

5.1 COASTAL HAZARDS

PHOTO: BEACHED SAILBOAT AFTER COASTAL STORM

Coastal Act policies related to Coastal Hazards that are relevant to Santa Barbara include the following:

Section 30233. (a) The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:

- (1) New or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities.
 - (2) Maintaining existing, or restoring previously dredged, depths in existing navigational channels, turning basins, vessel berthing and mooring areas, and boat launching ramps.
 - (3) In open coastal waters, other than wetlands, including streams, estuaries, and lakes, new or expanded boating facilities and the placement of structural pilings for public recreational piers that provide public access and recreational opportunities.
 - (4) Incidental public service purposes, including, but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake and outfall lines.
 - (5) Mineral extraction, including sand for restoring beaches, except in environmentally sensitive areas.
 - (6) Restoration purposes.
 - (7) Nature study, aquaculture, or similar resource-dependent activities.
- (b) Dredging and spoils disposal shall be planned and carried out to avoid significant disruption to marine and wildlife habitats and water circulation. Dredge spoils suitable for beach replenishment should be transported for these purposes to appropriate beaches or into suitable longshore current systems.
- (c) In addition to the other provisions of this section, diking, filling, or dredging in existing estuaries and wetlands shall maintain or enhance the functional capacity of the wetland or estuary...

(d) Erosion control and flood control facilities constructed on watercourses can impede the movement of sediment and nutrients that would otherwise be carried by storm runoff into coastal waters. To facilitate the continued delivery of these sediments to the littoral zone, whenever feasible, the material removed from these facilities may be placed at appropriate points on the shoreline in accordance with other applicable provisions of this division, where feasible mitigation measures have been provided to minimize adverse environmental effects. Aspects that shall be considered before issuing a coastal development permit for these purposes are the method of placement, time of year of placement, and sensitivity of the placement area.

Section 30235. Revetments, breakwaters, groins, harbor channels, seawalls, cliff retaining walls, and other such construction that alters natural shoreline processes shall be permitted when required to serve coastal-dependent uses or to protect existing structures or public beaches in danger from erosion and when designed to eliminate or mitigate adverse impacts on local shoreline sand supply. Existing marine structures causing water stagnation contributing to pollution problems and fishkills should be phased out or upgraded, where feasible.

Section 30253. New development shall do all of the following:

- (a) Minimize risks to life and property in areas of high geologic, flood, and fire hazard.
- (b) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs.
- (c) Be consistent with requirements imposed by an air pollution control district or the State Air Resources Board as to each particular development.
- (d) Minimize energy consumption and vehicle miles traveled.
- (e) Where appropriate, protect special communities and neighborhoods that, because of their unique characteristics, are popular visitor destination points for recreational uses.

INTRODUCTION

Natural hazards have been part of the City's fabric since its inception. These hazards include geologic, erosion, flooding, wildfire, and shoreline hazards. While geologic hazards, wildfires, and creek flooding are citywide hazards, the shoreline is particularly vulnerable to storm hazards. Coastal storms cause accelerated erosion of beaches and coastal bluffs from wave action, landslides from saturation of the ground from water, damage to the shoreline from wave runup, and flooding from high water events and storm surge. Models show rising sea level will result in increased coastal flooding, erosion, property damage, and resource loss, including the loss of recreational, economic, cultural, and ecological beach resources.

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HAZARD IDENTIFICATION & RISK REDUCTION

Under the Coastal Act, development is required to be sited and designed to minimize risks, assure stability and structural integrity, and neither create nor contribute significantly to erosion. The Coastal Act also places significant limits on construction that could alter natural shoreline processes and natural landforms along coastal bluffs, such as seawalls and revetments. If a proposed development is located in an area identified as potentially exposed to high geologic, flood, fire, and/or shoreline hazards, it is evaluated to identify whether the proposed development at any time during its economic life could pose substantial risk to life, property, or public health. When necessary, mitigation measures and alternatives are required to avoid or minimize the risk.

CITY PROGRAMS

The City has identified and mapped areas potentially affected by geologic, flood, fire, and shoreline hazards, and applies procedures for evaluating development in potential hazard areas (see below for more information). The City's Municipal Code implements federal, state, and local regulations related to development of earthquake-resistant structures and addresses other seismic, geologic, and soil conditions, flood conditions, and specific provisions for building construction and vegetation management in high fire hazard areas.



HARBOR DREDGE

As a city that is vulnerable to floods, fires, and earthquakes, there are many programs to ensure that the City is ready and able to mitigate, prepare for, respond to, and recover from the effects of major emergencies that threaten lives, property, and the environment. Programs that address hazards present in the Coastal Zone are described below.

Community Resilience

The City promotes community resilience through public education and comprehensive emergency response planning and programs, including training City employees as Disaster Service Workers and maintaining a citywide *Emergency Management Plan*. To reduce risk to critical facilities (e.g., hospitals and medical clinics, schools, police and fire stations, emergency operations, and potential high loss facilities such as dams and hazardous material sites) in compliance with the Federal Disaster Mitigation Act of 2000, the City maintains a *Local Hazard Mitigation Plan* that identifies and profiles hazards, identifies critical facilities for inclusion in vulnerability assessments, and ranks the

probability of potential hazards on those critical facilities. Community resilience also includes planning for specific hazards, such as tsunamis, floods, and wildland fire.

Tsunami Response

Tsunamis with the potential to affect Santa Barbara may be generated by an earthquake that occurs locally, such as in the Santa Barbara Channel, or by a large earthquake that



TSUNAMI HAZARD ZONE SIGN

occurs at a distant location. The threat of a locally generated tsunami affecting Santa Barbara is relatively low based on the low recurrence interval for large earthquakes originating in the Santa Barbara Channel. The City has responded to the threat of tsunamis by completing steps to be designated by the National Weather Service as a “TsunamiReady®” community. These steps include a 24-hour warning system, more than one method to receive tsunami warnings and alert the public, promotion of public readiness, and development of a *Tsunami Response Plan*. As part of this effort, the City has installed signs identifying potential tsunami inundation areas and evacuation routes that are identified in the

Tsunami Response Plan. The City has also worked with state agencies to develop a *Maritime Tsunami Playbook* to help members of the maritime community prepare, plan, and respond to strong currents and tsunami damage.

Floods

Numerous regulatory requirements and risk reduction programs have been implemented by federal, state, and local agencies to minimize the effects of flooding. In general, these requirements and programs reduce the potential for damage to structures. Some of the measures that reduce the risk and consequences of flooding in the City include: the National Flood Insurance Program; the construction, operation, and maintenance of flood control and drainage infrastructure by the Santa Barbara County Flood Control District and the City Public Works Department; City ordinances for floodplain management and development along creeks; and the City’s *Storm Water Management Program*. Furthermore, the City has developed draft *Flood Response Guidelines* to assist law enforcement, Fire Department, Public Works, and Emergency Services staff in response to imminent flooding including response trigger points based on National Weather Service advisories.

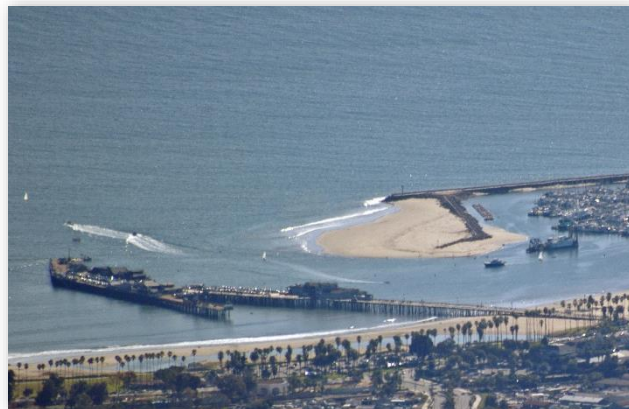
Wildland Fire

The City implements programs through the *Wildland Fire Plan* to reduce the risk of wildland and structure fires and coordinate fire risk prevention, management, response, recovery, and public education programs with the County, U.S. Forest Service, FEMA, and other agencies.

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Sediment Management

Beach nourishment from sand dredged from the Harbor periodically widens down coast beaches, improving the City's resilience to coastal storms and the anticipated impacts of sea level rise. The Harbor breakwater functions as a groin, forming Leadbetter Beach as sand from the west is impounded (dammed) by the breakwater. Sand also migrates along the southern side of the breakwater to form a sand spit at the mouth of the harbor. This sandspit, which requires regular dredging to keep the Harbor navigable, also serves to protect the marinas from southeasterly storms. Currently, the estimated quantity of sediment transport into the Harbor annually is about 370,000 cubic yards. Of this, an average of 312,000 cubic yards of sediment is dredged from the Harbor annually.



THE HARBOR SANDSPIT VIEWED FROM ABOVE

In 2011, the City implemented a comprehensive 10-year sediment management program including dredging, beach nourishment, beach grooming, installation of lifeguard towers, and maintenance of storm drain outlets to provide optimal navigation, recreation, operations, economic, and shoreline protection for the Harbor and beaches area. The Coastal Development Permit for the sediment management program was later amended to authorize construction of seasonal sand berms at Leadbetter Beach and between the mouth of Mission Creek and Stearns Wharf to minimize wave damage to existing structures and uses in the Harbor area.

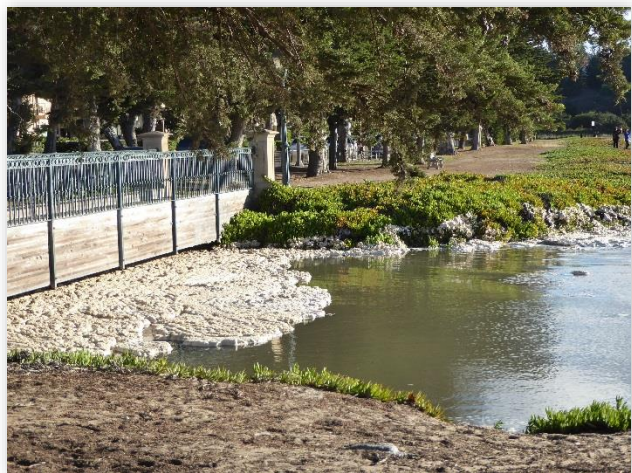
The City is a member agency of the Beach Erosion Authority for Clean Oceans and Nourishment (BEACON), a Joint Powers Agency established in 1986 to address coastal erosion, beach nourishment, and clean oceans within the Central California coast from Point Conception to Point Mugu. BEACON's *Coastal Regional Sediment Management Plan* (CRSMP) includes regional consensus-driven sediment management policy and guidance to restore, preserve, and maintain Santa Barbara's coastal beaches.

Sea Level Rise

Modeling & Mapping

The City participates in local, state, and federal efforts to monitor and model projected hazards due to sea level rise. Each iteration of modeling and mapping has improved upon the previous efforts to provide more accurate depictions of potential future coastal hazard areas. For example, the City's 2010 *General Plan Update Environmental Impact Report* (EIR) included an analysis and maps of current and predicted future coastal erosion and flooding due to sea level rise based on what was known at the time. Sea level rise scenarios have been used to prepare several preliminary vulnerability assessments including the City's *Climate Action Plan* in 2012 and a University of California Santa Barbara (UCSB) Bren School of Environmental Science & Management Master's Degree

project (*City of Santa Barbara Sea Level Rise Vulnerability Assessment*, Bren MESM, 2015). In 2015, the County of Santa Barbara's *Coastal Resiliency Project* included the City in coastal hazard modeling of erosion (beach and bluff), coastal storm flood, and extreme inundation hazard zones under three different sea level rise scenarios for the years 2030, 2060, and 2100. Following the County's modeling effort, the City prepared a refined



KING TIDE EVENT PROVIDES INSIGHT ON SLR IMPACT

model for the low-lying shoreline (i.e., Leadbetter Point to the bluffs at East Beach) that included the effects of existing shoreline protection structures, beach management strategies, and water control infrastructure to provide a more accurate forecast of the sea level rise scenarios. Finally, the most recent coastal hazards modeling effort is the *Coastal Storm Modeling System* (CoSMoS) for the California coast from the United States Geological Survey (USGS). The 2017 CoSMoS 3.0 *Phase 2 Southern California Bight* data simulates coastal hazards in response to projections of waves, storm surge, anomalous variations in water levels, creek discharges, and tides under various sea level rise scenarios. It is considered the current best available science on sea level rise impacts

in the Santa Barbara area that has been peer reviewed. It is part of a statewide effort by USGS to uniformly study sea level rise impacts so that all local jurisdictions and the state are using the same assumptions and data in addressing sea level rise impacts. Unlike previous modeling efforts, CoSMoS incorporates probability into the analysis. It shows scenarios that are likely to occur versus those that represent less likely or extreme worst-case scenarios.

While these modeling simulations and studies provide a general indication of potential hazards due to sea level rise, they all contain some level of uncertainty and do not take into account existing building footprints, pumping capacities, creek flooding, and other variables that could substantially change the results. Sea level rise modeling is an emerging science that is continuing to evolve and is best used as a hazards screening tool to visually anticipate where hazards may occur. Site-specific evaluations are usually needed to confirm and verify information presented in the datasets, and analysis of the data will be necessary to address specific challenges as the City moves forward in sea level rise planning and adaptation.

The policies included in this Coastal LUP that address the potential effects of sea level rise are considered interim and are likely to change as a result of the Sea Level Rise Adaptation Plan that the City is undertaking in the next several years. The interim policies included in this Coastal LUP assume that the City will protect public roads and other public facilities along the shoreline that provide public access, recreation, and coastal dependent uses (such as the Harbor) until a long term plan for these resources is developed as part of the upcoming Sea Level Rise Adaptation Plan.

Sea Level Rise Adaptation Plan

A planned comprehensive Sea Level Rise Adaptation Plan will: assist the City in determining the best use of the multiple sea level rise scenarios and model products; reassess vulnerabilities; evaluate the existing shoreline protection devices, flood (water control) infrastructure, and beach management strategies; develop a range of feasible adaptation strategies and identify their economic implications; and re-evaluate coastal hazard policies, development standards, and hazard screening tools. Any future changes made to the Coastal LUP coastal hazards policies or procedures as a result of the Sea Level Rise Adaptation Plan will be processed as a Local Coastal Program amendment.

GEOLOGIC & SEISMIC HAZARDS

Many of the geologic hazards of concern to life and property in the Coastal Zone are related to seismic hazards. Strong earthquakes can result in fault displacement and groundshaking, liquefaction of soils, tsunamis, and landslides. Other serious geologic hazards include coastal bluff erosion and retreat caused by marine and terrestrial erosion processes, high groundwater, and radon. The City's Community Development Department maintains maps of geologic and seismic potential hazard zones including earthquake fault, peak ground acceleration, tsunami, liquefaction, slope failure, expansive soils, erosion, and radon, as part of the Master Environmental Assessment Maps available to City staff and the public. They are used by a City Environmental Analyst, along with site-specific field evidence, to determine if a site has the potential for geologic and seismic hazards and whether a hazards evaluation and other technical reports are needed as part of the review of development proposals prior to a City permitting decision.

The City has implemented several programs to minimize the effects of geologic and seismic hazards including building code regulations that require unreinforced masonry buildings to be retrofitted to reduce the danger of collapse during earthquakes and requirements for conducting site-specific liquefaction hazard evaluations. The following describes the major geologic and seismic hazards in the Coastal Zone and, where necessary, the basis for including Coastal LUP policy direction beyond the City's existing codes and regulations.

Fault Displacement & Groundshaking

Geologic conditions in the Santa Barbara region are complex, and movement along regional and local faults over geologic time has shaped, and will continue to shape, the City's landscape. These forces have the potential to result in adverse to catastrophic effects. Historically, there is an established record of strong earthquakes affecting Santa Barbara, particularly the earthquake of 1925, which caused extensive damage throughout the Downtown area.

Several documented faults exist within the Coastal Zone, including portions of the Mesa fault in the West Beach area and other small, unnamed faults on the coastal bluffs. The

Mesa fault is “apparently active,” meaning there is evidence of fault movement occurring over the past 11,000 years. The unnamed coastal bluff faults show no evidence of movement along the faults from the last 11,000 to two million years and are considered “potentially active.”

The Alquist-Priolo Act of 1972 prevents the construction of most structures used for human occupancy on the surface trace of active faults, which, for the purposes of the Act,



1925 EARTHQUAKE DAMAGED CALIFORNIA HOTEL

is one that has ruptured in the last 11,000 years. Per the Act’s regulatory zones (known as Earthquake Fault Zones), there are no active faults within the City, and the Act’s fault development setbacks (generally 50 feet) do not apply. There is no regulatory requirement to identify potential fault hazard zones or for a specified setback width for faults not designated as active under the Act.

The City identifies and reviews fault displacement and groundshaking hazards for specified types of projects (e.g., schools, hospitals, multiple residential units) at the land

use or building permit phase within the mapped fault hazard zones. Based on the results of site-specific investigations, hazard avoidance, site layout modifications, or structural engineering techniques can be required to minimize the risk of fault displacement and groundshaking.

Liquefaction

Liquefaction of soils is a temporary condition that can occur during or after moderate to large earthquakes. Liquefied soil will have a substantial loss of bearing strength, which may cause buildings in affected areas to settle or tilt. The resulting structural damage can range from minor to complete failure. The potential for liquefaction to occur is greatest in areas with loose, granular, low-density soils, where the water table is within 55 feet of the ground surface.

Within the Coastal Zone, areas with the highest liquefaction risk include the entire Waterfront Component Area up to Highway 101 and land near the Arroyo Burro creek banks. Within the Waterfront, areas with high liquefaction potential are within the boundaries of the former El Estero, a low-lying coastal lagoon that was filled during the 1920s and 1930s. Studies to evaluate the potential consequences of liquefaction are required by the City at the land use or building permit phase depending on the level of the hazard and the type of development proposed. Based on the results of site-specific investigations, site modifications, building foundation, and design measures are required to minimize the risk of liquefaction and its associated effects.

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Landslides & Slope Failures

Landslides occur on sloping ground when the weight of the material that comprises the slope and the weight of objects placed on the slope exceed the strength of the slope material. The down-slope movement of earth material is part of the continuous and natural process of erosion; however, the stability of a slope can be adversely affected by a wide variety of factors, such as by adding water and/or load to a slope.

Many sources and factors have been used to determine landslide potential within the City. Generally, the coastal bluffs and a few steep slopes in the Las Positas Valley are considered high landslide potential areas for various reasons, including steep slopes that are naturally unstable and subject to failure even in the absence of human activities. Coastal bluff retreat is also caused by marine and terrestrial erosion, discussed in greater detail in the Shoreline Hazards section below.

Known slope failures and slope failure deposits (landslides) have been identified and mapped by the USGS and others along the coastal bluffs mainly at the western City limits (Sea Ledge Lane to Arroyo Burro Beach area) and between Mesa Lane and La Mesa Park (south of Edgewater Way and El Camino de la Luz). Large landslides that affected the coastal bluffs in the recent past include the El Camino de la Luz landslide in 1978 that resulted in the destruction of two homes and a landslide in Shoreline Park in 2008 that moved a portion of the bluff landward approximately 38 feet. Both landslides occurred in the winter after large storms.



SHORELINE PARK BLUFF FAILURE

The California Geological Survey (CGS) Landslide Hazard Maps are used by the City to identify areas of varying landslide potential (slope instability). In the mapped moderate or high landslide potential areas, the City requires a site investigation in accordance with applicable sections of the California Building Code, Seismic Hazards Mapping Act, and CGS Special Publication 117 at the land use or building permit phase depending on the type of development proposed. If feasible, development should be avoided in areas where substantial slope movement has occurred in recent or historic times. Where avoidance is not feasible, development must demonstrate that the slopes in the project area meet a minimum factor of safety and/or incorporate design and construction techniques to reduce risk. The “factor of safety” is determined by a site-specific investigation that estimates the strength of the soil or rock that comprises the slope (resisting forces) and the weight of the slope and objects placed on the slope (driving forces) above a potential slide surface or “slip plane.” The value of the resisting forces divided by the value of the driving forces determines the “factor of safety.” A factor of safety below 1.0 is theoretically impossible, as the slope would have failed already. A factor of safety of 1.0 indicates that failure of the slope is imminent. Increasing values above 1.0 lend increasing confidence in the stability of the slope (Johnsson, 2002). The Coastal LUP policies provide

further detail on slope stabilization and protection to ensure that adverse impacts to life and property and coastal resources are minimized. Shoreline beach and bluff erosion is a separate topic discussed in the Shoreline Hazards section.

Erosive & Expansive Soils

Soil erosion occurs when wind, water, or ground disturbances cause soil particles to move and deposit elsewhere. Numerous conditions influence the susceptibility of soils to the effects of erosion, including soil characteristics, vegetative cover, and topography. Erosion potential in the Coastal Zone ranges from very high to slight. In general, the coastal bluffs and hillside areas have a higher erosion hazard potential. Numerous federal, state, and local regulatory programs reduce the potential for soil erosion hazards at the building permit phase. Shoreline beach and bluff erosion is a separate topic discussed in the Shoreline Hazards section.

Expansive soils will expand when wet and shrink when they become dry. Repeated cycles of shrinking and swelling can impact structural integrity due to cracking building foundations, walls, ceilings, and floors and damage to surface improvements such as roadways and sidewalks. Soils in the Coastal Zone that present a potential high shrink/swell hazard are predominately in the Mesa and East Beach areas. The impacts of expansive soil hazards can be addressed early in the project design phase and typically include hazard avoidance, appropriate site layout, control of site drainage and runoff, and specific foundation and/or structure design.

Radon

Radon is an invisible and odorless radioactive gas that is created by the decay of uranium and thorium that is naturally present in rocks and soils. Breathing air with elevated levels of radon gas can result in an increased risk of developing lung cancer. Radon gas can move from the soil and into buildings through cracks in slabs or basement walls, pores and cracks in concrete blocks, and openings around pipes. Since radon enters buildings from the adjacent soil, concentrations of the gas are generally highest in basements and in ground-floor rooms. While all buildings have some potential for elevated radon levels, buildings located on rocks and soil containing elevated levels of uranium or thorium will have a greater likelihood of having elevated radon concentrations. The U.S. Environmental Protection Agency and the California Department of Public Health recommend that individuals avoid long-term exposures to radon concentrations above four picocuries per liter (pCi/L).

Areas of the City that have a moderate to high potential for elevated radon concentrations are generally located in areas underlain by the Rincon or Monterey Formations, or soils derived from those formations. In general, Coastal Zone areas designated as having a “High” or “Moderate” risk potential are located in portions of the Mesa, Las Positas Valley, and Santa Barbara City College. Because site investigations and evaluation of radon hazards may be more costly than incorporating radon mitigation measures into project design, most types of projects in these areas incorporate

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engineered controls, such as installing a soil depressurization system that uses a fan and ventilation pipes to create a vacuum below the building, during the building permit phase of review to mitigate for radon hazards. Passive ventilation systems that do not rely on the use of a fan can be installed in new construction. Sealing foundation cracks, pipe penetrations, and utility channels can also be an effective measure to reduce indoor radon concentrations.

High Groundwater

High groundwater is a hazard that can have an adverse effect on building construction, roads, storage tank installation, utility installation, and other projects with structural elements that penetrate the subsurface. Buildings and other facilities in areas with high groundwater can be subjected to moisture intrusion, and in some cases, tremendous buoyancy forces that may push up on the structure, potentially causing structural offsets at the ground surface or otherwise causing extensive damage. In general, groundwater within 15 feet of ground surface can create a nuisance and can require special structure design to address buoyancy and moisture intrusion.

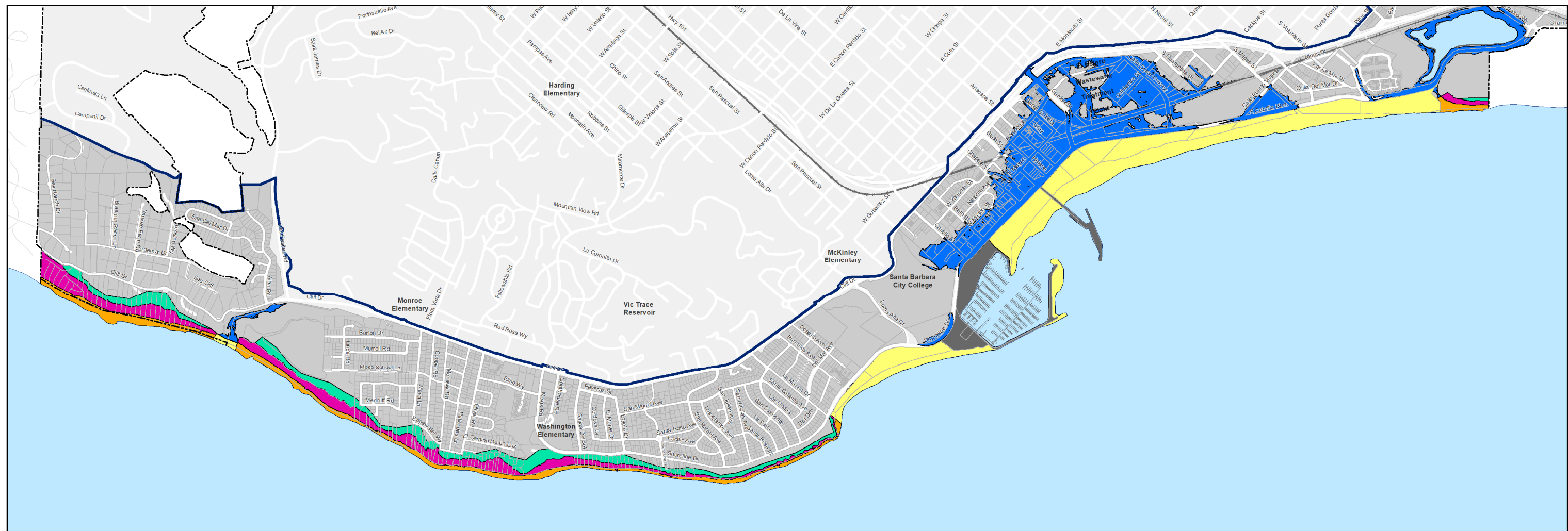
In general, Coastal Zone areas that have the potential for high groundwater-related hazards include low-lying portions from the shoreline inland to Highway 101 and areas located adjacent to major creeks. While certain areas have been identified as having the potential to be affected by high groundwater levels, there can be substantial variability in groundwater levels at a particular site seasonally, over time, and due to climatic conditions. Certain types of projects, such as those with deep foundations or under-floor space, require a site-specific investigation (soil borings and/or cased wells/piezometers) to provide up-to-date depth to groundwater data. Upon determination of a “design groundwater elevation,” structure design during the design phase can be evaluated and construction methods, such as dewatering during construction, can be implemented as necessary to mitigate the hazard. Requirements for building damp proofing and water proofing are included in the California Building Code.

Coastal groundwater inundation is a potential hazard related to sea level rise in the low-lying areas. With progressive sea level rise, the water table will likely rise at a similar rate and shallower groundwater could alter site conditions, impacting development and coastal resources. Likely changes to groundwater as a result of sea level rise requires more research in order to evaluate whether changes in groundwater will alter site conditions.

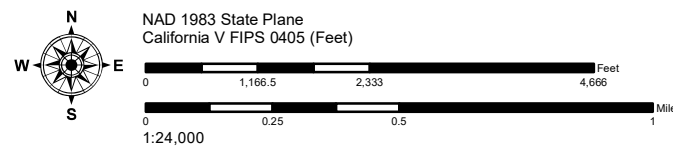
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FIGURE 5.1-1 INTERIM SHORELINE HAZARDS SCREENING AREAS



Planning Division, AJN, TRB, 5/31/2018



BOUNDARIES

- Coastal Zone
- City Limits

SHORELINE HAZARDS SCREENING AREAS

- Area 1 - City-Owned Low-Lying Beach and Backshore Areas
- Area 2 - Bluff-Backed Beaches
- Area 3 - Coastal Bluff Faces
- Area 4 - Coastal Bluff-Tops
- Area 5 - Stearns Wharf and Harbor
- Area 6 - Inland Coastal Flooding Area

Note: Large scale and digital versions of this figure and the data on the map are available at the City of Santa Barbara Community Development Department office. Southern city limits extend into the Santa Barbara Channel. See Official Annexation Map for official city limit boundary. The Coastal Zone Boundary depicted on this map is shown for illustrative purposes only and does not define the Coastal Zone. The Coastal Zone Boundary delineation is representational, may be revised at any time in the future, is not binding on the Coastal Commission, and does not eliminate the possibility that the Coastal Commission must make a formal mapping determination. This map was created using the middle confidence bound of the USGS CoSMoS 3.0 model outputs for the 150cm SLR scenario with a 100 year storm event, no beach nourishment, and no consideration of existing coastal protective structures. This is a tool used to depict hazard screening areas potentially subject to shoreline hazards including: beach erosion; coastal bluff erosion; coastal bluff slope failure or instability; coastal flooding; and wave impacts, now and in the future and factoring in the anticipated effects of sea level rise. This map is based on model outputs and does not account for all of the complex and dynamic geologic conditions and coastal processes that could occur at any given site, future construction, shoreline protection upgrades, or other changes to the City or region that may occur in response to sea level rise. This map provides a tool for when site specific technical evaluations may be required and when development standards pertaining to shoreline hazard areas may be applied. Any areas subject to beach erosion, coastal bluff erosion, coastal bluff slope failure, coastal flooding, and/or wave impacts that are not depicted on the Map, shall also be subject to the policies of this Coastal LUP. This map shall be used in the interim period between Coastal Commission certification of this Coastal LUP and when new shoreline hazard screening procedures and maps are certified as part of a future Sea Level Rise Adaptation Plan process. Further information on the Shoreline Hazards Screening Areas can be found in Policy 5.1-29 Interim Shoreline Hazards Screening Areas Map.

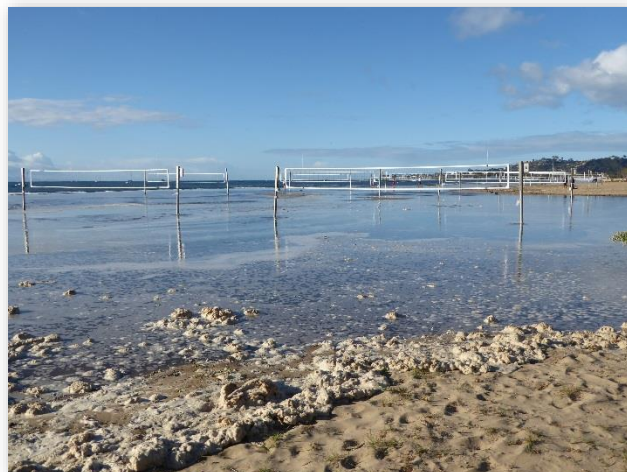
Sources: California Coastal Commission GIS/Mapping Unit (2017), USGS CoSMoS 3.0 (2017), City of Santa Barbara (2017), and Santa Barbara County Clerk-Recorder-Assessor's Mapping Division (2017).

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SHORELINE HAZARDS

The City's Coastal Zone shoreline includes beaches, backshore areas, and coastal bluffs. Hazards along the shoreline include beach erosion, coastal bluff erosion, coastal bluff slope failure, coastal flooding from the sea, and wave impacts. As sea level rises, inundation (when dry land becomes permanently submerged) will move inland, and so will coastal flooding and wave impacts. Beach and coastal bluff erosion will become significantly accelerated and will add to the inland extent of impacts. The updated policies for shoreline hazards include an Interim Shoreline Hazards Screening Areas Map that depicts six areas based on geographic composition and potential shoreline hazards that are or may be subject to in the future, factoring the effects of sea level rise. The Map also provides a general screening level evaluation tool to be used to identify shoreline hazards that may impact coastal development. The updated policies also include procedures for evaluating shoreline hazards and shoreline hazard development standards. The Map and policies are considered interim until the City completes a planned Sea Level Rise Adaption Plan, which may recommend a different or tiered approach for screening coastal hazards based on the best available sea level rise science.



FLOODED VOLLEYBALL FACILITIES DURING KING TIDE

The intent of the Coastal LUP shoreline hazards policies is to continue identifying and evaluating shoreline hazards and to provide detailed development standards to address new development and significant redevelopment, subject to existing and future coastal bluff and beach erosion, slope instability, wave impact, coastal flooding, and other hazards, including the impacts of sea level rise, with the aim of reducing hazard-related risk consistent with the hazard-related policies of the Coastal Act.

The following sections discuss the geography, history of development, and Coastal LUP interim policy direction for development along the City's shoreline.

Beaches

The City's beach system is one of its most important recreational assets and relates closely to the basic character of Santa Barbara. With this relationship, the beaches are an important recreational focal point for the community as well as a source of attractions for residents and visitors.

There are approximately six miles of beaches within the City limits, of which approximately 70 percent is in public ownership. The approximately three miles of City-owned beach area from Shoreline Park to the coastal bluffs near the eastern City limits is

a relatively wide sandy beach area with a high level of recreational use. Conversely, the several miles of coastal bluff backed tidal beaches offer a considerably different shoreline experience. Here, the higher tides occasionally cover the entire beach to the base of the coastal bluffs. At low tides the receding ocean exposes broad areas of smooth-packed sand, ideal for walking. While convenient access is provided at several points, most of this area is a secluded, quiet, walking beach. The City has a long history of keeping the coastal bluffs and bluff-backed beaches undeveloped dating prior to the 1970s. Attempts to make improvements of any kind to these natural coastal bluff and associated beach tidal areas, with the purpose of increasing the intensity of use for reasons other than coastal access and recreation, is not allowed.

Beach Modification & Erosion

The history of Santa Barbara's beaches include both natural erosion and storm damage processes and human interventions, particularly between Leadbetter Beach and East Beach, that extensively modified the coastline. Between Leadbetter Beach and East

Beach, modifications on or adjacent to the sandy shoreline started in the late 1880s, including development of several public pools, "West" and "East" Boulevards (now Cabrillo Boulevard), winter cottages, and public parks. The largest modification occurred with the construction of the Harbor breakwater, completed in 1930, which resulted in the creation (accretion) of Leadbetter Beach and erosion of East Beach and Cabrillo Boulevard and the installation of thousands of tons of boulders to stabilize the shoreline. The Harbor construction, ongoing maintenance dredging, and dredge spoils disposal for beach nourishment permanently altered much of this area.



THOUSAND STEPS DURING KING TIDE EVENT

Wave Impacts

Water levels along the coast vary depending on tides and wave conditions. Wave runup is the distance or extent that water from a breaking wave will extend up the shoreline, including up

a beach, coastal bluff, or structure. In Santa Barbara, periodic wave runup events have damaged beach access stairways, overtopped the Harbor breakwater, damaged Stearns Wharf, and deposited debris on beach access parking lots. Wave runup is exacerbated when wind and low pressure from a storm event cause a storm surge that pushes water on shore above the normal water level. The combination of wave runup with storm surge and high tides can cause coastal flooding, which is temporary but can be highly damaging, and erosion to beaches and coastal bluffs.

Shoreline Protection

Shoreline protection is a broad term for constructed features or other techniques that block the landward retreat of the shoreline and are used to protect structures or other

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features from erosion, coastal flooding, wave impacts, and ocean currents. Shoreline protection devices include seawalls, revetments, riprap, earthen berms, and bulkheads.

As far back as the 1920s, shoreline protection devices were installed parallel to the City-owned beaches starting with a low concrete seawall constructed along West Cabrillo Boulevard. Reportedly, waves would come up to the edge of the wall. Now, as sand has accreted in this area, only a small portion of the wall is exposed and ocean waves no longer reach the seawall. In the early 1930s, timber sheet pile walls fronted by rock revetment and groins were constructed along East Beach to address severe erosion. After East Beach was further denuded of sand following heavy storms, a rock and rubble dike was placed in the area in the 1940s. Since then, beach nourishment from dredging has extended the beach width and slowly buried the majority of these structures with sand, but portions are temporarily exposed after large storms.



SEA LEDGE LANE ROCK REVETMENT

In 1983, during the 1982-83 El Niño season storm events, the eastern end of Leadbetter Beach and the Harbor commercial area were significantly damaged by waves and coastal flooding. Following this event, a three-foot high, 450-foot long concrete wave runup wall was permitted and constructed near the Yacht Club parking lot to protect the Harbor commercial area from future storms. The annual sand berm constructed on Leadbetter Beach also protects the Harbor commercial area from wave action damage.

The majority of the coastal bluffs remain in a natural condition. However, two private shoreline protection structures (rock revetments) were permitted at the toe of the bluffs following the 1982-83 El Niño season storm events: one 640-foot long revetment below Sea Ledge Lane at the western City limits to protect existing private structures from high waves and storms, and one 800-foot long revetment at the eastern City limits to protect Bellosguardo (formerly known as the Clark Estate) as a significant coastal resource.

Shoreline protection devices can cause considerable impacts to sand supplies, beach widths, and beach erosion. They prevent the shoreline and bluffs from naturally eroding. Normally, waves lose momentum and energy as they run up a gently sloping shoreline, and sand is deposited to form beaches. Many shoreline protection devices make it so that there is a hard back-stop to the shoreline. Waves hit the devices and reflect backwards, often causing increased sand erosion in front of the device. They can also increase beach erosion on either side of the device and impact down shore sand supplies. Shoreline protection devices such as revetments along coastal bluffs often impede vertical and lateral access to and along the beach as they can take up space on the beach and, over time, can narrow the sand area on the beach. For these reasons, the City's original 1981 Coastal LUP provided strict limits on when shoreline protection devices are allowed and how they should be designed to limit impacts on sand supplies and beaches. These policies are carried over into this Coastal LUP.

Beach Area Development

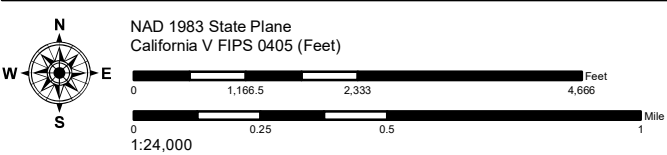
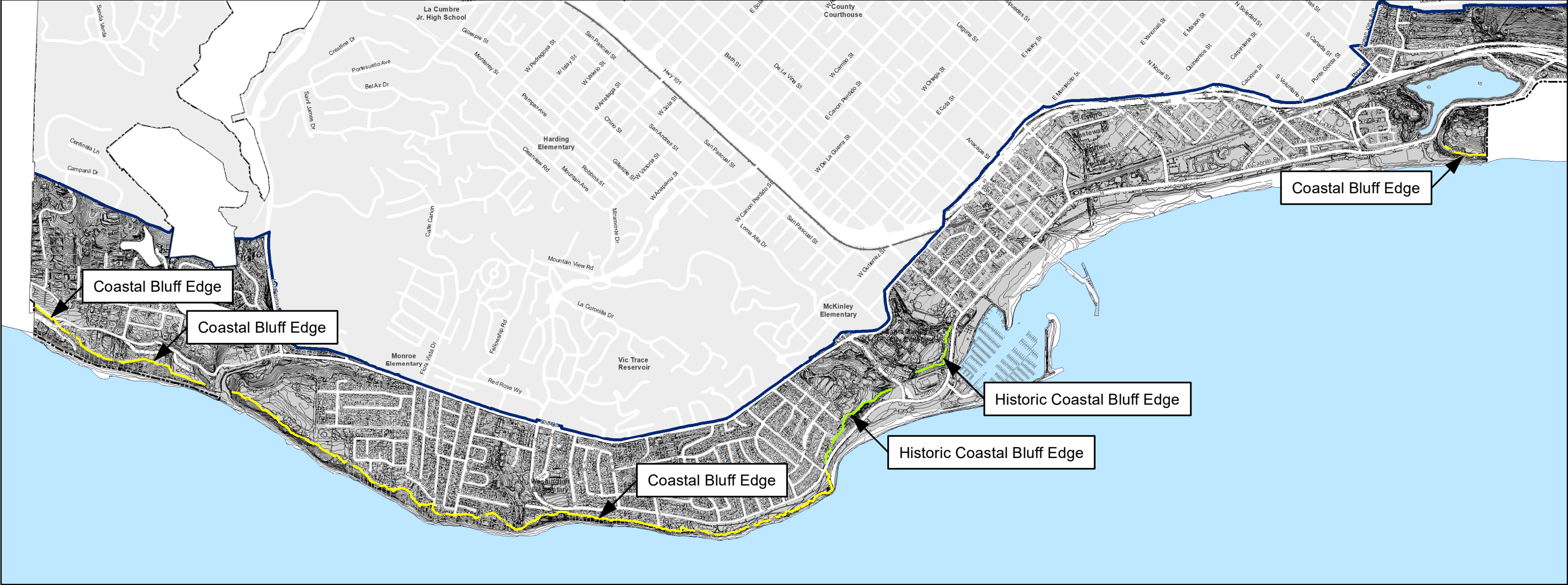
More than half of the beach portion of the shoreline is in public ownership, particularly from the western boundary of Shoreline Park through East Beach. Development in this area mainly serves public recreation and coastal-dependent purposes (e.g., parks, parking lots, the Harbor, Stearns Wharf, etc.). Existing City ordinances limit the uses allowed on City-owned beaches and backshore areas.

Most privately owned parcels on the coastal bluffs include some portion of the beach area to the mean high tide line, but this area is used as a public resource and is undeveloped except for coastal access stairways and the shoreline protection structures described above. Beginning in the early 1970s, City documents protect the bluff-backed beaches, prohibiting the installation of any improvements that would limit lateral access along the beach or change the nature of the beach from its natural condition that has long been used for walking, tidepooling, and other passive uses.

The beach portion of the shoreline is most exposed to wave impacts, beach erosion, and coastal flooding hazards. To date, parking lots and other structures in these areas have recovered from the occasional damaging storms, and no permanent inundation has occurred. The best available sea level rise models indicate that the threat of frequent flooding, permanent inundation, and beach loss will begin to increase significantly with approximately 1.5 feet of sea level rise, which is projected to occur by 2050. This provides the City a timeframe to design and implement sea level rise adaptation actions to mitigate future impacts. Going forward, new development and substantial redevelopment in areas depicted on Figure 5.1-1 *Interim Shoreline Hazards Screening Areas* will be evaluated to avoid shoreline hazards at any time during its expected life, factoring in the effects of sea level rise, to the degree feasible. During the time period prior to completion of the City's Sea Level Rise Adaptation Plan, it is the City's intent to retain and protect existing public development and operations of the City-owned beach and backshore areas, Harbor, and Stearns Wharf, including coastal access and coastal-dependent development, as long as doing so does not exacerbate risks to life and property. The Sea Level Rise Adaptation Plan will evaluate a full range of options to address the anticipated impacts of sea level rise on the City's beaches, Harbor, Stearns Wharf, and existing development and properly locate new development.

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FIGURE 5.1-2 COASTAL BLUFF EDGE



- BOUNDARIES**

 - Coastal Zone
 - City Limits
- COASTAL BLUFF EDGE**

 - Coastal Bluff Edge (Defined in Policy 5.1-54 Coastal Bluff Edge Defined)
 - Historic Coastal Bluff Edge (Defined in Policy 5.1-71 Historic Coastal Bluff Edge)

Note: Southern city limits extend into the Santa Barbara Channel. See Official Annexation Map for official city limit boundary. The Coastal Zone Boundary depicted on this map is shown for illustrative purposes only and does not define the Coastal Zone. The Coastal Zone Boundary delineation is representational, may be revised at any time in the future, is not binding on the Coastal Commission, and does not eliminate the possibility that the Coastal Commission must make a formal mapping determination. This figure shows the location of the coastal bluff edge in the City of Santa Barbara that meets the definition of Coastal Bluff Edge contained in Policy 5.1-54 Coastal Bluff Edge Defined and Historic Coastal Bluff Edge contained in Policy 5.1-71 Historic Coastal Bluff Edge. This figure may be updated by the City based on best available information and current site conditions. Large scale and digital versions of this figure and the topographical data on the map are available at the City of Santa Barbara Community Development Department office. Source: California Coastal Commission GIS/Mapping Unit (2017) and City of Santa Barbara Community Development Department (2016).

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Coastal Bluffs

The coastal bluff is composed of three main elements: the base of the bluff or toe, the face of the bluff (the vertical surface), and the top of the bluff. As defined in the Coastal Commission regulations, a “coastal bluff” is a bluff whose toe is now or was historically (generally within the last 200 years) subject to marine erosion.

There are approximately four miles of coastal bluffs along the City’s coastline, including the bluffs at the western City limits from Hope Ranch to Arroyo Burro Beach, the bluffs along the Mesa from Douglas Family Preserve to Shoreline Park at Leadbetter Point, and finally the bluffs at the eastern City limits adjacent to Bellosguardo (formerly known as the Clark Estate). Coastal bluffs whose toe was historically subject to marine erosion (prior to construction of the Harbor) include an area east of Shoreline Park and west of Pershing Park, depicted as Historic Coastal Bluff Edge on Figure 5.1-2 *Coastal Bluff Edge*.



COASTAL BLUFF

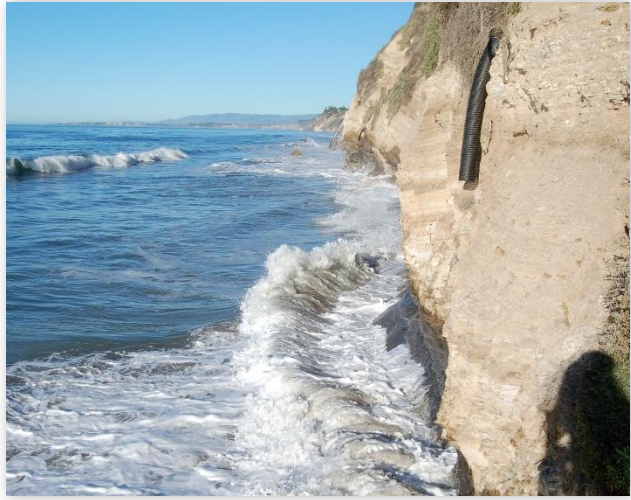
The coastal bluffs are composed primarily of the Monterey shale formation. This formation is prone to rapid erosion and landsliding for several reasons:

1. It is a thinly bedded sedimentary rock in which the bedding planes frequently slope seaward. This configuration facilitates wave erosion and allows the forces of gravity to pull slope material downward more easily than bedding planes that slope away from the base of the bluff;
2. The presence of bentonite clay layers adds to the inherent instability of the Monterey formation. When this highly expansive clay becomes wet, it expands and becomes slick, facilitating the downslope movement of the material above it;
3. The Monterey formation is often tightly folded, crumpled, and fractured. This allows thin, brittle rocks to be easily removed from the bluff by waves and deposited at the toe of the bluff as a pile of rock debris; and
4. The bedding planes, joints, and fractures allow water to enter the formation in many places, reducing overall rock strength.

Coastal Bluff Erosion & Retreat

One of the sources of erosion that can accelerate coastal bluff retreat is the addition of water from development along the coastal bluffs, including planting and watering of lawns and gardens, leaking of underground pipes, and unmaintained drain pipes overhanging the bluffs. Additional water on the coastal bluffs percolates down to the ground and emerges at the base as a spring or seep. The continual emergence of this water can significantly weaken bluff material. Other actions that can increase coastal bluff retreat include paths along the bluff edge and down the face that serve as water channels during rainstorms and cut gullies into the bluff material, increasing the weight placed on or near the bluff edge with buildings, fill, swimming pools, etc. that can make a formerly

stable slope unstable, and heavy non-native plants with shallow root systems (e.g., ice plant) overhanging the bluff edge and growing down the bluff face, pulling the slope material downslope.



COASTAL BLUFF WAVE ACTION

Coastal bluff retreat is a continual, natural process caused by both marine and terrestrial erosion and landslide processes that cause the bluffs to move landward. Wave action is the predominant erosion process as waves can erode the base of the bluff and remove support for overlying material, which increases the potential for landslides to occur. Terrestrial processes, such as erosion by water runoff over the face of the bluff, can also be a cause of coastal bluff retreat. Grading, vegetation removal, overwatering, poor drainage designs, and other development that contributes to excessive loading on the coastal bluff face and bluff top lands can also exacerbate erosion and instability on bluffs. Due to the perpetual nature

of these erosion processes, and the resulting landward retreat of the coastal bluffs, these areas should be recognized as temporary in nature.

Slope Stabilization Devices on Coastal Bluffs

Slope stabilization devices on coastal bluffs include constructed features such as retaining walls, sheet pile walls, buttresses, rip-rap, soldier piles, rock bolts, and gunite covering. Slope stabilization devices influenced by or designed to prevent impacts from waves and ocean currents are considered shoreline protection devices. While slope stabilization devices can mitigate slope instability, they can also cause other problems and have negative effects. Similar to shoreline protection devices, slope stabilization devices prevent the coastal bluffs from naturally eroding, but normally only in the location of the device. Slope erosion continues to occur around the device, devices weaken over time, or events occur that the device was not engineered to withstand, all of which eventually can result in gradual or catastrophic failure.

These devices also prevent the coastal bluffs and shoreline behind the beach from naturally eroding, which reduces sand supplies and beach widths. Other problems and negative effects of slope stabilization devices include visual impacts. Even when not originally visible or designed to blend into the natural landscape, over time these devices

may become exposed or deteriorate to the point that they are eyesores or disintegrate and litter coastal bluff faces and beaches.

For these reasons, the City's Coastal LUP and other planning documents limit when slope protection devices are allowed and how they should be designed to limit impacts.

Coastal Bluff Retreat Rates

Several different studies of coastal bluff retreat rates have been conducted in the Santa Barbara area. One study evaluated erosion rates over a 70-year period and determined that the highest retreat rate was approximately 12 inches per year, while the average erosion rate was eight inches per year. The estimated rates of coastal bluff retreat vary due to local differences in the composition and structure of the bluffs, the effects of bluff top development, and natural and human-made barriers located at the base of the bluffs, such as cobbles, boulders, and rock revetments. Although coastal bluff retreat varies at individual sites and generally occurs in an episodic manner, the average historic rate of coastal bluff retreat when measured over an extended period of time has been about six to 12 inches per year. At that average rate, the coastal bluffs could be expected to retreat by approximately 10-20 feet over the next 20 years, and approximately 45 to 90 feet by 2100. It should be noted, however, that site-specific studies of coastal bluff retreat rates have also determined that average retreat rates may be substantially lower than area-wide averages.



COASTAL BLUFFS

Coastal Bluff Retreat & Sea Level Rise

As sea level rises, coastal bluffs will be more vulnerable to wave-related erosion, which is expected to result in an increase in coastal bluff retreat rates. Currently, higher tides, storm surges, and wave uprush occasionally cover the entire beach at the base of the coastal bluffs. Sea level rise could increase coastal bluff retreat rates by greater than 55% over historical rates by 2100.

The faster coastal bluffs retreat with sea level rise, the more likely beaches will remain at the base of the bluffs, as the eroding bluffs allow space for the beaches to retreat and to some degree provide sediment to build up the height of beach. However, the rising sea level and associated beach erosion may occur faster than coastal bluffs erode, leading to the loss of bluff-backed beaches as they become inundated. Recent sea level rise model results suggest that beaches backed by coastal bluffs, as seen in the Mesa area, will narrow considerably and, in some cases, disappear with sea level rise.

Coastal Bluff Development & Risk Reduction

Most of the privately owned parcels along the coastal bluffs are developed with single-unit homes that were mainly constructed after World War II. Current setbacks from the

coastal bluff edge vary, with some primary structures located on the coastal bluff face, some adjacent to the coastal bluff edge, and others setback up to 50 feet. A Coast Guard lighthouse, Shoreline Park, the Douglas Family Preserve, and three public access stairs to the beach are also along the coastal bluffs. Of particular concern is development that is located on the bluff face or in close proximity to the coastal bluff edge. As the coastal bluff has retreated, this development causes a visual blight to the natural scenic qualities of the bluffs, and in some cases has become hazardous as disintegrating structures and improvements have fallen down the coastal bluff or onto the beach below.

In the late 1970s, the City established methods to mitigate hazards associated with development on the coastal bluffs. These included establishing adequate building setbacks for new development, requiring methods to drain water away from the coastal bluff top and edge, and controlling or prohibiting activities that contribute to coastal bluff erosion, such as unpermitted access routes, development that adds excessive weight to the coastal bluff top (i.e., large structures, swimming pools, artificial fill, etc.), non-native vegetation that requires a large amount of water (ice plant and annual grass), and disposal of material onto the coastal bluff face. At the time, a preliminary “seacliff setback line” was established such that the normal rates of erosion and coastal bluff material loss would not seriously affect the structure during its expected lifetime (75 years), to be verified by a site-specific investigation. An updated 75-year sea cliff retreat line map was developed in 2009 to identify areas where a site-specific geotechnical investigation for sea cliff retreat is required.

While the City has recognized the hazards of coastal bluff retreat for many years, this Coastal LUP updates policies for development on the coastal bluffs based on current best available science and the Coastal Commission *Sea Level Rise Policy Guidance*, and to clarify standards and procedures that were formerly not detailed enough for project applicants, planners, decision-makers, and the public. The City’s goals are to: 1) minimize exposure of new development and substantial redevelopment to the hazards of coastal bluff retreat and coastal erosion, 2) minimize risks to life and property through siting and design, 3) avoid project-induced exacerbation of erosion hazards, and 4) avoid the need for slope and shoreline protection devices that negatively impact natural landforms, beach widths, sand accretion, public access along the beach, and the aesthetic and biological resources of the beach and coastal bluff area. The overarching goal is to strictly limit development on the coastal bluff face to minimize risks to life and property from coastal bluff erosion and wave impacts. With these goals in mind, the City also recognizes the need for owners of coastal properties to perform maintenance and modest improvements to existing primary structures, garages, commercial buildings, and infrastructure.

The policies for coastal bluff development include procedures for identifying coastal bluff edge on a specific parcel and a map of the coastal bluff edge, as well as updated procedures for calculating the Coastal Bluff Edge Development Buffer. Also included are policies specifically outlining allowed development on the coastal bluff face, allowed development within the Coastal Bluff Edge Development Buffer, conditions for development in coastal erosion hazard areas, and a process to undertake if certain development standards cannot feasibly be met.

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Finally, with the updated coastal bluff edge information, some coastal bluff structures are considered nonconforming due to their location on the coastal bluff face. The Coastal LUP policies provide standards and findings to assist project applicants, planners, decision-makers, and the public on permit decisions for nonconforming new development and substantial redevelopment.

CREEK FLOODING

Four major watersheds drain through the City of Santa Barbara to the Pacific Ocean. The creeks that drain those watersheds include Arroyo Burro, Mission Creek, Laguna Channel, and Sycamore Creek. Arroyo Burro, Mission Creek, and Sycamore Creek originate in the Santa Ynez Mountains and drain areas within the Los Padres National Forest as well as developed areas of the City. The watershed for Laguna Channel drains an almost entirely urbanized area within the City.

These creeks and channels often experience short-duration, high-intensity rainfall events, which can result in high runoff rates and creek flows that rise quickly. Many of the natural creek channels in the City do not have the capacity to convey a sudden increase in flood flows that can occur during a large storm, and the areas with the greatest potential to experience out of channel flows are the lower creek reaches, where streambed gradients flatten and channel bank tops are relatively low.

Floods are generally described in terms of their frequency of occurrence. For example, a 100-year flood (also referred to as the base flood) is defined by evaluating the long-term average time period between floods of a certain size and identifying the size of flood that has a one percent chance of occurring during any given year. Floods of any size may occur at much shorter intervals or even within the same year. Flooding at the immediate shoreline is often temporary and results from a combination of creek flow, storm drain discharges, high tides, large waves, and ocean storm conditions.



LOWER MISSION LAGOON, THE CONNECTION BETWEEN LAGUNA AND MISSION CREEKS.

The Federal Emergency Management Agency (FEMA) provides official flood hazard mapping data, known as Flood Insurance Rate Maps (FIRM), that support the National Flood Insurance Program (NFIP) and provide the basis for community floodplain management regulations and flood insurance requirements. FEMA also maps Special Flood Hazard Areas (SFHA), including areas along the coast subject to temporary inundation by the 100-year flood with additional hazards associated with storm-induced waves. FEMA is in the process of remapping coastal flood risk and wave hazards in a project known as the Open Pacific Coast (OPC) Study. Following FEMA's process and statutory requirements, the new base flood elevations and hazard zones will be presented on digital FIRM.

Currently, coastal areas that would be expected to incur temporary flooding-related damage include most beaches and adjacent areas as far inland as Shoreline Drive and Cabrillo Boulevard. The FEMA designated 100-year flood zone areas in the City's Coastal Zone are briefly described below.

Arroyo Burro

Within the Coastal Zone, Arroyo Burro flows through a fairly incised channel. Floodwaters during a 100-year storm may only inundate small areas directly adjacent to the creek.

Mission Creek

Along the lower reaches of Mission Creek, flooding may impact the West Beach neighborhood, lower State Street, and the Waterfront area. Floodwaters from Mission Creek can also enter the Laguna Channel watershed, which adversely affects the ability of the Laguna Channel to convey flood flows.

Laguna Channel & Tide Gate

Laguna Channel is an engineered flood control channel from Highway 101 to the ocean.



LAGUNA CHANNEL TIDE GATE

Flooding associated with Laguna Channel can affect large portions of the City, including lower State and Milpas Streets, the Industrial Area, the western end of East Beach, and portions of the Waterfront.

A hydraulic pump station and tide gate facility was constructed at the mouth of the channel in the 1950s to prevent flooding in the Downtown area during high tides and storm events with heavy creek flows. The tide gates are essential in preventing flooding, particularly in the areas of the City that were within the historic Laguna Estero. This includes key recreational areas and coastal access parking lots, essential transportation facilities, visitor-serving uses, and existing commercial and residential structures. The Laguna Channel tide gate is one

of the City's key flooding protection structures, and ongoing use and maintenance of this facility is critical to public health and safety.

Sycamore Creek

Sycamore Creek can cause flooding impacts in portions of the East Beach neighborhood, where overbank flows occur due to a reduction in the creek channel slope and the resulting reduction in channel conveyance capacity.

Andrée Clark Bird Refuge & Weir

Historically, the Andrée Clark Bird Refuge was a brackish area that was inundated with ocean water during high tides and also received fresh water input from Sycamore Creek. However, construction of the railroad resulted in rerouting of Sycamore Creek, and now the Bird Refuge is an artificially modified estuary. Runoff from the urban watershed enters

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the Bird Refuge via a mix of open channels and storm drains, and the Bird Refuge is connected to the ocean through a weir system on the inland side of Cabrillo Boulevard, passing under the roadway to a coastal lagoon. The outlet weir was installed in the 1980s to prevent flooding of Cabrillo Boulevard. Potential improvements to the weir system are currently being evaluated by the City.

Creek Flooding & Climate Change

Recent climate models to the year 2100 indicate that annual precipitation rates could remain relatively unchanged, but the number of large rainfall events could increase. The rainy season is projected to start later and end sooner, but shorter seasons with more large rainfall events will lead to more runoff and larger peak discharges, resulting in an increase in flooding events. More research is needed to evaluate the potential impact of increased creek flooding coupled with sea level rise to determine if any changes to existing practices should occur to minimize the effects of flooding.



SYCAMORE CREEK OUTLET

FIRE HAZARDS

Wildland fires are a significant part of Santa Barbara's history, with most of them occurring on the south-facing slopes of the Santa Ynez Mountains, also known as the "front country." A wildland fire that occurs in the vicinity of urban development is often referred to as a "wildland-urban interface" fire. The high fire hazard areas in the Coastal Zone are not directly connected to the Los Padres National Forest, and there is no recent history of wildland fires in the Coastal Zone. However, the City has designated four fire hazard zones within the high fire hazard areas based on the degree of hazard. Two of the hazard zones fall within the Coastal Zone: Coastal and Foothill, described below.

Development in high fire hazard areas requires provisions for appropriate site layout, building design and materials, access, water supply, and vegetation management practices to reduce the potential for wildfire-related damage. The Fire Department reviews projects to determine if building materials, defensible space, and water storage capacity are adequate for fire protection purposes.

Coastal

This zone is at the western City limits in a developed neighborhood north of Cliff Drive and west of Las Positas Road. This zone is mostly developed with single-unit homes with landscaped vegetation. The ocean's influence dominates weather patterns in this zone for most of the year; however, down canyon winds may occur that can cause the rapid spread of flames. The majority of the roads in this zone meet the Fire Department's



HARBOR VIEW OF WILDFIRE

standards, and water supplies also meet Fire Department requirements for fighting structure fires.

Foothill

Most of this zone is in the City's foothills located outside the Coastal Zone boundary, but a small portion of it extends into the Coastal Zone to Old Coast Highway/Highway 101 at the eastern City limits. This zone is almost entirely within the developed and irrigated golf course of the Montecito County Club. This zone is, however, connected to areas further inland with a mix of heavy brush and canopy fuels provided by oak and eucalyptus trees, heavy vegetation in creek

areas, and slopes with gradients that vary between 20 and 40 percent. This zone generally has adequate water supplies for fighting structure fires, which reduces potential fire hazards.

Fire Hazards & Climate Change

Climate change poses many potential challenges to California forests, including predicted increases in intensity and frequency of wildfire. In recent years, the California fire season has been starting sooner and ending later, and the severity of wildfire acreage burned has increased. It is unknown if the City's fire hazard zones will change due to changing climate. Any statewide updates to the fire hazard severity zones or building code requirements for high fire hazard areas will be reflected locally in the City of Santa Barbara.

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COASTAL HAZARDS POLICIES

CITY PLANNING EFFORTS & PROGRAMS

- Policy 5.1-1** Community Resilience. Promote community resilience through risk reduction, public education, and emergency response planning and programs.
- Policy 5.1-2** Tsunami Response Plans. Continue to participate in local and regional efforts to develop, implement, and update Tsunami Response Plans and evacuation routes. Implement the tsunami warning system, conduct public education and readiness measures, post Tsunami Hazard Zone signs, and develop response planning programs necessary to continue designation as a TsunamiReady® community.
- Policy 5.1-3** Floodplain Mapping Update. Coordinate with FEMA on updates to the Flood Insurance Rate Map (FIRM) floodplain boundaries for Special Flood Hazard Areas, as well as public education to keep the public informed of the risks and policies surrounding flooding.
- Policy 5.1-4** Fire Hazard Risk Reduction Programs. Continue to implement programs that reduce the risk of wildland and structure fires, and that minimize the short- and long-term effects of fires consistent with the policies of this Coastal LUP.
- A. *Wildfire Risk Reduction*. Continue to implement risk reduction measures such as vegetation fuels management and vegetation chipping through City operations, inter-agency programs, and programs for private property.
 - B. *Limit Residential Development in High Fire Hazard Areas*. Continue land use map designations that limit residential density in High Fire Hazard Areas.
 - C. *Wildland Fire Suppression Assessment District*. Continue to implement wildfire risk reduction programs facilitated by the Wildland Fire Suppression Assessment District, such as vegetation management, and homeowner education and assistance programs.
 - D. *Coordination*. Continue to coordinate fire risk prevention, management, response, recovery, and public education programs with the County of Santa Barbara, Montecito Fire Protection District, U.S. Forest Service, California Emergency Management Agency, CAL FIRE, Federal Emergency Management Agency, and other agencies.

- Policy 5.1-5** Evacuation Route Evaluation. Periodically evaluate the effectiveness of existing and proposed fire emergency evacuation routes, and develop standards or conditions that can be applied to projects to assure that adequate evacuation routes are provided and maintained, where feasible.
- Policy 5.1-6** Public Water System Improvements for Fire Fighting. Continue to periodically evaluate the potential for additional water system improvements to assist in emergency preparedness and incorporate feasible measures that are consistent with the policies of this Coastal LUP into the City Capital Improvement Plan and development standards and conditions.
- Policy 5.1-7** Private Water Supplies for Fire Fighting. Encourage and assist homeowners in High Fire Hazard Areas to install their own emergency water supplies to support firefighting operations provided that procurement of such supplies and related development is consistent with the policies of this Coastal LUP.
- Policy 5.1-8** Sewer Line Erosion. Identify, prioritize, and support relocation of sewer lines that may be threatened by erosion.
- Policy 5.1-9** Regional Coordination on Beach and Coastal Bluff Erosion. Continue support for local and regional beach management strategies and coordinate with local and regional entities such as the Beach Erosion Authority for Clean Oceans and Nourishment (BEACON), the County, other South Coast cities, Santa Barbara City College, and UCSB to manage regional beach and coastal bluff erosion issues including:
- A. Protection and restoration of natural sand transport;
 - B. Sand supply replenishment projects;
 - C. Natural coastal bluff restoration, stabilization, and erosion control measures;
 - D. Non-intrusive methods to slow sand transport and retain sand along the beaches; and
 - E. Funding opportunities and mechanisms to implement regional solutions.
- Policy 5.1-10** Harbor Dredging and Beach Nourishment. Continue to dredge the Harbor entrance channel and other areas, as necessary, to ensure the navigational channels permit safe travel for boating and fishing vessels and to provide sand for beach nourishment.
- Policy 5.1-11** Sand Management. Continue beach nourishment and dredged sediment management that protect shorelines from erosion and lessen the need for shoreline protection devices (e.g. seawalls), consistent with the

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policies of this Coastal LUP and subject to a valid Coastal Development Permit.

Policy 5.1-12 Laguna Channel Tide Gate and Pump Station Facility Maintenance and Improvement. The City shall prioritize the maintenance and improvement of the Laguna Channel Tide Gate and Pump Station Facility to ensure its function as a critical flood prevention device for protection of coastal resources, coastal access, public infrastructure and facilities, and existing development.

Policy 5.1-13 Monitoring, Data Collection, and Analysis of Sea Level Rise. Monitor, assess, and inform the public and City decision-makers about the effects of sea level rise on coastal resources, coastal access, public infrastructure and facilities, and existing development in order to make informed recommendations on adaptation and revise plans and policies as needed. This includes activities such as:

- A. Supporting sea level rise modeling, vulnerability identification, and adaptation planning efforts;
- B. Tracking NOAA tide gauge records and other resources to establish a long-term monitoring record of sea level changes;
- C. Coordinating with the State Lands Commission, other state and federal agencies, other jurisdictions, academic and research institutions, and other organizations along the coast to obtain mean high tide line survey data in order to document baseline data and monitor movement of the shoreline and public trust boundary;
- D. Documenting coastal bluff and beach erosion through photographs, mapping, and field notes;
- E. Documenting tide conditions, storm event flooding depths and duration, wave height and frequency, beach and coastal bluff erosion, and property damage through photographs, mapping, and field notes to validate numerical modeling results and track the frequency of events; and
- F. Supporting efforts to monitor sea level rise impacts to recreational resources (e.g. beaches), natural resources, and ESHAs.

Policy 5.1-14 Sea Level Rise Adaptation Plan.

- A. The City, in coordination with CCC staff, shall develop a comprehensive Sea Level Rise (SLR) Adaptation Plan that identifies the City's vulnerability to SLR and analyzes the feasibility, economic impacts, costs, and environmental consequences of a range of adaptation strategies. The SLR Adaption Plan shall, to the extent feasible, be coordinated with other regional jurisdictions and entities working on SLR issues and be guided by the California Natural Resources Agencies Safeguarding California Plans for

Reducing Climate Risk and the California Coastal Commission’s Sea Level Rise Policy Guidance.

B. The SLR Adaptation Plan shall include:

- i. A vulnerability assessment that uses best available science to examine potential SLR resource and hazard impacts, and assets at risk for the near-term, mid-term, and long-term to at least 2100. The assessment shall identify the areas, structures, facilities, and coastal resources that are most vulnerable. The assessment shall also analyze impacts to areas providing public access and recreation resources (including beaches, the California Coastal Trail, and Highway 101), significant ESHAs (such as wetlands), open space areas (in particular those that could provide areas in the future for migration of habitats and resources), and sites of existing or planned critical infrastructure. The assessment shall establish baseline conditions and analyze multiple sea level rise scenarios based on best available science, including a high emission sea level rise scenario based on state guidance;
- ii. An economic and fiscal impacts review that analyzes the value of property, public infrastructure, ecosystem, and recreational assets vulnerable to SLR;
- iii. A cost/benefit analysis of a range of adaptation strategies that address anticipated impacts of SLR identified in the vulnerability assessment. The plan shall include analysis of the feasibility of managed retreat or other ways to move existing and future development in order to minimize hazards, protect coastal resources from sea level rise, allow migration of wetlands and other habitats, and/or restore areas for open space, public access, biological, and recreational benefits to replace those lost due to the impacts of sea level rise; and
- iv. A timeline for phased implementation of the plan that includes action triggers.

Policy 5.1-15 Implementation of SLR Adaptation Plan. The SLR Adaptation Plan shall be used to draft policies, programs, and development standards to implement chosen SLR adaptation strategies for inclusion in the City’s LCP through a future LCP Amendment to be submitted to the CCC for review and certification.

Policy 5.1-16 Update Shoreline Hazard Maps. The City shall update shoreline hazard maps as necessary to incorporate new sea level rise science, monitoring results, and information on coastal conditions.

Policy 5.1-17 Educate Public on Sea Level Rise Hazards. Educate the public about the effects of sea level rise and shoreline hazards. Pursue various methods to notify and educate owners, residents, tenants, and potential future

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owners of property located in areas potentially subject to shoreline hazards and the effects of sea level rise. Support legislation to include the risks of sea level rise and shoreline hazards on real estate disclosures included in the sales of property.

DEVELOPMENT REVIEW POLICIES

General

Policy 5.1-18 Hazard Risk Reduction. New development and substantial redevelopment shall do all of the following, over the expected life of the development, factoring in the effects of sea level rise:

- A. Minimize risks to life and property from high geologic, flood, and fire hazards;
- B. Assure stability and structural integrity; and
- C. Neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area.

Policy 5.1-19 Adaptation in Development. New development and substantial redevelopment shall consider the expected life of proposed development in conjunction with the best available information on climate change effects, particularly sea level rise, and incorporate adaptation measures, as needed, in the location, siting, and design of structures in order to minimize hazards and protect coastal resources for the life of the development.

Geologic & Seismic Hazards

Policy 5.1-20 Avoid or Minimize the Effects of High Geologic Hazards. New development and substantial redevelopment in areas of potential fault rupture, groundshaking, liquefaction, tsunami, seiche, slope failure, landslide, soil erosion, expansive soils, radon, or high groundwater shall be sited, designed, constructed, and operated (including adherence to recommendations contained in any site specific geologic evaluation required) to ensure that the development minimizes risks to life and property, assures stability and structural integrity, and neither creates nor contributes significantly to erosion, geologic instability, or destruction of the site or surrounding area over its expected life, factoring in the effects of sea level rise.

Policy 5.1-21 Avoid Development on Slopes Greater than 30%. Avoid, and where avoidance is not feasible, minimize development that involves grading on any slopes greater than 30%.

Policy 5.1-22 Slope Failure Areas. New development and substantial redevelopment shall avoid areas subject to slope failure, to the extent feasible. Where avoidance is not feasible, minimize development and incorporate design and construction techniques that lessen slope failure risk, including use of deep-rooted, drought-tolerant vegetation, control of site drainage, and erosion control measures. Development proposed in slope failure areas within the Shoreline Hazards Screening Areas outlined in Policy 5.1-29 *Interim Shoreline Hazards Screening Areas Map* are subject to additional restrictions, as outlined in the shoreline hazard policies of this Chapter.

Policy 5.1-23 Slope Stabilization and Protection.

- A. Where such measures are otherwise allowed pursuant to the policies of this Coastal LUP, slope stabilization devices and other geotechnical mitigation measures that significantly modify landforms shall only be permitted when all of the following criteria are met:
 - i. When necessary to minimize the risk of a geologic or shoreline hazard and when alternative techniques to protect the development from risk of damage due to landslides and unstable slope have been determined to be infeasible or more damaging to coastal resources. Alternate techniques to protect development could include: siting of development; use of deep-rooted; drought tolerant vegetation; control of site drainage; erosion control measures; and relocation or demolition of threatened existing development when appropriate;
 - ii. Any new structures that are threatened by high geologic hazards (landslides, etc.) are setback from the hazard, to the maximum extent feasible;
 - iii. The development is designed and constructed to assure stability and structural integrity, including meeting an adequate factor of safety (1.5 static conditions; 1.1 pseudostatic conditions) for the expected life of the structure, factoring in the effects of sea level rise; and
 - iv. The development will not create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area for the expected life of the development, factoring in the effects of sea level rise.
- B. Slope stabilization devices and other geotechnical mitigation measures that significantly modify landforms shall be designed to be the least environmentally damaging alternative, minimize landform alteration, avoid impacts to public access to and along the shoreline and coastal recreation areas, and be visually compatible with the surrounding natural environment, to the maximum extent feasible. Mitigation measures shall be incorporated into the design and

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construction of slope stabilization projects to minimize adverse impacts to coastal resources consistent with the policies of this Coastal LUP.

- C. Temporary slope stabilization methods such as placement of tarps shall only occur in cases of immediate threat or emergency and shall not be maintained as permanent stabilization measures.

Policy 5.1-24 Fault Rupture Setbacks and Safety Measures. Avoid placing new habitable structures across or adjacent to apparently active faults.

- A. *Fault Setbacks.* Habitable structures should generally be setback at least 50 feet from discrete fault surface rupture, or as determined by a site-specific fault investigation, to mitigate surface warping hazard.
- B. *Utilities that Cross Faults.* For linear utility infrastructure (e.g., water, sewer, gas pipelines) that must cross an apparently active fault, appropriate safety measures shall be provided. Examples of appropriate safety measures include providing shut-off valves on both sides of the fault, motion-sensitive shut-off valves, and appropriate structural engineering to accommodate anticipated levels of ground movement or surface warping.

Policy 5.1-25 Tsunami (Seismic Sea Waves) and Seiche Permit Conditions. Coastal Development Permits for new development and substantial redevelopment in areas designated as a tsunami hazard zone or a seiche hazard area shall include conditions that require:

- A. The owner acknowledges that:
 - i. The project site may be subject to hazards from tsunamis and/or seiches;
 - ii. The applicant assumes the risks of injury and damage from such hazards in connection with the permitted development; and
 - iii. The owner waives any claim of damage or liability against the City for injury or damage from such hazards.
- B. In the event of a tsunami and/or seiche hazard event that damages the development, the owner shall remove all recoverable debris associated with the development from the beach and the ocean and lawfully dispose of the material at an approved disposal site. Such removal shall require authorization through an emergency and/or regular Coastal Development Permit process; and
- C. The owner shall record a deed restriction, in a manner acceptable to the City Attorney, reflecting the conditions listed above.

Fire

Policy 5.1-26 Avoid or Minimize the Effects of High Fire Hazard. New development and substantial redevelopment shall provide appropriate site layout, structure design and materials, fire detection and suppression equipment, landscaping and maintenance including defensible space requirement, road access and fire vehicle turnaround, road capacity for evacuation (if new roads are proposed), and water supply to avoid or minimize risks to life and property. Any requirements for fire protection shall be considered as part of any Coastal Development Permit application review to ensure that adverse impacts to coastal resources are avoided or minimized consistent with the policies of this Coastal LUP.

Policy 5.1-27 Defensible Space Requirements. Existing structures, new development, and substantial redevelopment in high fire hazard areas shall provide defensible space as required by the Fire Department. Within defensible space vegetation (native or otherwise) must be maintained to create an effective fuel break by thinning dense vegetation and removing dry brush, flammable vegetation, and combustible growth. Fuel modification and brush clearance techniques shall minimize impacts to native vegetation, protect ESHAs consistent with the policies of Chapter 4.1 Biological Resources, and minimize erosion, runoff, and sedimentation, to the maximum feasible extent.

Flooding

Policy 5.1-28 Minimize the Effects of High Flood Hazard. New development and substantial redevelopment shall meet the following requirements over the expected life of the development, factoring in the effects of sea level rise:

- A. Avoid high flood hazards where feasible;
- B. Where avoidance of high flood hazards cannot be feasibly achieved, minimize flood risk by increasing elevation of structures, restricting basements or habitable floor area below grade, restricting grading, restricting fencing or yard enclosures that cause water to pond, and/or utilizing flood proof materials consistent with local building requirements; and
- C. Neither create nor contribute significantly to downstream flooding, erosion, geologic instability, or destruction of the site or surrounding area.

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Shoreline Hazards

Policy 5.1-29 Interim Shoreline Hazards Screening Areas Map.

- A. Figure 5.1-1 *Interim Shoreline Hazards Screening Areas* depicts hazard screening areas potentially subject to shoreline hazards including: beach erosion; coastal bluff erosion; coastal bluff slope failure or instability; coastal flooding; and wave impacts, now and in the future, factoring in the effects of sea level rise. The Map is based on data from geological investigations, surveys, aerial photos, best available science modeling of sea level rise, and other sources. The Map depicts areas potentially impacted from shoreline hazards resulting from 150cm of sea level rise with a 100-year storm event. The Map provides a screening-level tool that depicts where site specific technical evaluations may be required and where development standards pertaining to shoreline hazard areas may be applied. Any development subject to beach erosion, coastal bluff erosion, coastal bluff slope failure, coastal flooding, and/or wave impacts factoring in the effects of sea level rise, that are not located within the screening areas depicted on the Map, shall also be subject to the shoreline hazard policies of this Coastal LUP.
- B. Figure 5.1-1 *Interim Shoreline Hazards Screening Areas* shall be used in the interim period between CCC certification of this Coastal LUP and when new shoreline hazard screening procedures and maps are certified as part of the Sea Level Rise Adaptation Plan process.
- C. There are six potential shoreline hazards screening areas depicted on Figure 5.1-1 *Interim Shoreline Hazards Screening Areas* as follows:
 - i. Potential Shoreline Hazards Screening Area 1 (City-Owned Low-Lying Beach and Backshore Areas). This Area includes Arroyo Burro Beach; the portion of Arroyo Burro Beach Park subject to potential beach erosion; and the area bounded by the southerly prolongation of La Marina Drive to the west, Cabrillo Boulevard and Shoreline Drive to the north, the westerly edge of the Bellosguardo property to the east, and the ocean to the south, excluding Stearns Wharf and the developed portions of the Harbor. This Area is subject to the following potential shoreline hazards: beach erosion, coastal flooding, and wave impacts;
 - ii. Potential Shoreline Hazards Screening Area 2 (Bluff-Backed Beaches). This Area includes bluff-backed beaches from the mean high water line to the toe of coastal bluffs. This Area is subject to the following potential shoreline hazards: beach erosion, coastal bluff erosion, coastal bluff slope failure, coastal flooding, and wave impacts;
 - iii. Potential Shoreline Hazards Screening Area 3 (Coastal Bluff Faces). This Area includes coastal bluff faces from the toe of coastal bluffs up to the coastal bluff edge. This Area is subject

to the following potential shoreline hazards: coastal bluff erosion, coastal bluff slope failure, coastal flooding, and wave impacts;

- iv. Potential Shoreline Hazards Screening Area 4 (Coastal Bluff-Tops). This Area includes those portions of the bluff top landward of the coastal bluff edge. This Area is subject to the following potential shoreline hazards: coastal bluff erosion, landslide, and coastal bluff slope failure;
- v. Potential Shoreline Hazards Screening Area 5 (Stearns Wharf and Harbor). This Area includes the developed portions of Stearns Wharf and the Harbor. This Area is subject to the following potential shoreline hazards: beach erosion, coastal flooding, and wave impacts; and
- vi. Potential Shoreline Hazards Screening Area 6 (Inland Coastal Flooding Area). This Area includes low-lying areas potentially subject to coastal flooding that are not included in Potential Shoreline Hazards Screening Areas 1-5. This Area is subject to the following potential shoreline hazard: coastal flooding.

Policy 5.1-30 Development Standards for Potential Shoreline Hazards Screening Area 1 (City-Owned Low-Lying Beach and Backshore Areas) on the Interim Shoreline Hazards Screening Areas Map.

- A. New development and substantial redevelopment in the Potential Shoreline Hazards Screening Area 1 (City-Owned Low-Lying Beach and Backshore Areas) on Figure 5.1-1 *Interim Shoreline Hazards Screening Areas* shall be limited to:
 - i. Public trails, walkways, engineered staircases, or related public infrastructure to provide public access to the beach and coast;
 - ii. Habitat creation, restoration, and enhancement;
 - iii. Remediation or removal of hazardous materials;
 - iv. Reestablishment of natural landforms that have been altered by previous development activities;
 - v. Subsurface public utility pipes or lines with no other feasible inland siting alternative;
 - vi. Pipelines for coastal dependent industry;
 - vii. Flood control projects;
 - viii. Lifeguard towers;
 - ix. Public restrooms and showers;
 - x. Substantial redevelopment, alteration, or relocation of existing public structures and public parking lots provided there is no net increase in overall development area. Relocation shall be to a site that is not located on the beach and that has the same or

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smaller threat of erosion, coastal flooding, or other wave impacts than the existing site. Any needed shoreline protection shall be consistent with the policies of this Coastal LUP, including Policy 5.1-44 *Shoreline Protection Device Permitting*;

- xi. Beach nourishment and dredged sediment management;
 - xii. Shoreline protection devices found to be consistent with Policy 5.1-44 *Shoreline Protection Device Permitting*;
 - xiii. Beach grooming found to be consistent with Policy 4.1-32 *Beach Grooming and Disturbance of Wrack*;
 - xiv. Beach volleyball courts and other minor, at-grade, easily removable, recreational equipment; and
 - xv. Temporary structures associated with a temporary event.
- B. New development and substantial redevelopment shall be sited outside areas subject to beach erosion and wave impacts over the expected life of the development, to the extent feasible, and factoring in the effects of sea level rise. If complete avoidance of beach erosion and wave impact hazards is not feasible, new development and substantial redevelopment shall be set back from beach erosion and wave impact hazards, to the maximum extent feasible. New development and substantial redevelopment shall be sited and designed to minimize the impacts of beach erosion, coastal flooding, and wave impacts to life and property; assure stability and structural integrity; and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area over the expected life of the development, factoring in the effects of sea level rise.

Policy 5.1-31 Development Standards for Potential Shoreline Hazards Screening Area 2 (Bluff-Backed Beaches) on the Interim Shoreline Hazards Screening Areas Map.

- A. New development and substantial redevelopment on bluff-backed beaches (area from the mean high water line to the toe of coastal bluffs) shall be limited to:
 - i. Public trails, walkways, engineered staircases, or related public infrastructure to provide public access to the beach and coast;
 - ii. Habitat creation, restoration, and enhancement;
 - iii. Remediation or removal of hazardous materials;
 - iv. Re-establishment of natural landforms that have been altered by previous development activities;
 - v. Subsurface public utility pipes or lines with no other feasible inland siting alternative;
 - vi. Pipelines for coastal-dependent industry;

- vii. Flood control projects;
 - viii. Beach nourishment and dredged sediment management; and
 - ix. Shoreline protection devices found to be consistent with Policy 5.1-44 *Shoreline Protection Device Permitting*.
- B. New development and substantial redevelopment shall be setback from shoreline hazards to the maximum extent feasible and sited and designed to minimize impacts resulting from beach erosion, coastal bluff erosion, coastal bluff slope failure, coastal flooding, and wave impacts to life and property; assure stability and structural integrity; and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area over the expected life of the development, factoring in the effects of sea level rise.

Policy 5.1-32 Development Standards for Potential Shoreline Hazards Screening Area 3 (Coastal Bluff Faces) on the Interim Shoreline Hazards Screening Areas Map.

- A. New development and substantial redevelopment on coastal bluff faces (area between the toe of the coastal bluff up to coastal bluff edge) shall be limited to:
- i. Public trails, walkways, engineered staircases, or related public infrastructure to provide public access to the beach and coast;
 - ii. Habitat creation, restoration, and enhancement;
 - iii. Remediation or removal of hazardous materials;
 - iv. Re-establishment of natural landforms that have been altered by previous development activities;
 - v. Replacement of existing subsurface public utility pipes or lines where no inland siting alternative is feasible;
 - vi. Drainage systems consistent with Policy 5.1-39 *Drainage Systems On Coastal Bluff Faces and Coastal Bluff Edge Development Buffers*;
 - vii. Slope stabilization devices and other geotechnical mitigation measures consistent with Policy 5.1-23 *Slope Stabilization and Protection* that are necessary to protect: development that provides coastal public access; existing public structures; drainage systems consistent with Policy 5.1-39 *Drainage Systems On Coastal Bluff Faces and Coastal Bluff Edge Development Buffers*; replacement of existing subsurface public utility pipes or lines where no inland siting alternative is feasible; existing principal structures; other existing habitable structures; existing garages or required parking areas; and minimum required ingress and egress to these existing structures; and

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viii. Shoreline protection devices that are consistent with Policy 5.1-44 *Shoreline Protection Device Permitting*.

- B. If compliance with subsection A. above would prohibit a reasonable use of a lawfully created lot, Policy 5.1-36 *Reduction of Coastal Bluff Face and Coastal Bluff Edge Development Buffer Standards* or Policy 5.1-37 *Sea Ledge Lane* may apply.
- C. New development and substantial redevelopment shall be sited outside areas subject to beach erosion, coastal flooding, wave impacts, coastal bluff erosion, and coastal bluff slope failure over the expected life of the development, to the maximum extent feasible, factoring in the effects of sea level rise. If complete avoidance of hazard areas is not feasible, new development and substantial redevelopment shall be sited and designed to minimize impacts of beach erosion, coastal bluff erosion, coastal bluff slope failure, coastal flooding, and wave impacts to life and property; assure stability and structural integrity; and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area over the expected life of the development, factoring in the effects of sea level rise.

Policy 5.1-33 Development Standards for Potential Shoreline Hazards Screening Area 4 (Coastal Bluff-Tops) on the Interim Shoreline Hazards Screening Areas Map.

- A. New development and substantial redevelopment shall be designed and sited to minimize impacts of coastal bluff erosion and coastal bluff slope failure to life and property; assure stability and structural integrity; and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding areas over the expected life of the development, factoring in the effects of sea level rise.
- B. Except for allowed development outlined in subsection C. below, new development and substantial redevelopment shall be sited landward of a Coastal Bluff Edge Development Buffer. The Coastal Bluff Edge Development Buffer shall be of sufficient size to ensure that new development and substantial redevelopment will not be threatened by erosion or slope instability, will not require the use of existing or new slope stabilization devices, and will not require the use of existing or new shoreline protective devices over the expected life of the development, factoring in the effects of sea level rise. Policy 5.1-70 *Coastal Bluff Edge Development Buffer Calculation* provides a detailed methodology for site-specific analysis of Coastal Bluff Edge Development Buffers.
- C. New development and substantial redevelopment within Coastal Bluff Edge Development Buffers shall be limited to:

- i. Development allowed on coastal bluff faces pursuant to Policy 5.1-32 *Development Standards For Potential Shoreline Hazards Screening Area 3 (Coastal Bluff Faces) on the Interim Shoreline Hazards Screening Areas Map*;
- ii. Landscaping and other plantings consistent with Policy 5.1-38 *Landscaping, Watering, Weight, and Drainage on Coastal Bluff Faces and Coastal Bluff Edge Development Buffers*;
- iii. Substantial redevelopment, alteration, or relocation of existing public structures and public parking lots where no inland siting alternative is feasible and provided there is no net increase in overall development area. Relocation shall be to a site that has a smaller threat of erosion. Any needed shoreline protection shall be consistent with the policies of this Coastal LUP, including Policy 5.1-44 *Shoreline Protection Device Permitting*; and
- iv. Patios (constructed of wood, pavers, stone, brick, tile, or similar material) no more than 10 inches above existing grade, walkways, lighting for public safety purposes, fences limited to 42 inches in height, and vegetation barriers, if they are minor improvements, easily removable (without the use of mechanized equipment), and conform to the following:
 - a. Shall be located at least 10 feet from the coastal bluff edge (fences or other vegetation barriers for safety purposes could be located as close as 5 feet from the bluff edge if there is no other feasible option on the site);
 - b. Shall require an evaluation by a qualified California licensed professional (e.g., Professional Geologist, Engineering Geologist, Geotechnical Engineer, or Civil Engineer, as applicable) that shows that the improvement will not create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area;
 - c. Shall be designed to be visually compatible with the surrounding area; and
 - d. Shall be subject to the conditions listed in Policy 5.1-42 *Conditions for Development in Shoreline Hazard Areas on the Interim Shoreline Hazards Screening Areas Map* and additional conditions of approval that:
 - i. Require proper maintenance of the improvements so that they do not become a safety issue or begin to affect erosion, geologic instability, or destruction of the site or surrounding area;
 - ii. Require that no mechanized construction equipment is used for installation or removal;

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- iii. Require removal of the minor improvements when erosion reaches less than 5 feet from the improvements or if the improvements are otherwise deemed unusable or unsafe due to imminent threat of damage or destruction from geologic instability, erosion, flooding, wave impact hazards, or other hazards associated with development on a coastal bluff or beach; and
- iv. Limit the approval of the minor improvements to a maximum 20 years from the issuance of the Coastal Development Permit. When the permit term ends, the minor improvements shall be removed unless re-evaluation of the site shows the minor improvements still meet the standards and conditions listed above and a new Coastal Development Permit is approved to retain the minor improvements.

D. If compliance with subsection A., B., and C. above would prohibit a reasonable use of a lawfully created lot, Policy 5.1-36 *Reduction of Coastal Bluff Face and Coastal Bluff Edge Development Buffer Standards* or Policy 5.1-37 *Sea Ledge Lane* may apply.

Policy 5.1-34 Development Standards for Potential Shoreline Hazards Screening Area 5 (Stearns Wharf and Harbor) on the Interim Shoreline Hazards Screening Areas Map. New development and substantial redevelopment shall be sited and designed to minimize impacts of beach erosion, coastal flooding, and wave impacts to life and property; assure stability and structural integrity; and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area over the expected life of the development, factoring in the effects of sea level rise. See additional policies addressing uses in this Area in Chapter 2.1 *Land Use & Development* and Chapter 2.2 *Coastal-Dependent & Related Development*.

Policy 5.1-35 Development Standards for Potential Shoreline Hazards Screening Area 6 (Inland Coastal Flooding Area) on the Interim Shoreline Hazards Screening Areas Map. New development and substantial redevelopment shall:

- A. Avoid high flood hazards unless determined to be infeasible or more damaging to coastal resources;
- B. Where avoidance of high flood hazards cannot be achieved, minimize flood risk by increasing elevation of structures, restricting basements or habitable floor area below grade, restricting grading, restricting fencing or yard enclosures that cause water to pond, and/or utilizing flood proof materials consistent with local building requirements; and

- C. Be designed to assure stability and structural integrity and neither create nor contribute significantly to downstream flooding, erosion, geologic instability, or destruction of the site or surrounding area over the expected life of the development, factoring in the effects of sea level rise.

Policy 5.1-36 Reduction of Coastal Bluff Face and Coastal Bluff Edge Development Buffer Standards. It is the goal of the City to move as many structures as possible outside of coastal bluff face and Coastal Bluff Edge Development Buffer areas. However, there may be existing legally established lots that are severely constrained where reasonable use of the property may not be feasible outside of these areas. This policy addresses the rare cases when a reduction of coastal bluff face and Coastal Bluff Edge Development Buffer standards (Policy 5.1-32 *Development Standards for Potential Shoreline Hazards Screening Area 3 (Coastal Bluff Faces)* and Policy 5.1-33 *Development Standards for Potential Shoreline Hazards Screening Area 4 (Coastal Bluff Tops)*) may be allowed for new development and substantial redevelopment on severely constrained lots. Reductions of coastal bluff face and Coastal Bluff Edge Development Buffer standards may be allowed if all of the following findings can be made:¹

- A. The reduction of coastal bluff face and Coastal Bluff Edge Development Buffer standards is necessary to provide reasonable use of a legally established lot that cannot feasibly be accommodated outside the coastal bluff face and Coastal Bluff Edge Development Buffer areas;
- B. There are special circumstances or exceptional characteristics applicable to the property involved, such as size, shape, topography, location, or surroundings, that make it a severely constrained lot;
- C. Reduction of coastal bluff face and Coastal Bluff Edge Development Buffer standards shall be the minimum necessary to accommodate a reasonable use of the lot;
- D. The development allowed on the lot (outside and inside the coastal bluff face and Coastal Bluff Edge Development Buffer areas) shall only include the following and not exceed:
 - i. A principal structure that is the minimum size necessary to provide a reasonable use of the property but in no case exceeds the square footage of the existing permitted principal structure(s) on the lot or 1,200 square feet in cases where the

¹Any new development and substantial redevelopment necessitating shoreline protection devices inconsistent with Policy 5.1-44 *Shoreline Protection Device Permitting* does not adhere to the policies of this Coastal LUP and will require a property takings analysis pursuant to Policy 1.2-3 *Property Takings*.

- existing permitted principal structure(s) (excluding garage) is less than 1,200 square feet or there is no existing principal structure;
- ii. A garage or parking area, as applicable, sized to meet minimum parking requirements. Garages shall be integrated into the principal structure where feasible;
 - iii. The least amount of development necessary to provide ingress and egress to and from the principal structure/garage/parking area;
 - iv. Decks attached to the principal structure and not requiring additional caissons, slope stability devices, or other geotechnical mitigation measures;
 - v. Fences and natural barriers;
 - vi. Minimal exterior lighting;
 - vii. Any caissons, slope stabilization devices, or other geotechnical mitigation measures necessary to construct the principal structure, garage, and/or adequate ingress and egress to the site that are consistent with Policy 5.1-23 *Slope Stabilization and Protection*; and
 - viii. Development allowed within coastal bluff face and/or Coastal Bluff Edge Development Buffer areas (as applicable) pursuant to Policy 5.1-32 *Development Standards for Potential Shoreline Hazards Screening Area 3 (Coastal Bluff Faces)* and Policy 5.1-33 *Development Standards for Potential Shoreline Hazards Screening Area 4 (Coastal Bluff-Tops)*.
- E. The granting of the reduction of coastal bluff face and Coastal Bluff Edge Development Buffer standards will not be materially detrimental to the public welfare or be injurious to other property or improvements in the same vicinity;
 - F. The development conforms to the City's Zoning Ordinance;
 - G. Compliance with coastal bluff face and Coastal Bluff Edge Development Buffer standards (including Policy 5.1-32 *Development Standards for Potential Shoreline Hazards Screening Area 3 (Coastal Bluff Faces)* and Policy 5.1-33 *Development Standards for Potential Shoreline Hazards Screening Area 4 (Coastal Bluff Tops)*) are maximized to the extent feasible by minimizing the development area and siting of the development, as far inland as feasible;
 - H. Feasible modifications to required development standards that are not related to hazards and ESHA, wetland, and creek protection are included in the project to avoid or minimize hazard risks and impacts to coastal resources;

- I. The development is designed and constructed to assure stability and structural integrity, including meeting an adequate factor of safety (1.5 static conditions; 1.1 pseudostatic conditions) for the expected life of the structure, factoring in the effects of sea level rise;
- J. The development will not create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area for the expected life of the development, factoring in the effects of sea level rise; and
- K. The development shall not rely on existing shoreline protection devices or require new shoreline protection devices for the expected life of the structure.

Policy 5.1-37 Sea Ledge Lane.

- A. All existing single-unit residential development on the following parcels on Sea Ledge Lane are considered non-conforming with respect to Policy 5.1-32 *Development Standards for Potential Shoreline Hazards Screening Area 3 (Coastal Bluff Faces)* on the Interim Shoreline Hazards Screening Areas Map due to their location on a coastal bluff face:
 - i. APN 047-082-003 (3511 Sea Ledge Lane);
 - ii. APN 047-082-004 (3501 Sea Ledge Lane);
 - iii. APN 047-082-005 (3443 Sea Ledge Lane);
 - iv. APN 047-082-006 (3433 Sea Ledge Lane);
 - v. APN 047-082-007 (3429 Sea Ledge Lane);
 - vi. APN 047-082-009 (3427 Sea Ledge Lane);
 - i. APN 047-082-010 (3407 Sea Ledge Lane); and
 - ii. APN 047-082-012 (3425 Sea Ledge Lane).
- B. Maintenance, repair, additions, alterations, and substantial redevelopment on the parcels listed under subsection A. shall be processed according to Policy 2.1-19 *Nonconforming Development*.
- C. New or substantially redeveloped residential developments on the parcels listed under subsection A. may only be allowed if all of the findings contained in Policy 5.1-36 *Reduction of Coastal Bluff Face and Coastal Bluff Edge Development Buffer Standards* can be met. In addition, any new development or substantial redevelopment shall be located as close to Sea Ledge Lane as feasible².

² Any new development and substantial redevelopment necessitating shoreline protection devices inconsistent with Policy 5.1-44 *Shoreline Protection Device Permitting* does not adhere to the policies of this Coastal LUP and will require a property takings analysis pursuant to Policy 1.2-3 *Property Takings*.

Policy 5.1-38 Landscaping, Watering, Weight, and Drainage on Coastal Bluff Faces and Coastal Bluff Edge Development Buffers.

- A. Development, including landscaping and other improvements, shall be located and designed to prevent an increase in water percolation or excessive weight placed on coastal bluff faces and Coastal Bluff Edge Development Buffers, and to avoid increased drainage over the coastal bluff edge.
- B. All new plantings on coastal bluff faces and Coastal Bluff Edge Development Buffers shall be native, drought-tolerant vegetation. Sprinkler systems, irrigation plumbing, and in-ground irrigation systems shall not be allowed on coastal bluff faces and Coastal Bluff Edge Development Buffers. Watering shall not be allowed on coastal bluff faces or mapped slope failure areas, except for minimal manual watering needed for establishment of new plantings. Watering within Coastal Bluff Edge Development Buffers shall be limited to the minimum necessary for plant establishment and survival and accomplished via manual watering or easily removable drip irrigation tubing that is designed with a dedicated shutoff valve outside of the Coastal Bluff Edge Development Buffer. Additional limitations to watering in the Coastal Bluff Edge Development Buffer may be required based on the geologic conditions of the site.
- C. When new development or substantial redevelopment is proposed on coastal bluff faces or within Coastal Bluff Edge Development Buffers, existing landscaping and other plantings that are not drought-tolerant (e.g., lawns) shall be replaced with native, drought-tolerant vegetation when appropriate based on the scope and nature of the development.

Policy 5.1-39 Drainage Systems on Lots Containing Coastal Bluff Faces and Coastal Bluff Edge Development Buffers.

- A. Existing drainage systems on coastal bluff faces, including drainage pipes that hang partially or fully down the coastal bluff face and any drainage outlet on the coastal bluff face, shall be phased out and removed, to the maximum extent feasible, due to their continued impacts on bluff and beach erosion, visual resources, and biological resources.
- B. New development or substantial redevelopment on lots containing coastal bluff faces and Coastal Bluff Edge Development Buffers shall have drainage systems carrying runoff landward away from these areas and shall be conditioned to remove existing private bluff face drainage pipes, to the extent feasible. Where infeasible, new drainage systems on coastal bluff faces may only be permitted if each of the following criteria are met:
 - i. It is not feasible to carry runoff landward away from the bluff face;

- ii. It is not feasible to utilize existing drainage systems, or use of existing drainage systems would result in more erosion or visual impacts than a new system; and
- iii. The new drainage system is sited and designed to:
 - a. Be effective for the expected life of the development;
 - b. Avoid erosion and slope stability impacts;
 - c. Operate properly with only minimal maintenance requirements; and
 - d. Remain minimally visible for the expected life of the project. Drainage pipes on the bluff faces shall blend into the bluff (e.g., no blue-colored pipe).
- C. Where new or substantially redeveloped drainage systems are needed, consolidated drainage systems should be used where appropriate and feasible. Consolidated drainage systems should be sized to accommodate runoff from nearby and similarly drained parcels, if the consolidated system is found to be most beneficial and efficient, will not result in environmental damage, and property owners are in agreement regarding the installation and maintenance of a consolidated system.

Policy 5.1-40 Private Bluff Accessways.

- A. As feasible, existing lawfully established private accessways on coastal bluff faces shall be phased out due to safety concerns and their cumulative impacts to coastal bluff erosion, slope stability, visual resources, beaches, and shoreline processes.
- B. No new private accessways (stairways, walkways, and trails), additions to existing lawfully established private accessways, or substantial redevelopment of existing lawfully established private accessways shall be allowed on coastal bluff faces.
- C. Unpermitted accessways on coastal bluff faces shall be removed and the coastal bluff face shall be restored.

Policy 5.1-41 Material Disposal. The disposal of unauthorized material onto coastal bluff faces or beaches, including brush clippings from landscape vegetation, shall be prohibited. Property owners shall be required to remove any unauthorized materials on coastal bluff faces or beaches.

Policy 5.1-42 Conditions for Development in Shoreline Hazard Areas on the Interim Shoreline Hazards Screening Areas Map. Coastal Development Permits for new development and substantial redevelopment located in Potential Shoreline Hazard Screening Areas on Figure 5.1-1 *Interim Shoreline Hazards Screening Areas*, or otherwise subject to reasonably foreseeable beach erosion, coastal bluff erosion, coastal bluff slope failure, coastal

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flooding, and/or wave impacts over the expected life of the development, factoring in the effects of sea level rise, shall include conditions that:

- A. Require removal of the development by owners if any government agency has ordered that the structure(s) is not to be occupied or is otherwise unsafe due to imminent threat of damage or destruction from any shoreline hazard;
- B. Require removal of all recoverable debris associated with the development in the event that portions of the development fall on the bluff face, to the beach, or are swept to another location before they are removed. All such debris shall be disposed of in a lawful manner. Such removal shall require authorization through an emergency and/or regular Coastal Development Permit;
- C. For uses and/or structures not allowed to have shoreline protection devices pursuant to Policy 5.1-44 *Shoreline Protection Device Permitting*, the following condition shall apply: Prohibit the construction of new or substantially redeveloped shoreline protection devices in the future to protect the new development or substantial redevelopment from any shoreline hazard;
- D. For uses not allowed to have slope stabilization devices pursuant to Policy 5.1-31 *Development Standards for Potential Shoreline Hazards Screening Area 3 (Coastal Bluff Faces)* and Policy 5.1-32 *Development Standards for Potential Shoreline Hazards Screening Area 4 (Coastal Bluff Tops)*, the following condition shall apply: Prohibit the construction of new or substantially redeveloped slope stabilization devices in the future to protect the new development or substantial redevelopment from any shoreline hazard;
- E. Limit the Coastal Development Permit to only the time period that the land underlying the development is under the ownership of the applicant or successor in interest. If the public trust boundary moves landward, resulting in the development encroaching onto public trust lands, the Coastal Development Permit will expire and the development on such public trust lands must be removed at the property owner's expense, unless the property owner obtains appropriate legal authorization from the trustee of the public trust lands (e.g., City of Santa Barbara or State Lands Commission) and obtains a new Coastal Development Permit from the CCC to authorize any development of public tidelands. Authorization for such development on public trust lands is restricted by the Coastal Act and Public Trust Doctrine and may not be allowed if the proposed use significantly interferes with public access or other public trust uses. (This condition may not apply to applications for development in Potential Shoreline Hazards Screening Area 6 (Inland Coastal Flooding Area));
- F. Require the applicant to acknowledge that:

- i. The project site and public services to the site (utilities, roads, etc.) may be subject to beach erosion, bluff erosion, coastal bluff slope failure, coastal flooding, wave impacts, or other hazards associated with development on a coastal beach, coastal bluff face or top, or in a coastal flood and/or wave impact area, now and in the future, factoring in the effects of sea level rise;
 - ii. Public services to the site may not be maintained in perpetuity due to the impacts of sea level rise;
 - iii. The applicant assumes the risks of injury and damage from such hazards in connection with the permitted development; and
 - iv. The applicant waives any claim of damage or liability against the approving entity (the City, or, if the permit is appealed, the CCC) for injury or damage from such hazards.
- G. Require the applicant to record a deed restriction, in a manner acceptable to the City Attorney (or the Executive Director of the CCC if the permit is appealed), reflecting at a minimum the applicable Coastal Development Permit conditions listed above.

Policy 5.1-43 Shoreline Hazards Avoidance Preferred. Protection of development at risk from shoreline hazards shall first avoid the hazards, including through demolition, relocation, siting of structures, as well as drainage control and installation of drought-tolerant landscaping. If avoidance is not feasible, other techniques that minimize hazards and avoid use of shoreline protection devices, such as use of vegetative planting, dune creation, dune restoration, and beach nourishment, shall be implemented in conjunction with avoidance techniques, as feasible.

Policy 5.1-44 Shoreline Protection Device Permitting.

- A. New or substantially redeveloped shoreline protection devices shall not be permitted unless avoidance measures, including consideration of relocation or removal of the at-risk structure, beach nourishment, dune creation, dune restoration, and other similar techniques are determined to be infeasible. Shoreline protection devices shall be prohibited unless they are necessary to, and will accomplish the intent of protecting public beaches, coastal-dependent uses, existing public structures, and existing principal structures (main living quarters, main commercial buildings, and functionally necessary appurtenances to those structures, such as wastewater and water systems, utilities, and other infrastructure) in danger from erosion. Shoreline protection devices shall not be allowed for the sole purpose of protecting private accessory structures or landscape features (e.g., garages, carports, storage sheds, decks, patios, walkways, landscaping).

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- B. All shoreline protection devices shall:
- i. Be sited as far landward as feasible where appropriate;
 - ii. Be designed to factor in the effects of sea level rise, including associated changes to beach erosion, coastal bluff erosion, coastal flooding, and wave impacts over the expected life of the development;
 - iii. Be designed to have the smallest footprint possible;
 - iv. Minimize alterations of the natural landform and natural shoreline processes to the maximum extent feasible;
 - v. Avoid encroachment upon any beach area that impedes lateral public access along the beach at any tide condition. If it is infeasible to avoid impeding lateral access along the beach at any tide condition, mitigation shall be required that provides equivalent lateral access to that portion of shoreline at an alternate location;
 - vi. Avoid adverse impact on public access to and along the shoreline and coastal recreation areas, to the maximum extent feasible, through project siting and design and required mitigation; and
 - vii. Be designed to eliminate or mitigate adverse impacts on local shoreline sand supply.

Policy 5.1-45 Conditions of Approval for Shoreline Protection Devices for Private Development. Coastal Development Permits for new or substantially redeveloped shoreline protection devices for private development shall, at a minimum, include the following conditions:

- A. Require removal of the shoreline protection device by the applicant when either of the following occur:
 - i. The structure or use requiring protection is removed and the shoreline protection device is no longer needed for its permitted purpose; or
 - ii. The existing structure it is protecting is substantially redeveloped, removed, or no longer exists.
- B. Require any mitigation necessary to address impacts to public access and sand supply pursuant to subsections B. vi. and B. vii. of Policy 5.1-44 *Shoreline Protection Device Permitting*;
- C. Limit the Coastal Development Permit for a shoreline protection device to a maximum twenty (20) year, limited term permit;
- D. Require all adverse impacts be monitored periodically and reassessed and mitigation adjusted as necessary to address the adverse impacts at the end of the permit term or when

improvements are proposed that extend the life of the device, whichever comes first; and

- E. Require the applicant to record a deed restriction, in a manner acceptable to the City Attorney, reflecting the conditions listed above.

Policy 5.1-46 Conditions of Approval for Shoreline Protection Devices for Public Development. Coastal Development Permits for new or substantially redeveloped shoreline protection devices for public development shall, at a minimum, include the following conditions:

- A. Require removal of the shoreline protection device by the applicant when either of the following occur:
 - i. The structure or use requiring protection is removed and the shoreline protection device is no longer needed for its permitted purpose; or
 - ii. The existing structure, public beach, coastal recreation area, or coastal dependent uses it is protecting is removed or no longer exists.
- B. Require any mitigation necessary to address impacts to public access and sand supply pursuant to subsections B. vi. and B. vii. of Policy 5.1-44 *Shoreline Protection Device Permitting*;
- C. Require all adverse impacts be monitored periodically and reassessed at the end of the permit term or when improvements are proposed that extend the life of the device, whichever comes first; and
- D. Require reevaluation of the design and necessity of the shoreline protection device when the protected structure is substantially redeveloped.

Policy 5.1-47 Legal Title. Applicants for proposed development on a beach or along the shoreline, including but not limited to a shoreline protection device, must demonstrate that they own adequate legal title to the underlying property. This includes, without limitation, that the applicants must demonstrate that the development either will not be constructed on public trust tidelands or that the applicants have received appropriate legal authorization from the City or State Lands Commission, whichever is trustee for those particular lands, to undertake the development consistent with public trust principles.

Policy 5.1-48 Harbor Dredging and Beach Nourishment. The scheduling and design of dredging shall minimize impacts to coastal resources and water quality and maximize down coast movement of sand. Dredge spoils suitable for beach nourishment shall be used for such purposes whenever possible.

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Policy 5.1-49 Beach Nourishment Placement.

- A. The placement of sediments at appropriate points along the shoreline that were removed from erosion control or flood control facilities may be permitted for the purpose of beach nourishment, if the source material proposed for deposition contains the physical (e.g., grain size and type), chemical, color, particle shape, debris, and compatibility characteristics appropriate for beach replenishment.
- B. All beach nourishment projects shall be designed to: minimize adverse impacts to beach, intertidal, and offshore resources; incorporate appropriate mitigation measures; and consider the method, location, and timing of placement.
- C. Sediment removed from catchment basins may be disposed of in the littoral system if it is tested and is found to have suitable physical, chemical, color, particle shape, debris, and compatibility characteristics appropriate for beach replenishment.

Policy 5.1-50 Harbor Structures and Sand Movement. Development in the Harbor shall be designed to avoid negative impacts on the movement of sand to the extent feasible.**DEFINITIONS & PROCEDURES***Definitions*

Policy 5.1-51 Beach Defined. A beach is an expanse of sand, gravel, cobble, or other loose material that extends landward from the Mean Low Water (MLW) line to the place where there is distinguishable change in physiographic form (toe of the coastal bluff), or to the line of permanent vegetation.

Policy 5.1-52 Beach Erosion Defined. Beach erosion is the loosening and transportation of beach materials, and rock and soil along the shoreline's low-lying areas by wave action, currents, water, wind, or other natural forces. Development and other non-natural forces (e.g., water leaking from pipes or scour caused by wave action against a seawall) may cause or increase beach erosion.

Policy 5.1-53 Coastal Bluff Defined. A coastal bluff is a scarp or steep face of rock, weathered rock, sediment, and/or soil resulting from erosion, faulting, folding, or excavation of the land mass. The coastal bluff may be a simple planar or curved surface, or it may be step-like in section. For purposes of this Coastal LUP, "coastal bluff" is limited to those features having vertical relief of 10 feet or more and whose toe is or may be subject to marine erosion.

Policy 5.1-54 Coastal Bluff Edge Defined. The coastal bluff edge is the upper termination of a bluff. In cases where the top edge of the bluff is rounded

away from the face of the bluff as a result of erosional processes related to the presence of the steep bluff face, the bluff edge is that point nearest the bluff, beyond which the downward gradient of the land surface increases more or less continuously, until it reaches the general gradient of the bluff. In a case where there is a step-like feature at the top of the bluff face, the landward edge of the topmost riser is the bluff edge. Where a coastal bluff curves landward to become a canyon bluff, the termini of the coastal bluff edge shall be defined as a point reached by bisecting the angle formed by a line coinciding with the general trend of the coastal bluff line along the seaward face of the bluff, and a line coinciding with the general trend of the bluff line along the canyon-facing portion of the bluff. Five hundred feet shall be the minimum length of bluff line or edge to be used in making a determination of where a coastal bluff becomes a canyon bluff.

- Policy 5.1-55** Coastal Bluff Erosion Defined. Coastal bluff erosion is the loosening and transportation of rock and soil along coastal bluffs by wind, water, waves, currents, or other natural forces.
- Policy 5.1-56** Coastal Flooding Defined. Coastal flooding is temporary flooding due to high water level events caused by one or more of the following: high tides, storm surge (a rise above normal water level during storms), and/or sea level rise.
- Policy 5.1-57** Expected Life of a Development Defined. The expected life of a development is the time period for which a development is expected to function without major repairs. The expected life of residential and commercial structures shall be a minimum of 75 years, while other types of development shall be determined on a case-by-case basis.
- Policy 5.1-58** Shoreline Protection Device Defined. Shoreline protection devices are constructed features such as seawalls, revetments, riprap, earthen berms, coastal bluff retaining walls, gunite covering, and bulkheads that block the landward erosion of the shoreline and are used to protect structures or upland areas from erosion, coastal flooding, and other impacts of waves and ocean currents. Also known as “coastal armoring.” Beach nourishment and dredged sediment management are not considered shoreline protection devices.
- Policy 5.1-59** Shoreline Hazards Defined. Hazards along the shoreline to the ocean that are created by winds, waves, currents, tides, storms, water, and geologic instability. Shoreline hazards include beach erosion, coastal bluff erosion, coastal bluff slope failure, landslide, coastal flooding, and wave impacts.
- Policy 5.1-60** Slope Stabilization Device Defined. Slope stabilization devices are constructed features such as retaining walls, sheet pile walls, buttresses, rip-rap, soldier piles, rock bolts, and gunite covering that are used to stabilize slopes. Slope stabilization devices influenced by or designed to

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prevent impacts from waves and ocean currents are considered Shoreline Protection Devices as outlined in Policy 5.1-58 *Shoreline Protection Device Defined*.

Policy 5.1-61 Wave Impacts Defined. Wave impacts are damage and flooding caused by the velocity and volume of ocean waves and wave run-up (the vertical extent of wave uprush on a beach or low lying inland area) during normal and storm conditions. For the purposes of implementing the policies of this Coastal LUP, wave impacts (impacts from the force or velocity of fast moving, breaking waves) are distinguished from coastal flooding impacts (impacts from the presence of water in an area from tides, storm surge, or sea level rise).

Procedures

Policy 5.1-62 Geologic Hazards Evaluations.

- A. Geologic Hazard Evaluations may be needed for new development and substantial redevelopment located in an area potentially subject to high geologic or seismic hazards (including fault rupture, groundshaking, liquefaction, slope failure, expansive soils, soil erosion, radon, and high groundwater). See *Policies 5.1-64 through 5.1-68* for evaluations needed in Potential Shoreline Hazards Screening Areas. A City Environmental Analyst shall determine if and when a hazard evaluation is required, the scope of analysis, and the adequacy of any submitted reports prior to consideration of any Coastal Development Permit. Factors to be considered in determining whether a geologic hazard evaluation is required include, but are not limited to:
 - i. Location of the project in relation to geologic hazard areas identified on the City's Master Environmental Assessment hazard information maps, certified maps, or on any other maps prepared by other resource agencies that depict areas of known safety hazards;
 - ii. Site-specific hazards information;
 - iii. The adequacy of other existing hazards evaluations for the site or area;
 - iv. Potential for the project to exacerbate natural or human-caused hazards;
 - v. Potential for the project to be impacted by natural or human-caused hazards;
 - vi. Intended use of the site or proposed structures; and
 - vii. Current federal, state, and local hazards regulations, including local building code requirements.

- B. Site-specific hazard evaluations shall be prepared by a qualified California licensed professional (e.g., Professional Geologist, Engineering Geologist, Geotechnical Engineer, Civil Engineer, Soils Engineer, and/or Coastal Engineer, as applicable). A City Environmental Analyst shall determine the adequacy of any submitted evaluations prior to consideration of Coastal Development Permits. Some evaluations may require peer review by a technical specialist in order to be deemed adequate. The City may impose a fee on applicants to recover the cost of peer review of evaluations.
- C. Geologic Hazard Evaluations shall include:
 - i. Site specific hazards information (e.g. detailed descriptions of the hazard or other technical information relating to the hazard);
 - ii. Evaluation of the potential for geologic hazards to be present on the site based on hazards screening maps, site research, and field surveys, as appropriate;
 - iii. Evaluation of any potential adverse impacts the project may have during construction or operation on the extent or severity of geologic hazards on the site or neighboring sites;
 - iv. Identification of alternatives to avoid or minimize hazards and potential impacts of the project, consistent with the policies of this Coastal LUP;
 - v. Statement verifying whether the development will minimize risks to life and property; assure stability and structural integrity; and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area over its expected life; and
 - vi. In areas of potential slope failure, a screening level investigation to determine whether the site exhibits a high potential for slope failure and to determine if a detailed quantitative evaluation of slope failure is needed. When detailed quantitative evaluation of slope stability is required, the evaluation should demonstrate how all structures will meet a minimum factor of safety of 1.5 under static conditions and 1.1 under pseudostatic conditions.

Policy 5.1-63 Shoreline Hazard Evaluations.

- A. New development and substantial redevelopment in the Potential Shoreline Hazards Screening Areas 1-5 or areas otherwise subject to beach erosion, coastal bluff erosion, coastal bluff slope failure, and/or wave impacts shall require a Shoreline Hazard Evaluation. Shoreline Hazards Evaluations shall also be required for repairs and alterations of existing structures that require foundation work or substantial grading.
- B. The evaluation may be waived by the Environmental Analyst for:
 - i. Minor development that meets the following criteria:

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- a. Does not require a structural foundation;
 - b. Does not require slope stabilization, retaining walls, or other geotechnical mitigation measures;
 - c. Does not require significant grading or modified landforms; and
 - d. Designed to be easily removed.
- ii. Development proposed in areas where previous hazard evaluations show no risk of the potential hazard (previous hazards evaluations completed for the development site must be no more than two years old).
- C. A City Environmental Analyst shall determine if and when a Shoreline Hazard Evaluation is required, the scope of analysis, and the adequacy of any submitted evaluations prior to consideration of a Coastal Development Permit. Some evaluations may require peer review by a technical specialist in order to be deemed adequate. The City may impose a fee on applicants to recover the cost of review of evaluations.
- D. The required content and procedures for shoreline hazard evaluations in each shoreline hazards screening area are specified in the policies below. All shoreline hazard evaluations shall use the current best available science on sea level rise projections to analyze hazard conditions on the site over the expected life of the proposed development. The evaluation should, at a minimum, examine storm (100-year storm) and non-storm conditions and sea level rise impacts under a high emissions scenario based on state guidance.

Policy 5.1-64 Potential Shoreline Hazards Screening Area 1 (City-Owned Low-Lying Beach and Backshore Areas) Evaluations for New Development and Substantial Redevelopment. The Potential Shoreline Hazards Screening Area 1 (City-Owned Low-Lying Beach and Backshore Areas) is potentially subject to beach erosion, coastal flooding, and wave impacts. Shoreline Hazard Evaluations for development in this screening area shall be prepared and signed by a qualified California licensed professional (e.g., Professional Geologist, Engineering Geologist, Geotechnical Engineer, Civil Engineer, Soils Engineer, and/or Coastal Engineer, as applicable). The evaluations shall be subject to review and approval by the City's Environmental Analyst. The Environmental Analyst may require peer review of evaluations by a technical specialist in order to deem them adequate. The City may impose a fee on applicants to recover the cost of review of evaluations. Evaluations shall analyze the effects of the hazard and the development over the expected life of the project, factoring in the effects of sea level rise, and with and without the effects of any existing or new shoreline protective devices except for existing major public shoreline protection and flood protection devices (breakwater and other protection devices for the Harbor, Laguna Channel Tide Gate and

Pump Station Facility, etc). The evaluation may assume that existing authorized levels of dredging, sand management, and beach nourishment continue to occur. The following shall be evaluated:

- A. The profile of the beach;
- B. Mean high tide line, including a mean high tide line survey (unless data shows the mean high tide line will not be affected by the project);
- C. The area of the project site subject to beach erosion, coastal flooding, and wave impact hazards;
- D. The FEMA Base Flood Elevation and mapped areas;
- E. Future projections in sea level rise, associated beach erosion, coastal flooding, and wave impacts, and any additional sea level rise related impacts that could be expected to occur over the life of the project in both storm (100-year storm) and non-storm scenarios. The analysis shall utilize best available science and include, at a minimum, evaluation of projected sea level rise at a high emission scenario based on state guidance;
- F. Design requirements to assure stability and structural integrity;
- G. The need for a shoreline protection device over the life of the project;
- H. The long-term impacts of proposed development on sand supply;
- I. The impacts of the proposed development during construction and operation on beach erosion, coastal flooding, wave impacts, and any other hazards on or near the site;
- J. The impacts of proposed development on public access to and along the shoreline;
- K. Any necessary mitigation measures, alternatives, or monitoring protocols to be completed over the life of the development and that are needed to avoid or minimize any potential beach erosion, coastal flooding, wave impacts hazards, and any potential impacts to public access to and along the shoreline; and
- L. A statement verifying whether the development will minimize risks to life and property; assure stability and structural integrity; and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area over its expected life, factoring in the effects of sea level rise.

Policy 5.1-65 Potential Shoreline Hazards Screening Area 2 (Bluff-Backed Beaches) Evaluations for New Development and Substantial Redevelopment. The Potential Shoreline Hazards Screening Area 2 (Bluff-Backed Beaches) is potentially subject to beach erosion, coastal bluff erosion, coastal bluff slope failure, coastal flooding, and wave impacts. Shoreline Hazard Evaluations for development in this screening area shall be prepared and

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signed by a qualified California licensed professional (e.g., Professional Geologist, Engineering Geologist, Geotechnical Engineer, Civil Engineer, Soils Engineer, and/or Coastal Engineer, as applicable). The evaluations shall be subject to review and approval by the City's Environmental Analyst. The Environmental Analyst may require peer review of evaluations by a technical specialist in order to deem them adequate. The City may impose a fee on applicants to recover the cost of review of evaluations. Evaluations shall analyze the effects of the hazard and the development over the expected life of the project, factoring in the effects of sea level rise, and with and without the effects of any existing or new shoreline protective devices except for existing major public shoreline protection and flood protection devices (breakwater and other protection devices for the Harbor, Laguna Channel Tide Gate and Pump Station Facility, etc.). The following shall be evaluated:

- A. The profile of the beach;
- B. Mean high tide line, include a mean high tide line survey;
- C. The area of the project site subject to beach erosion, coastal bluff erosion, coastal bluff slope failure, coastal flooding, and wave impact hazards;
- D. The FEMA Base Flood Elevation and mapped areas;
- E. Future projections in sea level rise, associated beach erosion, coastal flooding, coastal bluff erosion, coastal bluff slope failure, and wave impacts, and any additional sea level rise related impacts that could be expected to occur over the life of the project in both storm (100-year storm) and non-storm scenarios. The analysis shall utilize best available science and include, at a minimum, evaluation of projected sea level rise at a high emission scenario based on state guidance;
- F. Design requirements to assure stability and structural integrity;
- G. The need for a shoreline protection device over the life of the project;
- H. The long-term impacts of the proposed development on sand supply;
- I. The impacts of the proposed development during construction and operation on beach erosion, coastal bluff erosion, coastal bluff slope failure, coastal flooding, wave impacts, and any other hazards on or near the site;
- J. The impacts of the proposed development on public access to and along the shoreline;
- K. Any necessary mitigation measures, alternatives, or monitoring protocols to be completed over the life of the development and that are needed to avoid or minimize any potential beach erosion, coastal bluff erosion, coastal bluff slope failure, coastal flooding, and

wave impact hazards and any potential impact to public access to and along the shoreline;

- L. A statement verifying whether the development will minimize risks to life and property; assure stability and structural integrity; and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area during its expected life, factoring in the effects of sea level rise; and
- M. A site map that shows all easements, deed restrictions, or “Offers to Dedicate” and/or other dedications for public access or open space and provides documentation for said easements or dedications. The approved development shall be located outside of and consistent with the provisions of such easements or offers.

Policy 5.1-66 Potential Shoreline Hazards Screening Area 3 (Coastal Bluff-Faces) Evaluations for New Development and Substantial Redevelopment. The Potential Shoreline Hazards Screening Area 3 (Coastal Bluff-Faces) is potentially subject to coastal bluff erosion, coastal flooding, coastal bluff slope failure, and wave impacts. Shoreline Hazard Evaluations for development in this screening area shall be prepared and signed by a qualified California licensed professional (e.g., Professional Geologist, Engineering Geologist, Geotechnical Engineer, Civil Engineer, Soils Engineer, and/or Coastal Engineer, as applicable). The evaluations shall be subject to review and approval by the City’s Environmental Analyst. The Environmental Analyst may require peer review of evaluations by a technical specialist in order to deem them adequate. The City may impose a fee on applicants to recover the cost of review of evaluations. Evaluations shall analyze the effects of the hazard and the development over the expected life of the development, factoring in the effects of sea level rise, and with and without the effects of any existing or new shoreline protective devices or slope stabilization devices except for existing major public shoreline protection and flood protection devices (breakwater and other protection devices for the Harbor, Laguna Channel Tide Gate and Pump Station Facility, etc.). The following shall be evaluated:

- A. Detailed topographic information for the site, including representative cross sections;
- B. Mean high tide line, including a mean high tide line survey (unless data shows the mean high tide line will not be affected by the project);
- C. The toe of the coastal bluff and coastal bluff edge (see Policy 5.1-69 *Location of Coastal Bluff Edge* for more information);
- D. The area of the project site subject to coastal bluff erosion, coastal bluff slope failure, coastal flooding, and wave impacts;
- E. The FEMA Base Flood Elevation and other mapped areas;

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- F. Future projections in sea level rise, associated beach erosion, coastal flooding, coastal bluff erosion, coastal bluff slope failure, and wave impacts, and any additional sea level rise related impacts that could be expected to occur over the life of the project in both storm (100-year storm) and non-storm scenarios. The analysis shall utilize best available science and include, at a minimum, evaluation of projected sea level rise at a high emission scenario based on state guidance;
- G. Design requirements to assure stability and structural integrity, including the need for any slope stabilization devices or other geotechnical mitigation measures over the life of the project. When detailed quantitative evaluation of slope stability is required after a screening-level investigation, a minimum factor of safety of 1.5 under static conditions and 1.1 under pseudostatic condition shall be provided for structures;
- H. The need for a shoreline protection device over the life of the project;
- I. The long-term impacts of the proposed development on sand supply;
- J. The impacts of the proposed development during construction and operation on beach erosion, coastal bluff erosion, coastal bluff slope failure, coastal flooding, wave impacts, and any other hazards on or near the site;
- K. The impacts of the proposed development on public access to and along the shoreline;
- L. Any necessary mitigation measures, alternatives, or monitoring protocols to be completed over the life of the development and that are needed to avoid or minimize any potential coastal bluff erosion, coastal bluff slope failure, coastal flooding, and wave impact hazards and any potential impact to public access to and along the shoreline;
- M. A statement verifying whether the development will minimize risks to life and property; assure stability and structural integrity; and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area during its expected life, factoring in the effects of sea level rise; and
- N. A site map that shows all easements, deed restrictions, or “Offers to Dedicate” and/or other dedications for public access or open space and provides documentation for said easements or dedications. The approved development shall be located outside of and consistent with the provisions of such easements or offers.

Policy 5.1-67 Potential Shoreline Hazards Screening Area 4 (Coastal Bluff-Tops) Evaluations for New Development and Substantial Redevelopment. The Potential Shoreline Hazards Screening Area 4 (Coastal Bluff-Tops) is potentially subject to coastal bluff erosion and coastal bluff slope failure.

Shoreline Hazards Evaluations for development in this screening area shall be prepared and signed by a qualified California licensed professional (e.g., Professional Geologist, Engineering Geologist, Geotechnical Engineer, Civil Engineer, Soils Engineer, and/or Coastal Engineer, as applicable). The evaluations shall be subject to review and approval by the City's Environmental Analyst. The Environmental Analyst may require peer review of evaluations by a technical specialist in order to deem them adequate. The City may impose a fee on applicants to recover the cost of review of evaluations. Evaluations shall analyze the effects of the hazard and the development over the expected life of the project, factoring in the effects of sea level rise, and with and without the effects of any existing or new shoreline protective device or slope stabilization device, except for existing major public shoreline protection and flood protection devices (breakwater and other protection devices for the Harbor, Laguna Channel Tide Gate and Pump Station Facility, etc.). The following shall be evaluated:

- A. Detailed topographic information for the site, including representative cross sections;
- B. The coastal bluff edge (see Policy 5.1-69 *Location of Coastal Bluff Edge* for more information);
- C. The area of the project site subject to coastal bluff erosion or coastal bluff slope failure;
- D. The required Coastal Bluff Edge Development Buffer (see Policy 5.1-70 *Coastal Bluff Edge Development Buffer Calculation* for more information);
- E. Design requirements to assure stability and structural integrity, including the need for any slope stabilization devices or other geotechnical mitigation measures over the life of the project. When detailed quantitative evaluation of slope stability is required after a screening-level investigation, a minimum factor of safety of 1.5 under static conditions and 1.1 under pseudostatic condition shall be provided for structures;
- F. The need for a shoreline protection device over the life of the project;
- G. The impacts of the proposed development during construction and operation on coastal bluff erosion, coastal bluff slope failure, and any other hazards on or near the site;
- H. Any necessary mitigation measures, alternatives, or monitoring protocols needed to avoid or minimize any potential coastal bluff erosion or coastal bluff slope failure hazards;
- I. A statement verifying whether the development will minimize risks to life and property; assure stability and structural integrity; and neither create nor contribute significantly to erosion, geologic

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instability, or destruction of the site or surrounding area during its expected life, factoring in the effects of sea level rise; and

- J. A site map that shows all easements, deed restrictions, or “Offers to Dedicate” and/or other dedications for public access or open space and provides documentation for said easements or dedications. The approved development shall be located outside of and consistent with the provisions of such easements or offers.

Policy 5.1-68 Potential Shoreline Hazards Screening Area 5 (Stearns Wharf and Harbor) Evaluations for New Development and Substantial Redevelopment.

Potential Shoreline Hazards Screening Area 5 (Stearns Wharf and Harbor) is potentially subject to beach erosion, coastal flooding, and wave impacts. Shoreline Hazard Evaluations for development in this screening area shall be prepared and signed by a qualified California licensed professional (e.g., Professional Geologist, Engineering Geologist, Geotechnical Engineer, Civil Engineer, Soils Engineer, and/or Coastal Engineer, as applicable). The evaluations shall be subject to review and approval by the City’s Environmental Analyst. The Environmental Analyst may require peer review of evaluations by a technical specialist in order to deem them adequate. The City may impose a fee on applicants to recover the cost of review of evaluations. Evaluations shall analyze the effects of the hazard and the development over the expected life of the project, factoring in the effects of sea level rise, and with and without the effects of any existing or new shoreline protective devices, except for existing major public shoreline protection and flood protection devices (breakwater and other protection devices for the Harbor, Laguna Channel Tide Gate and Pump Station Facility, etc). The following shall be evaluated:

- A. The area of the project site subject to beach erosion, coastal flooding, and wave impact hazards;
- B. The FEMA Base Flood Elevation and mapped areas;
- C. Future projections in sea level rise, associated beach erosion, coastal flooding, and wave impacts, and any additional sea level rise related impacts that could be expected to occur over the life of the project in both storm (100-year storm) and non-storm scenarios. The analysis shall utilize best available science and include at a minimum evaluation of projected sea level rise at a high emission scenario based on state guidance;
- D. Design requirements to assure stability and structural integrity;
- E. The need for a shoreline protection device over the life of the project;
- F. The impacts of the proposed development during construction and operation on beach erosion, coastal flooding, wave impacts, and any other hazards on or near the site;

- G. Any necessary mitigation measures, alternatives, or monitoring protocols to be completed over the life of the development that are needed to avoid or minimize any potential beach erosion, coastal flooding, and wave impact hazards; and
- H. A statement verifying whether the development will minimize risks to life and property; assure stability and structural integrity; and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area, during its expected life, factoring in the effects of sea level rise.

Policy 5.1-69 Location of Coastal Bluff Edge. The following outlines the process to determine the location of the coastal bluff edge to be used in the interpretation of the policies of this Coastal LUP.

- A. Figure 5.1-2 *Coastal Bluff Edge* shows the location of the coastal bluff edge in the City of Santa Barbara that meets the definition of coastal bluff edge contained in Policy 5.1-54 *Coastal Bluff Edge Defined*. This figure may be updated by the City based on best available information and current site conditions. Large scale and digital versions of Figure 5.1-2 *Coastal Bluff Edge* are available at the City of Santa Barbara Community Development Department office.
- B. The coastal bluff edge line depicted on Figure 5.1-2 *Coastal Bluff Edge* shall be used in the Coastal Development Permit process to establish a project's consistency with the policies of this Coastal LUP, unless a site-specific analysis demonstrates substantial inaccuracies in the topography depicted on Figure 5.1-2 *Coastal Bluff Edge* that, when considered in combination with the definition of coastal bluff edge in Policy 5.1-54 *Coastal Bluff Edge Defined*, would result in a coastal bluff edge line for the property that is materially different than that depicted on Figure 5.1-2 *Coastal Bluff Edge*.
- C. If it is demonstrated that there are substantial inaccuracies in the topography depicted on Figure 5.1-2 *Coastal Bluff Edge*, when considered in combination with the definition of coastal bluff edge in Policy 5.1-54 *Coastal Bluff Edge Defined*, and the inaccuracies would result in a coastal bluff edge line for the property that is materially different than that depicted on Figure 5.1-2 *Coastal Bluff Edge*, then an alternate coastal bluff edge line shall be used to determine the consistency of the project with the policies of this Coastal LUP. The alternate coastal bluff edge shall meet the definition of coastal bluff edge contained in Policy 5.1-54 *Coastal Bluff Edge Defined* and be based upon best available topographic survey data.
- D. If an alternate coastal bluff edge is identified, pursuant to subsection C., and is more than 20 horizontal feet seaward of the coastal bluff edge line depicted on Figure 5.1-2 *Coastal Bluff Edge*, an LCP Amendment amending Figure 5.1-2 *Coastal Bluff Edge* to correct the bluff edge in the subject area, shall be required concurrent with or

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prior to approval of a Coastal Development Permit that relies on the alternate bluff edge line, to find consistency with the policies of this Coastal LUP.

- E. Any Coastal Development Permit application requiring determinations outlined above as to inaccuracies of Figure 5.1-2 *Coastal Bluff Edge* and alternate coastal bluff edge locations shall include a detailed site-specific topographic survey, prepared by a licensed land surveyor, that includes representative cross sections and a figure showing changes in the slope angle of the coastal bluff. Peer review by a technical specialist chosen by the City, and paid for by the applicant, may be required.
- F. Planning Commission (or City Council or the California Coastal Commission on appeal) shall make all determinations regarding coastal bluff edge to be used in the interpretation of the policies of this Coastal LUP as part of the Coastal Development Permit process.

Policy 5.1-70 Coastal Bluff Edge Development Buffer Calculation. The methodology to be used by California licensed Geotechnical Engineers or Certified Engineering Geologists for analyzing site-specific Coastal Bluff Edge Development Buffer is described below:

Step 1. Identify the coastal bluff edge consistent with Policy 5.1-69 *Location of Coastal Bluff Edge*.

Step 2. Determine a “slope stability buffer.” Evaluate the stability of points along the coastal bluff edge. If a screening-level analysis of the top of the coastal bluff shows a potential for slope instability, then a detailed field investigation and quantitative slope stability analysis shall be conducted to establish a “slope stability buffer.” The slope stability buffer is the area landward of the coastal bluff edge line where the minimum factor of safety (1.5 static and 1.1 pseudostatic) cannot be met. When determining the slope stability buffer, the minimum factor of safety is analyzed without the use of existing or new slope stabilization or shoreline protection devices, except for existing major public shoreline protection and flood protection devices (breakwater and other protection devices for the Harbor, Laguna Channel Tide Gate, and Pump Station Facility, etc).

Step 3. Determine the “coastal bluff erosion buffer.” A site-specific evaluation of the long-term coastal bluff retreat rate at the site shall be conducted that considers not only historical coastal bluff retreat data, but also acceleration of coastal bluff retreat caused by sea level rise and any known site-specific conditions. Such an evaluation shall be used to determine the distance from the coastal bluff edge line (or from the slope stability buffer line, if applicable) that the coastal bluff might reasonably be expected to erode over the expected life of the principal structure (assumed to be 75 years for single-unit residences and commercial

structures; otherwise determined on a case-by-case basis for public infrastructure), factoring in the effects of sea level rise, and without the use of existing and new slope stabilization or shoreline protection devices, except for existing major public shoreline protection and flood protection devices (breakwater and other protection devices for the Harbor, Laguna Channel Tide Gate, and Pump Station Facility, etc). Historic erosion rates can be determined by examination of historic records, surveys, aerial photographs, studies, or other evidence showing the location of the bluff edge through time. A minimum of 50 years' worth of historic data is generally used to evaluate historic erosion rates.

Step 4. Determine the Coastal Bluff Edge Development Buffer. Development shall be setback from the coastal bluff edge the distance needed to: ensure slope stability (the slope stability buffer), ensure the development is not endangered by erosion (the coastal bluff erosion buffer), and to avoid the need for existing and new slope and shoreline protective devices over the expected life of the structure.

Note: Modifications to the prescribed buffer methodology may be approved by a City Environmental Analyst to reflect updated guidance on sea level rise as it becomes available.

Policy 5.1-71 Historic Coastal Bluff Edge. The line depicted on Figure 5.1-2 *Coastal Bluff Edge* as "Historic Coastal Bluff Edge" east of Shoreline Park and west of Pershing Park is a historic coastal bluff edge that meets the California Code of Regulations Section 13577(h)(1) definition of coastal bluff that is used to establish the appeal jurisdiction for Coastal Development Permits and to determine whether projects are exempt from obtaining Coastal Development Permits. This definition of coastal bluff includes bluffs that historically (generally within the last 200 years) have been subject to marine erosion. The "Historic Coastal Bluff Edge" area used to be a coastal bluff, subject to marine erosion, prior to the construction of the Harbor in the 1920s. This historic coastal bluff area, however, shall not be subject to the policies in this Coastal LUP required specifically for all other coastal bluffs. All other policies of the Coastal Land Use Plan, including those relating to steep slopes, slope stability, and general erosion, would still apply as they do for any other area of the Coastal Zone. However, this policy shall expire in the event that sea level rise causes marine erosion to recommence at the toe of the bluff in this area.

Policy 5.1-72 Shoreline Protection Device Evaluation Requirements. Any application for installation of a new or a modification to an existing shoreline protection device shall require the following:

- A. A description of the structure in danger and the threats to the structure;
- B. A site-specific evaluation prepared and signed by a qualified California licensed professional (e.g., Professional Geologist,

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Engineering Geologist, Geotechnical Engineer, Civil Engineer, and/or Coastal Engineer, as applicable). The evaluation is subject to review and approval by the City's Environmental Analyst, including possible peer review at the expense of the applicant. The evaluation shall analyze the effects of the shoreline protection device over the expected life of the project, factoring in the effects of sea level rise. The following shall be evaluated, along with all information needed to comply with Policy 5.1-44 *Shoreline Protection Device Permitting*:

- i. The profile of the beach;
- ii. Mean high tide line, including a mean high tide line survey;
- iii. The area of the project site subject to beach erosion, coastal bluff erosion, coastal bluff slope failure, coastal flooding, and wave impact hazards;
- iv. Future projections in sea level rise, associated beach erosion, coastal flooding, coastal bluff erosion, coastal bluff slope failure, and wave impacts, and any additional sea level rise related impacts that could be expected to occur over the life of the project in both storm (100-year storm) and non-storm scenarios. The analysis shall utilize best available science and include, at a minimum, evaluation of projected sea level rise at a high emission scenario based on state guidance;
- v. Design requirements to address stability and structural integrity;
- vi. The long-term effects of the device on sand supply;
- vii. The impacts of the device during construction and operation on beach erosion, coastal bluff erosion, coastal bluff slope failure, coastal flooding, wave impacts, and any other hazards on or near the site;
- viii. The impacts of the device on the ability of the mean high tide line to shift landward due to sea level rise and natural coastal processes;
- ix. The impacts of the device on public access to and along the shoreline, coastal recreation areas, and beach widths (additional evaluations may be needed to analyze impacts to habitat areas pursuant to the policies in Chapter 4.1 Biological Resources); and
- x. Any necessary mitigation measures and all feasible non-intrusive and least environmentally damaging alternatives to shoreline protection including, but not limited to, siting the device as far landward as feasible, relocation or removal of portions of the threatened structures, drainage control and improvements, installation of drought tolerant landscaping, and other adaptation strategies. Priority shall be given to

options that protect, enhance, and maximize coastal resources and access, including giving full consideration to nature-based or “soft” approaches such as living shoreline techniques, beach nourishment, or planned retreat.

- C. A site map that shows all easements, deed restrictions, or “Offers to Dedicate” and/or other dedications for public access or open space and provides documentation for said easements or dedications. The approved device shall be located outside of and consistent with the provisions of such easements or offers; and
- D. If the project involves development on public trust lands, then review by the appropriate trustee to the public trust lands (e.g. City of Santa Barbara or State Lands Commission) shall be required.

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