation efforts?
Element	
E2-b	Q. Does the Plan include a status update for all mitigation actions identified in the previous mitigation plan? 44 CFR 201.6(d)(3) A. N/A

Source: FEMA, *Local Mitigation Planning Policy Guide*, Effective April 11, 2025

6.6.2 New Actions/Mitigation Projects

FEMA Regulation Checklist: Mitigation Strategy	
44 CFR § 201.6(c)(3)(ii)	Documentation of the Plan Update Requirement: C4. Does the plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure?
44 CFR §201.6(c)(3)(iii)	Documentation of the Plan Update Requirement: C5. Does the plan contain an action plan that describes how the actions identified will be prioritized (including a cost-benefit review), implemented, and administered by each jurisdiction?
Elements	
C4-b	<p>Q: Does the plan include one or more action(s) per jurisdiction for each of the hazards as identified within the plan's risk assessment?</p> <p>A: See Table 77: BCHD Hazard Mitigation Strategy</p>
C5-b	<p>Q: Does the plan provide the position, office, department or agency responsible for implementing/administrating the identified mitigation actions, as well as potential funding sources and expected time frame?</p> <p>A: See Table 77: BCHD Hazard Mitigation Strategy</p>

Source: FEMA, *Local Mitigation Planning Policy Guide, Effective April 11, 2025*

The hazard mitigation strategy identifies the actions BCHD will take to reduce risk and improve resilience across its facilities and community Planning Area. These actions were developed using the findings from the hazard risk assessment, the capability assessment, and input from internal stakeholders. As this is BCHD's first Local Hazard Mitigation Plan, the strategy serves as a starting point for building a structured and proactive approach to risk reduction.

Table 77 below outlines proposed mitigation projects by hazard type. Each project includes a description, potential funding sources, responsible parties, estimated costs, and an expected implementation timeframe. These actions support BCHD's goal of maintaining safe and accessible services while reducing long-term vulnerability to natural hazards affecting the region.

Table 77: BCHD Hazard Mitigation Strategy

Beach Cities Health District LHMP							
Hazards	Project Name	Project Description	Potential Funding Source	Responsible Parties	Cost Estimate	Time Frame	Priority (STAPLE+E)
All Hazards	AH1: Educational Materials	Create tailored educational materials for populations that are particularly vulnerable to natural hazards	FEMA HMGP, General Fund	Emergency Management	\$100K-\$250K	1-3 Years	21 (High)
	AH2: Backup Generator	Install backup generators for the Emergency Operations Center	FEMA HMGP, General Fund	Emergency Management, Public Works	\$50K-\$100K	1-3 Years	19 (High)
Drought	D1: Water Conservation Education Campaign	Implement a public awareness campaign to promote water-saving behaviors and practices	California Department of Water Resources (DWR) Water Use Efficiency Grants, General Funds	Emergency Management, Public Affairs	\$50K-\$100K	6-12 months	19 (High)

Beach Cities Health District LHMP							
Hazards	Project Name	Project Description	Potential Funding Source	Responsible Parties	Cost Estimate	Time Frame	Priority (STAPLE+E)
	D2: Irrigation Efficiency Upgrades	Install smart irrigation systems in landscapes and around BCHD campuses to reduce water use	California State Water Efficiency and Enhancement Program (SWEEP), General Funds	Public Works	\$200K-\$500K	1-3 Years	14 (Medium)
	D3: Drought Emergency Plan	Access and develop a Drought Emergency Plan	FEMA HMGP, General Fund	Emergency Management, Public Works	\$50K-\$100K	3-5 Years	18 (High)
Earthquake	E1: Seismic Retrofit Program	Retrofit critical facilities to meet current State seismic safety standards	FEMA HMGP, General Funds	BCHD Maintenance, Emergency Management	\$2M-\$5M	3-5 Years	18 (High)
	E2: Nonstructural Seismic Mitigation	Secure or replace nonstructural elements (e.g., shelving, HVAC units) in BCHD	FEMA HMGP, California Earthquake Brace & Bolt Program, General Funds	BCHD Maintenance, Emergency Management	\$500K-\$1M	1-3 Years	14 (Medium)

Beach Cities Health District LHMP							
Hazards	Project Name	Project Description	Potential Funding Source	Responsible Parties	Cost Estimate	Time Frame	Priority (STAPLE+E)
		public facilities					
	E3: Public Awareness Campaign	Educate BCHD staff and residents on earthquake preparedness through workshops and materials	General Funds	Emergency Management, Human Resources	\$50K-\$100K	6-12 months	18 (High)
	E4: Emergency Supplies Storage	Stockpile emergency supplies (e.g., water, food, medical kits) in BCHD community locations	General Funds	Emergency Management	\$100K-\$500K	1-2 Years	19 (High)
Extreme Heat	EH1: Heat Wave Emergency Notification	Develop a system to notify BCHD residents of heat waves and cooling resources	FEMA HMGP, General Fund	Emergency Management, IT Department	\$100K-\$500K	1-2 Years	18 (High)
Inland Flooding	IF1: Community Flood Risk	Educate BCHD staff and	FEMA HMGP, General Funds	Emergency Management, Public Affairs	\$50K-\$100K	6-12 Months	14 (Medium)

Beach Cities Health District LHMP							
Hazards	Project Name	Project Description	Potential Funding Source	Responsible Parties	Cost Estimate	Time Frame	Priority (STAPLE+E)
	Awareness Program	members about flood risks and preparedness measures, introducing flood insurance options					
	IF2: Sandbags for BCHD Facilities	Ensure that an adequate supply of sandbags is available for facilities in flood prone areas	FEMA HMGP, General Funds	Emergency Management, Public Works	\$50K-\$100K	2-5 Years	18 (High)
Landslide	L1: Landslide Risk Education	Develop materials to educate BCHD staff and residents about landslide risks and prevention strategies	General Funds	Emergency Management, Human Resources	\$50K-\$100K	6-12 months	19 (High)

Beach Cities Health District LHMP							
Hazards	Project Name	Project Description	Potential Funding Source	Responsible Parties	Cost Estimate	Time Frame	Priority (STAPLE+E)
Tsunami	T1: Tsunami Evacuation Route Signage	Develop and install clear signage around BCHD facilities and campuses for tsunami evacuation routes and safe zones	General Funds	Emergency Management, Public Safety	\$100K-\$250K	1-2 Years	20 (High)
Urban Wildfire	UW1: Vegetation Management Plan	Develop and implement a plan for reducing hazardous vegetation in high-risk areas	FEMA Fire Mitigation Assistance Grant (FMAG), General Fund	Public Works	\$2M-\$5M	2-5 Years	18 (High)
	UW2: Emergency Access Road Maintenance	Maintain and upgrade roads for fire response vehicles	General Funds	Public Works	\$500K-\$1M	1-2 Years	14 (Medium)
Wind	W1: Tree Maintenance Program	Trim trees near power lines and vulnerable structures to	CalFire Urban Forestry Program, General Fund	Public Works Department, Utility Companies	\$100K-\$500K	Ongoing	16 (High)

Beach Cities Health District LHMP							
Hazards	Project Name	Project Description	Potential Funding Source	Responsible Parties	Cost Estimate	Time Frame	Priority (STAPLE+E)
		reduce wind hazards					

Mitigation Action Goals

FEMA Regulation Checklist: Risk Assessment	
44 CFR § 201.6 (c)(3)(i)	Documentation of the Plan Update Requirements: C.3 Does the plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards?
Element	
C3-a	<p>Q: Does the plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards?</p> <p>A: See Mitigation Action Goals below</p>

Source: FEMA, *Local Mitigation Planning Policy Guide*, April 11, 2025

Table 78: Mitigation Project AH.1

Project Number	AH.1
Goal/Objective Being Met	Goal 1, Goal 2, Goal 3
Hazards to be Mitigated	All Hazards
Community Lifeline	Safety and Security
Vulnerability and Impact Statement	BCHD serves a diverse population including older adults and individuals with access and functional needs. Many community members may not be aware of natural hazard risks or how to prepare for them. This project addresses these vulnerabilities by providing inclusive, accessible materials to build awareness and preparedness.
Project Description	Create tailored educational materials for populations that are particularly vulnerable to natural hazards.
Responsible Party	BCHD Emergency Management
Estimated Cost	\$100K–\$250K
Estimated Timeline	1–3 Years
Potential Funding Source	FEMA HMGP, General Fund
Priority Level (STAPLE-E)	21 (High)

Table 79: Mitigation Project AH.2

Project Number	AH.2
Goal/Objective Being Met	Goal 1, Goal 4, Goal 6
Hazards to be Mitigated	All Hazards
Community Lifeline	Safety and Security
Vulnerability and Impact Statement	Power outages during emergencies could disrupt BCHD operations and services. This project ensures continuity of operations and uninterrupted support for vulnerable populations during hazard events.
Project Description	Install backup generators for the Emergency Operations Center.
Responsible Party	BCHD Emergency Management
Estimated Cost	\$50K–\$100K
Estimated Timeline	1–3 Years
Potential Funding Source	FEMA HMGP, General Fund
Priority Level (STAPLE-E)	19 (High)

Table 80: Mitigation Project D.1

Project Number	D.1
Goal/Objective Being Met	Goal 1, Goal 2, Goal 3
Hazards to be Mitigated	Drought
Community Lifeline	Food, Water, Shelter
Vulnerability and Impact Statement	BCHD plays a role in community sustainability. Promoting water conservation helps reduce regional demand and supports long-term drought resilience, especially for vulnerable populations.
Project Description	Implement a public awareness campaign to promote water-saving behaviors and practices.
Responsible Party	BCHD Emergency Management, Public Affairs
Estimated Cost	\$50K–\$100K

Estimated Timeline	6–12 Months
Potential Funding Source	California DWR Water Use Efficiency Grants, General Funds
Priority Level (STAPLE-E)	19 (High)

Table 81: Mitigation Project D.2

Project Number	D.2
Goal/Objective Being Met	Goal 1, Goal 4, Goal 5
Hazards to be Mitigated	Drought
Community Lifeline	Food, Water, Shelter
Vulnerability and Impact Statement	Older irrigation systems may lead to water waste during drought periods. Upgrading to efficient systems helps conserve water and reduce operational costs.
Project Description	Install smart irrigation systems in landscapes and around BCHD campuses to reduce water use.
Responsible Party	BCHD Public Works
Estimated Cost	\$200K–\$500K
Estimated Timeline	1–3 Years
Potential Funding Source	California SWEEP, General Funds
Priority Level (STAPLE-E)	14 (Medium)

Table 82: Mitigation Project D.3

Project Number	D.3
Goal/Objective Being Met	Goal 1, Goal 2, Goal 3
Hazards to be Mitigated	Drought
Community Lifeline	Food, Water, Shelter
Vulnerability and Impact Statement	BCHD currently lacks a formal drought response framework. Developing a plan ensures preparedness, coordination, and continuity of services during future drought emergencies.

Project Description	Access and develop a Drought Emergency Plan.
Responsible Party	BCHD Emergency Management, Public Works
Estimated Cost	\$50K–\$100K
Estimated Timeline	3–5 Years
Potential Funding Source	FEMA HMGP, General Fund
Priority Level (STAPLE-E)	18 (High)

Table 83: Mitigation Project E1

Project Number	E.1
Goal/Objective Being Met	Goal 1, Goal 2, Goal 3
Hazards to be Mitigated	Earthquake
Community Lifeline	Health and Medical
Vulnerability and Impact Statement	BCHD's Beach Cities Health Center and other critical facilities may be vulnerable to structural failure during a major earthquake. Retrofitting will protect essential services and preserve life safety.
Project Description	Retrofit critical facilities to meet current State seismic safety standards.
Responsible Party	BCHD Maintenance, Emergency Management
Estimated Cost	\$2M–\$5M
Estimated Timeline	3–5 Years
Potential Funding Source	FEMA HMGP, General Funds
Priority Level (STAPLE-E)	18 (High)

Table 84: Mitigation Project E.2

Project Number	E.2
Goal/Objective Being Met	Goal 1, Goal 2, Goal 4
Hazards to be Mitigated	Earthquake
Community Lifeline	Health and Medical

Vulnerability and Impact Statement	Nonstructural hazards pose injury and damage risks even when buildings remain structurally sound. Securing these elements improves safety for staff and visitors during seismic events.
Project Description	Secure or replace nonstructural elements (e.g., shelving, HVAC units) in BCHD public facilities.
Responsible Party	BCHD Maintenance, Emergency Management
Estimated Cost	\$500K–\$1M
Estimated Timeline	1–3 Years
Potential Funding Source	FEMA HMGP, Earthquake Brace & Bolt Program, General Funds
Priority Level (STAPLE-E)	14 (Medium)

Table 85: Mitigation Project E.3

Project Number	E.3
Goal/Objective Being Met	Goal 1, Goal 2, Goal 3
Hazards to be Mitigated	Earthquake
Community Lifeline	Safety and Security
Vulnerability and Impact Statement	Many BCHD clients and staff may lack knowledge on how to respond during an earthquake. Increasing awareness improves individual and organizational readiness.
Project Description	Educate BCHD staff and residents on earthquake preparedness through workshops and materials.
Responsible Party	BCHD Emergency Management, Human Resources
Estimated Cost	\$50K–\$100K
Estimated Timeline	6–12 Months
Potential Funding Source	General Funds
Priority Level (STAPLE-E)	18 (High)

Table 86: Mitigation Project E.4

Project Number	E.4
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Goal/Objective Being Met	Goal 1, Goal 2
Hazards to be Mitigated	Earthquake
Community Lifeline	Safety and Security
Vulnerability and Impact Statement	During emergencies, supply chains may be disrupted. Stockpiling resources ensures BCHD facilities can support staff and community members until external assistance arrives.
Project Description	Stockpile emergency supplies (e.g., water, food, medical kits) in BCHD community locations.
Responsible Party	BCHD Emergency Management
Estimated Cost	\$100K–\$500K
Estimated Timeline	1–2 Years
Potential Funding Source	General Funds
Priority Level (STAPLE-E)	19 (High)

Table 87: Mitigation Project EH.1

Project Number	EH.1
Goal/Objective Being Met	Goal 1, Goal 2, Goal 3
Hazards to be Mitigated	Extreme Heat
Community Lifeline	Health and Medical
Vulnerability and Impact Statement	Extreme heat disproportionately affects older adults and those with medical conditions. A targeted notification system supports timely outreach and resource distribution to at-risk individuals during heat events.
Project Description	Develop a system to notify BCHD members of heat waves and cooling resources.
Responsible Party	BCHD Emergency Management, IT Department
Estimated Cost	\$100K–\$500K
Estimated Timeline	1–2 Years
Potential Funding Source	FEMA HMGP, General Fund

Priority Level (STAPLE-E)	18 (High)
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Table 88: Mitigation Project IF.1

Project Number	IF.1
Goal/Objective Being Met	Goal 1, Goal 2, Goal 3
Hazards to be Mitigated	Inland Flooding
Community Lifeline	Food, Water, Shelter
Vulnerability and Impact Statement	Localized flooding can disrupt services and damage property. Increasing awareness among BCHD staff and the community supports preparedness and promotes resilience through flood insurance participation.
Project Description	Educate BCHD staff and residents about flood risks and preparedness measures, introducing flood insurance options.
Responsible Party	BCHD Emergency Management, Public Affairs
Estimated Cost	\$50K–\$100K
Estimated Timeline	6–12 Months
Potential Funding Source	FEMA HMGP, General Funds
Priority Level (STAPLE-E)	14 (Medium)

Table 89: Mitigation Project IF.2

Project Number	IF.1
Goal/Objective Being Met	Goal 1, Goal 6
Hazards to be Mitigated	Inland Flooding
Community Lifeline	Food, Water, Shelter
Vulnerability and Impact Statement	Stormwater backups and heavy rains can result in minor flooding near entrances and low-lying areas. Pre-positioning sandbags protects BCHD property and ensures continued access to services.
Project Description	Ensure that an adequate supply of sandbags is available for facilities in flood prone areas.

Responsible Party	BCHD Emergency Management, Public Works
Estimated Cost	\$50K–\$100K
Estimated Timeline	2–5 Years
Potential Funding Source	FEMA HMGP, General Funds
Priority Level (STAPLE-E)	18 (High)

Table 90: Mitigation Project L.1

Project Number	L.1
Goal/Objective Being Met	Goal 1, Goal 2, Goal 3
Hazards to be Mitigated	Landslide
Community Lifeline	Safety and Security
Vulnerability and Impact Statement	While landslide risk is low in the BCHD Planning Area, awareness and preparedness among staff and community members remain important. This project enhances resilience by increasing understanding of site-specific risks and response actions.
Project Description	Develop materials to educate BCHD staff and residents about landslide risks and prevention strategies.
Responsible Party	BCHD Emergency Management, Human Resources
Estimated Cost	\$50K–\$100K
Estimated Timeline	6–12 Months
Potential Funding Source	General Funds
Priority Level (STAPLE-E)	19 (High)

Table 91: Mitigation Project T.1

Project Number	T.1
Goal/Objective Being Met	Goal 1, Goal 2, Goal 5
Hazards to be Mitigated	Tsunami
Community Lifeline	Safety and Security

Vulnerability and Impact Statement	Although BCHD facilities are outside high-risk tsunami inundation zones, improved evacuation signage ensures all individuals, including visitors and those with access and functional needs, can evacuate quickly and safely if needed.
Project Description	Develop and install clear signage around BCHD facilities and campuses for tsunami evacuation routes and safe zones.
Responsible Party	BCHD Emergency Management, Public Safety
Estimated Cost	\$100K–\$250K
Estimated Timeline	1–2 Years
Potential Funding Source	General Funds
Priority Level (STAPLE-E)	20 (High)

Table 92: Mitigation Project UW.1

Project Number	UW.1
Goal/Objective Being Met	Goal 1, Goal 4
Hazards to be Mitigated	Urban Wildfire
Community Lifeline	Safety and Security
Vulnerability and Impact Statement	While wildfire risk is low in BCHD's area, overgrown vegetation near infrastructure could pose risks during extreme heat or fire events. A proactive vegetation plan reduces that risk.
Project Description	Develop and implement a plan for reducing hazardous vegetation in high-risk areas.
Responsible Party	BCHD Public Works
Estimated Cost	\$2M–\$5M
Estimated Timeline	2–5 Years
Potential Funding Source	FEMA Fire Mitigation Assistance Grant (FMAG), General Fund
Priority Level (STAPLE-E)	18 (High)

Table 93: Mitigation Project UW.2

Project Number	UW.2
Goal/Objective Being Met	Goal 1, Goal 5
Hazards to be Mitigated	Urban Wildfire
Community Lifeline	Safety and Security
Vulnerability and Impact Statement	Ensuring that emergency vehicles can access BCHD facilities during wildfire or evacuation events is critical to life safety. This project enhances mobility and emergency coordination.
Project Description	Maintain and upgrade roads for fire response vehicles.
Responsible Party	BCHD Public Works
Estimated Cost	\$500K-\$1M
Estimated Timeline	1-2 Years
Potential Funding Source	General Funds
Priority Level (STAPLE-E)	14 (Medium)

Table 94: Mitigation Project W.1

Project Number	W.1
Goal/Objective Being Met	Goal 1, Goal 4, Goal 6
Hazards to be Mitigated	Wind
Community Lifeline	Energy
Vulnerability and Impact Statement	High winds may cause tree limbs to damage facilities or knock out power. Regular tree maintenance reduces the risk of infrastructure damage and service disruption at BCHD sites.
Project Description	Trim trees near power lines and vulnerable structures to reduce wind hazards.
Responsible Party	BCHD Public Works Department, Utility Companies
Estimated Cost	\$100K-\$500K
Estimated Timeline	Ongoing
Potential Funding Source	CalFire Urban Forestry Program, General Fund
Priority Level (STAPLE-E)	16 (High)

SECTION 7: PLAN MAINTENANCE

The BCHD LHMP is intended to be a dynamic and evolving document that informs and guides mitigation efforts over time. As new information emerges, conditions change, or progress is made in implementing mitigation actions, the plan will require periodic updates to remain relevant and effective. Key elements of this ongoing process include monitoring, evaluating, and updating the LHMP to ensure it continues to meet the needs of BCHD and the communities it serves.

BCHD is committed to maintaining an inclusive approach to hazard mitigation planning. Throughout the development of this LHMP, stakeholders, staff, and the community were actively engaged in identifying risks and prioritizing mitigation strategies. This collaborative approach will be carried forward in future plan updates to ensure the LHMP remains comprehensive and reflective of current conditions.

To maintain the plan's effectiveness, BCHD will conduct an annual review of the LHMP and its implementation. This review will be led by designated staff in coordination with local agencies, community organizations, and other key stakeholders. Should changes in personnel occur, new representatives will be appointed to ensure all relevant departments and organizations remain actively involved in the planning process. By regularly evaluating and updating the LHMP, BCHD will continue to strengthen its resilience and ability to mitigate the impacts of natural hazards.

FEMA Regulation Checklist Plan Maintenance	
44 CFR § 201.6(c)(4)(i)	Documentation of the Plan Update Requirements: D2. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating, and updating the mitigation plan within a five-year cycle?
Elements	
D2-a	Q: Does the plan describe the process that will be followed to track the progress/status of the mitigation actions identified within the Mitigation Strategy, along with when this process will occur and who will be responsible for the process? A: See Table 95 below
D2-b	Q: Does the plan describe the process that will be followed to evaluate the plan for effectiveness? This process must identify the criteria that will be used to evaluate the information in the plan, along with when this process will occur and who will be responsible. A: See Plan Evaluation below
D2-c	Q: Does the plan describe the process that will be followed to update the plan, along with when this process will occur and who will be responsible for the process? A: See Updating the Plan below

Source: FEMA, *Local Mitigation Planning Policy Guide*, Effective April 11, 2025

Table 95: Plan Maintenance Schedule

Plan Component	When	How	Who
Monitoring	Twice per year	Obtain status updates on mitigation actions. Compile progress reports. Identify mid-course corrections.	Emergency Preparedness Administrator
Evaluating	Once per year or after a disaster event	Use the BCHD Strategic Roadmap to evaluate if the plans goals were achieved. Record lessons learned.	Emergency Preparedness Administrator, HMPC
Updating	Every 5 years, or after a disaster event	Review the plan using FEMA's Plan Review Tool (PRT) and update as necessary.	Emergency Preparedness Administrator, HMPC, Members of the Public

7.1 Plan Monitoring and Situational Change

Plan monitoring means tracking how the plan is carried out over time, including goals, actions, integration with other plans, and public involvement. The HMPC will remain responsible for monitoring and updating the Plan, including evaluating the effectiveness of the Plan and its mitigation actions. BCHD's Chief Engagement Officer in coordination with the HMPC will develop a quarterly monitoring report, or when triggered by situational change. This report will be used for situational awareness on mitigation action progress and to ensure stakeholders continue to provide regular feedback.

The report will address the following:

- Is the mitigation project under, over, or on budget?
- Is the mitigation project behind, ahead of, or on schedule?
- Are there any changes in BCHD's capabilities which impact the LHMP?
- Are there any changes in BCHD's hazard risk?
- Has the mitigation project/action been initiated, or is its initiation planned?
- Is the current process of prioritizing mitigation projects/actions appropriate and accurate?
- Has the current method of incorporating mitigation project/actions yielded a comprehensive action and project strategy to address seen and unforeseen hazards?
- If applicable, has participation in a mitigation action collaboration been regular?
- Was a negative result caused directly or indirectly by insufficient levels of public outreach?

- If any, what plan updates occurred, what did they occur, and what is their impact?

7.2 Plan Evaluation

Plan evaluation extends beyond routine monitoring by assessing whether the LHMP is effectively meeting its intended goals. For BCHD, as a Special District responsible for public health and community well-being, evaluating the plan ensures that mitigation efforts remain aligned with evolving hazards, health trends, and operational priorities. Regular evaluations will allow BCHD to identify areas for improvement, integrate new data, and adjust mitigation strategies as necessary.

The following events or conditions will prompt a formal evaluation of the LHMP:

- Occurrence of a Hazard – Any natural disaster or emergency that impacts the district will be analyzed to assess the plan's effectiveness in mitigating risks and supporting response efforts.
- Training or Exercise – After-action reviews from trainings and exercises will be used to evaluate the applicability and practicality of mitigation strategies within the LHMP.
- Significant Changes to BCHD Operations – Organizational changes, shifts in public health priorities, or the expansion of BCHD facilities and services may necessitate adjustments to the mitigation plan.
- Completion of a Mitigation Project – As mitigation projects are implemented, their effectiveness will be reviewed to determine if additional measures are needed or if priorities should be adjusted.
- Regulatory or Policy Changes – Updates to local, state, or federal policies related to emergency preparedness and hazard mitigation will be incorporated to maintain compliance and best practices.

By continuously evaluating the LHMP, BCHD will ensure that its mitigation strategies remain effective, actionable, and relevant to the communities it serves. Findings from evaluations will be incorporated into future updates, ensuring that the plan remains a valuable tool for reducing risks and enhancing resilience.

7.3 Updating the Plan

The BCHD LHMP will be reviewed and updated at least once, every five years, to ensure it remains relevant and effective. As factors such as emerging health risks, advancements in technology, and changes in community demographics evolve, BCHD will update the plan to reflect new best practices and hazard conditions.

7.3.1 Annual Review Progress Worksheet

Each year, BCHD will conduct an internal review of the LHMP to assess progress on mitigation actions, evaluate any new hazard data, and determine if updates are necessary. BCHD staff, in coordination with key constituents, will document findings and identify any adjustments that may be needed to improve the plan's effectiveness.

7.3.2 Mitigation Progress Project Reports

Mitigation actions will be regularly evaluated to determine their effectiveness in reducing risk and enhancing community resilience. Departments or partner agencies responsible for implementing mitigation projects will provide progress reports to BCHD, outlining completed actions, challenges encountered, and any necessary modifications to project objectives. For projects funded by FEMA mitigation grants, FEMA quarterly reports may serve as the preferred reporting tool.

7.3.3 LHMP Planning Team Roundtable

In the third year following plan adoption, BCHD will convene a roundtable discussion with key stakeholders to review annual progress reports, identify emerging hazards, and determine necessary updates for the next LHMP cycle. This collaborative effort will help refine hazard vulnerability assessment and inform the development of new mitigation strategies.

7.3.4 Update Process Tasks

The following process will be undertaken for the next LHMP update. The following tasks will be conducted:

- Convening of the HMPC and continuation of stakeholder and public outreach.
- Identification of new plans, studies, reports and technical information that pertain to BCHD vulnerabilities.
- Validation or updating of the hazard list.
- Updating of hazard profiles to include events that occurred since the last plan.
- Validation and/or updating of the Capabilities Assessment.
- Validation or updating BCHD assets as applicable.
- Updating the risk assessment based on the above.
- Updating the mitigation strategy based on the new risk assessment as applicable
- Addressing changes in BCHD development and priorities.
- Documenting and describing the plan update process.

7.4 Continued Public Involvement in Plan Maintenance

FEMA Regulation Checklist Plan Maintenance	
44 CFR § 201.6(c)(4)(iii)	Documentation of the Plan Update Requirement: D1. Is there discussion of how each community will continue public participation in the plan maintenance process?
Element	
D1-a	Q: Does the plan describe how communities will continue to seek future public participation after the plan has been approved?

	A: See Continued Public Involvement in Plan Maintenance below
--	---

Source: FEMA, *Local Mitigation Planning Policy Guide, Effective April 11, 2025*

BCHD is committed to maintaining public engagement throughout the lifecycle of this LHMP. Ongoing community involvement is essential to ensure that residents, stakeholders, and individuals with AFN have opportunities to contribute to mitigation planning efforts, share concerns, and stay informed about hazard risks and preparedness strategies.

BCHD will provide multiple avenues for public participation to encourage continued dialogue and feedback, including:

- Hosting public meetings to discuss mitigation initiatives and gather input from residents, including AFN community members.
- Using BCHD's website and social media platforms to share updates, conduct surveys, and collect community feedback on evolving risks.
- Participating in public events, such as health fairs, community wellness expos, and preparedness workshops, to raise awareness of hazard mitigation efforts.
- Engaging with partner agencies and local organizations to ensure outreach efforts are inclusive and accessible to vulnerable populations.
- Collaborating with emergency response partners and healthcare providers to align mitigation efforts with community health and safety initiatives.
- Providing multilingual communications and accessible materials to ensure all community members receive critical hazard mitigation information.

Additionally, BCHD will incorporate hazard mitigation initiatives into its broader planning and budgetary processes, ensuring that mitigation projects receive continued attention and funding. Public input gathered through annual budget reviews, outreach events, and surveys will be documented and integrated into future updates to the LHMP.

7.5 Integration into Other Local Planning Mechanisms

FEMA Regulation Checklist Plan Maintenance	
44 CFR § 201.6(c)(4)(ii)	Documentation of the Plan Update Requirements: D3. Does the plan describe a process by which each community will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate?
Elements	
D3-a	Q: Does the plan describe the process the community will follow to integrate the ideas, information and strategy of the mitigation plan into other planning mechanisms? A: See Integration into Other Local Planning Mechanisms below
D3-b	Q: Does the plan identify the planning mechanisms for each plan participant into which the ideas, information and strategy from the mitigation plan may be integrated? A: See Integration into Other Local Planning Mechanisms below

Source: FEMA, *Local Mitigation Planning Policy Guide, Effective April 11, 2025*

Integration into Other Planning Mechanisms

Although BCHD is not a governing body, it plays a critical role in supporting emergency preparedness, response, recovery, and now hazard mitigation throughout the Beach Cities region. BCHD is committed to integrating hazard mitigation principles into its ongoing planning, service delivery, and partnership efforts, and to ensuring its LHMP aligns with and supports broader community resilience goals led by local governments and partner agencies.

As a health-focused special district, BCHD contributes to mitigation planning through community education, health and wellness programming, public information campaigns, and coordination with local jurisdictions on emergency planning and community outreach. Moving forward, BCHD will work to incorporate the goals, risk findings, and mitigation actions identified in this LHMP into the following BCHD initiatives and plans, as appropriate:

- Emergency Preparedness Program and Training Materials
- Continuity of Operations (COOP) Plan
- Health and Human Services Program Planning
- Facility and Infrastructure Planning and Maintenance
- Blue Zones Project and LiveWell Initiatives
- Community Education Campaigns and Outreach Strategies

Where appropriate, BCHD will also share relevant findings from the LHMP with city and county partners and collaborate on cross-jurisdictional mitigation activities. BCHD will seek opportunities to align its work with city-level General Plans, Safety Elements, and Emergency Operations Plans particularly in Manhattan Beach, Hermosa Beach, and Redondo Beach as well as with Los Angeles County's hazard mitigation and disaster response frameworks as necessary.

BCHD staff will continue to coordinate with city emergency managers, the Area G Disaster Management Area Coordinator (DMAC), and Los Angeles County agencies to ensure community needs, especially those of medically vulnerable and underserved populations, are represented in regional hazard mitigation efforts. This includes aligning preparedness programming with local hazard risks and supporting mitigation actions that address health equity, mental health, aging populations, and infrastructure resilience.

As BCHD updates its internal plans or creates new strategic initiatives, BCHD will aim to embed hazard mitigation strategies where feasible and monitor the progress of mitigation actions identified in this LHMP. In doing so, BCHD will strengthen its role as a key partner in reducing long-term risk and promoting health-based resilience throughout the Beach Cities region.

APPENDIX A: HAZARD MITIGATION PLANNING COMMITTEE

A.1 HMPC Outreach and Participation

A1.1 Email Invitations

The BCHD Planning Committee invited community members and stakeholders to four committee meetings. All invitations were sent, at a minimum, via email. The following table was used to document correspondence.

Table 96: Email Invitations

#	Community Lifeline	Organization/Agency/City Department	Contact Name	Title	Email
1	Safety and Security	City of Redondo Beach	Mike Witzansky	City Manager	mike.witzansky@redondo.org
2	Safety and Security	City of Hermosa Beach	Suja Lowenthal	City Manager	suja@hermosabeach.gov
3	Safety and Security	City of Manhattan Beach	Bruce Moe	City Manager	bmoe@manhattanbeach.gov
4	Safety and Security	City of Palos Verdes Estates	Kerry Kallman	City Manager	citymanager@pvestates.org
5	Safety and Security	City of Redondo Beach Fire	Patrick Butler	Fire Chief	patrick.butler@redondo.org
6	Safety and Security	City of Hermosa Beach Fire	Maurice Wright	Emergency Management Coordinator	mwright@hermosabeach.gov
7	Safety and Security	City of Manhattan Beach Fire	Mike Lang	Fire Chief	mlang@manhattanbeach.gov
8	Safety and Security	City of Palos Verdes Estates			
9	Safety and Security	City of Redondo Beach Police	Joe Hoffman	Police Chief	joe.hoffman@redondo.org
10	Safety and Security	City of Hermosa Beach Police	Paul LeBaron	Police Chief	plebaron@hermosabeach.gov
11	Safety and Security	City of Manhattan Beach Police	Rachel Johnson	Police Chief	rjohnson@manhattanbeach.gov
12	Safety and Security	City of Palos Verdes Estates	Luke Hellinga	Police Chief	lhellinga@pvestates.org

#	Community Lifeline	Organization/Agency/City Department	Contact Name	Title	Email
13	Food, Water, and Shelter	City of Redondo Beach	Andrew Winje	Public Works Director	andrew.winje@redondo.org
14	Food, Water, and Shelter	City of Hermosa Beach	Joseph Sanclemente	Public Works Director	jsanclemente@hermosabeach.gov
15	Food, Water, and Shelter	City of Manhattan Beach	Erick Lee	Public Works Director	elee@manhattanbeach.gov
16	Food, Water, and Shelter	City of Palos Verdes Estates	Steve Loriso	Public Works City Engineer	sloriso@pvestates.org
17	Food, Water, and Shelter	Greater Long Beach and South Bay American Red Cross	Amy Papageorges	Executive Director	amy.papageorges@redcross.org
18	Food, Water, and Shelter	Redondo Beach Salvation Army	Fabio Simoes	Executive Director	fabio.simoes@usw.salvationarmy.org
19	Food, Water, and Shelter	Beach Cities Health District Community Services	Emily Brosius	Director	emily.brosius@bchd.org
20	Health and Medical	LA County Department of Health, Emergency Preparedness & Response	Stella Fogelman	Director	sfogleman@ph.lacounty.org
21	Health and Medical	Beach Cities Mental Health	Kevin Niehaus	Executive & Clinical Director	info@beachcitiesmh.org
22	Communications	South Bay Regional Public Communications Authority	Bruce Moe	City Manager	bmoe@manhattanbeach.gov
23	Communications	Netrix	Kevin Chan	BCHD IT Manager	bchdsd@netrixllc.com
24	Transportation	Los Angeles Department of Transportation	Laura Rubio-Cornejo	General Manager	ladot.southerndistrict@lacity.org
25	Transportation	Beach Cities Transit	Cameron Harding	Director	BCT@redondo.org
26	Transportation	Los Angeles World Airports	John Ackerman	CEO	infoline@lawa.org
27	Hazardous Materials	United States Environmental Protection Agency- Region 9	Michael Regan	Administrator	Regan.Michael@epa.gov
28	Hazardous Materials	The BioClean Team	Stacy Houston	Founder	support@thebiocleanteam.com

#	Community Lifeline	Organization/Agency/City Department	Contact Name	Title	Email
29	Safety and Security	City of Manhattan Beach	Amanda MacLennan	Emergency Coordinator	amaclennan@manhattanbeach.gov
30	Safety and Security	Redondo Beach Fire Department	Isaac Yang	Division Chief-Operations	issac.yang@redondo.org
31	Safety and Security	Area G Disaster Management	Brandy Villanueva	Area G Disaster Management Area Coordinator	bvillanueva@areag-laco.org

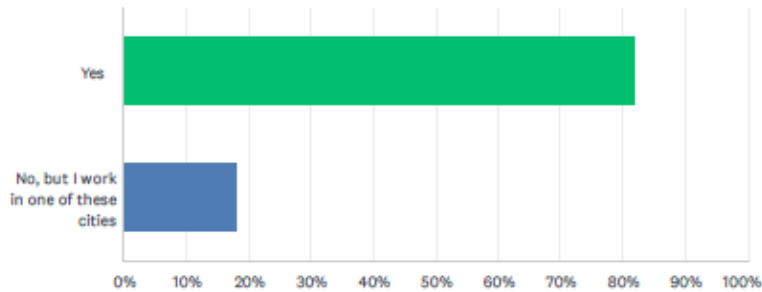
APPENDIX B: LHMP SURVEY RESULTS

As part of the Beach Cities Health District's (BCHD) effort to develop its first-ever Local Hazard Mitigation Plan (LHMP), a public survey was launched to gather input from residents and individuals working in Hermosa Beach, Manhattan Beach, and Redondo Beach. The survey was open to the public from Monday, September 16 to Friday, May 2, 2025, and received a total of 138 responses. These responses provided valuable insight into community perceptions of local hazards, past experiences with disasters, and priorities for future mitigation strategies. The results helped shape the risk assessment and informed the development of equitable, community-driven mitigation actions within the LHMP.

Beach Cities Health District - Local Hazard Mitigation Plan (LHMP)

Q1 Are you a resident of Hermosa Beach, Manhattan Beach, or Redondo Beach?

Answered: 138 Skipped: 0

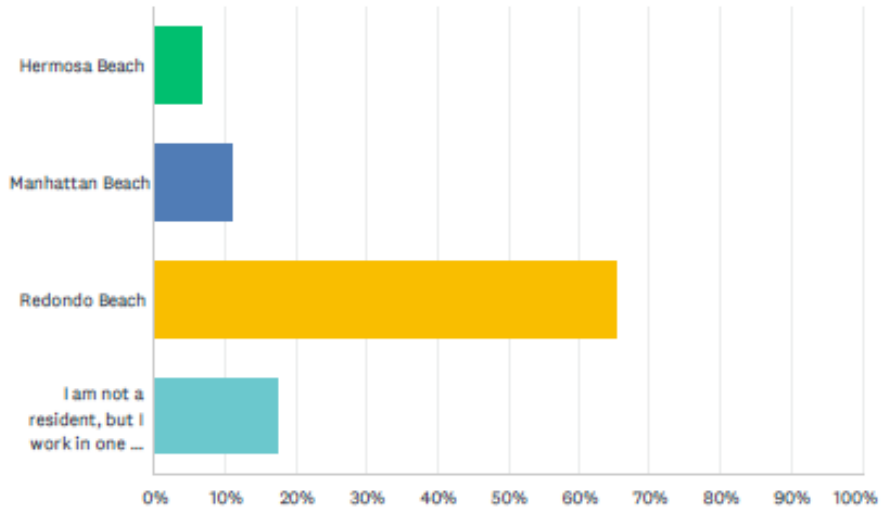


ANSWER CHOICES	RESPONSES	
Yes	81.88%	113
No, but I work in one of these cities	18.12%	25
TOTAL		138

Beach Cities Health District - Local Hazard Mitigation Plan (LHMP)

Q2 If yes, please indicate which city you reside in.

Answered: 138 Skipped: 0

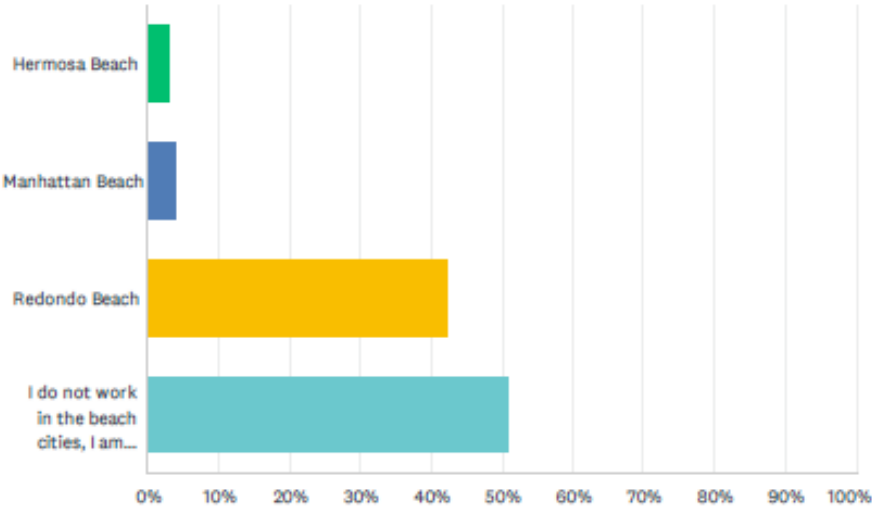


ANSWER CHOICES	RESPONSES
Hermosa Beach	6.52% 9
Manhattan Beach	10.87% 15
Redondo Beach	65.22% 90
I am not a resident, but I work in one of these cities	17.39% 24
TOTAL	138

Beach Cities Health District - Local Hazard Mitigation Plan (LHMP)

Q3 If you work in the beach cities, please indicate which city you work in

Answered: 132 Skipped: 6

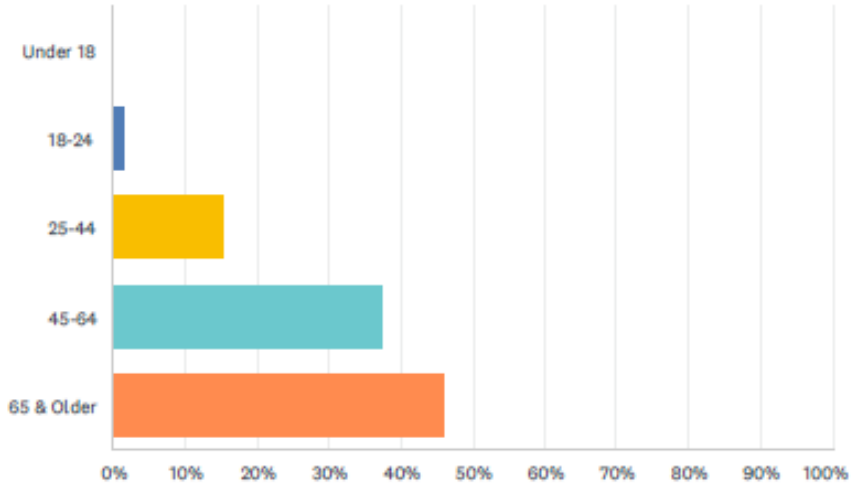


ANSWER CHOICES	RESPONSES
Hermosa Beach	3.03% 4
Manhattan Beach	3.79% 5
Redondo Beach	42.42% 56
I do not work in the beach cities, I am a resident	50.76% 67
TOTAL	132

Beach Cities Health District - Local Hazard Mitigation Plan (LHMP)

Q4 In which age group do you belong?

Answered: 137 Skipped: 1

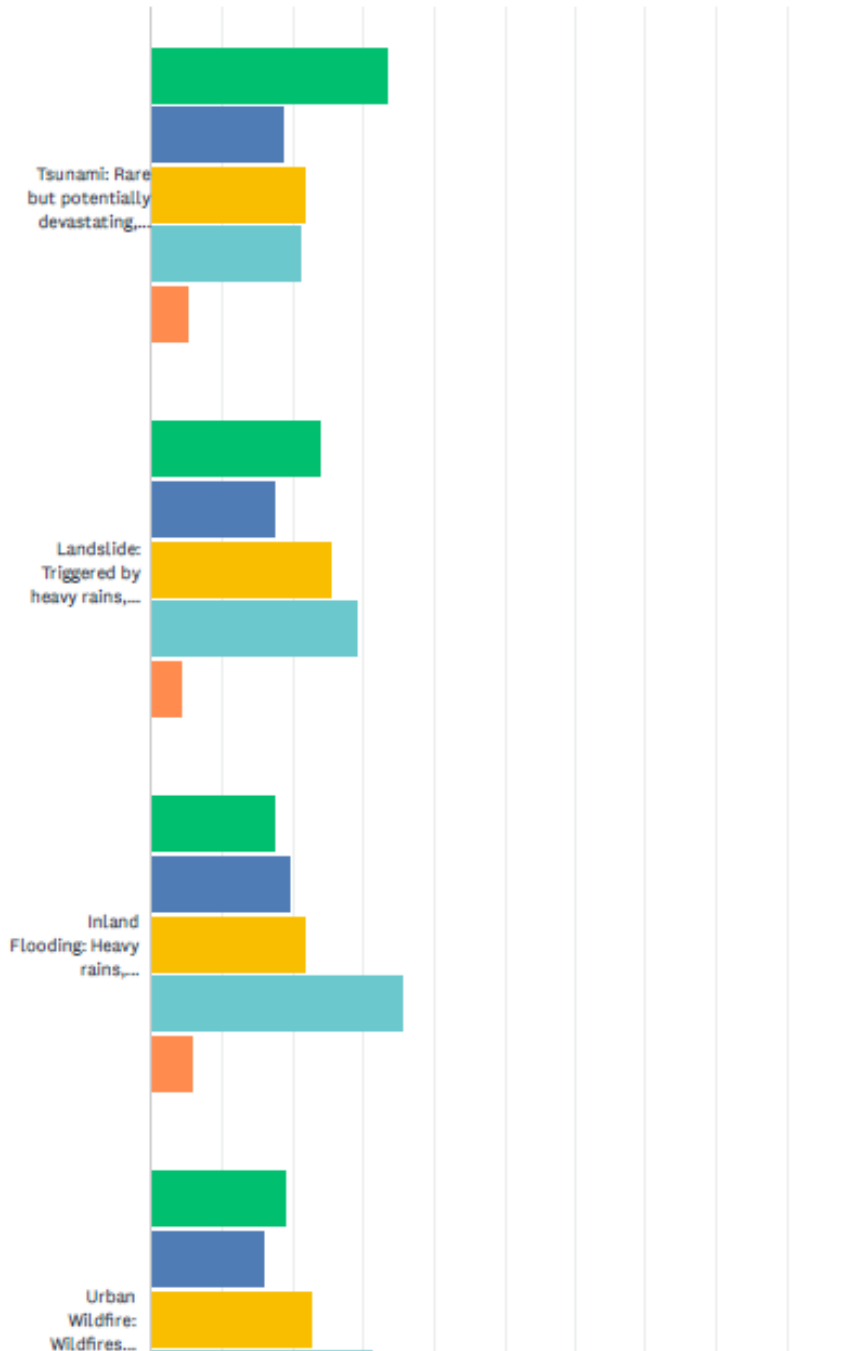


ANSWER CHOICES	RESPONSES	
Under 18	0.00%	0
18-24	1.46%	2
25-44	15.33%	21
45-64	37.23%	51
65 & Older	45.99%	63
TOTAL		137

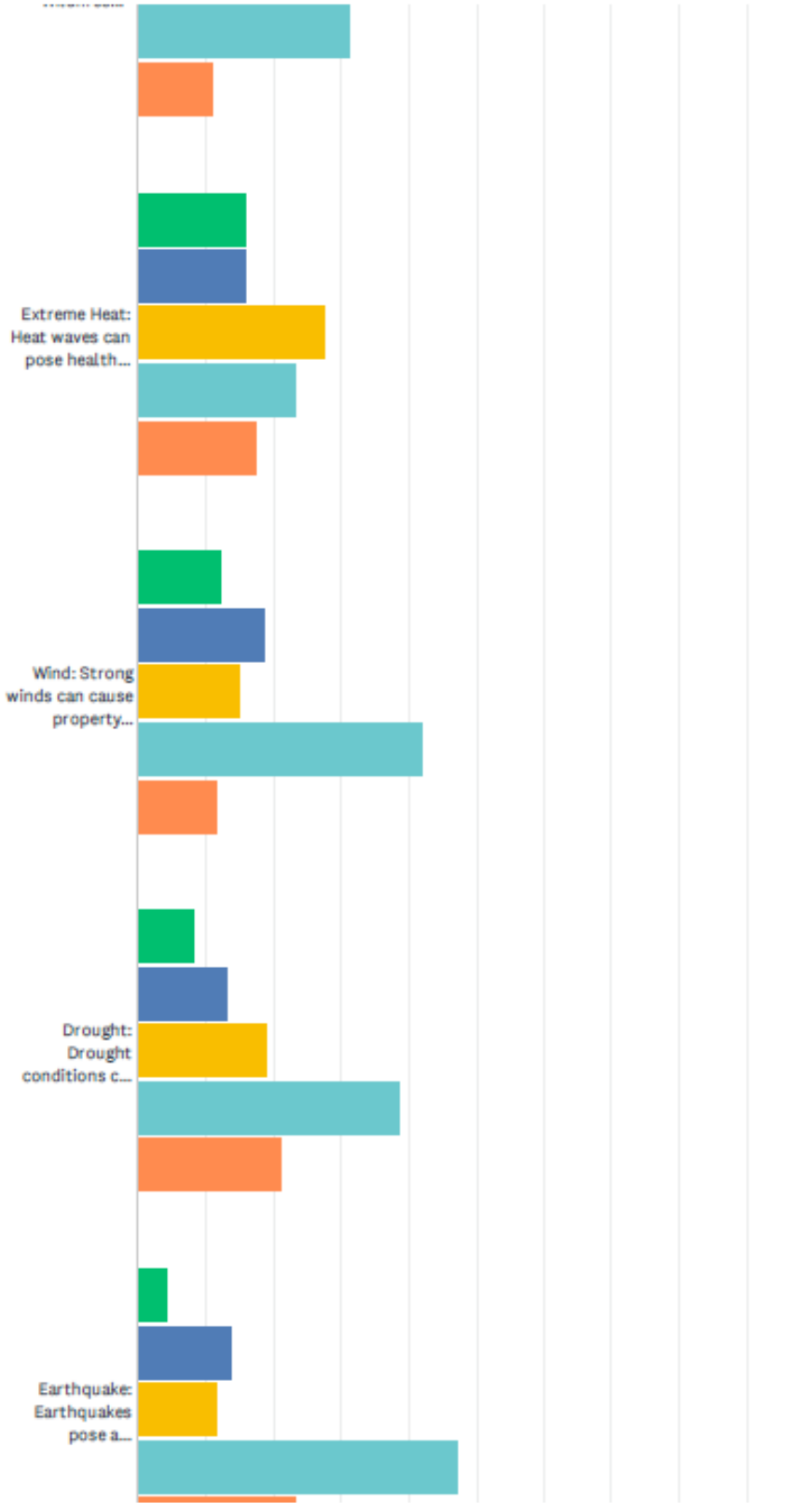
Beach Cities Health District - Local Hazard Mitigation Plan (LHMP)

Q5 Please indicate your level of concern for each hazard in the beach cities community:

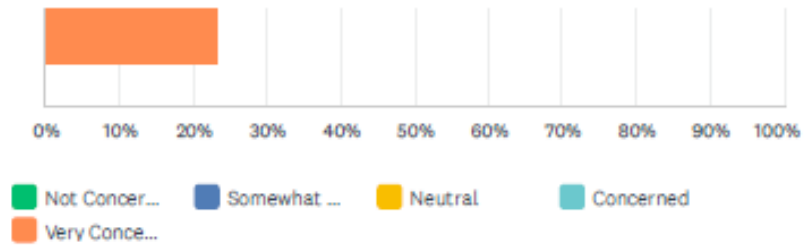
Answered: 138 Skipped: 0



Beach Cities Health District - Local Hazard Mitigation Plan (LHMP)



Beach Cities Health District - Local Hazard Mitigation Plan (LHMP)



Beach Cities Health District - Local Hazard Mitigation Plan (LHMP)

	NOT CONCERNED	SOMEWHAT CONCERNED	NEUTRAL	CONCERNED	VERY CONCERNED	TOTAL	WEIGHTED AVERAGE
Tsunami: Rare but potentially devastating, tsunamis can flood coastal areas, causing widespread damage to property and posing a serious risk to life.	33.33% 46	18.84% 26	21.74% 30	21.01% 29	5.07% 7	138	2.46
Landslide: Triggered by heavy rains, earthquakes, or human activity, landslides can cause rapid movement of large amounts of earth, threatening homes, infrastructure, and natural areas.	23.91% 33	17.39% 24	25.36% 35	28.99% 40	4.35% 6	138	2.72
Inland Flooding: Heavy rains, especially during storm events, can lead to inland flooding, impacting homes, businesses, and critical infrastructure, and increasing the risk of landslides.	17.39% 24	19.57% 27	21.74% 30	35.51% 49	5.80% 8	138	2.93
Urban Wildfire: Wildfires present a significant risk, potentially leading to loss of life, property damage, and destruction of natural areas. Dry conditions and high winds can exacerbate these risks.	18.98% 26	16.06% 22	22.63% 31	31.39% 43	10.95% 15	137	2.99
Extreme Heat: Heat waves can pose health risks, especially for vulnerable populations, and strain infrastructure.	15.94% 22	15.94% 22	27.54% 38	23.19% 32	17.39% 24	138	3.10
Wind: Strong winds can cause property damage, down power lines, and create hazardous conditions.	12.32% 17	18.84% 26	15.22% 21	42.03% 58	11.59% 16	138	3.22
Drought: Drought conditions can lead to water shortages, impact agriculture, increase fire risks, and affect local ecosystems.	8.03% 11	13.14% 18	18.98% 26	38.69% 53	21.17% 29	137	3.52
Earthquake: Earthquakes pose a significant threat due to the area's proximity to several active fault lines. They can lead to ground shaking, surface rupture, and structural damage,	4.35% 6	13.77% 19	11.59% 16	47.10% 65	23.19% 32	138	3.71

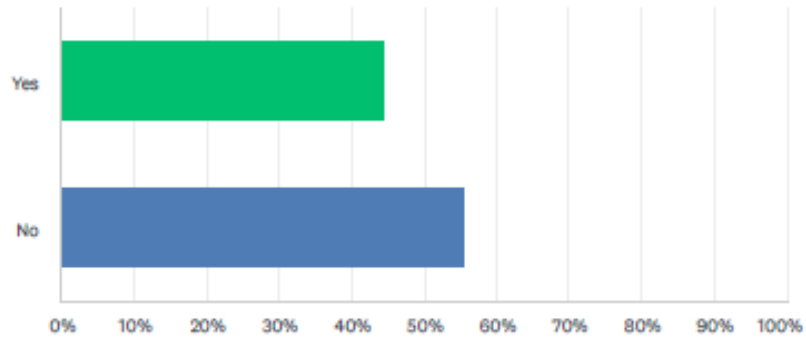
Beach Cities Health District - Local Hazard Mitigation Plan (LHMP)

posing risks to life and property.

Beach Cities Health District - Local Hazard Mitigation Plan (LHMP)

Q6 When you moved into your residence or commercial property, did you consider the impact a natural hazard event could have on your property?

Answered: 137 Skipped: 1

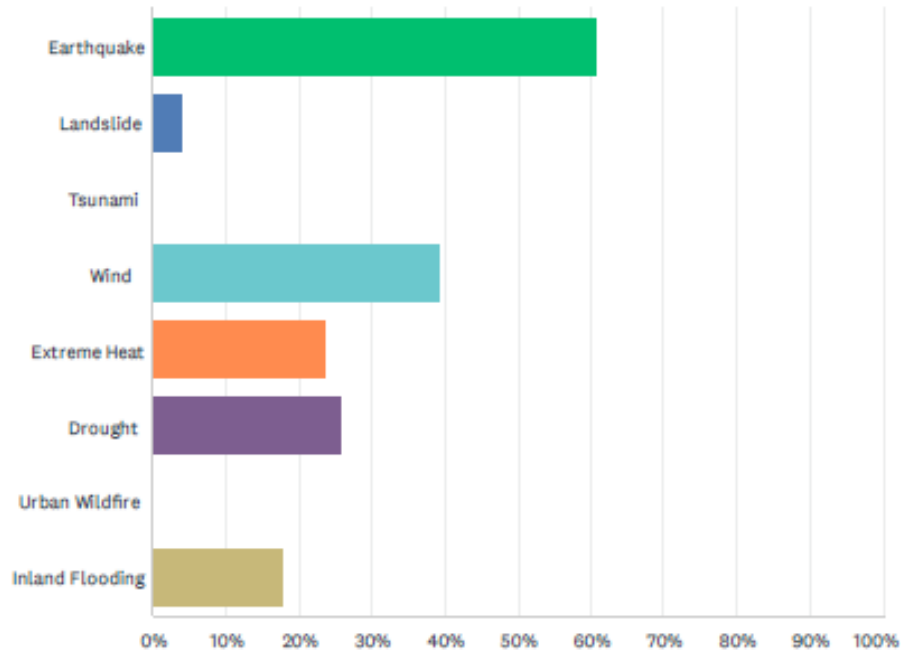


ANSWER CHOICES	RESPONSES	
Yes	44.53%	61
No	55.47%	76
TOTAL		137

Beach Cities Health District - Local Hazard Mitigation Plan (LHMP)

Q7 If your residence or commercial property has experienced damage from a hazard event, which of the following types of events have you experienced at your property? (Select all that apply)

Answered: 51 Skipped: 87

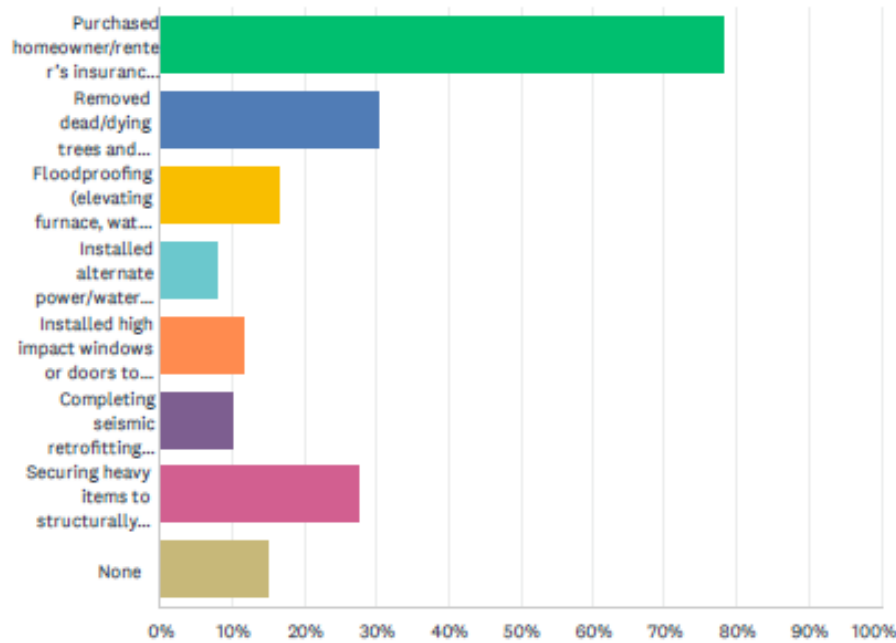


ANSWER CHOICES	RESPONSES	
Earthquake	60.78%	31
Landslide	3.92%	2
Tsunami	0.00%	0
Wind	39.22%	20
Extreme Heat	23.53%	12
Drought	25.49%	13
Urban Wildfire	0.00%	0
Inland Flooding	17.65%	9
Total Respondents: 51		

Beach Cities Health District - Local Hazard Mitigation Plan (LHMP)

Q8 Have you taken any of the following actions to reduce the risk of hazards to your residence or commercial property? (Choose all that apply)

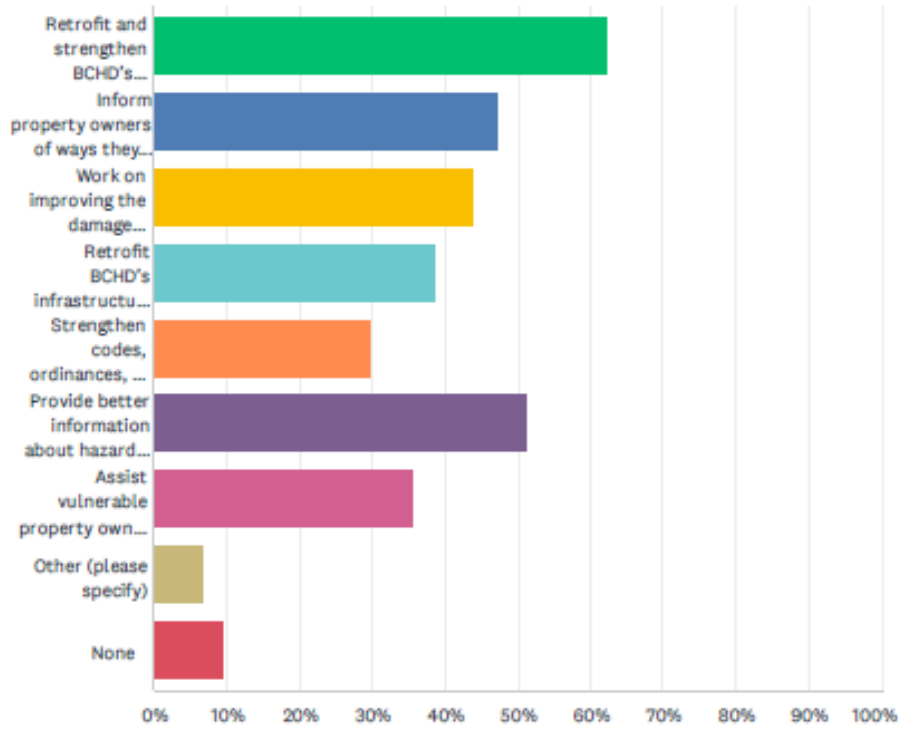
Answered: 138 Skipped: 0



ANSWER CHOICES	RESPONSES	
Purchased homeowner/renter's insurance policies	78.26%	108
Removed dead/dying trees and vegetation from around the home	30.43%	42
Floodproofing (elevating furnace, water heaters, electric panels)	16.67%	23
Installed alternate power/water supply	7.97%	11
Installed high impact windows or doors to withstand high winds	11.59%	16
Completing seismic retrofitting to reduce impacts of geological hazards	10.14%	14
Securing heavy items to structurally sound walls to reduce the impacts of falling objects	27.54%	38
None	15.22%	21
Total Respondents: 138		

Q9 Which of the following mitigation project types do you believe Beach Cities Health District should focus on to reduce disruptions of services and strengthen the community (check all that apply)?

Answered: 135 Skipped: 3



Beach Cities Health District - Local Hazard Mitigation Plan (LHMP)

ANSWER CHOICES	RESPONSES
Retrofit and strengthen BCHD's essential facilities such as police, fire, emergency medical services, hospitals, schools, homeless shelters, food banks, etc. and leased properties providing essential services (e.g., assisted living facility, federally qualified medical health center)	62.22% 84
Inform property owners of ways they can mitigate damage to their property	47.41% 64
Work on improving the damage resistance of utilities (electricity, communications, water/sewer, etc.)	43.70% 59
Retrofit BCHD's infrastructure, such as elevating roadways and improving drainage systems	38.52% 52
Strengthen codes, ordinances, and plans to require higher hazard risk management standards	29.63% 40
Provide better information about hazard risk and high-hazard areas	51.11% 69
Assist vulnerable property owners to mitigate impacts to their property	35.56% 48
Other (please specify)	6.67% 9
None	9.63% 13
Total Respondents: 135	

Beach Cities Health District - Local Hazard Mitigation Plan (LHMP)

Q10 In the last 10 years, have you evacuated from your home or business because of a disaster (e.g., flooding, power outage, water failure)? If so, how long were you displaced? Did you go to a shelter?

Answered: 91 Skipped: 47

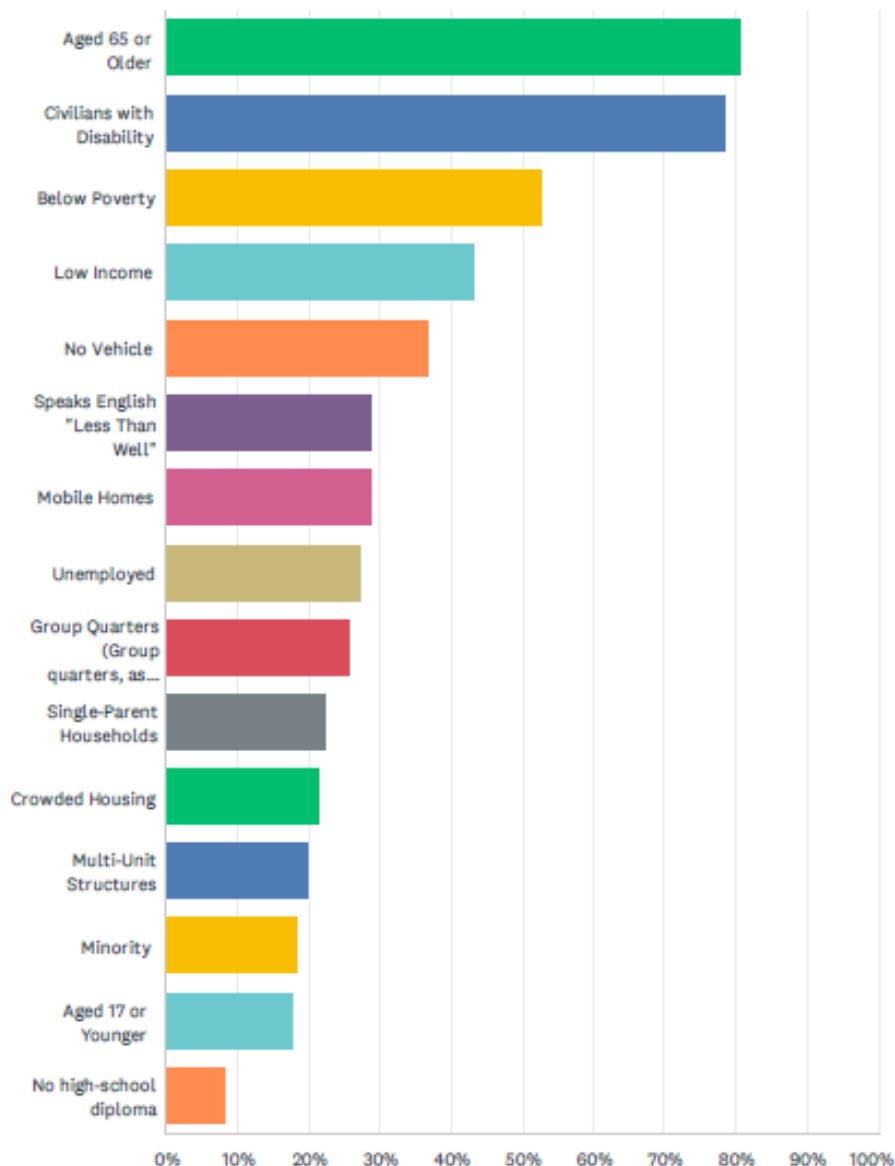
Beach Cities Health District - Local Hazard Mitigation Plan (LHMP)

Q11 Are you concerned with any other hazards not identified in this survey?

Answered: 91 Skipped: 47

Q12 In terms of social vulnerability, do you feel that a specific group, or groups, in Hermosa Beach, Manhattan Beach and Redondo Beach are more vulnerable to any of the hazards listed in Question 5 Note: Centers for Disease Control (CDC) 15 Social Factors below.

Answered: 125 Skipped: 13



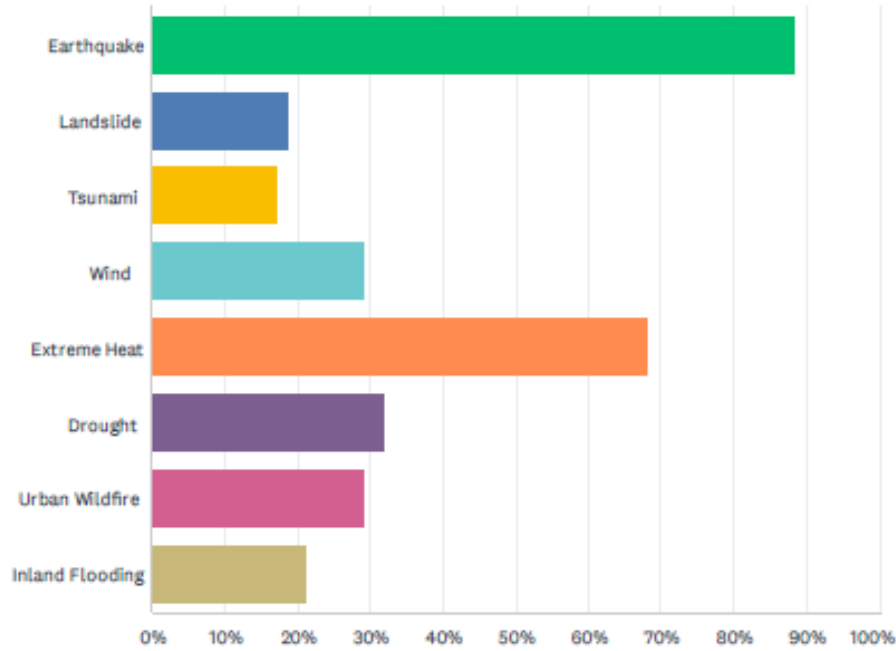
Beach Cities Health District - Local Hazard Mitigation Plan (LHMP)

ANSWER CHOICES	RESPONSES
Aged 65 or Older	80.80% 101
Civilians with Disability	78.40% 98
Below Poverty	52.80% 66
Low Income	43.20% 54
No Vehicle	36.80% 46
Speaks English "Less Than Well"	28.80% 36
Mobile Homes	28.80% 36
Unemployed	27.20% 34
Group Quarters (Group quarters, as defined in the context of the CDC's Social Vulnerability Index (SVI), refer to places where people live or stay in a group living arrangement, which are not households. Ex. Correctional facilities, nursing homes, and mental health care facilities)	25.60% 32
Single-Parent Households	22.40% 28
Crowded Housing	21.60% 27
Multi-Unit Structures	20.00% 25
Minority	18.40% 23
Aged 17 or Younger	17.60% 22
No high-school diploma	8.00% 10
Total Respondents: 125	

Beach Cities Health District - Local Hazard Mitigation Plan (LHMP)

Q13 Based on the group(s) you have selected in the previous question; please select which hazard events you feel may particularly affect those group(s)? (Choose all that apply)

Answered: 128 Skipped: 10



ANSWER CHOICES	RESPONSES	
Earthquake	88.28%	113
Landslide	18.75%	24
Tsunami	17.19%	22
Wind	28.91%	37
Extreme Heat	67.97%	87
Drought	32.03%	41
Urban Wildfire	28.91%	37
Inland Flooding	21.09%	27
Total Respondents: 128		

Beach Cities Health District - Local Hazard Mitigation Plan (LHMP)

Q14 In your opinion, what steps could be undertaken to reduce or eliminate the risk of future hazard damage?

Answered: 65 Skipped: 73

APPENDIX C: COMMUNITY OUTREACH

This appendix contains documentation of stakeholder engagement and outreach to both the public and vulnerable populations.

Event Activity	Documentation
<p>Hazard Mitigation Plan Community Awareness Announcements</p>	<p>To increase general awareness of the LHMP development process, BCHD created and distributed a general project flyer across several key community-facing sites. These included the BCHD Lobby, Center for Health & Fitness (CHF), elevators, and Del Amo facilities, all of which displayed the flyer beginning on September 11, 2024. The flyer introduced the purpose of the LHMP and encouraged the public to learn more about the planning process and how to get involved. These displays ensured high visibility for both facility visitors and staff, reinforcing that hazard mitigation is a BCHD priority and a shared community responsibility.</p>
<p>Email Outreach</p>	<p>BCHD leveraged its internal communications and volunteer networks such as the volunteer newsletter to disseminate information about the LHMP and opportunities to provide feedback. An LHMP update and survey link were included in the BCHD Volunteer Newsletter, which was distributed on October 1, 2024. This ensured that engaged members of the BCHD community including volunteers who support health, wellness, and emergency preparedness programs were informed and had the opportunity to participate in the planning process. Through targeted outreach via email newsletters, BCHD reached key internal stakeholders who are active contributors to community services and resilience initiatives.</p>
<p>Website Outreach</p>	<p>BCHD launched a blog post on its main website to raise awareness about the Local Hazard Mitigation Plan (LHMP) and encourage public participation. The blog post included an overview of the LHMP</p>

Event Activity	Documentation
	<p>planning process, the importance of community input, and a direct link to the public survey. This approach allowed BCHD to leverage its existing online platform to engage residents, partners, and stakeholders who regularly access the site for health and wellness updates. The blog format offered a concise and accessible way to inform the public about BCHD's role in hazard mitigation and provided a timely call to action for community involvement.</p>
<p>Print Media Outreach</p>	<p>To extend outreach beyond digital platforms and engage a broad cross-section of BCHD's service population, physical flyers were posted in high-traffic locations within BCHD-operated facilities. Flyers announcing the LHMP and inviting community members to complete the survey were posted at key sites, including the BCHD Lobby, CHF, elevators, and Del Amo locations starting on September 11, 2024. Additionally, a separate flyer promoting the LHMP survey was displayed at the Del Amo Front Desk on October 18, 2024. These print materials reached residents, clients, and visitors who may not engage with online platforms but regularly interact with BCHD services.</p>
<p>Vulnerable Community Outreach</p>	<p>BCHD incorporated equity-driven engagement by promoting the LHMP at community meetings focused on underserved populations, including the Partnership for Youth Coalition Meeting held on October 17, 2024. This engagement emphasized BCHD's commitment to including diverse perspectives particularly youth and families who may face social and economic vulnerabilities in the LHMP planning process. Furthermore, the Strategic Development Half Day held with BCHD staff and volunteers also brought in voices from across BCHD's health, wellness, and support services, many of which serve populations at increased risk</p>

Event Activity	Documentation
	during hazard events.
<p>Social Media Outreach</p>	<p>BCHD utilized its official social media channels to expand outreach and promote the LHMP survey. Posts were made on Facebook on October 6 and October 7, 2024, encouraging followers to participate in the community survey and help shape the district's hazard mitigation strategy. These posts linked directly to the survey and were designed to be accessible, informative, and actionable. Social media outreach helped raise awareness among residents who follow BCHD online, including those who may not access BCHD facilities regularly or receive direct email updates.</p>

C.1 Community Awareness Flyers

C.1.1 Beach Cities Health District LHMP Project Flyer

This flyer was displayed in the BCHD Lobby on September 11, 2024.

BEACH CITIES HEALTH DISTRICT
LOCAL HAZARD MITIGATION PLAN (LHMP)

ABOUT THE PLAN
WHAT IS IT?
Hazard mitigation refers to actions taken to reduce or eliminate long-term risks caused by hazards or disasters, such as flooding, earthquakes, wildfires, landslides, or tsunamis. It includes sustainable measures that minimize the impact of disasters and enhance resilience.

To support this effort, the Beach Cities Local Hazard Mitigation Plan, will be developed to address both short and long term strategies to protect the community and its critical assets.

WHY NOW?
The Federal Emergency Management Agency (FEMA) requires a hazard mitigation plan to be developed and approved in order to fund hazard mitigation strategies and actions.

OUR MISSION
Our mission is to ensure that the most vulnerable among us are at the forefront of our hazard mitigation efforts. We are committed to protecting lives, promoting equity, and building resilience by tailoring our strategies to address the unique needs and challenges faced by our vulnerable community members. Together, we are creating a stronger, more inclusive, and safer future for all.

PLANNING COMMITTEE MEETINGS

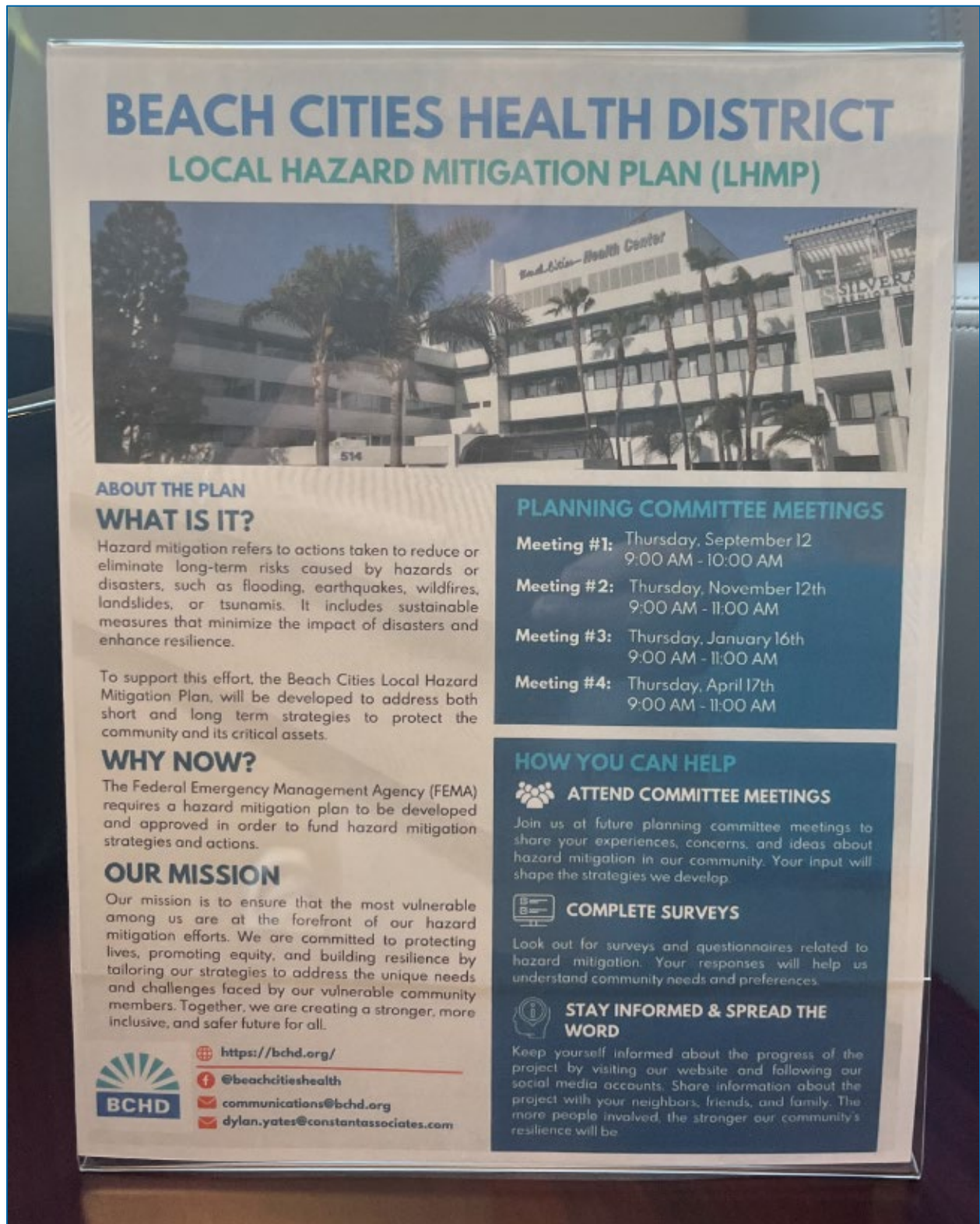
- Meeting #1:** Thursday, September 12
9:00 AM - 10:00 AM
- Meeting #2:** Thursday, November 12th
9:00 AM - 11:00 AM
- Meeting #3:** Thursday, January 16th
9:00 AM - 11:00 AM
- Meeting #4:** Thursday, April 17th
9:00 AM - 11:00 AM

HOW YOU CAN HELP

- ATTEND COMMITTEE MEETINGS**
Join us at future planning committee meetings to share your experiences, concerns, and ideas about hazard mitigation in our community. Your input will shape the strategies we develop.
- COMPLETE SURVEYS**
Look out for surveys and questionnaires related to hazard mitigation. Your responses will help us understand community needs and preferences.
- STAY INFORMED & SPREAD THE WORD**
Keep yourself informed about the progress of the project by visiting our website and following our social media accounts. Share information about the project with your neighbors, friends, and family. The more people involved, the stronger our community's resilience will be.

BCHD
<https://bchd.org/>
@beachcitieshealth
communications@bchd.org
dylan.yates@constantassociates.com

This flyer was displayed in CHF on September 11, 2024.



BEACH CITIES HEALTH DISTRICT

LOCAL HAZARD MITIGATION PLAN (LHMP)



ABOUT THE PLAN

WHAT IS IT?

Hazard mitigation refers to actions taken to reduce or eliminate long-term risks caused by hazards or disasters, such as flooding, earthquakes, wildfires, landslides, or tsunamis. It includes sustainable measures that minimize the impact of disasters and enhance resilience.

To support this effort, the Beach Cities Local Hazard Mitigation Plan, will be developed to address both short and long term strategies to protect the community and its critical assets.

WHY NOW?

The Federal Emergency Management Agency (FEMA) requires a hazard mitigation plan to be developed and approved in order to fund hazard mitigation strategies and actions.

OUR MISSION

Our mission is to ensure that the most vulnerable among us are at the forefront of our hazard mitigation efforts. We are committed to protecting lives, promoting equity, and building resilience by tailoring our strategies to address the unique needs and challenges faced by our vulnerable community members. Together, we are creating a stronger, more inclusive, and safer future for all.



- <https://bchd.org/>
- [@beachcitieshealth](#)
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COMPLETE SURVEYS

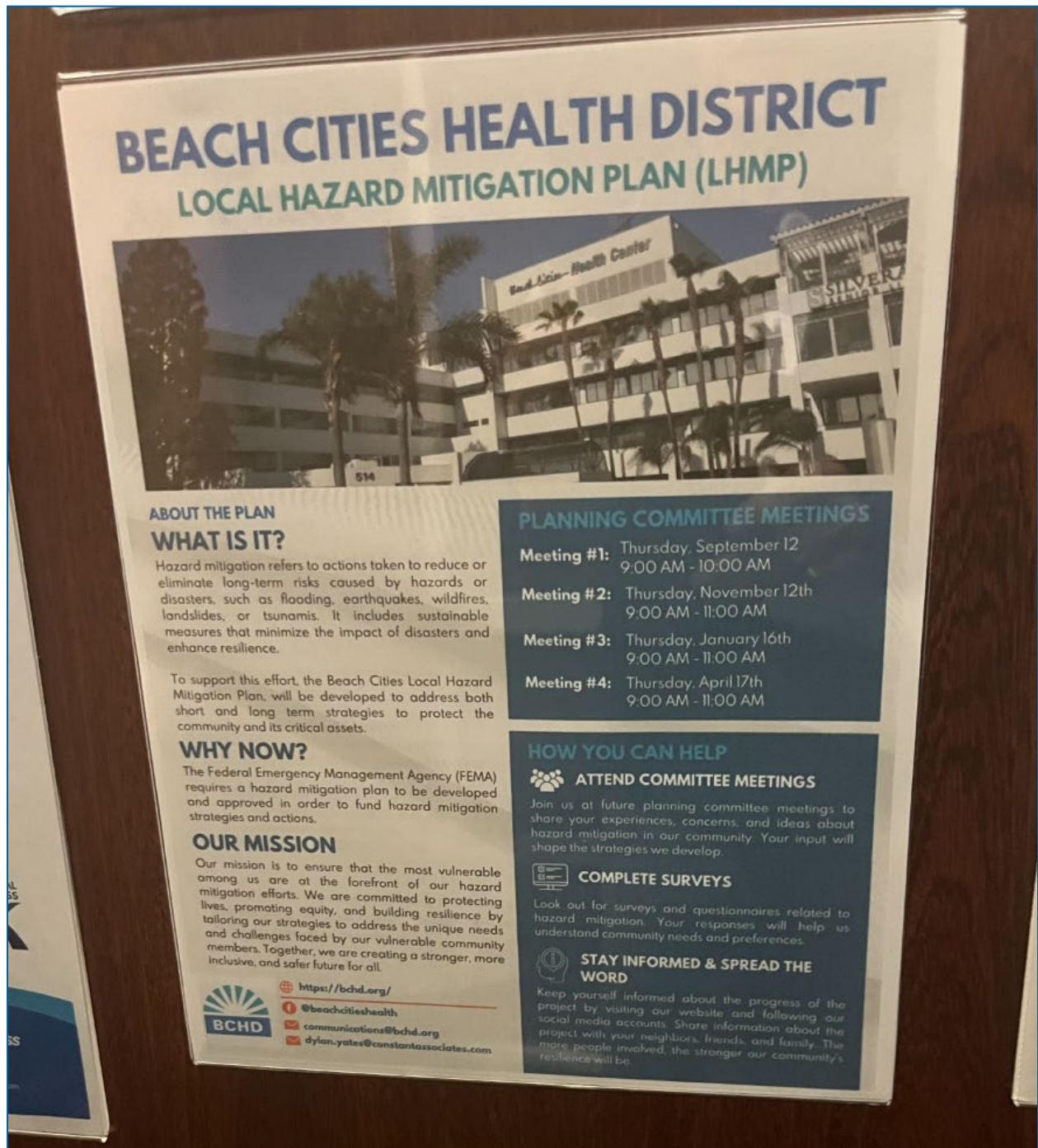
Look out for surveys and questionnaires related to hazard mitigation. Your responses will help us understand community needs and preferences.



STAY INFORMED & SPREAD THE WORD

Keep yourself informed about the progress of the project by visiting our website and following our social media accounts. Share information about the project with your neighbors, friends, and family. The more people involved, the stronger our community's resilience will be.

This flyer was displayed in an elevator on September 11, 2024.



C.1.2 Beach Cities Health District LHMP Survey Flyer

This online survey flyer was displayed at the Del Amo Front Desk on October 18, 2024.



C.2 BCHD LHMP Website Information

C.2.1 BCHD Blog Post

Promoting the public survey on Tuesday, November 19, 2024.



CENTER FOR HEALTH + FITNESS ADVENTURE PLEX HEALTHY LIVING CAMPUS


WHAT WE DO GET INVOLVED RESOURCES WHO WE ARE



BACK TO BLOG X

BEACH CITIES HEALTH DISTRICT - LOCAL HAZARD MITIGATION PLAN (LHMP)

TUESDAY, NOVEMBER 19, 2024



As valued members of our Beach Cities community, your input is crucial in shaping Beach Cities Health District's Local Hazard Mitigation Plan (LHMP). This initiative aims to identify and reduce the impacts of natural hazards—such as flooding, wildfires, and earthquakes—that can affect our homes, businesses, and overall safety.

If you live or work in Hermosa Beach, Manhattan Beach or Redondo Beach, you are invited to take a brief survey that will directly inform the development of our LHMP, and ensure that we build a safer, smarter community for all.

Why Your Voice Matters: As the costs of disaster management and recovery continue to rise, we must work together to find effective ways to minimize these risks. By participating in this survey, you'll help us understand the hazards that concern you most and the strategies that could strengthen our community's resilience.

What We're Asking: The survey will assess:

- Your awareness and concerns about natural hazards
- The impact of these hazards on our community
- Recommended mitigation projects and policies to enhance our preparedness


Join a Meeting: The next committee meeting is **Thursday, December 5, 9 - 11 a.m.** [Click here to join the meeting.](#)

The survey should take less than five minutes to complete. The last day to complete the survey is **May 2, 2025.**

If you have any questions about the survey or the planning process, please contact Dylan Yates at dylan.yates@constantassociates.com.

Thank you for taking the time to contribute to this important effort. Together, we can break the cycle of damage and reconstruction and work toward a stronger, safer community!

[TAKE THE SURVEY](#)



C.3 Social Media Outreach

C.3.1 LHMP Survey Post on Facebook

The following survey was posted on Facebook on October 6, 2024.

Beach Cities Health
★ Favorites · Yesterday at 10:00 AM · 🌐

Beach Cities Sunday, October 6, 2024 at 10:00 AM input on the hazards that impact your community and ways in which the hazards can be mitigated.

The information collected will inform the development of a BCHD Hazard Mitigation Plan and potential mitigation strategies

The survey will be open from Monday, September 16 - Friday, May 2. Please use the link below or in our bio to access the survey!

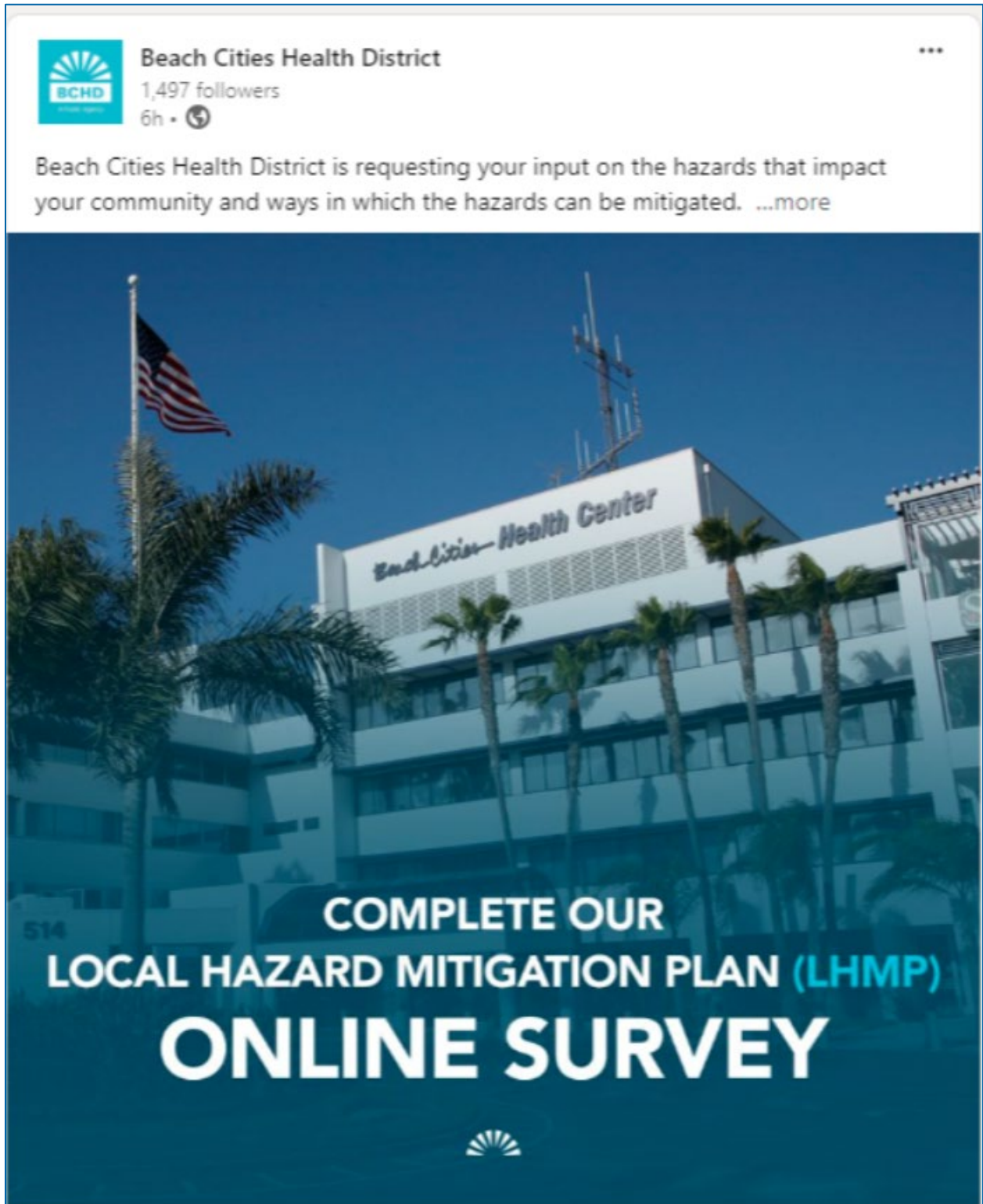
<https://www.surveymonkey.com/r/63KCVZZ>

#community #beachcitieshealthdistrict

**COMPLETE OUR
LOCAL HAZARD MITIGATION PLAN (LHMP)
ONLINE SURVEY**

C.3.2 LHMP Survey Post

The following post was posted on October 7, 2024.



C.3.3 Volunteer Newsletter

The following post was taken from a volunteer newsletter, which was disseminated to volunteer stakeholders on October 1, 2024.

WHAT'S HAPPENING THIS MONTH?

Take our Survey about BCHD's Local Hazard Mitigation Plan

As valued members of our Beach Cities community, your input is crucial in shaping our Local Hazard Mitigation Plan (LHMP). This initiative aims to identify and reduce the impacts of natural hazards—such as flooding, wildfires, and earthquakes—that can affect our homes, businesses, and overall safety.

If you live or work in Hermosa Beach, Manhattan Beach or Redondo Beach, I invite you to take a brief survey that will directly inform the development of our LHMP, and ensure that we build a safer, smarter community for all.

Why Your Voice Matters: As the costs of disaster management and recovery continue to rise, we must work together to find effective ways to minimize these risks. By participating in this survey, you'll help us understand the hazards that concern you most and the strategies that could strengthen our community's resilience.

What We're Asking: The survey will assess:

- Your awareness and concerns about natural hazards
- The impact of these hazards on our community
- Recommended mitigation projects and policies to enhance our preparedness

Take the Survey: [Link to Survey](#)

The survey should take less than five minutes to complete.

If you have any questions about the survey or the planning process, please contact Dylan Yates at dylan.yates@constantassociates.com.

Thank you for taking the time to contribute to this important effort. Together, we can break the cycle of damage and reconstruction and work toward a stronger, safer community!

C.4 Community Meetings/Events

C.4.1 Manhattan Beach Hometown Fair

BCHD promoted their LHMP project at a Hometown Fair conducted on October 6, 2024.



C.4.2 Partnership for Youth Coalition Meeting

BCHD promoted their LHMP online survey at the Partnership for Youth Coalition Meeting on October 17, 2024.



C.4.3 Strategic Development Half Day Session

As part of BCHD's effort to develop its first-ever LHMP, a Strategic Development Half Day session was convened to engage BCHD's staff, leadership, and dedicated volunteers in a collaborative planning discussion. The session served as a critical milestone in the LHMP planning process, providing a platform to identify the natural hazards that pose the greatest risk to the district's community, infrastructure, and essential health-supporting services.

Participants engaged in facilitated discussions to explore the specific vulnerabilities and operational challenges BCHD may face during hazard events such as earthquakes, urban wildfires, and extreme heat. Drawing on their diverse experiences, attendees offered valuable input on how BCHD can reduce risks and enhance community resilience through targeted, community-driven mitigation strategies.

The session also emphasized BCHD's integrated network of health and wellness services and the vital role its volunteer and community programs play in supporting emergency preparedness and response. With a strong commitment to equity, collaboration, and public health, BCHD's Strategic Development Half Day ensured that the LHMP development process reflects the voices and needs of those who serve and support the Beach Cities community every day.



APPENDIX D: CRITICAL FACILITIES LIST

Table 97: BCHD Critical Facilities List

Name of Facility	Address	Asset Value/Potential Loss Data	Community Lifeline Category
Beach Cities Health Center (Owned)	514 N. Prospect Ave.; Redondo Beach, CA 90277	\$62,592,873	Health and Medical
AdventurePlex (Owned)	1701 Marine Ave.; Manhattan Beach, CA 90266	\$7,707,276	Food, Water, Shelter
Sunrise Assisted Living (Land Lease & Joint Venture Limited Partner)	1837 Pacific Coast Highway, Hermosa Beach, CA 90254	\$2,408,000	Health and Medical
Leap & Bound Child Development Center (Building and Land Lease)	601 S. Pacific Coast Highway Redondo Beach, CA 90277	\$2,530,649	Food, Water, Shelter
Venice Family Clinic - South Bay Family Health Care (Building and Land Lease)	2114 Artesia Boulevard Redondo Beach, CA 90278	\$192,000	Health and Medical
512 Parking Structure (Owned)	512 N. Prospect Ave.; Redondo Beach, CA 90277	\$10,149,276	Health and Medical
520 Parking Structure (Owned)	520 N. Prospect Ave.; Redondo Beach, CA 90277	\$18,296,150	Health and Medical
514 Surface Parking (Owned)	514 N. Prospect Ave.; Redondo Beach, CA 90277	\$100,000	Health and Medical

Name of Facility	Address	Asset Value/Potential Loss Data	Community Lifeline Category
BCHD Total	\$103,976,224.00		

APPENDIX E: MITIGATION PROGRESS REPORT WORKSHEET

2025 BCHD LHMP – MITIGATION PROJECT PROGRESS REPORT	
Progress Report Period From (Date):	
Project Title:	
Project ID:	
Description of Project	
Implementing Department/Agency:	
Supporting Department/Agency:	
Contact Name	
Contact E-Mail:	
Contact Phone Number:	
Grant/Finance Administrator:	
Total Project Cost:	
Anticipated Cost Overrun/Underrun:	
Date of Project Approval:	
Project Start Date:	
Anticipated Completion Date:	

SUMMARY OF PROJECT PROGRESS FOR THIS REPORTING PERIOD
What was accomplished during this reporting period?
What obstacles, problems or delays did the project encounter, if any?
How were the problems resolved?
Does this project affect any populations?

APPENDIX F: FEMA LOCAL HAZARD MITIGATION REVIEW TOOL

The Plan Review Checklist is completed by FEMA. States and local governments are encouraged, but not required, to use the PRT as a checklist to ensure all requirements have been met prior to submitting the plan for review and approval. The purpose of the checklist is to identify the location of relevant or applicable content in the plan by element/sub-element and to determine if each requirement has been “met” or “not met.”

FEMA completes the “required revisions” summary at the bottom of each element to clearly explain the revisions that are required for plan approval. Required revisions must be explained for each plan sub-element that is “not met.” Sub-elements in each summary should be referenced using the appropriate numbers (A1, B3, etc.), where applicable.

Plan updates must include information from the current planning process. If some elements of the plan do not require an update, due to minimal or no changes between updates, the plan must document the reasons for that. (Local Hazard Planning Policy Guide, 2025)

F.1 Review Tool Elements

Element A: Planning Process

Element A Requirements	Location in Plan (section and/or page number)	Met / Not Met
A1. Does the plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement 44 CFR § 201.6(c)(1))		
A1-a. Does the plan document how the plan was prepared, including the schedule or time frame and activities that made up the plan’s development, as well as who was involved?	Click or tap here to enter text.	Choose an item.
A1-b. Does the plan list the jurisdiction(s) participating in the plan that seek approval, and describe how they participated in the planning process	Click or tap here to enter text.	Choose an item.
A2. Does the plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development as well as businesses, academia, and other private and non-profit interests to be involved in the planning process? (Requirement 44 CFR § 201.6(b)(2))		
A2-a. Does the plan identify all stakeholders involved or given an opportunity to be involved in the planning process, and how each stakeholder was presented with this opportunity?	Click or tap here to enter text.	Choose an item.

Element A Requirements	Location in Plan (section and/or page number)	Met / Not Met
A3. Does the plan document how the public was involved in the planning process during the drafting stage and prior to plan approval? (Requirement 44 CFR § 201.6(b)(1))		
A3-a. Does the plan document how the public was given the opportunity to be involved in the planning process and how their feedback was included in the plan?	Click or tap here to enter text.	Choose an item.
A4. Does the plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement 44 CFR § 201.6(b)(3))		
A4-a. Does the plan document what existing plans, studies, reports and technical information were reviewed for the development of the plan, as well as how they were incorporated into the document?	Click or tap here to enter text.	Choose an item.
ELEMENT A REQUIRED REVISIONS		
Required Revision: Click or tap here to enter text.		

Element B: Risk Assessment

Element B Requirements	Location in Plan (section and/or page number)	Met / Not Met
B1. Does the plan include a description of the type, location, and extent of all natural hazards that can affect the jurisdiction? Does the plan also include information on previous occurrences of hazard events and on the probability of future hazard events? (Requirement 44 CFR § 201.6(c)(2)(i))		
B1-a. Does the plan describe all natural hazards that can affect the jurisdiction(s) in the planning area, and does it provide the rationale if omitting any natural hazards that are commonly recognized to affect the jurisdiction(s) in the planning area?	Click or tap here to enter text.	Choose an item.
B1-b. Does the plan include information on the location of each identified hazard?	Click or tap here to enter text.	Choose an item.
B1-c. Does the plan describe the extent for each identified hazard?	Click or tap here to enter text.	Choose an item.

Element B Requirements	Location in Plan (section and/or page number)	Met / Not Met
B1-d. Does the plan include the history of previous hazard events for each identified hazard?	Click or tap here to enter text.	Choose an item.
B1-e. Does the plan include the probability of future events for each identified hazard, including the type, location and range of anticipated intensities?	Click or tap here to enter text.	Choose an item.
B1-f. For participating jurisdictions in a multi-jurisdictional plan, does the plan describe any hazards that are unique to and/or vary from those affecting the overall planning area?	Click or tap here to enter text.	Choose an item.
B2. Does the plan include a summary of the jurisdiction’s vulnerability and the impacts on the community from the identified hazards? Does this summary also address NFIP-insured structures that have been repetitively damaged by floods? (Requirement 44 CFR § 201.6(c)(2)(ii))		
B2-a. Does the plan provide an overall summary of each jurisdiction’s vulnerability to the identified hazards?	Click or tap here to enter text.	Choose an item.
B2-b. For each participating jurisdiction, does the plan describe the potential impacts of each of the identified hazards on each participating jurisdiction?	Click or tap here to enter text.	Choose an item.
B2-c. Does the plan address NFIP-insured structures within each jurisdiction that have been repetitively damaged by floods?	Click or tap here to enter text.	Choose an item.
ELEMENT B REQUIRED REVISIONS		
Required Revision: Click or tap here to enter text.		

Element C: Mitigation Strategy

Element C Requirements	Location in Plan (section and/or page number)	Met / Not Met
C1. Does the plan document each participant's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs? (Requirement 44 CFR § 201.6(c)(3))		
C1-a. Does the plan describe how the existing capabilities of each participant are available to support the mitigation strategy? Does this include a discussion of the existing building codes and land use and development ordinances or regulations?	Click or tap here to enter text.	Choose an item.
C1-b. Does the plan describe each participant's ability to expand and improve the identified capabilities to achieve mitigation?	Click or tap here to enter text.	Choose an item.
C2. Does the plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement 44 CFR § 201.6(c)(3)(ii))		
C2-a. Does the plan contain a narrative description or a table/list of their participation activities?	Click or tap here to enter text.	Choose an item.
C3. Does the plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure? (Requirement 44 CFR § 201.6(c)(3)(ii))		
C3-a. Does the plan include goals to reduce the risk from the hazards identified in the plan?	Click or tap here to enter text.	Choose an item.
C4. Does the plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure? (Requirement 44 CFR § 201.6(c)(3)(ii))		
C4-a. Does the plan include an analysis of a comprehensive range of actions/projects that each jurisdiction considered to reduce the impacts of hazards identified in the risk assessment?	Click or tap here to enter text.	Choose an item.
C4-b. Does the plan include one or more action(s) per jurisdiction for each of the hazards as identified within the plan's risk assessment?	Click or tap here to enter text.	Choose an item.

Element C Requirements	Location in Plan (section and/or page number)	Met / Not Met
C5. Does the plan contain an action plan that describes how the actions identified will be prioritized (including a cost-benefit review), implemented, and administered by each jurisdiction? (Requirement 44 CFR § 201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))		
C5-a. Does the plan describe the criteria used for prioritizing actions?	Click or tap here to enter text.	Choose an item.
C5-b. Does the plan provide the position, office, department or agency responsible for implementing/administrating the identified mitigation actions, as well as potential funding sources and expected time frame?	Click or tap here to enter text.	Choose an item.
ELEMENT C REQUIRED REVISIONS		
Required Revision: Click or tap here to enter text.		

Element D: Plan Maintenance

Element D Requirements	Location in Plan (section and/or page number)	Met / Not Met
D1. Is there discussion of how each community will continue public participation in the plan maintenance process? (Requirement 44 CFR § 201.6(c)(4)(iii))		
D1-a. Does the plan describe how communities will continue to seek future public participation after the plan has been approved?	Click or tap here to enter text.	Choose an item.
D2. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a five-year cycle? (Requirement 44 CFR § 201.6(c)(4)(i))		
D2-a. Does the plan describe the process that will be followed to track the progress/status of the mitigation actions identified within the Mitigation Strategy, along with when this process will occur and who will be responsible for the process?	Click or tap here to enter text.	Choose an item.

Element D Requirements	Location in Plan (section and/or page number)	Met / Not Met
D2-b. Does the plan describe the process that will be followed to evaluate the plan for effectiveness? This process must identify the criteria that will be used to evaluate the information in the plan, along with when this process will occur and who will be responsible.	Click or tap here to enter text.	Choose an item.
D2-c. Does the plan describe the process that will be followed to update the plan, along with when this process will occur and who will be responsible for the process?	Click or tap here to enter text.	Choose an item.
D3. Does the plan describe a process by which each community will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? (Requirement 44 CFR § 201.6(c)(4)(ii))		
D3-a. Does the plan describe the process the community will follow to integrate the ideas, information and strategy of the mitigation plan into other planning mechanisms?	Click or tap here to enter text.	Choose an item.
D3-b. Does the plan identify the planning mechanisms for each plan participant into which the ideas, information and strategy from the mitigation plan may be integrated?	Click or tap here to enter text.	Choose an item.
D3-c. For multi-jurisdictional plans, does the plan describe each participant's individual process for integrating information from the mitigation strategy into their identified planning mechanisms?	Click or tap here to enter text.	Choose an item.
ELEMENT D REQUIRED REVISIONS		
Required Revision: Click or tap here to enter text.		

Element E: Plan Update

Element E Requirements	Location in Plan (section and/or page number)	Met / Not Met
E1. Was the plan revised to reflect changes in development? (Requirement 44 CFR § 201.6(d)(3))		
E1-a. Does the plan describe the changes in development that have occurred in hazard-prone areas that have increased or decreased each community's vulnerability since the previous plan was approved?	Click or tap here to enter text.	Choose an item.

Element E Requirements	Location in Plan (section and/or page number)	Met / Not Met
E2. Was the plan revised to reflect changes in priorities and progress in local mitigation efforts? (Requirement 44 CFR § 201.6(d)(3))		
E2-a. Does the plan describe how it was revised due to changes in community priorities?	Click or tap here to enter text.	Choose an item.
E2-b. Does the plan include a status update for all mitigation actions identified in the previous mitigation plan?	Click or tap here to enter text.	Choose an item.
E2-c. Does the plan describe how jurisdictions integrated the mitigation plan, when appropriate, into other planning mechanisms?	Click or tap here to enter text.	Choose an item.
ELEMENT E REQUIRED REVISIONS		
Required Revision: Click or tap here to enter text.		

Element F: Plan Adoption

Element F Requirements	Location in Plan (section and/or page number)	Met / Not Met
F1. For single-jurisdictional plans, has the governing body of the jurisdiction formally adopted the plan to be eligible for certain FEMA assistance? (Requirement 44 CFR § 201.6(c)(5))		
F1-a. Does the participant include documentation of adoption?	Click or tap here to enter text.	Choose an item.
F2. For multi-jurisdictional plans, has the governing body of each jurisdiction officially adopted the plan to be eligible for certain FEMA assistance? (Requirement 44 CFR § 201.6(c)(5))		
F2-a. Did each participant adopt the plan and provide documentation of that adoption?	Click or tap here to enter text.	Choose an item.
ELEMENT F REQUIRED REVISIONS		
Required Revision: Click or tap here to enter text.		

Element G: High Hazard Potential Dams (Optional)

HHPD Requirements	Location in Plan (section and/or page number)	Met / Not Met
HHPD1. Did the plan describe the incorporation of existing plans, studies, reports and technical information for HHPDs?		
HHPD1-a. Does the plan describe how the local government worked with local dam owners and/or the state dam safety agency?	Click or tap here to enter text.	Choose an item.
HHPD1-b. Does the plan incorporate information shared by the state and/or local dam owners?	Click or tap here to enter text.	Choose an item.
HHPD2. Did the plan address HHPDs in the risk assessment?		
HHPD2-a. Does the plan describe the risks and vulnerabilities to and from HHPDs?	Click or tap here to enter text.	Choose an item.
HHPD2-b. Does the plan document the limitations and describe how to address deficiencies?	Click or tap here to enter text.	Choose an item.
HHPD3. Did the plan include mitigation goals to reduce long-term vulnerabilities from HHPDs?		
HHPD3-a. Does the plan address how to reduce vulnerabilities to and from HHPDs as part of its own goals or with other long-term strategies?	Click or tap here to enter text.	Choose an item.
HHPD3-b. Does the plan link proposed actions to reducing long-term vulnerabilities that are consistent with its goals?	Click or tap here to enter text.	Choose an item.
HHPD4-a. Did the plan include actions that address HHPDs and prioritize mitigation actions to reduce vulnerabilities from HHPDs?		
HHPD4-a. Does the plan describe specific actions to address HHPDs?	Click or tap here to enter text.	Choose an item.
HHPD4-b. Does the plan describe the criteria used to prioritize actions related to HHPDs?	Click or tap here to enter text.	Choose an item.
HHPD4-c. Does the plan identify the position, office, department or agency responsible for implementing and administering the action to mitigate hazards to or from HHPDs?	Click or tap here to enter text.	Choose an item.
HHPD Required Revisions		
Required Revision: Click or tap here to enter text.		

Element H: Additional State Requirements (Optional)

Element H Requirements	Location in Plan (section and/or page number)	Met / Not Met
This space is for the State to include additional requirements.		
Click or tap here to enter text.	Click or tap here to enter text.	Choose an item.

Plan Assessment

These comments can be used to help guide your annual/regularly scheduled updates and the next plan update.

Element A. Planning Process

Strengths

[insert comments]

Opportunities for Improvement

[insert comments]

Element B. Risk Assessment

Strengths

[insert comments]

Opportunities for Improvement

[insert comments]

Element C. Mitigation Strategy

Strengths

[insert comments]

Opportunities for Improvement

[insert comments]

Element D. Plan Maintenance

Strengths

[insert comments]

Opportunities for Improvement

[insert comments]

Element E. Plan Update

Strengths

[insert comments]

Opportunities for Improvement

[insert comments]

Element G. HHPD Requirements (Optional)

Strengths

[insert comments]

Opportunities for Improvement

[insert comments]

Element H. Additional State Requirements (Optional)

Strengths

[insert comments]

Opportunities for Improvement

[insert comments]

APPENDIX G: ADOPTION AND RESOLUTION

FEMA Regulation Checklist: Risk Assessment	
44 CFR § 201.6(c)(5)	Documentation of the Plan Update Requirements F1. For single-jurisdictional plans, has the governing body of the jurisdiction formally adopted the plan to be eligible for certain FEMA assistance?
Element	
F1-a	Q: Does the participant include documentation of adoption? A: See Plan Adoption Resolutions below

The adoption by a local governing body demonstrates BCHD commitment to fulfilling the hazard mitigation commitment to the hazard mitigation goals and actions outlined in the plan. The adoption legitimizes the plan and authorizes the responsible departments to perform their responsibilities. Renewed adoption of updated plans underscores the Special District's acknowledgement of the ongoing planning process, recognizes changes over the previous five years, and affirms the priorities for hazard mitigation actions. Failure to adopt indicates an incomplete mitigation planning process by BCHD, rendering it ineligible for specific FEMA assistance, including funding from programs such as HMA or HHPD grants.

G.1 Plan Adoption Resolutions

G.1.1 Resolution, Beach Cities Health District Board of Directors

PLACE HOLDER FOR BOARD OF DIRECTORS RESOLUTION

G.1.2 State of California Approval Letter

PLACE HOLDER FOR STATE APPROVAL LETTERS

G.1.3 FEMA Approval Letter

PLACE HOLDER FOR FEMA APPROVAL LETTERS