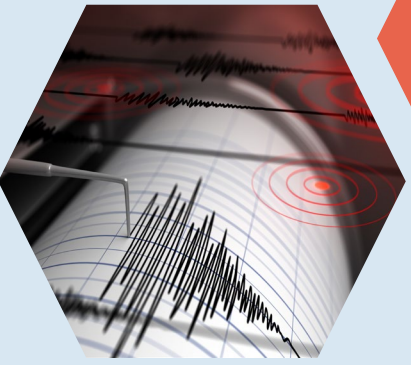
CITY OF
CHULA VISTA

SAFETY ELEMENT

2024



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Introduction

1.0 INTRODUCTION

A community's safety and well-being can be influenced by many natural and man-made hazards. The Safety Element is a mandatory chapter of a jurisdiction's General Plan, as required by California Government Code Section 65302, and addresses the need to protect citizens from risks associated with natural and man-made hazards. Natural hazards constitute natural phenomena and include naturally occurring events like geologic and seismic activity, wildfire, flooding, and drought. Conversely, man-made hazards are hazardous events that are caused by human activity. Man-made hazards may include hazardous materials spills, terrorism, sabotage, crime, and human-caused health crises or fires.

These hazards have the potential to cause serious impacts on the City of Chula Vista and its residents. The Safety Element contains goals, policies, and actions to reduce the potential short- and long-term risk of death, injuries, property damage, economic damage, and social dislocation associated with hazards. The City's response to these issues will determine its success in maintaining and attracting residents and businesses. Chula Vista will address safety issues comprehensively to ensure an enjoyable, safe, and healthy environment for Chula Vista's residents, workforce, and visitors.

1.1. Relationship to Other Documents

The Safety Element works jointly with other General Plan elements and planning documents and is implemented by several City departments through goals, policies, and implementation methods. The City's Safety Element relates to nearly every General Plan element but most closely relates to the Land Use, Transportation, Environmental[1], and Housing Elements of the City's General Plan. Additionally, the Safety Element relates to other planning documents, including the *Chula Vista Emergency Operations Plan* (EOP), *Multi-Jurisdictional Hazard Mitigation Plan* (MJHMP)*, and Climate Action Plan*. These plans are integrated in the Safety Element.

The Land Use and Transportation Element provides a central framework for the General Plan and serves as a compass to guide the public, planners, decision-makers, and City staff on the desired pattern of development in Chula Vista. Development is closely linked to safety as it provides an opportunity to design and guide the growth of the City with hazards and safety in mind.

1.1.1. City's General Plan Elements

The Land Use and Transportation Element establishes the land use designations, intensity of development, and nature of development. The element reflects anticipated levels of development including critical facilities such as schools, city services, utilities, police and fire protection services, and so on. It is necessary to make sure, as much as possible, that these developments are in areas that are not in hazard zones or that the hazards are mitigated to ensure the safety of the structures and users.

The Land Use and Transportation Element also evaluates the road system necessary to serve that development, as well as alternative forms of transportation available to move people and goods and to provide facilities that complement and enhance the nature of the surrounding neighborhood. Designation

[1] Environmental Element Covers the requirements of Conservation Element per Office of Planning and Research Guidelines.

of and access to evacuation routes based on the Land Use and Transportation Element is studied as a part of the Safety Element.

The Housing Element details the City's eight-year strategy for the enhancement and preservation of the community; identifies strategies for expanding housing opportunities for the City's various economic segments; and provides the official policy guidance for local decision-making related to housing. Similar to the Land Use and Transportation Element, the Housing Element is related to the Safety Element for the evaluation and mitigation of proposed development in any hazard zones. California Government Code Section 65302 requires the Safety Element to be updated every time a Housing Element is updated.

The Environmental Element sets policies and describes the natural resources of within the City including land, water, and ecosystem services. Essentially, it focuses on sustainable land use, resource management, and environmental protection. These are directly related to climate resiliency policies of the Safety Element.

1.1.2. County's Operational Area Emergency Operations Plan

The San Diego County Operational Area (OA) was formed in the 1960's to assist all of the cities and the County in developing emergency plans, exercising those plans, developing Mutual Aid capabilities between jurisdictions and, in general, establishing relationships that would improve communications between jurisdictions and agencies. The OA consists of the County and all jurisdictions within the county.

The San Diego County Operational Area Emergency Operations Plan (OA EOP) is for use by the County and all of the cities within the county to respond to major emergencies and disasters. It describes the roles and responsibilities of all county departments (including many city departments), and the relationship between the County and its departments and the jurisdictions within the county. The Cities are encouraged to adopt the OA EOP as their own, with modifications as appropriate for their city. The Plan is subject to update every four years by the Office of Emergency Services and the Unified Disaster Council of the Unified San Diego County Emergency Services Organization.

1.1.3. City's Vista Emergency Operations Plan

The City's Emergency Operations Plan (EOP) was updated in July 2021 and addresses Emergency Preparedness (those activities supporting enduring operational readiness) and Emergency Response (those immediate and ongoing actions that lead the jurisdiction through an identified crisis or disaster event). The goal of this plan is to provide for a coordinated effective response to ensure the protection of life, property, resources, and the environment.

The City of Chula Vista EOP is based on the County of San Diego Operational Area Emergency Operations Plan (OA EOP). It is designed to meet the needs of the City with respect to organizational structure and identified hazards. It is fully integrated into the Safety Element and may be found at this location: /https://pub-chulavista.escribemeetings.com/filestream.ashx?DocumentId=35655.

1.1.4. County's Multi-Jurisdictional Hazard Mitigation Plan

The City of Chula Vista is a jurisdictional partner in San Diego County's Multi-Jurisdictional Hazard Mitigation Plan (MJHMP). The MJHMP identifies ways to minimize damage from natural and human-

caused disasters. The plan is a resource for hazard management, state and federal program requirements, local hazard mitigation capability, and inter-jurisdictional coordination.

The County's MJHMP was revised in 2023 to include recent hazards and mitigation measures. San Diego County received an achievement award from the National Association of Counties for the original MJHMP drafted in 2004.

The 2023 MJHMP was crafted in accordance with the Disaster Mitigation Act of 2000 and followed the Federal Emergency Management Agency's (FEMA) 2011 Local Hazard Mitigation Plan guidance. The MJHMP incorporates a process where hazards are identified and profiled, the people and facilities at risk are analyzed, and mitigation actions are developed to reduce or eliminate hazard risk. The implementation of these mitigation actions, which include both short- and long-term strategies, involves planning, policy changes, programs, projects, and other activities. The MJHMP is fully integrated into the Safety Element and may be found at this location: https://www.sandiegocounty.gov/oes/emergency_management/oes_jl_mitplan.html

1.1.5. Climate Action Plan

Since 2000, Chula Vista has been implementing a "Climate Action Plan" to address the threat of climate change impacts to the local community. Greenhouse gas (GHG) emissions represent a unique hazard because until the City reaches its net-zero goal community-wide actions will contribute to an increase in the hazards they cause and will only be reduced by global GHG emissions reductions. The most recent plan is the 2017 Climate Action Plan (CAP). It includes ambitious new goals and policies to strengthen the City's climate action efforts. Implementing the CAP facilitates achieving numerous community co-benefits such as utility savings, better air quality, reduced traffic congestion, local economic development, and improved quality of life. It brings together past City of Chula Vista climate plan efforts including the original Carbon Dioxide Reduction Plan (2000), the mitigation plan (2008), and the adaptation plan (2011), and an updated plan is expected to be released in 2024. The City regularly conducts greenhouse gas emission inventories to help guide the execution of the CAP as well as to monitor and evaluate the progress. The CAP is fully integrated into the Safety Element and may be found at this location: https://www.chulavistaca.gov/home/showdocument?id=15586.

1.1.6. Sustainable Communities Strategy

The Sustainable Communities Strategy (SCS) was adopted in 2021 as a part of the San Diego Association of Governments (SANDAG) 2021 Regional Plan and is designed to help create more sustainable and livable communities within the San Diego region.[2] The SCS in San Diego, like in other regions of California, is largely driven by the requirements of Senate Bill (SB) 375, which was passed in 2008. SB 375 mandates that regions in California develop strategies to reduce greenhouse gas emissions from the transportation sector by integrating transportation, land use, housing, and environmental planning in order to improve air quality and enhance the overall quality of life for residents. Local jurisdictions, including Chula Vista, have agreed to certify that their general plans are consistent with the SCS.

[2] San Diego Association of Governments, 2021 Regional Plan, https://www.sandag.org/-/media/SANDAG/Documents/PDF/regional-plan/2021-regional-plan/final-2021-regional-plan/final-2021-regional-plan-flipbook.pdf.

Existing Conditions Analysis

2.0 NATURAL & MAN-MADE HAZARDS ANALYSIS

2.1. Existing Conditions

An analysis of existing conditions is one of the primary steps in the process of updating the City of Chula Vista's Safety Element. An outline of information on existing conditions in the City and surrounding areas, as well as an analysis of factors that will impact the City's physical development, will inform the goals, policies, and actions of the Safety Element. The existing conditions analysis for each identified hazard includes identifying the location and extent of hazard areas that currently exist and have historically occurred as well as identifying the capabilities of the City to mitigate or respond to each hazard. The goals, policies, and implementation plan laid out in this Safety Element are guided by the existing conditions related to each hazard and safety risk. The focus of the identified existing conditions is on mappable resources, trends, and concerns that will frame choices for the long-term physical development of the City.

2.1.1. Planning Area

The Safety Element relates to the entire City of Chula Vista, which is in San Diego County. San Diego County is located in southwestern California, bordering the Pacific Ocean and Mexico. The City is located in the southwestern portion of San Diego County along the San Diego Bay. The City is bordered by National City in the northwest, the City of San Diego farther northwest, and unincorporated San Diego County in the north and east. To the south of the City is the City of San Diego, followed by the US-Mexico Border. Because certain disaster events, geologic features, and potential hazards relate to each other and transcend the City's boundaries, this Safety Element takes into account hazards that occur or originate in other jurisdictions when the potential impact of those hazards might impact the City.

There are no military installations in Chula Vista and hence the impacts of hazards on military installations are not discussed in this document.

2.2. Geologic Hazards

San Diego County has a geologically diverse composition of alluvial fans, mountains, rivers, and streams, and is located along the San Diego Bay and Tijuana River Basin. Much of the City is characterized by sedimentary and volcanic rock. To the west is the San Diego Bay where the coastline includes habitats such as a salt marsh, mudflats, and salt flats. To the east is a lake and open space reserve. Major geological features of San Diego County include the San Diego Bay and Pacific Ocean to the west, the Tijuana River to the south, and the Anza Borrego Desert to the east.

An understanding of the geology and soil composition of a site is essential for new construction and redevelopment of land as it can impact the safety of the structures. Geologic hazards include seismic hazards, landslides, subsidence, and expansive soils. Seismic hazards can lead to fault rupture, ground shaking, and liquefaction. Seismic activity can also be a cause of landslides, subsidence, tsunamis, and seiches.

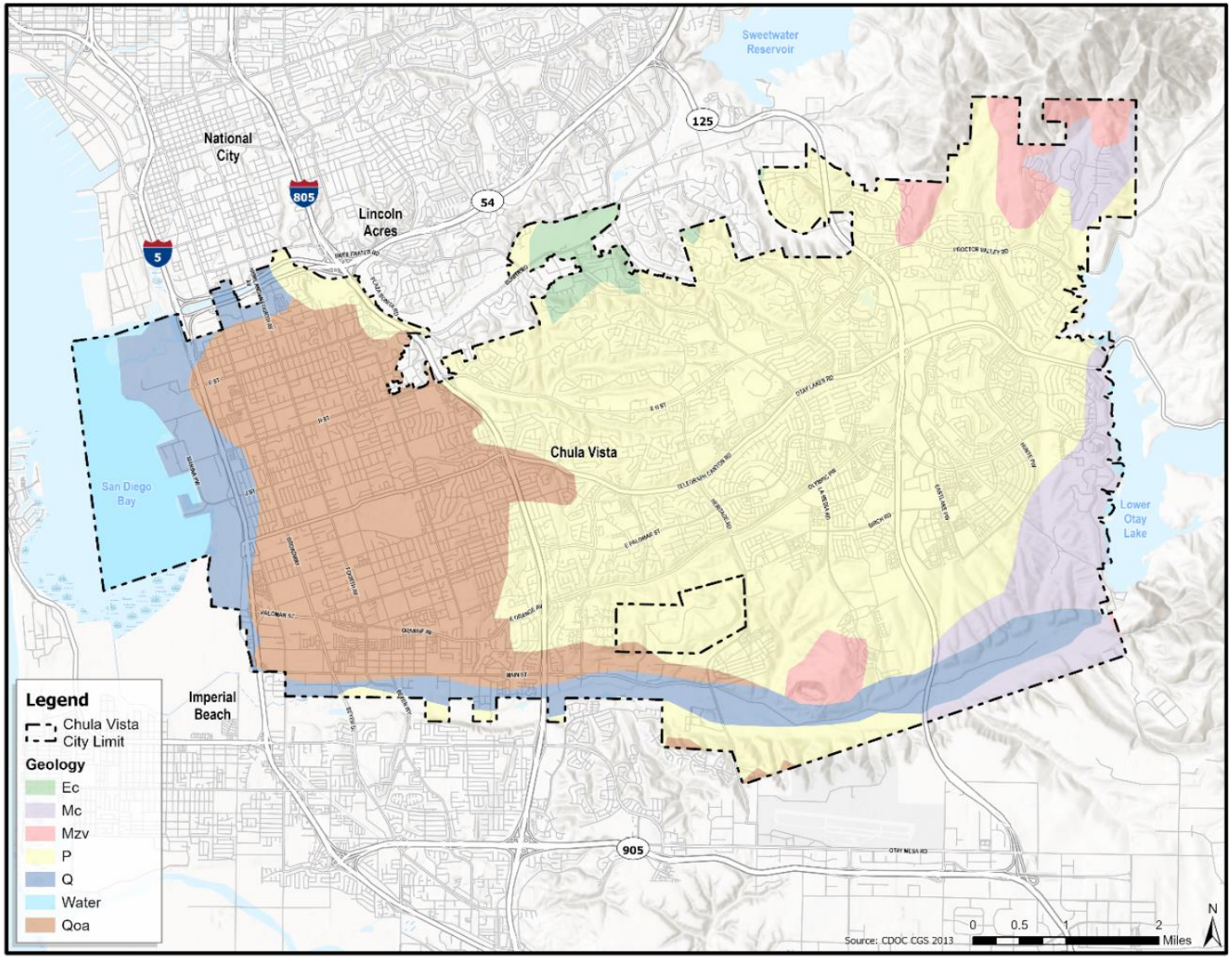
Table 1 and Figure 1 show the geologic makeup of Chula Vista. Large portions of the City on the east of Interstate 805 are composed of marine sedimentary rocks with high shale content and can be prone to

landslides when they become saturated with water, leading to reduced cohesion. The presence of weak or poorly cemented sedimentary layers can contribute to landslide susceptibility. The soils in Chula Vista vary, with sandy soils near the coast and more clay-rich soils inland.

Table 1: Geology

Rock Types	General Lithology	Age	Description
P	Marine Sedimentary Rocks	Pliocene	Sandstone, siltstone, shale, and conglomerate; mostly moderately consolidated.
Qoa	Marine and Nonmarine (Continental) Sedimentary Rocks	Pleistocene	Older alluvium, lake, playa, and terrace deposits.
Q	Marine and Nonmarine (Continental) Sedimentary Rocks	Pleistocene-Holocene	Alluvium, lake, playa, and terrace deposits; unconsolidated and semi-consolidated. Mostly nonmarine but includes marine deposits near the coast.
Mc	Nonmarine (Continental) Sedimentary Rocks	Miocene	Sandstone, shale, conglomerate, and fanglomerate; moderately to well consolidated.
Mzv	Metavolcanic Rocks	Mesozoic	Undivided Mesozoic volcanic and metavolcanic rocks. Andesite and rhyolite flow rocks, greenstone, volcanic breccia, and other pyroclastic rocks; in part strongly metamorphosed. Includes volcanic rocks of Franciscan Complex: basaltic pillow lava, diabase, greenstone, and minor pyroclastic rocks.
Ec	Nonmarine (Continental) Sedimentary Rocks	Eocene	Sandstone, shale, conglomerate; moderately to well consolidated.
Source: California Geological Survey, https://maps.conservation.ca.gov/cgs/gmc/App/.			

Figure 1: Geology



2.2.1. Seismic Hazards

2.2.1.1. Fault Rupture

Earthquake severity is typically categorized according to magnitude (a measure of the amount of energy released when a fault ruptures) and seismic intensity (a qualitative estimate of the damage caused by an earthquake at a given location). Because the amount of destruction generally decreases with distance from the epicenter (the point at the earth's surface directly above where the earthquake originated), earthquakes are assigned several intensities. The most commonly used seismic intensity scale is the Modified Mercalli Intensity (MMI) scale, which has 12 levels of damage. The higher the number, the greater the damage.

The largest earthquake that can occur on a fault or fault segment is called the maximum credible (MCE) or characteristic earthquake. Depending on the planned use, lifetime, or importance of a facility, a maximum probable earthquake (MPE) is the earthquake most likely to occur in a specified period (such as 30 to 500 years). In general, the longer the period between earthquakes on a specific fault segment (recurrence interval), the larger the earthquake. The State of California, under the guidelines of the Alquist-Priolo Earthquake Fault Zoning Act of 1972, regulates the development of structures near active faults. The California Department of Conservation classifies faults according to the following criteria:

- ***Holocene-Active Fault:*** A fault that has had surface displacement within Holocene time (the last 11,700 years)***;***
- ***Pre-Holocene Fault:*** A fault whose recency of past movement is older than 11,700 years and thus does not meet the criteria of Holocene-active fault as defined in the State Mining and Geology Board regulations***.***

An earthquake or rupture along one of the many faults in the vicinity of the City could result in casualties and extensive property damage. The impacts of such a quake may also result from aftershocks and secondary effects such as fires, landslides, dam failure, liquefaction, and other threats to public health and safety.

California is a seismically active area with numerous faults throughout the region (see **Figure 2**). The City is situated on the Pacific Ring of Fire, which is a region of intense tectonic activity that circles the Pacific Ocean. Hence, Chula Vista is at risk for earthquakes and other geologic hazards. However, there are no State-designated Alquist-Priolo Earthquake Fault Zones per Geological Survey within the City where surface fault rupture previously has occurred, or where local topographic, geological, and geotechnical conditions indicate a potential for permanent ground displacements such that mitigation by avoidance as stated in Public Resources Code Section 2621.5 would be required. The closest major fault system in the region is the Rose Canyon fault, approximately 14 miles northwest, and the Elsinore Fault on the east. Local faults also include the Sweetwater Fault and La Nacion Fault to the south of the City as shown in **Figure 3**.

Rose Canyon Fault: The Rose Canyon Fault is an extension of the Los Angeles Newport-Inglewood Fault and is a right-lateral, strike-slip fault. The last major earthquake along the Rose Canyon Fault occurred in 1862 with a magnitude of 6. The earthquake caused minor damage to Old Town San Diego and resulted in a tsunami in San Diego Bay.

Elsinore Fault: The Elsinore Fault extends for approximately 180 kilometers through Southern California. However, despite its size, it is one of the quietest faults in the region and is called a sleeping giant. It is known to be seismically active, and it has the potential to generate significant earthquakes. While it may not be as

well-known as other fault systems in California, it remains a source of concern for earthquake hazards in the region. It is a strike-slip fault, which means that it primarily exhibits horizontal movement along the fault plane.

La Nacion Fault: The La Nacion Fault is situated to the east of San Diego Bay, within the broader Southern California region. It runs through the Tijuana River Valley to the south of the City and is made up of north-south oriented faults that dip to the west, appearing like a network of connected lines. These faults have moved the rocks of the Pliocene San Diego Formation by more than 60 meters over time. There has been no recent movement on these faults.

Sweetwater Fault: The Sweetwater Fault is situated in the southern part of San Diego County, near Chula Vista and the Sweetwater Reservoir. It is part of the broader fault system in Southern California. The Sweetwater Fault is known to be a strike-slip fault. The Sweetwater Fault is considered one of the significant seismic hazards in the region and it has the potential to produce earthquakes that could impact local communities, including Chula Vista.

2.2.1.2. Ground Shaking

Ground shaking is characterized by the physical movement of the land surface during earthquakes. This shaking can cause significant damage to buildings and impact the underlying soils. Strong ground shaking as a result of earthquakes can cause soils to compact, resulting in local or regional subsidence of the ground surface. During strong ground shaking, soils become more tightly packed due to the collapse of pore spaces, resulting in a reduction in the thickness of the soil column. This type of ground failure typically occurs in loose granular, cohesionless soils and can occur in either wet or dry conditions. Unconsolidated young alluvial deposits are especially susceptible to this hazard. Damage to structures can occur as a result of subsidence.

Portions of the City may be susceptible to seismically induced settlement. The City of Chula Vista is not listed within a State-designated Alquist-Priolo Earthquake Fault Zone. The closest fault in the region is the Rose Canyon fault, approximately 14 miles northwest. San Diego County has a geologically diverse composition of alluvial fans, which may be susceptible to ground shaking.

Shake Potential

Figure 4 shows the shake potential in the City. It shows the relative intensity of ground shaking from anticipated future earthquakes. Percentage of gravity (% g) is a method for expressing acceleration, measured relative to gravity (g). Shaking potential at 150% of gravity would be 1.50 g's, perceived as severe ground shaking with moderate to heavy potential of damage on the Modified Mercalli Intensity scale. Based on the shake potential map, the strongest ground shaking that could occur in the City would be 1.35 to 1.75 g's (135% to 175% of gravity), with higher shake potential in the most western areas of the City. For comparison purposes, the peak ground acceleration in a single direction measured during the 1994 Northridge earthquake was 1.82 g, moment magnitude 6.7—this was the highest ever instrumentally recorded in urban North America.[3]

[3] Yegian, M. K., G. V. Ghahraman, G. Gazetas, P. Dakoulas, and N. Makris, "The Northridge Earthquake of 1994: Ground motions and Geo Technical Analysis," *Proceedings*, 1995, Volume III, https://web.archive.org/web/20130506100941/http://www.coe.neu.edu/Depts/CIV/faculty/myegian/library/Thenorthridge%20Earthquake%20of%201994%20Ground%20Motions%20and%20Geotechnical%20Aspects.pdf.

These shake potential maps show the projected maximum capacity for ground shaking in the specific geography, based on conditions such as topography, soil types, groundwater location, etc. Areas around floodplains or shallow groundwater can experience more significant ground shaking, along with steep hillsides.

2.2.1.3. Liquefaction

Seismic ground shaking of relatively loose, granular soils that are saturated or submerged can cause the soils to liquefy and temporarily behave as a dense fluid. Liquefaction is caused by a sudden temporary increase in pore water pressure due to seismic densification or other displacements of submerged granular soils. Liquefaction more often occurs in earthquake-prone areas underlain by young (i.e., Holocene age) alluvium where the groundwater table is higher than 50 feet below the ground surface.

Chula Vista's General Plan area is situated within seismically active Southern California. While no known Alquist-Priolo Earthquake Fault Zones or active faults (i.e., faults that exhibit evidence of ground displacement during the last 11,000 years) traverse Chula Vista, traces of the potentially active La Nacion Fault zone are known to cross the City in a generally north-south direction within the central portion of the City (refer to Figure 3). The greatest magnitude earthquake expected on the La Nacion fault is estimated to be 6.0. The nearest active faults are the Rose Canyon Fault, located approximately 14 miles northwest of the City, and the Coronado Bank fault, located approximately 30 miles from the City. Other active faults in the region are located more than 60 miles from the City.

Strong vibrations due to earthquakes can cause liquefaction of certain soil types. Areas of Chula Vista in close proximity to San Diego Bay and the Sweetwater and Otay River Valley (refer to Figure 5) have shallow groundwater tables and poorly consolidated granular sediments potentially subject to seismically induced liquefaction. Seismic activity within the region can cause structures to fail, resulting in significant property damage, business disruptions, injuries, and even loss of life.

Liquefaction-prone areas within the City are generally located along the coast of the San Diego Bay in the west, and surrounding the northern and southern boundaries of the City, as shown in Figure 5. These areas are classified as having liquefaction potential.

In general, hazards associated with seismic activity include strong ground motion; ground surface rupture; liquefaction; and seismically induced settlement. Ground surface rupture is not considered likely to occur in the City's General Plan area. Lurching or cracking of the ground surface as a result of nearby or distant seismic events is also considered unlikely.

Figure 2: Regional Fault Locations

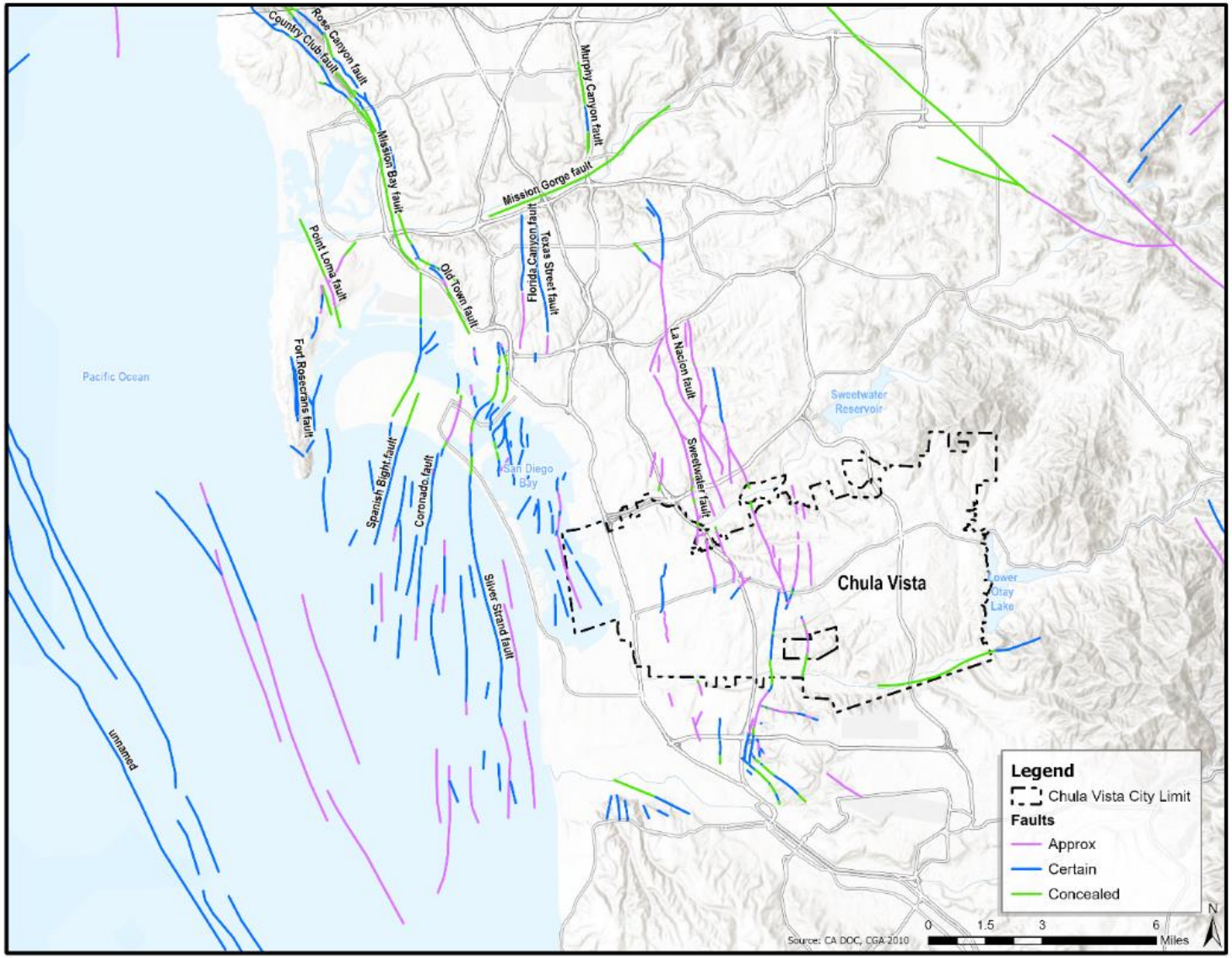


Figure 3: Local Fault Locations

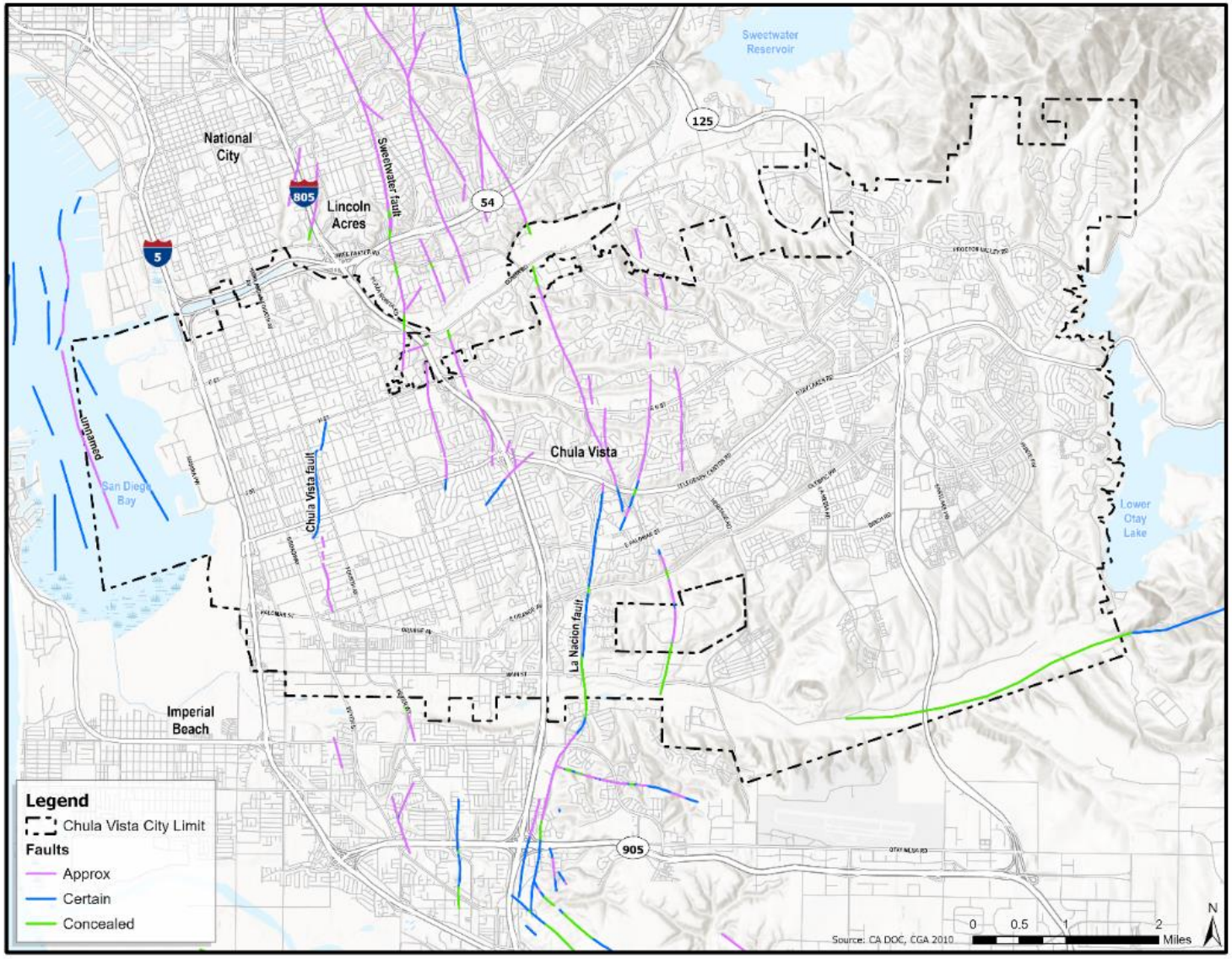


Figure 4: Shake Potential Map

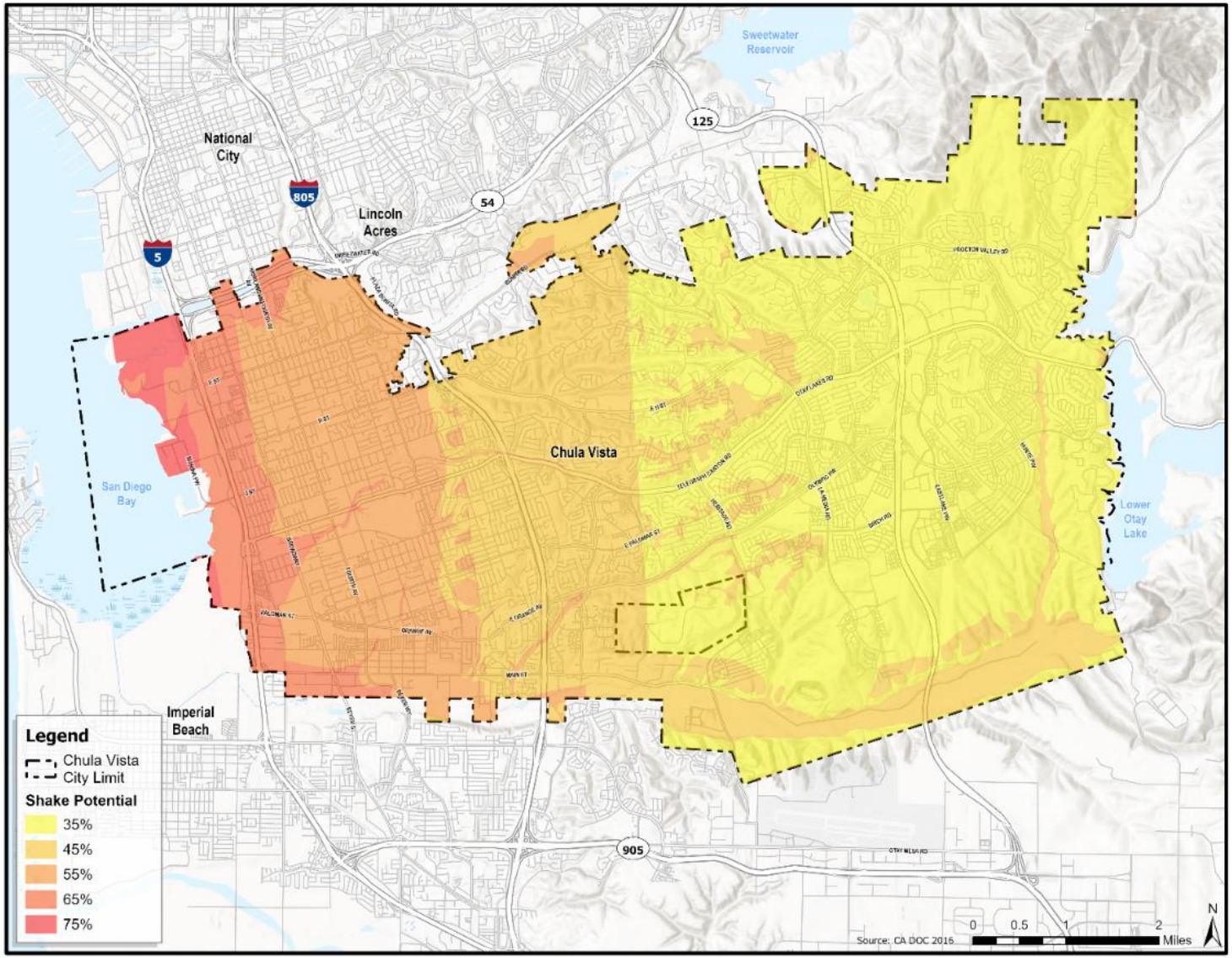
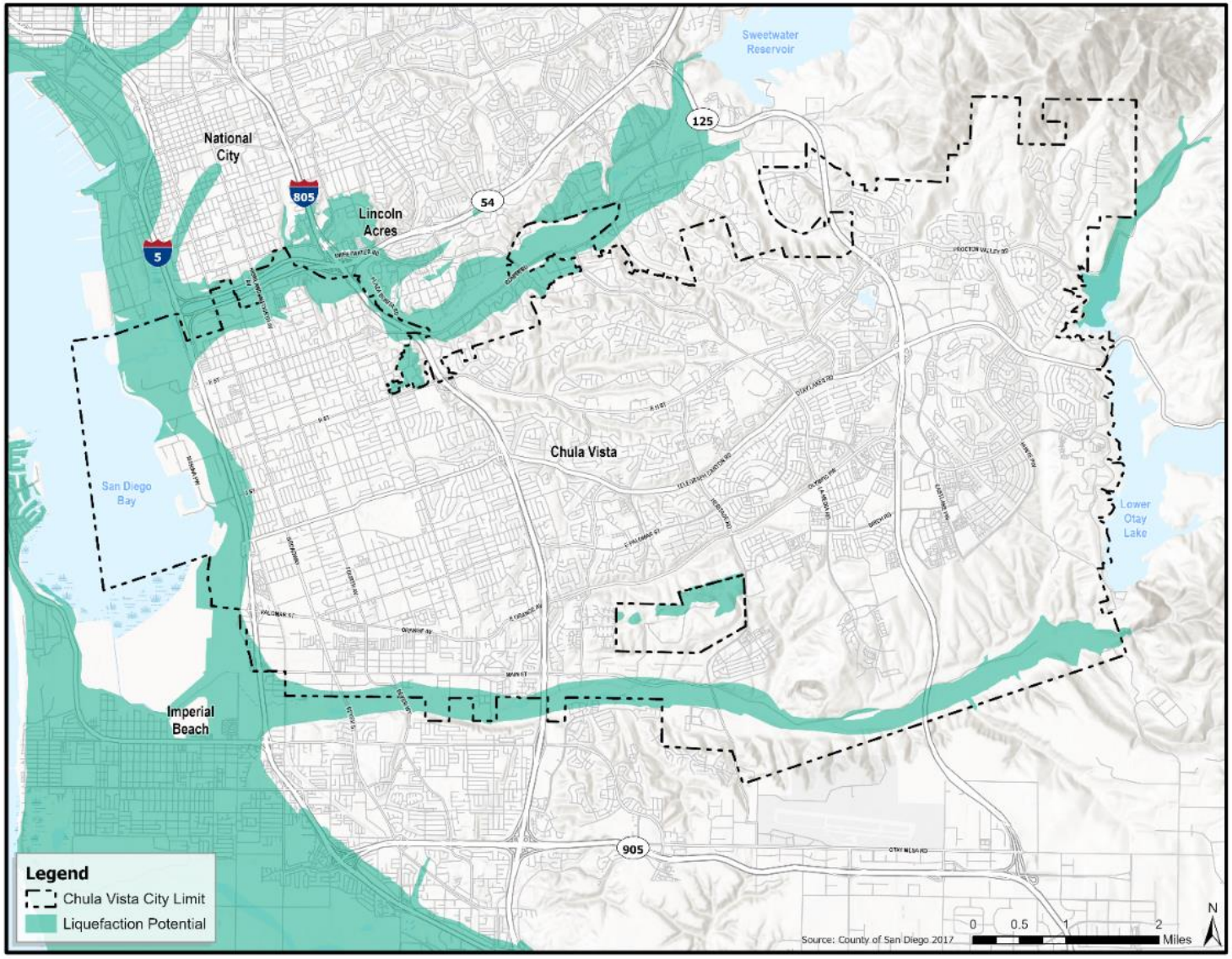


Figure 5: Liquefaction Zones



2.2.2. Landslides

A landslide is defined as the movement of a mass of rock, debris, or earth movement down a slope. Landslides are subdivided by the type of geologic material (bedrock, debris, or earth). Debris flows (commonly referred to as mudflows or mudslides) and rock falls are examples of common landslide types.[4]

Landslides can be initiated in slopes already on the verge of movement by rainfall, snowmelt, changes in water level, stream erosion, changes in groundwater, earthquakes, volcanic activity, disturbance by human activities, or any combination of these factors.

Landslide susceptibility is defined as the likelihood of a landslide occurring in an area on the basis of local terrain conditions. Initiates are not taken into account when determining landslide susceptibility, as the cause of an area being susceptible to landslides is not the same as the cause of a landslide.

While rainfall is not a cause of landslide susceptibility, it is a potential initiate of landslides. Average yearly rainfall in Chula Vista has been decreasing in recent years, however dry weather may lead to increased wildfire risk. Wildland fire risk zones have steep slopes and limited precipitation, Since Chula Vista receives limited precipitation, the potential for wildland fires represents a significant hazard within areas of the City. Per the California Department of Conservation, slopes are more susceptible to debris flow after wildfire. Therefore, landslide susceptibility may increase as a result of more frequent fires.

Areas of known landslides, or areas generally susceptible to landsliding, within the General Plan area have been identified in Figure 6. The potential for earthquake-induced landsliding in hillside terrain is also present. Slopes steeper than 25 degrees (approximately 2:1) are potentially subject to instability. Such areas may be prone to hazards such as surficial failures; earthflows; debris flow; mudslides; rock falls; soil creep; and erosion. Failures of man-made slopes could also occur in some of the developed areas of the City.

Planning for a safe community requires consideration of geologic hazards. Incorporating proper geotechnical engineering techniques in development projects can reduce the risks associated with geologic hazards to an acceptable level.

The State Historical Building Code is a tool that is available to the City to ensure the reasonable safety of historically significant buildings from geologic hazards while facilitating the maintenance of the historical integrity of such buildings.

Figure 6 shows the relative likelihood of deep-seated landsliding based on regional estimates of rock strength and steepness of slopes. On the most basic level, weak rocks and steep slopes are most likely to generate landslides. The map uses detailed information on the location of past landslides, the location and relative strength of rock units, and the steepness of the slope to estimate susceptibility to deep-seated landsliding. This landslide susceptibility map is intended to provide infrastructure owners, emergency planners, and the public with a general overview of where landslides are more likely to occur. However, it is essential to note that this map is not suitable for assessing the landslide risk at any particular location.

The analysis of landslide susceptibility uses a combination of rock strength and slope data to create classes of landslide susceptibility from 0 (low) to 10 (high). These classes express the generalization that on very low

[4] US Geological Survey, "What is a landslide and what causes one?" accessed October, 12, 2022, https://www.usgs.gov/faqs/what-landslide-and-what-causes-one.

slopes, landslide susceptibility is low even in weak materials and that landslide susceptibility increases with slope and in weak rocks. The landslide susceptibility matrix is based on Rock Strength and Slope Steepness.[5] Areas underlain by shale and siltstone are more prone to landslides when compared to other bedrock geology, which is more prone to slow-developing, slump-type failure. The areas in the north and southeast portions of the City with steeper slopes are more vulnerable to landslides. Areas along Olympic Parkway and Telegraph Canyon Road also have higher susceptibility with a few parcels reaching a susceptibility of 10. Any development of areas in the higher landslide susceptibility areas will need a geological assessment to determine the mitigation measures appropriate for these areas. Engineering techniques such as constructing retaining walls or reinforced retaining structures, creating terraces, installing proper drainage systems, and using rock bolts to secure loose rocks or soil can be explored as mitigation measures. In addition, native vegetation with deep roots to bind the soil and reduce erosion as well as limiting development in high-risk landslide areas may be effective in preventing landslides. No indications of past landslides have been observed.

2.2.3. Subsidence

Ground subsidence is the gradual settling or sinking of the ground surface with little or no horizontal movement. Most ground subsidence is anthropogenic (i.e., originating in human activity) and is usually associated with the extraction of oil, gas, or groundwater from below the ground surface in valleys filled with recent alluvium. Land subsidence can also occur during an earthquake because of offset along fault lines and as a result of settling and compacting of unconsolidated sediment from the shaking of an earthquake. The United States Geological Survey (USGS) documents areas of land subsidence throughout California, including historical and current subsidence. The USGS has not identified any regional subsidence as a result of groundwater pumping or oil extraction in the City of Chula Vista or surrounding communities.[6]

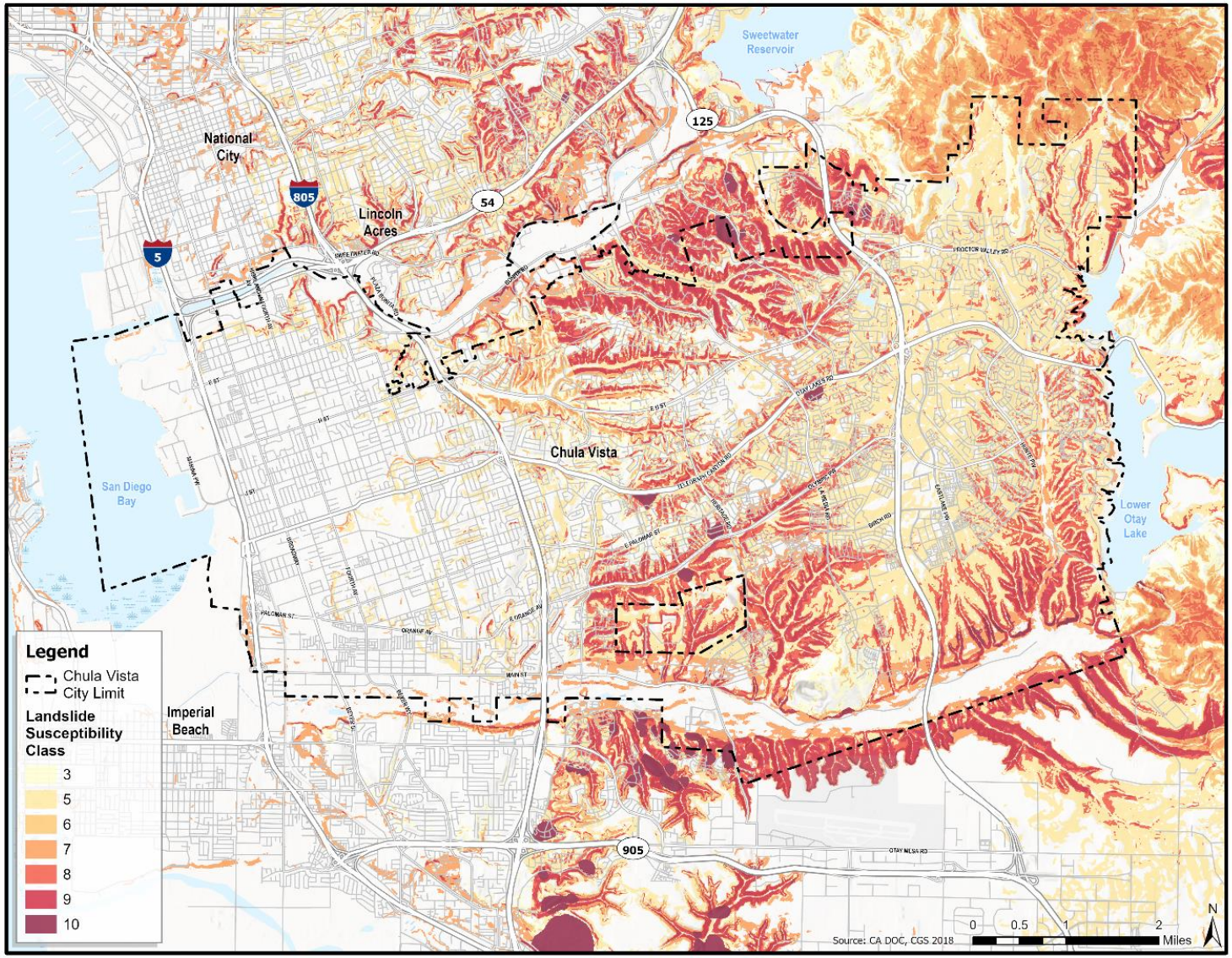
2.2.4. Expansive Soils

Expansive soils are those that have the ability to expand or contract, changing in volume based on their moisture content. They are typically composed of a form of expansive clay mineral that readily absorbs water and swells, leading to an increase in volume when wet and contraction/shrinkage when dry. This shrink-swell process can cause fatigue and crack for infrastructure or foundations placed directly on or within expansive soils. Structural damage may result over a long period of time, making it difficult to estimate the severity of long-term impacts. Expansive soils are typically rich in clay minerals, particularly montmorillonite and smectite. These minerals have the ability to absorb water and expand, which is the primary reason for the soil's volume changes. Large portions of the City are composed of Diablo clay soil (refer to Figure 7), which is an expansive soil. The shrink-swell characteristic of expansive soils can create challenges for construction, foundations, and infrastructure in areas where Diablo clay or similar expansive soils are present. Proper engineering and construction techniques are required to mitigate the potential problems associated with these soils.

[5]California Geological Survey, Layer: Landslide Susceptibility Classes (ID: 0), accessed July 11, 2022, https://gis.conservation.ca.gov/server/rest/services/CGS/MS58_LandslideSusceptibility_Classes/MapServer/0.

6 US Geological Survey, "Areas of Land Subsidence in California," accessed August 20,2023, https://ca.water.usgs.gov/land_subsidence/california-subsidence-areas.html.

Figure 6: Landslide Areas



2.2.5. Tsunamis and Seiches

A tsunami is a wave or series of waves generated by a large and sudden upward movement of the ocean floor, usually the result of an earthquake below or near the ocean floor, underwater landslides, or volcanic activity. This sudden displacement and force create waves that radiate outward in all directions away from their source, sometimes crossing entire ocean basins. A tsunami wave conceivably could have adverse effects on the coastal areas of Chula Vista. However, because the City is adjacent to a relatively protected part of San Diego Bay, the potential for significant wave damage is considered low.

A seiche is defined as a standing wave oscillation in an enclosed or semi-enclosed, shallow to a moderately shallow water body to the basin, such as a lake, reservoir, bay, or harbor, due to ground shaking, usually following an earthquake. Seiches continue in a pendulum fashion after the cessation of the originating force, which can be tidal action, wind action, or a seismic event. Seiches are often described by the period of the waves (how quickly the waves repeat themselves) since the period will often determine whether adjoining structures will be damaged. The period of a seiche varies depending on the dimensions of the basin. Whether the earthquake will create seiches depends upon a number of earthquake-specific parameters, including the earthquake location (a distant earthquake is more likely to generate a seiche, compared to a local earthquake), the style of fault rupture (e.g., dip-slip or strike-slip), and the configuration (length, width, and depth) of the basin.

Due to the San Diego Bay being a mostly enclosed body, seiches do pose a potential threat to the City of Chula Vista along the San Diego Bay shoreline. In the unlikely event of the development of noticeable seiches, it is conceivable that local areas adjacent to the Otay Lakes and the San Diego Bay could be impacted by wave activity. However, seiches have not been historically documented in the area.

Figure 7: Soils

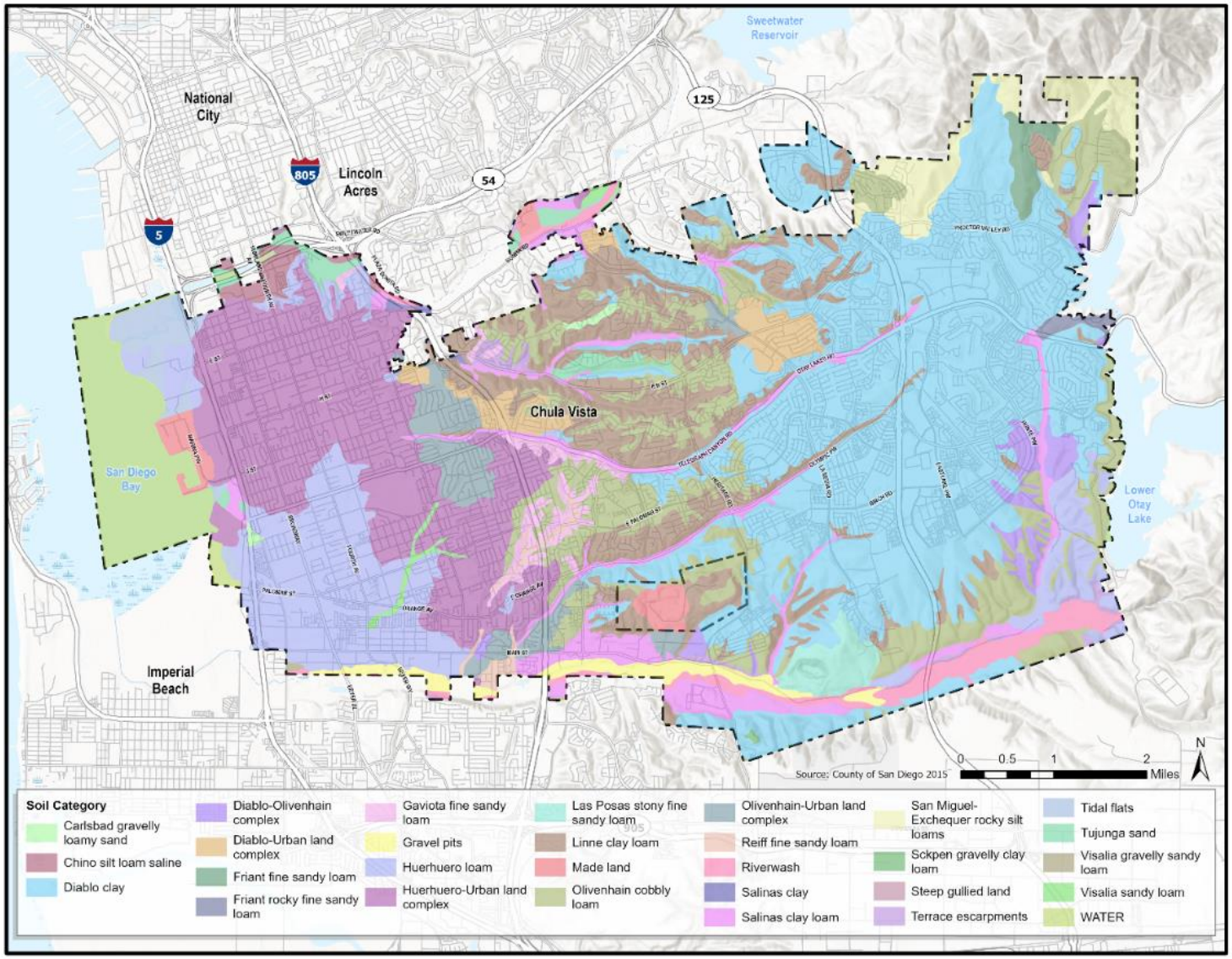
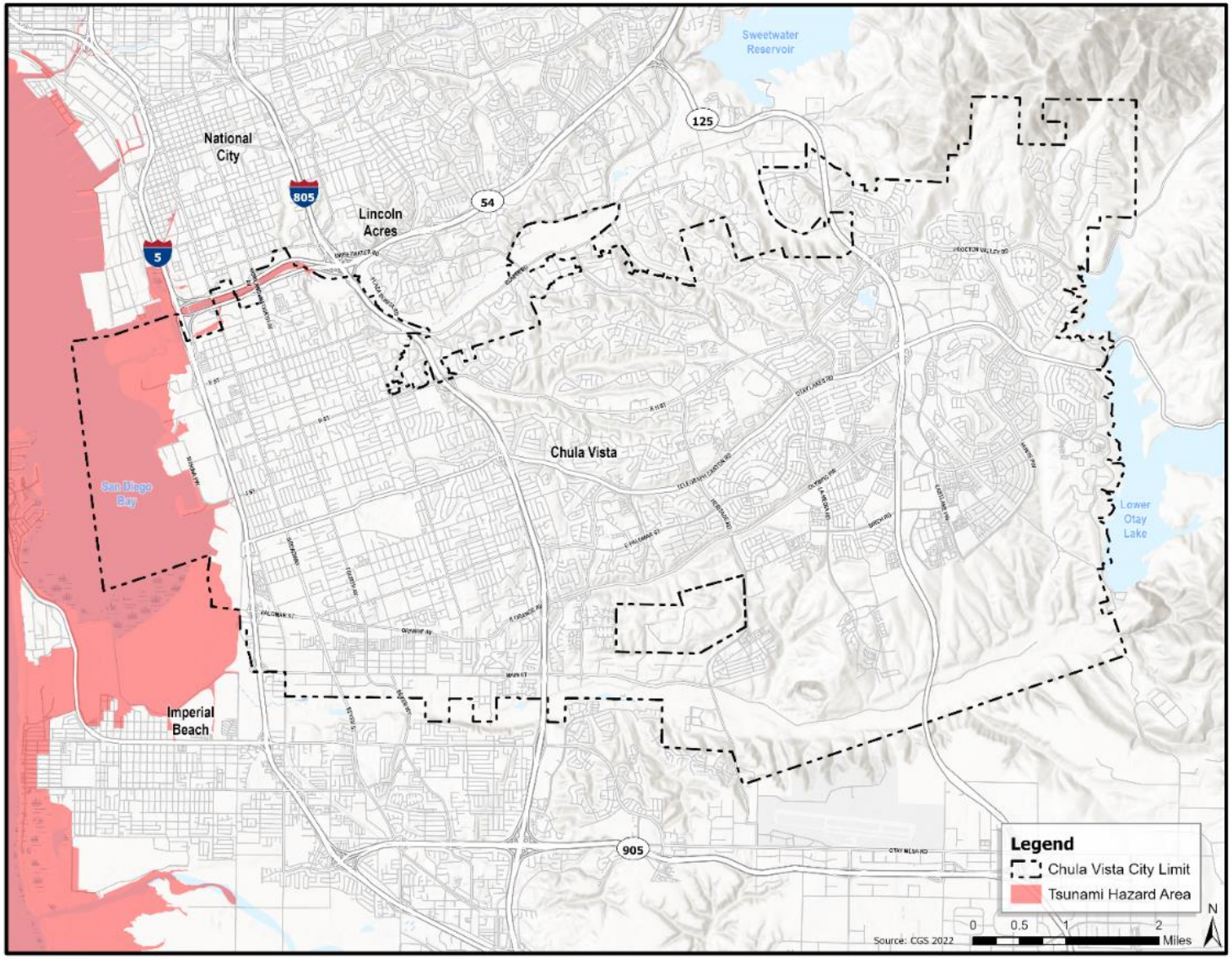


Figure 8: Tsunami Map



2.3. Fire Hazards

2.3.1. Wildland Fires

A wildfire is defined as an unplanned and unwanted wildland fire, including unauthorized human-caused fires, escaped wildland fire use events, escaped prescribed fire projects, and all other wildland fires where the object is to extinguish the fire. Wildfire is a natural part of the California ecosystem, helping to clear brush and debris, and is a necessary part of various species' life cycles. Lightning, accidents, or arson can spark wildfires. Wildfires are becoming more frequent or intense with climate change. Although the City is not generally prone to wildfire hazards except in certain areas, regional wildfires may become an increasing threat with climate change. City has considered OPR's Fire Hazard Technical Advisory in preparation of this section.

Human activity has changed the buffer zone between urbanized and undeveloped areas, known as the wildland-urban interface, where naturally fire-prone landscapes abut developed neighborhoods. The natural setting of a wildland-urban interface can make these areas highly desirable places to live, and many of these areas in California are now developed. This development has brought more people into wildfire-prone areas. The availability of fuel and increasing encroachment into the wildland-urban interface have made wildfires a common and dangerous hazard in California. Structural conditions that may affect fire control include the type and use of a structure, roof covering, surrounding landscaping, and exposure to the building.

Once a fire has started, several conditions influence its behavior, including fuel topography, weather, drought, and development. Certain conditions must be present for significant interface fires to occur. The most common conditions include hot, dry, and windy weather, the inability of fire protection forces to contain or suppress the fire, the occurrence of multiple fires that overwhelm committed resources, and a large fuel load (dense vegetation).

Wildland fire risk zones are areas that have steep slopes, limited precipitation, and plenty of available fuel, or combustible plant material. Brush management is required to be undertaken in the City in areas where urban development interfaces with open space, in order to reduce fire fuel loads and reduce potential fire hazards. Since Chula Vista receives limited precipitation, the potential for wildland fires represents a significant hazard within areas of the City.

In 2003, the Cedar fire burned about 280,000 acres of land, about 10 percent of which was in the City of San Diego and led to the evacuation and burning of thousands of homes. It started 25 miles east of San Diego in the Cleveland National Forest and crossed into San Diego the next day. The Cedar fire burned for three days. The City of Chula Vista was largely avoided as the fire stopped at Otay Lakes.

In 2007, the Harris, Witch Creek, and Guejito fires merged and burned about 200,000 acres and thousands of homes in San Diego County. Over 500,000 people were evacuated. The Harris fire entered the City of Chula Vista from the east and covered much of the same area as the Cedar fire had four years earlier.

2.3.2. Fire Hazard Severity Zones

The California Department of Forestry and Fire Protection prepares wildfire hazard severity maps based on fuels, terrain, weather, and other relevant factors. These zones, referred to as Fire Hazard Severity Zones (FHSZ), define the application of various mitigation strategies and influence how people construct

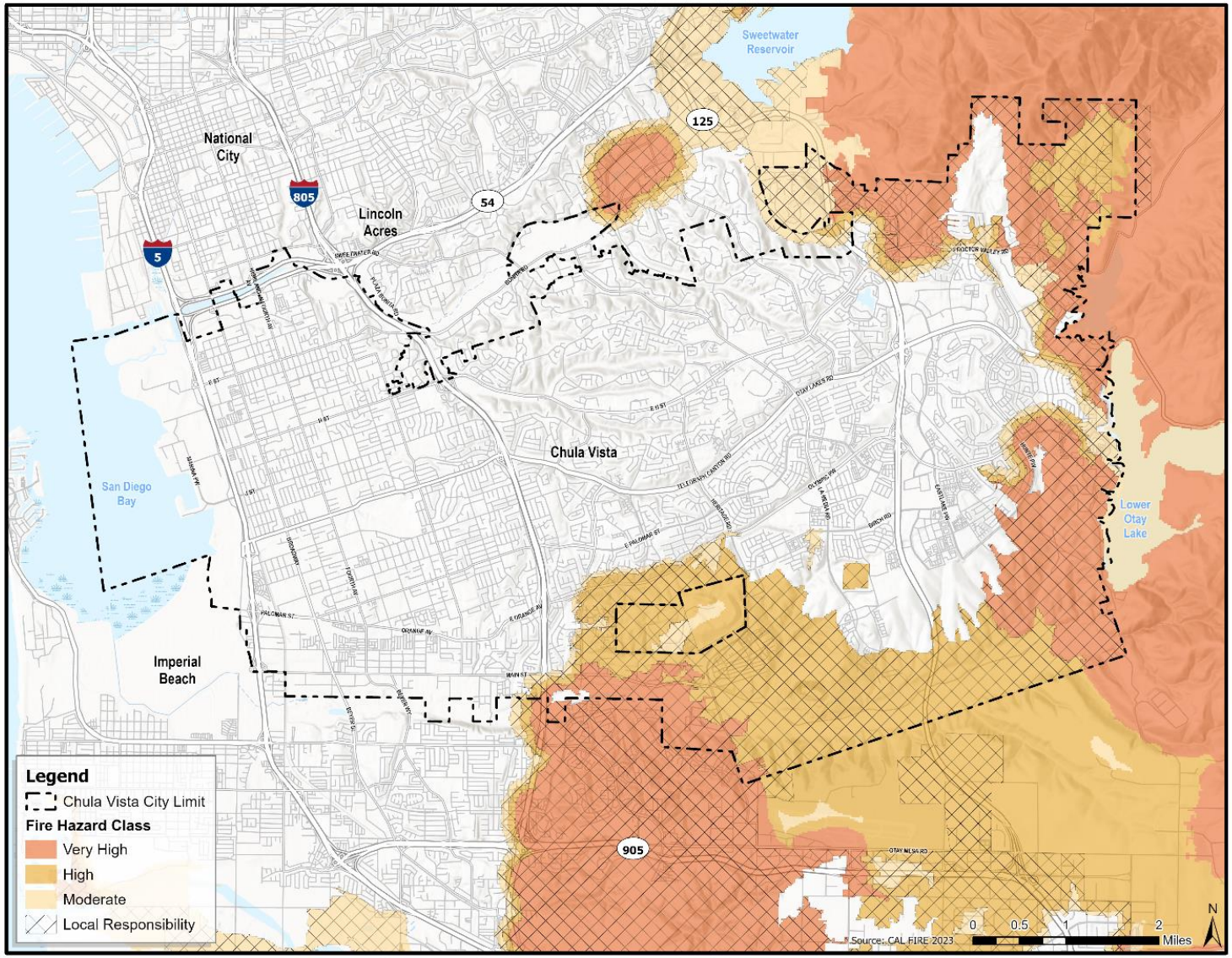
buildings and protect property to reduce the risk associated with wildland fires. While FHSZ does not predict when or where a wildfire will occur, they do identify areas where wildfires may be more likely to occur or be more severe, based on factors such as fire history, existing and potential vegetation that can serve as fuel, predicted flame length, blowing embers, terrain, and typical fire weather for an area. Zones are designated in varying degrees from moderate, high, and very high.

There are three types of responsibility areas in California: Local Responsibility Area (LRA), State Responsibility Area (SRA), or Federal Responsibility Area (FRA). LRAs are incorporated jurisdictions such as cities, urban regions, and agricultural lands where the local government is responsible for wildfire protection. SRAs are those for which the State of California is financially responsible for the prevention and suppression of wildfires. FRAs are lands for which the federal government has legal responsibility for providing fire protection.

The City of Chula Vista has Very High Fire Hazard Severity Zones (VHFHSZ) in the eastern side of the city and a section in the south. There are also sections of SRA and FRA which are in the northeastern corner of Chula Vista. SRA is the responsibility of CAL FIRE and FRA lands are the responsibility of the U.S. Forest Service.

In the City of Chula Vista, fire protection is provided by the Chula Vista Fire Department. Fire stations are dispersed throughout the City while police facilities are centered in headquarters located in downtown Chula Vista as shown in Figure 15. The Public Safety Services section provides more details on location and programs by fire department services in the City.

Figure 9: Fire Hazard Severity Zone



2.4. Flooding

2.4.1. Major Sources of Flooding

Flooding occurs when a waterway (either natural or artificial drainage channel) receives more water than it is capable of conveying, causing the water level in the waterway to rise. Depending on how long these conditions last and the amount of runoff the waterway receives in proportion to its capacity, the rising water level may eventually overtop the waterway's banks or any other boundaries to the drainage area, resulting in flooding.

Floods often occur during heavy precipitation events, when the amount of rainwater exceeds the capacity of storm drains or flood control channels. Floods can also happen when infrastructure such as levees, dams, reservoirs, or culverts fail or when a section of drainage infrastructure fails, and water cannot be drained from an area quickly enough. These failures can be linked to precipitation events (e.g., when water erodes a levee, allowing water to escape and flood nearby areas) or can be a consequence of other emergency situations (e.g., a dam collapsing due to an earthquake).

Flooding associated with heavy rainfall episodes, as well as dam failure, poses a significant hazard to people and property. Although much less likely to occur, tsunamis and seiches also represent potential flood hazards in portions of Chula Vista in proximity to the San Diego Bay and the Otay Lakes. Furthermore, flooding can result in costly damage to private and public property and infrastructure; by damaging roadways and creating unsafe driving conditions, flooding also impedes traffic and disrupts business operations.

Climate change may lead to more frequent or intense storm events, and it is likely that flooding would have a more significant effect on the City. Increasing the capacity of the City's drainage infrastructure would make the City more resilient to weather events linked to climate change.

During severe rain seasons, low-lying areas along the floodplains of the Sweetwater and Otay Rivers and several of their tributaries, including Telegraph Canyon Creek, Poggi Channel, Salt Creek, and Jamul (Dulzura) Creek, as well as certain drainage facilities, may experience flooding. Dams, levees, reservoirs, and drainage channels have been constructed to control the drainage of much of the watershed for the General Plan area, thereby reducing the potential for hazardous flooding of developed areas. FEMA has delineated inundation areas for 100- and 500-year floods. Areas designated to be within the flood zone are shown in Figure 10**.**

Flood hazard areas identified on the Flood Insurance Rate Map (FIRM) are identified as Special Flood Hazard Areas (SFHA). SFHAs are defined as the area that will be inundated by the flood event having a 1 percent chance of being equaled or exceeded in any given year. The 1 percent annual chance flood is also referred to as the base flood or 100-year flood. SFHAs are labeled as Zone A, Zone AO, Zone AH, Zones A1-A30, Zone AE, Zone A99, Zone AR, Zone AR/AE, Zone AR/AO, Zone AR/A1-A30, Zone AR/A, Zone V, Zone VE, and Zones V1-V30. Moderate flood hazard areas, labeled Zone B or Zone X (shaded), are also shown on the FIRM and are the areas between the limits of the base flood and the 0.2 percent annual chance (or 500-year) flood. The areas of minimal flood hazard, which are the areas outside the SFHA and higher than the elevation of the 0.2 percent annual chance of flood, are labeled Zone C or Zone X (unshaded). The city allows construction in flood zones pursuant to Chapter 14.18 of the municipal code.

There are Zone A, and AE flood risk areas along San Diego Bay and on the northern and southern boundaries of the City. Areas at risk generally have low levels of development and include parks and open spaces.

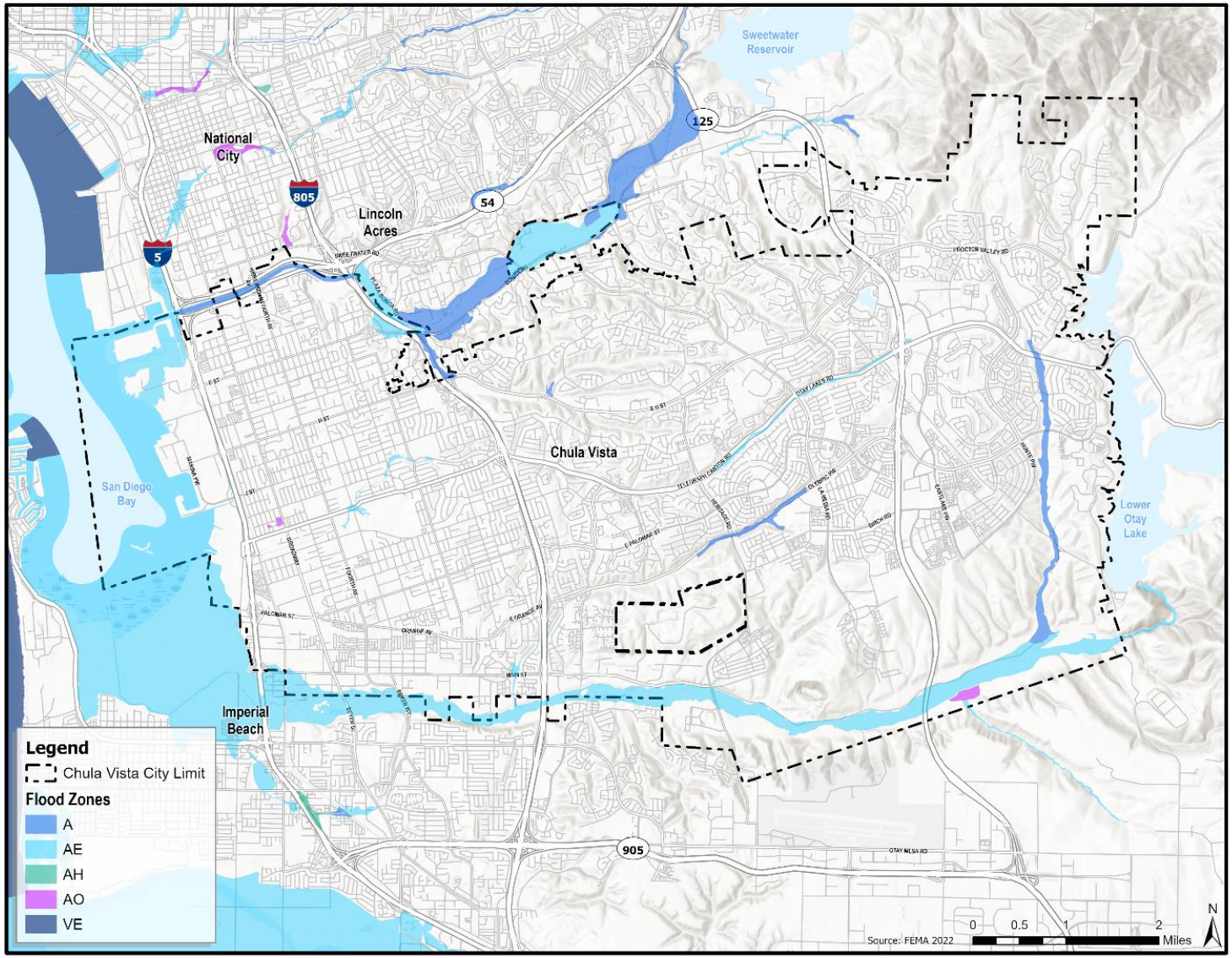
A Zone (A): This SFHA designation represents areas with a 1 percent annual chance of flooding, often referred to as the 100-year floodplain. It means that there is a 1 percent probability of a flood of this magnitude occurring in any given year. These areas typically have a higher risk of flooding and are subject to certain building and development restrictions, as well as requirements for flood insurance if a property owner has a federally backed mortgage.

AO Zone (AO): The AO Zone is also an SFHA, but it is slightly different from the A Zone in that an AO Zone is an area that has a 1 percent annual chance of shallow flooding (typically with depths between 1 and 3 feet). These areas are also considered high risk, but the flooding is characterized by shallow depths rather than deep inundation. As with the A Zone, properties in the AO Zone may be subject to specific building and development regulations and requirements for flood insurance.

AE Zone (AE): Similar to the A Zone, the AE Zone designates areas with a 1 percent annual chance of flooding, or the 100-year floodplain. The AE Zone is one of the most common flood zone designations. Properties within the AE Zone are subject to specific building and development regulations, including requirements for elevating structures above the base flood elevation to reduce flood risk. Property owners in AE Zones are also often required to have flood insurance if they hold federally backed mortgages.

VE Zone: The VE Zone is a coastal high-hazard area that signifies a significant risk of flooding from a combination of wave action and storm surge. These areas are typically located along coastlines and are subject to increased vulnerability to flooding during hurricanes, tropical storms, and other coastal weather events. The VE designation is used to denote Velocity Zone, indicating that not only is flooding a concern, but also the speed and force of floodwaters, such as from waves and storm surges. Properties within VE Zones face specific building and development regulations, and they often require structures to be elevated on pilings or other appropriate foundations to mitigate the risk of damage from the combination of floodwaters and wave action.

Figure 10: FEMA Flood Zones



2.4.2. Dam Inundation

Dam failure is the uncontrolled release of impounded water from behind a dam. Flooding, earthquakes, blockages, landslides, lack of maintenance, improper operation, poor construction, vandalism, and terrorism can all cause dam infrastructure to fail. Dam failure causes downstream flooding of varying velocities that can result in loss of life and property.

Several regional reservoirs and dams are located within and in the vicinity of Chula Vista. Of these, Sweetwater Dam, Savage Dam, and Lake Loveland have the potential to cause damage in the City if there is a breach. Savage Dam, built in 1919, is a 149-foot-high and 750-foot-wide dam. It is owned by City of San Diego and used for storing water for backup uses in the San Diego area. The Loveland Dam was built in 1945 and is owned and operated by the Sweetwater Authority; it is 203 feet high and 765 feet wide. In addition to its role in water supply, the Loveland Reservoir area offers recreational opportunities for the public. The surrounding lands are used for hiking, picnicking, birdwatching, and enjoying the natural beauty of the region. It is a popular spot for outdoor enthusiasts and nature lovers. The Sweetwater Dam was built in 1888 and is an important historical landmark in San Diego County. It is a 112-foot-high and 700-foot-wide dam. It is owned by the Sweetwater Authority and is part of their water supply system. It was built primarily to store and supply water for agricultural purposes and to support the growing population in the area.

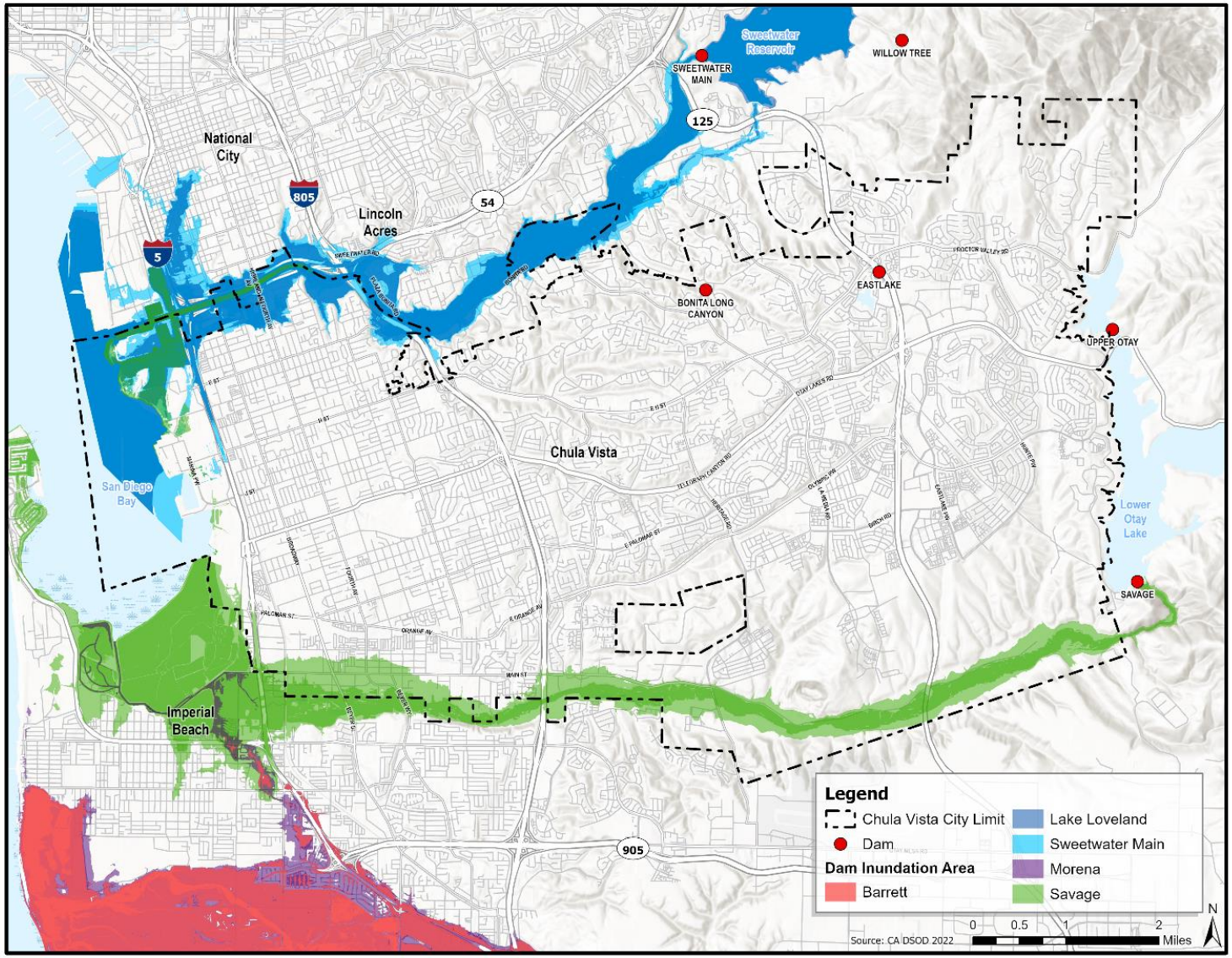
According to the California Department of Water Resources, Division of Safety of Dams (DSOD), the downstream hazard from Sweetwater Dam, Savage Dam, and Lake Loveland is classified as extremely high. The downstream hazard is based solely on potential downstream impacts to life and property should these dams fail when operating with a full reservoir and is expected to cause considerable loss of human life or result in an inundation area with a population of 1,000 or more.

The DSOD also maintains a record of the condition assessment of the dams. According to a September 2022 report by DSOD, the condition assessment of Lake Loveland is satisfactory, meaning no existing or potential dam safety deficiencies are recognized. Acceptable performance is expected under all loading conditions (static, hydrologic, seismic) in accordance with the minimum applicable state or federal regulatory criteria or tolerable risk guidelines. The condition assessment for Sweetwater Dam is fair, meaning no existing dam safety deficiencies are recognized for normal operating conditions. Rare or extreme hydrologic and/or seismic events may result in a dam safety deficiency. The risk may be in the range to take further action. The condition assessment for Savage Dam is poor, meaning a dam safety deficiency is recognized for normal operating conditions that may realistically occur. Remedial action is necessary. The classification of poor may also be used when uncertainties exist as to critical analysis parameters that identify a potential dam safety deficiency. Investigations and studies are necessary.[7]

Figure 11 depicts areas subject to flood inundation in the event of failure of the Sweetwater, Upper Otay, or Savage (Lower Otay) Dams. Dams typically fail due to overtopping by reservoir water during heavy rainfall episodes, structural damage, and earthquake-related hazards such as landsliding, ground shaking, and seiches.

[7] California Department of Water Resources, Division of Safety of Dams, "Dams within Jurisdiction of the State of California: Dams Listed Alphabetically By County," 2022, https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/All-Programs/Division-of-Safety-of-Dams/Files/Publications/Dams-Within-Jurisdiction-of-the-State-of-California-Listed-Alphabetically-by-Name-September-2022.pdf.

Figure 11: Reservoir Inundation



2.4.3. Drainage System

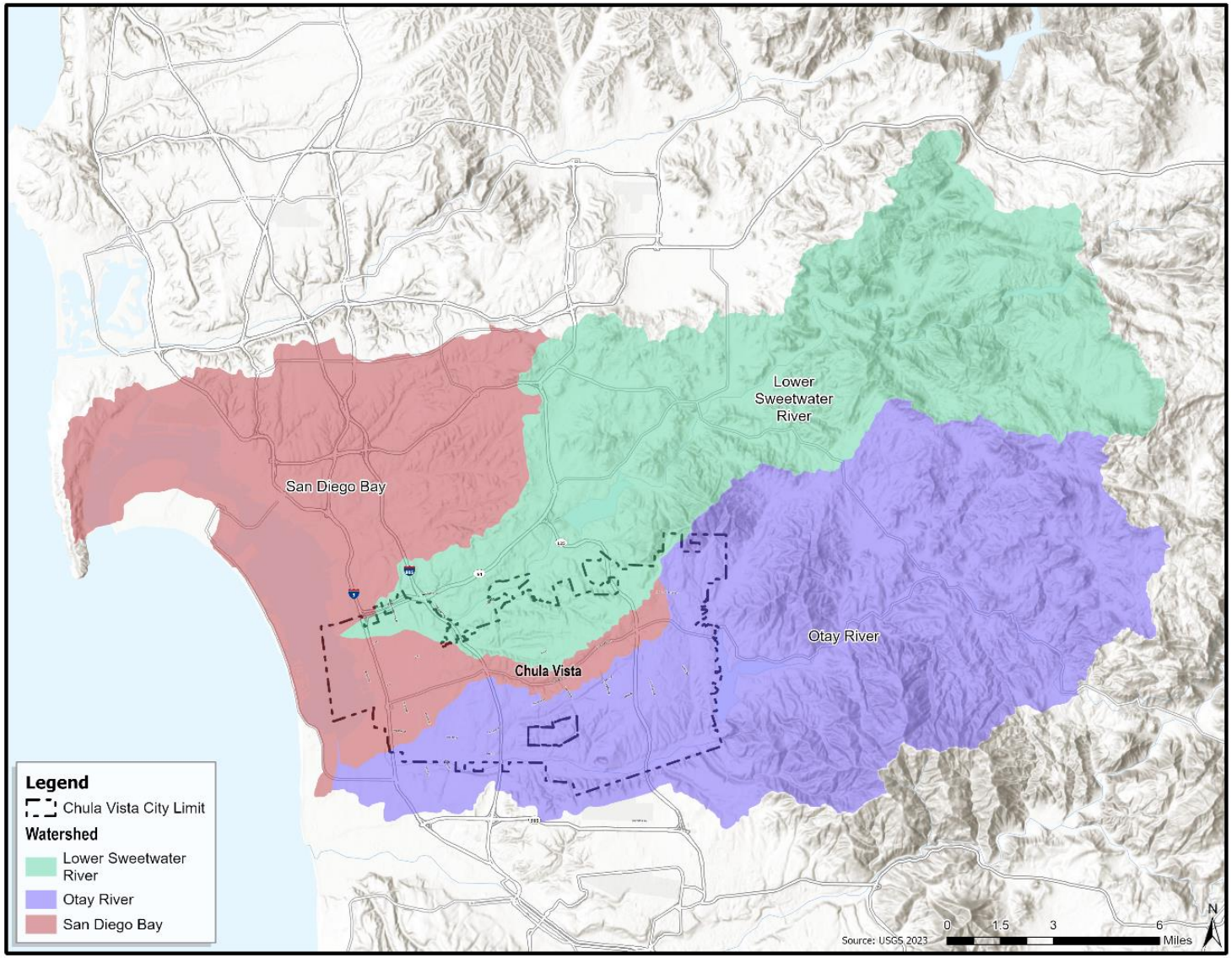
The City is located in the San Diego Bay watershed. A watershed, also known as a drainage basin or catchment area, is an area of land where all the water, including rainfall and runoff, drains into a common outlet, such as a river, lake, or ocean. The San Diego Bay watershed includes about 30 percent of San Diego County. The watershed includes Cities of Imperial Beach, Chula Vista, Coronado, La Mesa, Lemon Grove, National City, and San Diego, as well as unincorporated areas of San Diego County. The watershed supplies potable water and supports recreational activities.

The San Diego Bay watershed is divided into Pueblo, Sweetwater, and Otay watersheds. Of these, the Sweetwater and Otay watersheds cover Chula Vista (refer to Figure 12).

- **Sweetwater River Watershed:** The Sweetwater River is a prominent water body in the Chula Vista area. It flows through the City and has its headwaters in the mountains to the east. The Sweetwater River watershed includes the land area that drains into the river. The river and its watershed play a significant role in the region's water supply and ecology.
- **Otay River Watershed:** The Otay River flows through the southern part of Chula Vista and serves as the boundary between the United States and Mexico for a portion of its course. The Otay River watershed includes the land area that drains into the Otay River. It is an important watercourse in the region.

These watersheds are essential for managing stormwater, providing recreational opportunities, and maintaining water quality in the Chula Vista area. The City participates in San Diego County's Project Clean Water and coordinates with other communities in the County on matters of clean water and stormwater.

Figure 12: Watersheds



2.5. Climate Change and Resilience

Climate resilience is the capacity of communities to withstand, adapt to, and recover from the adverse impacts of climate change. Climate change is a phenomenon characterized by the long-term shifts in global temperature and weather patterns associated with the build-up of greenhouse gases in the atmosphere and the warming of the planet due to the greenhouse effect. Although climate change is global, its effects can be felt locally, and the response also can start locally. Local policies and actions can reduce greenhouse gas emissions from local sources and incorporate resilience and adaptation strategies into planning and development.

Climate change can have widespread effects on temperature and weather patterns, creating conditions that may make storms more frequent or more intense, resulting in more intense rainfall and flooding. Climate change also contributes to sea level rise, intensifying coastal hazards. In many areas, climate change may increase the frequency and duration of droughts and create conditions that intensify wildfire vulnerability.

2.5.1. Climate Change

The California Natural Resources Agency's Cal-Adapt tool is an online platform designed to provide data, information, and resources related to climate change impacts in California. Table 2**,** created from the Cal-Adapt tool, shows the changes specific to Chula Vista. As shown, the number of extreme heat days, increase in annual maximum temperatures, and decrease in annual precipitation may be a cause of concern for the City.

Table 2: Local Climate Change Snapshot

Climate Change Factors Impacting the City	Observed (1961-1990)	Mid-Century (2035-2064)	
		Medium Emissions[A]	High Emissions[A]
Annual Average Maximum Temperature (°F)	71.0 - 71.7	72.6 – 76.0	73.1 – 76.5
Extreme Heat Days (days)[B]	2 – 4	5 – 16	6 – 20
Annual Average Precipitation (inches)	10.8[C]	10.6	10.4
Annual Average Area Burned (acres)[D]	247.5 – 290.1	279.0 – 335.6	303.2 – 344.1

A. The Medium Emissions Scenario represents a mitigation scenario where global carbon dioxide (CO2) emissions peak by 2040 and then decline. Statewide, the temperature is projected to increase by 2-4°C for this scenario by the end of this century. The High Emissions Scenario represents a scenario where CO2 emissions continue to rise throughout the twenty-first century. Statewide, the temperature is projected to increase by 4-7°C by the end of this century.
B. Number of days in a year when the daily maximum temperature is above a threshold temperature of 103.9°F (98th percentile).
C. Summary statistics are calculated using values between 1961 and 1990 from Modeled Historical data (CanESM2, CNRM-CM5, HadGEM2-ES, MIROC5 models).
D. This area may contain locations outside the combined fire state and federal protection responsibility areas. These locations were excluded from these wildfire simulations and had no climate projections.

Source: Cal-Adapt, Local Climate Change Snapshot (cal-adapt.org), Accessed February 3,2023

2.5.2. Extreme Heat

An extreme heat event occurs between April and October when the temperature is at or above the 98th Percentile for historic daily maximum temperatures in Chula Vista. An increase in extreme heat waves can increase the risk of heat stroke or dehydration. Extreme heat may strain water, power, and transportation

systems. Extreme heat can also have negative effects on infrastructure such as roadways and sidewalks, leading to deterioration and buckling. Additionally, the increased use of air conditioners used by extreme heat events can put strain on electrical systems and lead to emissions which effect lung function over time.

2.5.3. Sea Level Rise

As the City of Chula Vista includes approximately 5 miles of coastline along the San Diego Bay, the City is potentially vulnerable to future sea level rise. The San Diego Bay receives water from Sweetwater River, Otay River, and Chollas Creek, and is connected to the Pacific Ocean. Sea level rise is a climate change-driven phenomenon of increasing the elevation of the ocean surface.

According to the National Oceanic and Atmospheric Administration (NOAA), sea level rise at the regional level can deviate significantly from the globally averaged rate.[8] Thus, effects are unique to specific coastal jurisdictions due to variations in topography and geography. Sea level rise projections and modeling referenced in Table 3 rely on the best available science as evaluated by the California Coastal Commission's 2018 Sea Level Rise Policy Guidance and are supplemented by NOAA's 2022 Sea Level Rise Technical Report. Figure 13 shows a scenario assuming 3 feet of sea level rise. In such a scenario, only a few segments of the Chula Vista coastal area will be inundated. These areas are currently undeveloped and are expected to remain so in the future.

Table 3: California Coastal Commission Sea Level Rise (SLR) Projections

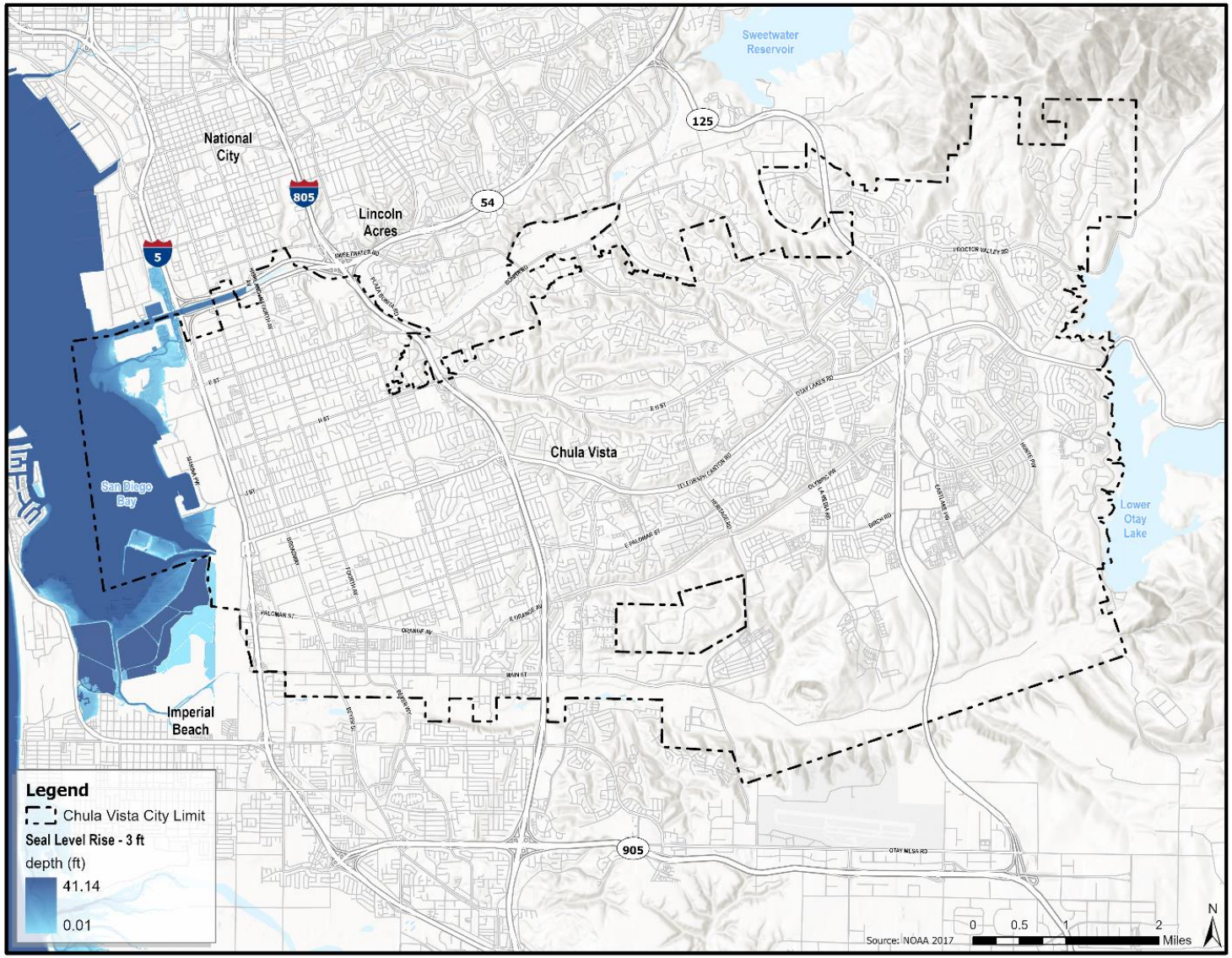
YEAR	Low Risk Aversion	Medium-High Risk Aversion
	Upper limit of "likely range" ~17% probability SLR exceeds…	1-in-200 chance 0.5% probability SLR exceeds…
2050	1.2 feet	2.0 feet
2070	2.0 feet	3.6 feet
2090	3.0 feet	5.7 feet
2100	3.6 feet	7.0 feet
NOTE: The California Coastal Commission and NOAA state available climate models and experiments do not extend beyond 2100. Both agencies acknowledge increased uncertainties regarding projections past 2100 and recommend caution if projections require utilization.		

Source: California Coastal Commission, Sea Level Rise Policy Guidance – Science Update, adopted November 2018.

In addition, groundwater emergence which refers to the flooding or inundation caused by the emergence of groundwater at the land surface, is anticipated to accompany future sea level rise impacts. As sea levels rise, saltwater can intrude into groundwater aquifers that store fresh water. If the amount of saltwater intrusion is great enough, groundwater can be pushed to the surface.[9] Specific vulnerabilities to a rising water table and groundwater emergence include dry weather flooding, deterioration of underground infrastructure such as water/sewer pipelines, extended earthquake liquefaction zones, and resurfacing any underground toxic contamination.[10]

[8] National Ocean Service/National Oceanic and Atmospheric Administration, *2022 Sea Level Rise Technical Report,* https://oceanservice.noaa.gov/hazards/sealevelrise/sealevelrise-tech-report-sections.html.
[9] MIT Technology Review, *Climate Change: How Groundwater caused by Climate Change could Devastate Coastal Communities,* 2021, https://www.technologyreview.com/2021/12/13/1041309/climate-change-rising-groundwater-flooding/.
[10] KQED, *Groundwater Beneath Your Feet Is Rising With the Sea. It Could Bring Long-Buried Toxic Contamination With It*, 2020, https://www.kqed.org/science/1971582/groundwater-beneath-your-feet-is-rising-with-the-sea-it-could-bring-long-buried-toxins-with-it.

Figure 13: Sea Level Rise



2.5.4. Resilience

Resiliency in the face of climate change refers to the actions that can be taken to reduce the drivers of climate change and actions to mitigate the effects of climate change. This includes making our community is more resilient to impacts of climate change but also reducing those impacts by reducing GHG emissions and achieving the City's net zero goal. Because climate change is a long-term phenomenon, it is important to adequately plan for its impacts.

In order to mitigate the effects of intense storms, actions may include bolstering drainage capacities and flood control measures. With more frequent or intense storm events, it is likely that flooding would have a more significant effect on the City. Increasing the capacity of the City's drainage infrastructure would make the City more resilient to weather events linked to climate change.

Climate change resiliency would also include measures to reduce vulnerability to droughts and wildfires. This may include water conservation and water supply management efforts to ensure the City is prepared in the event of a long-term drought. Diversifying the City's water supply by introducing and maintaining water sources that are less susceptible to drought or are more sustainable also accomplishes this goal. The City does not own or maintain any water supply. The City is dependent on 3 water agencies for its water supply. The City could implement conservation efforts but these efforts do not guarantee a reserve supply of water for the City during drought periods. Additionally, as wildfires become more frequent or intense with climate change, actions to mitigate the City's vulnerability may be warranted. Although the City is not generally prone to wildfire hazards, regional wildfires may become an increasing threat with climate change.

2.5.5. Vulnerability Assessment Summary

The County's MJHMP (2023) documents the hazards for the City of Chula Vista and provides a vulnerability assessment of these threats. Facilities that provide critical and essential services following a major emergency are of particular concern because these locations house staff and equipment necessary to provide important public safety, emergency response, and/or disaster recovery functions. Considering the critical facilities identified in Figure 14 and Figure 15 the climate-related threat that the structures are most vulnerable to is wildfire. Some structures located in the northern portion of the City are also vulnerable to flooding, dam inundation, and liquefaction. The critical facilities are also vulnerable to earthquakes. The secondary impacts of earthquakes could be magnified by climate change. Soils saturated by repetitive storms could fail prematurely during seismic activity due to the increased saturation.

2.5.6. Critical Facilities

Critical facilities in a city are those essential structures, services, and resources that are vital for the well-being and functioning of the community, particularly during and after disasters or emergencies. These facilities are considered critical because their disruption or damage can have severe consequences for public safety, health, and the overall recovery of the community. Table 4 provides the list of various critical facilities as identified by the City's Public Works department. Figure 14 and Figure 15 show the location of these critical facilities. Map A shows critical facilities that fall into categories of education, healthcare, transportation, and wastewater. Map B covers local, county, state and federal government facilities, fire, and law enforcement services.

Table 4: Critical Facilities List

Map ID	Facility Name and Type	Map ID	Facility Name and Type
	Education		**Health Care**
1	Allen (Ella B.) Elementary	1	Aegis Health LLC
2	Alta Vista Academy	2	Bonita Homecare, Inc.
3	Arroyo Vista Charter	3	Bonitaview Home
4	Bayfront Charter High School	4	Chula Vista Family Counseling Center
5	Bayview Christian Academy	5	Chula Vista Family Health Center
6	Berean Bible Baptist Academy	6	Fredericka Manor Care Center
7	Bonita Country Day School	7	Fresenius Medical Care East Lakes
8	Bonita Learning Academy	8	Fresenius Medical Care Marina Bay
9	Bonita Road Christian	9	Healthwise Home Health Care Inc.
10	Bonita Vista Middle	10	Mi Clinica
11	Bonita Vista Senior High	11	Modern Home Health Care, Inc.
12	Calvary Christian Academy	12	Otay Family Health Clinic
13	Camarena (Enrique S.) Elementary	13	Paradise Valley Hsp D/P Aph Bayview Beh Hlth
14	Casillas (Joseph) Elementary	14	Planned Parenthood - Chula Vista Center
15	Castle Park Elementary	15	Rice Family Health Center
16	Castle Park Middle	16	Samahan Health Centers : 2835 Highland
17	Castle Park Senior High	17	Samahan Health Centers: 2743 Highland
18	Christian Elementary South Bay	18	San Diego Dialysis Services, Inc.
19	Chula Vista Adult	19	San Ysidro Health Chula Vista
20	Chula Vista Hills Elementary	20	Scripps Mercy Hospital - Chula Vista
21	Chula Vista Learning Community Charter	21	Sharp Chula Vista Medical Center
22	Chula Vista Learning Community Charter Middle	22	South Bay Post Acute Care
23	Chula Vista Middle	23	St. Paul's Pace
24	Chula Vista Senior High	24	U.S. Renal Care Chula Vista Broadway Dialysis
25	Clear View	25	U.S. Renal Care Chula Vista Dialysis
26	Cook (Hazel Goes) Elementary	26	Veterans Home Of California - Chula Vista
27	Davila Day		**Transportation**
28	Discovery Charter	1	Bayfront E St. Trolley Station
29	East Hills Academy	2	Bus Transit Facility
30	Eastlake Church Preschool/K	3	Chula Vista Transit
31	Eastlake Elementary	4	Community Hospital Of Chula Vista Heliport
32	Eastlake High	5	CVESD School Bus Corp Yard
33	Eastlake Middle	6	H St Trolley Station
34	Feaster (Mae L.) Charter	7	L Street Mts Trolley Station
35	Fifth Ave Academy	8	Mts Bus Maintenance Facility
36	Finney (Myrtle S.) Elementary	9	Palomar Street Trolley Station

Map ID	Facility Name and Type	Map ID	Facility Name and Type
37	First United Methodist Christian School	**Wastewater**	
38	Halecrest Elementary	1	Wastewater Pump Station
39	Harborside Elementary	2	Wastewater Pump Station
40	Hawking S.T.E.A.M. Charter	3	Wastewater Pump Station
41	Hedenkamp (Anne And William) Elementary	4	Wastewater Pump Station
42	Heritage Elementary	5	Wastewater Pump Station
43	High Tech Elementary Chula Vista	6	Wastewater Pump Station
44	High Tech High Chula Vista	7	Wastewater Pump Station
45	High Tech Middle Chula Vista	8	Wastewater Pump Station - City Hall
46	Hilltop Drive Elementary	9	Wastewater Pump Station - Marina Park
47	Hilltop Middle	10	Wastewater Pump Station - Olympic Training Center
48	Hilltop Senior High	11	Wastewater Pump Station - Police Department
49	Howard Gardner Community Charter	12	Wastewater Pump Station - Rancho Robinwood Unit 2
50	Innovation High School San Diego	13	Wastewater Pump Station - Rancho Robinwood Unit 3
51	Kellogg (Karl H.) Elementary	14	Wastewater Pump Station - Salt Creek Park
52	Lauderbach (J. Calvin) Elementary	15	Wastewater Pump Station - Sports Complex
53	Learning Choice Academy - Chula Vista	16	Wastewater Pump Station - Tidelands
54	Leonardo Da Vinci Health Sciences Charter	**City Government**	
55	Liberty Elementary	1	Animal Shelter South
56	Loma Verde Elementary	2	Chula Vista Womens Club
57	Maac Community Charter	3	City Of Chula Vista-Administration
58	Marshall (Thurgood) Elementary	4	City Of Chula Vista-Public Works
59	Mater Dei Catholic High School	5	Civic Center Branch
60	Mater Dei Juan Diego Academy	6	Heritage Park Recreation Center
61	Mcmillin (Corky) Elementary	7	Loma Verde Park And Recreation Center
62	Mindful Montessori School	8	Memorial Park
63	Montessori American School	9	Montevalle Recreation Center
64	Montessori Explorer	10	Mount San Miguel Recreation Center
65	Montgomery (John J.) Elementary	11	Norman Park Senior Center
66	Montgomery Adult	12	Otay Ranch Branch
67	Montgomery Senior High	13	Otay Recreation Center
68	Mueller Charter (Robert L.)	14	Parkway Community Center
69	Muraoka (Saburo) Elementary	15	Salt Creek Recreation Center
70	National University-Chula Vista	16	South Chula Vista Branch
71	Ocean View Christian Academy	17	Veterans Recreation Center

Map ID	Facility Name and Type	Map ID	Facility Name and Type
72	Olympian High		**County Government**
73	Olympic View Elementary	1	Bonita-Sunnyside Branch
74	Options Secondary	2	County Of San Diego-Health Services
75	Otay Elementary	3	County Of San Diego-Probation Dept
76	Otay Ranch Senior High	4	South County Courthouse
77	Pacific Coast Christian Prep		**State Government**
78	Pacific Springs Charter	1	Caltrans-Chula Vista Complex
79	Palomar Elementary	2	State Dept Of Motor Vehicles
80	Palomar High	3	State Of Calif-Employment Dev Dept
81	Parkview Elementary		**Federal Government**
82	Pima Medical Institute	1	U.S. Post Office
83	Rancho Del Rey Middle	2	U S Border Patrol Headquarters
84	Rice (Lilian J.) Elementary	3	U.S. Post Office
85	Rogers (Greg) Elementary	4	U.S. Post Office
86	Rohr (Fred H.) Elementary	5	U.S. Post Office
87	Rosebank Elementary		**Fire**
88	Salt Creek Elementary	1	Fire Station 1
89	South Bay Christian Academy	2	Fire Station 2
90	South Bay Christian Academy	3	Fire Station 3
91	Southwestern College	4	Fire Station 4
92	Special Education Preschool	5	Fire Station 5
93	St. John's Episcopal	6	Fire Station 6
94	St. Pius X	7	Fire Station 7
95	St. Rose Of Lima School	8	Fire Station 8
96	Sunnyside Elementary	9	Fire Station 9
97	Sweetwater High	10	Fire Station 10
98	Sweetwater Secondary	11	Fire Station 11 (Future)
99	Tiffany (Burton C.) Elementary	12	Fire Station 12 (Future)
100	United Education Institute-Chula Vista	13	Fire Station (Bonita-Sunnyside)
101	University Of Phoenix	14	Sd Fs 6
102	Valle Lindo Elementary		**Law Enforcement**
103	Valley Vista Elementary	1	Chula Vista City Jail
104	Veterans Elementary	2	Chula Vista Police Station
105	Victory Christian Academy	3	National City Police
106	Victory Christian Academy	4	South Bay Detention Facility
107	Vista Square Elementary		
108	Wolf Canyon Elementary		

Source: City of Chula Vista

Figure 14: Critical Facilities Map A

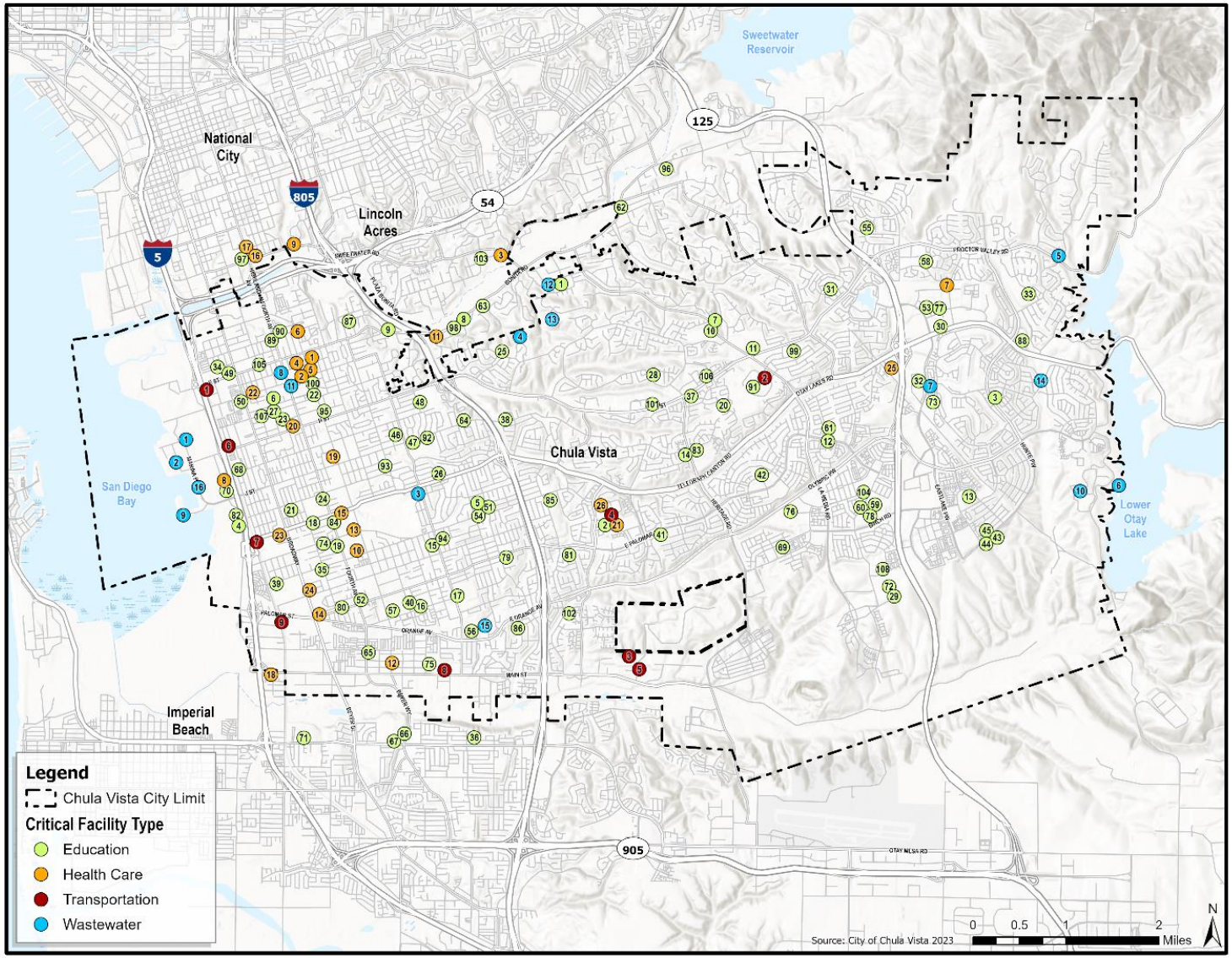
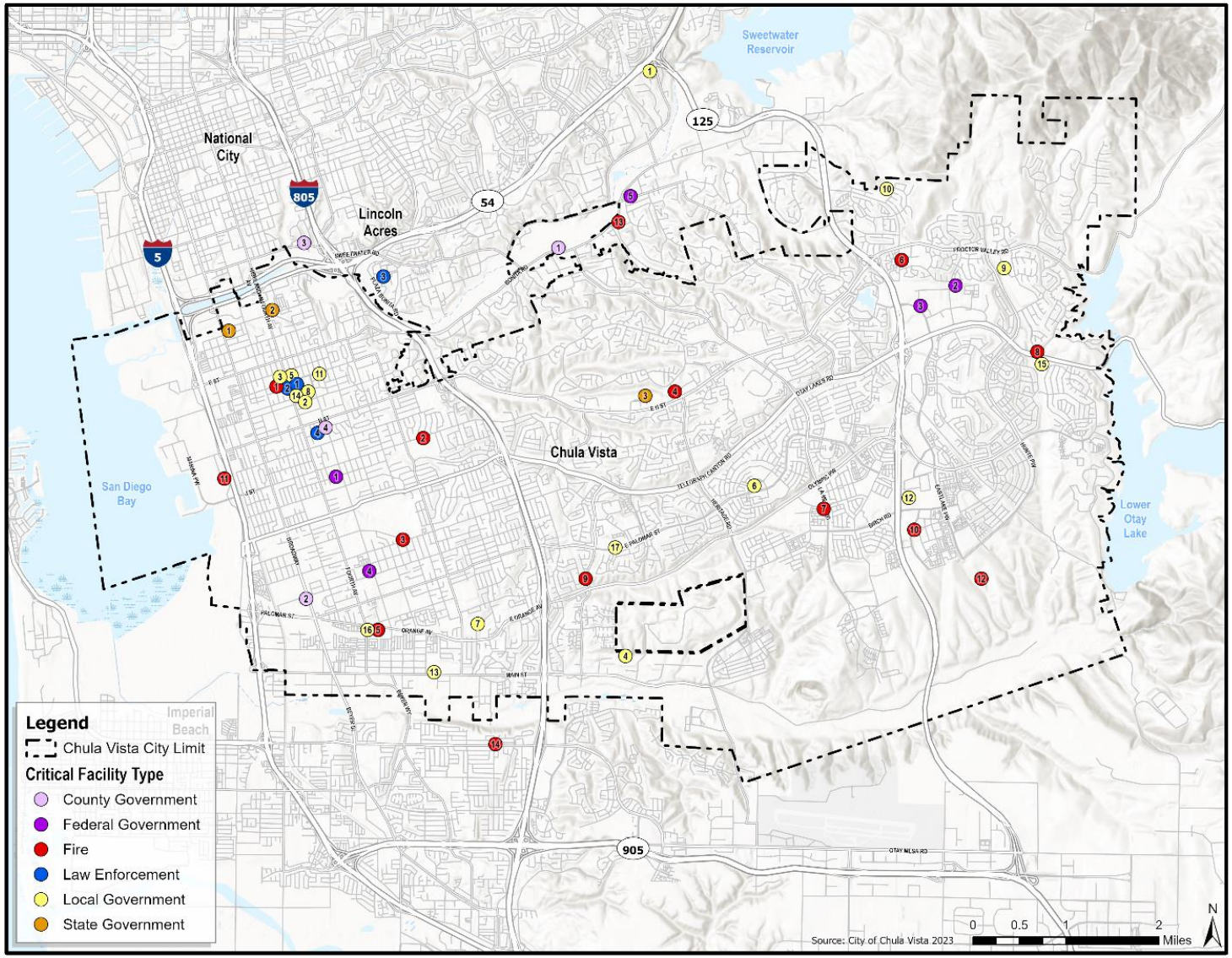


Figure 15: Critical Facilities Map B



2.6. Drought

Drought is defined as an extremely dry climatic period where the available water falls below a statistical average for a region. Drought is also defined by factors other than rainfall, including vegetation conditions, agricultural productivity, soil moisture, water levels in reservoirs, and streamflow. Droughts or water shortages are a gradual phenomenon, occurring over multiyear periods and increasing with the length of dry conditions. When precipitation is less than normal for a period of time, the flow of streams and rivers declines, water levels in lakes and reservoirs fall, and the depth to water in wells increases. If dry weather persists and water supply problems develop, the dry period can become a drought.

The term "drought" can have different meanings depending on how a water deficiency affects day-to-day activities. Drought is a complex natural hazard, which is reflected in the following four definitions commonly used to describe it:

- Agricultural – Agricultural drought is defined principally in terms of naturally occurring soil moisture deficiencies relative to water demands of plant life, usually arid crops.
- Hydrological – Hydrological drought is related to the effects of precipitation shortfalls on stream flows and reservoir, lake, and groundwater levels.
- Meteorological – Meteorological drought is defined solely on the degree of dryness, expressed as a departure of actual precipitation from an expected average or normal amount based on monthly, seasonal, or annual time scales.
- Regulatory (or socioeconomic) – Regulatory drought can occur when the availability of water is reduced due to the imposition of regulatory restrictions on the diversion and export of water out of a watershed to another area.

Although the climate is a primary contributor to hydrological drought, other factors such as changes in land use (i.e., deforestation), land degradation, and the construction of dams can affect the hydrological characteristics of a region. Because regions are geographically interconnected by natural systems, the impact of meteorological drought may extend well beyond the borders of the precipitation-deficient area. Changes in land use upstream may alter hydrologic characteristics such as infiltration and runoff rates, resulting in more variable streamflow and a higher incidence of hydrologic drought downstream. Land use change is one way that human actions can alter the frequency of water shortage even when no change in precipitation has been observed.

Droughts cause public health and safety impacts, as well as economic and environmental impacts. Public health and safety impacts are primarily associated with catastrophic wildfire risks and drinking water shortage risks for small water systems in rural areas and private residential wells. Examples of other impacts include costs to homeowners due to loss of residential landscaping, degradation of urban environments due to loss of landscaping, agricultural land fallowing, and associated job loss, degradation of fishery habitat, and tree mortality with damage to forest ecosystems. Drought conditions can also result in damage to older infrastructure that is located within dry soils with the potential to leak or break. Dead or dying vegetation poses a risk of falling and damaging structures and infrastructure systems.

Climate change may increase vulnerability to droughts. Water conservation and water supply management efforts would help ensure the City is prepared in the event of a long-term drought. The City

could implement conservation efforts but these efforts do not guarantee a reserve supply of water for the City during drought periods.

2.6.1. Drought Severity

Drought severity depends on numerous factors, including duration, intensity, and geographic extent, as well as regional water supply demands by humans, animals, and vegetation. The severity of drought can be aggravated by other climatic factors, such as prolonged high winds and low relative humidity. The magnitude of drought is usually measured in time and the severity of the hydrologic deficit.

The US Drought Monitor is a map released weekly that indicates the portions of the United States that are experiencing drought and the severity of the drought based on five classifications: abnormally dry (D0), showing areas that may be going into or are coming out of drought, and four levels of drought: moderate (D1), severe (D2), extreme (D3), and exceptional (D4) (refer to Table 5).

The Drought Monitor is not a forecast but looks backward, providing a weekly assessment of drought conditions based on how much precipitation did or did not fall. Because drought is a slow-moving hazard, it may take more than one good rainfall to end a drought, especially if an area has been in drought for a long time.

Table 5: Drought Severity Classification

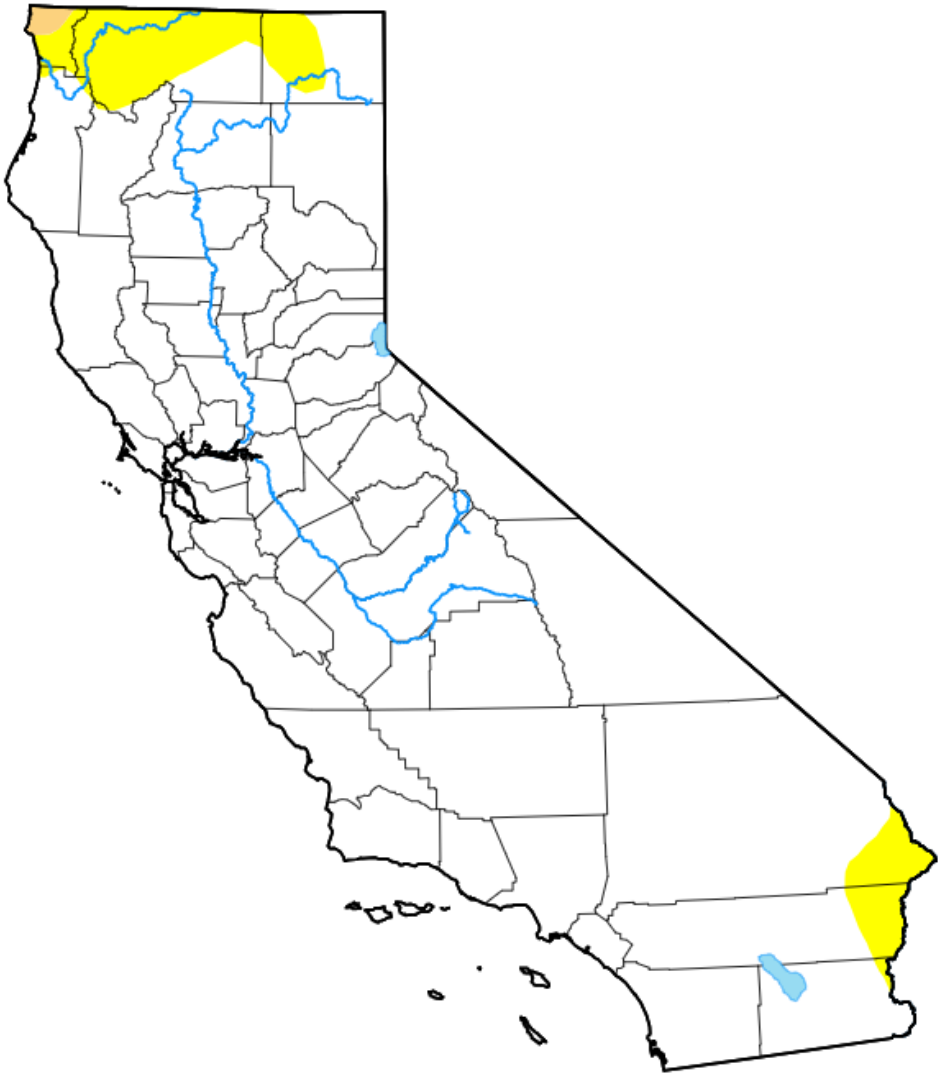
Category	Description	Possible Impacts
D0	Abnormally Dry	Going into drought: short-term dryness slowing planting, growth of crops or pastures. Coming out of drought: some lingering water deficits; pastures or crops not fully recovered.
D1	Moderate Drought	Some damage to crops, pastures, streams, reservoirs, or wells is low. Some water shortages are developing or imminent; voluntary water-use restrictions are requested.
D2	Severe Drought	Crop or pasture losses likely; water shortages common; water restrictions imposed.
D3	Extreme Drought	Major crop/pasture losses; widespread water shortages or restrictions.
D4	Exceptional Drought	Exceptional and widespread crop/pasture losses; shortages of water in reservoirs, streams, and wells create water emergencies.

Source: US Drought Monitor, Drought Classification, https://droughtmonitor.unl.edu/About/AbouttheData/DroughtClassification.aspx.

Based on a map released on September 21, 2023, 93.53 percent of California is not in drought compared to 0 percent at this same time last year. None of the areas are in the D2 to D4 categories compared to 94 percent a year ago. Only 6.5 percent fall into in the D0 and D1 categories (see Figure 16).[11]

[11] US Drought Monitor accessed September 25, 2023, https://droughtmonitor.unl.edu/CurrentMap/StateDroughtMonitor.aspx?CA.

Figure 16: California Drought Map



Map released: Thurs. September 21, 2023

Data valid: September 19, 2023 at 8 a.m. EDT

Week	Date	None	D0	D1	D2	D3	D4
Current	2023-09-19	93.53	6.23	0.24	0.00	0.00	0.00
3 Months Ago to Current	2023-06-20	72.32	23.05	4.63	0.00	0.00	0.00
Start of Calendar Year to Current	2022-12-27	0.00	2.06	17.38	45.06	28.33	7.16
One Year Ago to Current	2022-09-20	0.00	0.24	5.70	53.15	24.34	16.57

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Droughts in California are regional events. In a drought, all areas of Chula Vista will be affected. According to the US Drought Monitor, there is no extreme (D3) or exceptional drought (D4) in California. California has not seen D1/D0 only conditions since March 2020. California experienced 31 atmospheric rivers in water year (WY) 2023 through March, which delivered between 1.5 to 2 WYs' worth of precipitation in much of the state. The region has been extremely cool this WY, and in particular, much of the region in the last three months from the date of this writing, experienced temperatures 3–9 degrees below normal. This has helped to maintain the snowpack. The precipitation from December 2022 to March 2023 alleviated much of the precipitation deficit in the California central and south coast region.

2.6.2. California Drought History

Drought has affected virtually every county in California, and California has experienced numerous severe droughts over the past century. FEMA declared one drought emergency for California in January 1977, and other drought emergency declarations have been declared by the state.[12] According to the *2018 State Hazard Mitigation Plan*, from 1972 to 2016, there were fifteen drought state emergency proclamations in California.[13]

The most severe drought on record began in 2012 and continued through 2017. On January 17, 2014, the governor of California declared a state drought emergency, and on April 1, 2015, the governor announced the first-ever mandatory 25 percent statewide water use reduction and a series of actions to help save water, increase enforcement to prevent wasteful water use, streamline the state's drought response, and invest in new technologies that would make California more drought resilient. At the time of the announcement, the volume of the Sierra Nevada snowpack was approximately 14 percent of normal. Despite multiple storms in February 2014, drought conditions persisted. By the end of May 2014, all of California was in a condition of "extreme" or "exceptional" drought. At the same time, the volume of the Sierra Nevada snowpack had decreased to less than 10 percent of normal, and water stored in Lake Oroville, the major reservoir for the State Water Project, was at 58 percent of normal.[14] On April 7, 2017, the governor issued an executive order ending the drought emergency in most of California, including San Diego County.

Table 6: Historical Droughts

Date	Area Affected	Notes
1827–1916	Statewide	Multiyear: 1827–29, 1843–44, 1856–57, 1863–64 (particularly extreme), 1887–88, 1897–1900, 1912–13.
1917–21	Statewide, except for the central Sierra Nevada and north coast	Simultaneous in affected areas, 1919–20. Most extreme in the north.
1922–26	Statewide, except for the central Sierra Nevada	Simultaneous in effect for the entire state only during 1924, which was particularly severe.

[12] Federal Emergency Management Agency, Disaster Declarations, accessed March 15, 2022, https://www.fema.gov/disaster/3023.

[13] California Governor's Office of Emergency Services, *2018 California State Hazard Mitigation Plan*, 2018, https://www.caloes.ca.gov/wp-content/uploads/002-2018-SHMP_FINAL_ENTIRE-PLAN.pdf.

[14] California Department of Water Resources, *California's Most Significant Droughts: Comparing Historical and Recent Conditions*, 2015.

Date	Area Affected	Notes
1928–37	Statewide	Simultaneously in effect for the entire state, 1929–34. Longest in the state's history.
1943–51	Statewide	Simultaneously in effect for the entire state, 1947–49. Most extreme in the south.
1959–62	Statewide	Most extreme in the Sierra Nevada and the central coast.
1976–77	Statewide, except for southwestern deserts	Driest 2 years in the state's history. Most severe in the northern two-thirds of the state.
1987–92	Statewide	Moderate, continuing through 1989. Most extreme in the northern Sierra Nevada.
2000–02	Statewide	Most severe in Southern California.
2007–09	Statewide	Twelfth driest 3-year period on record at the time. Most severe in western San Joaquin Valley.
2012–17	Statewide	Most severe California drought on record.
2021–present	Statewide	2021 became the second driest year on record. The drought emergency expanded statewide as of October 2021.

Sources: Paulson, R. W., E. B. Chase, R. S. Roberts, and D. W. Moody, Compilers, National Water Summary 1988-89: Hydrologic Events and Floods and Droughts: US Geological Survey Water-Supply Paper.
California Department of Water Resources, *California's Most Significant Droughts: Comparing Historical and Recent Conditions*, 2015.

2.6.3. Water Supply

Chula Vista residents receive their water supply for both drinking and emergency from three water districts, depending on their specific location within the City. The primary water agencies serving different parts of Chula Vista are:

- **Sweetwater Authority:** Sweetwater Authority is the primary water agency that serves a significant portion of Chula Vista. It provides water to the western and central areas of the City, including much of the residential and commercial areas. Due to the lack of significant undeveloped land area within the boundaries of the Sweetwater Authority's service area, future increases in the demand for potable water will be associated with infill development and redevelopment projects. Water delivered to Sweetwater Authority consumers is obtained from a variety of sources. Approximately 70 percent of its water is from local water supplies, including the Sweetwater River and the San Diego Groundwater Formation. The remainder is obtained from imported water sources such as groundwater wells, local reservoirs, and imported water San Diego County Water Authority (CWA).
- **Otay Water District:** The Otay Water District serves the eastern parts of Chula Vista, including areas near the Otay Lakes and eastern neighborhoods. It provides water to residents and businesses in this part of the City. Otay Water District also currently has one of the largest recycled water distribution systems in San Diego County. Water is recycled at the South Bay Water Reclamation Plant located in San Ysidro. All potable water comes from imported sources purchased from the San Diego CWA.
- **California-American Water:** Certain parts of western Chula Vista receive water service from the California-American Water Company. Areas served by the Cal-American Water Company are presently built out and significant growth in water demand is not anticipated.

Figure 17: California American Water Service Area Map

The San Diego CWA generally imports 75–95 percent of this water from the Metropolitan Water District (MWD) of Southern California. Water imported to the region comes from two primary sources: the Colorado River, through the 240-mile Colorado River Aqueduct; and the State Water Project from Northern California, through the Sacramento-San Joaquin River Delta and the 444-mile California Aqueduct. These sources deliver water to the MWD, which then distributes water supplies to districts throughout the Southern California region, including the San Diego CWA. The CWA is composed of 23-member water agencies and water districts, including two that serve Chula Vista: the Otay Water District and Sweetwater Authority. A third water agency, Cal-American, also provides water to a small portion of the Chula Vista planning area but is not a member of the CWA.

The three districts vary in size and age of infrastructure but are all expected to conform to the same quality and service standards established by the California Department of Public Health and the federal Clean Water Act. In addition to providing water supplies, these agencies provide emergency storage systems and implement conservation efforts.

The California Water Code requires all urban water suppliers within the state to prepare urban water management plan(s) and update them every five years, in years ending in five or zero. The plans are to identify supply and demand, infrastructure, and funding. In accordance with state law, the CWA updated its Urban Water Management Plan (UWMP) in 2020. The 2020 UWMP identifies a diverse mix of water resources planned to be developed over the next 25 years to ensure that the region has enough water to meet its needs, including during drought periods.

Chula Vista has adopted a landscape water conservation ordinance as required by state law and the California Department of Water Resources' Water Efficient Landscape Ordinance. In addition, the City's Landscape Manual requires the use of recycled water to irrigate landscaped areas of residential, commercial, and industrial developments, as well as schools, parks, and golf courses, where recycled water is available.

2.7. Hazardous Materials

A "hazardous material" is defined by California Health and Safety Code Section 25501 as "any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment." Improper handling of hazardous materials or waste may result in significant impacts on human health and the environment. Hazardous materials can be in the form of explosives, flammable and combustible substances, poisons, and radioactive materials. Hazardous materials accidents can occur during production, storage, transportation, use, or disposal.

The impacts of a hazardous materials release can vary, depending on the type and amount of material released. Hazardous materials exposure can include the following effects: skin/eye irritation; difficulty breathing; headaches; nausea; behavior abnormalities; cancer; genetic mutations; physiological malfunctions (i.e., reproductive impairment, kidney failure); physical deformations; or birth defects.

Many businesses and residents in the City use hazardous materials and generate some amount of hazardous waste. Common hazardous waste is generated from gasoline service stations, dry cleaners, automotive mechanics, auto body repair shops, machine shops, printers, photo processors, and agriculture.

2.7.1. Hazardous Materials Incidents

Potential threats from hazardous materials exist where they are manufactured, stored, transported, or used due to the risk of spill and exposure to hazardous materials.

The magnitude and severity of the hazard would be highly dependent on the type of spill, location, and the extent to which hazardous materials enter the water system. Hazardous materials can be flammable, radioactive, infectious, corrosive, toxic/poisonous, or otherwise reactive. Heavy rains or winds could spread hazardous materials over a larger geographical area and create challenging cleanup conditions.

Hazardous materials are used in virtually every manufacturing operation by retailers, service industries, and homeowners in the City of Chula Vista. Operations known to handle hazardous materials in the City include gas stations, dry cleaners, medical facilities, commercial/retail businesses, and roadway and railway transportation. Most hazardous materials operations are small-scale and pose a minimal risk; however, commercial transportation of hazardous materials via roadway or railway would potentially have significant impacts on the City during an incident, given the volumes of hazardous materials being transported.

2.7.2. Transportation of Hazardous Materials

Transportation of hazardous materials/wastes is regulated by the California Code of Regulations Title 26. The US Department of Transportation (DOT) is the primary regulatory authority for the interstate transport of hazardous materials. The DOT establishes regulations for safe handling procedures (i.e., packaging, marking, labeling, and routing). Criteria also exist regarding personnel qualifications and training, inspection requirements, and equipment specifications. The California Highway Patrol (CHP) enforces regulations related to the intrastate transport of hazardous materials and hazardous wastes. The CHP and the California Department of Transportation (Caltrans) enforce federal and state regulations and respond to hazardous materials transportation emergencies.

2.7.3. Hazardous Materials Sites

The State Water Resources Control Board (SWRCB) maintains a data management system called GeoTracker. Sites identified by GeoTracker are sites that impact or have the potential to impact water quality in jurisdictions statewide. These sites are required for cleanups, such as leaking underground storage tank (LUST) sites, Department of Defense sites, and cleanup program sites. GeoTracker also contains records for various unregulated projects as well as permitted facilities, including irrigated lands, oil and gas production, operating permitted underground storage tanks, and land disposal sites.

A search of federal, state, and local databases identified numerous known and potentially contaminated sites within and immediately adjacent to Chula Vista. Known and potentially contaminated sites in Chula Vista are primarily associated with unauthorized releases of oil and hazardous substances (e.g., LUSTs); former solid and hazardous waste disposal and transfer sites; use, storage, and transport of hazardous materials; and hazardous waste generation.

As identified by the SWRCB, 267 sites have been cleaned up in Chula Vista. In 2023, 27 sites were shown to have ongoing activities related to the previously known or suspected release of hazardous materials to soil and groundwater in Chula Vista. These sites and their statuses are identified in Figure 18 and Table 7.

In addition, EnviroStor is the Department of Toxic Substances Control's data management system for tracking cleanup, permitting, enforcement, and investigation efforts at hazardous waste facilities and sites with known contamination or sites where there may be reasons to investigate further. Of the 62 sites identified since 1990, 6 are active. These sites and their statuses are identified in Figure 18 and Table 7.

Table 7: Hazardous Materials Sites

#	Facility	Address	Status	Site Type
State Water Resources Control Board GeoTracker				
1	442 Tremont Street (Drug Lab)	442 Tremont Street	Open - Site Assessment	Cleanup Program Site
2	517 Shinohara Lane	517 Shinohara Lane	Open - Site Assessment	Cleanup Program Site
3	821 Main Street	821 Main Street	Open - Site Assessment	Cleanup Program Site
4	A & P Drive Thru Cleaners	48 Broadway	Open - Inactive	Cleanup Program Site
5	Chula Vista Bayfront Master Plan Development - Cvbd - Pacifica Exchange Parcels (H-13, H-14, H-15, Hp-5)	Marina Parkway	Open - Remediation - Land Use Restrictions	Cleanup Program Site
6	Chula Vista Bayfront Master Plan Development - South Bay Power Plant	San Diego Bay	Open - Inactive	Cleanup Program Site
7	Chula Vista General Plan Site 1-A	789 E Street	Open - Site Assessment	Cleanup Program Site
8	Chula Vista Mixed Use (Sear's Center)	565 Broadway	Open - Site Assessment	Cleanup Program Site
9	Crown Chemical Corp	1888 Nirvana Av	Open - Remediation	Cleanup Program Site
10	El Super	765 Palomar Street	Open - Site Assessment	Cleanup Program Site
11	Eldorado Cleaners & Laundry	648 E St	Open - Remediation	Cleanup Program Site
12	Goodrich Aerostructures / Rohr - Goodrich Aerostructures - North Campus - Eastern Parcel A	850 Lagoon Drive	Open - Site Assessment	Cleanup Program Site
13	Goodrich Aerostructures / Rohr - Goodrich Aerostructures - South Campus	850 Lagoon Drive	Open - Remediation	Cleanup Program Site
14	Gunpowder Point	0 Gunpowder Point Drive	Open - Inactive	Cleanup Program Site
15	Homefed Village III Master, Llc	0 Heritage Road	Open - Site Assessment	Cleanup Program Site
16	Moss & Industrial	676 Moss Street	Open - Site Assessment	Cleanup Program Site
17	Optima Car Wash	498 Broadway	Open - Site Assessment	Lust Cleanup Site
18	Private Property	1402-1418 Broadway	Open - Site Assessment	Cleanup Program Site
19	Proposed Wash N Go	495 Telegraph Canyon	Open - Site Assessment	Cleanup Program Site

#	Facility	Address	Status	Site Type
20	Sediment Off Former Shangrila Site	980 Lagoon Drive	Open - Inactive	Cleanup Program Site
21	Speedy Clean Chula Vista	1327 3rd Avenue	Open - Inactive	Cleanup Program Site
22	Summit Equipment Rentals	128 Mace Street	Open - Site Assessment	Cleanup Program Site
23	Supreme Gasoline	196 Broadway	Open - Site Assessment	Cleanup Program Site
24	Sweetwater Marsh	0 2300 North Of E Street	Open - Site Assessment	Cleanup Program Site
25	The Marine Group, Llc	997 G Street	Open - Inactive	Cleanup Program Site
26	Tires 4 Less	77 Broadway	Open - Site Assessment	Lust Cleanup Site
27	Xtreme Car Wash	1264 Third Avenue	Open - Site Assessment	Cleanup Program Site
Department of Toxic Substance Control EnviroStor				
1	E Street Plaza Shopping Center	640-692 E Street	Active	Tiered Permit
2	Otay Ranch Village III - Lots 826, 827 & Parcel 2	Heritage Road	Active	Voluntary Cleanup
3	Otay River Mitigation Bank	000 No Address	Active	Voluntary Cleanup
4	Proposed Otay Ranch Village 3 (School No. 47) School Site	Camino Prado	Active	School Cleanup
5	Proposed Otay Ranch Village II S-2 School Site	Santa Liza Avenue	Active	Voluntary Cleanup
6	San Diego Gas & Electric, South Bay Power Plant	990 Bay Boulevard	Active	Voluntary Cleanup

Source: State Water Resources Control Board GeoTracker, accessed September 15, 2023, Https://Geotracker.Waterboards.Ca.Gov/Map/?Global_Id=Sl0601331885; Department of Toxic Substance Control, Envirostor, accessed September 15, 2023, https://www.envirostor.dtsc.ca.gov/public/search?basic=True.

2.7.3.1. Siting Hazardous Waste Facilities

Products as diverse as gasoline, paint, solvents, film-processing chemicals, household cleaning products, refrigerants, and radioactive substances are categorized as hazardous materials. After use, or processing, hazardous materials that remain are considered hazardous waste. Nearly all industry and businesses in Chula Vista generate some amount of hazardous waste. Hazardous waste is of concern in light of potential adverse public health and safety and environmental impacts that can result from the improper handling and disposal of such materials. Therefore, the appropriate siting of hazardous waste storage, collection, treatment, disposal and transfer facilities is important. Also important is the siting of such facilities in relatively close proximity to generation sources in order to facilitate proper and efficient disposal of hazardous waste and to reduce the transport of hazardous waste within the City.

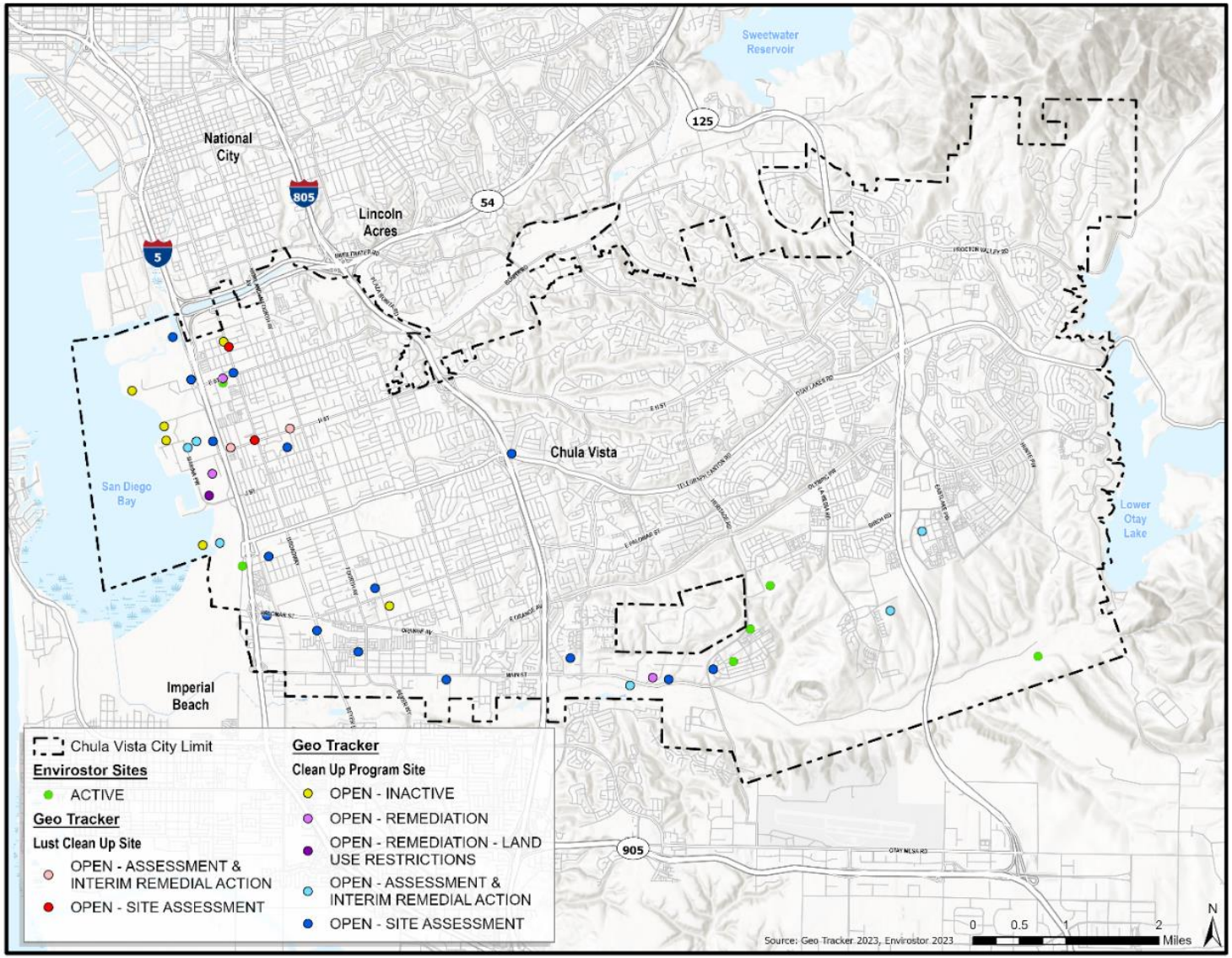
State law requires the mapping of "general areas" within which hazardous waste facilities might be established. Proposed hazardous waste facilities will be considered only if they are within the industrial zoned general areas and meet specific siting, design, and operating criteria as established by the Chula Vista Zoning Code, and pursuant to siting criteria guidelines established by the City.

2.7.3.2. Siting and Managing Facilities

The use, storage, and handling of hazardous materials and waste within Chula Vista are rigorously controlled by federal, state, and local regulations. The City uses a variety of tools to regulate facilities that use, store, and handle hazardous materials and waste in order to ensure compatibility with existing and planned surrounding land uses. The primary tools utilized by the City are zoning regulations, environmental review of proposed developments in accordance with the California Environmental Quality Act, and the issuance of business licenses.

As development and redevelopment in Chula Vista continue, the potential exists for facilities that use, store, and handle hazardous materials and waste to be sited in locations where such activities may be incompatible with existing and planned surrounding land uses. Through the use of appropriate tools, the City will ensure that facilities using, storing, and handling hazardous materials and waste will be appropriately sited and that the operation of such facilities will be regulated such that significant adverse effects to surrounding land uses will be avoided.

Figure 18: Hazardous Materials Sites



2.7.4. Household Hazardous Waste Program

Chula Vista's household hazardous waste (HHW) program, designed to provide a means to safely collect, recycle, treat, and dispose of HHW, was implemented in 1997. Public education and awareness programs, including programs for school-aged children, support the recycling program and contribute to high participation rates.

HHW includes used motor oil; latex and oil-based paints; used antifreeze; cleaning products; aerosol containers; dry cell and automotive batteries; pesticides and garden chemicals; and solvents. HHW generated by Chula Vista residents cannot be disposed of at the local and regional landfills serving the City and is, therefore, handled separately from non-hazardous solid waste. Chula Vista's current HHW program includes a temporary storage facility located at the City's John Lippitt Public Works Center on Maxwell Road. This facility was designed as a regional facility to accommodate waste from the South Bay area, including areas outside the City limits. The majority of the HHW collected at the City's facility is reused or recycled and thus diverted from landfill disposal.

In addition to the City's HHW facility, the City provides free used motor oil and oil filter recycling through its hazardous waste collection. The City-has also advertised a pharmaceutical waste disposal sites, with location at the police department and various pharmacies. Source reduction, a form of diversion, is promoted through public education on alternatives to toxic products.

In the absence of convenient and affordable HHW collection facilities and sufficient public education, the extent of improper HHW disposal would likely be great. The adverse impacts of improper HHW disposal to the environment and to public health and safety warrant significant efforts to facilitate proper disposal. Public education on alternatives to toxic products can yield a reduction of HHW sources and, in turn, a reduction in HHW generation; therefore, such efforts are also warranted.

2.8. Emergency Planning/Response

Emergency planning and disaster response are key components in addressing the City's vulnerability to natural and human-caused hazards. A well-developed emergency planning strategy ensures that, in the event of a significant hazard event, the City of Chula Vista is prepared to efficiently respond and maintain the safety and well-being of its residents, buildings, infrastructure, and critical facilities.

2.8.1. Emergency Operations Plan

The City of Chula Vista Emergency Operations Plan (EOP) was developed in accordance with following recommended guidance from the Federal Emergency Management Agency's (FEMA) Comprehensive Preparedness Guide 101 Version 2.0. The EOP addresses the emergency response functions of local government departments, public officials, and other public and private organizations during emergencies/disasters. The plan was developed through a collaborative effort of City departments, including public safety agencies such as fire, law enforcement, and public works. These organizations play a vital role in responding to emergencies.

The EOP applies to all persons participating in protection, prevention, mitigation, preparedness, response, and recovery efforts within the City. Furthermore, all stakeholders are encouraged to maintain their own procedures and actively participate in the training, exercises, and maintenance needed to support this plan.

The City of Chula Vista EOP is based on the County of San Diego Operational Area Emergency Operations Plan (OA EOP). It is designed to meet the needs of the City with respect to organizational structure and identified hazards.

2.8.2. Emergency Preparedness Program

State regulations establish the Standardized Emergency Management System (SEMS). The system includes requirements for incident command systems; multi-agency coordination systems; mutual aid agreements; and the "operational area" concept. As an agency (municipality) with emergency response capability within the state, Chula Vista is required to use the SEMS system.

Chula Vista provides for the preparation and execution of plans for the protection of persons and property within the City in the event of an emergency (Chula Vista Municipal Code, Chapter 2.14, Emergency Organization Department). The code requires coordination of the emergency functions of the City with other public agencies, corporations, and organizations.

Federal law (Disaster Management Act 2000) requires that, in order to remain eligible for post-disaster FEMA funding, every jurisdiction in the United States must have an approved Hazard Mitigation Plan (HAZMIT plan) to address the management of, and response to, emergency situations. In addition, to be eligible for pre-disaster FEMA funding for use in hazard mitigation, each jurisdiction's approved HAZMIT plan must include the planned uses of those funds. The County of San Diego adopted its MJHMP in 2023, which included the City of Chula Vista. The plan was submitted to FEMA for approval in compliance with federal law.

General Plan policies and standards tie new development and redevelopment to the provision of adequate public facilities and services, including police and fire protection. Due to the rolling terrain and varied topography, some new developments have winding streets and irregular layouts instead of the grid pattern found in older, traditional neighborhoods. Some design characteristics, such as narrow street widths, aim to create walkable communities, serve to establish an overall neighborly atmosphere, and tend to reduce traffic speeds. In mixed-use neighborhoods, density increases may result in taller buildings. The evolving urban form and the cumulative increase in development will affect emergency service response times as well as the equipment, facilities, and personnel needed for fire and police services.

Crime Prevention Through Environmental Design (CPTED) is a method of incorporating design techniques into projects to help reduce the potential for crime. CPTED is used in the development of parks; residential and commercial projects; schools; transit stations; and parking lots to reduce the number of calls for service. The reduced call volume may favorably impact response times.

CPTED includes the use of four primary strategies:

- Providing natural access control into areas;
- Improving natural surveillance (i.e., increasing "eyes on the street");
- Maintaining and managing a property to reduce crime and disorder; and
- Using territorial reinforcement to distinguish private space from public space.

2.8.2.1. Emergency Response Program

A Citywide emergency response program provides the framework for responding to any type of emergency or disaster that might occur in Chula Vista. Accomplishing efficient emergency response involves coordination with other agencies regarding disaster preparedness; preparation and regular updates of the emergency operations plan; education of residents and businesses about the plan and about evacuation routes; and periodic training of City staff and other emergency response staff to effectively implement the plan.

2.8.2.2. Post-Emergency Response

In the event of disasters and emergencies, a swift and efficient response minimizes injuries, casualties, and property damage. Planning post-disaster operations ensures the safety, health, and welfare of residents by allowing critical operations to continue as expeditiously and efficiently as possible following a catastrophic event. The post-disaster analysis will help the City improve safety plans and responses.

2.8.2.3. Exposure Control Plan

Chula Vista Fire Department is updating the 2023 Exposure Control plan, which complies with Title 8, California Code of Regulations, Section 5193: Bloodborne Pathogens; Section 5199: Aerosol Transmissible Disease; Cal OSHA Tuberculosis Control Enforcement Guidelines and any such subsequent code or regulations aimed at reducing occupational exposure to potentially communicable pathogens.

This plan:

- Outlines and summarizes the requirements of the cited standards.
- Evaluates routine tasks and procedures in the workplace that involves exposure to bloodborne, airborne and OPIM, identifies workers performing such tasks and uses a variety of methods to reduce risks.
- Establishes field guidelines for pre-hospital care personnel, outline engineering and work practice controls, personal protective equipment, housekeeping procedures, and post-exposure evaluations to comply with the standard and communicate hazards to applicable personnel and assist in minimizing the risk of being exposed, contracting and/or spreading communicable disease.
- Establishes guidelines for the management of fire department personnel, who in the line of duty, may be exposed to or contract a communicable disease.
- Informs emergency responders of the risks of occupational exposure to blood/airborne pathogens and aerosol-transmissible diseases and how to reduce those risks.

2.8.3. Public Safety Services

In the City of Chula Vista, fire protection and emergency medical services are provided by the Chula Vista Fire Department, and law enforcement services are provided by the Chula Vista Police Department. Fire stations are dispersed throughout the City, while police facilities are centered in headquarters in downtown Chula Vista. The current Fire Station Master Plan calls for 11 fire stations. The number and location of future fire stations, along with how they are equipped, may change. The City is currently developing the Bayfront property, which will call for the development of an additional fire station (number 12).

To maintain a high level of dependable, competent fire protection and emergency medical services for the City, several strategies will continue to be employed. The City will continue to use a growth-related service standard to help determine if public safety is adequately protected. Fire Department staffing and equipment will continue to be expanded, as needed, to meet the service standard and to minimize hazards to the firefighters and public, in conformance with changes to the updated Fire Station Master Plan. The Fire Department will continue to enhance its capabilities and staffing through mutual aid agreements with fire departments in the surrounding communities.

Similar strategies also facilitate the provision of law enforcement services that meet the City's needs. The department will continue to monitor calls for service, analyze crime statistics and resident survey data, and make changes in staffing and patrols to reflect the growing community's needs.

Effective fire protection and emergency medical and law enforcement services require two-way relationships with the community. Staff must understand the unique needs and conditions in the community and the community must lend support to the various programs and efforts of the Police Department and Fire Department. The City encourages active participation by Fire and Police Departments in all facets of community life, including involvement in area business and senior/youth activities.

2.8.3.1. Keeping Pace with Growth

The City of Chula Vista has experienced significant residential growth over the last decade. The majority of new growth has occurred in the east, where continued relatively high growth is expected in the coming years, along with density increases in the west. Fire protection, emergency medical services, and police services will need to expand to match the demand brought on by this anticipated growth.

While fire stations are located throughout the City, the Police Department maintains one police headquarters, located in the western portion of the City. If appropriate, the department could establish satellite storefront offices to provide a presence in other neighborhoods.

2.8.4. Evacuation Routes

In the event of a significant emergency, clear routes are needed to ensure that emergency responders and supplies can be transported and that community members can be evacuated. Evacuation efforts depend on the severity and type of hazard incident that is occurring. In some cases, people may have a day or two to prepare, while other situations might call for an immediate evacuation. Evacuation routes include major roadways and thoroughfares intended to transport people from areas impacted by hazardous events to areas of safety.

There may be occasions when a limited-scale evacuation is the appropriate response to an emergency situation. Under these circumstances, people should be evacuated to neighborhood and community schools, hospitals, and public facilities, where they could receive adequate care and treatment. In the event of a major disaster, where a large part of the City may require evacuation, the following circulation routes may be used and are depicted in Figure 19:

- Interstate 5; Interstate 805; State Route 54; and State Route 125
- E, H, J and L Streets; Bonita Road; Telegraph Canyon Road; Olympic Parkway
- Naples, Palomar and Main Streets; Orange Avenue

- Broadway; Fourth Avenue; Hilltop Drive; Oleander Avenue; Third Avenue; Melrose Avenue; Otay Lakes Road; and Heritage Road

Evacuation routes effectively include all improved (paved) roads within the City. Unpaved roads may be used in an evacuation as a last resort but should not be relied on as a primary evacuation route. Local streets typically serve as direct access for adjacent residential and commercial development and while they are not designed to accommodate high traffic volumes, they serve limited development areas and are rarely required to handle traffic flows that would exceed their capacities, even under full evacuation conditions.

For the purposes of evacuation planning, the designated evacuation route street network includes roadways that are classified as collectors and above including the following:

1. Freeways/Highways
2. Major Roadways
3. Gateway Streets
4. Urban Arterials
5. Commercial Boulevard
6. Neighborhood & Local Streets (in select areas)

Designated evacuation routes are the most reliable roadway facilities for the following reasons:

- These roads are designed to accommodate higher volumes of traffic in-line with their classifications.
- Access controls are more stringent on roads of higher classification.
- Intersection controls are designed to prioritize travel on roads of higher classification.
- Roadway maintenance policies prioritize roads of higher classification.

Primary evacuation routes are identified in Figure 19. Note that evacuation routes shown are to gateway exit points located at or near the City boundary. In addition, SR-125 is identified as an important evacuation route, and while it is a toll road under emergency evacuation conditions it is presumed the evacuees would be able to access the highway without penalty or fees.

Evacuation route vulnerability can be expressed from several perspectives. The most direct expression of route vulnerability deals with physical features along an evacuation route that can be damaged during emergency scenarios and cause the evacuation route to be disrupted and unusable. These physical features include:

- Bridges (over rivers, creeks, and other drainage features)
- Bridges (creating grade separated roadways)
- Low points along the route that are prone to flooding
- Route locations along steep natural slopes that are prone to landslides

Figure 19: Evacuation Routes Map

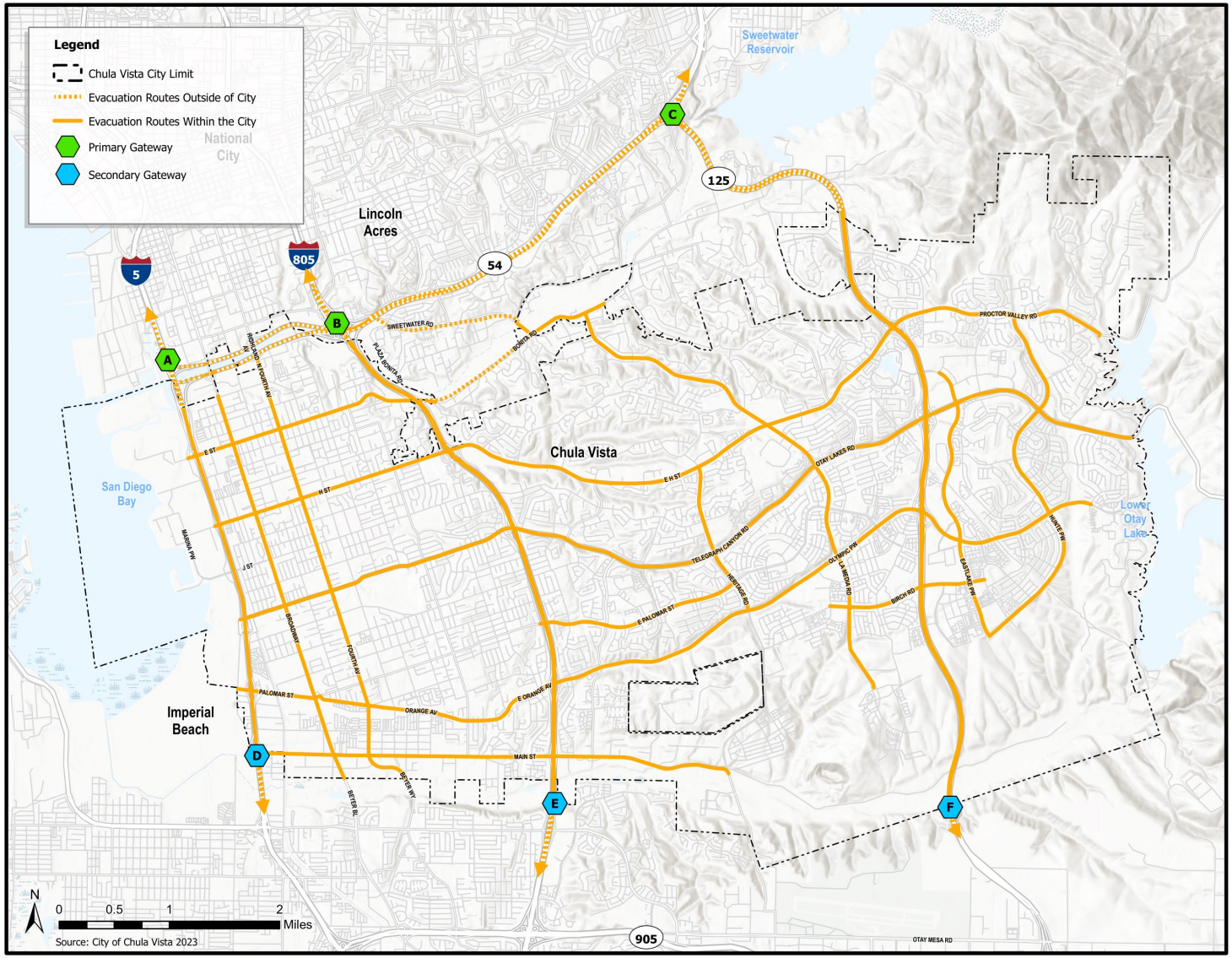


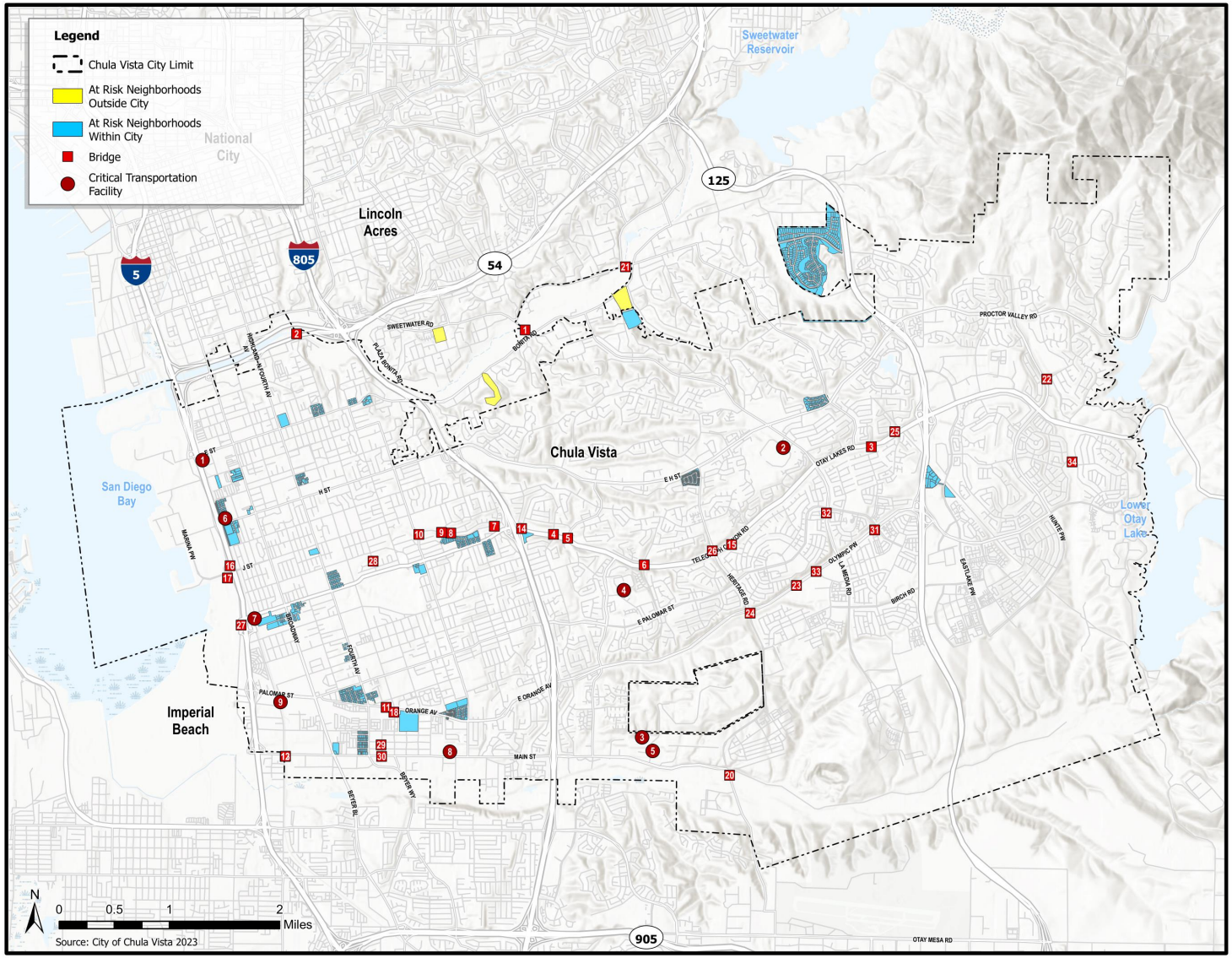
Figure 20 depicts physical features such as bridge structures along primary evacuation routes that may impede an evacuation if damaged at the time of an emergency which require an evacuation. The Vulnerability Assessment (separate cover) summarizes all of the critical facilities throughout.

Evacuation route vulnerability can also be expressed in terms of vulnerability to residents where development areas are isolated and/or areas that have access to only one evacuation route. These areas are a concern and require additional advanced planning to address emergency scenarios where an evacuation is needed, and the single evacuation route may be blocked or damaged and cannot be used.

Also shown in **Figure 20** are those residential development areas (neighborhoods) that have only one access point to a primary evacuation route. These neighborhoods were identified after a thorough review of various City-wide maps and aerial photographs and include residential developments that may be access constrained during an evacuation. If a neighborhood takes direct access to another roadway and that roadway funnels to more than one designated evacuation route, it would not be considered vulnerable. Similarly, if a neighborhood does take direct access to a designated evacuation route with only one way in and out, this would be considered a vulnerable neighborhood.

In an evacuation scenario, these neighborhoods could be exposed to an increased risk due to the lack of multiple egress opportunities and should be given earlier evacuation consideration.

Figure 20: Evacuation Route Vulnerable Neighborhoods



Goals, Policies, and Actions

Goal SE 1.0: Minimize the potential for loss of life, injury, damage to property, economic and social dislocation, and unusual public expense due to natural hazards.

Flooding and Erosion

Policy SE 1.1: Require appropriate measures to control and minimize the impact of flooding and erosion.

Action SE 1.1.1 Mandate site-specific hydrological studies for new developments and major renovations in 100 and 500-year floodplain areas and prohibit development in these areas unless sufficient evidence shows no adverse impact on proposed projects or surrounding properties.

Action SE 1.1.2 Wherever feasible, remove or relocate existing structures that are determined to be unsafe from flood hazards. Seismic Activity and Geologic Instability

Policy SE 1.2: Ensure that all geologic hazards are adequately addressed and mitigated through project development.

Action SE 1.2.1 Require site-specific geotechnical investigations for proposed projects within areas subject to potential geologic hazards (e.g., liquefaction, landslide, mudslide, erosion, sedimentation, hydromodification, and settlement) and ensure implementation of all measures deemed necessary by the City Engineer and/or Building Official to avoid or adequately mitigate such hazards.

Action SE 1.2.2 Make the geological hazards map readily available on the website either by providing links to reliable data sources such as the California Geological Survey or by updating the geologic hazards map with new information provided by geotechnical studies.

Action SE 1.2.3 Ensure during the project design and review process that existing modifications and new structures are designed to protect people and property from seismic hazards.

Policy SE 1.3: Address safety issues related to unreinforced masonry buildings and promote the strengthening of these buildings and structures, where appropriate.

Action SE 1.3.1 Explore funding sources to create an inventory of unreinforced masonry structures in the City that may collapse in the event of an earthquake and develop a hazard reduction program for their rehabilitation or removal.

Action SE 1.3.2 Wherever feasible, remove or relocate the structures determined to be unsafe from geologic hazards.

Wildfire

Policy SE 1.4: Ensure that the City is well-equipped to reduce the risk of wildfire and its aftereffects.

Action SE 1.4.1 Continue to adequately equip and staff the Fire Department, including fire suppression equipment and fire engines, to ensure that established service standards for emergency calls are met.

Action SE 1.4.2 Continue to upgrade fire and emergency medical equipment, as required, to protect the public from hazards and to ensure the safety of firefighters. Pursue funding for the same when Measure P expires in 2027.

Action SE 1.4.3 Support an update to the Fire Station Master Plan as necessary to ensure that the City has an adequate number of fire stations as new development takes place and existing facilities are renovated, as necessary.

Action SE 1.4.4 Review and revise development impact fees as necessary for new development projects for their contribution toward fire protection services.

Action SE 1.4.5 Explore opportunities to provide access to two or more evacuation routes for existing and future residential developments with densities of more than 30 units per acre.

Action SE 1.4.6 Implement brush management programs that are consistent with the Chula Vista MSCP Subarea Plan and the City's Urban-Wildland Interface Code, within urban development and open space interface areas to reduce potential wildland fire hazards. Brush management guidelines within the MSCP Subarea Plan and the Urban-Wildland Interface Code shall include limits and measures to prevent increased risk of erosion.

Policy SE 1.5: Incorporate fire-safe design for existing and new developments and major renovations.

Action SE 1.5.1 Revisit site design and maintenance standards periodically to ensure that the standards for fire protection for new development meet or exceed the statewide minimums.

Action SE 1.5.2 Require new development proposals to submit plans showing ingress/egress, evacuation routes, emergency vehicle access, visible addressing and signage, and fuel modification/fire-retardant zones.

Action SE 1.5.3 Continue to use the California Fire Code and California Code of Regulations and update the City code as necessary to mitigate the risk of wildfires.

Action SE 1.5.4 When feasible, require all development to be located outside of the Very High Fire Hazard Severity Zone (VHFHSZ). Should development be located in VHFHSZ, then require that it be built to the current California Building Code and Fire Code.

Action SE 1.5.5 Identify existing non-conforming development and create a plan which would include seeking grant funding to update those developments to contemporary fire-safe standards, in terms of road standards and vegetative hazard, and requiring all development to meet or exceed CCR, division 1.5, chapter 7, subchapter 2, articles 1 -5 requirements (SRA Fire Safe Regulations).

Policy SE 1.6: Reduce the risk of wildfire spreading to the extent possible.

Action SE 1.6.1 Treat the City-owned roadways identified as evacuation routes as firebreak areas and perform vegetation and road maintenance on city roads and enforcement on private roads.

Action SE 1.6.2 Encourage neighborhood- or area-based approaches to reducing wildfire hazards, acknowledging that one property's wildfire risk is dependent on the wildfire hazards presented by surrounding properties.

Action SE 1.6.3 Require new development and major renovations to submit fuel modification plans for approval from the City Fire Department.

Action SE 1.6.4 Ensure the availability of water sources for firefighting efforts and maintain hydrants in working condition.

Action SE 1.6.5 Ensure that all developments in Very High Fire Hazard Severity Zones maintain certain defensible space through specific fuel modification (brush clearing) requirements as outlined in Government Code Sections 51175-51189.

Action SE 1.6.6 Create and implement a vegetation management program to reduce the presence of flammable vegetation, including creating defensible space, clearing dead vegetation, and maintaining fuel breaks.

Action SE 1.6.7 Develop a plan to revegetate slopes on City-owned property soon after wildfires with desirable native species that support native habitats and have robust root systems to keep soil in place. Work with appropriate agencies and property owners as applicable on similar projects.

Action SE 1.6.8 Implement a comprehensive strategy focused on proactive hazardous fuels removal, treatment, and the establishment of a network of fuel breaks and greenbelts to effectively mitigate wildfires, contain their size, and minimize heat and smoke generation.

Climate Resiliency

Policy SE 1.7: Increase the City's resiliency to climate change impacts.

Action SE 1.7.1 Update the City's Climate Action Plan routinely and monitor its effectiveness in achieving reduction targets, and implementing additional measures if goals are not met.

Action SE 1.7.2 Locate new essential public facilities, including hospitals and health care facilities, emergency shelters, emergency command centers, and emergency communications facilities, outside of hazard areas as feasible, and implement construction methods to minimize impacts if located in at-risk areas.

Action SE 1.7.3 To the extent feasible, develop infrastructure that uses natural ecological systems or processes or sequesters greenhouse gas emissions to reduce vulnerability to climate change-related hazards or other related climate change effects.

Action SE 1.7.4 Identify critical facilities in need of reliable sources of sustained electrical power, from zero emission sources when feasible, during natural hazards and climate change impacts including electric vehicle charging for municipal fleet.

Action SE 1.7.5 Identify public buildings, specific private buildings, and/or institutions with facilities required for multiple day habitation as public shelters during periods of extreme flooding, heat waves, or power outages and provide up-to-date information to the public about such buildings through the City's website.

Action SE 1.7.6 Aim to minimize the impact of new construction on climate change by striving for net zero emissions where feasible.

Policy SE 1.8: Ensure that the City has adequate water supply for domestic use and fire protection.

Action SE 1.8.1 Continue to assist Chula Vista's water providers in preparing and maintaining urban water management plans that identify water demand anticipated by existing and new developments.

Action SE 1.8.2 Coordinate with water providers on long-range planning programs.

Action SE 1.8.3 Participate in existing and future regional planning programs for water treatment, reclamation, and distribution.

Action SE 1.8.4 Encourage the development of new technologies and the use of new sources to meet the long-term water demands in Chula Vista.

Action SE 1.8.5 Establish a system for residents and businesses to report suspected leaks and take prompt action to repair leaks.

Action SE 1.8.6 Continue to implement routine inspection schedules for the entire water distribution system, including regular visual inspections, meter readings, and the use of leak detection devices.

Policy SE 1.9: Encourage and facilitate construction and land development techniques that ensure sustainable water use and minimize water quality impacts from urban development.

Action SE 1.9.1 Promote the use of low-water demand landscaping and drought-tolerant plant materials in both existing and new developments.

Action SE 1.9.2 Where safe and feasible, promote and facilitate the use of recycled water in new developments, and explore opportunities for the use of recycled water in redevelopment projects.

Action SE 1.9.3 Support the continued use of graduated rate structures by water suppliers to promote water conservation.

Action SE 1.9.4 Implement and enforce restrictions on outdoor water use, such as watering lawns, washing cars, and filling swimming pools, particularly during drought conditions.

Policy SE 1.10: Increase the City's resilience to extreme heat and minimize the negative impacts of heat waves.

Action SE 1.10.1 Develop a protocol for the City to respond to extreme heat events, e.g., extend cooling center hours, alternative schedules for outdoor workers, delivery of water, medicine, and other critical resources to vulnerable populations, and so on.

Action SE 1.10.2 Revisit building standards to require cost-effective cooling strategies. Some strategies include the use of reflective materials for buildings and roads to reduce heat absorption; cool roof initiatives to decrease surface temperatures; green roofs and walls to absorb heat and increased insulation and air sealing to increase a buildings passive ability to stay cool; cool or reflective pavements to reduce the urban heat island effect; permeable surfaces to allow water infiltration and reduce surface temperatures; and so on.

Action SE 1.10.3 Adopt zero emission building energy codes strategies, such as energy efficiency, solar panel with battery storage and bi-directional electric vehicle charging that reduce peak energy demand on the electrical grid.

Goal SE 2.0: Minimize the potential for loss of life, injury, damage to property, economic and social dislocation, and unusual public expense due to human-made hazards.

Crime

Policy SE 2.1: Reduce the risk of crime through site planning, surveillance, support programs, and information.

Action SE 2.1.1 Provide adequate law enforcement staff and equipment pursuant to Police Department strategic plans to meet established service standards. Pursue funding for the same when current funding expires in 2027.

Action SE 2.1.2 Continue to assist with the existing Neighborhood Watch programs and establish new ones as needed to prevent crime in communities.

Action SE 2.1.3 Implement Crime Prevention Through Environmental Design (CPTED) techniques in urban planning and development as feasible in new development and redevelopment projects. Some examples of CPTED techniques include installing large windows, avoiding tall shrubbery that obstructs views, maintaining clear sightlines, installing adequate and well-placed lighting, promoting a mix of activities, implementing target hardening techniques, minimizing secluded spaces, and using electronic surveillance.

Action SE 2.1.4 Support after-school programs, mentorship initiatives, and community centers that provide positive opportunities for youth and reduce the risk of involvement in criminal activities.

Action SE 2.1.5 Provide resources and information on personal safety, neighborhood watch programs, and available social services through the City website, booths at City events, social media, newsletter, and so on.

Action SE 2.1.6 Support community initiatives aimed at reducing gun violence through education and awareness.

Action SE 2.1.7 Regularly evaluate the effectiveness of crime reduction initiatives with the Police Department and adapt policies and programs accordingly.

Health Emergencies

Policy SE 2.2: Provide essential services in a timely manner during a public health crisis.

Action SE 2.2.1 Update the Exposure Control Plan on a regular basis and ensure that all emergency responders including City staff that deal with emergency operations, are aware of and trained regularly to use the plan.

Action SE 2.2.2 Ensure, to the extent possible, that City employees have access to appropriate protective equipment to provide essential services.

Action SE 2.2.3 Follow the direction and guidance of appropriate public health agencies and relay the information to the community in a timely manner.

Action SE 2.2.4 Ensure that City employees are equipped to telecommute if needed during an emergency.

Action SE 2.2.5 Ensure that the Planning Commission and City Council are aware of operations protocols for public health crisis scenarios.

Action SE 2.2.6 Regularly review and update policies based on lessons learned from previous crises or emerging best practices since the nature of a public health crisis can evolve rapidly, and plans should be flexible enough to adapt to changing circumstances.

Action SE 2.2.7 Create a program to foster collaboration among various government agencies, healthcare providers, nonprofit organizations, and community groups to create a cohesive response.

Hazardous Materials

Policy SE 2.3: Minimize the use of toxic products by residents and small businesses and facilitate the proper disposal of household hazardous waste.

Action SE 2.3.1 Encourage the reduction of household hazardous waste generation and disposal by promoting the use of safe substitutes, and by promoting and facilitating recycling of household hazardous waste.

Action SE 2.3.2 Promote the City's Household Hazardous Waste Collection Facility and continue to collaborate with the County of San Diego and other local agencies for the diversion of household items, recyclables, and household hazardous waste by providing information on the program to residents on a regular basis through the City website.

Action SE 2.3.3 Clean contaminated sites to protective limits to ensure that planned future uses of such sites and public health and safety are not compromised.

Action SE 2.3.4 Prior to the redevelopment of contaminated sites, ensure adequate remediation in accordance with the recommendations of appropriate environmental assessments and consistent with all applicable regulations and standards.

Action SE 2.3.5 Minimize the use of toxic products by residents and small businesses through public education on alternative products and methods.

Policy SE 2.4: Maintain the ability to establish hazardous waste storage, collection, treatment, disposal, and transfer facilities to serve the needs of the Chula Vista industry and businesses within appropriate locations of the City, while ensuring adequate protection of the community.

Action SE 2.4.1 Ensure through code enforcement that no hazardous materials are dumped in any area of the City other than the sites specifically permitted.

Action SE 2.4.2 Evaluate the Chula Vista Fire Department's and Police Department's capacities to respond to hazardous materials spills; identify any gaps in equipment or training.

Action SE 2.4.3 On a periodic basis, review and modify, where necessary, the City's zoning regulations to ensure that adequate provisions are in place to avoid adverse effects to surrounding land uses from facilities using, storing, and handling hazardous materials and waste.

Action SE 2.4.4 Ensure that all hazardous waste facilities adhere to local, state, and federal regulations. Regularly review and update regulations to align with industry standards and best practices.

Action SE 2.4.5 Continue to require, prior to the issuance or renewal of business licenses for businesses involving hazardous materials and/or generating hazardous waste, licensees to prepare and submit an acceptable Business Plan and Risk Management Prevention Program to the County Department of Environmental Health, as applicable, and to obtain all other necessary licenses and permits.

Action SE 2.4.6 Establish communication protocols for notifying the community in case of incidents and providing clear instructions on protective actions.

Action SE 2.4.7 Support legislative efforts to reduce the risk associated with hazardous waste.

Goal SE 3.0: Ensure residents are thoroughly informed about hazards and emergency preparedness programs and procedures.

Policy SE 3.1: Promote public safety awareness on hazards, safety measures, and evacuation procedures through education and awareness campaigns.

Action SE 3.1.1 Ensure that the Disaster Preparedness web page is up to date and readily accessible on the City website to promote resident awareness and caution regarding hazards, including soil instability, earthquakes, flooding, and wildfire.

Action SE 3.1.2 Ensure that the City's Emergency Management web page is combined with the Disaster Preparedness web page for ease of navigation and finding information.

Action SE 3.1.3 Organize regular workshops and seminars or set up informational booths during City events and fairs to disseminate information on emergency preparedness to cover topics such as evacuation procedures, sheltering in place, and the creation of emergency kits.

Action SE 3.1.4 Create informative brochures, pamphlets, and fact sheets detailing local hazards, emergency procedures, and preparedness tips such as fire-resistant landscaping and defensible space. Use City events, festivals, and newsletters to disseminate the brochures.

Action SE 3.1.5 Partner with local schools to integrate emergency preparedness education into the curriculum.

Action SE 3.1.6 Ensure that all educational materials and campaigns are available in multiple languages spoken within the community.

Action SE 3.1.7 Conduct public awareness campaigns to educate residents about evacuation routes and procedures. Ensure that the evacuation routes map is available on the website.

Action SE 3.1.8 Continue to publicize disaster plans such as the Emergency Operations Plan and make them available on the City website and to critical facilities.

Goal SE 4.0: Ensure the City is well-prepared for an effective emergency response.

Policy SE 4.1: Ensure that the City permitting, and approval processes allow for emergency preparedness.

Action SE 4.1.1 Prior to approval of any discretionary projects, ensure that construction is phased with the provision of police and fire protection services such that services are provided prior to or concurrent with need.

Action SE 4.1.2 Continue to require new development and redevelopment projects to demonstrate adequate access for fire and police vehicles.

Action SE 4.1.3 Require new development and redevelopment projects to demonstrate adequate water pressure to new buildings.

Action SE 4.1.4 Maintain detailed hazard maps for use in the development review.

Action SE 4.1.5 Strive to locate and design emergency buildings and vital utilities, communication systems, and other public facilities so that they can remain operational during and after an emergency or disaster.

Action SE 4.1.6 Require new development to screen, protect, or underground all utilities and provide underground connections to improve both public safety and the City's appearance.

Action SE 4.1.7 Ensure that newly proposed or modified roadway designs are reviewed by the Fire Department so that these roadways do not significantly impair the movement of emergency vehicles and equipment.

Action SE 4.1.8 Educate City officials at the beginning of each term on emergency procedures, protocols, line of command, and expedited processes related to disaster recovery.

Policy SE 4.2: Ensure that emergency preparedness planning is done on a regular basis and seek interagency and interdepartmental collaboration in such planning process.

Action SE 4.2.1 Maintain and implement a Citywide Emergency Operations Plan to respond to local and regional emergencies and update it as needed to respond to changes in emergency response systems and threats to public safety.

Action SE 4.2.2 Require that the Police and Fire Departments maintain active participatory roles in emergency preparedness planning.

Action SE 4.2.3 Conduct a post-disaster analysis after every emergency response and incorporate the lessons learned to improve safety plans.

Action SE 4.2.4 Continue to be a jurisdictional partner in the preparation, maintenance, and implementation of the multi-jurisdictional Hazard Mitigation Plan by San Diego County, in compliance with federal law.

Action SE 4.2.5 Cooperate with local, state, and federal agencies, and with emergency response organizations such as the American Red Cross, to ensure temporary housing for displaced residents following an emergency or disaster.

Action SE 4.2.6 Within six months of any area-wide disaster, analyze the response and the Citywide Emergency Response Plan and propose revisions as needed.

Action SE 4.2.7 Develop post-disaster development regulations to assist displaced residents in rebuilding damaged and destroyed structures as expeditiously as possible. Ensure re-development complies with City code, California Fire Code and California Code of Regulations.

Action SE 4.2.8 In the event of a disaster in Chula Vista, apply for and obtain federal funding from the Federal Emergency Management Agency, as applicable, to augment recovery efforts in the community.

Policy SE 4.3: Encourage the City residents and businesses to be a part of the emergency preparedness program.

Action SE 4.3.1 Continue to support the Community Emergency Response Team (CERT) program as well as the Fire Explorers program spearheaded by the Fire Department.

Action SE 4.3.2 Continue to support the Citizens Adversity Support Team (CAST), Senior Volunteer Patrol, Reserve Officers, and the Cadet Program by the Police Department and allow volunteers to supplement both officer and police civilian positions.

Action SE 4.3.3 Continue to support the Police Department's School Resource Officer Program, which provides leadership and a safe learning environment in the schools.

Action SE 4.3.4 Encourage residents to sign up for emergency alert systems that deliver notifications directly to their mobile devices.