

Chapter 13 Climate Change

13.1 Risk Assessment

13.1.1 Description of Hazards

Requirement §201.6(c)(2)(i): The risk assessment shall include a description of the type location and extent of all natural hazards that can affect the jurisdiction.

Because climate change will continue to occur regardless of efforts to reduce GHG emissions, it is necessary to prepare for a range of possible effects. The range of possible hazards as a result of climate change includes:

- Sea Level Rise
- Flooding
- Extreme Storm Events
- Coastal Storm Damage, Bluff Erosion, Beach Loss and Landslides
- Changes in Temperatures
- Increase in Wildland Fires
- Impacts to Water Supply
- Impacts to Public Health

It is important to note that many of the hazards we may experience will not be new situations created by previously unknown processes, but rather a worsening of hazards that the community has experienced in the past. For example, severe winter storms are experienced periodically in Santa Cruz County. The damage from flooding and coastal waves associated with severe winter storms may worsen as the climate changes due to higher sea levels exacerbating wave damage, coastal erosion, and coastal flooding.

Climate change hazards are described in detail in the County of Santa Cruz Climate Action Strategy, February 2013, and also briefly summarized below.

Sea Level Rise

Impacts from rising sea level will accelerate coastal erosion, increase the extent of coastal inundation, increase localized elevated groundwater levels, and magnify the impacts of extreme storm and wave events including El Niño events. A 2012 study prepared by the National Academy of Sciences projects that sea level will rise 1.6–11.8 inches (4–30 cm) by 2030 relative to 2000, 4.7–24.0 inches (12–61 cm) by 2050, and 16.5–65.7 inches (42–167 cm) by 2100 (National Research Council, 2012⁶).

The 2018 California Ocean Protection Council Sea Level Rise Guidance is considered the best available science and provides sea level rise projections that have been refined for 12 tide gauges throughout California. The report provides projections for planning purposes based on probability of occurrence and the level of risk aversion. Low risk aversion means a high risk of occurrence, and extreme risk aversion

⁶ National Research Council, 2012. Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future. Prepared by the National Research Council, of the National Academies. Released in 2012.

means an extremely low risk of occurrence. For the Monterey tide gauge there is a high risk of sea level rise of approximately one foot by the year 2050 (2000-2050), a moderate risk of two feet, and an extremely low risk of up to 2.7 feet of sea level rise over the same time period. By the year 2100 the report projects a low risk of between 2.3 and 3.3 feet of sea level rise, a moderate risk of between 5.5 and 6.9 feet, and an extremely low risk of up to 10 feet of sea level rise.

Sea level rise has the potential to adversely impact the following types of public and private infrastructure.

City of Santa Cruz Neary Lagoon Wastewater Treatment Plant: Groundwater level at the Neary Lagoon Wastewater Treatment Facility is very high. The anticipated rise in groundwater due to sea level rise may adversely impact the facility by impacting storage tanks and associated infrastructure (City of Santa Cruz, 2018). A large underground pump gallery is also susceptible to groundwater impacts through infiltration of groundwater through electrical conduits and cracking walls (City of Santa Cruz 2018)⁷.

Santa Cruz County Sanitation District Sewer Infrastructure: Numerous pump stations and associated sanitary sewer infrastructure operated by the Santa Cruz County Sanitation District are situated in locations vulnerable to winter storm damage. The primary high-pressure sewer line that transports 3-8 million gallons of raw sewage a day to the Neary Lagoon Wastewater Treatment facility crosses the face of Schwan Lake and is susceptible to sea level rise. It is expected that several of these facilities may be increasingly impacted as sea level rises and storms increase.

Coastal Transportation Infrastructure: Roads at the top edge of coastal bluffs are vulnerable to damage because the rate of retreat of unprotected coastal bluffs is expected to increase in response to increased exposure to storm waves and intense rain events. Roads at low elevations at the back beach and the subsurface infrastructure within the roads are also particularly vulnerable to coastal erosion.

Oceanfront Residential and Commercial Properties: The projected rise in sea level would put most Santa Cruz County oceanfront properties at greater risk from either inundation and/or coastal flooding, or from increased bluff erosion. Unincorporated Santa Cruz County has approximately 29 miles of coastline. Approximately 3 miles of the most intensively developed coastline with primarily residential uses is located in the mid-county community of Live Oak. An additional 3 miles of vulnerable beaches with extensive coastal residential and commercial development occurs from Seacliff to Rio Del Mar.

Flooding

Flooding and coastal storms present similar risks and are usually related types of hazards in Santa Cruz County. Coastal storms can cause increases in tidal elevations (called storm surge), wind speed, coastal erosion, and debris flows, as well as flooding (See Chapter 6 Floods and Coastal Storms).

As a result of climate change, seasonal precipitation patterns, including timing, intensity, and form of precipitation, are projected to shift. A recent study conducted by the U.S. Geological Survey⁸ projects that there will be a shift in peak precipitation from January to February, with less precipitation occurring in the fall (November-December) and spring (March-April) by 2100. The U.S. Geological Survey (USGS)

⁷ City of Santa Cruz, 2018. Climate Adaptation Plan Update 2018-2023.

⁸ Flint, L.E., and Flint, A.L., 2012. Simulation of Climate Change in San Francisco Bay Basins, California: Case Studies in the Russian River Valley and Santa Cruz Mountains: U.S. Geological Survey Scientific Investigations Report 2012-5132, 55 p.

also concluded that while the amount of annual precipitation is not expected to substantially change as a result of climate change, precipitation will be concentrated in mid-winter. As a result, flooding is a growing threat that deserves careful attention as one of the more hazardous impacts of climate change.

Extreme Storm Events

Some models predict that extreme storm events will become more common, and that heightened sea level will persist longer as sea level rises, increasing the potential for damage.

Coastal Storm Damage, Bluff Erosion, Beach Loss and Landslides

An increase in future coastal storm frequency and/or intensity will increase cliff retreat rates as well as cause potential damage to oceanfront property or public infrastructure. Practically speaking, the entire coast of California has been retreating or eroding for the past 18,000 years. There is an important distinction, however, between the erosion or retreat of coastal cliffs or bluffs, which is an irreversible process, and the seasonal or longer-term erosion of the beaches, which can be recoverable. Thus, even as the coastline continues to retreat landward, beaches will be present as long as the supply of sand to the shoreline is maintained. However, hard armoring placed along the shoreline prevents landward retreat of the coastline and increases water depth as sea level rises, causing beaches to disappear (See Chapter 9 Coastal Erosion).

An anticipated increase in precipitation during midwinter months (December and January) may lead to increased impact to roadways and residences from flooding and landslides.

Changing Temperatures

Increased greenhouse gases in the atmosphere raises temperatures and alters seasonal temperature patterns. Effects can include changes in average temperature, the timing of seasons, and the degree of cooling that occurs in the evening. In addition to new seasonal temperature patterns, extreme events such as heat waves are projected to occur more frequently and/or last for longer periods of time.

Wildfire

Climate change is expected to increase an already high risk of wildfires in terms of fire frequency, size, and severity beyond the historic range of natural wildfire variability due to increasing length of the fire season, drier fuels, and decreasing forest health. These changes are being driven by alterations in temperature and precipitation regimes to a warmer and drier condition. There has been no more devastating example of the increased risk than the 2020 CZU Lightning Complex Fire (See Chapter 5 Wildfires).

Impacts to Water Supply

The effects of climate change on water supplies will have impacts on agriculture, recreation and tourism, and the economy overall as well as on natural ecosystems. Water supply in Santa Cruz County is provided by a number of independent water agencies. Almost all of the jurisdictions are experiencing some kind of water supply shortfall from overdraft of the groundwater basin, inadequate supply during a drought, or inadequate facilities to meet current demands (See Chapter 7 Drought).

Impacts to Public Health

In Santa Cruz County the predicted health effects of climate change include increased incidence of emerging diseases and vector-borne disease if ecological changes lead to migration of insect and animal disease vectors, and physical and mental health impacts associated with severe weather events, such as flooding, when they cause population dislocation and infrastructure loss. Though extreme heat may be

moderated in our coastal location, inland areas of the County can experience much higher temperatures. An increase in temperature can exacerbate existing respiratory disease, cardiovascular disease, and stroke. Wildfires are also expected to increase in frequency and severity as drought takes hold, which may cause respiratory distress, exacerbation of existing disease, physical and mental dislocation, as well as some number of direct fatalities.

13.1.2 Previous Occurrences

Requirement §201.6(c)(2)(i): The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.

Climate change is currently affecting California and Santa Cruz County, where sea level has risen by as much as seven inches along the coast over the last century, increasing pressure on the state's and county's infrastructure, water supplies, and natural resources. The state and county have seen increased average temperatures, more extreme hot days, fewer cold nights, shifts in the water cycle with less winter precipitation falling as snow, and snowmelt running off sooner in the year (California Natural Resources Agency, 2018⁹). These are only some of the changes that have occurred.

There is consensus among the world's leading climate change scientists that human-generated emissions of heat-trapping greenhouse gases (GHGs) are the primary cause of the warming trend. Projections indicate that atmospheric concentrations of GHGs will continue to increase throughout this century. Data describing atmospheric GHG concentrations over the past 800,000 years demonstrates that concentrations of carbon dioxide (CO₂), the primary anthropogenic GHG, have increased substantially since pre-industrial times, driven largely by economic and population growth, and are now higher than ever. This has led to atmospheric concentrations of carbon dioxide, methane and nitrous oxide that are unprecedented in at least the last 800,000 years. Their effects, together with those of other anthropogenic drivers, have been detected throughout the climate system and are extremely likely to have been the dominant cause of the observed warming since the mid-20th century. (IPCC, 2014¹⁰).

The Intergovernmental Panel on Climate Change (IPCC) described potential global emission scenarios for the coming century. The scenarios vary from a best-case, characterized by low population growth, clean technologies, and low GHG emissions; to a worst-case, wherein high population and fossil-fuel dependence result in extreme levels of GHG emissions. Continued emission of greenhouse gases will cause further warming and long-lasting changes in all components of the climate system, increasing the likelihood of severe, pervasive, and irreversible impacts for people and ecosystems. Limiting climate change would require substantial and sustained reductions in greenhouse gas emissions which, together with adaptation, can limit climate change risks. Many aspects of climate change and associated impacts will continue for centuries, even if anthropogenic emissions of greenhouse gases are stopped. The risks of abrupt or irreversible changes increase as the magnitude of the warming increases (IPCC 2014).

⁹ California Natural Resources Agency, 2018. Safeguarding California Plan: 2018 Update, California's Climate Adaptation Strategy.

¹⁰ IPCC, 2014: *Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Core Writing Team, R.K. Pachauri, and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 pp.

Our natural, economic, and cultural systems are closely tied to the climate. Significant changes in the climate will impact the way people live: the food we grow, our health and safety, the availability of water, our economy, wildlife and vegetation, and many other aspects of our lives. Preparation of a Climate Action Strategy (CAS) is an opportunity for the community to review the local activities that contribute to GHG emissions, to consider changes we can make to decrease our local contribution to climate change, and to plan the community response to the local impacts that will occur as climate change progresses.

13.1.3 Assessing Vulnerability: Overview

Requirement §201.6(c)(2)(ii): The risk assessment shall include a description of the jurisdiction’s vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community.

Adaptation to climate change is fundamentally a risk management strategy, or an insurance policy against an uncertain future. Risk is a combination of the likelihood of any of the previously described climate related events occurring in the future, and the magnitude of the potential consequences. Some processes or events, several years of drought, for example, have occurred often in the past and have a very high probability of occurring in the future, probably more frequently. The consequences of a prolonged drought can be very significant. The product of the probability and consequences of drought and the associated water shortages, therefore, produce a very high-risk rating, over both the short and long-term.

Processes such as floods and droughts reflect climate variations or fluctuations. The County has adequate records for these types of events, simply because the County has experienced these types of events many times throughout its history. As a result, there is a high degree of certainty that both floods and droughts will occur in the future. The uncertainty lies in how much more frequent and how much more severe these events will be in the future as a result of changing climate.

There are other events related to climate change, those related to sea level rise for example (inundation of low-lying coastal areas, a rise in the water table beneath Rio Del Mar Esplanade/Flats), where the future unknowns are higher, simply because of the lack of certainty about future greenhouse gas emissions and how they will influence climate and sea level rise. Despite the uncertainties, it is possible to make some judgment as to the relative level of risk that each of these poses to the County based on some range of future projections.

Over the next 30 years (between 2020 and 2050), it is expected that the highest risks to Santa Cruz County will come from:

- Wildfire. Climate change is expected to result in additional risk of increased fire frequency, size, and severity beyond the historic range of natural wildfire variability due to increasing length of the fire season, drier fuels, and decreasing forest health. These changes are being driven by alterations in temperature and precipitation regimes (generally, warmer, and drier). As a result, the consequence would be very high while the probability of such an event occurring is also very high.

- Water Shortages. Potential water shortages due to the combination of increasing temperatures, changes in precipitation patterns increasing climatic water deficit, increased saltwater intrusion, decreased groundwater recharge, and higher demand. This has a very high probability of occurrence and also significant (high) consequences.
- Coastal Storms. Potential increase in future coastal storm frequency and/or intensity will increase cliff retreat rates as well as cause potential damage to oceanfront property or public infrastructure. According to some studies, the coastlines of northern California, Oregon and Washington have experienced increasingly intense winter storms and greater wave heights over the past few decades, both of which may be leading to more severe winter erosion (NRC, 2012). The consequence of coastal bluff erosion is high due to the extent of high-value public and private improvements (infrastructure, structures, etc.).
- Flooding. Flooding in Santa Cruz County has occurred in each of the primary drainages and will continue to occur in the future given certain sets of meteorological conditions. Previous occurrences are well documented for all primary drainages with the exception of Aptos Creek, which is not gauged. In addition, low-lying areas such as Rio Del Mar Esplanade/Flats will experience more frequent flooding and inundation from sea level rise and increased wave heights. As a result, the consequence would be high in terms of structural and economic loss, with the probability of such an event occurring also being high.
- Groundwater Overdraft. Groundwater extraction rates from the Pajaro River Valley groundwater basin have exceeded sustainable pumping rates for decades, causing groundwater levels to drop significantly, resulting in saltwater intrusion, and rendering some coastal groundwater wells unsuitable for use. With the rise in sea level in the coming decades, saltwater intrusion will be exacerbated. The probability of saltwater intrusion is high due to the current groundwater overdraft situation in the Pajaro Valley, and the consequence of this occurring is high due to the economic effects of following large expanses of farmland to reduce groundwater pumping. However, efforts are being developed to reduce groundwater pumping and to stop saltwater intrusion. The success of these efforts will be challenged by the additional effects of climate change. Many of the wells located within the boundaries of the Soquel Creek Water District are also threatened with saltwater intrusion. A reduction in groundwater pumping will be necessary to meet the protective and target water levels necessary to avoid saltwater intrusion into the wells.
- High Groundwater. Rising water table beneath the Rio Del Mar Esplanade is already an issue. As sea level continues to rise, the present problems will be exacerbated. The consequence of a continuing water table rise on commercial and residential structures and infrastructure, including the wastewater pump station is high, and the likelihood of this taking place in the immediate future is high.
- Extreme Heat. Heat waves in Santa Cruz County are likely to become more frequent in the future due to climate change; however, due to the marine climate, temperature increases would be moderate. As a result, the consequence would be low while the probability of such an event occurring is high.

Based on the trends of the past century and the various climate models that have been developed, the risks from each of these climate-related events will almost certainly increase over the intermediate- to long-term, 2050-2100.

13.1.4 Assessing Vulnerability: Identifying Structures

Requirement §201.6(c)(2)(ii)(A): The plan should describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas.

Due to the nature and extent of the potential hazards due to climate change it is not possible to accurately assess the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the County that may be vulnerable to multiple climate change related hazards.

13.1.5 Assessing Vulnerability: Estimating Potential Losses

Requirement §201.6(c)(2)(ii)(B): The plan should describe vulnerability in terms of an estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(ii)(A) of this section and a description of the methodology used to prepare the estimate.

Potential dollar losses were not estimated.

13.1.6 Assessing Vulnerability: Analyzing Development Trends

Requirement §201.6(c)(2)(ii)(C): The plan should describe vulnerability in terms of providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.

Santa Cruz County has a number of compact urban communities as well as extensive areas of agricultural land and forested hillsides. A number of rural villages and towns are located throughout the County. As dictated by the 1978 Growth Management Ordinance, most new development has occurred within or adjacent to the urban services line (i.e., the boundary point for such infrastructure as water and sewage service). As with most communities, increased housing costs have resulted in the need to provide higher density housing. In Santa Cruz County, all development of this type occurs where urban services are available. Other development is mostly infill or reuse development, and development of existing rural residential properties.

No changes in these development regulation or patterns occurred that would affect the County's overall vulnerability since the previous plan was adopted in 2016. According to annual Growth Management Reports, there have been 909 new residential structures built in the County since 2010 (Table 12).

13.2 Mitigation Strategy

Requirement §201.6(c)(3): The plan shall include a mitigation strategy that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools.

Adaptation efforts in Santa Cruz County by government and other organizations already exist in the form of emergency preparedness plans, public health programs, water supply contingency plans, flood regulations, sustainable agriculture efforts, and land protection programs. Additional research and planning should build on these existing efforts and amend them to address climate change directly.

13.2.1 Mitigation Goals

Requirement §201.6(c)(3)(i): The hazard mitigation strategy shall include a description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.

The following goals have been proposed in an effort to guide development of more specific adaptation strategies that would reduce our vulnerability to climate change.

Climate Change 1 - Encourage and support actions that reduce risks and vulnerabilities now, while recognizing the importance of identifying, making decisions about, and preparing for impacts and risks that may develop in the future.

Climate Change 2 - Support the reduction of risks from other environmental hazards, noting the strong interrelationships and benefits between reducing risk from climate change, non-climate change-related disasters, and most other environmental hazards.

Climate Change 3 - Build resilience into all programs, policies, and infrastructure.

Climate Change 4 - Encourage climate change resilience planning and actions in private companies, institutions, and systems essential to a functioning County of Santa Cruz.

Climate Change 5 - Encourage community involvement and public-private partnerships to respond to potential climate impacts, particularly for those most vulnerable.

Climate Change 6 - Ensure that Santa Cruz County remains a safe, healthy, and attractive place with a high quality of life for its residents, businesses, and visitors.

13.2.2 Identification and Analysis of Mitigation Actions

Requirement §201.6(c)(3)(ii): The mitigation strategy shall include a section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.

Mitigation actions for each of the vulnerabilities and impacts that have been recognized and evaluated are located throughout the LHMP. Sections on Wildfire, Floods and Coastal Storms, Drought, Tsunami, and Landslide all contain mitigation actions that address some of the hazards identified in this section on Climate Change. Additional recommended actions are summarized below. The alpha-numeric identifiers after each action are further described in Chapter 15 Mitigation Strategy.

- Address climate change in Public Health Preparedness Plan Update, General Plan Update, and other pertinent plans in order to implement policies and programs to reduce impact of climate change (C-13)
- Develop a forum for ongoing engagement with coastal private property owners and the California Coastal Commission to discuss frameworks for land use policies that respond to expected future losses. (C-14)
- Consider relocating coastal development away from areas that will be inundated to eliminate the risk of damage and the need for coastal protection. (C-15)
- Consider limiting new engineered protection structures to infill in locations where the back beach is currently fixed. (C-16)
- Consider a program to identify those areas where managed retreat should replace engineered protection structures, based on public benefit. (C-17)
- Work with the engineering community to define a standard increment of additional height that should be added to the FEMA 100-year wave run up, storm surge, and flood levels when analyzing hazards in specific locations. (C-18)
- In consultation with the California Coastal Commission, consider revising regulations that address rebuilding structures that are repeatedly damaged by SLR and coastal storms. (C-19)
- Amend the Safety Element of the General Plan and revise implementing regulations to increase the efficacy of the damage prevention and flood protection aspects of the National Flood Insurance Program. (C-20)
- Work with the County Office of Response, Recovery, and Resilience to refine FEMA flood hazard mapping to account for climate change, as maps are the basis for evacuation notification in the event of anticipated flooding and/or a tsunami. (C-21)
- Consider evaluating unprotected developed coastal bluff areas subject to future erosion, and develop plans and timeline for either armor placement, or retreat and relocation of existing public structures and/or infrastructure. (C-22)
- Consider designing and siting all future County projects and infrastructure to account for sea level rise projections, considering projected life span of project. (C-23)
- Consider securing federal grant funding for the following drainage improvements within the Rio Del Mar Esplanade necessary to protect against a 10-year storm. (C-24)
- Continue to improve wastewater collection system to reduce infiltration by groundwater or surface water. (C-25)

- Consider coordinating with the City of Santa Cruz on programs to minimize vulnerabilities at the Neary Lagoon plant. (C-26)
- Expand use and functionality of targeted shelters County Wide to serve as “All Hazard Resiliency Centers” which can serve as an all-hazard resource for community members in events including but not limited to: earthquakes, fires, floods, Public Safety Power Shut-off events, extreme weather events, poor air quality days. Building resiliency centers may include but is not limited to back-up power generation capacity, air filtration, air conditioning, kitchen facilities, shelter capacity. (A-24 New)

2021 Progress Report

- The County has adopted a Climate Action Strategy that provides recommendations for addressing climate change in the updates of other pertinent plans. In 2020 the Safety Element has been updated accordingly. The County Health Services Agency staff has completed a Public Health Hazard and Vulnerability Assessment Tool to identify the top ten public health hazards facing the community which includes hazards related to and exacerbated by climate change impacts. The next update of the Public Health Preparedness Plan should address climate change impacts as they relate to public health. (C-13)
- Planning Department staff conducted a series of public hearings and community meetings to discuss frameworks for land use policies that respond to sea level rise. In 2020, the project resulted in adoption by the Board of Supervisors of an amended Safety Element and related implementing ordinances. See Chapter 9 Coastal Erosion Progress Report for Mitigation Actions C-3, C-4, and C-8 for additional details. (C-14)
- County land use policies and regulations include thresholds and requirements to relocate structures away from hazardous coastal locations if feasible based on-site conditions and project scope. See Chapter 9 Coastal Erosion Progress Report for Mitigation Actions C-3, C-4, and C-8 for additional details. (C-15)
- The recently amended Safety Element containing an updated section on coastal hazards addresses engineered protection structures. See Chapter 9 Coastal Erosion Progress Report for Mitigation Actions C-3, C-4, and C-8 for additional details. (C-16)
- In 2020 the Board of Supervisors adopted the updated Safety Element that includes policies establishing areas of the County coastline where managed retreat will be required, and new engineered protection will be prohibited. See Chapter 9 Coastal Erosion Progress Report for Mitigation Actions C-3, C-4, and C-8 for additional details. (C-17)
- In 2020 the Board of Supervisors adopted an amended Safety Element and related implementing ordinances containing increased freeboard requirements for development in both alluvial flood hazard areas and coastal high hazard areas. For inland riverine flood hazards areas, the additional freeboard requirement is 2 feet. For coastal high hazards areas, the additional freeboard requirement is 3 feet. (C-18)
- In 2020 the Board of Supervisors adopted an amended Safety Element and related implementing ordinances containing a new repetitive loss policy with the intent of reducing future flood losses on repetitive loss properties. (C-19)
- In 2020 the Board of Supervisors adopted an amended Safety Element and related implementing ordinances addressing flood hazards. The County adopted new Floodplain Regulations using the State model code as a template. In addition to the increased freeboard requirements for development in flood hazard areas, the model ordinance contains more clarity

and detail regarding development in the floodplain intended to make local floodplain regulation more effective. (C-20)

- In 2017 FEMA completed an updated Flood Insurance Study and revised maps for the County. However, the study and map updates do not account for sea level rise. This is the reason the County adopted local regulations that require increased freeboard above mapped flood elevations to account in part for future sea level rise. (C-21)
- In 2020 the Board of Supervisors adopted an amended Safety Element and related implementing ordinances containing policies that plan for future conditions along the coast that are likely to exist as a result of sea level rise. Policies require as part of future development projects an evaluation of unprotected developed coastal bluff areas subject to future erosion, and development of plans and timeline for either armor placement, or retreat and relocation of existing public structures and/or infrastructure. See Chapter 9 Coastal Erosion Progress Report for Mitigation Actions C-3, C-4, and C-8 for additional details. (C-22)
- County projects and infrastructure in the Coastal Zone require review for consistency with both County policy and California Coastal Commission Guidance. It is standard practice currently to incorporate sea level rise analysis in project designs. An example of this involves the update of the Stormwater Facilities Master Plan for Zone 5. One of the tasks in the Zone 5 Master Plan update will be about “limited” modeling for climate change and sea level rise. One iteration of climate change impacts will be modeled on the CIP pipe and creek models. The climate change iteration will include tidal boundary change due to sea level rise and increased runoff due to precipitation change. (C-23)
- The Rio Del Mar drainage improvement project has been designed and permitted. The Dept. Of Public Works has received federal grant funding but continues to seek the balance of the funding to construct the project. (C-24)
- The Dept. Of Public Works continues to implement a program to upgrade wastewater collection infrastructure as funding allows. (C-25)
- A project to address the vulnerabilities at the Neary Lagoon Wastewater Treatment Plant has not been implemented. (C-26)

This page intentionally left blank