
City of Santee Safety and Environmental Justice Element

FINAL

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Prepared for:



City of Santee
Planning and Building Development
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Section 1. Executive Summary

The current Santee General Plan was adopted in 2003 by Resolution 63-2003 to guide new development in the City of Santee (City) through the year 2020. This document serves as an update to the Santee General Plan's Safety Element and incorporates a new Environmental Justice Element. The Safety and Environmental Justice Element (Element) is integral to guiding future development in Santee as it addresses public safety concerns and provides goals and policies to minimize public safety hazards. Land use planning, implemented through the Santee Municipal Code and General Plan, is an important component of both hazard mitigation and environmental injustice prevention. Site selection that avoids proximity to natural hazards or hazardous facilities and building construction techniques designed for fire protection, life safety and temporary systems failure can reduce hazard risks in the built environment and promote quality of life.

The Safety and Environmental Justice Element provides an introduction (**Section 2, *Introduction***) and a description of laws and regulations related to the Element (**Section 3, *Statutory Requirements***). This Element provides a summary of existing conditions related to public safety and environmental justice and identifies a set of needs to be addressed by future actions (**Section 4, *Safety – Existing Conditions***, and **Section 6, *Environmental Justice – Existing Conditions***, respectively). Safety and environmental justice goals for the City are defined in **Section 7, *Goals, Objectives, and Policies*** along with objectives and policies intended to help achieve the goals, address community needs, and support the recommended improvements by providing the necessary legislative backing. The Safety and Environmental Justice Element builds on and coordinates with the City's Vulnerability Assessment (**Appendix A**), which assesses climate change-related impacts on vulnerable populations and critical infrastructure (**Section 5, *Climate Adaptation and Resilience***), and the Sustainable Santee Plan: The City's Roadmap to Greenhouse Gas Reductions (Sustainable Santee Plan), which addresses impacts from climate change on all residents of the City. This Element also incorporates the Emergency Evacuation Route Analysis (**Appendix B**) and Environmental Justice Existing Conditions Assessment (**Appendix D**) prepared for the Element. Finally, this Element concludes with an implementation plan in **Section 8, *Implementation***, which sets forth the intended process for monitoring, implementing, and maintaining the Safety and Environmental Justice Element.

The City is coordinating efforts to improve staff's ability to respond to and recover from major emergencies by managing critical information and limited resources and using technology. The effort to maintain and enhance overall preparedness to prevent, respond to, and recover from any hazard, whether natural or human-made, is ongoing. The City is also responsible for securing and managing funding opportunities (e.g., grants) for addressing hazards and environmental justice issues, which requires an updated Safety and Environmental Justice Element (see **Section 2.6, *Grants and Future Funding Opportunities***). The Safety and Environmental Justice Element aims to ensure that residents have the opportunity to provide input on decisions that affect their quality of life through public participation, which is described in **Section 2.7, *Community Engagement***.

1.1 Major Accomplishments

Since adoption of the City's first General Plan in August of 1984, the City has fulfilled many of the goals and implemented the policies in the Safety Element. Major accomplishments include the following:

- Since the 2000s, the City has implemented a traffic signal interconnect system on most of the arterials, which helps maintain traffic signal timing for enhancing traffic safety.
- Since the 2000s, the City has installed battery backups for traffic signals at key intersections to minimize interruption in operation and improve safety during power outages.
- Since the 2000s, the City has received Federal Highway Safety Improvement Program grants in the amount of \$2.5 million for safety improvements, including raised medians, sign upgrades, speed feedback signs, and enhanced crosswalks.
- In conjunction with the State of California, the City completed significant bridge, drainage, and channel improvements on Forester Creek in 2005 while realigning the creek to accommodate improvements to State Route (SR-) 52. This multimillion-dollar award-winning project reduced the effects of flooding to surrounding properties while also improving the safety of surrounding streets and pedestrians.
- In 2008, the San Diego County Regional Airport Authority serving as the Airport Land Use Commission (ALUC) for the county of San Diego adopted the Marine Corps Air Station (MCAS) Miramar Airport Land Use Compatibility Plan (ALUCP).
- In 2010, the ALUC adopted the Gillespie Field ALUCP.
- In 2010, the City of Santee Emergency Operations Plan was adopted and prepared to ensure the most effective and economic allocation of resources for the maximum benefit and protection of the community in time of emergency.
- In 2012, the City funded and began a corrugated metal pipe repair and replacement program to repair and or replace aging infrastructure with an ongoing program. This program has repaired and upgraded significant deficiencies identified in Santee's master drainage facility inventory to reduce the impacts of flooding due to climate change.
- In 2015, the City completed the installation of a decorative pedestrian crossing that created an Americans with Disabilities Act (ADA)-compliant crossing from the existing Santee Trolley and San Diego Metropolitan Transit System (MTS) hub to the existing shopping center and future developments north of Town Center Parkway.
- As part of the Highway Safety Improvement Program, the City completed the installation of raised medians on Mission Gorge Road in 2019 where accident data supported the approval of grant funding to complete the installation to improve traffic safety in the area.
- Planned upgrades to improve accessibility to City Hall were completed in 2019, providing accessible parking and paths of travel upgrades to meet current safety standards.

- As part of emergency operation improvements, Santee completed improvements to the Emergency Operations Center (EOC) in 2013 by adding a backup generator and completed significant communication and technology improvements to the EOC in 2019.
- With a partnership with the San Diego Association of Governments, Santee was able to secure redevelopment funding to complete significant safety improvements to Prospect Avenue between Cuyamaca Street and Magnolia Avenue. This award-winning multimillion-dollar project improved drainage and eliminated historical flooding by creating a new drainage system with water quality treatment features. The road was also widened to current standards with new sidewalks, accessible ramps, and bike lanes to improve pedestrian, bicycle, and traffic safety.
- The City continuously updates its Emergency Operations Plan and provides ongoing training to maintain compliance with the Statewide Emergency Management System (SEMS), increasing preparedness in the event of a disaster.
- The City has consistently maintained one of the lowest crime rates of any jurisdiction in San Diego County.
- The City has consistently maintained one of the lowest traffic collision rates among all jurisdictions in San Diego County and among all cities of similar size in California.

Section 2. Introduction

The Element provides policy direction for new development and redevelopment in Santee related to public safety and equity issues as the City approaches buildout. The following section provides an overview of the purpose of Safety Elements and Environmental Justice Elements as well as the purpose of preparing a combined Element. The Introduction explains the relationship between this Element and other General Plan Elements and other planning documents. Finally, the Introduction explains the grants and funding opportunities available to address the issues discussed in this Element and the community engagement opportunities that helped to develop the Element.

2.1 What Is a Safety Element?

The purpose of a Safety Element is to establish policies related to future development that will minimize unreasonable risk of personal injury, loss of life, property damage, and environmental damage associated with natural and human-made hazards. The Safety Element provides policy direction that supports laws and regulations related to safety hazards and policies as well as the overall goals established for the Santee General Plan.

2.2 What Is an Environmental Justice Element?

The purpose of an Environmental Justice Element is to address the inequities resulting from environmental hazards and health impacts in the built environment. The policies included in an Environmental Justice Element are intended to ensure all residents have the right to live, work, and play in a safe and healthy community.

Government (Gov.) Code, Section 65040.12(e), defines “environmental justice” as the fair treatment of people of all races, incomes, and ethnicities with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies. Per Gov. Code, Section 65040.12(e)(2), environmental justice includes but is not limited to the following:

- The availability of a healthy environment for all people
- The deterrence, reduction, and elimination of pollution burdens for populations and communities experiencing the adverse effects of that pollution so that the effects of the pollution are not disproportionately borne by those populations and communities
- The governmental entities engaging and providing technical assistance to populations and communities most impacted by pollution to promote their meaningful participation in all phases of the environmental and land use decision-making process
- The meaningful consideration of recommendations from populations and communities most impacted by pollution and other hazards into environmental and land use decisions

2.3 Why a Combined Safety and Environmental Justice Element?

New state mandates requires the Safety Element to include climate change adaptation and requires local agencies to adopt environmental justice policies for disadvantaged communities (**Section 3**). Therefore, the City of Santee Department of Planning & Building is updating the Safety Element and integrating environmental justice. The Safety and Environmental Justice Element updates risks and policies for the protection of the community, provides goals and policies for environmental justice, and includes climate change adaptation and resiliency.

The City is adopting a Safety and Environmental Justice Element in compliance with state-mandated requirements to concurrently create a safer, healthier community for its residents and improve its adaptability and resiliency to climate-related hazards. The fundamental objective of the Safety and Environmental Justice Element is to reduce the risk of hazard resulting from natural and human-caused events, including climate change-related hazards, particularly on disadvantaged communities (see **Section 5**). The Safety component of this Element directly relates to the Environmental Justice component because development plans must adequately account for public safety considerations and open space for public health, and ecological benefits often incorporate areas of increased hazard risk. For this reason, some of the figures prepared for the safety component of this Element also show disadvantaged communities for environmental justice. Additionally, combining the Elements also allowed the City to conduct robust community engagement to obtain input on the hazards and issues most affecting Santee residents (see **Section 2.7**).

This Safety and Environmental Justice Element addresses the following safety considerations:

- Flood Hazards
- Geologic/Seismic Hazards
- Urban/Wildland Fire Hazards
- Crime

- Traffic Hazards
- Light-Rail Transit Hazards
- Airport Hazards
- Disaster Preparedness
- Hazardous Materials
- Climate Adaptation and Resilience

2.4 Relationship to Other Elements

The Safety Element directly relates to topics also mandated in the Land Use Element, Conservation Element, Mobility Element, and Recreation and Trails Element (serving as the City's Open Space Element as required by Governor's Office of Planning and Research [OPR]). The Safety and Environmental Justice Element is most closely related to the Land Use Element since public safety and security information is used to guide the location of the City's various land uses. For example, the safety policies identify the need to ensure that critical facilities and hazardous facilities are located and designed to be functional in the event of a disaster. The environmental justice policies also identify the need for access to recreational areas and healthy food. These needs inform the land use policies needed to guide future development in Santee.

The Safety and Environmental Justice Element is also related to the Housing Element. For example, the safety policies identify the need to regulate or prohibit housing within Flood or High Fire Hazard Severity Zones (FHSZs). The environmental justice policies promote access from low-income residential areas to public transit, public facilities and services, recreational opportunities, healthcare, and healthy food. The environmental justice policies also identify the need to mitigate unsafe, unhealthy housing conditions for vulnerable populations in Santee (see **Section 7**). This information is used to guide the location and design of future housing development in Santee.

2.5 Related Plans

The County of San Diego's 2023 Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) is a countywide plan that identifies risks and ways to minimize damage by natural and human-made disasters.¹ The MJHMP was developed in accordance with the Disaster Mitigation Act of 2000 (DMA 2000) and followed the Federal Emergency Management Agency's (FEMA's) Local Hazard Mitigation Plan (LHMP) guidance. The LHMP incorporates a process where hazards are identified and profiled, 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-term and long-term strategies, involve planning, policy changes, programs, projects, and other activities. The MJHMP can be found at https://www.sandiegocounty.gov/oes/emergency_management/oes_jl_mitplan.html.

¹The 2010 MJHMP was incorporated into the Santee General Plan by Resolution 08-2011 on February 9, 2011.

The MJHMP is a comprehensive resource document that guides the County in reducing risks from disasters to people, property, economy, and environment and complies with federal and state hazard mitigation planning requirements to establish eligibility for funding under the FEMA grant programs (see **Section 2.6**).

The recently adopted MJHMP was revised to reflect changes to both the hazards threatening the County and its participating jurisdictions (including Santee), as well as the programs in place to minimize or eliminate those hazards. The City reviewed a set of jurisdictional-level hazard maps, including detailed critical facility information and localized potential hazard exposure/loss estimates, to identify the top hazards threatening its jurisdiction.

The City developed specific hazard mitigation goals, objectives, and related potential actions in its chapter of the County's 2023 MJHMP after considering the risk assessment findings, localized hazard identification and loss/exposure estimates, and an analysis of the City's current capabilities assessment. These goals represent a vision of long-term hazard reduction or enhancement of capabilities and align with the City's goals and objectives for the Safety and Environmental Justice Element:

- **Goal 1.** Promote disaster-resistant future development.
- **Goal 2.** Increase public understanding, support, and demand for effective hazard mitigation.
- **Goal 3.** Build and support local capacity and commitment to continuously become less vulnerable to hazards.
- **Goal 4.** Improve coordination and communication with federal, state, local and tribal governments.

Reduce the possibility of damage and losses to existing assets, particularly people, critical facilities/infrastructure, and state-owned facilities, due to the following:

- **Goal 5.** Floods.
- **Goal 6.** Wildfires.
- **Goal 7.** Severe Weather.
- **Goal 8.** Infestations/Diseases.
- **Goal 9.** Geological Hazards.
- **Goal 10.** Extremely Hazardous Materials Releases.
- **Goal 11.** Other Human-Caused Hazards.
- **Goal 12.** Droughts.

The Board of Supervisors of the County of San Diego adopted the 2023 San Diego County MJHMP on February 7, 2023. Since the 2023 update to the MJHMP was adopted prior to approval of the Safety and Environmental Justice Element, the City incorporated the adopted plan by reference. However, much of the information included in this Element was informed by information gathered for preparation of the 2023 MJHMP update.

2.6 Grants and Future Funding Opportunities

The Safety and Environmental Justice Element is integrated with the County's 2023 MJHMP, ensuring a coordinated approach to public safety and qualifying the City for additional funding opportunities (consistent with Gov. Code, Section 65302.6).² Given that the City's Safety and Environmental Justice Element includes goals, objectives, and policies that parallel those included in the County's 2023 MJHMP, the Element's adoption provides the opportunity for the City to secure grants and funding for hazard mitigation.

In addition, the Inflation Reduction Act of 2022 directs new federal spending toward reducing carbon emissions by providing significant federal funding for climate efforts. The Inflation Reduction Act directs nearly \$400 billion in federal funding to clean energy with the goal of substantially lowering the nation's carbon emissions by the end of this decade.³ The funds are delivered through a combination of tax incentives, grants, and loan guarantees, which are available to jurisdictions that adopt programs and policies aimed at increasing resiliency to climate-related events. The City's incorporation of programs and policies aimed at climate resiliency into the Safety and Environmental Justice Element opens opportunities for grant funding to support these programs.

2.7 Community Engagement

The City recognizes the importance of community involvement in the planning and decision-making processes and is committed to creating transparent processes inclusive of all City residents. The City provided opportunities for the community to engage in the development of the Safety and Environmental Justice Element through stakeholder and City Council meetings, which are outlined in **Table 2.1, *Safety and Environmental Justice Stakeholder Meetings***, and a Community Survey, which is discussed in **Section 6** and in **Appendix E, Environmental Justice Community Survey Results**.

Table 2.1. Safety and Environmental Justice Stakeholder Meetings

Meeting	Date	Purpose
Safety Stakeholder Meetings		
Stakeholder Meeting 1	November 16, 2021	<ul style="list-style-type: none">• Confirm the hazard profiles (e.g., seismic/geologic hazards, flood hazards, fire hazards)• Gather information on adaptive capacity (i.e., the City's ability to respond to climate change impacts)
Stakeholder Meeting 2	April 4, 2022	<ul style="list-style-type: none">• Present the results of the Vulnerability Assessment

² The Disaster Mitigation Act of 2000 requires all local governments to create such a disaster plan to qualify for hazard mitigation funding.

³ REPEAT Project. 2022. Preliminary Report: The Climate and Energy Impacts of the Inflation Reduction Act of 2022. Prepared by J.D.Jenkins, E.N. Mayfield, J. Farbes, R. Jones, N. Patankar, Q. Xu, G. Schivley. Accessed November 2022. https://repeatproject.org/docs/REPEAT_IRA_Preliminary_Report_2022-08-04.pdf.

Meeting	Date	Purpose
		<ul style="list-style-type: none"> Solicit feedback on the safety-related goals, objectives, and policies of the Safety and Environmental Justice Element
Environmental Justice Stakeholder Meetings		
Stakeholder Meeting 1	June 16, 2021	<ul style="list-style-type: none"> Present the results of the Community Survey Solicit feedback on what should be included in the Environmental Justice Existing Conditions Assessment
Stakeholder Meeting 2	December 1, 2021	<ul style="list-style-type: none"> Solicit feedback on the environmental justice-related goals, objectives, and policies of the Safety and Environmental Justice Element

The City also held a City Council Workshop on October 12, 2022. The workshop provided a forum for City Council members and residents to provide their recommendations on the information that should be included in this Element, such as policies that would unlock funding for residents living in disadvantaged communities.

Section 3. Statutory Requirements

3.1 Safety Laws and Regulations

California planning and zoning laws require a Safety Element for the protection of the community from unreasonable risks as one of the mandatory Elements in a General Plan. The City's current Safety Element represents a consolidation of the previous Public Safety and Seismic Safety Elements.

The Safety Element must address public safety issues associated with the effects of seismic and geologic hazards, flooding, wildland and urban fires, and crime prevention. The Safety Element must identify evacuation routes, military installations, peak-load water supply requirements, and minimum road widths and clearances around structures because those items relate to identified fire and geologic hazards. This Element must also identify plans and programs for emergency response.

Disaster Mitigation Act of 2000 (42 USC Section 5121 et seq.)

The federal Disaster Mitigation Act of 2000 outlines how a Local Hazard Mitigation Plan (LHMP) can be developed individually or through an MJHMP. The successful completion of an LHMP makes the jurisdiction eligible to apply for federal Hazard Mitigation Grant Program post-disaster funding, pre-disaster mitigation funding, or flood management assistance funding (refer to **Section 2.6**).

Assembly Bill 2140 – Local Hazard Mitigation Plan

At the state level, Assembly Bill (AB) 2140 authorizes local governments to adopt their LHMPs with the Safety Elements of their General Plans (Gov. Code, Section 65302.6). Integration or incorporation by reference is encouraged through a post-disaster financial incentive that

authorizes the state to use available California Disaster Assistance Act funds to cover local shares of the 25 percent non-federal portion of grant-funded post-disaster projects when approved by the legislature (Gov. Code, Section 8685.9). AB 2140 is one of the most important links between General Plans and hazard mitigation in California.

The Safety Element must identify hazards and hazard abatement provisions to guide local decisions related to zoning, subdivisions, and entitlement permits. Therefore, the Safety Element contains general hazard and risk reduction strategies complementary with those of the City's chapter in the County's 2023 MJHMP. The 2023 MJHMP is incorporated into the Safety Element by reference in accordance with AB 2140. Adopting the 2023 MJHMP with the Safety Element provides a vehicle for implementation of the 2023 MJHMP. This also provides for consistency across multiple documents such as the City's Sustainable Santee Plan (i.e., Climate Action Plan), General Plan, and County 2018 MJHMP.

Gov. Code, Section 65302(g)(2) – Flood and Drought Hazards

Gov. Code, Section 65302(g)(2), requires the description of flood and drought hazards in the Safety Element. The impacts of climate change on the frequency, timing, and magnitude of flooding vary by geography throughout the state. The Safety Element must identify information regarding flood hazards; establish a set of comprehensive goals, policies, and objectives for the protection of the community from the unreasonable risks of flooding; and establish a set of feasible implementation measures designed to carry out the goals, policies, and objectives for flood protection. The Safety Element must also assess the availability of water resources for fighting fires.

Senate Bill 1241 and Gov. Code, Section 65302(g)(3) – Wildland and Urban Fire Hazards

Senate Bill (SB) 1241 and Gov. Code, Section 65302(g)(2), apply to communities with Very High FHSZs or unincorporated communities in State Responsibility Areas (SRAs). SB 1241 requires cities and counties to address fire risk in SRAs and identify areas in Very High FHSZs, as defined in Section 51177 of the California Public Resources Code, in the Safety Element of their General Plans upon the next revision of the Housing Element. Communities subject to SB 1241 need to ensure consistency between the Housing and Safety Elements to address fire risk. The Safety Element must also establish a set of goals, policies, and objectives based on the information identified for the protection of the community from the unreasonable risk of wildfire. SB 1241 also requires cities and counties to make certain findings regarding available fire protection and suppression services before approving a Tentative Map or Parcel Map.

Senate Bill 1035, Gov. Code, Section 65302, Senate Bill 379, and Gov. Code, Section 65302(g)(4) – Climate Change Adaptation and Resiliency

SB 1035 (Gov. Code, Section 65302) and SB 379 (Gov. Code, Section 65302[g][4]) require all cities to address climate change adaptation and resilience in their General Plan Safety Element. On October 8, 2015, Gov. Code, Section 65302, was amended by SB 379 to require the Safety Element to be reviewed and updated as necessary to include a climate change Vulnerability Assessment, measures to address vulnerabilities, and a comprehensive hazard mitigation and emergency response

strategy. Policies in a Safety Element identify hazards and emergency response priorities and mitigation through avoidance of hazards by new projects and reduction of risk in developed areas.

The introduction of climate risk to the discussion of the Safety Element adds focus on a community's longer-term preparation. Climate change will affect and potentially exacerbate the impacts of other hazards rather than being solely a distinct hazard with unique impacts. For example, extreme heat and heat waves are existing hazards that will be exacerbated by climate change.

SB 379 is triggered by the next update of a jurisdiction's LHMP (updated every 5 years) or before January 1, 2022, whichever is first. SB 1035 built off SB 379, requiring that the Safety Element be updated every 8 years upon the next Housing Element update.

Gov. Code, Section 65302 (g)(6) – Flood Plain

Cities and counties that have Floodplain Management Ordinances approved by FEMA, or have substantially equivalent provisions to the subdivision in their General Plans may use that information in the Safety Element to comply with this subdivision and shall summarize and incorporate by reference into the Safety Element the other General Plan provisions or the Floodplain Ordinance, specifically showing how each requirement of the subdivision has been met.

Assembly Bill 747, Senate Bill 99, Assembly Bill 1409, and Gov. Code, Section 65302(g)(1) – Evacuation Routes

AB 747, adopted in 2019, requires cities and counties to update the Safety Element of their General Plans to identify evacuation routes and assess the capacity, safety, and viability of those routes under a range of emergency scenarios. Gov. Code, Section 65302(g)(1), also specifies that Safety Elements must address evacuation routes.

SB 99, adopted in 2019, requires cities and counties to identify residential developments in hazard areas that do not have at least two emergency evacuation routes (i.e., neighborhoods or households in a hazard area that have limited accessibility).

AB 1409, adopted in 2021, requires cities and counties to identify evacuation locations.

Gov. Code, Section 65302(g)(8) – Consultation Requirements

Gov. Code, Section 65302(g)(8), requires the City to consult the California Geological Survey (CGS) of the California Department of Conservation and the California Office of Emergency Services (Cal OES) before preparing or revising the Safety and Environmental Justice Element to include information known by and available to the departments. Cal OES assists local governments with developing their Safety Elements and aligning General Plan strategies with those of the LHMPs and Emergency Operation Plans to ensure consistency. As required by Gov. Code, Section 65302.5(a), the City provided a draft of its Element to the CGS (at least 45 days) prior to adoption to determine if all known seismic and other geologic hazards are addressed and to Cal OES to ensure consistency between all Local and Regional Hazard Mitigation and Emergency Operation Plans.

Additionally, Gov. Code, Section 65302.5(b)(1), requires a draft Element or draft amendment to the Safety Element of a county or a city's General Plan to be submitted to the State Board of

Forestry and Fire Protection if that county or city contains SRAs or Very High FHSZs. Because there are Very High FHSZs in Santee, the City provided a draft of the Safety Element to the State Board of Forestry and Fire Protection for review (at least 90 days) before adoption in accordance with Gov. Code, Section 65302.5(b). The State Board was provided the opportunity to recommend changes regarding land uses, policies, or strategies for reducing fire risk.

3.2 Environmental Justice Laws and Regulations

Senate Bill 1000 – Disadvantaged Communities

In an effort to address the inequitable distribution of pollution and associated health effects in low-income communities and communities of color, the California Legislature passed and Governor Brown signed SB 1000 in 2016. This law requires local governments to identify environmental justice communities (referred to as “disadvantaged communities”) in their jurisdictions and incorporate environmental justice policies into their General Plans upon adoption of two or more Elements concurrently on or after January 1, 2018.

SB 1000 defines “disadvantaged communities” as those disproportionately burdened by multiple sources of pollution and with population characteristics that make them more sensitive to pollution. Per this definition, disadvantaged communities are more likely to experience a lower quality of life and experience poor health outcomes compared to more affluent areas. Disadvantaged communities are often subject to disproportionate environmental burdens; therefore, SB 1000 requires that cities and counties develop objectives and policies in their General Plans to address the following:

- Improve air and water quality and promote access to public facilities, healthy food, safe and sanitary homes, and physical/recreational activity to reduce the unique or compounded health risks in disadvantaged communities
- Promote civic engagement in the public decision-making process
- Prioritize improvements and programs that address the needs of disadvantaged communities

See **Section 6** for a discussion of disadvantaged communities in Santee.

Gov. Code, Section 65302(h)

Gov. Code, Section 65302(h)(2), requires the addition of an Environmental Justice Element that identifies disadvantaged communities in the General Plan (or related goals, policies, and objectives integrated in other Elements) upon the adoption or next revision of two or more Elements concurrently on or after January 1, 2018.

Disadvantaged communities are defined by Gov. Code, Section 65302(h)(4)(A), as “an area identified by the California Environmental Protection Agency (CalEPA) pursuant to Section 39711 of the Health and Safety Code OR an area that is low-income that is disproportionately affected by environmental pollution and other hazards that can lead to negative health effects, exposure, or environmental degradation.”

Gov. Code, Section 65302(h), requires the following:

- Identification of objectives and policies to reduce the unique or compounded health risks in disadvantaged communities by means that include the reduction of pollution exposure, and the promotion of public facilities, food access, safe and sanitary homes, and physical activity
- Identification of objectives and policies to promote civil engagement in the public decision-making process
- Identification of objectives and policies that prioritize improvements and programs that address the needs of disadvantaged communities

Assembly Bill 1553 – Office of Planning and Research Guidelines

Adopted in 2001, AB 1553 amends Gov. Code, Section 65040.2 and 65040.12, to require the OPR to provide guidance for local jurisdictions to incorporate environmental justice considerations.

Health and Safety Code, Section 39711 – Disadvantaged Communities

Health and Safety Code, Section 39711, requires that the CalEPA identify disadvantaged communities for investment opportunities, such as fostering job creation by promoting in-state greenhouse gas (GHG) emissions reduction projects carried out by California workers and businesses.

Governor’s Office of Planning and Research Environmental Justice Element Guidelines

The OPR adopts and periodically revises the California General Plan Guidelines as required by Gov. Code, Section 65040.2, for the preparation of General Plans for all cities and counties in California (OPR Guidelines). Chapter 4.8, Environmental Justice Element, of the OPR Guidelines serves as the “how to” resource for drafting the Element.

OPR Environmental Justice Element Guidelines recommend using the CalEnviroScreen, a computer mapping tool, to identify disadvantaged communities in a city or county. CalEnviroScreen uses several indicators to determine if a community is disadvantaged and disproportionately affected by pollution. In addition to using CalEnviroScreen, the OPR Guidelines recommend mapping low-income areas to identify disadvantaged communities. The OPR Environmental Justice Element Guidelines also recommend screening for areas that are below the state income limits established by the California Department of Housing and Community Development (HCD). The 2021 state income limits are on the department’s website (<https://www.hcd.ca.gov/grants-funding/income-limits/state-and-federal-income-limits/docs/income-limits-2021.pdf>). See **Section 6** for a discussion of the disadvantaged communities and low-income areas mapped for the City’s environmental justice analysis.

Section 4. Safety – Existing Conditions

The Safety and Environmental Justice Element sets forth the City’s intention to develop goals, objectives, and policies to minimize pollution, flood, fire, and other hazards and their effects on all communities. The public safety considerations addressed in the Element include flooding, geotechnical and seismic hazards, fire hazards, crime prevention, traffic safety, light-rail transit safety, aircraft safety, disaster preparedness, and hazardous materials. Information on these

topics is used in the planning process to guide the location, type, and design of future developments in Santee to avoid risks to public safety.

4.1 Flood Hazards

Flooding in Santee could result primarily from four conditions or a combination of them: (1) heavy, prolonged rain; (2) the collapse or cresting of a dam; (3) a degraded watershed or drainage system; (4) a release of water from upstream dams. One of the most serious watershed management problems is caused by wildland fires, which remove thick underbrush and chaparral, stripping the moisture-retaining ground cover from the soil and allowing water to run rapidly downslope. Runoff from bare slopes increases, resulting in flooding, mudslides, and soil erosion.

Rivers and Creeks

The City's primary waterways include the San Diego River, Forester Creek, Sycamore Creek, and intermittent creeks paralleling Big Rock Road and Fanita Drive. FEMA mapped the San Diego River and Forester Creek and created updated maps as of May 16, 2012, as part of the National Flood Insurance Program.

Figure 4.1, *FEMA Flood Hazard Zone*, depicts the City's 100-year and 500-year Flood Hazard Zones. The magnitude of flooding that is used as the standard for floodplain management in the United States is a flood with a probability of occurrence of 1 percent in any given year. This flood is also known as the 100-year flood or base flood. The most readily available source of information regarding the 100-year flood, as well as the 500-year flood (i.e., 0.2 percent probability of occurrence in any given year), is the system of Flood Insurance Rate Maps prepared by FEMA.

In Santee, a total of 1,020 acres of land is within the floodplain of the San Diego River, including approximately 596 acres within the floodway and 424 acres within the floodplain fringe. The Forester Creek floodplain is estimated to cover an area of approximately 100 acres. The low-flow channel of Sycamore Creek is estimated to cover roughly 42 acres. The low-flow channel of the creek parallel to Big Rock Road covers roughly 5 acres. The portion of the low-flow channel of the creek parallel to Fanita Drive in Santee covers roughly 2.8 acres. Various existing and designated land uses (i.e., residential, commercial, and industrial) are within the floodplain areas of these waterways. Depending on their siting and design considerations, many of these uses would be susceptible to flood damage in the event of a 100-year flood.

The U.S. Geological Survey maintains the San Diego River Gauge at Fashion Valley in Mission Valley, downstream from Santee. It provides historical data on peak streamflow for each year. The National Weather Service defines flood stage at this location as 11.3 feet with an estimated discharge of 2,700 cubic feet per second.

In 2019, the City completed a comprehensive update of the City's Municipal Code that included updates to the Flood Damage Prevention Ordinance (Santee Municipal Code, Chapter 11.36) to minimize the public and private losses due to flooding. The intent of the ordinance is to reduce the risks to residents and public and private improvements from flooding. The ordinance precludes development in flood-prone floodway areas and requires all new development to be designed to be above the height of the 100-year flood. The ordinance establishes a basis for the areas deemed

special flood hazard, incorporating an engineering analysis entitled San Diego River Flood Study (1992) and the City’s Flood Insurance Study from 1983. The studies identify the amended 100-year peak discharge for six locations and are on file at the City Engineer’s office. The City’s Flood Damage Prevention Ordinance is incorporated into this Safety and Environmental Justice Element by reference.

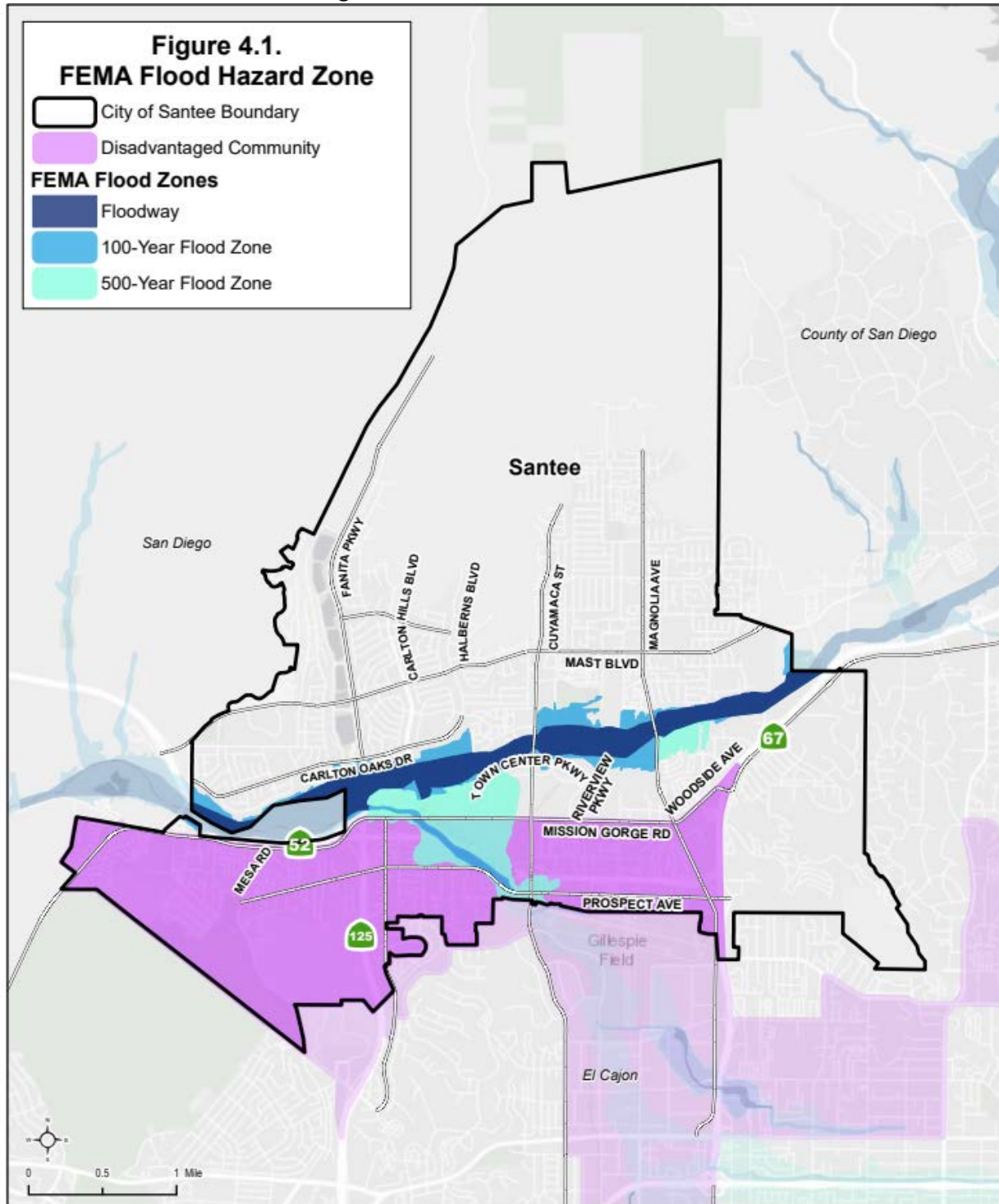
Historical flood records indicate extensive flood damage to surrounding areas in Santee associated with flood events along the San Diego River and, to a lesser extent, Forester Creek. Portions of both waterways have been improved to reduce flooding. The City completed the required environmental process, channel design, right-of-way acquisition, and future construction of improvements to Forester Creek between Mission Gorge Road and Prospect Avenue for approximately 1.2 miles. The improvements to the creek increased the flood-carrying capacity of the creek to sufficiently contain the 100-year flood flow. This project reduced the floodplain of Forester Creek from 100 acres under existing conditions to approximately 25 to 30 acres in size.

Santee and the greater San Diego County have experienced two declared disasters for severe weather, including fires, floods, and mudflows, in the last 5 years (**Table 4.1, *Federal Weather-Related Disaster Declarations for San Diego County (2017–2021)***). Federal disaster declarations provide individual and public assistance to impacted counties. Historical flooding in the County notably occurred in 1862, 1916, 1927, and 1937. In 1945, the federal government authorized a report on flood control downstream of the San Diego River, and associated work on the flood control channel began in the 1950s (San Diego History Center, *The Journal of San Diego History*, Spring 1971, Volume 17, Number 2).

Table 4.1. Federal Weather-Related Disaster Declarations for San Diego County (2017–2021)

Disaster Declaration No.	Federal Declaration Date	Disaster Name	Incident Period
DR-4353 (Individual Assistance)	Jan. 2, 2018	California Wildfires, Flooding, Mudflows, and Debris Flows	Dec. 4, 2017–Jan. 31, 2018
DR-4305	Mar. 16, 2017	California Severe Winter Storms, Flooding, and Mudslides	Jan. 18, 2017–Jan. 23, 2017

Figure 4.1. FEMA Flood Hazard Zone



Water Reservoirs

The Padre Dam Municipal Water District (Padre Dam) provides potable water, recycled water, wastewater management services, and recreational facilities to an 80-square-mile service area, including the entire City. Padre Dam's service area population is estimated at 95,000, with an average daily water demand of 8.1 million gallons. Padre Dam currently has over 330 miles of potable water mains, 140 miles of wastewater mains, and 25 miles of recycled water mains.

Padre Dam maintains seven water reservoirs in Santee. The Charles C. Price Reservoir, just east of SR-67 and Via Madonna, is the largest with a capacity of 15.5 million gallons. The Northcote Reservoir, at the end of Northcote Road, is the smallest reservoir with a capacity of 0.71 million gallons. The Fanita Terrace Reservoir, an aboveground tank just south of the southern terminus of Organdy Lane, is the only water tank in the City that holds recycled water. Padre Dam is planning two potable water reservoirs near the southern end of Mesa Road for future development in these areas. It is anticipated that a 3-million-gallon facility would be required for the Mesa Reservoir and a 4-million-gallon facility would be required for the Fanita Ranch Reservoir. Each of the reservoirs is on the top of a hill to minimize the need for pumps. In the event of the failure and release of water from any of the reservoirs, the land adjacent to and below the ruptured reservoir could be flooded. The reservoirs range from 150 to more than 1,500 feet from the nearest homes.

In addition, the City could be subject to flood damage from failure of other water storage tanks nearby. One water storage tank is near Grossmont College, just south of the City limits. This reservoir holds 3.6 million gallons of water for Padre Dam and the Helix Water District. Additionally, the nearby Fletcher Hills Reservoir on Weld Avenue, in El Cajon, has a capacity of 1.5 million gallons and could affect Santee with flooding caused by failure.

Dam Failure

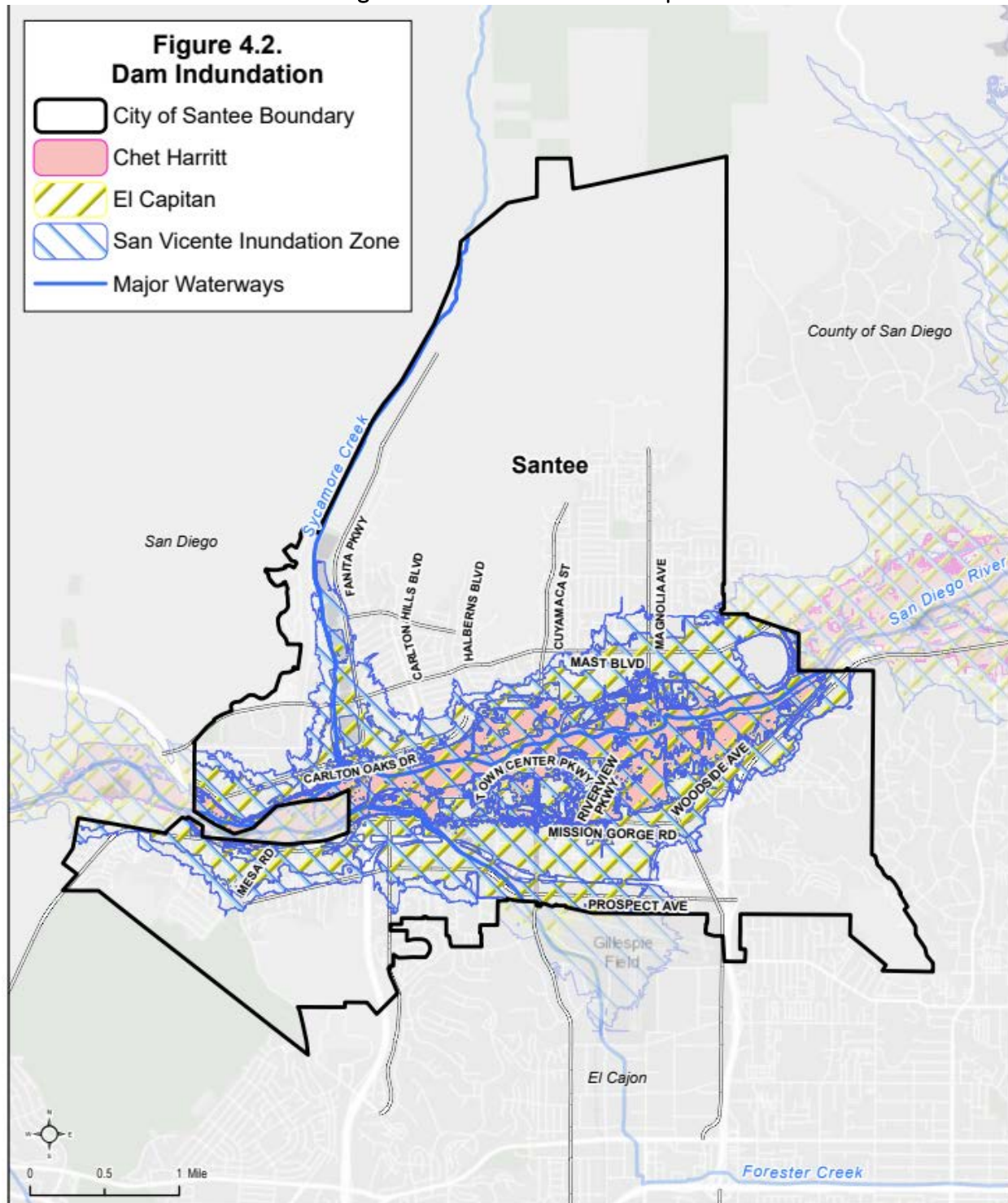
The central portion of the City is in the San Diego River Valley downstream of three major dams in San Diego County: San Vicente Dam, El Capitan Dam, and Chet Harritt Dam (Lake Jennings Reservoir) (**Table 4.2, *Major Dams Located Upstream of the City of Santee***). The Earthquake Engineering Research Institute San Diego Chapter's publication San Diego Earthquake Planning Scenario, Magnitude 6.9 on the Rose Canyon Fault Zone, expects these dams to remain in service due to recent seismic retrofit and their distance from any major active faults. These dams are inspected annually by the California Department of Water Resources Division of Safety of Dams (DSOD) to ensure they are safe, performing as intended, and are not developing issues. Given their location upstream of communities and residential areas, the DSOD and the County classify these dams as possessing an "extremely high" downstream hazard and "high" hazard rating, respectively.

Table 4.2. Major Dams Located Upstream of the City of Santee

Dam Name	Distance from City	Year Constructed	Capacity (acre-feet)	Notes
San Vicente Dam	3.5 miles	1943	245,000	Concrete gravity structure originally constructed with a capacity of 90,200 acre-feet and then raised an additional 117 vertical feet in 2016 using roller-compacted concrete to expand its capacity.
El Capitan Dam	9 miles	1934	112,800	Hydraulically filled earth structure.
Chet Harritt Dam (Lake Jennings Reservoir)	3 miles	1962	9,790	Earth-filled dam constructed by procedures to resist seismic damage.

Information regarding dam failure risk can be found in the County’s 2023 MJHMP. Maps prepared by the DSOD showing areas of inundation in the event of dam failure can be found online here: <https://fmds.water.ca.gov/maps/damim/>. Inundation zones for each of the three dams located upstream of Santee are shown on **Figure 4.2, Dam Inundation Map**. This figure was generated using a DSOD GIS layer showing the extent of dam inundation areas for extremely high, high, and significant hazard dams in Santee. Information concerning the safety of these dams is reviewed annually by the DSOD. To plan for long-term fire risks to certain demographics, physical assets, structures, and critical infrastructure in the community, the 2023 Community Risk Assessment Long-Range Master Plan prepared by the Santee Fire Department also shows dam inundation risk from potential failure of the San Vicente Dam. The 2023 Community Risk Assessment Long-Range Master Plan is incorporated into this Safety and Environmental Justice Element by reference. In addition, Annex Q of the County’s Office of Emergency Services’ 2022 Emergency Operations Plan outlines the evacuation procedures in the event of a dam failure.

Figure 4.2. Dam Inundation Map



Summary of Needs to Address Flooding

The major waterways in Santee will continue to cause flooding and associated erosion and other effects, especially with worsening extreme precipitation events exacerbated by climate change (see **Section 5.3, *Climate Adaptation Planning***, for further discussion of the impacts of climate change on extreme precipitation and floods). Some homes could be damaged by water runoff from a rupture of any of the seven water reservoirs in Santee and or three upstream dams. It is important that future planning takes into consideration the general direction of flow in the event of a rupture in any of the reservoirs and avoids the placement of buildings in those areas. The City should encourage Padre Dam to complete inundation studies for existing and planned reservoirs in Santee.

Since the impervious surfaces associated with urban development create more runoff than vegetated lands, it is important that future planning take into consideration the impacts of potential increased runoff. Any project proposed within a floodplain area is subject to site plan review. In addition, planning for flood control improvements for the San Diego River and other City waterways must be comprehensive and balanced with other goals, such as providing recreation and protecting valuable habitat and species. The City coordinates regularly with FEMA through the Flood Insurance Rate Map Program, which delineates special flood hazard areas and the risk premium zones in a community. These are used to determine flood insurance rates and premiums, serving as tools to understand and protect against flood risk.

The City's Engineering Department maintains flood zone and FEMA map information. The County's Fire Department, Flood Control District, and Department of Public Works are also responsible for flood protection in the County.

4.2 Geologic/Seismic Hazards

Santee lies near the junction of the coastal plain and the Peninsular Ranges geologic provinces of southwestern California. The eastern portion of the coastal plain is in the west, south, and north portions of Santee and consist of a series of Tertiary-age formational sedimentary rocks that are deeply incised by canyons and tributaries, including the San Diego River and Sycamore Creek. The San Diego River generally bisects Santee from east to west. The drainage area of the San Diego River upstream of West Hills Parkway on the western edge of Santee is approximately 368 square miles. Downstream, the San Diego River flows through Mission Trails and Mission Valley in the City of San Diego and drains into the Pacific Ocean. Much of Santee is within the gentle gradient of the San Diego River Valley. Sycamore Creek is along the western boundary of the City and flows southward into Santee Lakes and the San Diego River. In the southeastern and eastern portions of Santee, the sedimentary rocks and alluvial valley province end abruptly in the foothills of the Peninsular Ranges exposing granitic rock. The formational units are covered by surficial soils.

Geologic Stratigraphy

According to the Geotechnical/Seismic Hazard Study (**Appendix C**), the geologic stratigraphy of Santee consists of several surficial soil types and formational units. The surficial soil deposits consist of human-made soil (undocumented fill and previously placed fill) and naturally occurring soil (topsoil, colluvium, young alluvium/debris flows, landslide deposits, and old alluvial floodplain

deposits). In general, naturally occurring surficial soils are found in drainage areas such as the San Diego River Valley and Sycamore Creek and generally overlying undisturbed formational materials.

Formational materials in Santee include sedimentary rock units of the Eocene-age Pomerado Conglomerate, Stadium Conglomerate and Friars Formation, and the hard rock units of the Mesozoic-age (Cretaceous and Jurassic) granitic and volcanic rocks associated with the Peninsular Ranges. The claystone portions of the Friars Formation are typically weak, fractured, and prone to landsliding.

Each of the surficial soil types and formational units in Santee is described herein in order of increasing age.

Undocumented Fill

In many areas of Santee, fill soils presumed to be undocumented exist and have been mapped in certain site-specific geotechnical reports. An example of an undocumented fill deposit is in an undeveloped area north of the northern terminus of Strathmore Drive in the northwestern corner of Santee. These types of deposits typically contain a wide range of soil types, including silt, sand, clay, and rock derived from the local geologic formations.

Undocumented fills typically are poorly compacted and often are underlain by potentially compressible topsoil or alluvium. Consequently, where these deposits are in areas of proposed development, they require special evaluation and recommendations. Normally, the undocumented fill materials are removed, moisturized as necessary, and placed as compacted fill.

Previously Placed Fill

Most of the central and southern portions of Santee have been developed. Some of the largest master developments include Black Horse Estates, Cajon Park, Carlton Country Club, Carlton Hills, Carlton Oaks, Castlerock, Dakota Ranch, Deer Park, Fanita Corona, Fanita Rancho, Fanita Terrace, Los Ranchos, Mission Creek, Mission Trials Vista, Mountain Meadow, Rancho Fanita, Riderwood – The Heights, Santana North, Shadow Hill Terrace, Silver Country Estates, Sycamore Hills, Santee Trolley Square Town Center, Vista Monte, Sky Ranch, Woodglen, and Woodside Industrial Park. Developments will typically include infrastructure improvements associated with roadways, parks, underground utilities, and pump stations that are provided for Santee. Other previously placed fill within City limits is associated with California Department of Transportation controlled roadways not under the purview of the City.

Previously placed fill generally consists of materials that were properly placed and compacted using the testing and observation services of a geotechnical engineering consultant. The fill materials placed during development of these projects generally consist of silty and clayey sand and sandy clay with gravel and cobble mixtures. Prior to grading or constructing additional improvements in previously graded areas, specific geotechnical evaluations and update reports should be performed to address the potential impacts to existing or proposed improvements underlain by these deposits. The existing fill materials should be tested to evaluate their suitability to support proposed structures and improvements.

Topsoil

In undeveloped areas, naturally developed topsoil blankets most of the formational units and range in thickness from approximately 1 to 3 feet. The topsoil is generally characterized as brown to dark brown, silty/clayey, fine to medium sands and sandy clays. Topsoil that overlies the Stadium Conglomerate at higher elevations are generally thinner than overlying the Friars Formation and have a greater percentage of gravel and cobble clasts. Topsoil is typically considered compressible in its natural state and ordinarily requires remedial grading in areas planned to receive structural fill and/or settlement-sensitive structures. The clayey topsoil characteristically overlying sedimentary units has a “medium” to “high” expansion potential (expansion index of 51 to 130) and, when present, commonly require remedial grading to help mitigate their impacts prior to construction operations.

Colluvium

Colluvial soils are relatively deep natural deposits of soil that have accumulated on the face and base of natural slopes through the weathering and erosion of exposed materials at higher elevations that accumulate from soil-creep processes. Colluvial deposits are typically thicker in the gentle, low-lying, bottom of slope areas near alluvial drainages. Figure 1 of the Geotechnical/Seismic Hazard Study (**Appendix C**) indicates areas of undifferentiated Quaternary-age young alluvium and colluvium designated as map symbol Qu in the southern portion of Santee. Other areas of unmapped colluvium are present near the base of natural sloping ground across Santee. Typically, these materials are deepest in areas underlain by the Friars Formation; however, they are also present, but typically thinner, in areas underlain by Stadium Conglomerate and granitic rock. Colluvial materials can also be present on landslide deposits, particularly in graben zones near the head or upper portions of the slides. The thickness of the colluvium is typically about 5 to 10 feet and locally can be thicker. These deposits generally possess “medium” to “high” expansion potential (expansion index of 51 to 130), are poorly consolidated, and often require remedial grading in areas of planned development.

Alluvium and Debris Flows

Holocene- to late Pleistocene-age young alluvium is typically present in drainage areas, such as the San Diego River channel, Sycamore Creek, and smaller natural tributary drainages. The San Diego River alluvium is relatively deep (locally up to 80 feet), and near the surface, it typically consists of clean, medium-grained sands that have historically been mined as a source of concrete sand. Alluvial soils cover a relatively large portion of Santee, while debris flows have limited exposure. Alluvial soils generally consist of relatively loose/soft, silty/clayey sands and sandy clays with little gravel and cobble and will be saturated below groundwater. However, larger size and higher cobbles and boulder contents are typical within the San Diego River drainage due to higher flows.

Debris flows are present on upper portions of steeper gradient drainages within Stadium Conglomerate and Friars Formation created by weathering, slope creep, and saturation of surface materials. Most of the historical debris flows occurred at higher elevations and are generally north of the San Diego River. Most of these debris flow deposits consist of silty/clayey, sandy gravel and cobble deposits.

The alluvial and debris flow deposits are often poorly consolidated, compressible, and typically require remedial grading or special design considerations. Where development is planned in main drainage channels, such as the San Diego River floodplain, soil improvement techniques and structural reinforcement to remediate the effects of potential liquefaction may be necessary. Within secondary drainage areas, the compressible young alluvium is usually removed and replaced as properly compacted fill. Where groundwater exists within the upper approximately 50 feet, the young alluvium is typically considered to possess a potential for liquefaction and related geologic hazards.

Landslide Deposits

Several confirmed landslides and suspected ancient landslides have been identified during the Geotechnical/Seismic Hazard Study (**Appendix C**) and previous geotechnical investigations. The presence of inferred landslide deposits is based on topographic evaluation during field reconnaissance, interpretation of aerial photographs and topographic maps, and maps published by the CGS.

The landslides encountered in Santee occur on gentle to moderate sloping ground in the Friars Formation and generally below an elevation of approximately 600 feet above mean sea level (AMSL). On the southern portion of the City, landslides generally occur between elevations of 400 and 600 feet AMSL. Characteristic landslide morphology consists of a steep back-scarp; bulging, hummocky, distorted topography; and deflected drainages. Some landslide areas express a more subdued topography suggestive of incipient or older eroded landslide deposits.

The landslide deposits observed are characterized as deep-seated, relatively intact, block type movements or as shallow to deep-seated bedrock slides with a varying degree of slip plane development and slide mass disturbance. The thickness of landslide material is estimated to be approximately 45 to 50 feet; however, it can thicken toward the head scarp as much as 100 feet. The landslide debris varies from dense sandstone/claystone blocks to a variable mixture of intensely sheared and pulverized claystone breccia suspended in a stiff clay matrix. Highly disturbed cobble clay mixtures resembling debris flow materials have also been encountered and are known to exist within graben zones.

Most of the landslides appear to have occurred along inherently weak, previously sheared, low-angle, pre-existing bedding plane shears as part of a weak, thinly laminated claystone in the Friars Formation. This is suggested by the relatively uniform, near-horizontal slip surfaces typically observed along the base of the landslides, and because of the general correlation in exploratory borings at which bedding plane shears are present in the Friars Formation outside the limits of the landslides at the same elevation as the landslide basal shear zone. Further discussion of this correlation and an apparent regional zone of bedding plane shears in the Friars Formation are included in the *Geologic Structure* discussion below.

In general, new developments should be planned to avoid or mitigate ancient landslide deposits, where possible. Where landslide materials are present below proposed fill embankments or exposed in cut slopes or building pad areas, remedial grading is often required to properly buttress the existing landslides or proposed slopes. Some landslides will require complete removal, while other landslides will only require partial removal of the loose and compressible portions to be

replaced with new compacted fills. Localized areas of deeper removals may be required in looser graben zones and/or more pulverized portions of the landslides. Still, other landslides will require only minor processing of the surficial materials prior to placing fill embankments. Slope stability analyses of landslide materials are typically included in geotechnical reports.

Cut slopes exposing landslide materials or basal slip planes or areas where basal slip surfaces occur near finish grade typically require stabilization by construction of stability fills, drained earthen buttresses, shear keys, shear pins, or other means. Slope stability is addressed in the *Ancient Landslides/Slope Stability* discussion below.

Terrace Deposits/Older Alluvium

Older alluvial floodplain deposits of Pleistocene-age exist within former floodplain areas and are exposed at the surface between the younger alluvial deposits and formational sedimentary or rock units. The older alluvium was deposited during previous geologic stream flow events with the soils typically consolidated by burial, cemented, and subsequently eroded to current valley floor elevations. These deposits are generally in the flatter portions of valleys and consist of slightly cemented, clayey sands with little gravel and cobble. These materials are generally dense to very dense and do not possess a potential for liquefaction or significant settlement.

Stadium Conglomerate and Pomerado Conglomerate

The Stadium Conglomerate (middle to late Eocene age) occurs throughout the southwestern, central, and northern parts of Santee. The Pomerado Conglomerate has a limited extent and is in the northern portion of Santee. These geologic units have similar characteristics and are difficult to distinguish between each other unless separated by the Mission Valley Formation. However, the Mission Valley Formation is not present within the City limits, and therefore, the Pomerado Conglomerate conformably overlies the Stadium Conglomerate above an elevation of roughly 1,000 feet AMSL. The Stadium Conglomerate conformably overlies the Friars Formation at elevations ranging from approximately 610 to 1,000 feet AMSL. The inferred thickness of this deposit in Santee varies from approximately 40 feet when eroded to an estimated 375 feet on less eroded ridgelines. Geomorphically, the Stadium Conglomerate forms characteristic resistant, dissected ridges in the upper elevations of Santee. Localized, steeply eroded scars occur in this formation where debris flows originated at the head of tributary canyons.

The Stadium Conglomerate generally consists of dense to very dense, slightly cemented, sandy to clayey, gravel and cobble conglomerate with interbedded silty sandstone. The cobble content of the Stadium Conglomerate can sometimes be up to about 60 percent with diameters up to 24 inches. The Stadium Conglomerate is regionally part of the upper Eocene Poway Geologic Group that also includes the Mission Valley Formation and Pomerado Conglomerate.

Moderate to very heavy excavation effort should be anticipated during grading and trenching within the Stadium Conglomerate due to its cementation and high cobble size and percentage and randomly occurring highly cemented zones. Cut or fill slopes composed of the Stadium Conglomerate generally possess adequate slope stability characteristics.

Friars Formation

The Friars Formation was deposited on an irregular erosion surface formed on the crystalline basement rock of the Southern California Batholith. The Friars Formation may be observed overlying granitic rocks in the southern and north-central parts of Santee. This unit generally occupies the gentler, lower portions of valley slopes below elevations ranging from 600 to 700 feet AMSL depending on the locality. The age of the Friars Formation is middle to late Eocene-age based on vertebrate fossil evidence. In the southwestern portion of Santee, this unit is exposed between Cuyamaca Street and the eastern base of Cowles Mountain and throughout the northern part of Santee except the most northeasterly section.

Numerous large, ancient landslides occur in the Friars Formation, discussed in detail in the *Ancient Landslides/Slope Stability* discussion below. The Friars Formation consists of relatively flat-lying lagoonal and alluvial claystone, sandstone, and conglomerate units. Specifically, weak, waxy claystone, and thinly laminated siltstone/claystone, sandstone, and conglomerate occur in the northern undeveloped portion of the City below an approximate elevation of 610 to 630 feet AMSL. Translational landslides are common throughout areas underlain by this geologic formation. Most of these landslides are remnants of wetter climatic conditions that occurred in late Pleistocene to early Holocene time (last 30,000 years).

As seen in the undeveloped area of Santee, the Friars Formation comprises a relatively continuous sequence of characteristic subunits consisting of thinly bedded sandstone/siltstone, underlain by relatively thin lenses of gravel/cobble conglomerate, which are in turn underlain by massive sandstone. A generally weak, fractured, waxy claystone unit containing abundant bedding plane shear zones underlies this sequence. It is likely the inherently weak nature of this basal claystone unit in combination with the presence of pre-existing shear zones is the causation of landsliding and landslide-prone hillsides.

Except for the sandstone and portions of the conglomeratic facies, soils derived from the Friars Formation typically possesses a “medium” to “high” expansion potential (expansion index of 51 to 130) and relatively low shear strength. Portions of the Friars Formation possess a “very high” expansion potential (expansion index of greater than 130) and require specialized grading and foundation recommendations. Where exposed in cut slopes, the claystone facies of the Friars Formation can be prone to surficial instability and often requires stabilization measures. Bedrock creep zones and areas of deeply weathered material also exist in the Friars Formation. During development, where weak, waxy, or highly weathered portions of this unit are exposed in embankments and/or “toe key” areas of proposed fill slopes, deeper remedial grading is typically required to provide a competent surface to support embankments.

Bedding plane shears are relatively common in the Friars Formation and are significant in that they represent inherent planes of weakness within the formation. Bedding plane shears have recently also been called bedding parallel shears. As the term implies, these shear zones are typically parallel to the bedding and are characterized by thin seams of very soft, wet, remolded plastic clay. During development, where the shears are anticipated to “daylight” in cut slopes, stabilization measures such as drained stability fills, buttresses, and/or shear pins are necessary.

Granitic Rock and Santiago Peak Volcanics

Cretaceous-age granitic rocks have a variety of compositions based on the percentage of quartz, plagioclase, and mafic mineralogy. Granitic rock also has a range of weathering and can vary from highly weathered decomposed granitic soils to hard fresh rock. Granitic rock can be classified as quartz-diorite, tonalite, and granodiorite with their finer-grained equivalents occurring in some areas. The granitic rocks that are deeply weathered can form extensive deposits of residuum or decomposed granitic rock that are locally mined for decomposed granite soils. The less weathered, more resistant rock has been used in the past as quarry stone and can be observed as large, rounded boulders on the hills east of Gillespie Field, near Carlton Oaks Golf Course, on Cowles Mountain, and in the eastern part of Santee. These hard rock units would require blasting prior to excavation and would require specialized grading techniques.

Santiago Peak Volcanic rock, also called Mesozoic Metavolcanic rock, from the lower Cretaceous and upper Jurassic Geologic Period is exposed in limited areas on the southwestern corner and in the eastern portion of Santee.

Geologic Structure

Bedding in the Eocene-age sediments is nearly horizontal or gently dipping. In general, strata in the Friars Formation and Stadium Conglomerate units dip very gently at inclinations of less than 5 degrees to the west and southwest. In the northern, undeveloped portion of Santee, the Friars Formation/Stadium Conglomerate contact dips generally south–southwest and varies in elevation from approximately 610 to 630 feet AMSL. Locally, bedding dip directions may vary or even reverse, depending on configuration of ancient, buried topography or other geologic structures. High-angle depositional contacts are also common locally between the sedimentary formations and underlying granitic rocks.

A high percentage of bedding plane shears and weak claystone materials were found to occur within this relatively narrow elevation range. A similar, less prominent grouping of shear zones was observed at other elevations in the Friars Formation. The elevations at which bedding plane shears occur in bedrock material and the elevation of basal slip surfaces in landslide areas are generally similar. This correlation has been observed on other projects in the county where the Friars Formation is present.

Regionally, the marine terraces in the coastal plain west of the Peninsular Ranges are underlain by flat-lying sediments with a few notable exceptions occurring near the coast. In the City of San Diego west of Santee, the terraces are broken in many areas by Tertiary and Pleistocene-age active and potentially active faults. However, in Santee, no known active or potentially active faults (movement within the last 1.8 million years) that cut Pleistocene-aged materials or any known major faults that cut Eocene or Cretaceous-age rocks occur.

Bedding plane shears, or more recently called “bedding parallel shears” (a term applied to minor shears within parallel bedding surfaces), are common in the Friars Formation and are believed to be a significant factor in landsliding processes both in the geologic past and at present. These features do not represent a seismic hazard; however, they are a significant geotechnical

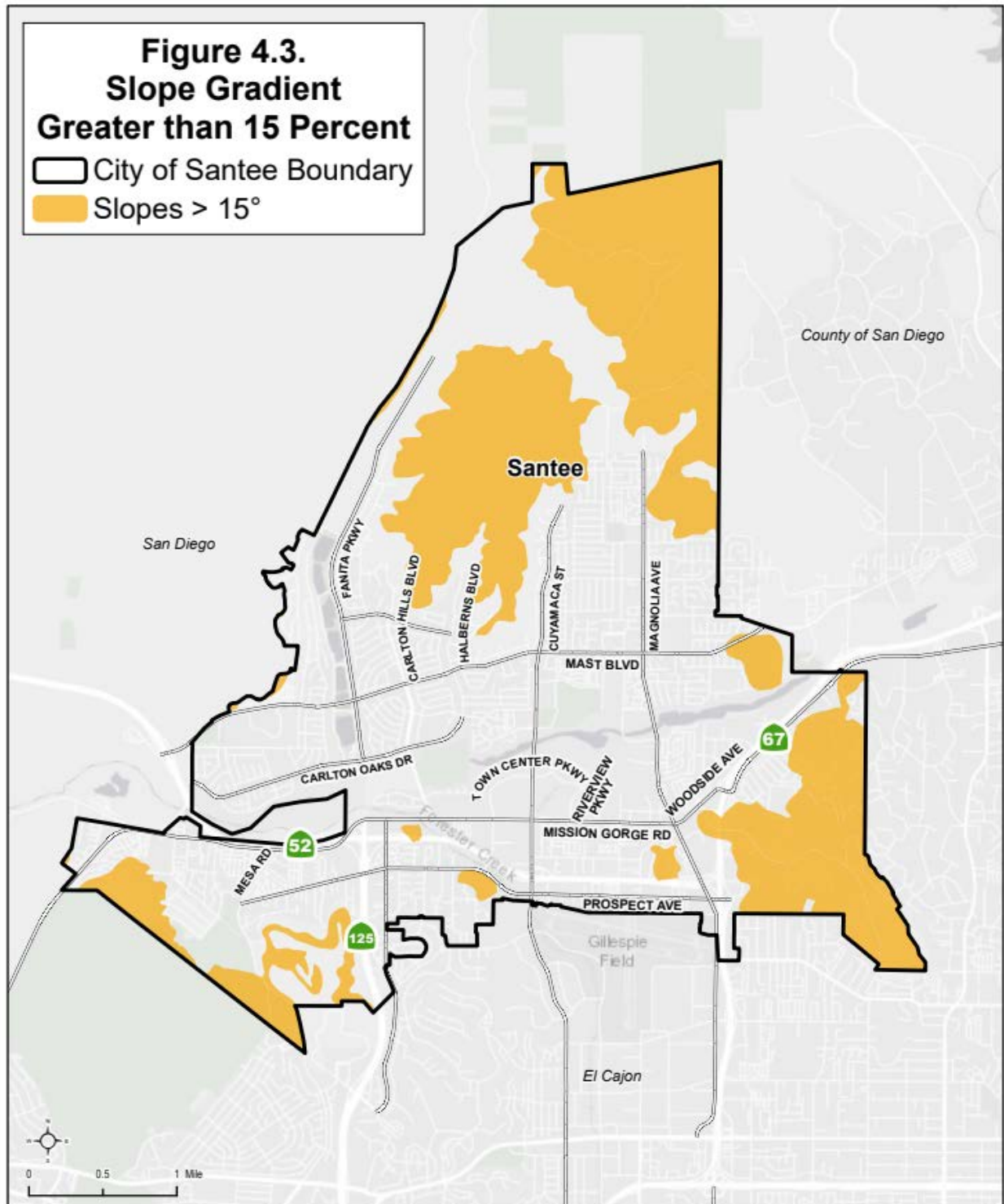
consideration in the analysis of slope and landslide stability (see *Ancient Landslides/Slope Stability* discussion below).

Ancient Landslides/Slope Stability

A landslide is defined as a mass movement of earth occurring below the limits of the soil mantle caused by shear failure along one or several surfaces. Ancient landslides have been dated by radiocarbon methods as being 8 to 30 thousand years old in the Southern California area by Stout (1969) and others. They are believed to have occurred primarily as a response of weak claystones exposed to intense rainfall causing high water table conditions in slopes during late Pleistocene and early Holocene times. Landslides occur throughout the area underlain by the Friars Formation.

Although the California Department of Conservation has not evaluated the Santee area for landslides, assessing slope gradient can help identify areas that may be susceptible to landslide risk. Areas with slopes that exceed 15 percent are highly susceptible to erosion and gully formation caused by running water. Without plant cover, these areas pose a risk for landslides. **Figure 4.3, *Slope Gradient Greater than 15 Percent***, locates areas in Santee that have slopes of greater than 15 percent.

Figure 4.3. Slope Gradient Greater than 15 Percent



The anticipation of ancient landslides and the creation of new landslides have been most commonly caused by grading activities, a rise in groundwater level in a landslide area, areas containing bedding plane shears, or seismic activity. Identification of landslide-prone areas through detailed geotechnical studies is of primary importance in predicting future slope failure and landslides. The most common method of stabilizing landslides and landslide-prone areas is through remedial grading or buttressing and installation of subdrains and drainage panels to reduce the potential for buildup of excessive hydrostatic pressures. Other development options may include structural setbacks or stabilizing shear pins.

Landslide areas in Santee can usually be mitigated using generally accepted remedial grading techniques and buttresses. These techniques may consist of partial or complete removal and compaction of the deposits or stabilization with earthen buttresses, shear keys, stability fills, or other means, such as shear pins or retaining structures. Similar remedial grading procedures could be required where landslides are not present but where weak claystone beds, bedding plane shears, or thick surficial soil deposits are encountered. Such areas should be generally limited to where the Friars Formation will be exposed in cut slopes.

Reactivation of ancient landslides have been responsible for either partial or complete loss of 20 to 30 homes in the Santee area. Geotechnical firms that possess experience in landslide evaluation and stabilization should evaluate the potential for additional loss in areas already developed when building additions are proposed.

Debris Flow Deposits

A debris flow is a rapid downslope movement of saturated soil and near-surface rock debris. Numerous debris flows or mudflows have occurred in the Stadium Conglomerate. The debris flows or mudflows are initiated near the crests of very steep ridges underlain by Stadium Conglomerate and likely occur as a result of high intensity rainfall. As the near-surface soils become saturated and pore water pressure increases, the soils lose strength and fail relatively rapidly to form a river of mud and rock with considerable destructive power. These deposits consist of the accumulation of topsoil, colluvium, and debris derived from formational “parent material” near the base of moderate to steep slopes caused by rapid flow of saturated near-surface soils.

The physical appearance of these features indicates that they are relatively young compared to the ancient landslides. Most appear to be only a few hundred years old or less and are easily eroded. While the causes of debris flows are generally well understood, specific details concerning these events make them difficult to predict. Several well-formed debris flows can be observed on the northern side of SR-52 west of Santee. High rainfall, loss of vegetation cover through fire or other causes, and the steepness of the slope are the main causative factors of debris flows.

The primary difference between ancient landslides and debris flows, in terms of the potential for activation, is that debris flows do not possess a basal slip surface. Thus, they are much less likely than ancient landslides to become reactivated by grading. In areas of proposed development, mitigation of debris flow deposits is typically similar to that for alluvium and colluvium, and the presence of these materials is not likely to significantly affect development unless directed toward the boundary of the site.

Groundwater and Seepage

Groundwater and seepage conditions are significant factors in assessing engineering and geologic hazards. Groundwater is typically found in the deep alluvial drainage areas (such as the San Diego River and Sycamore Creek) but may also be found in shallower drainages as a result of stormwater infiltration (such as the Santee Recreation Lakes area). Because of fluctuating water levels in a given area, as a result of seasonal variations in precipitation and surface water runoff, the prediction of groundwater occurrence is difficult.

Seepage is typically the result of a groundwater table or perched water, either seasonal or permanent, being exposed. However, some human-made seepage conditions can develop in rural areas downslope of septic systems. Seepage conditions in slopes, either graded or natural, are usually the result of water flowing at the contact between materials of widely different permeabilities with the water perched on an underlying, less permeable layer. When the water flow encounters a slope face, it is manifested as seepage.

In addition to the nuisance caused by minor seepage from new slopes in residential areas, groundwater and seepage caused by excess irrigation are a major contributing factor to landsliding in the county, especially in the reactivation of old landslides. As pore pressures rise along an old slip surface as a result of rainfall or heavy landscape irrigation, the factor of safety against sliding will decrease.

The potential for groundwater and seepage conditions should be addressed in geotechnical reports submitted to the City for new developments and improvements. Procedures for water-related mitigation, such as canyon subdrains and proper grading procedures, should also be addressed. Groundwater conditions typically increase as a result of development primarily due to increased irrigation and areas of impervious surfaces, which result in surface water runoff rather than groundwater infiltration.

Perched groundwater or seepage has been encountered in alluvial drainages, hillside areas, and landslide zones during previous investigations in Santee. The groundwater/seepage in drainage courses is presumed to be associated with surface runoff of rainwater along the natural watershed. Subdrain systems are often necessary in areas of proposed development to intercept and convey seepage migrating along impervious strata. In particular, the main drainages, stability/buttness fill areas, and possibly where impervious layers daylight near the ultimate graded surface typically require subdrains. Specific subdrain locations and design details should be provided with the detailed grading plans for the site. Seepage conditions also occur in bedrock materials and at the base of landslide areas perched on relatively impervious strata in the Friars Formation and ancient landslide deposits. Additionally, relatively minor natural surface seeps were observed in the northern portion of Santee at the Friars Formation/Stadium Conglomerate contact. The existing perched groundwater levels in alluvial areas can be expected to fluctuate seasonally and may affect remedial grading.

Seismic Hazards

This discussion presents seismic hazards anticipated to affect Santee. Seismic hazards are caused by earthquake-induced ground shaking—specifically, liquefaction potential and seismically

induced settlement and landsliding (refer to *Ancient Landslides/Slope Stability* discussion above for description of landslide-prone areas of Santee). A discussion of local and regional faulting and its impact on Santee is also presented.

Seismic hazards pertain to threats to life and property caused by earthquake-induced ground shaking. Based on current maps prepared by the California Department of Conservation and local geology maps, active or potentially active faults are not known to occur in or adjacent to Santee (**Figure 4.4, *Seismic and Geologic Hazards***). However, as with all of California, Santee is subject to periodic seismic shaking due to earthquakes along remote or regional active faults.

A review of geologic literature indicates that no known active or potentially active faults cross Santee. An active fault is defined by the CGS as a fault showing evidence for activity within the last 11,700 years. The Rose Canyon/Newport Inglewood Fault Zone, approximately 10 miles west of the City, is the closest known active fault. The CGS has included portions of this Fault Zone within the Alquist-Priolo Earthquake Fault Zone. Currently, restrictions on development due to faulting (i.e., fault setback zones) related to the State of California requirements are not present in the City.

Considerations important in seismic design include the frequency and duration of motion and the soil conditions underlying the site. Seismic design of structures should be evaluated in accordance with the most recent applicable California Building Code (CBC) guidelines currently adopted by the local agency.

Faults in Southern California

The County of San Diego and Southern California region are seismically active. **Figure 4.4** demonstrates that, although no Alquist-Priolo Fault Zones are within the City boundary, fault zones are in the greater San Diego County area. Notably, the Rose Canyon extension of the Newport Inglewood Fault Zone and the Mission Gorge Fault and La Nacion Fault Zone occur southwest of Santee.

Although no fault zones are within the City boundary, Santee could experience various levels of ground shaking as the result of an earthquake on a nearby fault system. Ground shaking is the motion felt on Earth's surface caused by seismic waves from an earthquake. It is the primary cause of earthquake damage. The strength of ground shaking depends on the magnitude of the earthquake, type of fault, and distance from the epicenter. Buildings on poorly consolidated and thick soils will typically see more damage than buildings on consolidated soils and bedrock. The level of potential ground shaking that could occur in Santee is depicted on **Figure 4.5, *Earthquake Shaking Potential based on the State Probabilistic Seismic Hazard Map***.

Overall, the earthquake shaking potential within the City boundary is low. The northern, southwestern, and southeastern portions of Santee may experience the lowest ground shaking potential, as indicated by the darker shades of green, while the middle-central portion of Santee and area along Fanita Parkway may experience low to low-moderate shaking potential as indicated by the yellow-green color. Ground shaking potential is analyzed using the State Probabilistic Earthquake Hazard Map. Earthquake probabilities are calculated by projecting earthquake rates based on earthquake history and fault slip rates. The result is expressed as the probability that an earthquake of a specified magnitude will occur on a fault or within an area.

Figure 4.4. Seismic and Geologic Hazards

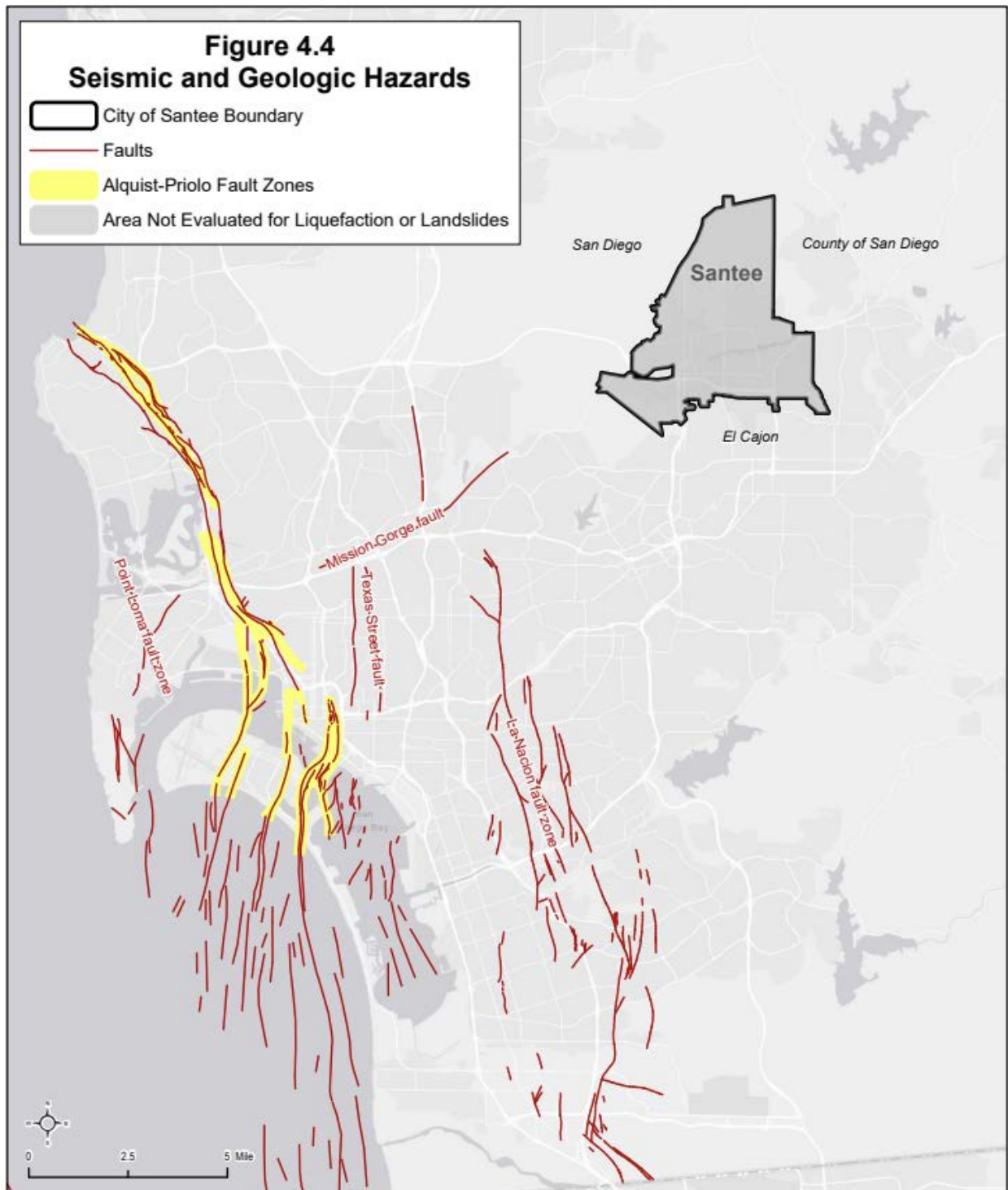
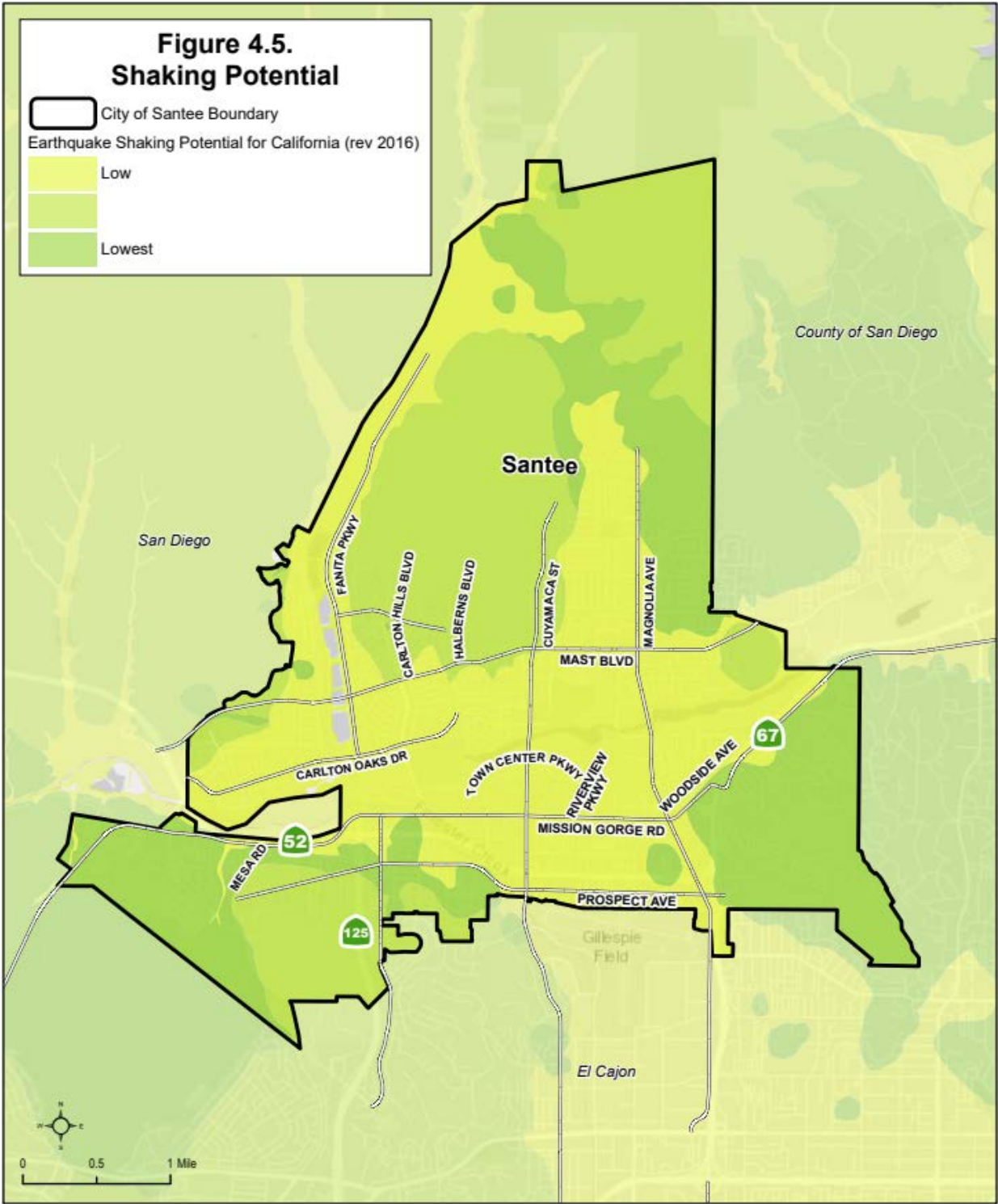


Figure 4.5. Earthquake Shaking Potential based on the State Probabilistic Seismic Hazard Map



Other Geologic and Seismic-Related Hazards

Soil Liquefaction

Liquefaction typically occurs when a site is in a zone with seismic activity, on-site soils are cohesionless or silt/clay with low plasticity, groundwater is encountered within 50 feet of the surface, and soil densities are less than about 70 percent of the maximum dry densities. If these four criteria are met, a seismic event could result in a rapid pore water pressure increase from the earthquake-generated ground accelerations.

Although the California Department of Conservation did not identify liquefaction potential in Santee, the soil deposits that may be susceptible to liquefaction are the young alluvial soils found in the San Diego River and its deeper tributary channels, such as Sycamore Creek, due to the level of groundwater and soil densities in these areas.

Although the major deposits of alluvial soils maybe susceptible to liquefaction, some areas may have a water table sufficiently deep or may have particular soil conditions that result in a very low potential for liquefaction based on the anticipated maximum intensity of shaking for the area. In general, for deposits with a water table below a depth of 50 feet, a seismic event would have to be especially strong for liquefaction to occur, and therefore, these deposits will have a low potential for liquefaction as a result of the maximum events anticipated. The evaluation of liquefaction should be performed on a project-specific basis by the geotechnical engineer of record.

Liquefaction-related distress could range from small, localized areas, wherein specially designed structures may experience damage, to liquefaction covering a large area, resulting in lateral movement of the near-surface deposits and subsequent heavy damage to any affected structures. The potential risk to a structure should be evaluated whenever development is proposed in a liquefaction susceptible area. Liquefaction studies should conform to the recommendations of the 2008 CGS Special Publication 117A titled Guidelines for Evaluating and Mitigating Seismic Hazards in California or other approved publications.

Sand boils occur where liquefiable soil is extruded upward through the soil deposit to the ground surface. Providing an increase in overburden pressure and a compacted fill mat can mitigate surface manifestation. Proposed projects that possess a potential for liquefaction should also include an evaluation of the likelihood of sand boils.

Lateral spreading occurs when liquefiable soil is in the immediate vicinity of a free face, such as a slope. Factors controlling lateral displacement include earthquake magnitude, distance from the earthquake epicenter, thickness of liquefiable soil layer, grain size characteristics, fines content of the soil, and standard penetration test blow counts. Lateral spreading should be evaluated on projects where liquefaction potential exists (**Appendix C**).

The anticipation of potential hazards due to liquefaction can be accomplished by the densification or removal of the potentially liquefiable soil or the use of foundation systems that still provide acceptable structural support should liquefaction occur. Soil densification can be accomplished by compaction grouting, vibrocompaction, soil mixing, and deep dynamic compaction (among others). Soil densification is generally used to increase density and provide liquefaction mitigation

of sensitive soil to relatively shallow depths over large areas. Deep foundation systems may be used to transmit structural loads to bearing depths below the liquefiable zones and may consist of driven piles or drilled piles. Deep foundations are designed to mitigate damage to the structures supported on the piles; however, they do not generally reduce the potential for damage to underground utilities and peripheral site improvements. The effects of differential settlement between rigid structures and attached settlement-sensitive surface improvements can be mitigated by designing the utilities to accommodate differential movement at the connections.

Seismically Induced Settlement

Settlement due to seismic shaking can occur on sites if liquefaction potential exists or not (e.g., loose sands). As with the susceptibility to liquefaction, the soils most susceptible to seismically induced settlement in the Santee area are the loose alluvial soils of the San Diego River and its tributaries. Site-specific studies should be performed in these areas to evaluate the settlement potential during anticipated maximum seismic events.

Seismically Induced Landslides and Rock Falls

Seismically induced landslides and rock falls are common in areas of high seismicity near the earthquake source. Over 11,000 such landslides occurred during the 1994 Northridge earthquake and mostly occurred in the mountains surrounding the Santa Clara River Valley. Seismically induced landslide and rock fall studies should be performed in accordance with current and applicable design standards, such as the CGS 2008 Guidelines for Evaluating and Mitigating Seismic Hazards in California.

Tsunamis and Seiches

A tsunami is a series of long period waves generated in the ocean by a sudden displacement of large volumes of water. Causes of tsunamis include underwater earthquakes, volcanic eruptions, or offshore slope failures. Wave heights and runup elevations from tsunamis along the San Diego coast have historically fallen within the normal range of the tides. Santee is not included in a high-risk tsunami hazard area due to the elevation and distance from the Pacific Ocean; therefore, tsunamis and seiches are not considered hazards of concern. A seiche is a run-up of water within a lake or embayment triggered by fault- or landslide-induced ground displacement. Seiches may be a hazard when adjacent to the bodies of water within the City limits. Site-specific evaluations and discussions would be required for proposed site developments adjacent to the inland bodies of water.

Subsidence

Subsidence is the gradual or sudden sinking of the ground surface. According to the County's 2023 MJHMP, subsidence often occurs when large amounts of groundwater have been withdrawn from certain types of fine-grained sediments. However, the soils in the county are largely granitic; therefore, it presents a minor threat to limited parts of the county. There is no historical record of this hazard in the region, and this hazard was excluded from further analysis in the 2023 MJHMP.

Surface Rupture

Surface rupture is a break in the ground's surface and associated deformation resulting from the movement of a fault. Since there are not any faults in Santee, surface rupture is not anticipated to

be a hazard. Santee’s earthquake and ground shaking potential comes from nearby faults outside the City limits.

Summary of Needs to Address Geologic/Seismic Hazards

While the certainty of occurrence, timing, and degree of significance of geologic and/or seismic hazards cannot be accurately predicted, it is possible to take appropriate actions that may minimize the loss of life and destruction of property in Santee caused by geologic or seismic hazards.

The City shall require that potential geologic hazards be investigated and evaluated at the environmental review stage prior to project approval. Such investigations shall include those identified in Table A-1, Determination of Geotechnical Studies Required, of the Geotechnical/Seismic Hazard Study (**Appendix C**). The City may request additional studies depending on the project location, project type, and possible updated information.

The level of geologic risk or hazard in a particular area and the basis for design considerations regarding types of structures and proposed location shall consider the following factors:

- The type and/or function of a structure.
- The presence of geological hazards at the proposed site.

The level of risk that can be accepted. For instance, in areas of potentially higher risk or where structures that are more critical are planned, special design considerations will be necessary to reduce the level of risk to an acceptable factor.

4.3 Urban/Wildland Fire Hazards

California’s increasing population and expansion of development into previously undeveloped areas is creating more wildland-urban interface (WUI) with a corresponding risk of economic loss caused by wildland fire. A “wildland fire” is defined as a fire occurring in a suburban or rural area that contains uncultivated lands, timber, range, watershed, brush, or grasslands. This includes areas where developed lands are adjacent to undeveloped, such as in Santee. Santee’s location in Southern California, surrounded by large areas of vegetated land, makes it a medium fire hazard area. The prevalence of brush-covered hillsides, many of which are not easily accessible, add to Santee’s fire hazards.

The most common type of home fires involve heating equipment that has been improperly designed, incorrectly installed, poorly maintained, or misused. This equipment includes wood stoves, fireplaces, chimneys, portable heaters, and other space heaters. Roughly 80 percent of the fires in Santee are in single-family residences.

A significant fire, one that burns a minimum of 500 acres and requires the heavy use of mutual aid resources, occurs in Santee on a periodic basis. The 2023 Community Risk Assessment Long-Range Master Plan states that the southwestern, northern, and eastern areas of the City pose the greatest risk from a wildfire. The Fanita Ranch and Rattlesnake Mountain areas of Santee, both of which represent inaccessible, elevated, brush-covered hillsides, have a higher-than-average proportion of the fires. Since 1950, 13 wildfires have occurred in Santee (**Table 4.3, *Historic Wildfires within the City of Santee [1950–2023]***).

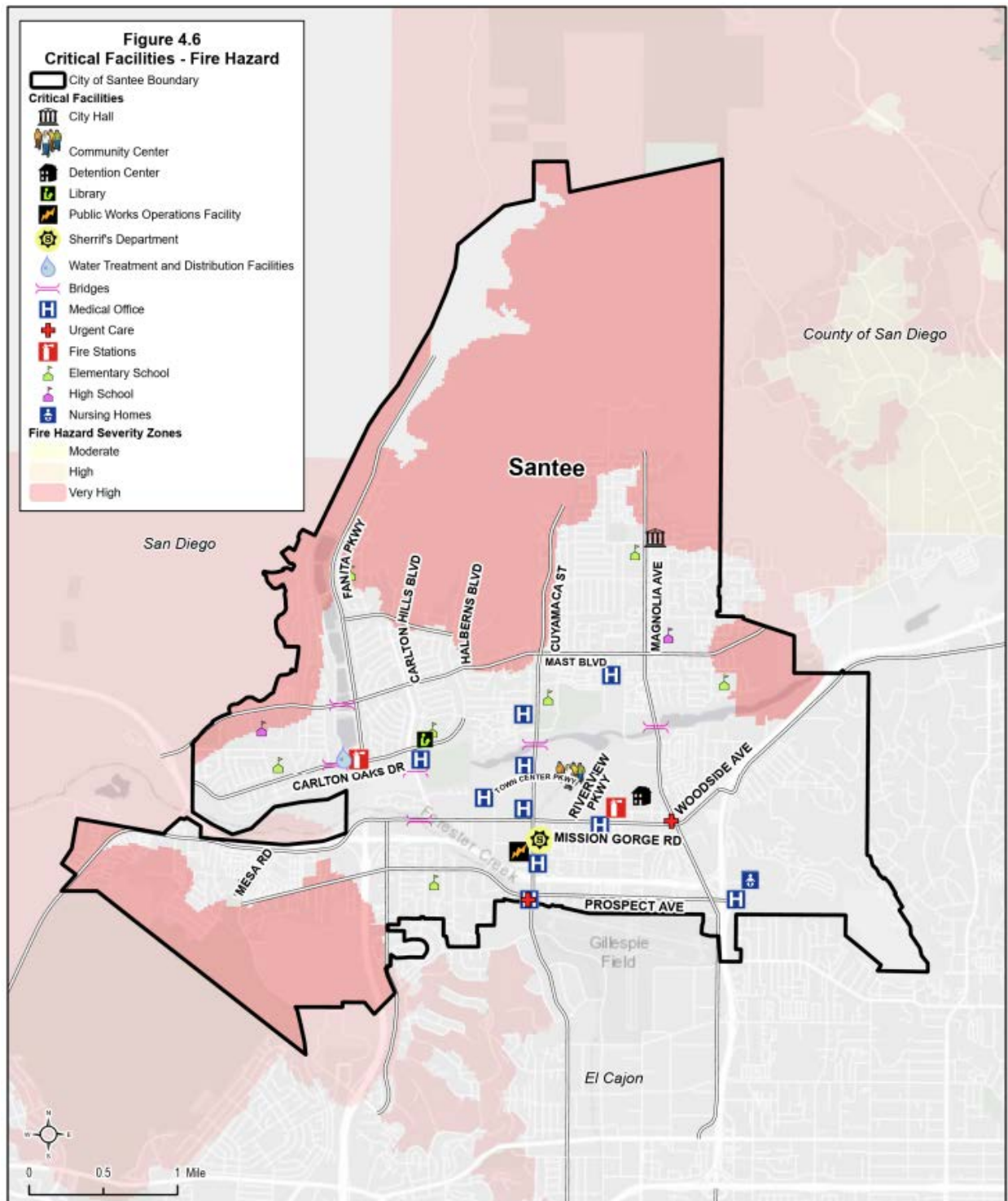
Table 4.3. Historic Wildfires within the City of Santee (1950–2023)

Fire Name	Start Date	Size (acres)
Quarry Fire	October 1950	281
Carlton Hills Fire	July 1966	329
No Name	1974	155
Assist #59	June 1981	7,311
Assist #72	July 1981	696
Outside Origin #4	1981	56
Outside Origin #1	March 1984	122
Assist #21	June 1984	62
Assist #38	April 1987	380
Assist #78	September 1988	935
Assist #59/Magnolia	November 1989	310
Rocoso Fire	January 1994	3,218
Cedar Fire	October 2003	280,278

In accordance with Gov. Code, Section 65302(g), this Safety Element update includes the evaluation of risk of fire for land classified as SRA and land classified as Very High FHSZs. SRAs are areas where the state has financial responsibility for fire protection. An FHSZ is an identified fire hazard area based on the physical conditions that create a likelihood and expected fire behavior over a 30-to-50-year period without mitigation measures, such as fuel reduction. These zones are based on factors such as fuel, slope, and fire weather.

The location of SRAs and FHSZs are identified using the California Department of Forestry and Fire Protection's (CAL FIRE's) Fire and Resources Assessment Program (FRAP). According to FRAP data, no SRAs are within the City boundary; therefore, the City has sole local financial responsibility for fire protection. There are, however, Very High FHSZs within the City boundary (**Figure 4.6, Fire Hazard Map**). The identification of FHSZs is used to implement WUI building standards for new construction, real estate disclosure at time of sale, 100-foot defensible space clearance requirements around buildings, and property development standards, such as road widths, water supply, and signage. Areas identified as a Very High FHSZs are primarily in the northern section of Santee. Much of the FHSZ covers undeveloped land. However, the zone also covers land along the western and eastern borders. **Figure 4.6** identifies Santee's critical facilities (e.g., City operations, fire stations, police departments, schools, medical facilities, utilities) in the Moderate, High, and Very High FHSZs.

Figure 4.6. Fire Hazard Map



Fire and Life Safety Services and Regulations

The Santee Fire Department provides the community with fire and life safety education, fire inspection and prevention services, code enforcement, vegetation management, emergency medical services, and trauma support. The department is also the City's lead for emergency preparedness, emergency management, and response to earthquakes, floods, explosion, fires, hazardous materials, rescue, and medical services in Santee. To plan for long-term fire risks to certain demographics, physical assets, structures, and critical infrastructure in the community, the Santee Fire Department updates its Community Risk Assessment Long-Range Master Plan. The most recent Community Risk Assessment prepared by the Santee Fire Department was published in March 2023. The 2023 Community Risk Assessment Long-Range Master Plan is incorporated into this Safety and Environmental Justice Element by reference.

The Santee Fire Department also provides fire protection, paramedic response, transport services to Santee. The Insurance Services Office (ISO) last surveyed Santee in 2021, and Santee received a Class 1 rating based on the ISO rating system of 1 through 10 (with the highest rating being 1 and the lowest being 10). The City maintains a minimum daily staffing of 19 emergency response personnel, including the battalion chief.

The Santee Fire Department currently has two fire stations—Station 4 and Station 5. Fire Station 4 is at 8950 Cottonwood Avenue, and Fire Station 5 is at 9130 Carlton Oaks Drive. In addition, a Fire Administration Building is at 10601 Magnolia Avenue (City Hall). The department is organized into the following three divisions:

Administrative: Finance, human resources, professional standards, information management, fleet and facilities support, grants, special programs and Emergency Management Services billing

Emergency Services: Incident response operations, training and safety, emergency medical services, emergency preparedness, communications, and special operations

Fire Prevention: Plan review, business inspections, public education, defensible space inspections for real estate transactions, community programs, water supply, and pre-fire planning

Additionally, vegetation management is contracted to a third-party consultant who performs weed abatement inspections and is overseen by the Santee Code Compliance Office. Fire investigation is contracted with the San Diego County Sheriff's Department Bomb/Arson Unit.

Fire Station 4 currently has one battalion chief vehicle and six response units—one fire engine, one fire truck, one brush engine, one paramedic ambulance, and one Basic Life Support (BLS) ambulance with a minimum daily staffing of 11 personnel distributed as follows:

- Fire Engine 4 is staffed with one captain, one engineer, and one firefighter-paramedic.
- Fire Truck 4 is staffed with one captain, one engineer, and one firefighter-paramedic.
- Brush Engine 4 is cross-staffed with personnel from Fire Truck 4. This crew cross-staffs the Truck and Brush units and respond in the appropriate apparatus based on the nature of the alarm.
- Paramedic Ambulance 4 is staffed with two firefighter-paramedics.

- BLS 4 is staffed with two non-safety Emergency Medical Technicians (EMT).
- Battalion Vehicle 2 is staffed with one battalion chief.

Station 4 also houses two reserve fire engines and four reserve ambulances.

Fire Station 5 currently has three response units—two fire engines and one paramedic ambulance with a minimum daily staffing of eight personnel distributed as follows:

- Fire Engine 5 is staffed with one captain, one engineer, and one firefighter-paramedic.
- Fire Engine 205 is staffed with one captain, one engineer, and one firefighter-paramedic.
- Paramedic Ambulance 5 is staffed with two firefighter-paramedics.

Response time is defined as the amount of time it takes for the units having received notification to their arrival at the scene. The National Fire Protection Association (NFPA) 1710 Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments establishes a 5-minute and 20-second benchmark response time goal for not less than 90 percent of dispatched incidents. The Santee Fire Department's response times vary in Santee, but the first due response time for a structure fire is 7 minutes and 33 seconds. The first due response time for rescue and emergency medical services calls is 7 minutes and 27 seconds.

NFPA 1710 lists several travel time requirements for apparatus. The first defined travel time, 4 minutes, is for the first unit, either an engine or a truck that can operate as an engine, and the first engine should arrive within 8 minutes for a moderate-risk structure fire. NFPA historically defined advanced life support (ALS) unit's travel time as 8 minutes. Certain areas in northern and southern Santee struggle to meet the 8-minute effective response force travel time goals established by the NFPA. In addition, much of the City does not meet the 4-minute travel benchmark. To meet the NFPA travel time standards, additional fire stations are needed.

However, the City has a signed automatic aid agreement on first alarm or greater fires with adjacent and nearby fire departments including Alpine Fire Protection District, El Cajon Fire Department, Lakeside Fire Protection District, La Mesa Fire Department, Lemon Grove Fire Department, San Miguel Fire Protection District, and City of San Diego Fire Department. Each participating member has a mutual aid agreement with the others and participate in the Unified San Diego County Emergency Services Organization to provide paramedic and fire protection services in the event that additional firefighting units are required. The City is also part of both the San Diego County and State of California Master Mutual Aid Agreements and maintains a separate agreement with CAL FIRE and the U.S. Forest Service.

Paramedic Services

Paramedic ALS services and BLS are currently provided with first responding fire companies and transport ambulances. All fire department apparatus and paramedic ambulances are staffed with firefighters and paramedics who are highly trained to administer advanced life support procedures on emergency incidents. A BLS ambulance is staffed with two non-safety emergency medical technicians and used for lower acuity calls to provide basic life support services. The Santee Fire

Department and the Lakeside Fire Protection District previously provided ambulance transport service under terms of a contract with County Service Area 69. As of January 1, 2023, the Santee Fire Department and the Lakeside Fire Protection District provide ambulance transport service through the Santee Lakeside Emergency Medical Service Authority JPA. All firefighters hired by the Santee Fire Department are required to possess State of California and County of San Diego paramedic certifications.

Public Education and Awareness

The Santee Fire Department also operates many community outreach and education programs to help mitigate potential safety issues for Santee residents. These Community Risk Reduction activities include the following, along with a variety of other services designed to enhance the collective emergency preparedness for the community:

- Senior Smoke Detector Program
- Senior Citizen Outreach and Safety Education
- 3rd Grade Fire Prevention Poster Contest
- Annual Open House and Community Safety Fair
- Community Cardiopulmonary Resuscitation training
- Community Emergency Response Team training
- First-Aid/Community Risk Reduction information booths at Citywide events
- “Every 15-Minutes” participation with local high schools
- Fire station tours
- Classroom presentations
- Social Media Public Service Announcements

Requirements for New Development

All new construction in Santee requires the installation of fire sprinklers, which further reduces potential for fire loss. The City requires a minimum pressure flow of water for fire protection purposes based on the type of structure. While currently no firefighting water flow pressure problems occur in Santee, much of the future development may occur on the tops or sides of hills in the northern part of Santee where water pressures are lower.

To address fire and life safety issues on new development, the Santee Fire Marshal reviews all proposed residential, commercial, and industrial projects through the City’s Development Review process. In this way, it is possible to ensure that adequate fire hydrant locations, water flow pressures, access for emergency vehicles, and other requirements are met.

Summary of Needs to Address Urban/Wildland Fire Hazards

Santee's recent wildfire fire history is primarily related to fires in the Forester Creek and San Diego River areas, where 309 Fires have occurred between September 1, 2020, and January 1, 2024. The fires in the Forester Creek and San Diego River appear to be related to the homeless population residing in the area. Additionally, Santee's fires are related to the large amount of brush-covered vacant land in Santee, which is often not easily accessible by emergency vehicles. As development in Santee's vacant hillside areas proceeds, the preventative measures below should be required to ensure fire safety.

Construction

To avoid construction-related wildfires, adequate water shall be available to service construction activities, a Fire Prevention Plan shall be prepared, and proper wildfire awareness shall be provided, including reporting and suppression training to construction personnel and requiring that all construction-phase components of the fuel modification are complete prior to delivery of combustible materials/lumber to the project site. Prior to combustible materials being brought on site, utilities shall be in place, fire hydrants operational, an approved all-weather roadway must be in place, and the fuel modified defensible space must be established and approved by the Fire Marshal.

Operation

Development should include a variety of fire protection features that form a redundant system of protection to minimize the likelihood of wildfire exposing people or structures to a significant risk of loss, injury, or death involving wildland fires. The development should provide a fire-hardened landscape, ignition-resistant residences and buildings, and conversion of fuels to maintained developed areas with designated review of all landscaping and fuel modification areas and highly ignition-resistant structures.

Wildland-Urban Interface

The 2023 Community Risk Assessment Long-Range Master Plan includes a map of WUI areas within the City. These areas are primarily along the City's boundaries in its northern, western, southwestern, southeastern, and eastern portions. The City's critical fire station, hospitals, and medical clinics are all located outside of the WUI areas, as shown on **Figure 4.7, Wildland-Urban Interface Map**. Land uses within the WUI areas in the City primarily include planned development, parks and open space, and residential development.

The Santee City Council adopted a WUI development standard in November 2004 and then amended the City's Fire Code with adoption in June 2006. Measures were also adopted into the 2007 CBC and have been retained and enhanced in code updates since then, including the 2022 CBC and California Fire Code. The following project features are required for new development in WUI areas and form the basis of the system of protection necessary to minimize structural ignitions and facilitate access by emergency responders as identified in the Fire Prevention Plan. Development within WUI shall comply with the most current codes and standards.

Fuel Modification Zones

Modified fuel areas separating wildland fuel areas from structures can reduce the number of fuel-related structure losses by providing separation between structures and heat generated by wildland fuels. Fuel Modification Zones provide appropriate buffers between native fuels and structures based on research indicating the type and width of Fuel Modification Zones that provide protection. Santee's defensible space requirement is a 100-foot minimum for fuel modification between structures and wildland areas.

Fire Protection Infrastructure

Installation of a fire hydrant network, a dedicated fire water pipeline system to provide adequate fire flow to the project site, and fire department hose connections throughout the project site. The availability of the on-site fire suppression network and water supply would reduce potential wildfire impacts. The City's Fire Code includes requirements for water supply, such as fire hydrants and storage tanks. Within FHSZs and WUI areas, fire hydrants must be spaced every 300 feet and must have a fire flow of 2,500 gallons per minute, or a fire flow approved by the Fire Chief. Additionally, the 2023 Community Risk Assessment Long-Range Master Plan depicts buildings within the City that may require a larger amount of water (i.e., greater than 3,000 gallons per minute) to extinguish a fire. The document also depicts the locations of all active fire hydrants within the City. Developments that require new or "stand alone" water storage facilities may also be required to provide secondary or backup systems, such as independently powered pumps that will ensure adequate water supply for firefighting emergencies. Secondary or backup systems create redundancy in the event the primary system fails and increases resilience of the system.

Establishing and adhering to minimum road width and clearances around structures ensures that fire response equipment and personnel can access buildings and people throughout Santee. According to City's Fire Marshall, fire apparatus require a horizontal clearance of at least 26 feet and vertical clearance of at least 13.5 feet. The Circulation Plan in the Mobility Element of the Santee General Plan identifies the roadway classifications and cross-section for each. The different roadway classifications identify the minimum road width for prime arterials, major arterials, collector industrial, collector residential, parkway, multimodal corridors, and regional facilities. Refer to the Mobility Element for the individual widths for each roadway classification. Adhering to these standards will ensure accessibility for emergency and fire personnel.

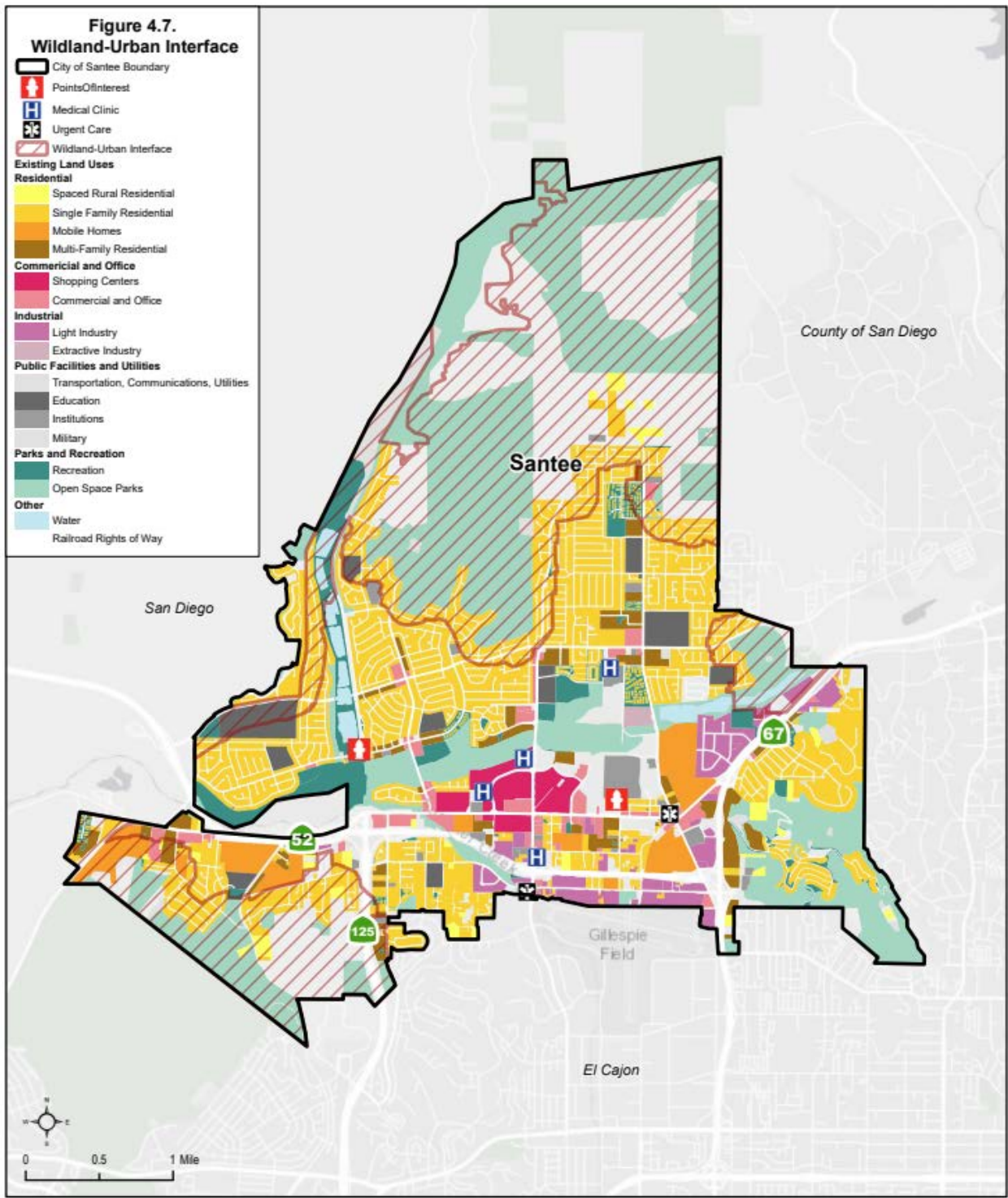
Emergency Vehicle Access

A Fire Protection Plan and Wildland Fire Evacuation Plan are required for all new development in Wildland Urban Interface (WUI) areas and must meet City and County requirements and prevent any conflicts with current evacuation plans. Details of the emergency access routes must be described in the Fire Protection Plan and Wildland Fire Evacuation Plan prepared for a proposed project and must be designed to comply with current and future population growth, roadway conditions, and access availability.

Weed Abatement Program

The City contracts with a third-party consultant to conduct weed abatement inspections annually. If weed violations are identified, the consultant sends the property owner a notice to comply. The City is involved if the owner fails to comply by the 30-day deadline. An additional notice is sent prior to forced abatement which is at the owner's expense.

Figure 4.7. Wildland-Urban Interface Map



4.4 Crime

Police protection for Santee residents is provided by the County Sheriff's Department, which operates out of the Santee Sheriff's Station at 8811 Cuyamaca Street. Additionally, a Sheriff's

storefront is operated in the Santee Trolley Square Town Center at the northwestern corner of Mission Gorge Road and Cuyamaca Street. The storefront includes an active volunteer unit that provides community services including vacation checks and regular visits to homebound citizens.

The Santee Sheriff's Station has over 70 employees providing patrol and traffic services, criminal investigations, juvenile intervention, crime analysis, and crime prevention education. The ratio of officers to population in Santee is 1.23 per 1,000 residents. In 2022, Santee had a quicker priority call response time than the county average. For Santee, the average priority call response time was 9.2 minutes and the average response time for traffic was 9.59 minutes. Santee has consistently had one of the lowest crime rates in the county, which according to the Federal Bureau of Investigation (FBI) index crime rate in 2022 was 11.85 per 1,000 population. This fell within the lower range for crime rates throughout the county.

Larceny thefts and thefts from vehicles are now the largest reported crime problem in Santee, although Santee's crime rate is well below the average for the county as a whole. In general, higher density residential areas tend to have more property-related crimes than single-family residential areas, with businesses being the main target for larceny crimes.

The County Sheriff's Department administers a Neighborhood Watch Program in Santee, aimed at reducing the number of burglaries which involves joint efforts of the County Sheriff's Department and the community designed to enhance neighborhood security.

The County Sheriff's Department also offers a video-sharing program known as "Safe Santee" that allows the public to share live video footage with the Sheriff's Department to monitor real-time criminal activities.

The County Sheriff's Department uses a Community Oriented Policing and Problem Solving (COPPS) approach to crime prevention. COPPS is an effective community policing with a positive impact on reducing crime, helping to reduce fear of crime, and enhancing the quality of life in the community by combining the efforts and resources of the police, local government, and community members.

Crime Prevention through Environmental Design

One of the proactive strategies used by the County Sheriff's Department to address thefts and other crimes in the community is the Crime Prevention through Environmental Design (CEPTD) program. This program emphasizes the application of preventative measures in new construction and existing spaces. To reduce potential incidents of crime, CEPTD emphasizes the importance of the physical environment of a building or neighborhood related to four primary concepts—natural surveillance, territoriality, access control, and maintenance. Site design, landscaping, and lighting are major components of the four concepts. Decisions made by local governments including planners, designers, and law enforcement officials can influence resident and business conditions and behavior. The CEPTD program is incorporated into Section 13.10.040M of the Santee Municipal Code, by establishing the minimum site and building standards, including defined entrances, landscaping, architectural design, lighting; natural surveillance through visibility and lighting; defined site boundaries and territorial reinforcement through landscaping and decorative fencing; designed wayfinding signage; and maintenance requirements.

The County Sheriff's Department COPPS and Crime Prevention Units review all new development proposals as part of the City development review process to incorporate safety recommendations and CEPTD principles into the design of new developments.

School Resource Officers

The City also funds two School Resource Officer (SRO) positions, when funding is available. SROs are assigned to the Santana and West Hills High Schools. The SROs are an educational resource, providing both intervention and follow-up services. They act as an on-campus resource for school students to both provide a law enforcement liaison and to ensure a safe environment for learning.

Las Colinas Detention and Reentry Facility

The County Sheriff's Department operates the Las Colinas Detention and Reentry Facility, the primary point of intake for women in the county, with a Board of State and community Corrections (BSCC) rated capacity of 1,280 people and an average daily population of 500 incarcerated persons. The facility is in Santee at 451 Riverview Parkway on a 45-acre site also listed as 9000 Cottonwood Avenue. The facility opened in August 2014, replacing the 1967 Las Colinas Detention Facility that operated for a period of time as a juvenile facility. Over 8,000 bookings of female prisoners are performed every year at the facility for regional law enforcement agencies. Las Colinas Detention and Reentry Facility is staffed by approximately 232 sworn employees and 130 professional staff members, making it one of the largest employers in Santee.

Summary of Needs to Address Crime

The most frequent crimes in Santee are thefts and burglaries within commercial areas especially along Mission Gorge Road. These crimes can continue to be addressed for new development through the use of improved building design techniques and lighting, which take into consideration defensible space strategies, and CEPTD. Additionally, the City can continue to address crime through the continued promotion of the COPPS and the Neighborhood Watch Program, as well as enforcement actions for existing developed areas of Santee.

4.5 Traffic Hazards

Roughly 108 miles of roads are in Santee. Most streets have been well maintained and do not present significant driving hazards. The main cause of traffic collisions appears to be correlated with unsafe speed and improper turning. Most collisions occur on the major streets in or near intersections where traffic is heaviest and turning movements are frequent, such as the intersection of Mission Gorge Road at Cuyamaca Street. This intersection is the focal point of the Santee Trolley Square Town Center and serves as the terminus of the San Diego Trolley East (Green) Line.

Mission Gorge Road has the highest number of accidents due to the amount of traffic this facility handles per day. This east-west roadway serves primarily commercial and business establishments. With these types of land uses, an increase in conflicting traffic movements may contribute to potential vehicle collisions on this street. Currently there are over 45,000 vehicles per day on portions of Mission Gorge Road and 39,000 vehicles per day on Cuyamaca Street.

The City has installed light emitting diode (LED) traffic signal lights throughout Santee. These lights use less energy and are more visible. Major intersections have installed battery backup power so that in the event of a power outage, these key intersections will continue to operate smoothly, reducing the potential for traffic collisions. The City has also installed reflective tapes on traffic signal heads to make signals more visible in low lights and during power outages.

Summary of Needs to Address Traffic Hazards

Traffic collisions along Mission Gorge Road are primarily due to heavy traffic volumes in association with numerous entrances and exits, which results in an increase of conflicting traffic movements. The City should continue to require the installation of shared driveways and reciprocal access between adjoining properties in association with the implementation of other traffic control devices, including the use of center medians, left-turn pockets, and signalized intersections, all of which would reduce conflicting traffic movements and the potential for traffic collisions.

4.6 Light-Rail Transit Hazards

The San Diego Transit System was established in 1948, replacing the San Diego Electric Railway Company. On April 24, 1949, rail transit ended as motor buses made San Diego the first California city to convert to an all-bus system. In 1967, San Diego Transit became a nonprofit corporation with the City of San Diego. In 1976, then Metropolitan Transit Development Board was formed, and in 1981, San Diego Trolley, Inc., was formed. The San Diego Trolley inaugural run took place on the 15.9-mile “South Line” between the international border and Downtown San Diego on July 19, 1981, representing the first light-rail run in 3 decades. In 1984, the Metropolitan Transit Development Board broke ground on a 4-mile extension east from the 12th and Imperial Station, becoming the first leg of the future East Line (later renamed the Orange Line). On November 17, 1986, the Metropolitan Transit Development Board held a groundbreaking for the next 11.7-mile East (Orange) Line segment, and on July 26, 1995, the segment between the El Cajon Transit Center and Santee Trolley Square Town Center opened.

The MTS is currently the public transit service provider for San Diego County. The MTS San Diego Trolley system includes 63 stations serving three primary trolley lines. Most of the stations are at, or near, ground-level, including the Santee Trolley Square station. The Santee Trolley Square station includes free parking and connections to MTS bus lines. The San Diego Trolley’s main lines operate with regular service between 5:00 a.m. and midnight 7 days per week, with station stops every 15 to 30 minutes. In 2019, the entire San Diego Trolley system provided over 38 million passenger trips. The San Diego Association of Governments 2050 Regional Transportation Plan forecasts 156 new miles of trolley service; however, none of these new miles are proposed in Santee because Santee is at the end of the East (Green) Line. From the Grossmont Trolley Station in La Mesa, both the Orange and Green Lines head northeast to the Arnele Avenue station in El Cajon where the Orange line terminates. From there, the Green Line continues into Santee.

To prevent transit delays, a priority system is used to manage traffic signal operations at or near crossings. The trolley priority system works as follows:

- The trolley dwells in the station until a count-down timer counts to zero.

- The trolley departs within 5 seconds after the zero point of the count-down timer.
- If the departure window is missed, the trolley must wait until the beginning of the next cycle.
- As long as the trolley leaves the station during the departure window, it will receive green lights at all of the downstream signals until it reaches the next station.

The trolley priority system is successful in increasing the efficiency of trolley operations. The priority system has been enhanced from a “passive” to an “active” system including train detectors embedded at predetermined locations and traffic system controllers which trigger signal changes at intersections if a train is detected. The monitoring and management of traffic signals, signage, pavement markers, and related equipment at intersections protect public safety as trolleys traverse major intersections, such as the following:

- Cuyamaca Street and Prospect Avenue (four-way)
- Cuyamaca Street and the SR-52 eastbound off-ramp
- Cuyamaca Street and SR-52 westbound off-ramp
- Cuyamaca Street and Buena Vista Avenue (four-way)
- Cuyamaca Street and Mission Gorge Road (four-way)

Two private lanes cross the tracks and pedestrian track crossings are within the premise of the Santee Trolley Square Town Center. As a light-rail transit line, the trolley provides an important service for regional and local passenger transit. However, it also presents safety concerns as a potential source of collisions with vehicles, bicyclists, and pedestrians due to the rail line’s location adjacent to busy City streets.

Summary of Needs to Address Light-Rail Transit Hazards

The City should continue to assess safety conditions associated with collisions between vehicles, bicyclists, and pedestrians due to the rail line’s location adjacent to busy City streets.

4.7 Airport Hazards

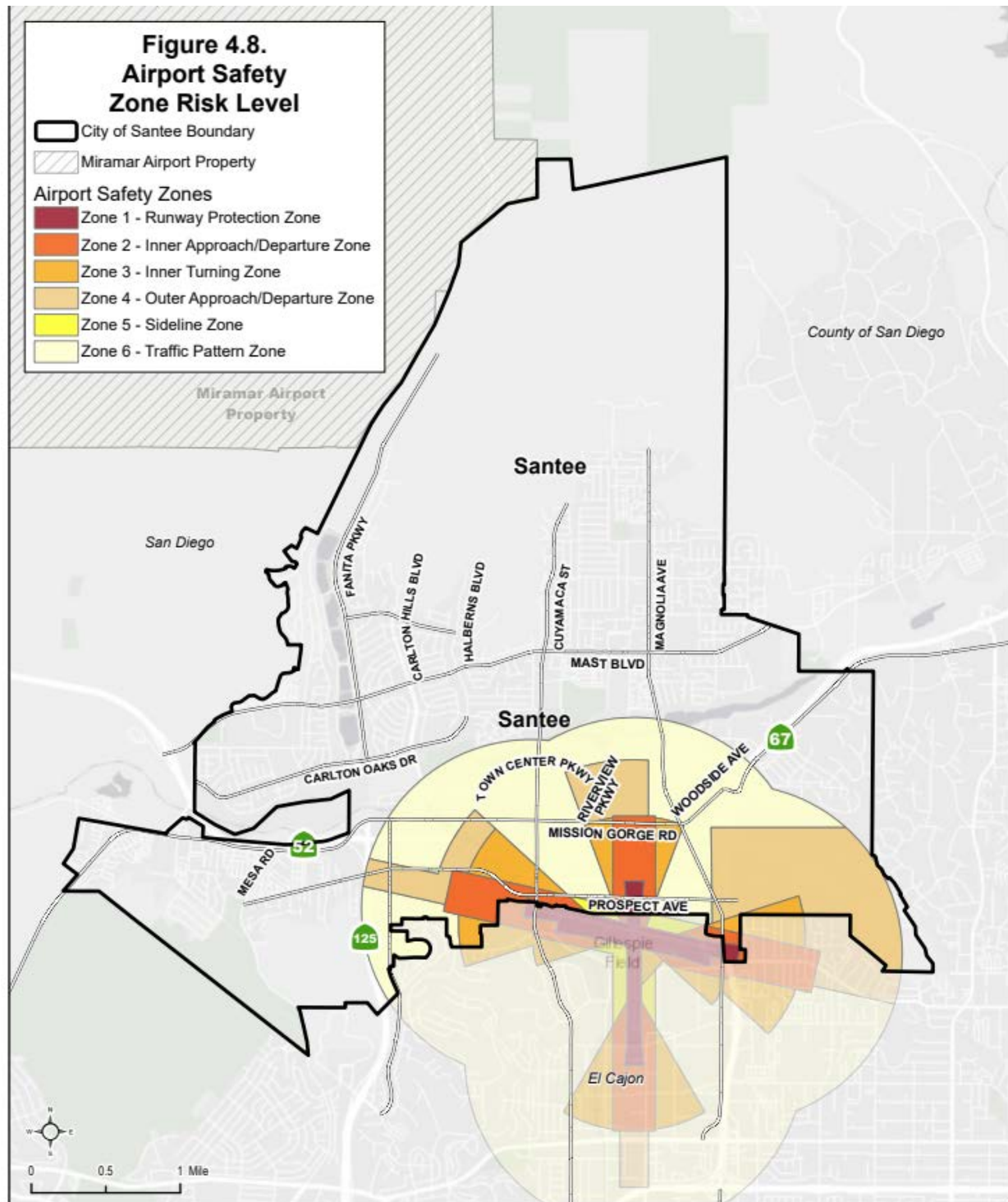
The City is situated between two aircraft operation areas: Marine Corps Air Station (MCAS) Miramar to the northwest and Gillespie Field immediately south of Santee (**Figure 4.8, *Airport Safety Zone Risk Level***). The San Diego County Regional Airport Authority, acting as the Airport Land Use Commission (ALUC) is responsible for adopting Airport Land Use Compatibility Plans (ALUCP)s. The basic function of an ALUCP is to promote compatibility between an airport and surrounding land uses that lie within the airport's designated Airport Influence Area to the extent that these areas are not already devoted to incompatible uses. The ALUCP is also intended to protect the safety of the public from airport-related hazards. The ALUCP includes specified limitations and conditions on the future development of new land uses surrounding the airport. The ALUCP consists of several components, including provision of airport information, compatibility policies and criteria (e.g., height restrictions to prevent obstructions to navigable airspace), compatibility maps, procedural policies, and land use information. It addresses noise, overflight, safety, and airspace protection concerns for land uses within the Airport Influence Area. The ALUCP also establishes standards for certain development projects to provide constructive notice to current and prospective property owners of aircraft activity within the vicinity of the airport.

Additionally, the Federal Aviation Administration (FAA) establishes airspace protection surfaces in the airspace above and surrounding airports to protect aircraft from obstructions, such as buildings and towers, in navigable airspace. ALUCP safety zones are derived from general aviation aircraft accident location data found in the California Land Use Planning Handbook and data regarding the airport's runway configuration and operational procedures at the airport.

Under certain circumstances, developers of specific properties may be required to dedicate aviation easements to the airport owner. Among other things, an aviation easement grants the right of flight in the airspace above the property; allows the generation of noise and other impacts associated with overflight; restricts the height of structures, trees, and other objects on the property; prohibits potential on ground flight hazards (e.g., sources of light/glare); and permits access to the property to remove or mark objects exceeding the established height limit.

New development proposals in the Airport Influence Area must process a consistency determination application and be found to be consistent or conditionally consistent with applicable land use compatibility policies with respect to noise, safety, airspace protection, and overflight as contained in the ALUCP. Additionally, development proposals are required to comply with FAA regulations concerning the construction or alteration of structures that may affect navigable airspace.

Figure 4.8. Airport Safety Zone Risk Level



MCAS Miramar

MCAS Miramar, formerly Naval Auxiliary Air Station Miramar and Naval Air Station Miramar, is a U.S. Marine Corps installation home to the 3rd Marine Aircraft Wing, which is the aviation element of the 1st Marine Expeditionary Force. MCAS Miramar is adjacent to Santee's northwestern boundary, and its runways are approximately 5.5 miles west of the City boundary. MCAS Miramar's Airport Influence Area, Review Area 2, includes portions of Santee. MCAS Miramar is not a public airport and is restricted to military use, providing facilities and services to various Marine Corps and Navy operating units.

MCAS Miramar is composed of three runways, one helicopter landing deck strip, six helicopter pads, and multiple support facilities. The primary runway is 12,000 feet long, whereas the secondary runway is 8,000 feet long. The helicopter landing deck strip (24S/06S runway) is 1,000 feet long for helicopter pattern operations and parallels the primary and secondary runways to the south. Helicopter Pads 1 through 6 are northwest of the main runways. Due to the prevailing winds, Runways 24R and 24L historically receive 95 percent of all operations with aircraft departing and approaching into the offshore wind. During certain weather conditions (e.g., Santa Ana winds), Runways 6L and 6R are used to ensure safety of flight.

Operational aircraft at MCAS Miramar have changed over the years from F-4s in the 1970s to the F-14s during the 1980/1990s. MCAS Miramar was identified for realignment during the 1993 Base Realignment and Closure round that subsequently recommended formal closure of MCAS El Toro and MCAS Tustin. The realignment of MCAS Miramar was completed with the relocation of personnel, support requirements, and airframes from MCAS El Toro and MCAS Tustin to the San Diego region. The move to MCAS Miramar from MCAS El Toro and MCAS Tustin included the assignment of both fixed and rotary-wing aircraft, including the Fighter Attack (F/A)-18 "Hornets," KC-130s "Hercules," CH-46 "Sea Knights," and CH-53 "Super Stallions." MV-22B "Ospreys" (9-tiltrotor aircraft) have operated out of MCAS Miramar since 2008, while the F-35 was more recently homebased in 2020. MCAS Miramar will remain home to the projection of Marine Corps' West Coast air power indefinitely as the remaining F/A-18 squadrons transition to F-35B and F-35C squadrons.

Within the MCAS Miramar Airport Influence Area, the ALUCP establishes Airport Safety Zones based on the Air Installations Compatible Use Zone (AICUZ) for the purpose of evaluating safety compatibility of new/future land uses. The Airport Safety Zone boundaries depict relative risk of aircraft accidents occurring near the airport with accident potential zones extending west toward the Pacific Ocean. Portions of the City of Santee will experience regular overflight and noise from military aircraft.

Gillespie Field

Gillespie Field was established in 1942 and is owned and operated by the County of San Diego. Located in the northwestern portion of El Cajon, with a small portion in Santee, the airport includes three runways, two of which are generally oriented east–west and one which is oriented north–south. According to the County of San Diego Department of Public Works website accessed on January 2024, Gillespie Field has a significant economic impact of over \$900 million and over 6,000 jobs. Gillespie Field is essential in supporting emergency responders and is home to Sheriff Aerial Support to Regional Enforcement Agencies (ASTREA), firefighting helicopters, and medevac helicopters and jets. Gillespie Field also supports business aviation for companies in the Southern California region as well as supports nonprofits such as the Air and Space Museum Annex—where aircraft are flown in on their last voyage and decommissioned for museum display at Balboa Park. Gillespie Field is a public-use airport serving a vital role as a National Reliever for the National Plan of Integrated Airport Systems.

According to the FAA, the airport ran approximately 226,887 aircraft operations (takeoff and landings) during 2016, averaging 622 operations per day. This rate has dropped from a high of more than 300,000 operations in 1979, and a total of 247,478 operations per year are projected by 2025. Two-thirds of the operations are performed by single-engine piston aircrafts, and approximately 25 percent of total annual operations are performed by helicopters.

The Gillespie Field ALUCP has a designated Airport Influence Area. Runway Protection Zones (RPZs) are areas of significant risk resulting from aircraft takeoff and landing patterns. While the RPZs for Gillespie Field fall mainly within airport boundaries, there are several County-owned properties north of the airport on Prospect Avenue that are within the designated RPZ. These properties are designated as Park/Open Space to reflect their airport function. There are also a number of privately owned parcels within the RPZ that cannot be further built upon per FAA guidelines.

The Gillespie Field ALUCP is prepared according to Caltrans Division of Aeronautics requirements and adopted by the San Diego County Regional Airport Authority. The Gillespie Field ALUCP seeks to reduce exposure to excessive noise and safety hazards within the Airport Influence Area, provides for the orderly growth of the airport and the area surrounding the airport, and safeguards the general welfare of the inhabitants within the vicinity of the airport and the public in general.

The Airport Influence Area includes a large portion of Santee and portions of El Cajon and areas within unincorporated San Diego County. Within the Airport Influence Area, the Gillespie Field ALUCP establishes six Airport Safety Zones for the purpose of evaluating safety compatibility of new/future land use actions. The ALUCP limits development intensities in these zones by imposing floor area and lot coverage maximums, incorporating risk reduction measures in the design and construction of buildings, and/or restricting certain uses altogether. Generally, permissible uses and development intensities range from most restrictive in Airport Safety Zone 1 to least restrictive in Airport Safety Zone 6. For example, all residential and virtually all non-residential uses are considered incompatible land uses in Zone 1, while all land uses in Zone 6 are considered to be either compatible or conditionally compatible with the airport.

Summary of Needs to Address Airport Hazards

Various levels of governments have differing roles and interests with land use planning around airports.

Federal: The FAA approves airport noise studies, serves as the lead agency in the federal environmental review process, and manages the nation's airspace. The FAA publishes airport standards and provides planning guidance for use by airport sponsors.

State: The state provides for the integration of aviation into transportation systems planning on a regional, statewide, and national basis. Staff administer noise regulation and land use planning laws that foster compatible land use around airports and encourages environmental mitigation measures to prevent incompatible land use encroachment.

ALUC: ALUCs prepare ALUCPs and ensure regional and local land use plans are consistent with the ALUCP. ALUCs establish advisory policies on land uses surrounding the airport, ensuring they are compatible with airport operations. ALUCs also evaluate the compatibility of proposed local agency land use policy actions with the relevant provisions in the ALUCP. Risks to people and property on the ground within the vicinity of the airport and to the people on board the aircraft are considered.

Local Government: Cities and/or counties have a responsibility to ensure the orderly development of the airports within their local jurisdiction and ensure that all applicable planning documents and building regulations are consistent with the ALUCP. They also have the final decision on local land use issues and can overrule ALUC determinations with findings, subject to statutory procedure.

For example, as established by state law (Pub. Util. Code, Section 21670), the ALUC has the responsibility both "to provide for the orderly development of airports" and "to prevent the creation of new noise and safety problems." ALUC policies thus have the dual objectives of (1) protecting against constraints on airport expansion and operations that can result from encroachment of incompatible land uses, and (2) minimizing the public's exposure to excessive noise and safety hazards. To meet these objectives, the City must continue to ensure that future development or redevelopment within the Airport Influence Area address the following noise, safety, airspace protection, and overflight factors to avoid potential airport compatibility impacts, as assessed in the Gillespie Field ALUCP.

Noise. The purpose of noise compatibility policies is to avoid the establishment of new incompatible land uses and exposure of the users to levels of aircraft noise that can disrupt the activities involved. The characteristics of Gillespie Field and the surrounding community are considered in determining the level of noise deemed acceptable for each type of land use. The noise contours established for the purpose of evaluating noise compatibility are depicted on Exhibit III-1 of the ALUCP. Strategies to minimize risk include the following:

- Prohibit outdoor and indoor noise-sensitive uses
- Require sound attenuation of buildings containing noise-sensitive uses

Safety. The purpose of safety compatibility policies is to minimize risks to the public in the event of an aircraft accident or emergency landing outside airport boundaries. Strategies to minimize risk include the following:

- Reduce concentrations of land use by limiting residential densities and non-residential intensities that attract people in locations most susceptible to an off-airport aircraft accident
- Prohibit certain risk-sensitive uses, such as schools and hospitals, and aboveground storage of flammable or hazardous materials regardless of the number of people involved

Airspace Protection. The purpose of airspace protection compatibility policies is to ensure that structures and other uses of the land do not cause hazards to aircraft in flight within the airport vicinity. Strategies to minimize risk include the following:

- Comply with standards set forth in the Code of Federal Regulations Part 77 and determination from the FAA that the object would not be hazard
- Comply with the minimum separation criteria for land use practices that have the potential to attract wildlife that could be hazardous to aircraft in the vicinity of airports
- Minimize land use characteristics that create visual or electronic interference (i.e., lights, glare/night smoke, dust, steam) with aircraft navigation or communication

Overflight. The purpose of overflight compatibility policies is to help notify people about the presence of overflights near airports so that they can make informed decisions regarding acquisition or leasing property in the affected areas. Noise, vibration, fuel vapors, and particulate deposits from aircraft overflights, especially by comparatively low-altitude aircraft, can be intrusive and annoying in locations beyond the limits of the mapped noise contours. Strategies to address overflight annoyance include the following:

- An overflight notice indicating that the property is within an area that is routinely subject to overflights by aircraft using Gillespie Field and residents may experience inconvenience, annoyance, or discomfort arising from such operations.
- California state law requires that, as part of many residential estate transactions, information be disclosed regarding whether the property is situated within an Airport Influence Area.

4.8 Disaster Preparedness

The role of government in a disaster—whether it is local, regional, state or federal government—is the preservation of life and property. The following programs and plans are developed to assist with emergency operations and to reduce the risk from natural and human-made hazards.

Standardized Emergency Management System (SEMS)

Gov. Code, Section 8607(a), directs Cal OES to prepare a SEMS program, which sets forth measures by which a jurisdiction should handle emergency disasters. The program is intended to effectively manage multi-agency and multi-jurisdictional emergencies in California. SEMS consists of five

organizational levels, which are activated as necessary: (1) field response, (2) local government, (3) operational area, (4) regional, and (5) state. Local governments must use the SEMS to be eligible for funding of their response-related personnel costs under state disaster assistance programs. The City has adopted an Emergency Operation Plan consistent with the SEMS. The plan addresses the planned response to extraordinary emergency situations associated with natural and human-caused disasters and describes the overall responsibilities of government entities, as well as the Santee Emergency Management Organization for protecting life and property in Santee.

County of San Diego Office of Disaster Preparedness and Recovery

The County of San Diego Office of Disaster Preparedness is the liaison between incorporated cities, Cal OES, and FEMA, as well as non-governmental agencies such as the American Red Cross. The Office of Disaster Preparedness ensures the preparation and execution of emergency plans in the event of a major emergency or disaster within the San Diego County area. It is important to note that the Office of Disaster Preparedness is not a response agency but rather serves to ensure coordination of efforts among County departments, cities, special districts, and other agencies in San Diego County, as well with the state and federal agencies.

Unified San Diego County Emergency Services Organization

Santee is one of 20 jurisdictions that support and participate in the Unified San Diego County Emergency Services Organization. The Emergency Services Organization, which is composed of the 18 incorporated cities in the county, the County of San Diego Office of Emergency Services, and the San Diego County Board of Supervisors, provides coordination of disaster response and recovery activities. The organization operates under a Joint Powers Agreement that provides for cooperation and coordination between member jurisdictions.

County of San Diego 2023 Multi-Jurisdictional Hazard Mitigation Plan

The purpose of the County's 2023 MJHMP is to identify the county's hazards, review and assess past disaster occurrences, estimate the probability of future occurrences, and set goals to mitigate potential risks to reduce or eliminate long-term risk to people and property from natural and human-made hazards. An important component of the County's 2023 MJHMP is the CERT, which educates community members about disaster preparedness and trains them in basic response skills, such as fire safety, light search and rescue, and disaster medical operations. The City is a participating jurisdiction in the County's 2023 MJHMP and helped the County prepare the City's chapter of the MJHMP.

County of San Diego Emergency Operations Plan

The County's Emergency Operations Plan describes a comprehensive emergency management system that provides for a planned response to disaster situations associated with natural disasters, technological incidents, terrorism, and nuclear-related incidents. It delineates operational concepts relating to various emergency situations, identifies components of the Emergency Management Organization, and describes the overall responsibilities for protecting life

and property and ensuring the overall well-being of the population. The plan also identifies the sources of outside support that might be provided (through mutual aid and specific statutory authorities) by other jurisdictions, state and federal agencies, and the private sector.

First responders are responsible for determining initial protective actions before the EOC, and emergency management personnel have an opportunity to convene and gain situational awareness. Initial protective actions are shared and communicated to local EOCs and necessary support agencies as soon as possible to ensure an effective, coordinated evacuation. During an evacuation effort, the designated County Evacuation Coordinator is the County Sheriff, who is also the Law Enforcement Coordinator. The County Evacuation Coordinator would be assisted by other law enforcement and support agencies.

Santee Emergency Operations Plan

The Santee Emergency Operations Plan was adopted in June 2010 and developed from the 2010 San Diego County Operational Area Emergency Plan. This plan was prepared to ensure the most effective and economic allocation of resources for the maximum benefit and protection of the community in time of emergency. The objective of the plan is to incorporate and coordinate City facilities and personnel into an efficient organization capable of responding to any emergency.

Emergency Operations Center (EOC)

The City of Santee EOC is at Santee City Hall and is integral in the coordination of successful response and recovery operations. The EOC serves in support of the incident commander and field responders. With centralized decision-making, personnel and other resources can be use more effectively. Coordination of activities through the EOC ensures that all tasks are accomplished with little or no duplication of effort and with the highest probability of success. Day-to-day operations are conducted by departments and agencies throughout Santee. When a major emergency or disaster occurs, the EOC provides the centralized management needed to facilitate a coordinated response.

Summary of Needs to Address Disaster Preparedness

The update of the Santee Emergency Operations Plan is an ongoing process by which the City maintains an adequate level of public safety. The City also has implemented procedures to initiate a coordinated EOC in the event of a significant natural or human-induced disaster. The City should continue to provide annual training to critical personnel to improve effectiveness in the event of an actual disaster.

4.9 Hazardous Materials

A hazardous material is any liquid or solid substance that poses a threat to human health and safety or to the environment if improperly treated, stored, transported, or disposed of. Hazardous materials that are commonly used in households and businesses include but are not limited to lawncare and gardening products, antifreeze, batteries, gasoline, motor oil, electronic devices, household cleaners, and paint. These materials may be disposed at the Permanent Household Hazardous Waste Collection facility operated by Waste Management in the City of El Cajon at no cost.

Hazardous material incident management is the responsibility of the Santee Fire Department. The City also belongs to the San Diego County Joint Powers Authority Hazardous Materials Response Team, which responds to assist with major incidents.

Hazardous materials sites in Santee include EnviroStor cleanup sites as identified and regulated by the California Department of Toxic Substances Control (DTSC) shown in **Table 4.4, *City of Santee EnviroStor Cleanup Sites***.

Table 4.4. City of Santee EnviroStor Cleanup Sites

Facility Name	Address	Program Type	Status
Coneen Property	8656 Cuyamaca Street	Evaluation	Refer: 1248 Local Agency
Dave's Auto Service	10438 Mission Gorge Road	State Response	Certified
El Capitan Quarry/El Cajon Mtn Mill Site	16820 El Monte Road	State Response	Certified
Ketema Process Equipment Co., C/O Baker Process	9484 Mission Park Place	Tiered Permit	No Action Required
Marine Parachute School La Mesa	In El Cajon, about 12 miles northeast of Downtown San Diego	Military Evaluation	No Further Action
Montes Metal Finishing	10039 Prospect Avenue, K	Tiered Permit	No Further Action
Quiroz Recycling	8514 Mast Avenue, Suite B	Inspection	No Action
Santee Army Camp	—	Military Evaluation	Inactive – Needs Evaluation

Federal, state, and local laws are designed to regulate the production, storage, transport, and disposal of hazardous materials (refer to **Section 3**). These laws and the agencies that enforce hazardous materials compliance are described below.

Federal

Agricultural Bioterrorism Protection Act (7 CFR 331; 9 CFR 121)

The Agricultural Bioterrorism Protection Act requires that entities that possess, use, or transfer agents or toxins deemed a severe threat to animal or plant health or products must notify and register with the Secretary of the U.S. Department of Agriculture (USDA). The USDA's Animal and Plant Health Inspection Service has been designated by the Secretary as the agency for implementing the provisions of the law for the USDA. Anyone using these agents on the project site are required to register with the USDA.

Federal Insecticide, Fungicide, and Rodenticide Act (40 CFR 152–186)

The Federal Insecticide, Fungicide, and Rodenticide Act provided the U.S. Environmental Protection Agency (USEPA) with authority of pesticide labeling and establishing standards for certification of restricted pesticide application. The USEPA also has the authority to delegate pesticide enforcement authority to states by entering into cooperative agreements with state pesticide programs. Since 1975, California has had primary authority over pesticide enforcement in the state.

The USEPA uses its authority under the act to regulate the distribution, sale, use, and testing of plants and microbes producing pesticidal substances. The act's regulations would apply to any pesticide use by farm workers or handlers.

Hazardous Materials Transportation Act (49 USC 5101–5127)

The Hazardous Materials Transportation Act was enacted to protect against the risks to life, property, and the environment that are inherent in the transportation of hazardous material in intrastate, interstate, and foreign commerce. The U.S. Department of Transportation receives the authority to regulate the transportation of hazardous materials from the Hazardous Materials Transportation Act.

Resource Conservation and Recovery Act (40 CFR 239–282)

Enacted in 1976, the Resource Conservation and Recovery Act (RCRA) is the primary federal law governing the disposal of solid and hazardous waste in the United States. The RCRA was amended and strengthened by Congress in 1984 with the passing of the federal Hazardous and Solid Waste Amendments. These amendments to the RCRA required phasing out land disposal of hazardous waste. The RCRA has been amended on two occasions since the Hazardous and Solid Waste Amendments were passed: in 1992, with the passage of federal Facility Compliance Act, which strengthened enforcement of the RCRA at federal facilities, and in 1996, with the passage of the Land Disposal Program Flexibility Act, which provided regulatory flexibility for land disposal of certain wastes. Under the RCRA, individual states may implement their own hazardous waste programs in lieu of the RCRA if the state program is at least as stringent as the federal RCRA requirements and is approved by the USEPA. The preferred land use plan with schools includes the potential that a school could be within the boundaries of a project site that could generate hazardous materials waste.

State

California Department of Pesticide Regulation

The USEPA enacts laws covering minimum pesticide requirements that are enforced at the state level through cooperative agreements. Over the years, the California Legislature has passed more stringent laws covering pesticide registration, licensing, the sale and use of pesticides, and worker protection. The California Department of Pesticide Regulation is responsible for regulating pesticide use in California. The best way to solve a pesticide-related problem often combines regulatory action

and voluntary adoption of improved pest management methods. The California Department of Pesticide Regulation has a legal mandate to encourage the use of environmentally sound pest management, including integrated pest management. Many California Department of Pesticide Regulation programs stress a least-toxic approach to pest management and promote risk reduction through information, encouragement, incentives, and community-based problem solving.

California Fire Code (24 CCR 9)

The California Fire Code contains regulations consistent with nationally recognized accepted practices for safeguarding, to a reasonable degree, life and property from the hazards of the following: fire and explosion, hazardous conditions in the use or occupancy of buildings or premises, and dangerous conditions arising from the storage, handling, and use of hazardous materials and devices. It also contains provisions to assist emergency response personnel. The California Fire Code and the CBC use a hazard classification system to determine what protective measures are required to protect fire and life safety. These measures may include construction standards, separations from property lines, and specialized equipment.

Environmental Health Standards for the Management of Hazardous Waste Law (22 CCR 66261.20–24)

The Environmental Health Standards for the Management of Hazardous Waste Law contains technical descriptions of characteristics that would classify wasted material, including soil, as hazardous waste. Specifically, a waste is considered hazardous if it is toxic (causes human health effects), ignitable (can burn), corrosive (causes severe burns or damage to materials), or reactive (causes explosions or generates toxic gases) in accordance with the criteria established in Article 3. Article 4 lists specific hazardous wastes, and Article 5 identifies specific waste categories, including RCRA hazardous wastes, non-RCRA hazardous wastes, extremely hazardous wastes, and special wastes. When excavated, soils with concentrations of contaminants higher than certain acceptable levels must be handled and disposed of as hazardous waste. When demolished, structural features containing lead-based paint also can be considered hazardous waste, depending on concentrations, and must be handled and disposed of as hazardous waste.

General Industry Safety Orders – Control of Hazardous Substances Law (CCR Title 8, Subchapter 7, Group 16, Article 109, Sections 5160–5199)

The Control of Hazardous Substances Law establishes minimum standards for the use, handling, and storage of hazardous materials in all places of employment. Article 109 describes requirements including but not limited to emergency equipment in the workplace, measures to protect those engaged in the laboratory use of hazardous chemicals, cleanup operations or hazardous substance removal work, and processes for safety management practices. School site employees working with regulated chemicals and/or hazardous materials within laboratories and other facilities defined in Article 109 are subject to compliance with California Code of Regulations. Title 8.

Hazardous Materials Release Response Plans and Inventory Act (Chapter 6.95, Section 25503.5, of the California Health and Safety Code)

The Hazardous Materials Release Response Plans and Inventory Act requires facilities that use, produce, store, generate, or have a change in business inventory of hazardous substances in quantities above certain limits to establish and implement a Hazardous Materials Management Plan or Business Plan. Hazardous Materials Business Plans (HMBPs) provide threshold quantities for regulated hazardous substances. When the indicated quantities are exceeded, an HMBP or Risk Management Program is required pursuant to the regulation. The Risk Management Program must disclose the type, quantity, and storage location of materials. The law also requires a site-specific Emergency Response Plan, employee training, and designation of emergency contact personnel. Any facility on the project site that exceed threshold quantities would be subject to these requirements.

Hazardous Materials Transportation (CCR Title 13, Division 2, Chapter 6)

The State of California adopted the U.S. Department of Transportation regulations for the movement of hazardous materials by motor vehicle. In addition, the State of California regulates the transportation of hazardous waste originating in the state and passing through the state (California Code of Regulations, Title 26). Both regulatory programs apply in California. The state agency with primary responsibility for enforcing state hazardous materials transportation regulations and responding to hazardous materials transportation emergencies is the California Highway Patrol.

Underground Storage Tank Act (Chapter 6.7 of the California Health and Safety Code and CCR Title 23)

The Underground Storage Tank Monitoring and Response Program was developed to ensure that the facilities meet regulatory requirements for monitoring, maintenance, and emergency response in operating underground storage tanks. The County's Department of Environmental Health and Quality is the local administering agency for this program.

California Department of Toxic Substances Control

The DTSC is a public agency whose mission is to protect California's people and environment from harmful effects of toxic substances by restoring contaminated resources, enforcing hazardous waste laws, reducing hazardous waste generation, and encouraging the manufacture of chemically safer products. The Hazardous Waste Tracking System is the DTSC's data repository for hazardous waste manifest and ID number information. The DTSC relies on the Hazardous Waste Tracking System for issuing and tracking ID numbers, registering transporters, and providing information to analyze hazardous waste activities for policy purposes and enforcement. The system generates reports from 1993 to the present on hazardous waste shipments for generators, transporters, and treatment, storage, and disposal facilities. Additionally, EnviroStor is the DTSC's online data management system for tracking cleanup, permitting, enforcement, and investigation efforts at hazardous waste facilities and sites with known or suspected contamination issues (**Table 4.4**).

California Environmental Protection Agency (CalEPA)

CalEPA was created in 1991 by Governor Pete Wilson by Executive Order W-5-91 to create a cabinet-level voice for the protection of human health and the environment and to ensure the coordinated deployment of state resources. The mission of CalEPA is to restore, protect, and enhance the environment to ensure public health, environmental quality, and economic vitality. CalEPA and the State Water Resources Control Board establish rules governing the use of hazardous materials and the management of hazardous waste.

Also, as required by Gov. Code, Section 65962.5, CalEPA develops an annual update to the Hazardous Waste and Substances Sites (Cortese List), which is a planning document used by the state, local agencies, and developers to comply with California Environmental Quality Act requirements in providing information about the location of hazardous materials release sites. The DTSC is responsible for a portion of the information contained in the Cortese List. Other state and local government agencies are required to provide additional hazardous material release information for the Cortese List.

Regional

San Diego County Department of Environmental Health and Quality

The County's Department of Environmental Health and Quality Hazardous Materials Division is the Certified Unified Program Agency for Santee. The Unified Program's goal is to achieve consistency, consolidation, and coordination in the regulation of six state-regulated environmental programs through education, community and industry outreach, inspections, and enforcement. A Certified Unified Program Agency is the agency responsible for the implementation and regulation of the Unified Program. All inspectors in the Certified Unified Program Agency program are trained environmental health specialists who take part in a continuous education program to ensure consistency and uniformity during inspections.

The Hazardous Materials Division of the County's Department of Environmental Health and Quality protects the health and safety of the public and the environment by ensuring that hazardous materials, hazardous waste, medical waste, and underground storage tanks are properly handled and stored. The Hazardous Materials Division assists regulated businesses in Santee in developing their business plans and developing an area plan for hazardous material emergency response coordination in Santee and San Diego County.

The County's Department of Environmental Health and Quality Health Hazardous Incident Response Team consists of 10 California State certified hazardous material specialists and is funded by a Joint Powers Agreement. The Hazardous Incident Response Team and the San Diego Fire and Life Safety Services Department investigate and mitigate chemically related emergencies or complaints. Emergency response activities include mitigation, containment, and control actions as well as hazard identification, evaluating the threat to local populations of the environment.

Santee falls under the jurisdiction of the San Diego County Hazardous Waste Management Plan, which is the primary planning document providing overall policy on hazardous waste management in the

county. The plan describes how San Diego County's hazardous waste stream can be safely managed, and serves as the guide for local decisions regarding the management of hazardous wastes.

Santee also falls under the jurisdiction of the San Diego County HMBP. The purpose of the HMBP is to prevent or minimize damage to public health, safety, and the environment from a release or threatened release of a hazardous material at regulated facilities. The HMBP also provides emergency personnel with adequate information to help prepare and respond to chemical related incidents.

Summary of Needs to Address Hazardous Materials

As shown in **Table 4.4**, very few hazardous materials cleanup sites are in Santee and the majority of them do not require further action. The City should continue to provide residential curbside pick-up of waste automotive oil and filters and participate in the Household Hazardous Waste Program.

4.10 Emergency Evacuation Route Analysis

A variety of hazard scenarios could require an evacuation in parts of Santee. These emergency situations could be caused by either natural or human-made events, such as wildfires, floods, or geologic or seismic hazards. An Emergency Evacuation Route Analysis (**Appendix B**) was prepared to identify evacuation capacity and network connectivity in Santee in addition to meeting the requirements associated with the following legislative updates:

- AB 747 (2019) requires the City to update the Safety Element of its General Plan to identify evacuation routes and assess the capacity, safety, and viability of those routes under a range of emergency scenarios.
- SB 99 (2019) requires the City to identify residential developments in hazard areas that do not have at least two emergency evacuation routes (i.e., neighborhoods or households within a hazard area that have limited accessibility).
- AB 1409 (2021) requires the City to identify evacuation locations.

Evacuation route viability is largely determined by the location of the hazard. Three types of analysis (wildfire, flood, and earthquake) were done in the Emergency Evacuation Route Analysis. Because Santee is surrounded by Very High FHSZs to the northeast, northwest, and southwest, the City considered three wildfire scenarios (a fire originating in the northeast, a fire originating in the northwest, and a fire originating in the southwest). Because there are flood zones in Santee, evacuation route viability is assessed for flood hazards. Lastly, due to the proximity of Earthquake Fault Zones to Santee, evacuation route viability is assessed for an earthquake event.

The results of the analysis indicate that residents closest to the northern region of the City center are most vulnerable to wildfire and flooding hazards given the distance they would need to travel to access an outbound road for evacuation. The analysis identified that residents closest to the southern and southwestern regions of Santee are most vulnerable to evacuation from earthquake hazards given the bridges they would need to traverse to access an outbound road (**Appendix B**).

The Emergency Evacuation Route Analysis identified potential vulnerabilities in Santee according to a GIS assessment that evaluates whether all residential parcels have at least two points of egress. Under the earthquake hazard scenario, which conservatively assumes bridges in Santee

are not viable, residential parcels in the southern region of Santee do not have any viable evacuation routes and residential parcels in the southwestern region of Santee only have one viable evacuation route (Mission Gorge Road) (**Appendix B**).

Evacuation locations for Santee residents would be dependent on the type and location of hazardous event affecting Santee and would be determined by first responders on site during emergency situations. For example, if a wildfire occurs north of Santee, residents would be directed to evacuate to community centers and City buildings in the southern portion of Santee, such as the City of Santee Operations Center, or to areas south of Santee, such as El Cajon. Evacuation locations would consist of places in Santee that residents are familiar with, such as parks, community centers, schools, libraries, City department buildings, or churches.

Section 5. Climate Adaptation and Resilience

In accordance with SB 379, the Safety and Environmental Justice Element includes a set of goals, policies, and objectives based on a Vulnerability Assessment (**Appendix A**) identifying the risks that climate change poses to Santee and the specific assets (i.e., critical facilities) and populations at risk from climate change impacts.

5.1 What is Climate Adaptation and Resilience?

One of the most significant policy challenges of our time is to change how we plan, build, and sustain our societal and physical systems to become more resilient to the unavoidable impacts of climate change. As GHG emissions continue to rise, climate change effects will continue to accelerate. Even if global GHG emissions were to stop today, the climate would continue to change for some time as Earth's system responds to the emissions already in the atmosphere. Climate adaptation planning involves anticipating the effects of climate change and proactively planning and shifting current practices now to minimize future economic and social risks.

Climate resilience is the ability and capacity to prepare for, recover from, and adapt to trends and events caused by climate change. Improving climate resilience involves assessing how climate change will create new or alter current climate-related risks and taking steps to better cope with these risks. These include severe weather, ocean warming and acidification, extended periods of drought and extreme temperatures, wildfire, and other increasingly unavoidable deleterious effects of climate change. More frequent and apparent extreme weather events have shown that resilience is an essential component of any comprehensive climate action program.

There is a robust and ever-growing movement fueled by local and national agencies and organizations alike geared toward building and improving climate resilience. From local community action to global treaties, addressing climate resilience is becoming a priority to avert the worst impacts of climate change. Climate resilience efforts encompass social, economic, technological, and political strategies that are being implemented in all facets of society, including public and private sectors.

The good news is that addressing these risks allows us to not only protect people and property, but also generate economic activity that will create domestic jobs and drive prosperity. Businesses prepare for risks every day and can factor climate change-related hazards into existing risk

management frameworks to become more climate-resilient. Businesses and governments alike are planning now for the environment and economy they will face in the future.

5.2 What Is Climate Vulnerability?

Climate vulnerability describes the ways in which a person or a community is susceptible to sustaining harm or damage (impact) as a result of climate change. Climate vulnerability is a function of (1) climate-related changes in conditions that are experienced by a community and (2) the community's sensitivity to experiencing impacts because of those changing conditions.

Climate vulnerability is related to physical factors, such as whether a community is likely to experience increases in the frequency of dangerously high-heat events or to be flooded during more frequent/intense storms, as well as social and economic factors, such as inequities in access to and benefits of education, economic investment, and government services.

Climate vulnerability is experienced by urban, suburban, and rural communities, but communities may be vulnerable in different ways. An individual or community may be vulnerable with respect to multiple factors of vulnerability at once. The cumulative impacts of these disparities and inequities may contribute to heightened vulnerability among certain groups, which are often referred to as "vulnerable communities" or "sensitive populations" (see the *Vulnerable Communities/Sensitive Populations* discussion in **Section 5.3**).

5.3 Climate Adaptation Planning

The purpose of climate adaptation planning is to reduce vulnerability and increase the local capacity to adapt to projected climate change effects and build resilience through adoption of goals and policies. A climate-resilient city is one that is prepared for the effects of climate change and can provide essential services during and after hazard events. To plan for climate-related hazards in Santee that may affect people and assets, the City prepared a Vulnerability Assessment (**Appendix A**) in accordance with the process outlined in the California Adaptation Planning Guide.

The Cal OES developed the California Adaptation Planning Guide to provide guidance to local governments on local adaptation and resiliency planning by presenting an updated, step-by-step process that communities can use to plan for climate change. **Appendix A** includes a full description of the four phases of the adaptation planning process. Phase 1 of the climate adaptation planning process, which includes identifying the potential climate change effects and important physical, social, and natural assets in the community, concluded that the primary hazards of concern for Santee are extreme heat, wildfire, extreme precipitation, and drought. Phase 2 of the climate adaptation planning process includes determining climate vulnerability of populations, natural resources, and assets in the community by analyzing potential impacts and the community's capacity to adapt. The City's Vulnerability Assessment follows the process outlined in Phase 2 of the California Adaptation Planning Guide.

Emissions Scenarios

The Vulnerability Assessment uses Cal-Adapt modeling and supplemental analysis to project the impacts of these climate change hazards. Cal-Adapt provides local climate projections for

jurisdictions in California using climate scenarios. Climate projections from Cal-Adapt and other sources rely on climate models, which are computer simulations that forecast future climate conditions under the various climate scenarios, described further below. While no model can project future conditions perfectly, current models are heavily reviewed by climate scientists and can accurately reproduce observed climate conditions.

The Intergovernmental Panel on Climate Change, an organization that represents the global scientific consensus about climate change, has identified four climate scenarios, which are referred to as Representative Concentration Pathways (RCPs), that can be used to project future climate conditions. RCPs are different scenarios that measure the future severity of climate change. RCP scenarios are defined by assumptions for the growth of GHG emissions and an identified point at which GHG emissions are expected to begin declining (assuming various GHG reduction policies or socioeconomic conditions). The four RCP scenarios (RCP 2.6, RCP 4.5, RCP 6.0, and RCP 8.5) are labeled with different numbers that refer to the increase in the amount of energy that reaches each square meter of Earth's surface under that scenario. The greater the number, the more severe future climate change conditions could be. For example, RCP 8.5 is the "business as usual" projection, which assumes that GHG emissions will continue to rise until at least the end of the twenty-first century. Below is a summary of the four emissions scenarios:

- RCP 2.6: Global GHG emissions peak around 2020 and then begin to decline substantially (low-emissions scenario).
- RCP 4.5: Global GHG emissions peak around 2040 and then begin to decline.
- RCP 6.0: Global emissions continue to rise until the middle of the century (2050).
- RCP 8.5: Global emissions continue to increase at least until the end of the century (2100) (high-emissions scenario).

Cal-Adapt's models represent the range of expected climate changes (e.g., annual average maximum temperature) under RCP 4.5 and RCP 8.5.

Hazards

The Vulnerability Assessment addresses the climate change-related hazards most pressing to the City, including extreme heat, wildfire, extreme precipitation, and drought.

Extreme Heat

The observed historical annual average temperature in Santee is 76.1 degrees Fahrenheit (°F). Average temperatures are projected to increase between 3.8°F and 4.7°F by mid-century (2035–2064) and between 4.9°F and 8.1°F by end of century (2070–2099), depending on the emissions scenario. In addition, the number of extreme heat days is projected to increase from a historical average of 3 days per year to between 12 and 15 days by mid-century and 16 to 32 days by end of century. Warmer days will also be accompanied by an increasing number of warmer nights.

Wildfire

Climate change can exacerbate wildfire risk. Wildfire risk is expected to continue to increase as a result of warmer temperatures, more frequent drought, changes in precipitation, and expanding WUI. According to the state’s Fourth Climate Change Assessment, wildfire risk will continue to increase as the climate warms. Santa Ana winds, which are hot, strong, and gusty winds that produce extreme dryness, have fueled—and will continue to fuel—the most catastrophic wildfires in the county. According to local climate projections, conditions that are optimal for the spread of wildfire— (1) changes in precipitation (measurable precipitation becoming less frequent), (2) changes in water availability (drought becoming more common), and (3) changes in weather (air becoming drier, temperatures becoming hotter, winds becoming stronger)—will become more prevalent. The county is expected to experience an increase in wildfire risk, especially during “peak season” in December and January, as a result of climate change.

Extreme Precipitation

Severe weather, such as atmospheric rivers, powerful rainstorms, and subsequent flooding, will occur more frequently throughout California as a result of climate change due to warmer weather and more moisture in storm systems. Climate change is expected to result in fewer but more intense rainstorms in which rainfall is rapid during a short amount of time. This could result in damages from floods. These heavy precipitation incidents could result in additional flows into the City’s primary waterways—San Diego River, Forester Creek, Sycamore Creek, and intermittent creeks paralleling Big Rock Road and Fanita Drive. Severe storms can result in overtopping or other types of dam failure, street flooding, or mudslides and debris flows (refer to the *Debris Flow Deposits* discussion in **Section 4.2, *Geologic/Seismic Hazards***), which can ensue on an annual basis.

Drought

Regionally, droughts are projected to become more frequent and intense in San Diego County and throughout Southern California by mid-century. Historically, Santee has averaged a 126-day dry spell for each year between 1961 and 1991. Dry spells are projected to increase by 4 to 8 days by mid-century and 6 to 14 days by end of century, depending on the emissions pathway. Drought episodes effectively lower fuel moisture conditions to create longer fire seasons. Drought’s toll on community water sources creates food and water security concerns in addition to economic considerations that showcase the importance of proper preparedness.

Critical Facilities

The Vulnerability Assessment evaluated the vulnerability of Santee’s critical facilities. The Vulnerability Assessment incorporated and supplemented the list of critical facilities identified for Santee in the County’s 2023 MJHMP. This list includes the following types of critical facilities:

- City Operations
- Public Safety Facilities
- Public Health Facilities

- Community Centers
- Utility Facilities
- Critical Transportation
- Schools

Critical transportation facilities were determined to be the type of critical facility most impacted by, or vulnerable to, extreme heat. Public health facilities, schools, and critical transportation were determined to be vulnerable to wildfire. Public health facilities and schools in Santee are vulnerable to extreme precipitation and associated flooding damages. Utility facilities are the only critical facility type considered to be highly vulnerable to the effects of drought. See the Vulnerability Assessment (**Appendix A**) for a full discussion of the impacts of these climate change hazards on critical facilities in Santee.

The Safety and Environmental Justice Element includes several goals, objectives, and policies to address the potential for climate change-related impacts to critical facilities in **Section 7**.

Vulnerable Communities/Sensitive Populations

The Vulnerability Assessment also analyzed climate change-related impacts on the types of populations that are most sensitive or vulnerable to these effects. These populations include the following:

- People with access and functional needs (AFNs): People in multi-lingual communities, families with infants and children, older adults, people with disabilities, and people experiencing homelessness.
- People with Existing Chronic Health Conditions: People with diabetes, cardiovascular diseases, psychiatric illnesses, and respiratory diseases (e.g., asthma).
- People with Low Incomes: People with incomes that are between 50 percent and 80 percent of the area median income. See **Section 6.2, *Mapping Disadvantaged Communities***, for a detailed discussion of low-income areas in Santee.
- People Experiencing Homelessness: People who are living in a place that is not meant for human habitation, in emergency shelters, or in transitional housing or exiting an institution where a person temporarily resided.
- Outdoor Workers: People who spend most of their workday outside (e.g., gardeners, landscapers, and park/recreation staff).
- Older Adults: People who are 65 years of age or older.
- Children: People who are 17 years of age or younger.
- People without Life-Supporting Resources: People who lack adequate housing or ways to cool living space, are renters/tenants, or are food-insecure.

The populations that were determined to be most vulnerable to extreme heat include people with AFNs, people experiencing homelessness, outdoor workers, and people without life-supporting resources. The identified sensitive populations, except for people with existing chronic health

conditions, were found to be highly vulnerable to wildfire hazards. None of the identified sensitive populations were determined to be highly vulnerable to extreme precipitation. The identified sensitive populations, except people with existing chronic health conditions, are highly vulnerable to drought. **Appendix A** includes a full discussion of the impacts of these climate change hazards on Santee’s vulnerable populations.

The Safety and Environmental Justice Element includes several goals, objectives, and policies to address the potential for climate change-related impacts to vulnerable populations in **Section 7**.

Section 6. Environmental Justice – Existing Conditions

Environmental justice is defined by the California Environmental Justice Alliance as “the basic right of people to live, work, go to school, and pray in a healthy and clean environment—regardless of race, gender, sexual orientation, age, culture, ability, nationality, or income.”

In Santee, as in many other places, areas with the highest concentration of low-income families are more likely to be exposed to pollution and environmental hazards. Consequently, they experience higher rates of health-related issues. SB 1000, which requires cities and counties with disadvantaged communities to incorporate environmental justice policies in their General Plans, has seven primary objectives:

1. Prioritize the Needs of Our Disadvantaged Communities
2. Promote Civic Engagement
3. Improve Access to Public Facilities
4. Promote Food Access
5. Promote Safe and Sanitary Housing
6. Reduce Pollution Exposure
7. Promote Physical Activity

In Santee, as in many other jurisdictions, areas with the highest concentration of low-income families are more likely to be exposed to pollution and environmental hazards. Consequently, the populations in these areas experience higher rates of health-related issues. This Element incorporates an analysis of environmental justice issues in Santee and identifies goals, objectives, and policies aimed at addressing community issues in equity (see **Section 7**). Addressing equity and environmental justice plays an important part in achieving the General Plan vision of improving the quality of life for citizens, workers, and visitors of Santee.

Once a city identifies disadvantaged communities, the OPR Environmental Justice Element Guidelines recommend that local agencies work with these communities to understand existing conditions with respect to the following environmental justice topic areas to better understand the drivers of inequality:

- Pollution exposure, including access to clean air and water
- Access to public facilities and services, including access to transit, healthcare, childcare, parks, and other civic facilities

- Access to healthy food
- Access to safe and sanitary homes
- Access to physical activity and recreational opportunities
- Unique or compounded health risks, including climate exposure

6.1 Community Engagement

A key environmental justice principle is to involve the communities most impacted by pollution, toxins, and other environmental problems that can impact their health and well-being in the public decision-making process. Resident participation in decision-making processes can bring knowledge, information, and ideas that local governments may not have thought of. Community members affected by environmental issues can share their firsthand knowledge of problems and provide input on solutions.

The City conducted two community stakeholder meetings with City staff, members of community programs, and representatives of the Santee Fire Department, Santee Sheriff's Station, and healthcare districts. The stakeholder meetings were held on June 16, 2021 and December 1, 2021. The first stakeholder meeting on December 1, 2021, included a discussion of the goals, objectives, and policies presented in this Safety and Environmental Justice Element.

Following the first stakeholder meeting, the City developed an online Community Survey to identify what environmental justice topic areas were of greatest concern to residents. The Community Survey was made available in English and Spanish and was open from March 11, 2021, to April 30, 2021 and again from June 23, 2021 to July 7, 2021. The Community Survey included the following questions:

1. What conditions make it difficult for you to have good health and living conditions?
2. Which three issues do you think are the most important for the City to address to ensure that your neighborhood has access to healthy living conditions?
3. What improvements would you like to see in your City?
4. How much influence do you think residents have on City decisions that affect community health and environmental issues?
5. What is your age in years?
6. Which race/ethnicity category best describes you?
7. What is the highest education level you achieved?

A total of 121 responses were received from City residents. The results of the Community Survey were shared and discussed with community stakeholders during the second stakeholder meeting on June 16, 2021. The City used the Community Survey results and commentary from the stakeholders to refine the environmental justice goals, objectives, and policies to address environmental justice issues relevant to the community (**Appendix E**).

The key findings of the Community Survey are discussed in the Environmental Justice Existing Conditions Assessment (**Appendix D**), and survey results are provided in the Environmental Justice Community Survey Results (**Appendix E**).

6.2 Mapping Disadvantaged Communities

CalEnviroScreen

The OPR Environmental Justice Element Guidelines recommend using CalEnviroScreen, a computer mapping tool used to identify communities disproportionately burdened by multiple sources of pollution and with population characteristics that make them more sensitive to pollution (i.e., disadvantaged communities). Using data from federal and state sources, CalEnviroScreen uses indicators to determine if a community is disadvantaged and disproportionately affected by pollution. Exposure and environmental effects are components comprising a Pollution Burden group, and the Sensitive Populations and Socioeconomic Factors are components comprising a Population Characteristics group. The four components are made up of environmental, health, and socioeconomic data from 21 indicators (**Table 6.1, CalEnviroScreen 4.0 Indicator and Component Scoring**). The CalEnviroScreen score is calculated by combining the individual indicator scores within each of the four components, then multiplying the Pollution Burden and Population Characteristics scores to produce a final score.

Table 6.1. CalEnviroScreen 4.0 Indicator and Component Scoring

Pollution Burden Group	Population Characteristics Group
<u>Exposure</u> <ul style="list-style-type: none"> • Ozone Concentrations • PM_{2.5} Concentrations • Diesel Particulate Matter Emissions • Drinking Water Quality • Pesticide Use • Toxic Releases from Facilities • Traffic Density • Children’s Lead Risk from Housing 	<u>Sensitive Populations</u> <ul style="list-style-type: none"> • Cardiovascular Disease • Low Birth-Weight Births • Asthma Emergency • Department Visits
<u>Environmental Effects</u> <ul style="list-style-type: none"> • Cleanup Sites • Groundwater Threats • Hazardous Waste • Impaired Water Bodies • Solid Waste Sites and Facilities 	<u>Socioeconomic Factors</u> <ul style="list-style-type: none"> • Educational Attainment • Linguistic Isolation • Poverty • Unemployment • Housing Burdened Low • Income Households

Notes: PM_{2.5} = fine particulate matter measuring no more than 2.5 microns in diameter

CalEnviroScreen scores are converted to percentiles for census tracts across California that can be ranked relative to other areas of the state. In general, the higher the score or percentile, the more impacted a community is compared to other areas of the state. As shown on **Figure 6.1, City of Santee**

Disadvantaged Communities: CalEnviroScreen, the southernmost portion of Santee, west of SR-67, south of Mission Gorge Road, and bounded by the City boundary to the west and south, exceeds the 75th percentile of CalEnviroScreen scores. These areas are considered disadvantaged communities.

Low-Income Areas

In addition to using CalEnviroScreen, the OPR Environmental Justice Element Guidelines recommend mapping low-income areas to identify disadvantaged communities. To identify communities with low incomes, the City compared household income levels to two different thresholds:

1. Statewide median household income
2. HCD state income limits/area median income

The average statewide median household income (in 2018 dollars) between 2015 and 2019 was \$75,235. As shown on **Figure 6.2, *City of Santee Disadvantaged Communities: Statewide Median Income***, only a small portion of households along the southern edge of Santee are below the statewide median income threshold.

The 2021 area median income established by the HCD for a four-person household in the county was \$95,100. As shown on **Figure 6.3, *City of Santee Disadvantaged Communities: HCD State Income Limits***, Santee identified four census tracts (166.05, 166.16, 16.17, 162.02) intersecting Santee with an average median household income below the HCD's state income limits for the region.

As shown on **Figure 6.1** through **Figure 6.3**, disadvantaged communities are in the southernmost portions of Santee, west of SR-67, south of Mission Gorge Road, and bounded by the City boundary to the west and south. In addition, the area of Santee between Cuyamaca Street east to SR-67 on the southern side of Prospect Avenue is mapped as a disadvantaged community by the California Office of Environmental Health Hazard Assessment.

The Environmental Justice Existing Conditions Assessment (**Appendix D**) provides a full analysis of the extent that designated disadvantaged communities in Santee are exposed to environmental burdens or lack access to public goods and services. Key findings of this assessment are summarized in **Section 6.3, *Key Findings of the Existing Conditions Assessment***.

Figure 6.1. City of Santee Disadvantaged Communities: CalEnviroScreen

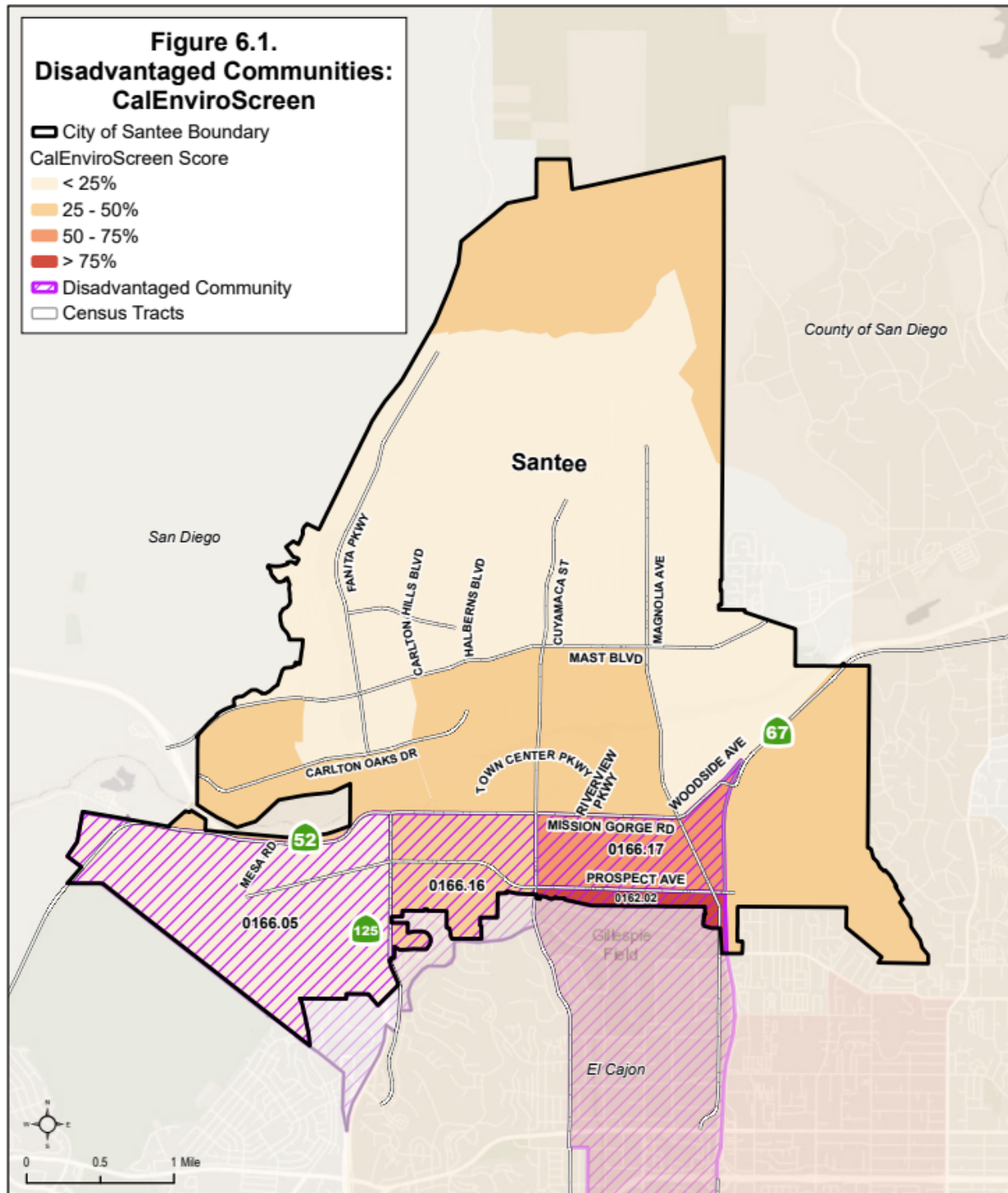


Figure 6.2. City of Santee Disadvantaged Communities: Statewide Median Income

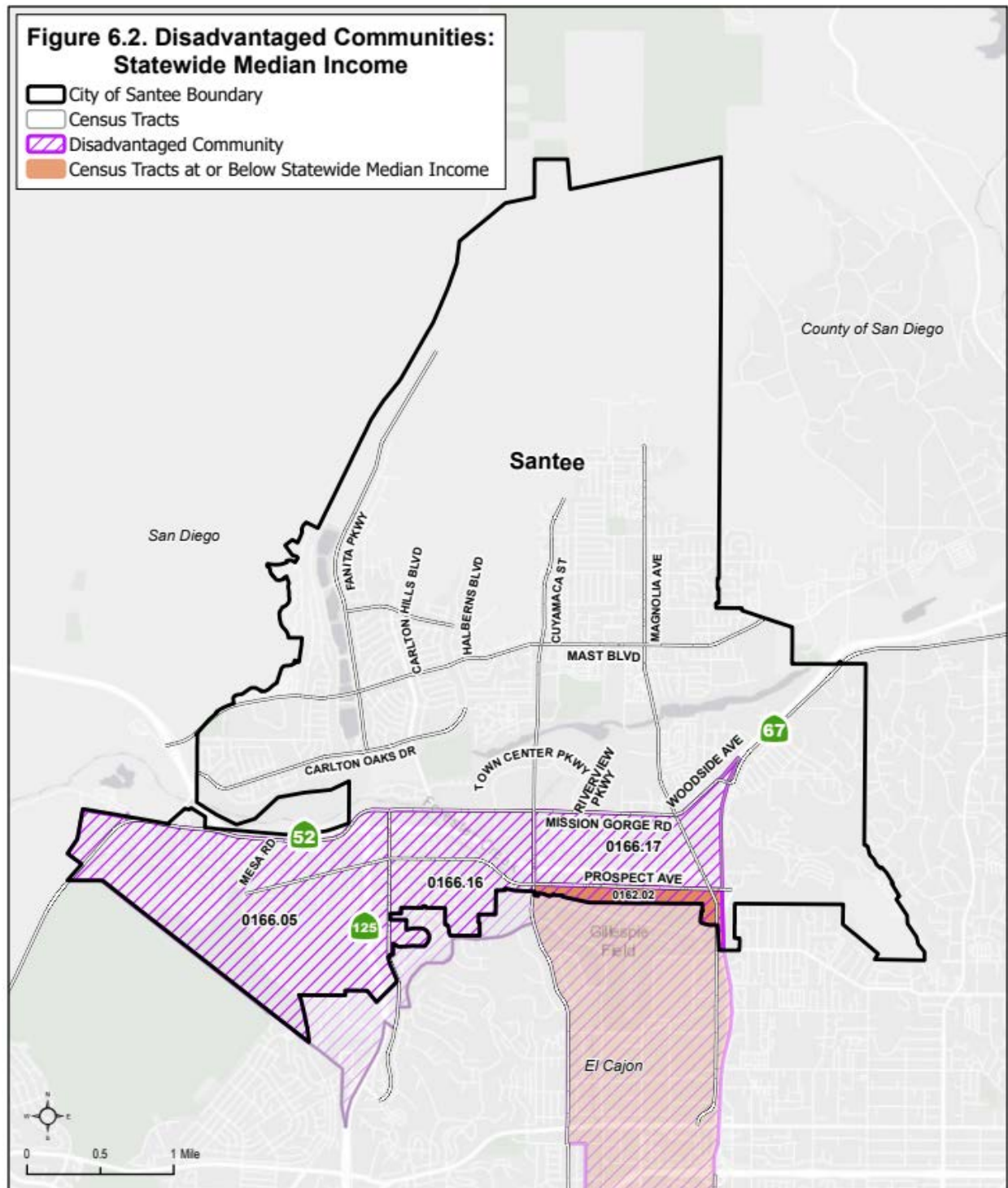
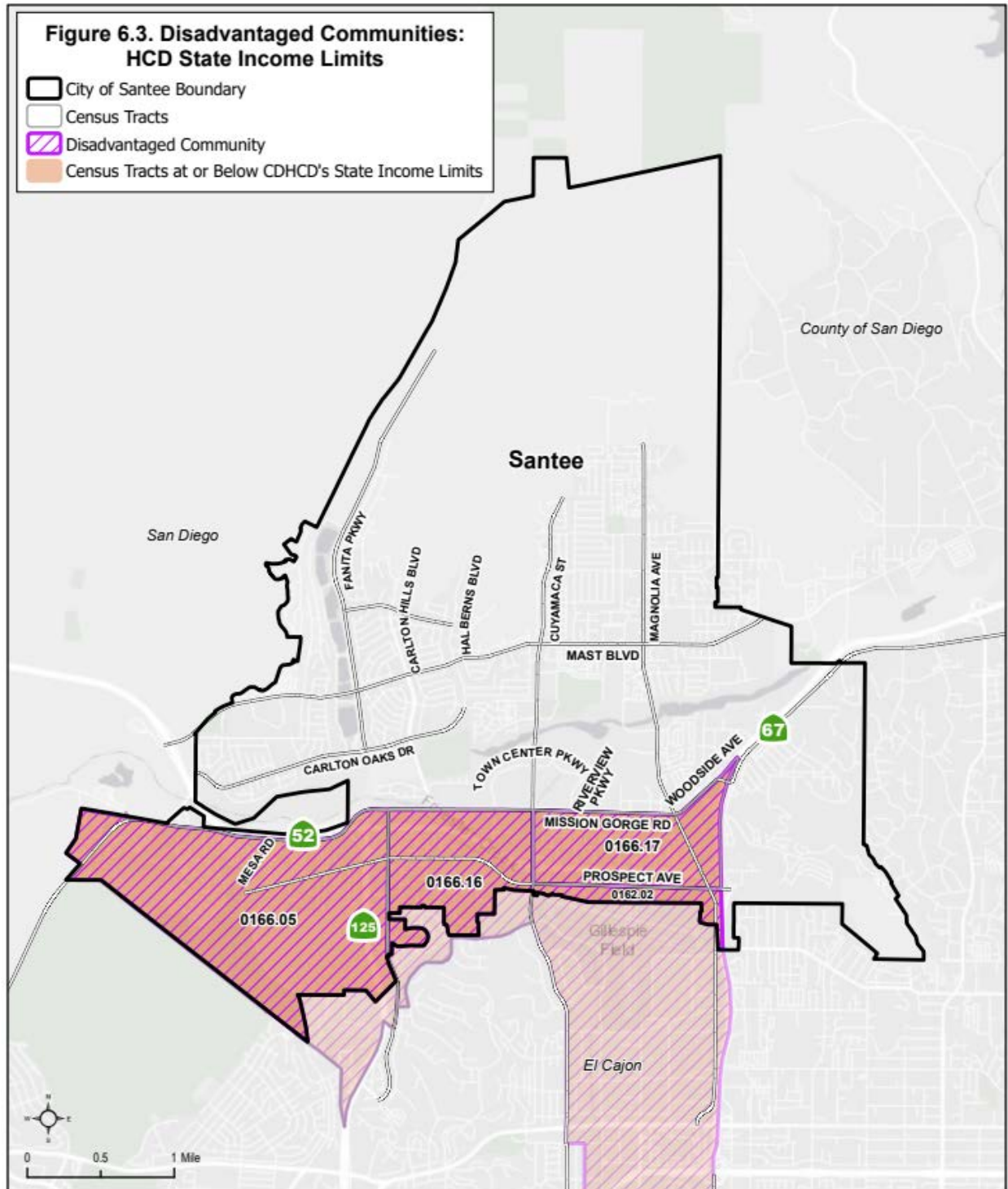


Figure 6.3. City of Santee Disadvantaged Communities: HCD State Income Limits



6.3 Key Findings of the Existing Conditions Assessment

The Environmental Justice Existing Conditions Assessment (**Appendix D**) assessed six environmental, health, and socioeconomic topic areas, including pollution exposure, access to public facilities and services, access to healthy food, access to physical activity and recreational opportunities, access to safe and sanitary homes, and unique or compounded health risks related to climate change.

To assess existing conditions with respect to each environmental justice topic area, the City relied on U.S. Census data, which is the primary and standard source of high-resolution geographic information about the U.S. population; however, U.S. Census data can have large margins or error attributable to specific methodological decisions made by the U.S. Census Bureau. Therefore, U.S. Census data was supplemented by local data and knowledge, including the results of the Community Survey and community stakeholder meetings (refer to **Section 6.1, *Community Engagement***). Stakeholders were able to “ground truth” data by providing individual observations of their lived experiences in Santee. The Community Survey also helped to quantify areas of concern to Santee residents. The key findings of the Environmental Justice Existing Conditions Assessment are listed below. See **Appendix D** for the full analysis of existing environmental justice conditions in Santee and **Appendix E** for the results of the Community Survey.

Pollution Exposure

The Environmental Justice Existing Conditions Assessment analyzed areas of Santee with poor air quality and issues related to water quality, accessibility, and affordability. Proximity to high-volume roadways, hazardous waste sites, and heavy industrial land use types and other high-emission sources can result in adverse health impacts. Disadvantaged communities are often disproportionately subjected to adverse air quality and water quality due to proximity to polluting activities and are more likely to have underlying medical conditions that may be worsened by pollution. As recommended by the OPR Guidelines, the City employed California Office of Environmental Health Hazard Assessment indicators to assess water quality, accessibility, and affordability. The Environmental Justice Existing Conditions Assessment identified the following key findings related to pollution exposure:

- Disadvantaged communities experience greater exposure to air pollutants due to their proximity to high-traffic corridors and industrial activity (Refer to Figures 7 and 8).
- While drinking water quality is not an issue for Santee, Santee’s disadvantaged communities experience greater instances of chemical, sediment, and sewage pollutants from illicit stormwater discharges due to their proximity to the San Diego River; however, these discharges do not impact the community’s potable water quality (Refer to Figure 10).
- Although not analyzed explicitly due to the lack of data availability, the pollution source that residents (46 percent of Community Survey respondents) are most concerned about is the prevalence of trash and debris throughout Santee, with many specifically pointing to homeless encampments along the river as a major source of pollution (Refer to Figure 10).

Access to Public Facilities and Services

For this analysis, access to public facilities and services included access to transit, healthcare, childcare, parks, and other civic facilities. The Environmental Justice Existing Conditions Assessment identified the following key findings related to access to public facilities and services:

- Many residences in disadvantaged communities are not within walking distance to their nearest school. However, residences in disadvantaged communities are generally within walking distance of daycare centers and transit, which can provide residents with opportunities to access other community services without using their personal vehicle (Refer to Figures 11, 12, and 13).
- Despite low transit fares and well-distributed bus stops, most residents still rely on their personal vehicle. Nevertheless, 21 percent of Community Survey respondents indicated that heavy traffic restricted access to key destinations (Refer to Figure 13).
- Residents in disadvantaged communities are less likely to have health insurance, which may result in higher rates of avoidable emergency room visits (Refer to Figure 14).
- Several medical facilities serve the area in and around the City's disadvantaged communities (Refer to Figure 14).

Access to Healthy Food

Access to healthy food is essential to improving health conditions. Many Californians also experience "food insecurity," defined as a household's inability to provide enough food for every person to live an active, healthy life. Although individuals make food choices, those choices are made within the context of what is consistently accessible, affordable, or available. The Environmental Justice Existing Conditions Assessment identified the following key findings related to access to healthy food:

- Disadvantaged communities have slightly less access to healthy food outlets compared to other areas in Santee and San Diego County. Less access to healthy food and higher prevalence of fast-food establishments in disadvantaged communities may contribute to higher obesity rates. (Refer to Figure 16).
- While Santee has several food banks and summer meal program sites, the southwestern portion of Santee with disadvantaged communities is not served by these food distribution sites (Refer to Figure 15).
- Overall, Community Survey respondents felt that they had sufficient access to healthy food.

Access to Physical Activity and Recreational Opportunities

Increasing physical activity is one of the most important contributors to improved health. It helps people manage weight; reduces risk of cardiovascular disease, type 2 diabetes, osteoporosis, and some cancers; and improves mental health and well-being. The Environmental Justice Existing Conditions Assessment identified the following key findings related to access to physical activity and recreational opportunities:

- Disadvantaged communities in the southwestern portion of Santee have fewer sidewalks and bike paths compared to other areas of Santee, limiting their ability to use active transportation modes (Refer to Figure 18).
- Nearly 46 percent of Community Survey respondents indicated that limited access to and/or deterioration of City infrastructure and facilities that support physical activity, including sidewalks, bicycle lanes, parks, and recreation centers, is the most important issue for the City to address to ensure all residents have access to healthy living conditions.

Access to Safe and Sanitary Homes

Housing location, quality, affordability, and stability have health implications. Often, individuals who experience unique or compounding health risks face multiple, interrelated barriers to accessing safe, stable, and affordable housing. The Environmental Justice Existing Conditions Assessment identified the following key findings related to access to safe and sanitary homes:

- Although housing costs in Santee are less expensive than housing costs in other areas in the county and state, 48 percent of renters and 31 percent of homeowners in Santee are cost burdened (Figure 20).
- High housing costs impact renters in disadvantaged communities more severely because they often include low-income residents.
- Community Survey respondents were much more concerned with housing affordability than the safety and quality of homes—32 percent of respondents thought affordable housing is the most important issue for the City to address as opposed to the 2 percent of respondents who thought safe and sanitary housing is the most important issue.

Unique or Compounded Health Risks

Disadvantaged communities that suffer disproportionate environmental burdens are also likely to be more vulnerable to climate impacts. Climate change may even cause displacement from increased frequency or severity of hazards like flooding, drought, wildfire, extreme heat, and other impacts (refer to **Section 5.3**). The Environmental Justice Existing Conditions Assessment identified the following key findings related to unique or compounded health risks due to climate change:

- The area with the greatest vulnerability to extreme heat, which poses a significant public health threat, is the southern portion of Santee. However, overall, Santee, including disadvantaged communities, is not particularly vulnerable to extreme heat (Refer to Figure 21).

The Safety and Environmental Justice Element aims to address these issues by integrating the primary areas of concern identified in the Environmental Justice Existing Conditions Assessment (**Appendix D**) into a series of implementation measures outlined in **Section 7**. These measures have been written in consultation with stakeholders to create a document that provides a blueprint for a more equitable, sustainable quality of life in Santee.

Section 7. Goals, Objectives, and Policies

The City is adopting goals, objectives, and policies as defined below to address the different safety hazards and environmental burdens faced by the community:

- **Goals:** High-level objectives that address different safety and environmental justice topic areas, including those that were addressed in the Environmental Justice Existing Conditions Assessment (**Appendix D**).
- **Objectives:** Established focus areas and direction on how the City will accomplish each safety and environmental justice goal.
- **Policies:** Specific actions the City will take to advance a specific goal and objective.

In accordance with SB 379 and the process outlined in the California Adaptation Planning Guide, the City prepared a Vulnerability Assessment (**Appendix A**) that identifies the risks that climate change poses to Santee and the specific assets (i.e., critical facilities) and populations at risk from climate change impacts. The Safety and Environmental Justice Element includes several goals, objectives, and policies to address the potential for climate change-related impacts to critical facilities based on the results of the Vulnerability Assessment (**Appendix A**). In addition, the City prepared an Emergency Evacuation Route Analysis (**Appendix B**) in accordance with AB 747, SB 99, and AB 1409. The analysis identifies evacuation routes that are impacted by various hazard scenarios and the residential areas of the City that are especially vulnerable due to limited evacuation routes. The results of the Emergency Evacuation Route Analysis (**Appendix B**) when creating the goals, objectives, and policies related to public safety.

The OPR Guidelines recommend that local agencies work with residents to understand the environmental burdens and drivers of inequality when developing the Environmental Justice Element. Accordingly, the City prepared the Environmental Justice Existing Conditions Assessment (**Appendix D**), which includes information from the stakeholders and the Community Survey (**Appendix E**).

The City considered the findings from the Environmental Justice Existing Conditions Assessment (**Appendix D**) when creating the goals, objectives, and policies, which seek to address the following:

- Reduce unique or compounded health risks
- Promote civic engagement in the public decision-making process
- Prioritize improvements and programs

Overall Goals:

- The goal of the Safety Element is to minimize injuries, loss of life, and property damages resulting from natural and human-induced safety hazards.
- The goal of the Environmental Justice Element is to minimize the effects of climate change, pollution, and other hazards and environmental effects.

7.1 Safety Element

Goal 1: Reduce impacts from and improve the City of Santee's capacity to adapt to natural hazards.

Objective 1: Minimize injuries, loss of life, and property damage resulting from flood hazards.

Policies

Policy 1.1: Encourage the use of innovative site design strategies within the floodplain, which ensure the minimization of flood hazards and maintenance of the natural character of waterways.

Policy 1.2: Require that developments proposed within a floodplain area use design and site planning techniques to ensure that structures are elevated at least 1 foot above the 100-year flood level.

Policy 1.3: Ensure that proposed projects that would modify the configuration of any of the three main waterways in Santee (San Diego River and Sycamore and Forester Creeks) are required to submit a report prepared by a registered hydrologist that analyzes potential effects of the project downstream and within the local vicinity.

Policy 1.4: Actively pursue the improvement of drainage ways and flood control facilities to lessen recurrent flood problems and include such public improvements in the Capital Improvements Program for Santee.

Policy 1.5: Pursue the identification of flood hazard areas along Fanita and Big Rock Creeks and apply protective measures where necessary.

Policy 1.6: Require a hydrologic study, including the analysis of effects on downstream and upstream properties and on the flood-carrying characteristics of the stream, for development proposed in the floodplain.

Policy 1.7: Ensure that critical emergency uses (hospitals, fire stations, police stations, the Emergency Operations Center, public administration buildings, and schools) are not in flood hazard areas or in areas that would affect their ability to function in the event of a disaster.

Policy 1.8: Prohibit development within the 100-year floodway, subject to the provisions of the City of Santee's Flood Damage Prevention Ordinance.

Policy 1.9: Ensure that floodway areas are not included in the calculation of net area for the purpose of land division.

Objective 2: Increase awareness of geotechnical and seismic hazards to avoid or minimize the effects of hazards during the planning process for new development or redevelopment and to mitigate the risks for existing development.

Policies

Policy 2.1: Utilize existing and evolving geologic, geophysical, and engineering knowledge to distinguish and delineate those areas that are particularly susceptible to damage from landslides and slope instability, liquefaction, and dam inundation.

Policy 2.2: For projects proposed in areas identified in the geologic hazard category area, the geologic/geotechnical consultant shall establish either that the unfavorable conditions do not exist in the specific area in question or that they can be mitigated through proper design and construction.

Policy 2.3: As shown in Table A-1, Determination of Geotechnical Studies Required, of the Geotechnical/Seismic Hazard Study Group I, II, III, and IV facilities require a Geotechnical Investigation, a Geologic Investigation, and a Seismic Hazard Study specific to the project. Additionally, the State of California requires reports for public schools, hospitals, and other critical structures to be reviewed by the State Architect.

Objective 3: Minimize injuries, loss of life, and property damage resulting from fire hazards.

Policies

New Development

Policy 3.1: Mandate that a proposed development in a State Responsibility Area or Very High Fire Hazard Severity Zone be approved only after it is determined that a Fire Protection Plan is in place that includes measures to avoid or minimize fire hazards, such as adequate water pressure to maintain the required fire flow at the time of development.

Policy 3.2: Ensure that all new development meets established response time standards for fire and life safety services and that all new development in State Responsibility Areas or Very High Fire Hazard Severity Zones requires fuel modification around homes and subdivisions.

Policy 3.3: Avoid expanding new residential development, essential public facilities, and critical infrastructure in areas subject to extreme threat or high risk, such as High or Very High Fire Hazard Severity Zones, or areas classified by the California Department of Forestry and Fire Protection as having an Extreme Threat classification on Fire Threat Maps unless all feasible risk reduction measures have been incorporated into project designs or conditions of approval.

Policy 3.4: Prohibit land uses that could exacerbate the risk of ignitions in High or Very High Fire Hazard Severity Zones, such as outdoor storage of hazardous or highly flammable materials, automobile service or gas stations, or temporary fireworks sales.

Policy 3.5: Prohibit land uses that could place occupants at unreasonable risk in High or Very High Fire Hazard Severity Zones, such as areas with large events or assembly of people and healthcare facilities.

Policy 3.6: Encourage the use of conservation easements or establish a Transfer of Development Rights Program in undeveloped wildland areas within High or Very High Fire Hazard Severity Zones.

Policy 3.7: Require the installation of fire hydrants and establishment of emergency vehicle access, notably before construction with combustible materials can begin on an approved project.

Policy 3.8: Require emergency access routes in developments to be adequately wide to allow the entry and maneuvering of emergency vehicles to ensure that new development has adequate fire protection.

Policy 3.9: Mandate that proposed development satisfy the minimum structural fire protection standards in the adopted edition of the California Building Standards Code and California Fire Code; however, where deemed appropriate, the City of Santee shall enhance the minimum standards to provide optimum protection.

Policy 3.10: Mandate that all new development in the Very High Fire Severity Zones comply with the most current version of the California Building Code and California Fire Code.

Policy 3.11: Mandate that all new development meet or exceed Title 14, California Code of Regulations, Division 1.5, Chapter 7, Subchapter 2, Articles 1–5 (starting with Section 1270) (SRA Fire Safe Regulations), and Title 14, California Code of Regulations, Division 1.5, Chapter 7, Subchapter 3, Article 3 (starting with Section 1299.01) (Fire Hazard Reduction Around Buildings and Structures Regulations), for State Responsibility Areas and/or Very High Fire Severity Zones.

Existing Development

Policy 3.12: Increase resilience of existing development in high-risk areas built prior to modern fire safety codes or wildfire hazard mitigation guidance.

Policy 3.13: Mandate that public and private landowners for all existing land uses comply with all applicable state and local requirements and implement site-specific safety measures that mitigate to a low-risk condition around or near public facilities, infrastructure, and natural resources.

Policy 3.14: Provide information regarding defensible space and building retrofits to achieve a low-risk condition.

Policy 3.15: Require public and private landowners to minimize the risk of wildfire moving from wildland areas to developed properties or from property to property by increasing structural hardening measures (e.g., fire-rated roofing and fire-resistant construction materials and techniques), maintaining and improving defensible space on site, and supporting vegetation management in adjacent undeveloped areas.

Policy 3.16: Require structures with fire protection sprinkler systems to provide for outside alarm notification.

Policy 3.17: Mitigate existing non-conforming development to contemporary fire safe standards (e.g., road standards, vegetative hazards). Support state legislation that would provide tax incentives to encourage the repair or demolition of structures that could be considered fire hazards.

Infill Development

Policy 3.18: Prioritize infill development within the existing developed footprint to avoid hazardous areas and support emergency response times.

Policy 3.19: Ensure that all infill development projects within State Responsibility Areas or Very High Fire Hazard Severity Zones are required to comply with applicable state or local fire safety and defensible space regulations or standards and any applicable fire protection or risk reduction measures identified in locally adopted plans.

Policy 3.20: Ensure that discretionary infill projects may be required to prepare a project-specific fire hazard and risk assessment and incorporate project-specific risk reduction measures, subject to the determination and approval of the Fire Marshal.

All Development

Policy 3.21: Support the continuation of long-term maintenance of fire hazard reduction projects, such as a weed abatement program (existing), community fire breaks, and private and public road clearance.

Policy 3.22: Ensure that the distribution of fire hydrants and capacity of water lines is adequate through periodic review. Collaborate with the Padre Dam Municipal Water District to ensure that the City's water supply location and long-term integrity are sufficient and future water supply needs are met.

Policy 3.23: Encourage and support the delivery of a high level of emergency services through cooperation with other agencies and use of available financial opportunities.

Policy 3.24: Encourage the continued development, implementation, and public awareness of fire prevention programs.

Policy 3.25: The Santee Fire Department shall continue to be involved in the review of development applications to minimize fire hazards. Considerations shall be given to adequate emergency access, driveway widths, turning radii, future water supply needs, fire hydrant locations, needed fire flow requirements, street addressing, and signage.

Policy 3.26: Coordinate with the Padre Dam Municipal Water District on future water supply needs and existing water infrastructure constraints and deficiencies that could affect the City's ability to meet fire flow requirements.

Policy 3.27: Ensure that the timing of additional fire station construction or renovation (or new services) relates to the rise of service demand in Santee and surrounding areas.

Policy 3.28: Ensure that re-development after a large fire complies with the requirements for construction in the Very High Fire Hazard Severity Zones for fire safety.

Policy 3.29: Ensure that the planning and design of re-development in very high Fire Hazard Severity Zones minimizes the risks of wildfire and includes adequate provisions for vegetation management, emergency access, and firefighting while also complying with current fire codes.

Policy 3.30: Support mutual aid agreements and communications links with the County of San Diego and the other municipalities participating in the Unified San Diego County Emergency Service Organization.

Policy 3.31: Provide adequate staffing, equipment, technology, training, and funding for the Santee Fire Department to meet the existing and projected service demands and response times.

Goal 2: Improve the City of Santee’s capacity to prevent and respond to criminal activities.

Objective 4: Minimize injuries, loss of life, and property damage and losses resulting from criminal activities.

Policies

Policy 4.1: Encourage citizen and business participation in the Neighborhood Watch Program and the “Safe Santee” program and promote the establishment of new neighborhood watch programs to encourage community participation in the patrol and to promote the awareness of suspicious activity.

Policy 4.2: Incorporate Crime Prevention through Environmental Design principles into site planning for new developments, publicly owned spaces and renovations of existing developments, considering the concepts of defensible space, surveillance, territoriality, access control, and maintenance.

Policy 4.3: Encourage the upgrading of building security requirements.

Policy 4.4: Continue to involve law enforcement personnel in the review of new development applications through participation in the Development Review process.

Policy 4.5: Ensure that structures are adequately identified by street address and lighted sufficiently to deter criminal activity.

Policy 4.6: Work with the school districts in the establishment of a permanent School Resource Officer program or similar measure to provide a law enforcement presence at City schools.

Policy 4.7: Support the County of San Diego’s efforts to relocate the existing Las Colinas jail as part of a state-of-the-art consolidated justice facility to be located elsewhere on the County’s Town Center Property.

Policy 4.8: Ensure that critical facilities, hazardous facilities, and special occupancy structures are located and designed to be functional in an event of a disaster. These facilities and structures include fire and police stations, hospitals, communication centers, schools, churches, and other high occupancy structures.

Goal 3: Improve public safety and minimize injuries, loss of life, and property damage resulting from transportation-related hazards.

Objective 5: Minimize injuries, loss of life, and property damage resulting from traffic hazards.

Policies

Policy 5.1: Continue to review traffic safety problems annually and enforcement of parking regulations.

Policy 5.2: Promote the use of traffic control devices such as signals, medians, and other street design measures along busy roadways to regulate, warn, and guide traffic, thereby diminishing traffic hazards.

Policy 5.3: Encourage ridesharing and the use of transit and other transportation systems management programs to reduce the number of vehicle miles traveled and traffic congestion.

Policy 5.4: Preclude through-city truck traffic on local roadways and limit truck routes through Santee to principal and major arterial roadways.

Policy 5.5: Promote the establishment of shared driveways and reciprocal access between adjoining properties to reduce the number of curb cuts and conflicting traffic movements on major roads.

Objective 6: Improve the safety and functionality of light-rail transit.

Policies

Policy 6.1: Consider methods of improving service safety along and across the trolley line in coordination with San Diego Association of Governments, San Diego Metropolitan Transit System, and other relevant agencies.

Policy 6.2: Coordinate with San Diego Metropolitan Transit System to encourage transit stops in areas serving vulnerable populations, such as near senior housing projects, medical facilities, major employment centers, and mixed-use areas.

Objective 7: Minimize injuries, loss of life, and property damage resulting from airport hazards.

Policies

Policy 7.1: Continue reviewing all development proposed in the Gillespie Field Airport Influence Areas using the Airport Land Use Compatibility Plan, which provides guidance on appropriate land uses surrounding airports to protect the health and safety of people and property within the vicinity of an airport. Ensure consistency determinations are received from the Airport Land Use Commission to ensure that design features are incorporated into the site plan to address identified aircraft safety and noise hazards.

Policy 7.2: Continue to discourage the establishment of additional high-risk uses, including schools, hospitals, nursing homes, and daycare centers in Airport Safety Zones and receive consistency determinations from the Airport Land Use Commission.

Policy 7.3: Receive final airspace determination from the Federal Aviation Administration for projects in Airport Influence Areas in accordance with Code of Federal Regulations, Title 14, Part 77, Safe, Efficient Use, and Preservation of the Navigable Airspace.

Goal 4: Improve the City of Santee's capacity to prevent and respond to emergencies and hazardous materials incidents.

Objective 8: Ensure the efficient control of emergency operations during natural or human-caused disasters.

Policies

Policy 8.1: Continue to hold periodic disaster exercises in cooperation with the appropriate state and federal agencies.

Policy 8.2: Update the adopted Santee Emergency Operations Plan periodically to ensure the safety of residents, employees, and visitors in times of natural or human-caused disaster.

Policy 8.3: Maintain an Emergency Operations Center to coordinate resources, information, and communication, which would strengthen the City of Santee's ability to detect and respond to threats.

Objective 9: Minimize the risk of damage to people, property, and the environment caused by hazardous materials.

Policies

Policy 9.1: Continue to implement the County of San Diego's Hazardous Waste Management Plan or develop and implement an equivalent plan.

Policy 9.2: Continue to participate in the San Diego County Joint Powers Authority Hazardous Materials Response Team in dealing with hazardous materials incidents.

Policy 9.3: Require that any potential hazardous materials issues be fully investigated at the environmental review stage prior to project approval.

Policy 9.4: Review any proposed uses involving the use, transport, storage, or handling of hazardous waste to ensure that such uses will not represent a significant risk to surrounding uses or the environment.

Policy 9.5: Continue to provide for a household hazardous waste collection program for Santee residents as part of the contract with the City of Santee trash franchisee.

Policy 9.6: Control the location, manufacture, storage, or use of hazardous materials in Santee through Zoning Ordinance implementation and the development review process.

Policy 9.7: Encourage safe and proper disposal of household hazardous waste.

Policy 9.8: Promote safe, environmentally sound means of solid waste disposal for the community.

Policy 9.9: Investigate ways to encourage businesses to recycle their waste.

Policy 9.10: Continue to implement the Construction and Demolition Diversion Ordinance as required by Cal Recycle.

Goal 5: Increase Santee's resiliency to climate change-related impacts.

Objective 10: Build capacity to adapt to climate-related hazards through resilient emergency management and hazard mitigation strategies.

Policies

Policy 10.1: Integrate findings of climate vulnerability into emergency planning, including mitigation, preparedness, response, and recovery efforts. In doing so, the City of Santee will respond to any unique challenges in the community identified through the Vulnerability Assessment.

Policy 10.2: Ensure that emergency management activities are conducted equitably and are responsive to the needs of all community members, primarily by communicating emergency plans in many different formats and in multiple languages, as appropriate, and conducting outreach with and to seek feedback from members of the community who face equity issues.

Policy 10.3: Continue to collaborate with local and regional partners to support business resiliency through preparedness education, training, and resources.

Policy 10.4: Collaborate with local, regional, state, and federal partners to provide community-wide outreach to educate people on how to prepare for and recover from climate change effects.

Policy 10.5: Provide information on the benefits of the resiliency of existing residential and commercial development through structural strengthening, fire safe landscaping, and energy efficiency upgrades.

Policy 10.6: Coordinate with transportation agencies to identify local and regional transportation corridors that are at risk from climate change effects while using the best available science and resilient design features to improve resiliency to extreme climate events.

Policy 10.7: Coordinate with regional transit providers to identify alternative routes, stops, and modes of transit if normal infrastructure is damaged or closed because of extreme events.

Policy 10.8: Promote climate preparedness and provide outreach to vulnerable populations.

Objective 11: Increase resiliency to the impacts of extreme heat.

Policies

Policy 11.1: Increase the energy reliability of municipal facilities to withstand increased energy demands.

Policy 11.2: Continue expedited review of building permits for solar equipment and electric vehicle charging stations.

Policy 11.3: Encourage the conservation of energy during peak demand hours.

Policy 11.4: Promote adequate protection for outdoor workers and people experiencing homelessness from extreme conditions.

Policy 11.5: Provide information to the public in cooperation with community-based organizations to ensure that emergency shelters and cooling centers are available during climate events, such as extreme heat events, poor air quality, severe weather events, and other highly hazardous conditions.

Policy 11.6: Encourage shade trees near buildings, in parking lots, and along bike and pedestrian pathways.

Policy 11.7: Promote reverse 911 calls to notify residents of serious heat events or natural disasters and encourage residents to register into the Alert San Diego system.

Objective 12: Increase resiliency to the impacts of wildfire.

Policies

Policy 12.1: Continue to require fire prevention planning and defensible space in all new development within Very High Fire Hazard Severity Zones or wildland-urban interface.

Policy 12.2: Review development proposals and coordinate with regional transportation agencies, as needed, to ensure that multiple evacuation routes are available under a range of scenarios and to identify alternative routes that are accessible to people without life-supporting resources.

Policy 12.3: Continue to educate the public on the importance of fire safety with information on topics including but not limited to defensible space, evacuation routes, and road clearance, with a focus on reaching at-risk, vulnerable populations.

Policy 12.4: Identify fire-prone habitats to plan for increased risk of larger and more frequent wildfires.

Objective 13: Increase resiliency to the impacts of extreme precipitation.

Policies

Policy 13.1: Continue to encourage the implementation of low-impact development (e.g., rain gardens, rainwater harvesting, green roofs) to reduce flooding.

Policy 13.2: Continue to promote the application of nature-based solutions (e.g., greenways, tree trenches) to improve resilience and preserve biodiversity.

Policy 13.3: Continue to encourage the use of climate-smart landscaped surfaces (e.g., permeable pavement, stormwater parks, green streets) in new and existing development.

Objective 14: Increase resiliency to the impacts of drought.

Policies

Policy 14.1: Provide information on water efficiency and conservation efforts.

Policy 14.2: Continue to implement the City of Santee’s Water Efficient Landscape Ordinance for private and public projects.

Policy 14.3: Provide information on building code requirements for water conservation features (e.g., low-flow toilets, faucets, appliances).

Policy 14.4: Explore programs to expand access to limited water resources for at-risk, vulnerable populations (e.g., people experiencing homelessness).

7.2 Environmental Justice Element

Goal 1: Reduce pollution exposure and improve air quality.

Objective 1: Continue to minimize the potential impact of pollution on disadvantaged communities by mitigating the factors and conditions that contribute to exposure.

Policies

Policy 1.1: Continue to protect natural resources from pollution, such as trash and debris in creeks, rivers, and storm drainage areas, especially in areas where transient populations are prevalent.

Policy 1.2: Increase maintenance of public spaces, such as parks and trails, to protect natural resources from pollution.

Policy 1.3: Continue to reduce the potential danger related to the use, storage, transport, and disposal of hazardous materials to an acceptable level of risk.

Policy 1.4: Continue to protect the air, water, soil, and biotic resources from damage by exposure to hazardous materials.

Objective 2: Maintain and improve air quality, especially in areas identified as disadvantaged communities, by defining sources of air pollution and reducing emissions from said sources.

Policies

Policy 2.1: Continue to maintain or improve the current air quality level within the City of Santee’s jurisdiction.

Policy 2.2: Remove particulate matter from mobile source emissions through implementation of the Sustainable Santee Plan’s public transit, active transportation, and electrification strategies.

Policy 2.3: Seek to partner with the San Diego County Air Pollution Control District and the California Department of Transportation to establish a mitigation program, such as a roadside vegetation barrier program, to reduce the impacts of pollution, notably for homes in the disadvantaged communities bounded by Magnolia Avenue, Prospect Avenue, Cuyamaca Street, and Mission Gorge Road.

Policy 2.4: Explore creating a program to provide education on how to improve air quality for City residents impacted by air pollutants, especially those living within proximity to Gillespie Field.

Policy 2.5: Seek to partner with the San Diego County Air Pollution Control District to (1) establish a mitigation program to reduce the impact of air pollution on disadvantaged communities and (2) create targeted permit inspection programs in disadvantaged communities to help ensure enforcement of air quality permits.

Policy 2.6: Create land use patterns that encourage people to bicycle, walk, or use public transit to reduce emissions from mobile sources, such as plans that (1) require vegetative barriers to be included in industrial developments near residential areas in Santee and/or (2) improve tree canopy and promote green infrastructure development in disadvantaged communities, particularly the neighborhoods that do not already have access to green space.

Policy 2.7: Encourage stronger pollution controls at facilities in/near disadvantaged communities, especially the neighborhoods around Magnolia Avenue, Prospect Avenue, Cuyamaca Street, and Mission Gorge Road.

Goal 2: Promote access to public facilities and services.

Objective 3: Promote access to public transit by increasing frequency of buses and trolleys, decreasing travel duration for commuters, and updating system networks to connect riders to priority areas, such as shopping centers, schools, and parks and recreation facilities.

Policies

Policy 3.1: Implement the Santee Parks and Recreation Master Plan to increase access to diverse, high-quality parks, green space, recreation facilities, and natural environments for disadvantaged communities.

Policy 3.2: Work with the San Diego Metropolitan Transit System and the San Diego Association of Governments to encourage transit providers to establish, maintain, and increase frequency of routes to jobs, shopping, schools, daycares, parks, and healthcare facilities that are convenient to the disadvantaged communities in both the southeastern and the southwestern portions of Santee.

Policy 3.3: Promote and support the continued expansion of the San Diego Trolley system that benefits residents of Santee, especially in higher-density areas. Work with the San Diego Metropolitan Transit System to ensure that public transportation is provided from disadvantaged communities to commercial and recreational facilities. Work with the San Diego Metropolitan Transit System to increase frequency of the Green Line, particularly during weekends, which provides access to and from the City of Santee and the City of San Diego.

Policy 3.4: Encourage the use of alternative transportation modes, such as walking, cycling, and public transit. Maintain and implement the policies and recommendations of the Active Santee Plan and the San Diego Association of Governments San Diego Regional Safe Routes to School Strategic Plan to improve safe bicycle and pedestrian access to major destinations.

Policy 3.5: Coordinate with the San Diego Metropolitan Transit System and San Diego Association of Governments to provide efficient, cost-effective, and responsive systems; multimodal support facilities; and adequate access near and to and from transit stops for bicyclists and pedestrians, including children and youth, older adults, and people with disabilities.

Policy 3.6: Encourage and provide ridesharing, park and ride, and other similar commuter programs that eliminate vehicles from freeways and arterial roadways. Encourage businesses to provide flexible work schedules for employees and employers to offer shared commute programs and/or incentives for employees to use public transit.

Policy 3.7: Work to increase public transit ridership among transit-dependent populations by providing greater access to public transit throughout Santee.

Objective 4: Improve the quality of public facilities and promote equitable access to community (public) spaces.

Policies

Policy 4.1: Prioritize seeking public funding to upgrade public facilities in disadvantaged communities, particularly the neighborhoods around Magnolia Avenue, Prospect Avenue, Cuyamaca Street, and Mission Gorge Road.

Policy 4.2: Continue the City of Santee's maintenance and operation of parks and other recreational spaces throughout Santee, especially in the regions along the river, with more frequency. Provide and maintain the highest level of service possible for all community public services and facilities.

Policy 4.3: Continue to evaluate current agreements and work to improve joint-use agreements with schools for access to indoor facilities and use of fields to adopt a more cooperative approach to providing services to the community.

Policy 4.4: Explore providing more community centers throughout Santee, especially in residential areas that lack a community center within walking distance from home, such as the southwestern areas of Santee.

Policy 4.5: Prioritize new investments in community-building facilities that will foster a sense of belonging among its residents.

Objective 5: Continue to create a "livable community" by offering supportive community programs and services, providing alternative transportation choices, and promoting equitable, affordable housing.

Policies

Policy 5.1: Create a vibrant town center by developing a connected system of multi-modal corridors that encourages walking, biking, and riding public transit. A mobility hub should be considered at the existing Santee Trolley Square to provide features such as bike-share, bike parking, car-share, neighborhood electric vehicles, real-time traveler information, demand-based

shuttle services, wayfinding signage, bicycle and pedestrian improvements, and urban design enhancements.

Policy 5.2: Continue to implement the Santee Town Center Specific Plan, which provides retail commercial, office, recreational, and other appropriate uses to establish a focal point for Santee.

Policy 5.3: Allow for the development of a wide range of commercial and residential building and structure types in Santee and ensure that development in Santee is consistent with the overall community character and contributes positively to Santee's image.

Policy 5.4: Ensure that industrial uses are compatible with adjacent land uses, ensure that natural and human-induced hazards are adequately addressed in the location and intensity of development in Santee, and minimize land use conflicts between land uses in adjacent areas and existing and planned land uses in Santee.

Policy 5.5: Continue to increase sidewalks, crosswalks, and safety for people who walk and/or use mobility devices, such as wheelchairs.

Policy 5.6: Implement the Complete Streets Policy in the Santee General Plan Mobility Element.

Policy 5.7: Continue to plan for and implement a comprehensive network of safe pedestrian facilities to promote pedestrian travel.

Policy 5.8: Continue to design pedestrian walkways in a way that promotes walking by providing a safe, aesthetically pleasing path of travel.

Policy 5.9: Maintain access for pedestrian travel where it already exists and provide it where it does not to prevent or eliminate barriers to pedestrian travel.

Policy 5.10: Coordinate with local school districts and nonprofit organizations to improve access and resources to engage in active forms of transportation (e.g., bicycles, skates, helmets, and related equipment) for disadvantaged communities.

Goal 3: Promote access to physical activity and recreational opportunities.

Objective 6: Improve access to and connectivity between community services, including group meetings, recreation programs, and health classes.

Policies

Policy 6.1: Continue to provide a comprehensive program of recreational services for all ages, with an emphasis on programs for children and youth.

Policy 6.2: Continue to consider alternative recreation programs, such as providing basketball equipment to private groups, using church and commercial center facilities, and closing streets to through-traffic, where feasible, in neighborhoods with park deficiencies.

Policy 6.3: Provide readily accessible meeting space and inclusive programming at the community centers to meet the needs of people of all ages, physical conditions, and socioeconomic situations, especially Santee's diverse communities, including but not limited to the art and lesbian, gay, bisexual, and transgender communities.

Policy 6.4: Encourage service clubs, civic groups, individual donors, and others to help develop recreational facilities. Encourage private employee recreation in business and industrial areas to provide recreational opportunities for employees.

Policy 6.5: Consider providing affordable and free educational programming in disadvantaged communities to highlight practices that can improve one's health, such as physical activity and healthy eating.

Policy 6.6: Actively seek public and private funding sources to support recreation development, programs, and operation in the process of reviewing recreation programming to ensure that recreation programs reach all segments of the community.

Policy 6.7: Collaborate with organizations like California Walks to improve active transportation in Santee through policy, project, and program development and implementation; grant writing; and neighborhood needs assessments.

Objective 7: Continue to create green spaces, such as community gardens, open spaces, and public parks, that support food education, promote healthy lifestyles, and foster community building.

Policies

Policy 7.1: Continue to create safe, attractive spaces for recreation, including well-lit parks and pedestrian paths, through implementation of the Santee Parks and Recreation Master Plan, which is a roadmap used to address the need for additional trails for activities such as biking and hiking to improve connectivity throughout the Santee and to provide a system of public parks and recreation facilities that serve the residents of Santee.

Policy 7.2: Continue to provide adequate recreational acreage and facilities in all areas of Santee by identifying vacant lots and underused public land that can be turned into neighborhood-run community gardens. Provide additional park and recreational facilities for Santee residents, which could include a combination of local parks, trails, school playgrounds, and other public facilities that meet part of the need for local recreational facilities.

Policy 7.3: Encourage the development of a San Diego River Park with passive recreation uses throughout Santee as part of an overall master plan concept for the entire San Diego River. Encourage the inclusion of recreational facilities in all mixed land use developments, especially in the Santee Trolley Square Town Center.

Policy 7.4: Locate mini-parks in the built-up areas of Santee where recreational facilities are needed and where available land is limited. Pursue the development of additional publicly owned parks and recreation facilities that are distributed throughout Santee to meet the needs of all residents.

Policy 7.5: Continue and expand the City of Santee's community garden program and provide information on how existing community gardens operate and how residents can get involved.

Policy 7.6: Assess and, if feasible, develop open land for community gardens.

Policy 7.7: Identify and implement opportunities to incorporate open spaces suitable for community gardens into larger development projects.

Objective 8: Continue to create a “livable community” by investing in environmental education initiatives and streetscape beautification projects.

Policies

Policy 8.1: Consider creating an environmental education program that will include the following to encourage the appreciation of Santee’s natural resources:

- Development of trails, interpretive signs, and overlooks at public parks adjacent to sensitive environments
- Encouragement of private environmental organizations to sponsor wetlands enhancement programs and to provide docents for wetlands tours
- Coordination with school districts to use specified areas as outdoor learning laboratories

Policy 8.2: Consider developing and implementing a Green Infrastructure Plan, including a combination of stormwater features, habitat, trees, and other greenery.

Policy 8.3: Identify strategies for grassroots implementation of green infrastructure and restoration by Santee residents, such as through the promotion of eco-literacy with a focus on urban gardening.

Goal 4: Promote access to healthcare.

Objective 9: Expand healthcare access and readiness by working with partners at the regional, state, and federal levels to increase affordability of physical and mental healthcare services.

Policies

Policy 9.1: Encourage new healthcare facilities, including mental health facilities, to locate to Santee, with a focus on areas where residents lack health insurance or are underinsured, such as the southwestern portion of Santee.

Policy 9.2: Encourage existing healthcare organizations to provide safety improvement and service enhancements, as needed, to implement new technologies and best industry practices.

Policy 9.3: Explore partnerships with local and regional healthcare providers to provide free community healthcare and dental screenings and services throughout the year, particularly in disadvantaged communities.

Goal 5: Improve access to healthy food.

Objective 10: Improve the nutrition and overall health of the population by expanding the already existing network of food banks and meal sites into neighborhoods with disadvantaged communities.

Policies

Policy 10.1: Encourage the establishment and operation of additional farmers markets, farm stands, ethnic markets, mobile health food markets, and convenience/corner stores that sell healthy foods, including fresh produce where feasible and appropriate.

Policy 10.2: Encourage new developments to include a healthy food supply or edible garden (e.g., urban garden).

Policy 10.3: Work with nonprofits to expand and diversify alternative food access points, such as farmers markets and community-supported agriculture, and other healthy and local food distribution models.

Policy 10.4: Prioritize healthy food supplies in economic development efforts, especially in areas where a healthy food supply, farmers market, or community garden is not within a half mile of residential areas.

Policy 10.5: Work with food banks that serve the Santee community to maintain them as a food source to Santee residents, farmworkers, and youth.

Policy 10.6: Provide healthy food options at all municipal buildings and at City of Santee events where food is made available by the City.

Policy 10.7: Find incentives that encourage school districts to develop a program that integrates gardening and nutrition, making the connection between healthy food choices and fresh, locally grown produce.

Policy 10.8: Utilize the City of Santee's social media and newsletter to promote messages regarding healthy eating habits and food choices and information about food assistance programs, such as the Supplemental Nutrition Assistance Program (SNAP).

Goal 6: Improve access to safe and sanitary homes.

Objective 11: Continue to ensure community health and well-being by supporting rehabilitation programs, enforcing municipal codes, and supporting affordable housing projects that allow for members of disadvantaged communities, such as low-income residents, to live in safe, healthy housing.

Policies

Policy 11.1: Continue to support and coordinate with social service providers and regional agencies to address the housing-related needs of Santee residents, particularly those with special needs.

Continue the operation of the Residential Rehabilitation Program, which offers a limited amount of low-interest, deferred loans to income-eligible homeowners to facilitate home improvements and/or correct any health and safety or building code violations.

Policy 11.2: Continue to prioritize and enforce the existing Buildings and Construction Code based on safety and blight as required through existing—and, if necessary, expanded—code enforcement efforts. Continue to use the City of Santee’s Code Compliance Program to bring substandard units into compliance with City of Santee codes and to improve overall housing quality and neighborhood conditions in Santee.

Policy 11.3: Continue to use HOME Investment Partnerships and other funding sources to assist residents with extremely low, very low, and low incomes with housing rehabilitation Citywide. Develop and maintain collaborative efforts among nonprofits, for-profit developers, and public agencies to encourage the development, maintenance, and improvement of affordable housing.

Policy 11.4: Continue to provide information to the public regarding resources for housing repairs for single-family homes, multi-family properties, and mobile or manufactured homes to address unsafe and unhealthy conditions in neighborhoods.

Policy 11.5: Continue to educate and/or provide resources and weatherization (i.e., weatherproofing) measures that can improve housing conditions and reduce energy costs.

Objective 12: Increase affordable housing so households can put their income toward other goods and services, healthcare needs, and basic necessities and so households can avoid overcrowding, displacement of residents, and increased homelessness.

Policies

Policy 12.1: Address housing affordability through the Housing Element and Land Use Element to optimize land use for housing and to encourage affordable housing development.

Policy 12.2: Consider establishing a Community Revitalization and Investment Authority in the Santee Town Center area that would allow the City of Santee to use a portion of the property tax increment generated in that area to develop affordable housing and otherwise support Santee Town Center community revitalization projects.

Policy 12.3 Encourage both the private and public sectors to produce or assist in the production of housing, with particular emphasis on housing affordable to lower-income households, including extremely low-income households, and housing suitable for people with disabilities, older adults, large families, and female-headed household.

Policy 12.4: Ensure that all new housing development and redevelopment in Santee is properly phased in amount and geographic location so that City of Santee services and facilities can accommodate growth.

Policy 12.5: Coordinate with affordable housing developers and social service providers in Santee to provide Santee residents with education on how to qualify and apply for affordable housing and other housing-related needs.

Policy 12.6: Increase affordable homeownership opportunities for Santee’s low-income households and provide free homeownership education programs.

Policy 12.7: Collaborate with local social service providers to address the needs of Santee’s homeless population.

Goal 7: Promote community involvement in decisions.

Objective 13: Increase community involvement and participation in defining community needs, establishing local priorities, and creating programs to meet these needs.

Policies

Policy 13.1: Establish and clearly communicate the purpose of outreach efforts and the role the public shall play in decisions or outcomes through the City of Santee’s social media and newsletter to share updates, resources, and other information from the City of Santee.

Policy 13.2: Consider providing multi-lingual requirements for published City of Santee notices and materials, meetings, and facilitation events, where appropriate.

Policy 13.3: Leverage online tools for community engagement when beneficial, including videos and podcasts, e-comments, online forums, interactive web-based mapping, interactive planning, and tools that allow community members to use data and create their own reports. Consider instituting broadband initiatives, such as providing laptops or internet hotspots to the households in Santee affected by inadequate internet access (i.e., “digitally divided” households).

Policy 13.4: Leverage offline tools for community engagement and continue to work with local media services, such as television and radio stations, to ensure adequate public awareness of events, City of Santee resources, recreation opportunities, and policy decisions under consideration.

Policy 13.5: Collaborate with community-based organizations that have relationships, trust, and cultural competency with target communities to outreach for local initiatives and issues.

Policy 13.6: Continue to hold meetings and other public engagement forums at accessible locations and times to include a wide range of residents. Consider holding virtual meetings alongside in-person meetings to enable more residents and other stakeholders to conveniently participate in public meetings.

Policy 13.7: Prioritize outreach efforts to target communities that will be most impacted by an issue or a decision.

Policy 13.8: Continue community outreach that introduces residents to the City of Santee’s functions and services while equipping residents to get involved in their community.

Goal 8: Unique or compounded health risks.

Objective 14: Implement the Sustainable Santee Plan to help communities reduce greenhouse gases that cause climate change and to adapt to a changing climate with more extreme, more common weather phenomena.

Policies

Policy 14.1: Invest in census tracts in the areas of Santee that are more exposed to extreme heat events to build community resilience to and minimize impacts from climate change-induced phenomena.

Policy 14.2: Reduce greenhouse gas emissions, increase renewable energy, and promote energy efficiency through implementation of the Sustainable Santee Plan.

Policy 14.3: Prioritize disproportionately vulnerable populations for adaptation and mitigation investments identified in the Local Hazard Mitigation Plan.

Policy 14.4: Plan responsive measures to wildfire events. Provide public information on emergency preparedness, evacuation, shelters, food, water, and recovery in both Spanish and English. Use the City of Santee’s social media and newsletter to provide information for climate-related hazards.

Policy 14.5: Work with the County of San Diego and community-based organizations to identify resources and funding sources for those who may otherwise not qualify for financial assistance from the Federal Emergency Management Administration in the event of a disaster.

Policy 14.6: Prevent or limit significant increases in housing costs or essential supplies (“price gouging”) following disasters either through ordinances or other measures.

Policy 14.7: Prioritize dissemination of public information on emergency preparedness, evacuation, shelters, food, water, and recovery in languages primarily spoken by the ethnic and immigrant groups in the community.

Policy 14.8: Implement green infrastructure projects, including tree planting in disadvantaged communities, through implementation of a Green Infrastructure Plan through implementation of the Sustainable Santee Plan, Urban Forestry Plan, and private development proposals.

Policy 14.9: Integrate the natural and human-made landscapes of Santee to enhance the quality of life, revitalize older neighborhoods and community places, and sustain a beautiful, distinctive, and well-organized community for Santee residents.

Objective 15: Prioritize the health and safety of residents to create a resilient, adaptable community.

Policies

Policy 15.1: Continue to create an environment that promotes racial, ethnic, and religious tolerance and is free from discrimination and continue to support community and religious efforts and programs that advance tolerance and embrace diversity and anti-discrimination.

Policy 15.2: Use tools and services, such as Neighborhood Watch, law enforcement, community services, rehabilitation loan programs, code compliance, and waste management services, to support and enhance neighborhoods and streetscapes in need of revitalization.

Section 8. Implementation

Gov. Code, Section 65302(g)(2)(C), Section 65302(g)(3)(C), and Section 65302(g)(4)(C), require jurisdictions to establish a set of feasible implementation measures designed to carry out the goals, policies, and objectives established in the Safety Element of a General Plan. The policies outlined in **Section 7** function as implementation measures designed to carry out the Element's goals and objectives in compliance with the Gov. Code sections identified above.

The City will be responsible for ensuring that implementation of the policies identified in this Safety and Environmental Justice Element are monitored on an ongoing basis. The City is required to report on the implementation status of the Santee General Plan Elements in the City's Annual Progress Report in accordance with Gov. Code, Section 65400(a). The Annual Progress Report also informs the public of the City's progress toward meeting the community's goals. The Annual Progress Report is required to be prepared and submitted to City Council, the OPR, and the HCD by April 1 of each year. Additionally, implementation of policies identified in this Safety and Environmental Justice Element will be tracked and discussed during other regular City department meetings.

The policies will be implemented by various City departments and authorities. For example, the Santee Fire Department will be responsible for implementing policies related to wildfire response (e.g., Safety Policy 3.2, Environmental Justice Policy 14.4). Implementation of policies related housing, planning, and code compliance (e.g., Safety Policies 6.2 and 7.1, Environmental Justice Policies 12.4 and 14.2) will be the responsibility of the City's Development Services Department. The City's Community Services Department is responsible for implementation of policies related to recreational opportunities in Santee (e.g., Environmental Justice Policies 6.3 through 6.5). The City will implement these policies in coordination with the appropriate agencies, departments, and non-governmental organizations, as well as other jurisdictions.

The City acknowledges it is important to review the plan regularly and update it at least once every 8 years per Gov. Code, Section 65302(g)(5). The City will also ensure that as new safety hazard and equity information is discovered or produced, City staff will review and determine the appropriateness of incorporation. As part of this effort, as major disasters and other significant events affect Santee, City staff will be convened to review and assess the Safety and Environmental Justice Element.

The public will continue to be involved whenever the Safety and Environmental Justice Element is updated and as appropriate during the monitoring and evaluation process. Before the adoption of updates, the City will provide the opportunity for the public to comment on the updates. A public notice will be published before the meeting to announce the comment period and meeting logistics. Moreover, the City will engage stakeholders in community safety and environmental justice planning.

Various existing federal, state, and local programs and strategies can be used in Santee to reduce the potential public safety hazards and environmental justice issues described in this Element. The

Safety and Environmental Justice policies established in this Element must be integrated in the long-term with regional and state efforts to promote public safety and equity. The information in this Element, including results from the Vulnerability Assessment (**Appendix A**), Emergency Evacuation Route Analysis (**Appendix B**), and Environmental Justice Existing Conditions Assessment (**Appendix C**), will be used by the City to help inform updates and the development of local plans, programs, and policies. The City also incorporated the County’s 2023 MJHMP into this Safety and Environmental Justice Element, as recommended by AB 2140. The 2023 update to the MJHMP was adopted prior to approval of the Safety and Environmental Justice Element and is incorporated by reference. However, much of the information included in this Element was informed by information gathered for preparation of the 2023 MJHMP update.

Appendix A. Vulnerability Assessment

Vulnerability Assessment

City of Santee Safety and Environmental Justice Element

July 2023

Prepared for:



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Section 1 Climate Change and Climate Vulnerability

1.1 What is Climate Change?

Climate change is a long-term change in the average meteorological conditions in an area. The global climate is changing due to an increase in greenhouse gas (GHG) emissions that trap heat near Earth's surface. GHGs (at some levels) are necessary to maintain a comfortable temperature on Earth; however, an increased concentration of GHGs due to human activity that traps additional heat can change Earth's climate system in several ways. Climate change can create intensified or new hazardous conditions that can increase the risk of damage to critical infrastructure, injury to sensitive populations, and disruption of essential services. The City of Santee has prepared a Vulnerability Assessment to gain a better understanding of how a changing climate may impact Santee and to identify which aspects of the community—including people, infrastructure, and services—are most vulnerable to climate change's effects.

1.2 What is Vulnerability?

The following definition was developed by the Integrated Climate Adaptation and Resiliency Program Technical Advisory Council. The program's definition of "vulnerability" is meant to provide a clear understanding of the multiple components that characterize vulnerable communities.¹ This definition also draws upon the work of the Intergovernmental Panel on Climate Change and the California Climate Justice Working Group.²

"Climate vulnerability describes the degree to which natural, built, and human systems are at risk of exposure to climate change impacts. Vulnerable communities experience heightened risk and increased sensitivity to climate change, but also have less capacity and fewer resources to cope with, adapt to, or recover from climate impacts. These disproportionate effects are caused by physical (built/environmental), social, political, and/or economic factors, which are exacerbated by climate impacts."

Executive Order B-30-15 directs state agencies to integrate climate change into all planning efforts, including accounting for current and future climate conditions. Executive Order B-30-15 mandates this because "climate change will disproportionately affect California's most vulnerable people," and all "state agencies' planning and investments shall . . . protect California's most vulnerable populations."³ Section 2, Vulnerable Communities/Sensitive Populations, provides descriptions of how some populations are more vulnerable to the impacts of climate change than others.

¹ OPR (Governor's Office of Planning and Research). 2018. Defining Vulnerable Communities in the Context of Climate Adaptation. July. Accessed July 2023. http://www.opr.ca.gov/docs/20200720-Vulnerable_Communities.pdf.

² CJWG (Climate Justice Working Group). 2017. Advancing Climate Justice in California: Guiding Principles and Recommendations for Policy and Funding Decisions. August. Accessed July 2023. <https://www.healthyworldforall.org/en/pdf/AdvancingClimateJusticeInCaliforniaWithoutAppendix.pdf>.

³ OPR (Governor's Office of Planning and Research). 2018. "Vulnerable Populations." In Executive Order B-30-15 Resiliency Guidebook. Accessed July 2023. http://opr.ca.gov/docs/20180312-Vulnerable_Communities_Descriptions.pdf.

1.3 Climate Vulnerability and Climate Resilience

Climate vulnerability describes the ways in which a person or a community (receptor) is susceptible to sustaining harm or damage (impact) as a result of climate change. Climate vulnerability is a function of (1) climate-related changes in conditions that are experienced by a receptor and (2) the receptor's sensitivity to experiencing impacts because of those changing conditions. **Climate resilience** describes the receptor's ability and capacity to cope with or adapt to impacts caused by climate change.

Climate vulnerability is related to physical factors, such as whether a community is likely to experience increases in the frequency of dangerously high-heat events or to be flooded during more frequent/intense storms, as well as social and economic factors, such as inequities in access to and benefits of education, economic investment, and government services.

Climate vulnerability is experienced by urban, suburban, and rural communities, but communities may be vulnerable in different ways, depending on the context and the relative presence/absence of the above factors. An individual or community may be vulnerable with respect to multiple factors of vulnerability at once. The cumulative impacts of these disparities and inequities may contribute to heightened vulnerability among certain groups, which are often referred to as "vulnerable communities" or "sensitive populations" (see Section 2 for further discussion of vulnerable communities/sensitive populations).

1.4 Climate Change Modeling

This Vulnerability Assessment evaluates the ability of Santee's vulnerable populations to adapt to the impacts of four climate change hazards (extreme heat, wildfire, extreme precipitation, and drought). The assessment uses Cal-Adapt modeling and supplemental analysis to project the impacts of these climate change hazards. Cal-Adapt provides local climate projections for jurisdictions in California using climate scenarios. Climate projections from Cal-Adapt and other sources rely on climate models, which are computer simulations that forecast future climate conditions under the various climate scenarios, described further below. While no model can project future conditions perfectly, current models are heavily reviewed by climate scientists and can accurately reproduce observed climate conditions.

The Intergovernmental Panel on Climate Change, an organization that represents the global scientific consensus about climate change, has identified four climate scenarios, which are referred to as "Representative Concentration Pathways" (RCPs), that can be used to project future climate conditions. RCPs are different scenarios that measure the future severity of climate change. RCP scenarios are defined by assumptions for the growth of GHG emissions and an identified point at which GHG emissions are expected to begin declining (assuming various GHG reduction policies or socioeconomic conditions). The four RCP scenarios, RCP 2.6, RCP 4.5, RCP 6.0, and RCP 8.5,

are labeled with different numbers that refer to the increase in the amount of energy that reaches each square meter of Earth's surface under that scenario. The greater the number, the more severe future climate change conditions could be. For example, RCP 8.5 is the “business as usual” projection, which assumes that GHG emissions will continue to rise until at least the end of the 21st century. Below is a summary of the four RCPs:

- **RCP 2.6:** Global GHG emissions peak around 2020 and then begin to decline substantially (low-emissions scenario).
- **RCP 4.5:** Global GHG emissions peak around 2040 and then begin to decline.
- **RCP 6.0:** Global emissions continue to rise until the middle of the century (2050).
- **RCP 8.5:** Global emissions continue to increase at least until the end of the century (2100) (high-emissions scenario).⁴

RCP 4.5 and RCP 8.5 are displayed in Cal-Adapt's tools, allowing users to assess emission-dependent variability to evaluate a medium-emissions scenario (RCP 4.5) alongside a high-emissions scenario (RCP 8.5). Cal-Adapt's models represent the range of expected climate changes (e.g., annual average maximum temperature) under RCP 4.5 and RCP 8.5. The Governor's Office of Planning and Research (OPR) recommends that agencies use RCP 8.5 for analyses considering impacts through 2050 because minimal differences exist between emissions scenarios during the first half of the century.⁵ Per OPR's recommendation, this analysis uses RCP 4.5 and RCP 8.5 to model climate conditions and impacts related to climate change hazards in Santee.

1.5 Climate Adaptation Planning

The purpose of climate adaptation planning is to reduce vulnerability and increase the local capacity to adapt to projected climate change effects, as well as build resilience through adoption of goals and policies. A climate-resilient city is one that is prepared for the effects of climate change and can provide essential services during and after hazard events.

The California Adaptation Planning Guide (APG) was developed by the Governor's Office of Emergency Services as a resource for local governments to include climate adaptation and resilience in the City's Safety and Environmental Justice Element.⁶ The APG was designed to ensure that the Vulnerability Assessment meets Safety Element requirements in California Government Code, Section 65302(g)(4), as updated by Senate Bill (SB) 379 and SB 1035. The APG provides guidance to local governments on local adaptation and resiliency planning by presenting an updated, step-by-step process that communities can use to plan for climate change.

⁴ Cal-Adapt. 2021. “About Climate Projections and Models.” Accessed July 2023. <https://cal-adapt.org/help/get-started/about-climate-projections-and-models/>.

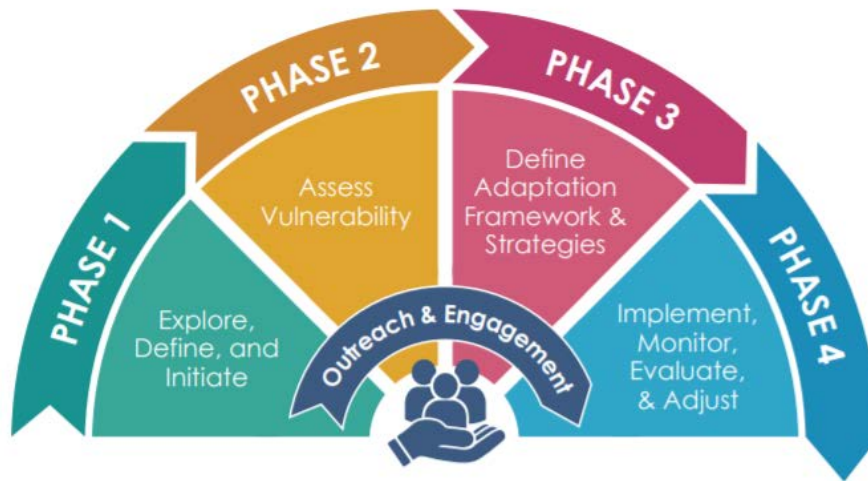
⁵ OPR (Governor's Office of Planning and Research). 2018. Planning and Investing for a Resilient California: A Guidebook for State Agencies. Accessed July 2023. http://opr.ca.gov/docs/20180313-Building_a_Resilient_CA.pdf.

⁶ CalOES (Governor's Office of Emergency Services). 2020. California Adaptation Planning Guide. 22. June. Accessed July 2023. <https://www.caloes.ca.gov/HazardMitigationSite/Documents/CA-Adaptation-Planning-Guide-FINAL-June-2020-Accessible.pdf>.

The adaptation planning process consists of the following phases, as shown on **Figure 1, Adaptation Planning Process**. Public outreach and engagement should occur during all four phases the adaptation planning process:

- **Phase 1: Explore, Define, and Initiate.** This phase includes scoping the process and project by identifying the potential climate change effects and important physical, social, and natural assets in the community. It also identifies the key stakeholders in the local government and throughout the community.
- **Phase 2: Assess Vulnerability.** This phase determines the climate vulnerability of populations, natural resources, and assets in the community by analyzing potential impacts and the community's capacity to adapt. The Vulnerability Assessment identifies how climate change could affect the community.
- **Phase 3: Define Adaptation Framework and Strategies.** This phase focuses on creating an adaptation framework and developing adaptation strategies based on the results of the Vulnerability Assessment. The adaptation strategies are the community's response to the Vulnerability Assessment—that is, how the community will address the potential for harm identified in the Vulnerability Assessment given the community's resources, goals, values, needs, and regional context.
- **Phase 4: Implement, Monitor, Evaluate, and Adjust.** In this phase, the adaptation framework is implemented, consistently monitored and evaluated, and adjusted based on continual learning, feedback, and/or triggers.

Figure 1. Adaptation Planning Process



Source: CalOES 2020.

Phase 1 of the climate adaptation planning process (explore, define, and initiate) concluded that the primary hazards of concern for Santee are extreme heat, wildfire, extreme precipitation, and drought. In conformance with the APG, the City has prepared a Vulnerability Assessment that follows the process outlined in Phase 2 of the APG and identifies the risks that these hazards pose to Santee.

1.5.1 Assessing Vulnerability to Climate Change Hazards

For each of the four climate change hazards (extreme heat, wildfire, extreme precipitation, and drought) addressed in this Vulnerability Assessment, Santee's vulnerability to the hazard is assessed using each of the five following categories (**Figure 2, Vulnerability Assessment Phase 2**):

1. **Exposure:** The goal of this step is to characterize the community's exposure to current and projected climate hazards. Climate projection data from Cal-Adapt is used to develop projections for how existing hazards are expected to change by mid- and late century.

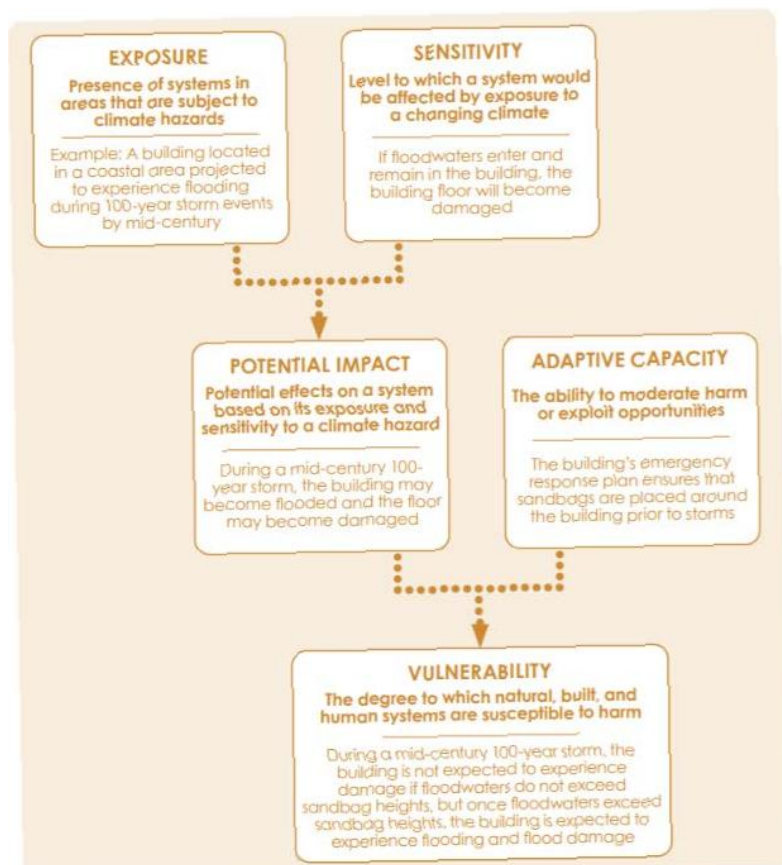
2. **Sensitivity:** This step identifies the populations (i.e., people) and assets (i.e., critical infrastructure) that are sensitive to localized climate change effects.

3. **Potential Impacts:** This step seeks to understand how sensitive populations and assets may be affected by climate change. "Potential impact" is a function of exposure and sensitivity.

4. **Adaptive Capacity:** The purpose of this step is to characterize Santee's current ability to cope with climate impacts. Santee's ability to adapt to each identified climate impact is determined through a review of existing plans, policies, and programs and through stakeholder engagement.

5. **Vulnerability Scoring:** Vulnerability is a function of potential impact and adaptive capacity. The vulnerability scoring method allows the City to understand which populations and assets will potentially face the greatest threats and where gaps are in current planning efforts. The scoring rubric used to assess the potential impact, adaptive capacity, and overall vulnerability is shown on **Figure 3, Potential Impact and Adaptive Capacity Scoring Rubric**, and **Figure 4, Vulnerability Scoring Rubric**.

Figure 2. Vulnerability Assessment Phase 2



Source: CalOES 2020 (Adapted by Harris and Associates 2022).

The Vulnerability Assessment assigns vulnerability scores to populations (i.e., people) and assets (i.e., critical infrastructure). The potential impact and adaptive capacity scores (**Figure 3**) determine the vulnerability score for each population and asset under each of the four climate

change hazards. The vulnerability score reflects how susceptible a population or asset is to harm from a particular hazard. Vulnerability is assessed on a scale of 1 to 5 (**Figure 4**). The matrix on Figure 4 shows how potential impact and adaptive capacity scores combine and translate into a vulnerability score. For example, if a hazard’s potential impact is highly likely and the population or asset lacks capacity to manage this impact, there is a very high vulnerability to this hazard. Lower vulnerability scores indicate the population or asset has a lower vulnerability to the hazard; higher values indicate greater vulnerability.

Figure 3. Potential Impact and Adaptive Capacity Scoring Rubric

SCORE	POTENTIAL IMPACT	ADAPTIVE CAPACITY
Low	Impact is unlikely based on projected exposure; would result in minor consequences to public health, safety, and/or other metrics of concern.	The population or asset lacks capacity to manage climate impact; major changes would be required.
Medium	Impact is somewhat likely based on projected exposure; would result in some consequences to public health, safety, and/or other metrics of concern.	The population or asset has some capacity to manage climate impact; some changes would be required.
High	Impact is highly likely based on projected exposure; would result in substantial consequences to public health, safety, and/or other metrics of concern.	The population or asset has high capacity to manage climate impact; minimal to no changes are required.

Source: CalOES 2020 (Adapted by Harris and Associates 2022).

Figure 4. Vulnerability Scoring Rubric

Potential Impacts	High	3	4	5
	Medium	2	3	4
	Low	1	2	3
		High	Medium	Low
		Adaptive Capacity		

Source: CalOES 2020 (Adapted by Harris and Associates 2022).

1.5.2 Relationship to Hazard Mitigation Planning

The information provided in the Vulnerability Assessment integrates information from the County of San Diego’s Multi-Jurisdictional Hazard Mitigation Plan (MJHMP)⁷ with supplemental

⁷ County of San Diego. 2018. Multi-Jurisdictional Hazard Mitigation Plan. October. Accessed July 2023. https://www.sandiegocounty.gov/content/dam/sdc/oes/emergency_management/HazMit/2018/2018%20Hazard%20Mitigation%20Plan.pdf.

information collected through the Safety and Environmental Justice Element planning process. Assembly Bill (AB) 2140 and SB 379 allow jurisdictions with federally approved Local Hazard Mitigation Plans (LHMPs) to adopt their LHMPs in the Safety Element and incorporate by reference the relevant sections of the LHMP into the Safety Element. This Vulnerability Assessment incorporates by reference relevant sections of the County’s 2018 FEMA-approved MJHMP, including Santee’s profile, risk analysis, and identification of critical facilities in Santee. Because the County’s update of the MJHMP is scheduled to occur in 2023, after the Safety and Environmental Justice Element, supplemental information related to critical facilities was collected for this assessment when available through additional sources. Sources include the County’s 2018 MJHMP, Sustainable Santee Plan,⁸ information collected from City staff, publicly available datasets, and SanGIS, which is the joint powers authority between the City and County that provides a regional geographic information system (GIS). The 2023 MJHMP update can be incorporated into the Safety and Environmental Justice Element at a later date, such as when the MJHMP is adopted or when the next Safety and Environmental Justice Element is updated.

Specifically, this Vulnerability Assessment incorporates the MJHMP’s hazard identification, analysis of exposure and loss in Santee, information on historical hazard events, and list of critical community infrastructure and facilities within hazard zones. **Table 1, Critical Facilities**, includes the types of critical infrastructure evaluated in this Vulnerability Assessment. Supplemental analysis was performed using these definitions to evaluate new information that may have changed since 2018. In Section 3.1 through Section 3.4, the Vulnerability Assessment analyzes the potential impact and adaptive capacity of the following critical infrastructure categories to climate-driven hazards, including extreme heat, wildfire, extreme precipitation, and drought.

Table 1. Critical Facilities

Category	Description
City Operations	City Hall, Emergency Operations Center
Public Safety Facilities	Fire stations
Public Health Facilities	Hospitals
Community Centers	Libraries
Utility Facilities	Water treatment and distribution facilities
Critical Transportation	Airports, bridges
Schools	Educational facilities

1.6 Section 1 Summary

This section introduced climate vulnerability and the climate adaptation planning process, which is used to achieve climate resilience. Section 1, Climate Change and Climate Vulnerability, also explained the methodology of scoring vulnerability of populations and assets by using the Potential

⁸ City of Santee. 2019. “Sustainable Santee Plan: The City’s Roadmap to Greenhouse Gas Reductions.” Final. December. Accessed July 2023. <https://www.cityofsantee.ca.gov/Home/ShowDocument?id=18422>.

Impact and Adaptive Capacity Scoring Rubric (**Figure 3**) and the Vulnerability Scoring Rubric (**Figure 4**). Finally, Section 1 identified the types of critical facilities included in the evaluation of climate change-related hazards (Section 3, Climate Change Hazards and Community Vulnerabilities). Section 2 will identify vulnerable populations included in the evaluation of climate change-related hazards and discuss how these populations are more vulnerable to the effects of climate change.

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Section 2 Vulnerable Communities/Sensitive Populations

The Vulnerability Assessment analyzes potential impacts on people and critical facilities, with a particular look at the types of populations that are most sensitive/vulnerable to climate change-related impacts. Vulnerable populations may include people with access and functional needs (AFNs), which consist of people in multi-lingual communities, families with infants and children, older adults, people with disabilities, and people experiencing homelessness (see Section 2.1, People with Access and Functional Needs). Vulnerable populations may also include people with existing chronic health conditions, people with low incomes, people experiencing homelessness, outdoor workers, children, and people without life-supporting resources. Several populations noted in this section (i.e., people with low incomes, people experiencing homelessness) are closely related to the “disadvantaged communities” identified in Section 5.3, Climate Adaptation and Resilience, of the Safety and Environmental Justice Element. Descriptions of vulnerable populations are summarized in **Table 2, Vulnerable Populations**, and described further in Section 2.1 through Section 2.8.

Table 2. Vulnerable Populations

Category	Description
People with AFNs	People in multi-lingual communities, families with infants and children, older adults, people with disabilities, and people experiencing homelessness
People with Existing Chronic Health Conditions	People with diabetes, cardiovascular diseases, psychiatric illnesses, respiratory diseases (e.g., asthma)
People with Low Incomes	People with incomes that are between 50 percent and 80 percent of the area median income (Note: The 2021 Area Median Income (AMI) for a four-person household in San Diego County was \$95,100)
People Experiencing Homelessness	People who are living in a place that is not meant for human habitation, in emergency shelter, in transitional housing, or exiting an institution where a person temporarily resided
Outdoor Workers	People who spend most of their workday outside (e.g., gardeners, landscapers, and park/recreation staff)
Older Adults	People who are 65 years of age or older
Children	People who are 17 years of age or younger
People without Life-Supporting Resources	People who lack adequate housing or ways to cool living space, are renters/tenants, or are food-insecure

Notes: AFNs = access and functional needs

The City’s Emergency Management Team, which includes the Care and Shelter Branch, have identified areas of Santee with high concentrations of vulnerable populations. The City continually works to identify individuals that fall into the AFN community criteria through engagement and outreach with local non-governmental organizations and Santee Fire Department personnel when these organizations locate AFN individuals while providing emergency services.

2.1 People with Access and Functional Needs

Per California Government Code, Section 8593.3, “‘AFN populations’ consists of individuals who have developmental or intellectual disabilities, physical disabilities, chronic conditions, injuries, limited English proficiency or who are non-English speaking, older adults, children, people living in institutionalized settings, or those who are low income, homeless, or transportation disadvantaged, including, but not limited to, those who are dependent on public transit or those who are pregnant.”

For the purposes of assessing climate change vulnerability, “people with AFNs” have been divided into the following subgroups, which are described in Section 2.2 through Section 2.8:

- People with Existing Chronic Health Conditions
- People with Low Incomes
- People Experiencing Homelessness
- Outdoor Workers
- Older Adults
- Children
- People without Life-Supporting Resources

2.2 People with Existing Chronic Health Conditions

People with existing chronic health conditions are most impacted by the intersections of heat waves, extreme weather events, unreliable/unavailable access to medical care, insufficient/non-existent interpersonal support networks, and fewer resources to relocate, adapt, or and/or manage climate-related hazards. People of color and people from low-income communities tend to have relatively high rates of existing health conditions (e.g., heart disease, chronic obstructive pulmonary disease [COPD], asthma). People living in areas of concentrated poverty also tend to have higher rates of obesity, diabetes, and depression than residents not living in these areas.

Hospital admissions and emergency room visits increase during heat waves for people with diabetes, cardiovascular diseases, respiratory disease, and psychiatric illnesses. Heart disease increases sensitivity to heat stress. People with diabetes are subject to the impacts of extreme weather events, which may limit access to medicine and food that they need to stay healthy. Asthma can be exacerbated by exposure to air pollution caused by or made worse by changes in temperature, humidity, wind, or wildfires. COPD increases sensitivity to changes in air quality made worse by climate change.

People with chronic health conditions frequently have greater reliance on healthcare systems, which may become disrupted during extreme weather events. Climate change has the potential to impact individuals’ financial situations or displace people from their homes, which may result in

limited access to healthcare services. Inaccessibility to quality, affordable healthcare can lead to worsening symptoms, compromised personal safety, and novel disease complications.

People with the following characteristics are at an increased risk of health impacts from climate change:

- Individuals 65 years or older
- Individuals without access to stable, reliable healthcare
- Individuals with multiple health conditions or disabilities

2.3 People with Low Incomes

Economic factors, such as income, poverty, and wealth, are collectively one of the largest determinants of health. Higher income is associated with greater longevity in the United States. Inequalities in longevity between those with lower and higher incomes continue to increase.^{9,10,11}

The health status of most people with low incomes compounds the risk of climate change impacts. Poverty increases vulnerability to climate change impacts, and communities experiencing poverty have fewer resources to evacuate during natural disasters, such as wildfires. Poverty also reduces the capacity to adapt to rising water or energy prices. Communities with low incomes face an even greater challenge when trying to rebuild after a disaster, especially because fewer people with low incomes have insurance. People with low to middle incomes have less access to healthcare and receive worse quality of care than people with high incomes. People with low incomes are also more likely to reside in housing that sustains damage due to lower-quality construction.

Climate change impacts on food cost and scarcity will magnify current inequalities in food access and choices. The existing disparities in health status and living conditions increase vulnerability of communities with low incomes to the health-related impacts of climate change. Climate-related health burdens due to poverty disproportionately impact the following populations:

- Populations who are unemployed, disabled, homeless, or have little formal education
- Racial, ethnic, and linguistic minority groups, including migrants
- Children of families with low incomes living in conditions that are harmful to their development
- Children in immigrant families with low incomes with reduced access to services
- People with psychiatric disorders, including neurotic disorders, functional psychoses, and alcohol/drug dependence

⁹ Chetty, R., M. Stepner, S. Abraham, et al. 2016. "The Association Between Income and Life Expectancy in the United States, 2001–2014." JAMA; Published online April 10. doi:10.1001/jama.2016.4226.

¹⁰ Marmot M., S. Friel, R. Bell, et al. "Closing the Gap in a Generation: Health Equity through Action on the Social Determinants of Health." The Lancet. 2008;372(9650):1661–1669.

¹¹ Woolf S.H., and P. Braveman. "Where Health Disparities Begin: The Role of Social and Economic Determinants—and Why Current Policies may Make Matters Worse." Health Aff (Millwood). 2011;30(10): 1852–1859.

2.4 People Experiencing Homelessness

People experiencing homelessness can be defined as individuals who use shelters to sleep and individuals who sleep outdoors or in other places that are not intended for human habitation. Homeless populations are more likely to live in poverty, lack access to healthcare services, and have multiple baseline conditions, such as poor health, which would be exacerbated by the impacts of climate change.

Pre-existing conditions and lack of access to resources among this vulnerable population increase the likelihood of experiencing the negative impacts of climate change exposures, including air pollution, heat waves, vector-borne diseases, and storms and floods. Vulnerable populations, such as those experiencing homelessness, are at a higher risk of heat-related illness than other people living in a population. Heat illnesses are exacerbated because of difficulty finding refuge from the heat and hydrating during times of extreme temperatures. People experiencing homelessness are also more likely to have higher levels of exposure to outdoor air pollution. Residing in cities (unhoused) puts this group at higher risk of air pollutants from freeways and highways. Vector-borne diseases have higher impacts on this population because people experiencing homelessness are more likely to live in immuno-compromising situations that can exacerbate infectious diseases.

People experiencing homelessness are more likely to occupy marginal areas of cities—along freeways, in creeks/riverbeds, and other areas—making them more vulnerable to environmental hazards, such as storms and floods. The physical deficiency of shelter puts them at even greater risk from storms and floods from which they cannot seek protection, except in the limited availability of facilities to house this group. People experiencing homelessness are particularly susceptible to natural disasters but are often not included in disaster planning.

2.5 Outdoor Workers

Outdoor workers are often among the first to be exposed to the effects of climate change. Climate change is likely to affect the health of outdoor workers through increases in temperature, poor air quality, extreme weather, vector-transmitted diseases, industrial exposures, and damage to infrastructure. Outdoor workers affected by climate change include farmers, ranchers, and other agricultural workers; commercial fishery workers; foresters; construction workers; military personnel; miners; refinery workers; paramedics, firefighters, police, and other first responders; hazardous waste site workers; and transportation workers. Outdoor workers in Santee consist of gardeners, landscapers, and park/recreation staff who spend the majority of their workday outside.

Extreme heat may result in more cases of heat-related illnesses, such as heat stroke and heat exhaustion and fatigue, among outdoor workers, especially among more physically demanding occupations. Heat stress and fatigue can reduce alertness and work capacity, leading to safety lapses that can increase the risk of injury. Higher temperatures can also worsen air pollution,

raising the risk of respiratory illness for workers. Heat extremes in areas not previously affected by higher temperatures can affect workers who are not used to working in high-heat conditions or are unaware of heat-related hazards.

Extreme events, such as floods, storms, droughts, and wildfires, are becoming more frequent and intense as a result of climate change, which can create risky conditions for workers involved in disaster response, rescue, and cleanup. For example, firefighters battling wildfires are exposed to hazards, such as being overrun by fire, heat-related illnesses and injuries, smoke inhalation, and air pollutants. First responders and other emergency workers face greater health and safety risks when working in conditions with infrastructure disruptions, communication interruptions, and social unrest or violence following storms.

The most vulnerable outdoor workers include (1) farm workers/day laborers, since this population tends to have lower incomes and belong to communities of color, both of which are associated with adverse health effects due to climate change, and (2) immigrants who work outdoors, since this population is subject to long workdays under strenuous conditions, language barriers, limited capacity to protect their rights, and exposure to chemicals, such as pesticides.

2.6 Older Adults

Older adults are vulnerable to climate change-related impacts for a number of reasons. The primary reason is that normal changes in the body associated with aging, such as loss of muscle or bone mass and agility, can limit mobility. Aging also impairs cognitive abilities, immune systems, and the regulation of body temperature. Older adults are more likely to have a chronic health condition, such as diabetes, that requires medications for treatment. Older adults with disabilities in one or more of the following areas may also need assistance with daily activities: communication (seeing, hearing, or speaking), mental functioning (e.g., Alzheimer's disease or dementia), and physical functioning (limited or no ability to walk, climb stairs, or lift and grasp objects).

Climate change will increase extreme heat events and lead to higher temperatures throughout the year. Extreme heat exposure can increase the risk of illness and death among older adults, especially people with congestive heart failure, diabetes, and other chronic health conditions that increase sensitivity to heat. Growing evidence suggests that injury, disease, and death are greatest among older adults during heatwaves. Higher temperatures have also been linked to increased hospital admission for older adults with heart and lung conditions. Side effects of some medications intensify the heat-related conditions in older adults.

Climate change affects the frequency and intensity of some extreme weather events, such as flooding related to heavy rains, hurricanes, coastal storms, droughts, and wildfires. Older adults are more likely to suffer storm- and flood-related fatalities and have a high risk of both physical and mental impacts if an extreme weather event requires evacuation. People with disabilities, with chronic medical

conditions, or living in nursing homes or assisted-living facilities are some of the most vulnerable. Health impacts are made worse by interruptions in medical care and challenges associated with transporting patients with their necessary medication, medical records, and any equipment like oxygen. Extreme events can also cause power outages that can affect electrically powered medical equipment and elevators, leaving some people without treatment or the ability to evacuate.

Older adult populations with the following characteristics are at an increased risk of health impacts from climate change:

- Aged 65 years or older
- Live alone, have limited mobility, are socially isolated, are residents of institutions, or are dependent on care
- Are women, have a low socioeconomic status, or are African American
- Have multiple chronic conditions (e.g., cardiovascular diseases, respiratory illnesses, diabetes) or pre-existing health conditions

2.7 Children

Children's continuous, ongoing growth and development from infancy to adolescence makes them more sensitive to environmental hazards related to climate change. Injury, death, infectious diseases, malnutrition, and post-traumatic stress are more common in children than adults after extreme weather events. Children are especially vulnerable to the impacts of climate change because of their (1) growing bodies, (2) unique behaviors and interactions with the world around them, and (3) dependence on caregivers.

Children's behaviors and interactions with their surroundings increase their exposure to certain health threats that are expected to increase due to climate change. Children, particularly those with disabilities or special health needs, must rely on parents or caregivers to provide basic needs, such as nutrition, shelter, and hygiene. Children also spend more time outdoors than adults, which increases their risk of being exposed to extreme heat and higher average temperatures, pollutants in air and water, and diseases carried by mosquitoes and ticks.

Individuals who are the most vulnerable to climate impacts include young children, infants, and pregnant women; children in low-income, rural, immigrant, or linguistically isolated households; children with pre-existing conditions (cardiac/respiratory); and children who spend considerable time outdoors.

2.8 People without Life-Supporting Resources

Life-supporting resources are essential to one's resilience in the face of climate change. Such resources include access to secure housing, access to food and sustenance, means to stay cool during extreme heat events, access to reliable transportation (for evacuating or navigating natural

disasters), and access to healthcare. Health, well-being, and resilience during climate change-related events are closely related to the availability of these resources. In other words, individuals who lack one or more of these resources (i.e., people who experience food insecurity, are uninsured, lack adequate and quality housing or are tenants or renters, and with low incomes) are especially vulnerable.

Climate change resiliency is dependent on several factors, including social status, geographic location, race, gender, disability, and personal resource, which significantly impact one's overall well-being during gradual or sudden climate-related events. Certain groups (e.g., renters, food-insecure individuals) disproportionately lack life-supporting resources. Renters without air conditioning are vulnerable to heat illness and are often unable to install air conditioners because they do not own their home. Many people facing economic challenges choose not to use their air conditioning units, even if they have them, due to concern about paying energy bills. Food-insecure individuals already experience hunger, which affects their immune systems and economic stability, but may experience excessive food insecurity during food shortages or price increases due to climate-related food scarcity.

People who lack multiple life-supporting resources will be especially vulnerable to a wide array, as well as a deeper extent, of climate impacts. Many of these vulnerabilities have different levels (e.g., level of food insecurity or quality of housing). Following are the individuals who are especially impacted and under-resourced:

- Those who are already vulnerable due to other factors (e.g., an individual who faces discrimination based on race, gender, or disability)
- Those who are unable to access compensating emergency resources (e.g., a person experiencing homelessness who is refused from a homeless shelter)
- Those who lack access to multiple resources (e.g., a person who cannot afford safe, secure housing or healthy, nutritious food)

2.9 Section 2 Summary

Section 2 discussed vulnerability to climate change-related effects focusing on AFN populations. Section 3 will discuss four climate change-related hazards (extreme heat, wildfire, extreme precipitation, and drought) and the risk that Santee's vulnerable populations and critical infrastructure face from these hazards.

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Section 3 Climate Change Hazards and Community Vulnerabilities

The Vulnerability Assessment addresses the climate change-related hazards that are the most pressing to the City, including extreme heat, wildfire, extreme precipitation, and drought. The analysis presented in this section evaluates how hazards are expected to occur, including frequency and severity, and how these hazards will affect sensitive populations and critical facilities at the local level. In Santee, climate change is expected to intensify specific existing hazards or create new hazards.

3.1 Extreme Heat

Overall temperatures are expected to rise in California during the twenty-first century. While the entire state will experience temperature increases, local impacts will vary greatly. The County's 2018 MJHMP projects that the region will face an increase in the frequency, duration, and severity of heatwaves in the coming decades. Extreme heat days are defined by days where the daily maximum temperature exceeds a threshold temperature of 98.7 degrees Fahrenheit (°F). Threshold temperatures are defined as the 98th percentile value (or the highest 2 percent of days) of historical daily maximum temperatures from 1961 to 1990 between April and October in Santee.

3.1.1 Exposure

The observed historical annual average temperature in Santee is 76.1°F. Average temperatures are projected to increase between 3.8°F and 4.7°F by mid-century (2035–2064) and between 4.9°F and 8.1°F by end of century (2070–2099), depending on the emissions scenario. In addition, the number of extreme heat days is projected to increase from a historical average of 3 days per year to between 12 and 15 days by mid-century and 16 to 32 days by end of century. Warmer days will also be accompanied by an increasing number of warmer nights.

3.1.2 Sensitivity

The Sustainable Santee Plan describes the impacts of extreme heat days on public health and safety. Intrinsic heat-related risks include age, socioeconomic status, and pre-existing medical conditions. The communities that are most vulnerable to the impacts of extreme heat are people experiencing homelessness, outdoor workers, people without life-supporting resources, older adults, young children, and people with pre-existing medical conditions (e.g., cardiovascular disease, diabetes, mental illness)—all of which are communities that may have a potential inability to survive/thrive in hotter conditions.

Other extrinsic factors, or those external to an individual, that increase sensitivity to extreme heat include neighborhoods with high levels of impervious surfaces and low tree cover or housing units that lack air conditioning. Immigration status and occupational profession are other significant

factors that may contribute to an individual's sensitivity to heat events, particularly outdoor workers and warehouse workers who do not have adequate accommodations and protections. Santee's unsheltered population is among the most sensitive to heat events.

The Heat Health Action Index score is a statistically weighted result of indicators that is intended to represent geographic areas of greater heat sensitivity. Indicators include the following:

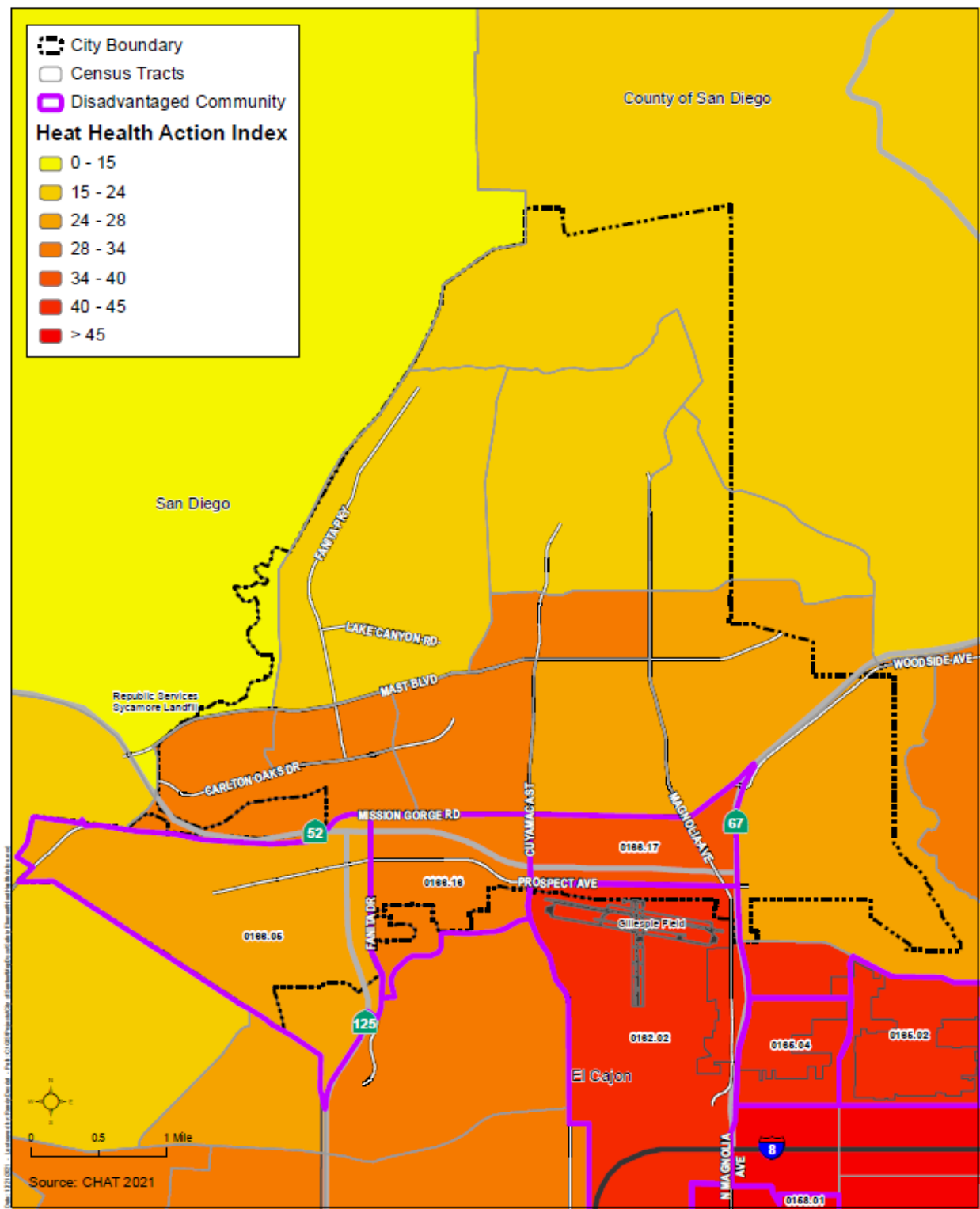
- Social vulnerability, such as percent of poverty, outdoor workers, and no vehicle access
- Health, including asthma rates and cardiovascular disease rates
- Environment, including lack of tree canopy, urban heat island, and ozone concentration

The composite score identifies the census tracts that may be most susceptible to heat health events. Heat health events are defined by a set of meteorological conditions over several days that have been associated with negative public health events. Higher scores indicate greater vulnerability. **Figure 5, Heat Health Action Index**, shows Heat Health Action Index scores for Santee by census tract, providing an overall summary of heat vulnerability for Santee. As shown on Figure 5, heat vulnerability ranges from low to moderate, with the moderately vulnerable census tracts located in the central and southern portions of Santee. Some of the moderately vulnerable census tracts are also disadvantaged communities, bordered by State Route (SR-) 52 and SR-67. Disadvantaged communities are identified and analyzed in the City's Safety and Environmental Justice Element and Existing Conditions Report. Santee's disadvantaged communities have been included on Figure 5 for comparison between the communities that have been identified as "disadvantaged" and the communities that are most vulnerable to impacts of extreme heat.¹²

Most buildings that house or operate as critical infrastructure may not be particularly sensitive to extreme heat. However, to the extent that Santee's electrical infrastructure is sensitive to extreme heat, so are Santee's critical facilities that depend on reliable electricity to power their operations, including hospitals, fire and police stations, schools, and water facilities. Higher temperatures can decrease the capacity of grid components (i.e., power plants, substations, and transmission lines) while increasing electricity demand due to increased cooling needs.

¹² California Natural Resources Agency. 2021. "California Heat Assessment Tool (CHAT)." Accessed July 2023. <https://www.cal-heat.org/>.

Figure 5. Heat Health Action Index



3.1.3 Potential Impact

Climate change, particularly extreme heat events, present serious health risks to Santee residents. Increased temperature or extended periods of elevated temperatures can increase heat-related mortality, cardiovascular-related mortality, respiratory mortality, and heart attacks while increasing hospital admissions and emergency room visits. Extreme heat can also affect a person's ability to thermo-regulate, causing heat stress and sometimes leading to death. Heat also intensifies smog and air pollutants that can contribute to and exacerbate respiratory disease and result in more asthma and heart attacks. Furthermore, the same areas that are most exposed to extreme heat are often the same areas that lack tree canopy and have high concentrations of racial minorities, making extreme heat an issue of environmental justice in addition to community safety (refer to **Figure 5**).

“Potential impact” refers to how incidents of extreme heat will affect sensitive critical facilities. Extreme heat events do not necessarily have significant impacts on most critical facilities. However, the Sustainable Santee Plan acknowledges that infrastructure is generally built to meet historical climate conditions so it can potentially be impacted by extreme heat. For example, roadways and railways are dark or metal based, conducting heat and raising temperatures well beyond the observed air temperature. Increased temperatures can cause pavement to soften and expand, causing potholes. Railways can buckle under extreme heat, requiring trains to go slower to navigate the buckle or stop service for repairs.

The County's MJHMP identifies the secondary impacts of heat, such as power outages and poor air quality. Critical facilities can be susceptible to extreme heat due to additional demand placed on the power system to power air conditioning. Extreme heat events may result in power demand outpacing supply, resulting in power outages. When this happens, San Diego Gas & Electric (SDG&E) implements California Independent System Operator Rotating Outages, wherein SDG&E rotates the outage across groups of customers throughout the service territory to protect the integrity of the electric system while limiting the inconvenience to any one customer or community. Loss of power can disrupt essential public facilities and services and pose a public health risk to residents. Further, increased temperatures can have an impact on air quality because ozone formation, a component of smog, increases with higher temperatures.¹³

In the event of extreme heat that causes power outages, the loss of power would have the most significant impact impacts on utilities, such as electricity and water, in addition to public health, public safety, and school facilities. Power outages, without back-up generation, could result in the loss of foundational critical services that are necessary to function: electricity, water, medical care, and police and fire protection services. Loss of services would have wide-reaching impacts for services and community members, especially those with medical conditions, older adults, and

¹³ County of San Diego. 2018. Multi-Jurisdictional Hazard Mitigation Plan. October. Accessed July 2023. https://www.sandiegocounty.gov/content/dam/sdc/oes/emergency_management/HazMit/2018/2018%20Hazard%20Mitigation%20Plan.pdf.

children. Loss of power due to extreme demand placed on the grid is a potential secondary impact and primarily given a medium score. Water and power are also critical to emergency response to the impacts of extreme heat, which is why the potential impact score is high.

3.1.4 Adaptive Capacity

The Sustainable Santee Plan, adopted in December 2019, is the City's roadmap to reducing GHG emissions, and includes GHG emissions forecasts, targets, reduction measures, and adaptation strategies to climate change impacts, including extreme heat. The City identified the following strategies to protect the health and safety of residents from extreme heat:

- Map neighborhoods that could be more vulnerable to the effects of climate change, including heat, to identify high-risk areas of Santee
- Create cooling centers at public spaces, such as libraries, for populations without air conditioning
- Implement cooling technologies, such as cool roofs and cool pavements
- Strategically place shade near buildings, in parking lots, and along bike and pedestrian pathways
- Use reverse 911 to notify residents of serious events or natural disasters and encourage residents to register into AlertSanDiego, the regional notification system for emergency or disaster warnings

The Sustainable Santee Plan also promotes reducing heat impacts by increasing tree canopy cover through planting trees and vegetation and replacing paved areas with light-reflecting materials, cool roofs, and cool pavement. Trees and vegetation lower surface and air temperatures by providing shade. This can help mitigate impacts of extreme heat, especially urban heat island effect, while also decreasing energy demand by providing shade and cooling temperatures. Urban heat island effect occurs when natural land cover is replaced with non-permeable surfaces, concentrations of pavement, and other hard surfaces that absorb and retain heat.

The City has a Cool Zone Program, which designates cool zone sites with air conditioning where residents, such as older adults, and others can gather during the summer to escape the heat and cool off before going back outside. Cool zones provide access to air conditioning to those who may not have it and encourage residents to share air conditioning by visiting the designated center, therefore lowering individual energy use and helping conserve energy for the entire community. Although not all locations are pre-identified, City Hall is often a designated cooling center, in addition to the Santee Cool Zone (Library and Community Center) and Lakeside Cool Zone in the neighboring City of Lakeside. During an extreme heat event, the City will identify additional locations of cooling centers based on availability and other variables. This information is conveyed to the public through the City's Public Information Officer in coordination with the Emergency Manager and City Manager. Further, the City's Public Information Officer, in coordination with

the County, releases information to the public about extreme heat events, including early warnings, so residents can prepare and access resources accordingly. Information about the Santee Cool Zone, as well as other cool zones throughout the county, can be found on the City's website.

The Santee Fire Department provides several resources on its Public Education and Emergency Preparedness web page including , preparedness tips and recommendations from the Unified San Diego County Emergency Services Organization, County Office of Disaster Preparedness, State of California, American Red Cross, and Federal Emergency Management Agency (FEMA). It identifies supplies, equipment, and special recommendations for children and people with disabilities, emergency kits, and actions one can take during power outages.

Some critical facilities are equipped with back-up generators that provide an alternate source of power in the event of an outage, ensuring critical services continue to operate. Specific public safety buildings and operations (sheriff's office, detention facilities, and fire stations) are equipped with back-up generators, as is Padre Dam Municipal Water District (PDMWD) and potentially a local pump station.

Chapter 8.06 of the Santee Municipal Code is the City's Urban Forestry Ordinance, which sets forth tree-related policies, regulations, and maintenance standards on public property and public right-of-way. It also articulates policies for tree planting as a condition of residential, industrial, and commercial development. The ordinance ensures that Santee will continue to realize the benefits of urban forestry and that trees are properly maintained through care, maintenance, diversity of tree species, landscaping, planting, and removal. It also supports the City's commitment to the generally accepted Tree City USA status and Growth Award status as designated by the National Arbor Day Foundation and the California Department of Forestry and Fire Protection, respectively. Chapter 13 of the Santee Municipal Code is the Zoning Code, which guides the growth and development of Santee. Relevant to this Vulnerability Assessment, the Santee Zoning Code includes requirements for parks and open space districts and landscape and irrigation regulations. Through the Santee Zoning Code relevant to parks and open space districts, the City seeks to promote a mix of open space with development to conserve and preserve natural resources, avoid hazards, provide low-intensity development, and protect residents from the impact of hazards. Parks, open space, and urban tree cover work together to combat the impacts of extreme heat.

The City could also evaluate infrastructure vulnerability based on current degradation and expected climate-related impacts; prioritize and plan for infrastructure improvements that increase fire safety and reduce energy, especially in vulnerable neighborhoods; and identify alternative routes where infrastructure damage may occur.

3.1.5 Vulnerability Score

Table 3, Vulnerability Assessment Results: Extreme Heat, provides the vulnerability scoring for vulnerable populations and critical facilities in response to extreme heat risks in Santee. The reasoning for the scoring provided in Table 3 is discussed below.

Extreme heat poses the most significant threat to people, especially vulnerable residents, and climate change is expected to exacerbate extreme heat. Vulnerable populations were given high scores for potential impact and primarily medium to high scores for adaptive capacity, which resulted in relatively high vulnerability scores (vulnerability scores of 3 to 5; **Table 3**). Of all the sensitive populations, people who are most at risk of experiencing more intense, life-threatening cases of heat-related illnesses are more likely to experience the impacts of extreme heat.

People experiencing homelessness may experience more heat-related illnesses, such as heat stroke, due to their limited ability to seek refuge from above-average heat during times of extreme temperatures. Outdoor workers, especially those who are not used to working in high-heat conditions or are unaware of heat-related hazards, may experience more heat-related illnesses, such as respiratory issues resulting from poor air quality caused by higher temperatures. People without life-supporting resources may experience more heat-related illnesses, such as heat exhaustion and fatigue, due to their limited ability to install and/or afford air conditioning in their homes.

Critical facilities were primarily given medium vulnerability scores (vulnerability scores of 2 to 4; **Table 3**). This is due to the statewide concern regarding climate change and rising temperatures. The State of California recognizes temperatures continue to rise, heat waves are more frequent, and precipitation continues to be highly variable. California's Fourth Climate Change Assessment produced climate projections that indicate temperatures will continue to increase and the number of extreme heat days will increase exponentially in many regions. By the middle or end of the century, greater impacts could occur on critical facilities and the built environment. A high potential impact score was given to utilities. Although extreme heat in the near-term may pose minimal threat to buildings themselves, it can result in secondary impacts, such as demand for power that outpaces supply, causing outages and disruptions. Potential disruptions could have a high impact on utilities because utilities are responsible for power and water, which are both necessary for cooling. Because outages and disruptions are considered a secondary impact, a medium impact score is given to critical facilities categories other than utilities, which would be slightly more impacted.

To mitigate the impacts of extreme heat, City Hall and the Santee Library serve as designated cool zone cooling centers, decreasing the vulnerability and providing capacity to mitigate impacts of extreme heat. The cooling centers and extreme heat warnings help keep residents safe during extreme heat events. Medium to high adaptive capacity scores were given to vulnerability populations, acknowledging the multiple resources provided to residents but also allowing for

opportunities to increase the number of cool zones or provide additional programs that increase access to air conditioning, especially for people with AFNs.

Given that most critical facilities, such as City operational buildings, PDMWD facilities, and public safety buildings, are equipped with back-up generators, these facilities were given high adaptive capacity scores. The City could increase its resiliency by further identifying facilities without generators and equipping more facilities with generators. At the time of this assessment, specific details about generators and cooling at public health facilities, schools, and transportation facilities was unknown. Due to the nature of the services provided at public health facilities and schools, they presumably are equipped with generators and, therefore, received a medium score. This provides opportunities for collaboration with these entities to increase resilience. However, capabilities were lesser known for the transportation category and given a default low score. Presumably, additional facilities could benefit from widespread distribution of generators or heat mitigation capabilities.

Table 3. Vulnerability Assessment Results: Extreme Heat

Category	Potential Impact	Adaptive Capacity Score	Vulnerability Score
Sensitive Populations			
People with AFNs	High	Medium	4
People with Existing Chronic Health Conditions	High	High	3
People with Low Incomes	High	High	3
People Experiencing Homelessness	High	Low	5
Outdoor Workers	High	Medium	4
Older Adults	High	High	3
Children	High	High	3
People without Life-Saving Resources	High	Medium	4
Critical Facilities			
City Operations	Medium	High	2
Public Safety Facilities – Generator	Medium	High	2
Public Health Facilities	Medium	Medium	3
Community Centers	Medium	High	2
Utility Facilities – Generator	High	High	3
Critical Transportation	Medium	Low	4
Schools	Medium	Medium	3

Notes: AFNs = access and functional needs

3.2 Wildfire

3.2.1 Exposure

Section 4.3, Urban/Wildland Fire Hazards, and Figure 4.6, Fire Hazard Map, of the Safety and Environmental Justice Element profiles fire hazard risk in Santee. According to the County Office

of Emergency Services, wildfires are the most prevalent and costly acute shock (“shock” referring to an incident that negatively impacts the community) facing the county, which includes Santee.

Climate change can exacerbate wildfire risk. Wildfire risk is expected to continue to increase as a result of warmer temperatures, more frequent drought, changes in precipitation, and expanding wildland-urban interface (WUI). According to the state’s Fourth Climate Change Assessment, wildfire risk will continue to increase as the climate warms. Santa Ana winds, which are hot, strong, and gusty winds that produce extreme dryness, have fueled—and will continue to fuel—the most catastrophic wildfires in the county. According to local climate projections, conditions that are optimal for the spread of wildfire—(1) changes in precipitation (measurable precipitation becoming less frequent), (2) changes in water availability (drought becoming more common), and (3) changes in weather (air becoming drier, temperatures becoming hotter, winds becoming stronger)—will become more prevalent. The county is expected to experience an increase in wildfire risk, especially during “peak season” in December and January, as a result of climate change.

As analyzed in Section 4.3, Urban/Wildland Fire Hazards, of the Safety and Environmental Justice Element, Santee is susceptible to wildfire, and very high fire hazard severity zones (VHFHSZ) are within and around the city boundaries. Fire hazard severity zones evaluate fire hazards, meaning the physical conditions that create a likelihood and expected fire behavior over a 30- to 50-year period without considering short-term modifications or mitigation strategies. These zones are based on factors such as fuel (i.e., vegetation), slope, and fire weather. These zones are used to designate defensible space standards and WUI building codes in General Plans and other policy documents. All new buildings within a State Responsibility Area, Local Responsibility Area, VHFHSZ, or WUI designated by the enforcing agency must comply with all sections of the WUI Fire Area Building Standards. These standards provide a reasonable level of exterior wildfire exposure protection for buildings within these hazard areas and establish minimum standards for materials and material assemblies to lessen the vulnerability of a building by resisting the intrusion of flames and burning embers projected during a conflagration or wildfire.

Santee’s 16.5 square miles are made up of residential, commercial, and industrial land uses with a significant WUI. The VHFHSZs are along the northern boundary that Santee shares with unincorporated county land, as well as along the eastern, western, and southwestern boundaries.

3.2.2 Sensitivity

Climate change can exacerbate the risk of wildfire and the risk to sensitive populations. The population most at risk of wildfire impacts include residents living in or near the VHFHSZs, primarily concentrated in the northern part of Santee and around the southwestern, western, and eastern city boundary. Land uses within the VHFHSZ include undeveloped/vacant land, parks and open space, and single- and multi-family residential, with a few schools, facilities, and utilities. According to the Sustainable Santee Plan, about one-third of Santee consists of open space, which contain grasses,

shrubs, and trees that may fuel wildfire. Vulnerable populations include households in poverty, older adults living alone, outdoor workers, people experiencing homelessness, people with reduced mobility, including people with disabilities, and people who do not have access to a personal vehicle and who may have difficulty evacuating—all of which are communities that may have a potential inability to respond to wildfire threats or evacuation mandates.

The populations most sensitive to wildfire include those living in or near the VHFHSZs, as well as those with mobility challenges, lack of access to medical care, and with financial limitations. Outdoor essential workers and individuals with respiratory conditions, such as asthma, are particularly vulnerable to wildfire smoke. Wildfires can generate significant amounts of smoke that can travel long distances, in some instances spreading across state and national boundaries. Living conditions and housing types also influence levels of protection from smoke; for example, mobile homes and older homes with unsealed windows are more sensitive than modern homes that feature airtight windows and air purification systems.

According to the County’s MJHMP, approximately 130 of Santee’s critical facilities are at risk of wildfire and structural fire. Supplemental analysis for this Vulnerability Assessment identifies City Hall, several schools, and SR-52 near or within the VHFHSZ.

As wildfires increase in frequency and intensity as a result of climate change, disruptions in electrical infrastructure are likely to become more common. When there is a high risk for a wildfire, SDG&E, Santee’s electric utility, may temporarily shut off power to prevent the electric system from becoming the source of ignition. Electric utility infrastructure has historically been responsible for less than 10 percent of reported wildfires; however, fires attributed to power lines comprise roughly half of the most destructive fires in California history.¹⁴ These events, termed “public safety power shutoffs,” can pose a serious risk for populations that are medically sensitive (those who rely on medication and respirators that require power generation) and have low incomes.

3.2.3 Potential Impact

Drought, changes in precipitation, and extreme heat can create conditions that increase the risk of wildfire. Uncontained wildfire can threaten human health and life and property and homes and result in evacuations. Wildfire poses great risk to residents living or working within the VHFHSZs. Impacts of wildfire can include land or structure damage, property loss, poor air quality, burn damage, habitat destruction, displacement, and fatalities.

The County’s MJHMP identifies wildfire as a major public health concern for the San Diego region. This is because wildfire can impact the health of multiple regions due to wildfire smoke traveling long distances and worsening air quality for days and even weeks. According to the

¹⁴ California Public Utilities Commission. 2021. “Utility Public Safety Power Shutoff Plans (De-Energization).” Accessed July 2023. <https://www.cpuc.ca.gov/psps>.

MJHMP, wildfire smoke can increase one's exposure to gases and chemicals, such as carbon monoxide, ground level ozone, and toxic chemicals (e.g., pesticides, plastics, and paints) released from burned building and other human-made materials. Smoke can also penetrate buildings, impacting people across a wide area.¹⁵

Wildfire can exacerbate existing air quality issues in Santee, posing a health risk for sensitive populations. Smoke and poor air quality can increase respiratory and cardiovascular hospitalizations; emergency department visits; medication dispensations for asthma, bronchitis, chest pain, chronic obstructive pulmonary disease (commonly known as COPD), and respiratory infections; and medical visits for lung illnesses.¹⁵ Those with pre-existing medical conditions or who work outdoors, populations over 65 years of age, and children may be at additional risk of poor air quality.

Critical facilities within VHFHSZs are at risk of damage or destruction. According to the County's MJHMP, potential exposure for critical facilities at risk of wildfire and structural fire can cost upwards of \$247 million dollars.¹⁶ Supplemental analysis was conducted to identify critical facilities within or near VHFHSZs. Using data collected from Santee's GIS, Homeland Infrastructure Foundation-Level Datasets, and publicly available datasets, two schools were identified as within or on the border of the VHFHSZ, City Hall was identified on the border of the VHFHSZ, and another two schools were identified outside but near the VHFHSZ.

3.2.4 Adaptive Capacity

Due to the wildfire risk facing Santee, multiple resources are available to residents to help build resilience to the impacts of wildfire. Section 4.3, Urban/Wildland Fire Hazards, of the Safety and Environmental Justice Element outlines the public education and awareness programs available for members of the public. Examples include the older adult smoke detector program, cardiopulmonary resuscitation (CPR) training, fire station tours, and older adult outreach and safety education, among others.

The City has a Public Education and Emergency Preparation section on its Fire Department web page. Here, residents can find information about emergency preparedness, fire codes and regulations, fire education, fire safety tips, wildfire preparation, emergency kit preparation, and personal disaster plans, as well as access to Ready San Diego and AlertSanDiego. Ready San Diego is a comprehensive website with disaster preparedness resources for families, kids, businesses, schools, and organizations. The County Office of Emergency Services provides training programs; emergency maps, including wildfire hazard maps; preparedness planning resources; and registration for AlertSanDiego. Ready San Diego contains wildfire prevention

¹⁵ CDC (Centers for Disease Control and Prevention). 2020. "Climate Health: Wildfires." Accessed July 2023. <https://www.cdc.gov/climateandhealth/effects/wildfires.htm>.

¹⁶ County of San Diego. 2018. "Multi-Jurisdictional Hazard Mitigation Plan." Accessed July 2023. https://www.sandiegocounty.gov/content/dam/sdc/oes/emergency_management/HazMit/2018/2018%20Hazard%20Mitigation%20Plan.pdf.

resources for home and yard, disaster kits, and wildfire resilience reports and tips. Specifically, it includes links to information on creating and maintaining defensible space (particularly in drought conditions), fire-resistant vegetation, personal disaster plan templates, and wildfire preparedness guidance. The City annually hosts its Open House/Safety Fair in October during National Fire Prevention Month. At the event, members of the public can tour the fire station, view fire engines, meet local firefighters, and learn about fire prevention.

According to Ready San Diego, state law requires that residents treat 100 feet of defensible space around their homes. This includes such steps as mowing and properly maintaining lawn and weeds, pruning or removing ignitable trees and shrubs, stacking firewood away from the home, and making sure the home's address is visible to emergency vehicles.

Further, the Sustainable Santee Plan addresses increased wildfire risk as a result of climate change by recommending the following implementation strategies:

- Educate the public on the importance of fire safety
- Include buffer zones between vegetation and structures and infrastructure
- Identify fire-prone habitats and evaluate and plan for increased risk of larger and more frequent wildfires

The Santee Municipal Code includes building standards and fire regulations for construction. The Santee Fire Code is Chapter 11.18 of the Santee Municipal Code, which is an adoption of the California Fire Code. The code includes regulations related to portable outdoor fireplaces, fire service features (fire apparatus access roads, gates, maps), fire protection systems (fire sprinklers, alarms, installations), special fire protection requirements, and explosives and fireworks. Notably, the code has requirements for defensible space and WUI areas. The City requires 100 feet minimum defensible space, necessitating fuel modification between structures and wildland areas. The code also requires fire protection plans, specific construction methods and requirements, construction materials, and other development requirements for new development within fire hazard severity zones or the WUI. More information about the Santee Fire Code and WUI regulations can be found in Section 4.3, Urban/Wildland Fire Hazards, of the Safety and Environmental Justice Element (the wildfire hazard profile and analysis). Information about firefighting water supply is also included in Section 4.3, Urban/Wildland Fire Hazards, of the Safety and Environmental Justice Element.

3.2.5 Vulnerability Score

Table 4, Vulnerability Assessment Results: Wildfire, provides the vulnerability scoring for vulnerable populations and critical facilities in response to wildfire risks in Santee. The reasoning for the scoring provided in Table 4 is discussed below.

Wildfire poses a significant threat to people, especially vulnerable populations, and climate change is expected to increase the frequency and intensity of wildfires across the state. Vulnerable

populations were given high scores for potential impact and primarily medium scores for adaptive capacity, which resulted in relatively high vulnerability scores (vulnerability scores of 4 to 5; Table 4). The following people, including sensitive populations and critical facilities within the VHFHSZ, are among the most vulnerable to wildfire and were given high potential impact scores:

- People without life-supporting resources, such as those who are unable to travel via evacuation routes due to limited access to reliable transportation or those who are unable to relocate to areas beyond VHFHSZs due to financial constraints, may have issue responding to more frequent, more severe wildfires.

Critical facilities, even if outside a VHFHSZ, can be affected by primary or secondary wildfire impacts. Further, the County identifies wildfire as the most prevalent shock facing the area. Therefore, by default, potential impact scores were rated as high across all critical facility categories. Medium adaptive capacity scores were given to public health facilities, critical transportation, and schools because the authority of those facilities is outside the City's local control, and the analysis assumes that some level of capacity or protection are provided by the City and County's public educational resources and the defensible space requirements. To further protect people and all categories, the City can focus on coordination and collaboration between entities through the implementation of Safety and Environmental Justice Element policies.

Table 4. Vulnerability Assessment Results: Wildfire

Category	Potential Impact	Adaptive Capacity Score	Vulnerability Score
Sensitive Populations			
People with AFNs	High	Medium	4
People with Existing Chronic Health Conditions	High	High	3
People with Low Incomes	High	Medium	4
People Experiencing Homelessness	High	Low	5
Outdoor Workers	High	Medium	4
Older Adults	High	Medium	4
Children	High	Medium	4
People without Life-Supporting Resources	High	Low	5
Critical Facilities			
City Operations	High	High	3
Public Safety Facilities	High	High	3
Public Health Facilities	High	Medium	4
Community Centers	High	High	3
Utility Facilities	High	High	3
Critical Transportation	High	Medium	4
Schools	High	Medium	4

Note: AFNs = access and functional needs

3.3 Extreme Precipitation

3.3.1 Exposure

Extreme precipitation may exacerbate riverine flooding (discussed in Section 4.1, Flood Hazards, of the Safety and Environmental Justice Element) and result in increased flooding in and around the flood zone, as well as localized flooding outside the flood zone. Severe weather, such as atmospheric rivers, powerful rainstorms, and subsequent flooding, will occur more frequently throughout California as a result of climate change, due to warmer weather and more moisture in storm systems. Climate change has the potential to cause more frequent and heavy precipitation incidents that result in damages from floods. These heavy precipitation incidents could result in additional flows into Santee's primary waterways—San Diego River, Forester Creek, Sycamore Creek, and intermittent creeks paralleling Big Rock Road and Fanita Drive—with the potential for overtopping or other types of dam failure. Street flooding is also possible during severe summer or winter storms, which can ensue on an annual basis.

Cal-Adapt measures both annual precipitation and maximum one-day precipitation to evaluate extreme precipitation. Climate change is expected to result in fewer but more intense rainstorms in which rainfall is rapid during a short amount of time. This pattern results in little change to average annual precipitation; in fact, average annual precipitation may not change significantly in the next 50 to 75 years. Rather, precipitation will be delivered in fewer, more intense storms within a shorter wet season.

However, because California's climate varies between wet and dry years, the state's research demonstrates that for much of the state, wet years will become wetter and dry years will become dryer. Subsequent dry years can increase the risk of drought (see Section 3.4, Drought). In Santee, average annual precipitation is expected to decrease. Historically, annual precipitation has averaged 13.8 inches. Under both the mid-century and end-of-century scenarios, annual precipitation is expected to decrease as a result of warming temperatures and changing storm patterns. By mid-century (2035–2064), average annual precipitation could decrease by 0.4 to 0.6 inch, depending on the emissions pathway. By the end of the century (2070–2099), average annual precipitation could decrease by 0.7–1.1 inches, depending on the emissions pathway.

According to Cal-Adapt, the projected maximum 1-day precipitation (i.e., the greatest amount of rain over a 24-hour period within the year) may increase by over 1 inch in Santee. By mid-century, maximum 1-day precipitation in Santee is expected to increase by over 1.43 inches in a medium-emissions scenario and 1.45 inches in a high-emissions scenario. Maximum 1-day precipitation in Santee could reach 1.44 inches in a medium-emissions scenario and 1.50 inches in a high-emissions scenario by end of century.

3.3.2 Sensitivity

Residents living in the floodplain, especially those in low-lying areas and individuals with physical disabilities that limit their mobility, may be vulnerable to extreme precipitation events that necessitate evacuation. Even just a few inches of moving water can be unsafe for children and people with disabilities. Santee's homeless population is at particular risk from flooding due to encampments located in or near the floodplain. The communities that are most vulnerable to the impacts of extreme precipitation are people experiencing homelessness, without life-supporting resources, with limited access to technology, and who are linguistically or socially isolated—all of which are communities that may have a potential inability to receive and/or interpret flood warnings or evacuation notices.

Critical assets in low-lying areas may be sensitive to extreme precipitation. Analysis performed during the 2018 MJHMP update identifies the following critical facilities as vulnerable to flood and flash flood hazards: at least eight schools and/or educational institutions; up to six government buildings, including fire stations, public works facility, and multiple sheriff's office buildings; four utilities stations; six healthcare-related facilities; three businesses; and one community services center. These facilities can be vulnerable to flood risk exacerbated by climate change, such as short but extreme rain events.

3.3.3 Potential Impact

Extreme precipitation events may result in flooding that can threaten human life. Due to the likelihood of flooding and increases in extreme precipitation, impacts on vulnerable populations could be likely in a major event and would result in impacts on public health and safety. Low-income residents without renters' insurance may experience significant financial impacts if extreme precipitation events resulted in the flooding of their property. Furthermore, flooded homes may also result in the growth of mold and mildew, which are allergenic and potentially harmful. Stormwater runoff can also contain a variety of contaminants and pollution, threatening public health and safety.

The types of critical facilities located in the 100-year and 500-year floodplains include educational institutions, government buildings, utilities, healthcare facilities, and private and nonprofit facilities. In the absence of mitigation, such as elevation and flood-proofing, these critical facilities could be susceptible to flood damage in the event of an extreme storm. Significant amounts of rain may fall in a short amount of time resulting in increased runoff, which can overwhelm the stormwater management system and cause water to inundate roads and property. Evacuation personnel may need to be dispatched to evacuate people experiencing homelessness from the floodplain. Shallow flooding

may result in mold and mildew in flooded buildings, allow for the spread of contaminants including gasoline and chemicals, and create a breeding ground for mosquitoes.¹⁷

3.3.4 Adaptive Capacity

The City has multiple planning resources, building codes and ordinances, and development standards that increase the capacity to adapt to the impacts of climate change. For example, Chapter 11.36, Flood Damage Prevention, of the Santee Municipal Code defines special flood hazards in Santee and regulates development and uses within those zones. The City's San Diego River Floodplain Study defines special hazard areas and requires new construction to be elevated to a minimum of 1 foot above the 100-year floodplain. Other drainage and hydrology reports and analyses include the following:

- Citywide Drainage Study (1990), which describes hydrologic and hydraulic characteristics of Santee and recommends necessary improvements.
- Supplemental Storm Drain System Study (1992), an analysis of the area south of Mission George Road and West Cottonwood Avenue where deficient storm drain facilities were identified. This study defines improvements and design criteria and costs for improvements that will help adequately convey the flow to the San Diego River.
- Maps of local hydrology, existing drainage facilities, deficient master drainage facilities, and FEMA Flood Rate Insurance Maps (FIRM).
- Fanita Lakes Drainage Study (2007), a proposed lake to serve as the primary stormwater best management practice (BMP) for a proposed 2,600-acre development, which is on the site of the recently approved Fanita Ranch Project.

A comprehensive update to the City's Master Drainage Study is currently underway and will combine the City's Master Drainage Study and Supplemental Storm Drain System (Mission Gorge Road) Report into one report. It is anticipated to be adopted in the summer of 2023. The City also provides on its website informational tips for preventing and reducing flooding impacts on personal property, such as erosion and mudslides. The City has also provided sandbags for residents during flood season.

Ready San Diego has a flooding page on its website, where residents can access resources to report damages occurring from a storm; tips for protecting property, including where to purchase sandbags; Department of Public Works service requests; flood control webcams; survey records searches to identify public drainage facilities on private property; and homeowners' guides to erosion control and flood debris.

¹⁷ FEMA (Federal Emergency Management Agency). 2005. Reducing Damage from Localized Flooding: A Guide for Communities. FEMA 511. June. Accessed July 2023. <https://www.fema.gov/pdf/fima/FEMA511-complete.pdf>.

County residents are informed of flood warnings disseminated by the Emergency Alert System through local radio, television stations, and the National Oceanic and Atmospheric Administration (NOAA) Weather Radio. The County provides real-time information about high flood water, road closures, and evacuation routes. Warnings can also be issued to affected residents and businesses through the AlertSanDiego Program. The Alert Flood Warning System in the county consists of over 120 alert flood warning stations, which include 25 stream gauges, 10 reservoir level sensors, 99 rainfall sensors, and three weather stations sharing data with the National Weather Service. As mentioned in Section 4.1, Flood Hazards, of the Safety and Environmental Justice Element, one stream gauge is in Santee along the San Diego River at West Hills Parkway (Old Master). This stream gauge detects flooding, including extreme floods caused by excessive precipitation and severe weather patterns as a result of climate change.

Further, the City participates in the County's MJHMP, which identifies natural hazard risks throughout the county, including flooding and extreme precipitation, and recommends mitigation measures to reduce the risk to people and critical facilities. This Safety and Environmental Justice Element incorporates by reference the MJHMP and the identified capacities to reduce risk.

Chapter 11.36, Flood Damage Prevention, of the Santee Municipal Code states that areas of special flood hazards are subject to the code and outlines methods for reducing flood losses. The code establishes the basis for areas of special flood hazard, designates the floodplain administrator, and contains standards for construction, including requirements for anchoring, construction materials and methods, and elevation and flood-proofing. It also includes development standards for utilities, subdivisions, mobile and manufactured homes, and recreational vehicles, as well as provisions for extremely hazardous floodways. Chapter 11.38, Drainages and Watercourses, of the Santee Municipal Code sets forth construction requirements and prohibitions for development within a floodplain, including elevation standards.¹⁸

The City has a Stormwater Pollution Prevention Program that asks all residents, businesses, City facilities, developers, and landowners participate in preventing water pollution by implementing BMPs. The City has minimum requirements for BMPs outlined in the Santee Guidelines for Surface Water Pollution Prevention (2015). The guidelines support Chapter 9.06, Stormwater Management and Discharge Control, and other water quality protection provisions of the Santee Municipal Code. The guideline instructs what dischargers must do to comply with ordinances and to receive permits for projects and activities. Minimum BMP requirements must be met for industrial, commercial, and municipal facilities; residential areas; construction sites; and development projects. Minimum BMPs are outlined by each land use category.

Both the City and the County provide abundant resources to residents, including advance notifications systems and alerts and flood reduction measures for personal property, and has

¹⁸ City of Santee. 2021. Santee Municipal Code. Accessed July 2023. <http://qcode.us/codes/santee/?view=desktop>.

provided sandbags during flood seasons. However, the City can continue to assess accessibility and availability of these resources, particularly for sensitive populations. As far as the adaptive capacity of critical facilities, the City has multiple codes, ordinances, and development standards that address flooding. These planning documents regulate development within the floodplain and require elevation of new construction 1 foot above the 100-year floodplain. Other City programs and participation in the County's MJHMP help increase the resilience of critical facilities to withstand flooding events.

3.3.5 Vulnerability Score

Table 5, Vulnerability Assessment Results: Extreme Precipitation, provides the vulnerability scoring for vulnerable populations and critical facilities in response to extreme precipitation in Santee. The reasoning for the scoring provided in Table 5 is discussed below.

Extreme precipitation and intense storm events can cause localized street flooding, although flood impacts during storm events will most likely occur in and around the floodplain. Vulnerable populations were given medium and high potential impact scores and high scores for adaptive capacity, which resulted in relatively low vulnerability scores (vulnerability scores of 2 to 3; **Table 5**). The following people are the most at risk of experiencing economic instability or insecurity and are more likely to experience the impacts of storm events:

- People without life-supporting resources, such as those who are unable to travel via evacuation routes due to limited access to reliable transportation or those who are unable to afford safe and secure housing due to financial constraints, may experience challenges responding to more frequent and intense precipitation and floods.
- People experiencing homelessness may experience more severe flood-related impacts, such as higher incidence of vector-borne illnesses and greater loss of human life, due to their deficiency of physical space to seek shelter from changing environmental conditions.

The asset categories most likely to be impacted by extreme precipitation are the residents and the critical facilities located near and within the 100-year and 500-year floodplains. Critical facilities within the floodplains include schools/educational institutions; City operations/government buildings, including fire stations, public works facility, and sheriff's office buildings; utility stations; healthcare-related facilities; and private and nonprofit facilities. These categories were given high impact scores. This assessment also assumes some impact on transportation infrastructure in the event of localized flooding. For example, a section of SR-52 runs parallel to the floodway and crosses the flood zone, although its elevation is likely to prevent significant damages. A medium score is provided, assuming some impacts could occur in a severe event. High adaptive capacity scores were given to City operations, public safety, utilities, and critical transportation. Medium scores are given to public health, schools, and community centers to account for the protections provided by the City's resources, but ultimately, authority and adaptive capacity are outside the City's local control (**Table 5**).

Table 5. Vulnerability Assessment Results: Extreme Precipitation

Category	Potential Impact	Adaptive Capacity Score	Vulnerability Score
Sensitive Populations			
People with AFNs	High	High	3
People with Existing Chronic Health Conditions	Medium	High	2
People with Low Incomes	Medium	High	2
People Experiencing Homelessness	High	High	3
Outdoor Workers	Medium	High	2
Older Adults	Medium	High	2
Children	Medium	High	2
People without Life-Supporting Resources	High	High	3
Critical Facilities			
City Operations	High	High	3
Public Safety Facilities	High	High	3
Public Health Facilities	High	Medium	4
Community Centers	Low	Medium	2
Utility Facilities	High	High	3
Critical Transportation	Medium	High	2
Schools	High	Medium	4

Note: AFNs = access and functional needs

3.4 Drought

3.4.1 Exposure

The PDMWD provides water, wastewater collection and treatment, water recycling, and recreational facilities to East County residents, including the cities of Santee and El Cajon and unincorporated communities of Flinn Springs, Harbison Canyon, Blossom Valley, Alpine, Dehesa, and Crest. The PDMWD imports 100 percent of drinking water supply from the San Diego County Water Authority (SDCWA). The water the PDMWD imports primarily comes from the State Water Project and the Colorado River Aqueduct via the Metropolitan Water District of Southern California.

Prolonged drought conditions can result in decreasing availability of water supplies. The County's 2021 Vulnerability Assessment and Adaptation Report covers the county's exposure to the effects of climate change, including drought and water supply, and identifies the Sierra Nevada as a key contributor of water supply for the region. Sierra Nevada snowmelt provides water to Southern California and other areas of the state via the State Water Project. However, the volume of snowpack is susceptible to climate change and rising temperatures.¹⁹ The decline in the snowpack disrupts the timing of groundwater and surface water recharge, making it harder to store and use

¹⁹ County of San Diego. 2021. Vulnerability Assessment and Adaptation Report. 27. Accessed July 2023. <https://www.sandiegocounty.gov/content/dam/sdc/pds/GPUupdate2021/VulnerabilityAssessmentandAdaptationReport-Draft.pdf>.

water during warm or drought conditions. High temperatures are also expected to affect the Colorado River streamflow.

Regionally, droughts are projected to become more frequent and intense in the county and throughout Southern California by mid-century. Cal-Adapt provides projections on the maximum length of a dry spell, or days with precipitation of less than 1 millimeter, for each year through mid- and end of century. Historically, Santee has averaged a 126-day dry spell for each year between 1961 and 1991. Dry spells are projected to increase by 4 to 8 days by mid-century and 6 to 14 days by end of century, depending on the emissions pathway.

3.4.2 Sensitivity

Water is critical to public health and safety, the economy, and community well-being. The PDMWD's 2020 Urban Water Management Plan (UWMP) estimates its population served in 2020 was 92,434. Drought conditions can increase demand for water supply, and water prices may rise in response to water shortages. Low-income households are particularly sensitive to increased water prices in drought as they often spend a greater percentage of their income on utilities, including water service. The communities that are most vulnerable to the impacts of drought are people experiencing homelessness, people without life-supporting resources, and people with low incomes—all of which are communities that may have a potential inability to access and/or afford increased prices set by utilities due to water scarcity.

Drought and limited water supply can impact businesses that rely on water; however, due to the array of job sectors in Santee, this impact is very likely to be low. According to the City's Housing Element, the City's largest job sectors are educational services, healthcare, and social assistance (24 percent); professional, scientific, management, and administrative services (13 percent); and retail trade (12 percent). Agriculture, a water-dependent sector, is the smallest economic sector at less than 1 percent, while construction and manufacturing each comprise 8 percent of the economic sectors in Santee.²⁰

Potable water supply is imported from the State Water Project (North Bay, South Bay, and California Aqueducts) and the Colorado River (Los Angeles and Colorado River Aqueducts) by the Metropolitan Water District of Southern California. The PDMWD's potable water system consist of 14 pumping stations, 30 storage reservoirs, 19 pressure zones, 20 pressure reducing stations, and 398 miles of distribution mains.²¹ As described in the Section 4.1, Flood Hazards, of the Safety and Environmental Justice Element, the PDMWD maintains seven water reservoirs in Santee: the Charles C. Price Reservoir, with a capacity of 15.5 million gallons; the Northcote Reservoir, with a capacity of 0.71 million gallons; and the Fanita Terrace Reservoir, the only water

²⁰ U.S. Census Bureau. 2019. "American Community Survey (ACS) 2014–2018 Estimates." Accessed July 2023. <https://www.census.gov/programs-surveys/acs/technical-documentation/table-and-geography-changes/2018/5-year.html>.

²¹ San Diego County Water Authority. 2021. "2020 Urban Water Management Plan." March. Accessed July 2023. <https://www.sdcwa.org/wp-content/uploads/2021/03/Draft-2020-UWMP.pdf>.

tank in Santee that holds recycled water, storing up to 1.5 million gallons. The PDMWD is planning two additional potable water reservoirs, likely a 3-million-gallon facility that would be required for the Mesa Reservoir and a 4-million-gallon facility that would be required for the Fanita Ranch Reservoir. In addition to imported water, the PDMWD's water supplies also include recycled water and a very small amount of groundwater used to supplement the recycled system.

3.4.3 Potential Impact

The magnitude of a drought's impact is directly related to the severity and length. The severity of a drought depends on water availability and moisture deficiency and the size and location of the affected area. The longer the drought persists and the larger the area impacted, the more severe the potential impacts. Hot and dry conditions that persist into spring, summer, and fall can aggravate drought conditions, making the effects of drought more pronounced as water demands increase during the summer months. Impacts increase with the length of a drought, as carryover supplies in reservoirs are depleted and water levels in groundwater basins decline.²²

Droughts can cause drinking water shortages and declines in water quality as sediments and other contaminants aggregate in depleted reservoirs, leading to increased reservoir maintenance needs. This is a greater concern for small water systems in rural areas and private residential wells. Water quality deterioration can occur during droughts due to lower levels of precipitation and limited water storage supply.

Droughts also increase the chances of catastrophic wildfire risks. Drought is a major determinant of wildfire hazard, in that it creates a greater propensity for fire starts and larger, more prolonged conflagrations fueled by excessively dry vegetation, along with reduced water supply for firefighting purposes. As illustrated by the state's catastrophic 21st century wildfire seasons, devastating urban/wildland fire episodes occurred during or following a drought, when dead timber and brush and dry vegetation created conditions favorable for massive fire outbreaks.²³

The Pacific Institute and Environmental Justice Coalition for Water released a 2017 report, accessible on the California Adaptation Clearinghouse's website, called Drought and Equity in California. It is the first statewide analysis of impacts of the 5-year and ongoing drought on California's most vulnerable communities. The report identifies impacts of drought on people, including water supply shortages and rising costs, which affect people's access to safe, affordable water in their homes.²⁴ Often, low-income communities are disproportionately burdened by rising costs, which can place pressure on the local economy and low-income households. In some cases, droughts can also cause significant increases in food prices to the consumer due to shortages.

²² California Department of Water Resources (DWR). 2022. "Drought." Accessed July 2023. <https://water.ca.gov/water-basics/drought>.

²³ DWR. 2022. "Drought In California." Accessed July 2023. https://water.ca.gov/-/media/DWR-Website/Web-Pages/Water-Basics/Drought/Files/Publications-And-Reports/DroughtBrochure2021update_ay11.pdf.

²⁴ Pacific Institute. 2017. "Drought and Equity in California." January. Accessed July 2023. https://pacinst.org/wp-content/uploads/2017/01/PI_DroughtAndEquityInCA_Jan_2017.pdf.

Examples of other economic impacts include costs to homeowners due to loss of residential landscaping, degradation of urban environments due to loss of landscaping, and higher electricity costs due to the loss of hydropower supplies.

Drought conditions stress the reliance on imported water supply and the county's limited local water supply. In the event of a severe drought, utilities may have to implement customer demand reductions. As the wholesale provider for the region, the SDCWA recognizes that climate change will impact the availability of water supply, potentially triggering a water shortage. The PDMWD relies on imported water, and extreme drought conditions could limit the availability of imported supply at the source. According to the PDMWD's 2020 UWMP, climate change is likely to add uncertainties to water supply planning and future supply availability. The PDMWD's Water Shortage Contingency Plan identifies various water shortage levels and conservation measures for each level. In a severe drought, reductions may be made to irrigation and landscaping, and conservation measures may even apply to public works projects and actively irrigated environmental mitigation projects. Water supply shortages could impact the ability of critical facilities to continuously operate and provide necessary civil services.

3.4.4 Adaptive Capacity

The Sustainable Santee Plan includes the following strategies to help mitigate the impacts of drought:

- Educate the public about water conservation;
- Encourage low-impact development;
- Expand water recycling and gray-water systems;
- Promote sub-metering in multi-family housing units; and
- Promote conversion of turf grass to xeriscaping.

The City releases information to the public about water conservation and water quality. The Stormwater Division posts tip sheets about minimizing hose use, vehicle washing, landscaping, harvesting rainwater, repairing leaks, adjusting sprinklers and watering times, installing drip systems, and implementing smart irrigation controllers. Contact information is also provided for WaterSmartSD, SaveOurWater, and the PDMWD.

Through the Public Information Office, the City has posted drought response summaries on its website. For example, the City posted an overview of the measures it took to reduce water usage during the statewide 2015 drought. Water conservation measures implemented by the City included installing drip irrigation, using reclaimed water, using smart irrigation controllers, replacing landscaping with drought-tolerant vegetation, installing artificial turf, installing drip systems, and conducting daily inspections to identify water system leaks at parks, rights-of-way, and landscape maintenance districts.

The PDMWD provides a number of conservation programs to help customers become more water efficient and reduce water use. Specifically, the PDMWD offers rebate programs when programs are funded, for water saving devices and turf replacement and has numerous programs to promote

water-efficient landscaping. The free Residential Landscape Survey Program will identify potential leaks, recommend water conserving devices, assess irrigation efficiency, and determine a proper landscape watering schedule, all customized to the customer's home. This program is available for single-family, multi-family, commercial, and industrial use properties. Customers can apply for the program through the PDMWD's website. The PDMWD also hosts water-efficient landscaping workshops, water-smart landscaping makeover series, and landscape design and irrigation classes. Links to examples of water-efficient landscaping, a landscape watering calculator, and a do-it-yourself water audit are available on the PDMWD's website. The PDMWD also has an education section of its website for children, containing workbooks by grade level about the water cycle, water conservation, and the California Water System. The PDMWD also offers tours of water recycling facilities and pump stations during which visitors can get a behind-the-scenes look at the operations of wastewater and water systems.

The PDMWD's 2020 UWMP includes a drought risk assessment that evaluates the impacts of a 5-consecutive-year drought. This period represents the driest 5-year historical sequence for the PDMWD. The water demands during a 5-consecutive-year drought are anticipated to range between 18,148 acre-feet per year (first year) to 18,885 acre-feet per year (fifth year) by year 2045. Based on the SDCWA's supply availability through the year 2045, the PDMWD is projected to have sufficient supply available to meet water demands through 2045 for a 5-consecutive-year drought. In addition, the SDCWA invested in carryover storage supplies to help achieve reliability in dry years and multiple-dry years. The carryover storage supply program includes both in-region surface water storage and out-of-region groundwater storage in California's Central Valley. The PDMWD also has capacity to implement water conservation and outreach efforts during drought conditions that would result in lower demand increases than those normally associated with hot, dry weather.

According to the PDMWD's 2020 UWMP, the PDMWD is focused on water supply diversification to reduce risks associated with reliance on imported water. Notable strategies include the following:

- By 2020, local water supplies, including the Carlsbad Desalination Plant, recycled water, groundwater and surface water reservoirs, increased to meet more than one-third of the region's water supply demands.
- Potable reuse projects are local, drought-proof sources of water that are projected to make up 17 percent of the county's drinking water supply by 2035.
- The PDMWD is currently working with Helix Water District, the City of El Cajon, and the County on the East County Advanced Water Purification Project. This project would purify recycled water to create up to 30 percent of East County's drinking water supply. Together with projects including Pure Water San Diego and Pure Water Oceanside, the East County Advanced Water Purification Project will play a crucial part in reducing the county's reliance on imported water. It is expected to come online in 2025.

The County’s MJHMP includes the following goals and actions to respond to natural hazards, such as climate change:

- Encourage residents to adopt drought-tolerant landscaping or xeriscape practices;
- Promote use of reclaimed water for all landscaping efforts; and
- Support groundwater recycling efforts.

Chapter 13.36, Landscape and Irrigation Regulations, of the Santee Municipal Code outlines the landscape and irrigation regulations. These regulations encourage the use of recycled water and update landscape design standards for new development in Santee. The regulations require efficient and appropriate irrigation equipment, establish maximum applied water allowances, prohibit overspray, include audit and maintenance provisions to meet the state’s Model Water Efficient Landscape Ordinance, encourage the use of recycled water, and include minimum landscaping requirements. Further, the City’s Guidelines for Implementation of the City of Santee Water Efficient Landscape Ordinance establishes a structure for planning, designing, installing, maintaining, and managing water-efficient landscape practices in new construction and rehabilitated projects. It establishes provisions for water management practices and water waste prevention.

3.4.5 Vulnerability Score

Table 6, Vulnerability Assessment Results: Drought, provides the vulnerability scoring for vulnerable populations and critical facilities in response to drought effects in Santee. The reasoning for the scoring provided in Table 6 is discussed below.

Drought poses the most significant threat to people, especially sensitive groups, and rising temperatures have the potential to exacerbate drought. Vulnerable populations were given high scores for potential impact and medium to low scores for adaptive capacity, which resulted in relatively high vulnerability scores (vulnerability scores of 4 and 5; **Table 6**). Across the state, drought will continue to be a leading hazard of concern and have an impact on people and water-dependent industries. In Santee, drought will likely have the most impact on the following people without life-supporting resources:

- People without life-supporting resources may experience more intense drought-related impacts, such as lack of affordability (inaccessibility to water), diminished living conditions (displacement from homes), and mental health impacts (anxiety/depression disorders) due to their limited ability to access and/or afford clean water in their homes.
- People experiencing homelessness may experience more severe drought-related impacts, such as higher incidence of heat stroke and greater loss of human life, due to their deficiency of physical space to seek shelter from changing environmental conditions.

Water utilities will be the most impacted by drought. Although drought may have minor (little to no) impacts on other critical facility asset categories in the short-term, the state and the Southern California region will need to continue to plan for the impacts of drought in the mid- to long-term under different

climate change scenarios. State modeling projects an increased number of dry days, dry years, and strings of dry years resulting from more frequent and more intense drought.²⁵ As a leading hazard of concern for California, medium impact scores are given to critical facilities (**Table 6**).

Both the City and the PDMWD provide multiple resources to the public, and the drought assessment in the 2020 UWMP identifies sufficient water supplies in the event of a 5-year drought. However, the impacts of drought in the short- and long-term in order require continual assessment and planning to drought resiliency. Adaptive capacity score is rated as a medium as the City and PDMWD will need to identify long-term priorities to address climate change-related effects on drought (**Table 6**).

Table 6. Vulnerability Assessment Results: Drought

Category	Potential Impact	Adaptive Capacity Score	Vulnerability Score
Sensitive Populations			
People Experiencing Homelessness	High	Low	5
People without Life-Supporting Resources	High	Low	5
People with AFNs	High	Medium	4
People with Low Incomes	High	Medium	4
Outdoor Workers	High	Medium	4
Older Adults	High	Medium	4
Children	High	Medium	4
People with Existing Chronic Health Conditions	High	High	3
Critical Facilities			
City Operations	Medium	Medium	3
Public Safety Facilities	Medium	Medium	3
Public Health Facilities	Medium	Medium	3
Community Centers	Medium	Medium	3
Utility Facilities	High	Medium	4
Critical Transportation	Medium	Medium	3
Schools	Medium	Medium	3

Note: AFNs = access and functional needs

3.5 Section 3 Summary

Section 3 summarized the exposure potential and sensitivity of vulnerable populations and critical facilities to the four climate change hazards (extreme heat, wildfire, extreme precipitation, and drought) analyzed in this Vulnerability Assessment. Using the exposure and sensitivity to each hazard, the analysis identifies the potential impact of the hazard on vulnerable populations and critical facilities. The potential impact and the adaptive capacity are examined to score the overall vulnerability of vulnerable populations and the City's critical facilities to these hazards. Table 3 through Table 6 depict

²⁵ State of California. 2019. "Fourth Climate Change Assessment." Accessed July 2023. <https://www.climateassessment.ca.gov/state/>.

how the potential impact and adaptive capacity scores were used to determine overall vulnerability scores using the Vulnerability Scoring Rubric on Figure 4. **Table 7, Vulnerability Assessment Results for All Hazards**, summarizes the vulnerability scores for vulnerable populations and critical facilities in Santee, as identified in Table 3 through Table 6.

Table 7. Vulnerability Assessment Results for All Hazards

Category	Vulnerability Score			
	Extreme Heat	Wildfire	Extreme Precipitation	Drought
Sensitive Populations				
People with AFNs	4	4	3	4
People with Existing Chronic Health Conditions	3	3	2	3
People with Low Incomes	3	4	2	4
People Experiencing Homelessness	5	5	3	5
Outdoor Workers	4	4	2	4
Older Adults	3	4	2	4
Children	3	4	2	4
People without Life-Supporting Resources	4	5	3	5
Critical Facilities				
Public Health Facilities	3	4	4	3
Schools	3	4	4	3
Utility Facilities	3	3	3	4
Critical Transportation	4	4	2	3
City Operations	2	3	3	3
Public Safety Facilities	2	3	3	3
Community Centers	2	3	2	3

Note: AFNs = access and functional needs

Appendix B. Emergency Evacuation Route Analysis

Emergency Evacuation Route Analysis

City of Santee Safety and Environmental Justice Element

July 2023

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Section 1 Background

A variety of hazard scenarios could require an evacuation in parts of the City of Santee. These emergency situations could be caused by either natural or human-made events, such as wildfires, floods, or geologic or seismic hazards. Santee is responsible for ensuring emergency preparedness, response, and recovery activities for all populations within its jurisdiction. The City's Emergency Operations Plan (EOP) was prepared with input from partnering jurisdictions within San Diego County to provide a system for the effective management of emergencies consistent with the County EOP and to ensure the protection of life, property, and the environment before, during, and after an emergency event, natural disaster, or technological incident. This Emergency Evacuation Route Analysis incorporates the City's EOP by reference.

The results of this analysis are intended to identify evacuation capacity and network connectivity in Santee in addition to meeting the requirements associated with the following legislative updates:

- **Assembly Bill (AB) 747¹ (2019)** requires the City of Santee to update the Safety Element of its General Plan to identify evacuation routes and assess the capacity, safety, and viability of those routes under a range of emergency scenarios.
- **Senate Bill (SB) 99² (2019)** requires the City of Santee to identify residential developments in hazard areas that do not have at least two emergency evacuation routes (i.e., neighborhoods or households within a hazard area that have limited accessibility).
- **AB 1409³ (2021)** requires the City of Santee to identify evacuation locations.

Authoritative state guidance has not yet been developed to determine the type and level of analysis that is mandated under AB 747, SB 99, or AB 1409. This analysis evaluates the efficacy of existing evacuation routes under various hazard scenarios, in compliance with AB 747, and uses the methodology described below to identify residential developments without sufficient evacuation routes, in compliance with SB 99. Evacuation locations are provided below in compliance with AB 1409.

¹ An act to add Section 65302.15 to the California Government Code.

² An act to amend Section 65302 of the California Government Code.

³ An act to add Section 65302.15 to the California Government Code.

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Section 2 Hazard Scenarios

Evacuation route viability is largely determined by the location of the hazard. The city is surrounded by Very High Fire Hazard Severity Zones to the north and southwest as shown in Figures 2 through 4 of this Emergency Evacuation Route Analysis. Therefore, the City of Santee considered three scenarios with wildfire originating in the northeast, the northwest, and the southwest). Because flood zones exist along the San Diego River in the south-central portion of Santee, evacuation route viability is assessed for flood hazards (**Figure 5, Flood Residential Evacuation Vulnerability Score**). Lastly, due to the proximity of the Rose Canyon extension of the Newport Inglewood Fault Zone and the Mission Gorge Fault and La Nacion Fault Zone southwest of the city, evacuation route viability is assessed for an earthquake event (**Figure 6, Earthquake Residential Evacuation Vulnerability Score**).

Six hazard scenarios are considered in this analysis:

1. Baseline (no hazard location specified)
2. Wildfire (originating in the area northeast of the city)
3. Wildfire (originating in the area northwest of the city)
4. Wildfire (originating in the area southwest of the city)
5. Flood
6. Earthquake

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Section 3 **Data, Assumptions, and Definitions**

The Evacuation Route Analysis uses updated data from UrbanFootprint and the OpenStreetMap Foundation that was published in 2021. The OpenStreetMap Foundation data builds on and includes all roads in the U.S. Census Bureau’s Topologically Integrated Geographic Encoding and Referencing (TIGER) database. The database includes primary roads, secondary roads, local neighborhood roads, rural roads, city streets, vehicular trails, ramps, service drivers, walkways, stairways, alleys, and private roads. Roads within the city are evaluated for evacuation route viability using the assumptions described below and methodology described in Section 4.

To develop a methodology that effectively evaluates the safety and capacity of evacuation routes and identifies residential areas that lack two evacuation routes, the following definitions and assumptions apply:

1. “Evacuation route vulnerability” refers to the reduced ability of people to evacuate under emergency conditions. Evacuation route vulnerability scores are calculated for each residential parcel. Lower values indicate lower levels of vulnerability, while higher values indicate greater evacuation route vulnerability.
2. “Capacity” is defined by the ability of a road to accommodate traffic volume. In this analysis, road type (local, collector, arterial, or highway/freeway) is used as an indicator of road capacity.
 - “Local” roads are streets that are primarily used to gain access to property. Proximity to local roads was not considered a significant determinant of evacuation vulnerability.
 - “Collector” roads are considered low-to-moderate capacity roads that serve to move traffic from local streets to arterial roads.
 - An “arterial” road is a high-capacity urban road. The primary function of an arterial road is to deliver traffic from collector roads to highways/freeways, which are the highest capacity evacuation route.
3. Evacuation proceedings are primarily reliant on “outbound” roads: roads that transport drivers away from the city. Outbound roads are either freeways or arterials. Outbound roads begin at the intersection closest to the city boundary.
4. “Proximity” is defined by the distance from a residential parcel to nearest road (for collector roads) or “nodes”: the nearest intersection on the following road types: arterial, outbound, or highway/freeway.
5. All roads have a potential role in evacuations. Closer proximity to higher capacity roads and outbound roads reduces evacuation vulnerability.
6. Hazard scenarios influence the direction people evacuate (away from the hazard area).
7. Under the earthquake hazard scenario, segments of roads with bridges are not viable.

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Section 4 Methodology

Evacuation route vulnerability scores were assigned to each residential property based on several factors, including proximity, capacity, and viability. The geospatial analysis included the following steps:

1. Map all residential parcels in Santee and all collector, arterial and outbound roads and freeways.
2. Create nodes at the intersection of collector and local roads to arterial roads and all intersections on outbound roads, including on-ramps for highways/freeways.
3. Determine the proximity of each residential parcel to the nearest evacuation route (highway/freeway or outbound road) using the following methodology:
 - a. Calculate the distance from the parcel to the nearest collector road.
 - b. Calculate the distance to the nearest arterial, outbound road, or highway/freeway node.⁴
4. Each distance value calculated in Step 3 is weighted based on road type. Apply the following vulnerability weights to the road type to reflect the higher vulnerability of lower capacity roads and roads with bridges:

Road Type	Vulnerability Weight
Freeway	1
Outbound Road	2
Arterial Road	3
Collector Road	4
Road segment with bridge	10

5. Add weighted distance values for each evacuation route to calculate the evacuation route vulnerability score. Lower values indicate the evacuation route has a lower vulnerability to the hazard scenario; higher values indicate greater vulnerability.
6. For each hazard scenario, identify residential parcels whose evacuation route vulnerability has changed (increased or decreased) from the baseline, and determine if there are any residential areas with fewer than two evacuation routes. A geographic information systems (GIS) assessment that identifies potential vulnerabilities in Santee is performed to conclude whether all residential parcels have at least two points of egress.

⁴ To account for the assumption that drivers would take the route that leads them out of the city most efficiently, if the distance from a parcel to a higher capacity road is less than the distance to a lower capacity road, the distance to the lower capacity road is assigned a value of 0.

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Section 5 Results

1. Baseline

The baseline scenario evaluates the evacuation route vulnerability of residential parcels absent a hazard event. In the baseline scenario, all outbound roads are available to residents for evacuation (**Figure 1, Baseline Residential Evacuation Vulnerability Score**). Key intersections within the city boundary are where two arterial roads connect. These key intersections are labeled on the baseline map. Major intersections are necessary to efficiently route residents to outbound roads. Residential parcels with higher evacuation route vulnerability scores are highlighted in red, orange, or yellow. Assuming all evacuation routes are viable, residents in the northern and southwestern regions of the city have the highest evacuation route vulnerability, as they have the farthest to travel to access outbound evacuation routes (i.e., State Route [SR-] 67, SR-52, SR-125, and Interstate [I-] 8).

In addition to considering evacuation route vulnerability, the vulnerability of residents should be considered in determining which areas may need to be prioritized by first responders during an evacuation. The areas in the Santee with a greater percentage of older adults, people with disabilities, and households that do not own a vehicle (i.e., transit-dependent populations) require greater levels of support during an evacuation. Other vulnerable groups beyond those within these demographics should be examined relative to evacuation route vulnerability.

For example, the following areas are defined as disadvantaged communities in the General Plan Safety and Environmental Justice Element:

- The area south of Mission Gorge Road and west of Fanita Road (Census Tract 0166.05)
- The area south of Mission Gorge Road and east of Fanita Road (Census Tract 0166.16)
- The area south of Mission Gorge Road and east of Cuyamaca Street (Census Tract 0166.17)

[See Figure 6.1 through Figure 6.3 in the Safety and Environmental Justice Element for the City's disadvantaged communities.]

City Boundary

Road Type

- Collector
- Arterial
- Freeway
- Freeway Ramp

Residential Evacuation Vulnerability Score

- Higher
- Lower

County of San Diego

FANTASY

LAKE CANYON RD

MISSION GORGE RD

CARLTON OAKS DR

CUYAMACA ST

PROSPECT AVE

WOODSIDE AVE

Gillespie Field

52

125

8

54

67

Source: UrbanFootprint 2022. ESRI 2022

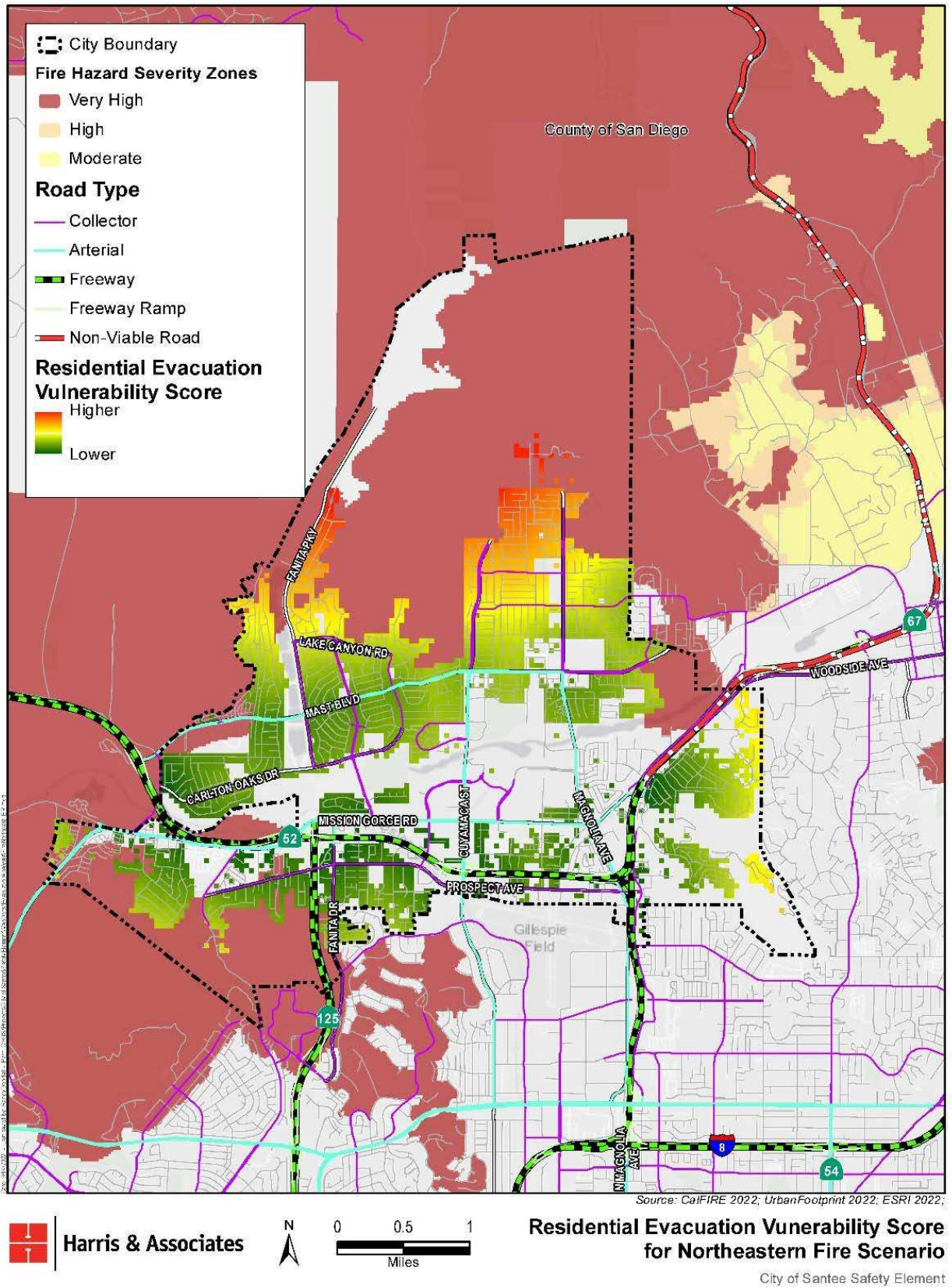
Residential Evacuation Vulnerability Score for Baseline Scenario

City of Santee Safety Element

2. Wildfire (Northeast)

This scenario assumes a mandatory residential evacuation due to a wildfire northeast of the city. Outbound roads leading north/northeast, such as SR-67 North, are assumed to be not viable due to the wildfire hazard. The south- and west-bound freeways are the most viable evacuation routes in Santee in this scenario. Evacuation vulnerability scores are re-calculated from the baseline scenario to account for the increased distance to the next closest, viable outbound road. **Figure 2, Northeast Wildfire Residential Evacuation Vulnerability Score**, highlights residential parcels with evacuation route vulnerability scores that increased as a result of the SR-67 North evacuation route being closed. SR-67 South, SR-52 West, and SR-125 South, as well as I-8, are the outbound roads most likely to be used in this scenario. Residents are able to travel along the following arterial roadways in Santee in order to access the viable south- and west-bound freeways: Mast Boulevard, Mission Gorge Road, Cuyamaca Street, and Magnolia Avenue. The viable south- and west-bound freeways under this scenario increase overall evacuation capacity in Santee. However, the city's internal roadways (e.g., arterial roads) are subject to congestion as residents attempt to access the outbound freeways. Emergency responders should consider activating evacuation traffic management along arterial roads to allow for easier access to the freeways, although this requires extensive coordination and should be reserved for extreme wildfire threats.

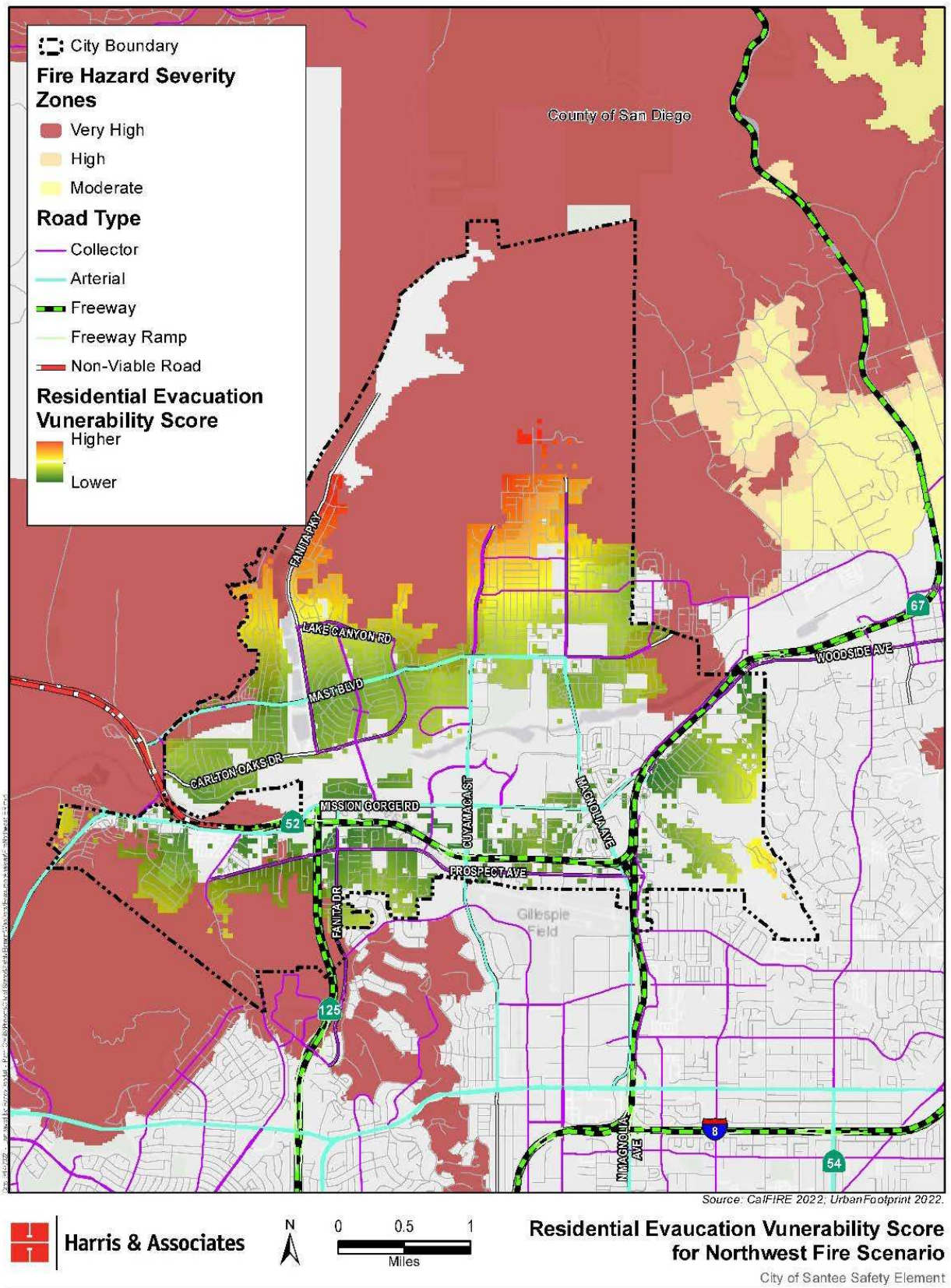
Figure 2. Northeast Wildfire Residential Evacuation Vulnerability Score



3. Wildfire (Northwest)

This scenario assumes a mandatory residential evacuation due to a wildfire northwest of the city. Outbound roads leading north/northwest, including SR-52 West, are assumed to be not viable. The south- and east-bound freeways are the most viable evacuation routes in Santee in this scenario. Evacuation scores are re-calculated from the baseline scenario to account for the increased distance to the next closest, viable outbound road. **Figure 3, Northwest Wildfire Residential Evacuation Vulnerability Score**, highlights residential parcels with evacuation route vulnerability scores that increased as a result of the SR-52 West evacuation route being closed. SR-67 South, SR-52 East, SR-125 South, and I-8 East are the outbound roads most likely to be used in this scenario. Residents are able to travel along the following arterial roadways in Santee in order to access the viable south- and east-bound freeways: Mast Boulevard, Mission Gorge Road, Cuyamaca Street, and Magnolia Avenue. The viable south- and east-bound freeways under this scenario increase overall evacuation capacity in Santee. However, the city's internal roadways (e.g., arterial roads) are subject to congestion as residents attempt to access the freeways. Emergency responders should consider activating evacuation traffic management along arterial roads to allow for easier access to the freeways, although this requires extensive coordination and should be reserved for extreme wildfire threats.

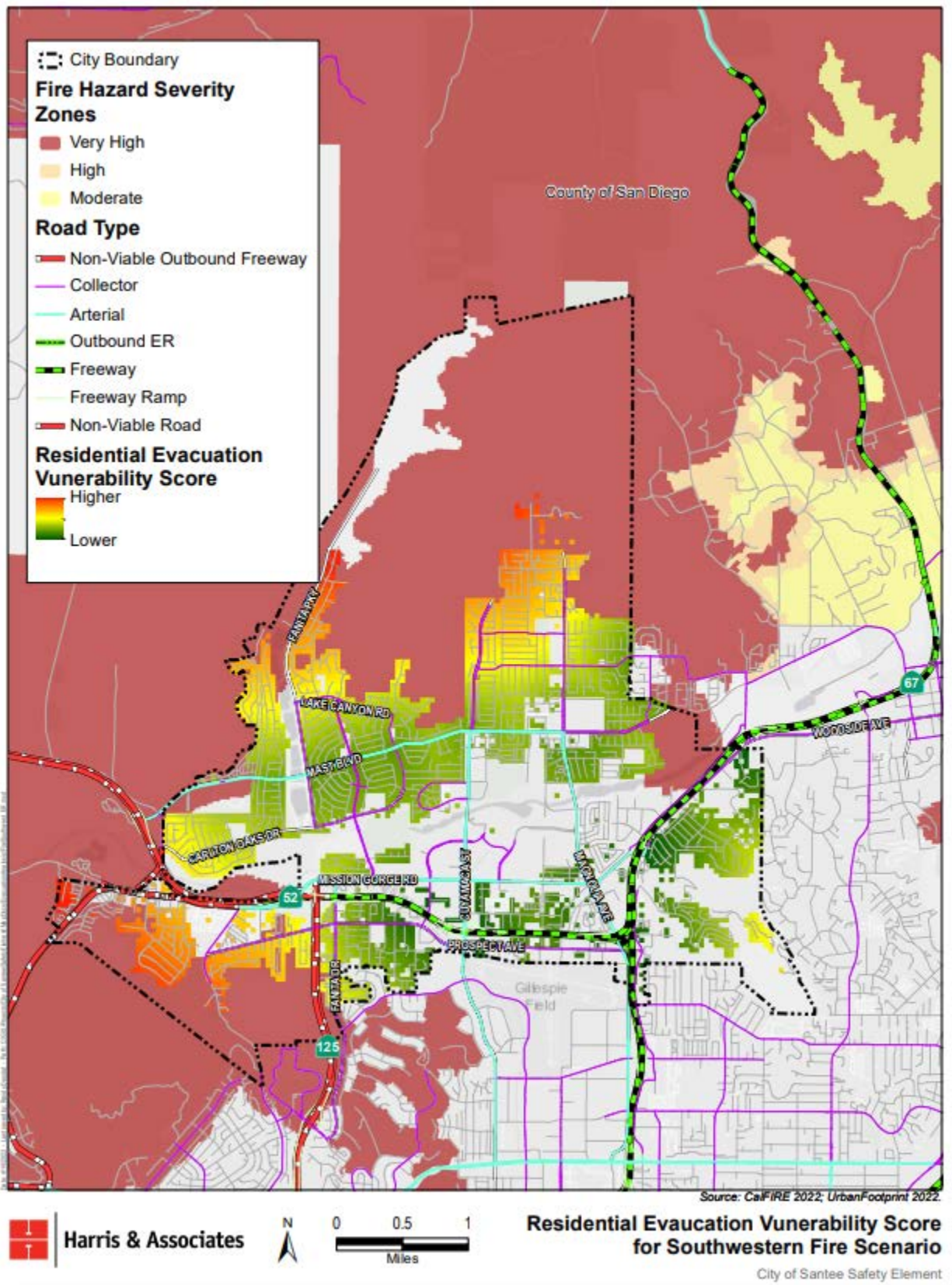
Figure 3. Northwest Wildfire Residential Evacuation Vulnerability Score



4. Wildfire (Southwest)

This scenario assumes a mandatory residential evacuation due to a wildfire southwest of the city. Outbound roads leading south/southwest, including SR-52 West and SR-125 South, are assumed to be not viable. The north- and east-bound freeways are the most viable evacuation routes in Santee in this scenario. Evacuation scores are re-calculated from the baseline scenario to account for the increased distance to the next closest, viable outbound road. **Figure 4, Southwest Wildfire Residential Evacuation Vulnerability Score**, highlights residential parcels with evacuation route vulnerability scores that increased as a result of the SR-52 West and SR-125 South evacuation routes being closed. SR-67 North, SR-52 East, and I-8 East are the outbound roads most likely to be used in this scenario. Residents are able to travel along the following arterial roadways in Santee to access the viable north- and east-bound freeways: Mast Boulevard, Mission Gorge Road, Cuyamaca Street, and Magnolia Avenue. The viable north- and east-bound freeways under this scenario increase overall evacuation capacity in Santee. However, the evacuation of residents without life-saving resources or residents with reduced mobility, such as those who do not have access to a vehicle of their own, may be more challenging.

Figure 4. Southwest Wildfire Residential Evacuation Vulnerability Score

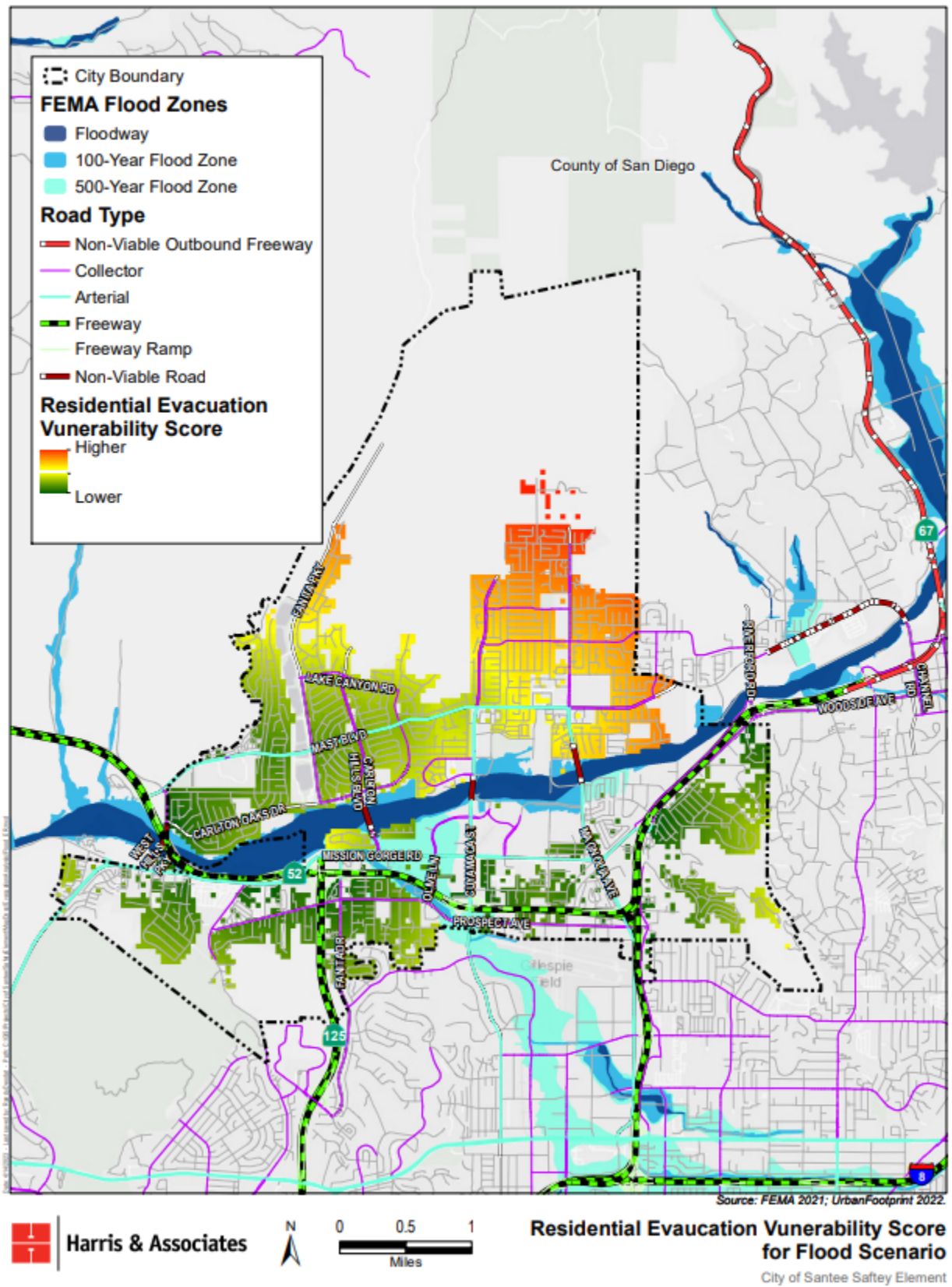


5. Flood

The flood scenario assumes that all city residents will need to evacuate away from the flood zone. Because the flood zone is along the San Diego River, the roadways that cross the river (i.e., located within the floodway) are assumed to be non-viable routes. For example, the following roadways are non-viable in the event of a flood: West Hills Parkway, Carlton Hills Boulevard, Olive Lane, Cuyamaca Street, Magnolia Avenue, Riverford Road, and Channel Road (**Figure 5, Flood Residential Evacuation Vulnerability Score**). Evacuation scores are re-calculated from the baseline to account for the increased distance to the next closest, viable outbound road. Figure 5 highlights residential parcels with evacuation route vulnerability scores that increased as a result of the evacuation routes being closed. Given that all city residents are assumed to need to evacuate, residents in the north area of the city (furthest from the flood zone) are shown to have the highest vulnerability, although they are much less likely to be affected by a flood from the San Diego River. It should be noted that residents closest to the flood zone are at highest risk of being affected by a flood hazards, although these residents generally have more options for viable routes to evacuate the city.

The roadways (collector and arterial) that flow in directions away from the floodway are the outbound roads most likely to be utilized in this scenario (e.g., Mast Boulevard, Woodside Avenue, Mission Gorge Road, El Nopal, Fanita Drive, Cuyamaca Street, Magnolia Avenue). However, the floodway includes sections of several of the arterial roads in Santee (i.e., Cuyamaca Street and Magnolia Avenue, where they cross the floodplain). Roadways that connect residents to evacuation routes (e.g., arterial roads) may be inundated, limiting the ability of residents to evacuate. Also, first responders may have more difficulty accessing vulnerable populations that need to be evacuated once the water inundates the area. For example, people with mobility restrictions (e.g., wheelchairs) would not be able to cross a ladder and would be more difficult to access in a flooded area. The time it takes to evacuate is not as critical during a flooding event because a flood is a slower-onset hazard. However, people experiencing homelessness may be camped near the San Diego River and therefore, inundated with floodwaters before first responders can access the area.

Figure 5. Flood Residential Evacuation Vulnerability Score



6. Earthquake

Because earthquakes can cause damage to bridges, including freeway bridges, the following assumptions were made: (1) residential parcels that require a bridge crossing to access their most efficient evacuation route are more vulnerable compared to those that do not need to cross a bridge, and (2) outbound roads that require a bridge crossing may not be viable evacuation routes after an earthquake. To account for the first assumption, residential parcels that require a bridge crossing to access their otherwise most efficient evacuation route have a higher vulnerability weight assigned to the road segment with the bridge. The second assumption removes the majority of evacuation routes from the analysis. For example, the bridges along the following roads are assumed to not be accessible in the event of an earthquake: Carlton Hills Boulevard, Cuyamaca Street, and Magnolia Avenue. Vulnerable residential parcels with no viable evacuation routes are denoted in the shaded areas on **Figure 6, Earthquake Residential Evacuation Vulnerability Score**. *Note:* This figure represents a worst-case scenario where all bridges fail, meaning that no bridges can be traversed. The areas that do not have two points of egress have been included in this map to comply with SB 99. Compared to the baseline scenario, more residential parcels in this scenario are vulnerable due to their proximity to bridges, including those in the south central and northwest regions of the city. Residents in these areas would not be able to evacuate along the identified evacuation routes (i.e., freeways) because the arterials and collectors that connect to the freeways would not be accessible. Emergency responders should consider the possibility of bridge failure and should also encourage residents to pre-determine routes without bridge crossings that lead out of the city. Bridges should be inspected regularly and reinforced as needed to prevent the possibility of bridge failure during an evacuation event.

City Boundary

Bridges

Road Type

- Non-Viable Outbound Freeway
- Collector
- Arterial
- Outbound ER
- Freeway
- Freeway Ramp
- Non-Viable Road

Value

High : 59074.8

Low : 2200.72

Residential Area with No Viable Evacuation Route

County of San Diego

San Marcos, CA

Map showing Residential Evacuation Vulnerability Score for No Bridges Scenario. The map displays various road types, including freeways, arterials, and collectors, and highlights areas with high vulnerability scores (yellow/orange) and low vulnerability scores (green). Key roads shown include Lake Canyon Rd, Mission Gorge Rd, and Woodside Ave. The map also includes a legend for road types, values, and residential areas with no viable evacuation routes.

Source: UrbanFootprint 2022.

Harris & Associates

0 0.5 1 Miles

Residential Evacuation Vulnerability Score for No Bridges Scenario

City of Santee Safety Element

Section 6 Evacuation Locations

In accordance with AB 1409, this Evacuation Route Analysis is required to identify evacuation locations for the city. Evacuation locations for city residents would be dependent on the type and location of hazardous event affecting the city and would be determined by first responders on site during emergency situations. For example, if a wildfire occurs north of the city, residents would be directed to evacuate to community centers and City buildings in the southern portion of the city, such as the City of Santee Emergency Operations Center (City of Santee Town Hall) or Alternate Emergency Operations Center (Santee Public Works Operations Center), or to areas south of the city, such as El Cajon. Evacuation locations would consist of places in Santee that residents are familiar with, such as parks, community centers, schools, libraries, City department buildings, or churches.

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Section 7 Conclusion

The results of the Evacuation Route Analysis were as expected for each of the hazard scenarios. Residential parcels near outbound roads that were assumed to be non-viable under the hazard scenario saw an increase in their Evacuation Route Vulnerability Score compared to the baseline scenario, reflecting the greater distance residents would need to travel to access the next nearest outbound evacuation route:

- The baseline scenario suggests that residents closest to the northern region of the city center are most vulnerable given the distance they would need to travel to access an outbound road.

The Evacuation Route Analysis identified potential vulnerabilities in the city according to a GIS assessment that concludes whether all residential parcels have at least two points of egress. The analysis shows that residents closest to the southern and southwestern regions of the city are most vulnerable given the bridges they would need to traverse to access an outbound road:

- The residential parcels in the northern region of the city are the most vulnerable in the event of a wildfire from the northeast; however, these residents have more than two viable evacuation routes in this scenario.
- The residential parcels in the northern region of the city are the most vulnerable in the event of a wildfire from the northwest; however, these residents have more than two viable evacuation routes in this scenario.
- The residential parcels in the northern and western regions of the city are the most vulnerable in the event of a wildfire from the southwest; however, these residents have more than two viable evacuation routes in this scenario.
- The residential parcels in the northern region of the city are the most vulnerable in the event of a flood; however, these residents have more than two viable evacuation routes in this scenario.
- The residential parcels in the south central and northwest regions of the city do not have any viable evacuation routes in the event of an earthquake.
- The residential parcels in the southwestern region of the city only have one viable evacuation route in the event of an earthquake: Mission Gorge Road.

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Section 8 **Recommendations**

The Evacuation Route Analysis suggests that emergency responders should be flexible in emergency scenarios since the location and extent of a hazard may disrupt established evacuation routes. Given the potential for congestion when certain evacuation routes are closed, emergency responders should consider contraflow lane reversal (i.e., the reversal of lanes in order to temporarily increase the capacity of congested roads) as one strategy to efficiently evacuate residents during all hazard scenarios. The majority of the outbound evacuation routes rely on a bridge, which are vulnerable to earthquakes and seismic hazards. Parcels that require access to bridges to evacuate should be prioritized as areas of concern in the event of an earthquake. In the event of a flood hazard, people experiencing homelessness may be camped near the San Diego River and therefore, inundated with floodwaters before first responders can access the area. First responders should focus first on evacuating areas closest to the flood zone. Additionally, first responders may have more difficulty accessing vulnerable populations that need to be evacuated. For example, people with mobility restrictions (e.g., wheelchairs) would not be able to cross a ladder and would be more difficult to access in a flooded or fire area. Special consideration should be made for accessing people with mobility restrictions (e.g., at hospitals, senior centers, etc.) during flood and fire hazards.

Social vulnerability indicators, including age, disability, and other mobility factors, should be further examined to determine other potential barriers to evacuation besides distance to and capacity of evacuation routes. The City, in coordination with the County of San Diego, continues to plan for the needs of individuals with disabilities and access and functional needs, including but not limited to providing accessible transportation during evacuations, providing public information in multiple languages, language translation services at evacuation and recovery centers, and training first responders on how to interact with persons with physical, cognitive, and emotional disabilities. The City's EOP details the measures to ensure that preparedness and response strategies serve the needs of the entire population within the City, including vulnerable populations, such as people with physical, programmatic, and communications needs; children; and household pets and service animals.

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Appendix C. Geotechnical/Seismic Hazard Study

GEOTECHNICAL/SEISMIC HAZARD STUDY FOR THE SAFETY ELEMENT OF THE SANTEE GENERAL PLAN

**CITY OF SANTEE
COUNTY OF SAN DIEGO,
CALIFORNIA**



GEOCON
INCORPORATED

GEOTECHNICAL
ENVIRONMENTAL
MATERIALS

PREPARED FOR



**MARCH 29, 2021
PROJECT NO. G2647-52-01**



Project No. G2647-52-01
March 29, 2021

City of Santee
10601 Magnolia Avenue
Santee, California 92071-1266

Attention: Mr. Scott A. Johnson

Subject: GEOTECHNICAL/SEISMIC HAZARD STUDY FOR
THE SAFETY ELEMENT OF THE SANTEE GENERAL PLAN
CITY OF SANTEE, COUNTY OF SAN DIEGO, CALIFORNIA
PURCHASE ORDER 53273

Mr. Johnson:

In accordance with your authorization of our proposal No. LG-20433 dated September 29, 2020, we prepared this Geotechnical/Seismic Hazard Study for the City of Santee, California. The accompanying report presents the findings of our study for inclusion into the Safety Element of the Santee General Plan.

Should you have questions regarding this report, or if we may be of further service, please contact the undersigned at your convenience

Very truly yours,

GEOCON INCORPORATED

Shawn Foy Weedon, GE 2714
Vice President, Senior Engineer

SFW:JH:arm

(e-mail) Addressee



John Hoobs, CEG 1524
Vice President, Senior Geologist

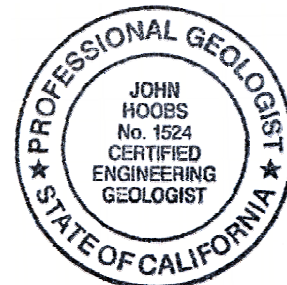


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- Table A-3, Geotechnical/Seismic Hazard Map Legend
- Table A-4, Modified Mercalli Intensity (Damage) Scale of 1931 (Abridged)
- Table A-5, Geologic Time

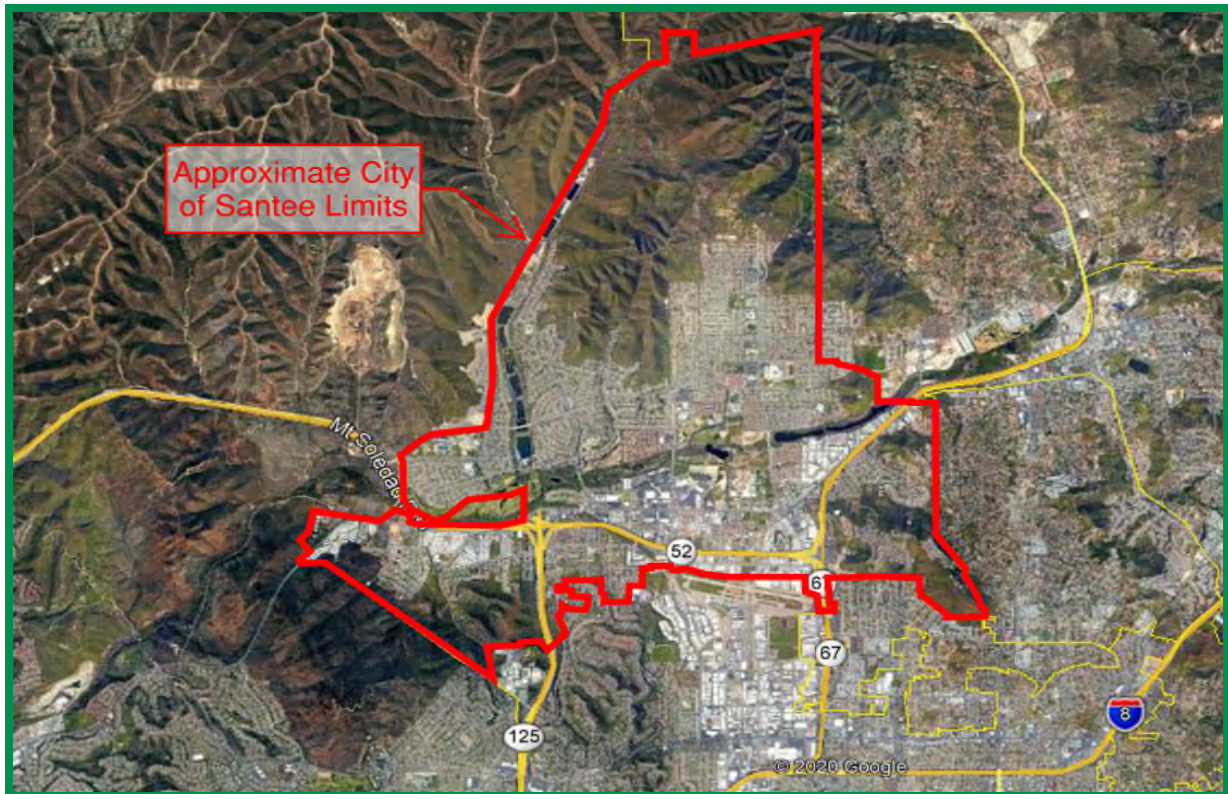
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GEOTECHNICAL/SEISMIC HAZARD STUDY FOR THE SAFETY ELEMENT OF THE SANTEE GENERAL PLAN

1. INTRODUCTION/EXECUTIVE SUMMARY

This report presents the results of a Geotechnical/Seismic Hazard Study for the Safety Element of the Santee General Plan. The Area Map presents the general area of the City of Santee.



City of Santee Area Map

We identified three general categories of hazards related to seismicity and geologic conditions within the City of Santee. These hazards could, under certain circumstances, result in property damage and disruption of essential services, bodily injury and loss of life. The three main seismically induced hazards specific to the City of Santee include:

1. **Landsliding and Slope Instability:** caused by the presence of ancient landslides, bedding plane shears and weak claystone beds within the Friars Formation; ground shaking.
2. **Liquefaction:** typically occurs within the alluvial deposits of the San Diego River. Liquefaction can cause settlement, lateral spreading, loss of bearing strength and sand boils.
3. **Dam Inundation:** failure of the three major dams located upstream of the City could be considered a hazard. We did not identify areas of potential surface fault rupture within the city limits based on published geologic maps.

This Geotechnical/Seismic Hazard Study identifies the potential natural and man-made hazards and sets forth goals and policies that will serve the public welfare and reduce the risks associated with these hazards.

The data used in preparing this study are derived mainly from published geologic literature, reports prepared by Geocon Incorporated and other firms for projects within the Santee city limits, and our field experience in the study area and the San Diego County area in general. A complete listing of the published reports and studies utilized is presented in Appendix C, List of References.

2. PURPOSE AND SCOPE OF WORK

A Safety Element of the General Plan is required by the California Legislature for all cities and counties in the state. The State of California Government Code, Section 65302 (g) states the General Plan shall include the following:

A safety element for the protection of the community from any unreasonable risks associated with the effects of seismically induced surface rupture, ground shaking, ground failure, tsunamis, seiche, and dam failure; slope instability leading to mudslides and landslides; subsidence; liquefaction; and other seismic hazards identified pursuant to Chapter 7.8 (commencing with Section 2690) of Division 2 of the Public Resources Code, and other geologic hazards known to the legislative body; flooding; and wildland and urban fires. The safety element shall include mapping of known seismic and other geologic hazards. It shall also address evacuation routes, military installations, peak-load water supply requirements, and minimum road widths and clearances around structures, as those items relate to identified fire and geologic hazards.

This Geotechnical/Seismic Hazard Study includes only geologic and seismic hazards. This report does not address flooding, wild land and urban fires or emergency preparedness requirements of the Safety Element. These requirements will be addressed separately by others and will be included along with this report into the Safety Element of the General Plan. This report contains a Geologic Map (**Figure 1**), Geotechnical/Seismic Hazard Map (**Figure 2**), an Inundation Map (**Figure 3**) depicting areas that could be affected by failure of local reservoirs and dams and a Characteristic Geology Section of the Santee Area (**Figure 4**). This report is consistent with the current building code and this report should govern if there is a discrepancy between the two documents. The City of Santee can request additional information from private development submittals, as necessary, to address the geologic requirements of the project.

The scope of our services includes an inventory and review of available literature, development of new geologic hazard and inundation maps, and preparation of this report. The literature reviewed included a report prepared by Geocon Incorporated, entitled *Geotechnical/Seismic Hazard Study for the Safety Element of the Santee General Plan*, dated October 31, 2002.

3. RECOMMENDED GENERAL PLAN GOALS

The overall Seismic Safety Element Goal is to minimize the loss of life and destruction of property in the City of Santee caused by seismic and geologic hazards. The implementation of information contained in this study, as well as information to be generated in future studies, is discussed herein. It includes a discussion on application of geologic data to land use studies, guidelines for type of reports necessary for projects in areas of different geologic hazards, and recommendations for a peer review procedure.

In addition, properties that are planned for development should address the three seismic hazard categories as follows:

1. **Landsliding and Slope Instability:** Performing background research and site-specific studies, geologic explorations (e.g. large-diameter drilling), laboratory testing and engineering analyses to properly characterize the existing geologic conditions on the property.
2. **Liquefaction:** Performing map reviews and site-specific studies, field explorations (e.g. cone penetrometer testing or mud-rotary drilling), laboratory testing and engineering analyses to properly characterize the existing geologic conditions on the property.
3. **Dam Inundation:** Performing background research to properly identify if dam inundation is a potential hazard to the planned development (e.g. hazard map review).

4. RECOMMENDED GENERAL PLAN OBJECTIVES AND POLICIES

The objectives of this report are to identify and evaluate the geotechnical and seismic hazards in the City of Santee, and to establish policies and guidelines to reduce the risks from the three hazard categories discussed herein. These hazards may result in damage to public and private property, disruption of essential services, bodily injury and loss of life. Suggested objectives of the General Plan for each of the three hazard categories could include:

Objective 1 – Awareness. Increase awareness of geotechnical and seismic hazards within the City of Santee in order to avoid or minimize the effects of the hazards during the planning process for new development or redevelopment, and to mitigate the risks for existing developments.

Policy 1. Utilize existing and evolving geologic, geophysical, and engineering knowledge to distinguish and delineate those areas that are particularly susceptible to damage from the three hazard categories.

Objective 2 – Project Review. Assure that the project review process allows for consideration of the seismic and geologic hazard categories as early as possible.

Policy 2. For projects proposed in areas identified within the geologic hazard category area, the geologic/geotechnical consultant shall establish either that the unfavorable conditions do not exist in the specific area in question or that they can be mitigated through proper design and construction.

Objective 3 – Essential Facilities, Hazardous Facilities, and Special Occupancy Structures. Ensure that essential facilities, hazardous facilities and special occupancy structures are located and designed to be functional in the event of a disaster. These facilities and structures include fire and police stations, hospitals, communication centers, schools, churches and other high occupancy structures.

Policy 3. As shown in Table A-1 (Appendix A), *Determination of Geotechnical Studies Required*, Group I facilities require a Geotechnical Investigation, a Geologic Investigation, and a Seismic Hazard Study specific to the project. Additionally, the State of California requires reports for public schools, hospitals, and other critical structures to be reviewed by the State Architect.

An analysis of each of the three policies is delineated herein.

4.1 Policy 1 – Awareness

The enclosed Geotechnical/Seismic Hazard Map (**Figure 2**) and Dam Inundation Map (**Figure 3**) were compiled from published maps from the California Geologic Survey and from the Poway, La Mesa, El Cajon, and San Vicente Quadrangles. In addition, geotechnical reports, in-house and on file at the City of Santee, were integrated into the map.

4.2 Policy 2 – Project Review

The City shall require that the potential geologic hazards be investigated and evaluated at the environmental review stage prior to project approval. Such investigations shall include those identified in Table A-1 (Appendix A), *Determination of Geotechnical Studies Required*, as may be warranted by results of the Initial Environmental Study. The City of Santee may request additional studies depending on the project location, project type and possible updated information.

4.2.1 Application of Data to Site- Specific Land Use Studies

The discussion presented herein is intended to inform the governing agencies as to the level of geologic risk or hazard in a particular area and to provide a basis for design considerations with regard to types of structures and proposed location. The factors requiring consideration are:

- The type and/or function of a structure,
- The presence of geological hazards at the proposed site, and
- The level of risk that can be accepted. For instance, in areas of potentially higher risk or where structures that are more critical are planned, special design considerations will be necessary to reduce the level of risk to an acceptable factor.

The intent is not to discourage a particular type of structure or to condemn an area as being impossible to develop. The intent of the recommendations is to provide a basis for evaluating specific site and structure combinations and to discourage those that are unfavorable.

Table A-1 (Appendix A) indicates the minimum suggested level of geotechnical study for various combinations of site location and type of structure or development. Table A-2 (Appendix A) gives a description of each type of study including Geologic Reconnaissance, Geologic Investigation, Geotechnical Investigation and Seismic Hazard Study. Proposed structures should be evaluated based on the type of structure and proposed building use. Table 4.2.1 presents a summary of the group/risk categories in general accordance with American Society of Civil Engineers (ASCE), *ASCE 7-16, Minimum Design Loads and Associated Criteria for Buildings and Other Structures* (ASCE 7-16). Required site-specific geologic studies will vary in detail and scope, based upon the type of land use proposed by an applicant and the existing geologic conditions of the subject property to ensure public safety.

TABLE 4.2.1
ASCE 7-16 RISK CATEGORIES

Group / Risk Category	Building Use	Examples
I	Low risk to Human Life at Failure	Parks, Open Spaces, Golf Courses, Agricultural Land, Landfills, Barn, Storage Shelter
II	Nominal Risk to Human Life at Failure (Buildings Not Designated as I, III or IV)	Residential, Commercial and Industrial Buildings, Warehouses, Apartment Buildings, Motels, Secondary Roadways
III	Substantial Risk to Human Life at Failure	Theaters, Lecture Halls, Dining Halls, Schools, Churches, Prisons, Small Healthcare Facilities, Infrastructure Plants, Storage for Explosives/Toxins, Main Roads High-Rise Buildings, Large Structures Intended for Human Occupancy
IV	Essential Facilities	Hazardous Material Facilities, Hospitals, Fire and Rescue, Emergency Facilities and Shelters, Police Stations, Power Stations, Aviation Control Facilities, National Defense, Water Storage

Depending on the site, potential landfill areas may require more investigation than the other types of developments in order to address environmental concerns.

The types of report required for site-specific studies typically include:

1. **Geologic Reconnaissance.** Normally a desktop study that summarizes the potential geologic hazards on a property based on research on existing geologic map and previously performed geotechnical studies in the vicinity.
2. **Geologic Investigation.** Includes mapping and exploratory excavations to confirm/identify the existing geologic hazards on a property.
3. **Geotechnical Investigation.** Provides a summary of the geologic hazards and design recommendations for the proposed development.

These reports can be preliminary (such as feasibility analyses) or detailed studies including extensive subsurface investigation, laboratory data testing generation, and engineering-geologic analysis.

Consideration should be given to developing *Guidelines for Geotechnical Reports* that would set technical standards for all reports submitted to the City of Santee. References for developing *Guidelines for Geotechnical Reports* including:

1. California Department of Conservation, Division of Mines and Geology, *DMG Note 48 Checklist for the Review of Engineering Geology and Seismology Reports for California Public Schools, Hospitals, and Essential Services Buildings*, November 2019.
2. City of San Diego, *Guidelines for Geotechnical Reports*, 2018.
3. *2019 California Building Code*, Chapter 18 and 18A, Effective January 1, 2020.

Concerning Seismic Hazard Studies for critical structures, very thorough investigations should be conducted. These studies should be performed in accordance with the following guidelines:

1. California Department of Conservation, Division of Mines and Geology, *DMG Note 42, Earthquake Fault Zones, A Guide for Government Agencies, Property Owners / Developers, and Geoscience Practitioners for Assessing Fault Rupture Hazards in California*, Revised 2018.
2. California Department of Conservation, California Geologic Survey, Special Publication 117A, *Guidelines for Evaluating and Mitigating Seismic Hazards in California*, Revised and Re-adopted September 11, 2008.

These reports are updated from time to time and the latest version should be used at the time of the submittal and review process, as accepted by the City of Santee.

4.2.2 Review Procedures

Consideration should be given to establishing a review procedure for site-specific geotechnical reports submitted to the City with applications for development. The procedure would consist of a review to check that pertinent geologic and geotechnical considerations have been adequately addressed. The reviewer could be geotechnical personnel employed directly by the City or private geotechnical consulting firms under contract to the City specifically in a review capacity to conduct Third Party Reviews.

4.3 Policy 3 – Essential Facilities, Hazardous Facilities, and Special Occupancy Structures

Land uses in Group I and II risk categories identified in Table 4.2.1 are considered low and nominal risk to human life. Group III and IV land uses in Table 4.2.1 require special study because they are in

higher-risk categories. Group III includes special occupancy structures including schools; churches; main roads; large commercial and industrial structures; mid- to high-rises; and other high occupancy structures. Group IV includes essential facilities; critical facilities including hospitals, fire and police facilities; power generating stations; communication facilities; and dams. Hazardous facilities include structures housing or using toxic or explosive chemicals or substances.

Group III and IV structures require a Geotechnical Investigation, a Geologic Investigation, and a Seismic Hazard Study even in areas which are generally or moderately stable.

4.4 Additional Policies

Additional land use policies can be made to reduce the risk of geotechnical and seismic hazards on an individual project basis as directed by the City of Santee. These may include limiting development in the floodplain, requiring seismic retrofitting or demolition of older buildings and unreinforced masonry structures, or scaling the development to reduce the amount of risk.

4.5 Further Study

As additional geotechnical studies are conducted in the Santee area, the Seismic Safety Study should be periodically updated and refined as new information concerning the location of landslides, faults and potentially liquefiable areas is obtained.

Review and update of the Zoning Ordinance should be periodically undertaken to ensure that it adequately addresses seismic safety issues, geologic site conditions, and geotechnical mitigation procedures identified in the General Plan.

5. DESCRIPTION OF EXISTING CONDITIONS

5.1 General Location

The City of Santee encompasses approximately 16.6 square miles (10,641 acres) and is located approximately 11 miles northeast of downtown San Diego, 13 miles east of the Pacific Ocean, and 19 miles north of the Mexican border. The majority of the City is located in Township 15 South, Range 1 West of the San Bernardino Meridian. The City of Santee is bound by the City of San Diego on the west, Mission Trails Regional Park on the southwest, and the United States Marine Corps Air Station Miramar on the northwest. The City of El Cajon is located to the south, and unincorporated areas of the County of San Diego are located to the east and north as shown in the Vicinity Map.



Vicinity Map

5.2 Soil and Geologic Conditions

5.2.1 General

This section describes the geologic and seismic setting of the Santee area including a brief description of the study area and a discussion of the stratigraphy and geologic structure of the geologic units within the area.

The City of Santee lies near the junction of the coastal plain and the Peninsular Ranges geologic provinces of southwestern California. The eastern portion of the coastal plain is located within the west, south and north portions of the city and consist of a series of Tertiary-age formational sedimentary rocks that are deeply incised by canyons and tributaries, including the San Diego River and Sycamore Creek. The San Diego River generally bisects the City of Santee. The drainage area of the San Diego River upstream of West Hills Parkway on the western edge of Santee is approximately 368 square miles. Downstream, the San Diego River flows through Mission Trails and Mission Valley in the City of San Diego and drains into the Pacific Ocean. Much of Santee is located within the gently gradient of the San Diego River Valley. Sycamore Creek is located along the western boundary of the City and flows southward into Santee Lakes and the San Diego River. In the southeastern and eastern portions of the City, the sedimentary rocks and alluvial valley province end abruptly in the foothills of the Peninsular Ranges exposing granitic rock. The formational units are covered by surficial soils as described herein.

The geologic stratigraphy of Santee consists of several surficial soil types and formational units. The surficial soil deposits consist of man-made soil (undocumented fill and previously placed fill) and naturally occurring soil (topsoil, colluvium, young alluvium/debris flows, landslide deposits, and old alluvial flood-plain deposits). In general, naturally occurring surficial soils are found in drainage areas such as the San Diego River valley and Sycamore Creek and generally overlying undisturbed formational materials.

Formational materials within the City include sedimentary rock units of the Eocene-age Pomerado Conglomerate, Stadium Conglomerate and Friars Formation, and the hard rock units of the Mesozoic-age (Cretaceous and Jurassic) granitic and volcanic rocks associated with the Peninsular Ranges. The claystone portions of the Friars Formation are typically weak, fractured, and prone to landsliding.

Each of the surficial soil types and formational units within the City is described herein in order of increasing age. A geologic map showing the lateral extent of the geologic units is included on **Figure 1**. The Geologic Map, **Figure 1**, is a combination of two California Geologic Survey (CGS) maps by different authors; therefore, the nomenclature is not always consistent. In addition, no corrections or additions to the published maps shown on **Figure 1** was performed, even if more detailed geotechnical field studies show the limits of the geologic units were different or landslides are known to exist. Geologic units shown on **Figure 1** outside the City limits are not included in our discussion. A discussion of the relationships between the units is presented in the Geologic Structure section of this report (Section 5.3). A generalized cross-sectional depiction of the geologic characteristics is presented on **Figure 4**.

5.2.2 Undocumented Fill (Unmapped)

In many areas of the City, fill soils presumed to be undocumented exist and have been mapped in certain site-specific geotechnical reports. An example of an undocumented fill deposit is located in an undeveloped area located north of the northern terminus of Strathmore Drive in the northwestern corner of the city. These types of deposits typically contain a wide range of soil types including silt, sand, clay, and rock derived from the local geologic formations.

Undocumented fills typically are poorly compacted and often are underlain by potentially compressible topsoil or alluvium. Consequently, where these deposits are located in areas of proposed development, they require special evaluation and recommendations. Normally, the undocumented fill materials are removed, moisturized as necessary and placed as compacted fill.

5.2.3 Previously Placed Fill (Unmapped)

The majority of the central and southern portions of the City have been developed. Some of the largest master developments include Black Horse Estates, Cajon Park, Carlton Country Club, Carlton Hills,

Carlton Oaks, Castlerock, Dakota Ranch, Deer Park, Fanita Corona, Fanita Rancho, Fanita Terrace, Los Ranchos, Mission Creek, Mission Trials Vista, Mountain Meadow, Rancho Fanita, Riderwood – The Heights, Santana North, Shadow Hill Terrace, Silver Country Estates, Sycamore Hills, Town Center, Vista Monte, Sky Ranch, Woodglen, and Woodside Industrial Park. Developments will typically include infrastructure improvements associated with roadways, parks, underground utilities, pump stations that are provided for the City. Other previously placed fill within city limits is associated with Caltrans controlled roadways not under the purview of the City.

Previously placed fill generally consists of materials that were properly placed and compacted using the testing and observation services of a geotechnical engineering consultant. The fill materials placed during development of these projects generally consist of silty and clayey sand and sandy clay with gravel and cobble mixtures. Prior to grading or constructing additional improvements in previously graded areas, specific geotechnical evaluations and update reports should be performed to address the potential impacts to existing or proposed improvements underlain by these deposits. The existing fill materials should be tested to evaluate its suitability to support proposed structures and improvements.

5.2.4 Topsoil (Unmapped)

In undeveloped areas, naturally developed topsoil blankets the majority of the formational units and range in thickness from approximately 1 to 3 feet. The topsoil is generally characterized as brown to dark brown, silty/clayey, fine to medium sands and sandy clays. Topsoil that overlies the Stadium Conglomerate at higher elevations are generally thinner than overlying the Friars Formation and have a greater percentage of gravel and cobble clasts. Topsoil is typically considered compressible in its natural state and ordinarily require remedial grading in areas planned to receive structural fill and/or settlement sensitive structures. The clayey topsoil characteristically overlying sedimentary units has a “medium” to “high” expansion potential (expansion index of 51 to 130), and, when present, commonly require remedial grading to help mitigate their impacts prior to construction operations.

5.2.5 Colluvium (Qu - Undivided)

Colluvial soils are relatively deep natural deposits of soil that have accumulated on the face and base of natural slopes through the weathering and erosion of exposed materials at higher elevations that accumulate from soil-creep processes. Colluvial deposits are typically thicker in the gentle, low-lying, bottom of slope areas near alluvial drainages. The Geologic Map, **Figure 1**, indicates areas of undifferentiated Quaternary-age young alluvium and colluvium designated as map symbol Qu within the southern portion of the City. Other areas of unmapped colluvium are present near the base of natural sloping ground across the City. Typically, these materials are deepest in areas underlain by the Friars Formation; however, they are also present, but typically thinner, in areas underlain by Stadium Conglomerate and granitic rock. Colluvial materials can also be present on landslide deposits, particularly in graben zones near the head or upper portions of the slides. The thickness of the

colluvium is typically about 5 to 10 feet and locally can be thicker. These deposits generally possess “medium” to “high” expansion potential (expansion index of 51 to 130), are poorly consolidated, and often require remedial grading in areas of planned development.

5.2.6 Alluvium (Qya and Qu - undivided) and Debris Flows

Holocene- to late Pleistocene-age young alluvium is typically present in drainage areas, such as the San Diego River channel, Sycamore Creek, and smaller natural tributary drainages. The San Diego River alluvium is relatively deep (locally up to 80 feet), and near the surface, typically consists of clean, medium-grained sands that have historically been mined as a source of concrete sand. Alluvial soils cover a relatively large portion of the City while debris flows have limited exposure. Alluvial soils generally consist of relatively loose/soft, silty/clayey sands and sandy clays with little gravel and cobble and will be saturated below groundwater. However, larger size and higher cobbles and boulder contents are typical within the San Diego River drainage due to higher flows.

Debris flows are present on upper portions of steeper gradient drainages within Stadium Conglomerate and Friars Formation created by weathering, slope creep and saturation of surface materials. Some of the known debris flows are indicated as symbol C2 on **Figure 2**, Geotechnical/Seismic Hazard Map. It appears that most of the mapped debris flow deposits are located at higher elevations and are generally located north of the San Diego River. The majority of these deposits consists of silty/clayey, sandy gravel and cobble deposits.

The alluvial and debris flow deposits are often poorly consolidated, compressible, and typically require remedial grading or special design considerations. Where development is planned in main drainage channels, such as the San Diego River floodplain, soil improvement techniques and structural reinforcement to remediate the effects of potential liquefaction may be necessary. Within secondary drainage areas, the compressible young alluvium is usually removed and replaced as properly compacted fill. Where groundwater exists within the upper approximately 50 feet, the young alluvium is typically considered to possess a potential for liquefaction and related geologic hazards.

5.2.7 Landslide Deposits (Qls)

Several confirmed landslides (Qls on **Figure 1** and D1 on **Figure 2**) and suspected ancient landslides (D2 on **Figure 2**) have been identified during this study and previous geotechnical investigations. The presence of inferred landslide deposits is based on topographic evaluation during field reconnaissance, interpretation of aerial photographs and topographic maps, and maps published by the California Geological Survey.

The landslides encountered within the City occur on gentle to moderate sloping ground within the Friars Formation and generally below an elevation of approximately 600 feet above MSL. On the

southern portion of the City, landslides generally occur between elevations of 400 and 600 feet above MSL. Characteristic landslide morphology consists of a steep back-scarp; bulging, hummocky, distorted topography; and deflected drainages. Some landslide areas express a more subdued topography suggestive of incipient or older eroded landslide deposits.

The landslide deposits observed are characterized as deep-seated, relatively intact, block type movements or as shallow to deep-seated bedrock slides with a varying degree of slip plane development and slide mass disturbance. The thickness of landslide material is estimated to be approximately 45 to 50 feet; however, can thicken toward the head scarp perhaps as much as 100 feet. The landslide debris varies from dense sandstone/claystone blocks to a variable mixture of intensely sheared and pulverized claystone breccia suspended in a stiff clay matrix. Highly disturbed cobble clay mixtures resembling debris flow materials have also been encountered and are known to exist within graben zones.

The majority of the landslides appear to have occurred along inherently weak, previously sheared, low-angle, pre-existing bedding plane shears as part of a weak, thinly laminated claystone within the Friars Formation. This is suggested by the relatively uniform, near-horizontal slip surfaces typically observed along the base of the landslides, and because of the general correlation within exploratory borings at which bedding plane shears are present within the Friars Formation outside the limits of the landslides at the same elevation as the landslide basal shear zone. Further discussion of this correlation and an apparent regional zone of bedding plane shears within the Friars Formation are discussed in the Geologic Structure section of this report.

In general, new developments should be planned to avoid or mitigate ancient landslide deposits, where possible. Where landslide materials are present below proposed fill embankments, or exposed in cut slopes or building pad areas, remedial grading is often required to properly buttress the existing landslides or proposed slopes. Some landslides will require complete removal, while other landslides will only require partial removals of the loose and compressible portions to be replaced with new compacted fills. Localized areas of deeper removals may be required in looser graben zones and/or more pulverized portions of the landslides. Still other landslides will require only minor processing of the surficial materials prior to placing fill embankments. Slope stability analyses of landslide materials are typically included in geotechnical reports.

Cut slopes exposing landslide materials or basal slip planes, or areas where basal slip surfaces occur near finish grade, typically require stabilization by construction of stability fills, drained earthen buttresses, shear keys, shear pins or other means. A discussion of slope stability issues is presented in the Geologic Hazard section of this report.

5.2.8 Older Alluvium (Qoa)

Older alluvial flood-plain deposits of Pleistocene-age exist within former flood-plain areas and are exposed at the surface between the younger alluvial deposits and formational sedimentary or rock units. The older alluvium was deposited during previous geologic stream flow events with the soils typically consolidated by burial, cemented, and subsequently eroded to current valley floor elevations. These deposits are generally located within the flatter portions of the valleys and consist of slightly cemented, clayey sands with little gravel and cobble. These materials are generally dense to very dense and do not possess a potential for liquefaction or significant settlement.

5.2.9 Stadium Conglomerate (Tst) and Pomerado Conglomerate (Tp)

The Stadium Conglomerate (middle to late Eocene age) occurs throughout the southwestern, central, and northern parts of the City. The Pomerado Conglomerate has a limited extent and is located in the northern portion of the City. These geologic units have similar characteristics and are difficult to distinguish between each other unless separated by the Mission Valley Formation. However, the Mission Valley Formation is not present within the City limits, and therefore, the Pomerado Conglomerate conformably overlies the Stadium Conglomerate above an elevation of roughly 1,000 feet MSL. The Stadium Conglomerate conformably overlies the Friars Formation at elevations ranging from approximately 610 to 1,000 feet MSL. The inferred thickness of this deposit within the City varies from approximately 40 feet when eroded to an estimated 375 feet on less eroded ridgelines. Geomorphically, the Stadium Conglomerate forms characteristic resistant, dissected ridges within the upper elevations of the City. Localized, steeply eroded scars occur within this formation where debris flows originated at the head of tributary canyons.

The Stadium Conglomerate generally consists of dense to very dense, slightly cemented, sandy to clayey, gravel and cobble conglomerate with interbedded silty sandstone. The cobble content of the Stadium Conglomerate can sometimes be up to about 60 percent with diameters up to 24 inches. The Stadium Conglomerate is regionally part of the upper Eocene Poway Geologic Group that also includes the Mission Valley Formation and Pomerado Conglomerate.

Moderate to very heavy excavation effort should be anticipated during grading and trenching within the Stadium Conglomerate due to its cementation and high cobble size and percentage and randomly occurring highly cemented zones. Cut or fill slopes composed of the Stadium Conglomerate generally possess adequate slope stability characteristics.

5.2.10 Friars Formation (Tfr)

The Friars Formation was deposited on an irregular erosion surface formed on the crystalline basement rock of the Southern California Batholith. The Friars Formation may be observed overlying granitic rocks in the southern and north-central parts of the City. This unit generally occupies the gentler,

lower portions of valley slopes below elevations ranging from 600 to 700 feet MSL depending on the locality. The age of the Friars Formation is considered to be middle to late Eocene-age based on vertebrate fossil evidence (Kennedy and Moore, 1971). In the southwestern portion of the City, this unit is exposed between Cuyamaca Street and the eastern base of Cowles Mountain and throughout the northern part of the City except the most northeasterly section.

Numerous large, ancient landslides occur within the Friars Formation. These are discussed in detail in the Geologic Hazards section of this study. The Friars Formation consists of relatively flat-lying lagoonal and alluvial claystone, sandstone, and conglomerate units. Specifically, weak, waxy claystone, and thinly laminated siltstone/claystone, sandstone, and conglomerate occur in the northern undeveloped portion of Santee below an approximate elevation of 610 to 630 feet MSL. Translational landslides are common throughout areas underlain by this geologic formation. Most of these landslides are remnants of wetter climatic conditions that occurred in late Pleistocene to early Holocene time (last 30,000 years).

As seen in the undeveloped area of Santee (see **Figure 4**), the Friars Formation comprises a relatively continuous sequence of characteristic subunits consisting of thinly bedded sandstone/siltstone, underlain by relatively thin lenses of gravel/cobble conglomerate, which are in turn underlain by massive sandstone. A generally weak, fractured, waxy claystone unit containing abundant bedding plane shear zones underlies this sequence. It is likely the inherently weak nature of this basal claystone unit in combination with the presence of pre-existing shear zones is the causation of landsliding and landslide-prone hillsides.

With the exception of the sandstone, and portions of the conglomeratic facies, soils derived from the Friars Formation typically possesses a “medium” to “high” expansion potential (expansion index of 51 to 130) and relatively low shear strength. Portions of the Friars Formation possess a “very high” expansion potential (expansion index of greater than 130) and require specialized grading and foundation recommendations. Where exposed in cut slopes, the claystone facies of the Friars Formation can be prone to surficial instability, and often requires stabilization measures. Bedrock creep zones and areas of deeply weathered material also exist in the Friars Formation. During development, where weak, waxy, or highly weathered portions of this unit are exposed in embankments and/or “toe key” areas of proposed fill slopes; deeper remedial grading is typically required to provide a competent surface to support embankments.

Bedding plane shears are relatively common within the Friars Formation and are significant in that they represent inherent planes of weakness within the formation. Bedding plane shears have recently also been called Bedding Parallel Shears by Hart, 2020 (see reference). As the term implies, these shear zones are typically parallel to the bedding and are characterized by thin seams of very soft, wet,

remolded plastic clay. During development, where the shears are anticipated to “daylight” in cut slopes, stabilization measures such as drained stability fills, buttresses and/or shear pins are necessary.

5.2.11 Granitic Rock (Kgu, Kgh, Kgr, Kt) and Santiago Peak Volcanics (Ksp, Mzu)

Cretaceous-age granitic rocks have a wide variety of compositions based on the percentage of quartz, plagioclase and mafic mineralogy. Granitic rock also has a wide range of weathering and can vary from highly weathered decomposed granitic soils to hard fresh rock. Granitic rock can be classified as quartz-diorite, tonalite and granodiorite with their finer-grained equivalents occurring in some areas. The granitic rocks that are deeply weathered can form extensive deposits of residuum or decomposed granitic rock that are locally mined for DG soils. The less weathered, more resistant rock has been utilized in the past as quarry stone and can be observed as large, rounded boulders on the hills east of Gillespie Field, near Carlton Oaks Golf Course, on Cowles Mountain and the eastern part of the City. These hard rock units would require blasting prior to excavation and would require specialized grading techniques.

Santiago Peak Volcanic rock also called Mesozoic Metavolcanic rock from the lower Cretaceous and upper Jurassic Geologic Period is exposed in limited areas on the southwest corner and east portion of the City.

5.3 Geologic Structure

Bedding within the Eocene-age sediments is nearly horizontal or gently dipping. In general, strata within the Friars Formation and Stadium Conglomerate units dip very gently at inclinations of less than 5 degrees to the west and southwest. On the northern, undeveloped portion of the City, the Friars Formation/Stadium Conglomerate contact dips generally south-southwest, and varies in elevation from approximately 610 to 630 MSL. Locally, bedding dip directions may vary, or even reverse, depending on configuration of ancient buried topography or other geologic structures. High-angle depositional contacts are also common locally between the sedimentary formations and underlying granitic rocks.

A high percentage of bedding plane shears and weak claystone materials were found to occur within this relatively narrow elevation range. A similar, less prominent grouping of shear zones was observed at other elevations within the Friars Formation. The elevations at which bedding plane shears occur in bedrock material, and the elevation of basal slip surfaces in landslide areas are generally similar. This correlation has been observed on other projects in San Diego County where the Friars Formation is present.

Regionally, the marine terraces within coastal plain westerly of the Peninsular Ranges is underlain by flat-lying sediments with a few notable exceptions occurring near the coast. In the City of San Diego to the west of Santee, the terraces are broken in many areas by Tertiary and Pleistocene-age active and

potentially active faults. In Santee, however, there are no known active or potentially active faults (movement within the last 1.8 million years) which cut Pleistocene-aged materials nor are there any known major faults which cut Eocene or Cretaceous-age rocks.

Bedding plane shears or more recently called bedding parallel shears (a term applied to minor shears within parallel bedding surfaces) are common in the Friars Formation and are believed to be a significant factor in landsliding processes, both in the geologic past, and at present. These features do not represent a seismic hazard; however, they are a significant geotechnical consideration in the analysis of slope and landslide stability.

6. GEOLOGIC HAZARDS

This section presents a discussion of the potential geologic hazards anticipated in the study area. Included is a discussion of landslides and potential slope instability as a result of reactivated ancient landslides, bedding plane shears, and weak claystone beds of the Friars Formation. A general description of the mechanism of landsliding and the locations of ancient landslides are also presented. Additional or lesser hazards within the area such as mud flows or debris flows, colluvial soils, and others are discussed. A discussion of groundwater and seepage related problems is also presented.

6.1 Ancient Landslides/Slope Stability

A landslide is defined as a mass movement of earth occurring below the limits of the soil mantle caused by shear failure along one or several surfaces. Ancient landslides have been dated by radiocarbon methods as being 8 to 30 thousand years old in the southern California area by Stout (1969) and others. They are believed to have occurred primarily as a response of weak claystones exposed to intense rainfall causing high water table conditions in slopes during late Pleistocene and early Holocene time.

Landslides occur throughout the area underlain by the Friars Formation. The approximate locations of known or suspected landslides are shown on the Geologic Map and the Geotechnical/Seismic Hazard Map, **Figures 1 and 2**, respectively. The largest of the ancient landslides are typically 1,000 to 1,500 feet in width and length (as in Carlton Hills and Fletcher Hills) and extend to depths of 20 to 100 feet below the ground surface. Landslide complexes or clusters of more than one individual slide component are common in the Fanita Ranch and Fletcher Hills regions. **Figure 4** presents a characteristic geologic section of the Santee area typically prone to landsliding.

The reactivation of ancient landslides and the creation of new landslides have been most commonly caused by grading activities, a rise in groundwater level in a slide area, or areas containing bedding plane shears, or by seismic activity. Identification of slide prone areas through detailed geotechnical studies is of primary importance in predicting future slope failure and landslides. The most common method of

stabilizing landslides and landslide prone areas is through remedial grading or buttressing and installation of subdrains and drainage panels to reduce the potential for buildup of excessive hydrostatic pressures. Other development options may include structural setbacks or stabilizing shear pins.

The landslide areas within the City can usually be mitigated using generally accepted remedial grading techniques and buttresses. These techniques may consist of partial or complete removal and compaction of the deposits, or stabilizing them with earthen buttresses, shear keys, stability fills or other means such as shear pins or retaining structures. Similar remedial grading procedures could be required where landslides are not present but where weak claystone beds, bedding plane shears, or thick surficial soil deposits are encountered. Such areas should be generally limited to where the Friars Formation will be exposed in cut slopes.

Reactivation of ancient landslides have been responsible for either partial or complete loss of 20 to 30 homes in the Santee area. Geotechnical firms that possess experience in landslide evaluation and stabilization should evaluate the potential for additional loss in areas already developed when building additions are proposed.

6.2 Debris Flow Deposits

A debris flow is a rapid downslope movement of saturated soil and near surface rock debris. Numerous debris flows or mudflows have occurred within the Stadium Conglomerate. The locations of some of the larger flows identified are shown on **Figure 2**.

The debris flows or mudflows are initiated near the crests of very steep ridges underlain by Stadium Conglomerate and probably occur as a result of high intensity rainfall. As the near surface soils become saturated and pore water pressure increases, the soils lose strength and fail relatively rapidly to form a river of mud and rock with considerable destructive power. These deposits consist of the accumulation of topsoil, colluvium and debris derived from formational “parent material” near the base of moderate to steep slopes caused by rapid flow of saturated near-surface soils.

The physical appearance of these features indicates that they are relatively young compared to the ancient landslides. Most appear to be only a few hundred years old or less and are easily eroded. While the causes of debris flows are generally well understood, specific details concerning these events make them difficult to predict. Several well-formed debris flows can be observed on the north side of Highway 52 west of the City. High rainfall, loss of vegetation cover through fire or other causes, and the steepness of the slope appear to be the main causative factors.

The primary difference, in terms of the potential for activation, between ancient landslides and debris flows is that, by definition, debris flows do not possess a basal slip surface. Thus, they are much less

likely than ancient landslides to become reactivated by grading. In areas of proposed development, mitigation of debris flow deposits is typically similar to that for alluvium and colluvium, and the presence of these materials are not likely to significantly affect development unless directed toward the boundary of the site.

6.3 Groundwater and Seepage

Groundwater and seepage conditions are significant factors in assessing engineering and geologic hazards. Groundwater is typically found in the deep alluvial drainage areas (such as the San Diego River and Sycamore Creek) but may also be found in shallower drainages as a result of storm water infiltration (such as the Santee Lakes area). Because of fluctuating water levels in a given area, as a result of seasonal variations in surface water runoff, the prediction of groundwater occurrence is difficult.

Seepage is typically the result of a groundwater table or perched water, either seasonal or permanent, being exposed. However, some man-made seepage conditions can develop in rural areas downslope of septic systems. Seepage conditions in slopes, either graded or natural, are usually the result of water flowing at the contact between materials of widely different permeabilities with the water perched on an underlying, less permeable layer. When the water flow encounters a slope face, it is manifested as seepage.

In addition to the nuisance caused by minor seepage from new slopes in residential areas, groundwater and seepage caused by excess irrigation are a major contributing factor to landsliding in San Diego County, especially in the reactivation of old landslides. As pore pressures rise along an old slip surface as a result of rainfall or heavy landscape irrigation, the factor of safety against sliding will decrease.

The potential for groundwater and seepage conditions should be addressed in geotechnical reports submitted to the City for new developments and improvements. Procedures for mitigation for the water related problems, such as canyon subdrains and proper grading procedures, should also be addressed. Groundwater conditions typically increase as a result of development primarily due to increased irrigation. Groundwater related problems may develop in areas where no problem was previously evident.

Perched groundwater or seepage has been encountered during previous investigations in the City of Santee within alluvial drainages, hillside areas and landslide zones. The groundwater/seepage in drainage courses is presumed to be associated with surface runoff of rainwater along the natural watershed. Subdrain systems are often necessary in areas of proposed development to intercept and convey seepage migrating along impervious strata. In particular the main drainages, stability/buttruss fill areas, and possibly where impervious layers daylight near the ultimate graded surface, typically require subdrains. Specific subdrain locations and design details should be provided with the detailed grading plans for the site. Seepage conditions also occur in bedrock materials, and at the base of landslide areas perched on relatively impervious strata within the Friars Formation and ancient

landslide deposits. Additionally, relatively minor natural surface seeps were observed in the northern portion of the city at the Friars Formation/Stadium Conglomerate contact. The existing perched groundwater levels in alluvial areas can be expected to fluctuate seasonally and may affect remedial grading.

7. SEISMIC HAZARDS

This section presents a discussion of the seismic hazards anticipated to affect the City of Santee. Seismic hazards are caused by earthquake-induced ground shaking, specifically, liquefaction potential and seismically-induced settlement and landsliding. A discussion of local and regional faulting and its impact on the City of Santee is also presented. Although not strictly a seismically related hazard, a brief discussion of flooding as a result of dam failure is also included in this section.

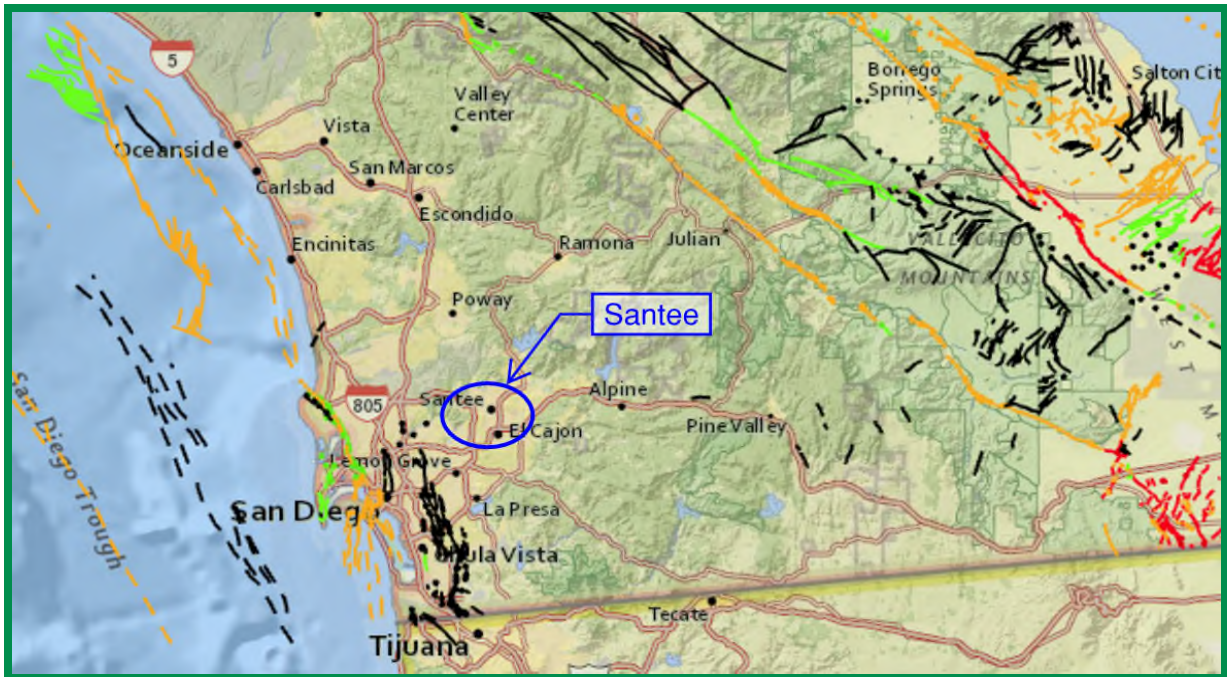
7.1 Local and Regional Faulting and Associated Ground Shaking

Seismic hazards pertain to threats to life and property caused by earthquake-induced ground shaking. Based on current maps prepared by the State of California and local geology maps, active or potentially active faults are not known to occur within or adjacent to the City of Santee. However, the City is similar to all other areas in California in that it is subject to periodic seismic shaking due to earthquakes along remote or regional active faults.

A review of geologic literature indicates that there are no known active or potentially active faults crossing the city. An active fault is defined by the California Geological Survey (CGS) as a fault showing evidence for activity within the last 11,700 years. The Rose Canyon/Newport Inglewood Fault Zone, located approximately 10 miles west of the City of Santee, is the closest known active fault. The CGS has included portions of this Fault Zone within the State of California (Alquist-Priolo) Earthquake Fault Zone. Currently, restrictions on development due to faulting (i.e., fault setback zones) related to the State of California requirements are not present in the City of Santee.

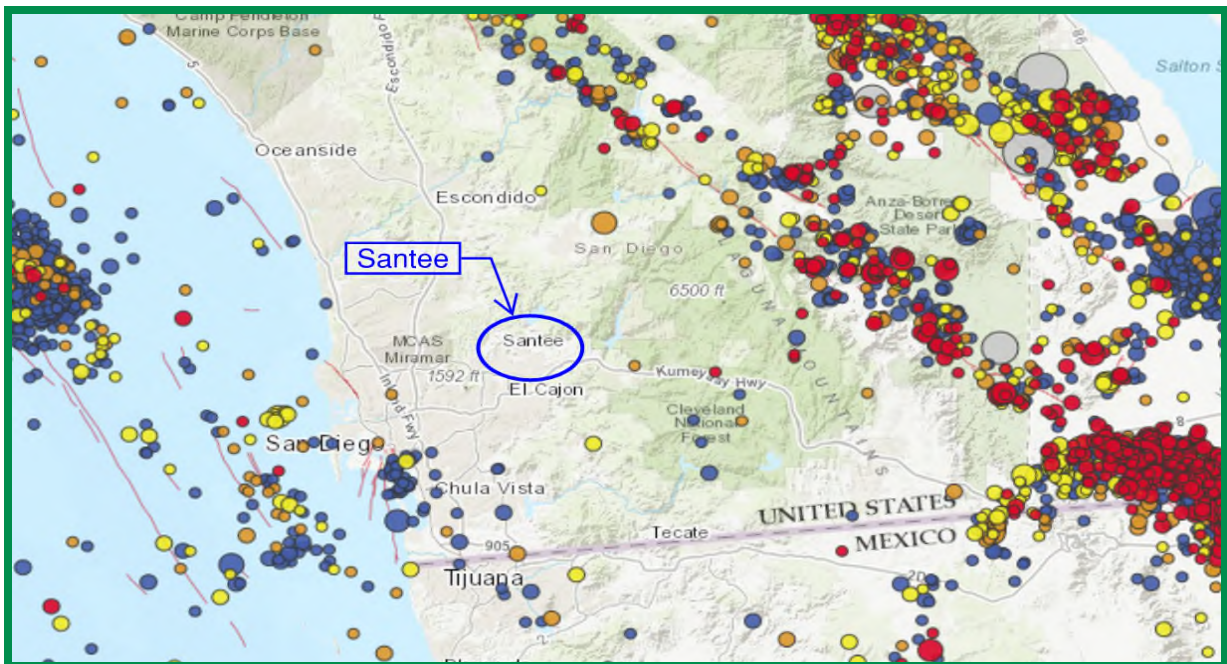
Considerations important in seismic design include the frequency and duration of motion and the soil conditions underlying the site. Seismic design of structures should be evaluated in accordance with the most recent applicable California Building Code (CBC) guidelines currently adopted by the local agency.

The USGS has developed a program to evaluate the approximate location of faulting in the area of properties. The following figure shows the location of the existing faulting in the San Diego County and Southern California region. The fault traces are shown as solid, dashed and dotted that represent well-constrained, moderately constrained and inferred, respectively. The fault line colors represent faults with ages less than 150 years (red), 15,000 years (orange), 130,000 years (green), 750,000 years (blue) and 1.6 million years (black).



Faults in Southern California

The County of San Diego and Southern California region is seismically active. The following figure presents the occurrence of earthquakes with a magnitude greater than 2.5 from the period of 1900 through 2015 according to the Bay Area Earthquake Alliance website. The occurrence of earthquakes are generally aligned along active faults.



Earthquakes in Southern California

The 2020 Earthquake Engineering Research Institute's (EERI) publication (see references) includes earthquake planning scenario maps. These maps include seismic intensity distributions, location of schools, fire stations, government and healthcare facilities, and impact scenario maps to water and wastewater systems, electrical power systems, transportation systems, fuel transportation systems, and federal infrastructure that are located within the City of Santee and San Diego County in general.

7.1.1 Seismic Design Criteria

The California Building Code (CBC) establishes the seismic design criteria for site-specific analysis. At the time of this report, the 2019 CBC (based on the 2018 International Building Code [IBC] and ASCE 7-16), Chapter 16 Structural Design, Section 1613 Earthquake Loads is the latest adopted standard.

Proposed developments and improvements should be designed using the applicable design procedures outlined in the current versions of the CBC and ASCE 7 documents (or other applicable design guidelines). The following tables include the estimated peak ground accelerations in accordance with the 2019 CBC seismic design criteria. Four locations are selected within the City of Santee to evaluate the general estimated ground accelerations as shown in Table 7.1.1.

**TABLE 7.1.1
SELECTED SITES WITHIN THE CITY OF SANTEE FOR GROUND ACCELERATION ESTIMATES**

Site	Directional Area of the City	Closest Street Locations	Site Latitude (Degrees)	Site Longitude (Degrees)
1	NW	Cadwell Road & Lasso Way	32.869663	-116.993656
2	NE	Oak Creek Drive & Ohana Way	32.896980	-116.957457
3	SW	Willowgrove Avenue & Willowgrove Court	32.842774	-116.994441
4	SE	Magnolia Avenue & Cottonwood Avenue	32.847362	-116.970412

The computer program U.S. Seismic Design Maps, provided by the Structural Engineers Association (SEA) was used to estimate the ground accelerations assuming a risk category of II. The Site Classes evaluated are based on the discussion in Section 1613.2.2 of the 2019 California Building Code (CBC), Table 20.3-1 of ASCE 7-16, and on the varying geologic units across the City of Santee. Table 7.1.2 presents the site class designations.

**TABLE 7.1.2
SITE CLASSIFICATION**

Site Class	Soil Type	Shear Wave Velocity, v_s (Feet/Second)	Blow Counts (N Values)	Undrained Shear Strength, S_u (psf)
A	Hard Rock	5,000+	NA	NA
B	Rock	2,500 to 5,000	NA	NA
C	Very Dense Soil and Soft Rock	1,200 to 2,500	50+	2,000+
D	Stiff Soil	600 to 1,200	15 to 50	1,000 to 2,000
E	Soft Clay Soil	Less Than 600	Less Than 15	Less Than 1,000
	Plasticity Index 20+ / Moisture Content 40%+ / $S_u < 500$			
F	Liquefiable Soil	Site Response Analysis Required		

Table 7.1.3 presents the estimated Mapped MCE_G Peak Ground Acceleration (PGA in accordance with ASCE 7-16, Figure 22-7), Site Coefficient, (F_{PGA} in accordance with ASCE 7-16, Table 11.8-1) and the Site Class Modified MCE_G Peak Ground Acceleration (PGA_M in accordance with ASCE 7-16, Section 11.8.3 – Eqn 11.8-1).

**TABLE 7.1.3
ESTIMATED PEAK GROUND ACCELERATIONS**

Site	Mapped MCE_G Peak Ground Acceleration (PGA)	Site Class	Site Coefficient (F_{PGA})	Site Class Modified MCE_G Peak Ground Acceleration (PGA_M)
1	0.332g	A	0.8	0.265g
		B	0.9	0.299g
		C	1.2	0.399g
		D	1.268	0.421g
2	0.335g	A	0.8	0.268g
		B	0.9	0.301g
		C	1.2	0.402g
		D	1.265	0.423g
3	0.331g	C	1.2	0.398g
		D	1.269	0.42g
		E	1.537	0.51g
4	0.329g	C	1.2	0.395g
		D	1.271	0.418g
		E	1.542	0.507g

The estimated PGA_M across the city of Santee ranges from 0.265g to 0.51g as listed in Table 7.1.3. Table A-4 (Appendix A) lists the Modified Mercalli Intensity (Damage) Scale. This scale composes of increasing levels of intensity with corresponding expected levels of damage based on the Peak Ground Acceleration (PGA) and the surrounding built environment. Based on Table A-4, that range

categorizes the city to expect an intensity value VII: *Damage slight in specially designed structures, considerable in ordinary substantial buildings, with partial collapse, great in poorly built structures; panel walls thrown out of frame structures; fall of chimneys, factory stacks, columns, monuments, walls; heavy furniture overturned; sand and mud ejected in small amounts; changes in well water; persons driving motor cars disturbed.*

7.2 Soil Liquefaction

Liquefaction typically occurs when a site is located in a zone with seismic activity, onsite soils are cohesionless or silt/clay with low plasticity, groundwater is encountered within 50 feet of the surface and soil densities are less than about 70 percent of the maximum dry densities. If the four previous criteria are met, a seismic event could result in a rapid pore water pressure increase from the earthquake-generated ground accelerations.

Within the City of Santee, the soil deposits that may be susceptible to liquefaction are the young alluvial soils found in the San Diego River and its deeper tributary channels such as Sycamore Creek. The general extent of the liquefaction-susceptible materials is shown on Geotechnical/Seismic Hazard Map, **Figure 2**. Although the major deposits of alluvial soils have been shown on **Figure 2** as being susceptible to liquefaction, some areas may have a water table sufficiently deep or may have particular soil conditions that result in a very low potential for liquefaction based on the anticipated maximum intensity of shaking for the area. In general, for deposits with a water table below a depth of 50 feet, a seismic event would have to be especially strong for liquefaction to occur and, therefore, these deposits will have a low potential for liquefaction as a result of the maximum events anticipated. The evaluation of liquefaction should be performed on a project specific basis by the geotechnical engineer of record.

Liquefaction-related distress could range from small, localized areas, wherein specially designed structures may experience damage; to liquefaction covering a large area, resulting in lateral movement of the near-surface deposits and subsequent heavy damage to any affected structures. The potential risk to a structure should be evaluated whenever development is proposed in a liquefaction susceptible area. Liquefaction studies should conform to the recommendations of the 2008 CGS Special Publication 117A titled *Guidelines for Evaluating and Mitigating Seismic Hazards in California* or other approved publications.

Sand boils occur where liquefiable soil is extruded upward through the soil deposit to the ground surface. Providing an increase in overburden pressure and a compacted fill mat can mitigate surface manifestation. Proposed projects that possess a potential for liquefaction should also include an evaluation of the likelihood of sand boils.

Lateral spreading occurs when liquefiable soil is in the immediate vicinity of a free face such as a slope. Factors controlling lateral displacement include earthquake magnitude, distance from the earthquake

epicenter, thickness of liquefiable soil layer, grain size characteristics, fines content of the soil and SPT blow counts. Lateral spreading should be evaluated on projects where liquefaction potential exists.

The mitigation of potential hazards due to liquefaction can be accomplished by the densification or removal of the potentially liquefiable soil or the use of foundation systems that still provide acceptable structural support should liquefaction occur. Soil densification can be accomplished by compaction grouting, vibrocompaction, soil mixing, and deep dynamic compaction (among others). Soil densification is generally used to increase the density and provide liquefaction mitigation of sensitive soil to relatively shallow depths over large areas. Deep foundation systems may be used to transmit structural loads to bearing depths below the liquefiable zones and may consist of driven piles or drilled piles. Deep foundations are designed to mitigate damage to the structures supported on the piles; however, they do not generally reduce the potential for damage to underground utilities and peripheral site improvements. The effects of differential settlement between rigid structures and attached settlement-sensitive surface improvements can be mitigated by designing the utilities to accommodate differential movement at the connections.

7.3 Seismically-Induced Settlement

Settlement due to seismic shaking can occur on sites if liquefaction potential exists or not (e.g. loose sands). As with the susceptibility to liquefaction, the soils most susceptible to seismically-induced settlement within the Santee area are the loose alluvial soils of the San Diego River and its tributaries. The limits of these soils are indicated on **Figure 2** as soils susceptible to liquefaction. Site-specific studies should be performed in these areas to evaluate the settlement potential during anticipated maximum seismic events.

7.4 Seismically-Induced Landslides and Rock Falls

Seismically induced landslides and rock falls are common in areas of high seismicity near the earthquake source. Over 11,000 such landslides occurred during the 1994 Northridge earthquake and mostly occurred in the mountains surrounding the Santa Clara River Valley. Seismically-induced landslide and rock fall studies should be performed in accordance with current and applicable design standards (e.g. CGS, 2008).

7.5 Tsunamis and Seiches

A tsunami is a series of long period waves generated in the ocean by a sudden displacement of large volumes of water. Causes of tsunamis include underwater earthquakes, volcanic eruptions, or offshore slope failures. Wave heights and run-up elevations from tsunamis along the San Diego Coast have historically fallen within the normal range of the tides. The City of Santee is not included within a high-risk tsunami hazard area due to the elevation and distance from the Pacific Ocean.

A seiche is a run-up of water within a lake or embayment triggered by fault- or landslide-induced ground displacement. Seiches may be a hazard when located adjacent to the bodies of water within the City of Santee limits. Site-specific evaluations and discussions would be required for proposed site developments located adjacent to the inland bodies of water.

7.6 Inundation Due to Dam Failure

The central portion of the City of Santee is located in the San Diego River Valley downstream of three major dams in San Diego County. These include the San Vicente Dam, the El Capitan Dam, and the Chet Harritt Dam (Lake Jennings Reservoir). The Earthquake Engineering Research Institute (EERI) San Diego Chapter's publication *San Diego Earthquake Planning Scenario, Magnitude 6.9 on the Rose Canyon Fault Zone* expects these dams to remain in service due to recent seismic retrofit and their distance from any major active faults. A seismic stability analysis, reviewed by the California Department of Water Resources, Division of Safety of Dams (DSOD), establishes the operating requirements to properly and safely operate the dam. The DSOD and the County of San Diego classify these dams as possessing an "extremely high" downstream hazard and "high" hazard rating, respectively.

The San Vicente Dam is a concrete gravity structure located approximately 3½ miles northeast of the City. The dam was originally constructed in 1943 with a capacity of 90,200 acre-feet and then raised an additional 117 vertical feet in 2016 using roller-compacted concrete, expanding its capacity to 245,000 acre-feet.

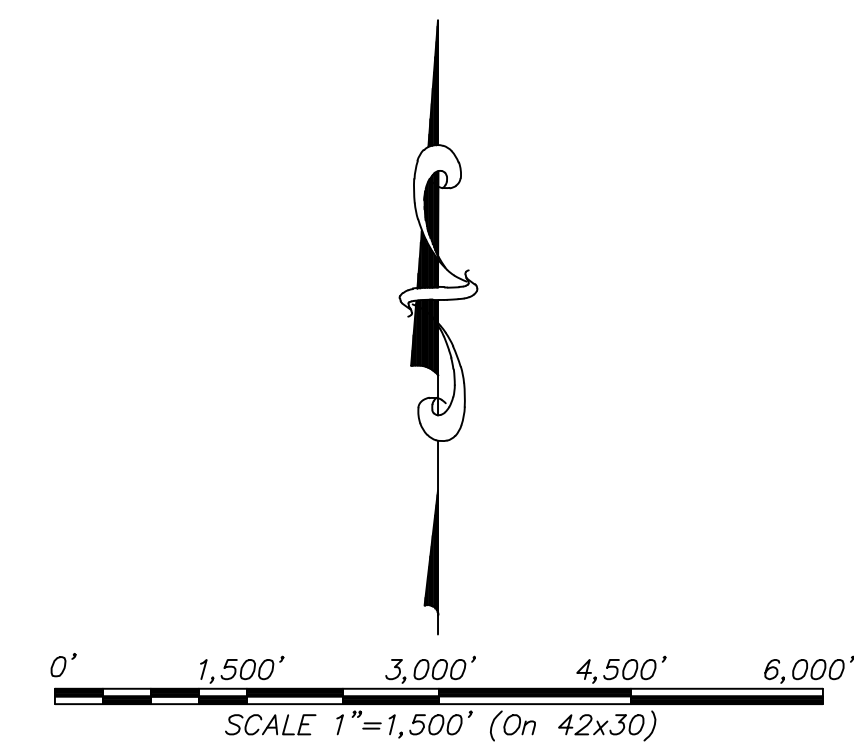
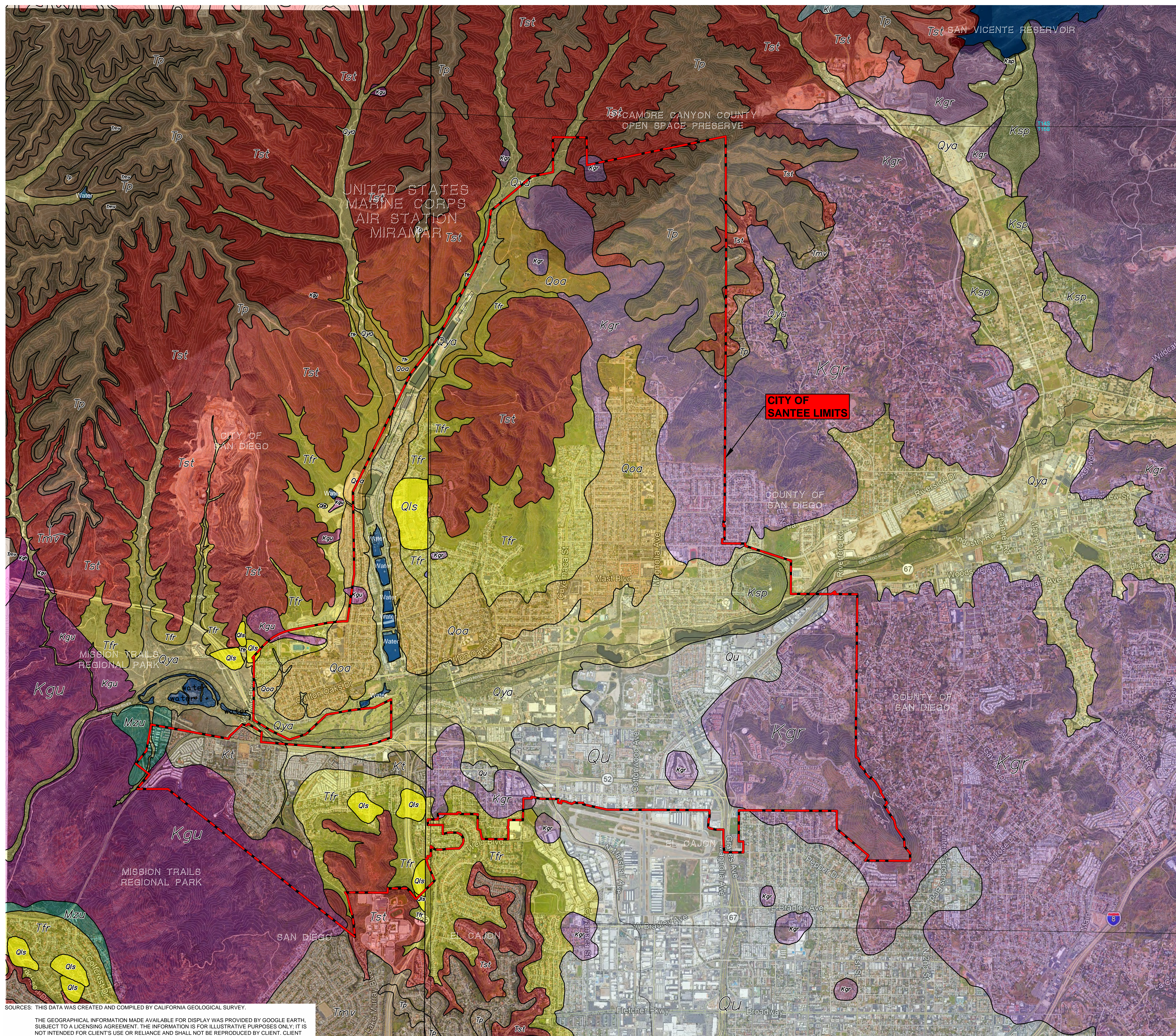
The El Capitan Dam is a hydraulically-filled earth structure located approximately 9 miles east of Santee. It has a capacity of 112,800 acre-feet and was built in 1934.

The Chet Harritt Dam (Lake Jennings) is an earth-filled dam located approximately 3 miles east of Santee. Lake Jennings, which is retained by the dam, has approximately 9,790 acre-feet of capacity. The dam was built in 1962 and was constructed by procedures to resist seismic damage.


Studies of the potential for, or the consequences of dam failure are beyond the scope of this study. Information regarding dam failure risk can be found in the County of San Diego's "Multi-Jurisdictional Hazard Mitigation Plan" dated Maps prepared by the DSOD showing areas of inundation in the event of dam failure can be found online. The inundation limits for each of the three dams located upstream of the City of Santee have been reproduced on the Dam Inundation Map included herein (See **Figure 3**). The inundation map for the Chet Harritt (Lake Jennings) Dam was generated on October 19, 2018; the El Capitan Dam map was generated on March 15, 2019; and the San Vicente map was generated on May 13, 2020. Information concerning the safety of these dams, which is reviewed annually by the DSOD may be obtained from that department. In addition, Annex Q of the County of San Diego's Office of Emergency Services' "Operational Area Emergency Operations Plan" outlines the evacuation procedures in the event of a dam failure.

LIMITATIONS AND UNIFORMITY OF CONDITIONS

1. The findings of this report pertain only to the City of Santee area and are based on the assumption that the soil conditions do not deviate from those disclosed herein. If any variations or undesirable conditions are encountered during future studies, we should be notified so that supplemental discussion can be provided, as necessary. The evaluation or identification of the potential presence of hazardous or corrosive materials was not part of the scope of services provided by Geocon Incorporated.
2. This report is issued with the understanding that it is the responsibility of the owner or his representative to ensure that the information contained herein are brought to the attention of the architect and engineer for the project and incorporated into the plans. The property owners and developers should evaluate their projects on a site-specific basis. This report should not be relied upon for design recommendations for proposed developments. This report should be considered a general guideline
3. The findings of this report are valid as of the present date. However, changes in the conditions of an area can occur with the passage of time, whether they be due to natural processes or the works of man on this or adjacent properties. In addition, changes in applicable or appropriate standards may occur, whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated wholly or partially by changes outside our control. Therefore, this report is subject to review and should not be relied upon after a period of 10 years.



LEGEND

- | | |
|------------|----------------------------------------------------------------------------------|
| <i>Qls</i> |LANDSLIDE DEPOSITS |
| <i>Qya</i> |YOUNG ALLUVIAL FLOOD-PLAIN DEPOSITS |
| <i>Qu</i> |ALLUVIUM AND COLLUVIUM, UNDIVIDED |
| <i>Qoa</i> |OLD ALLUVIAL FLOOD-PLAIN DEPOSITS, UNDIVIDED |
| <i>Tp</i> |POMERADO CONGLOMERATE |
| <i>Tmv</i> |MISSION VALLEY FORMATION |
| <i>Tst</i> |STADIUM CONGLOMERATE |
| <i>Tfr</i> |FRIARS FORMATION |
| <i>Kl</i> |LUSARDI FORMATION |
| <i>Kgu</i> |GRANODIORITE AND TONALITE, UNDIVIDED |
| <i>Kgh</i> |HYPABYSSAL ROCKS, UNDIVIDED |
| <i>Kgr</i> |GRANITOID ROCKS |
| <i>Kt</i> |TONALITE, UNDIVIDED |
| <i>Ksp</i> |SANTIAGO PEAK VOLCANICS |
| <i>Mzu</i> |METAMORPHOSED AND UNMETAMORPHOSED VOLCANIC AND SEDIMENTARY ROCKS, UNDIVIDED |
- .....GEOLOGIC CONTACT

GEOLOGIC MAP

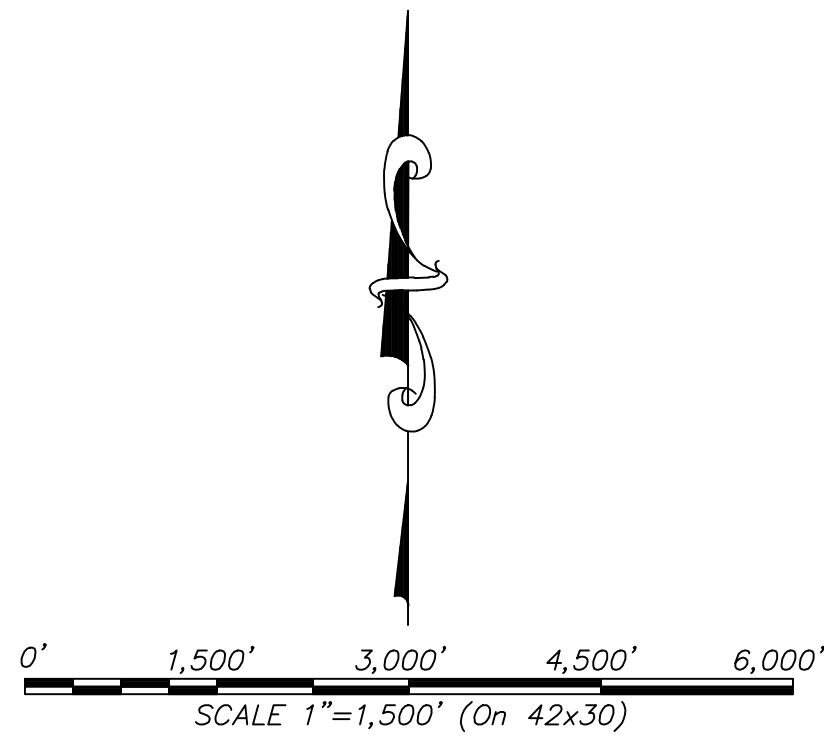
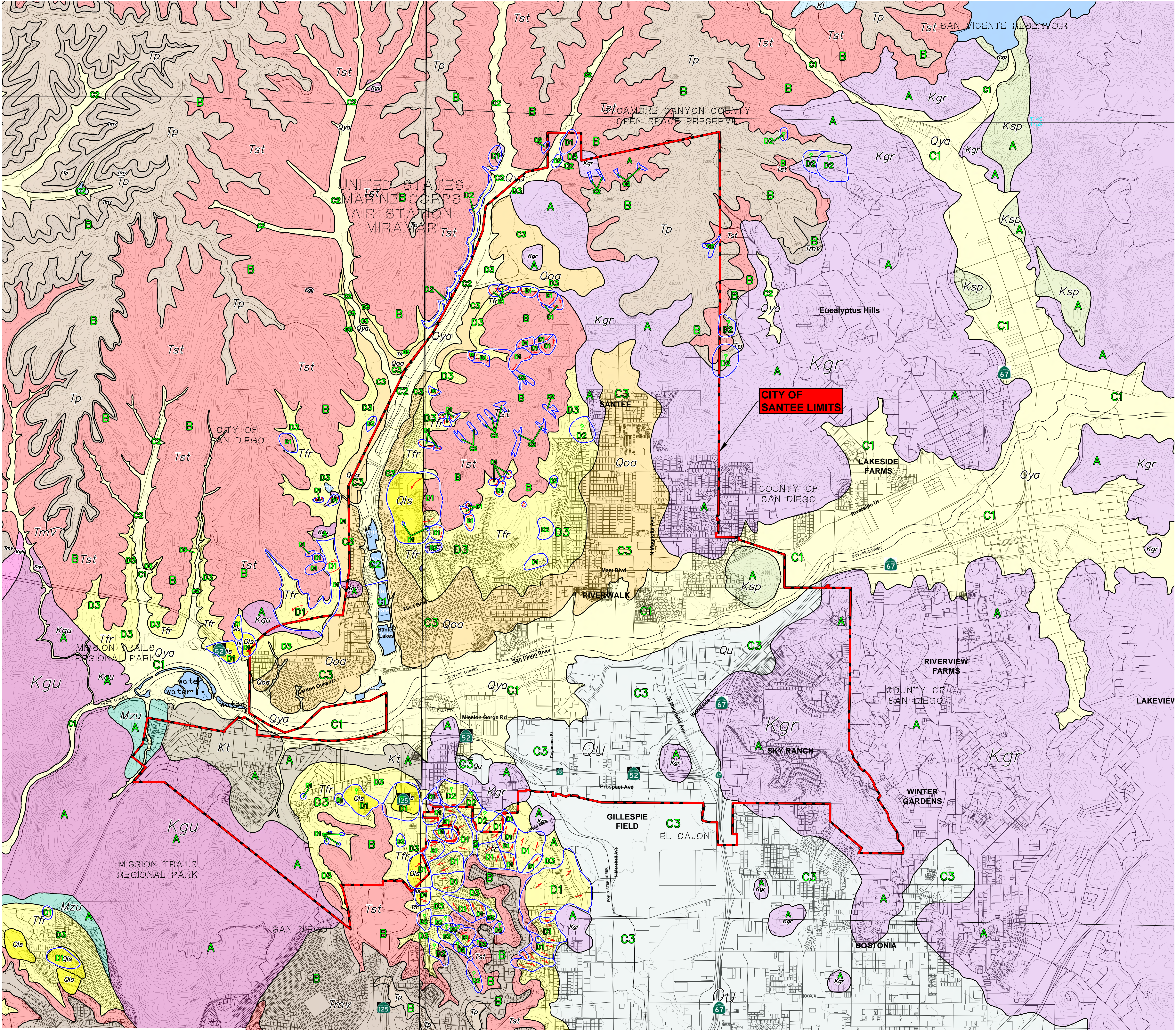
CITY OF SANTEE SEISMIC SAFETY STUDY
SANTEE, CALIFORNIA

 GEOCON INCORPORATED  GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS 6960 FLANDERS DRIVE - SAN DIEGO, CALIFORNIA 92121 - 297.4 PHONE (858) 558-6900 - FAX (858) 558-6159	SCALE	1" = 1,500'	DATE	03 - 29 - 2021
	PROJECT NO.	G2647 - 52 - 01		FIGURE
SHEET		1	OF	1

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[illegible]



LEGEND

- Qls** LANDSLIDE DEPOSITS
- Qya** YOUNG ALLUVIAL FLOOD-PLAIN DEPOSITS
- Qu** ALLUVIUM AND COLLUVIUM, UNDIVIDED
- Qoa** OLD ALLUVIAL FLOOD-PLAIN DEPOSITS, UNDIVIDED
- Tp** POMERADO CONGLOMERATE
- Tmv** MISSION VALLEY FORMATION
- Tst** STADIUM CONGLOMERATE
- Tfr** FRIARS FORMATION
- Kl** LUSARDI FORMATION
- Kgu** GRANODIORITE AND TONALITE, UNDIVIDED
- Kgh** HYPABYSSAL ROCKS, UNDIVIDED
- Kgr** GRANITOID ROCKS
- Kt** TONALITE, UNDIVIDED
- Ksp** SANTIAGO PEAK VOLCANICS
- Mzu** METAMORPHOSED AND UNMETAMORPHOSED VOLCANIC AND SEDIMENTARY ROCKS, UNDIVIDED
- APPROX. LOCATION OF GEOLOGIC CONTACT
- APPROX. LOCATION OF GEOLOGIC CONTACT-LANDSLIDES/ DEBRIS FLOW (C2, D1, D2)
- APPROX. DIRECTION OF LANDSLIDE MOVEMENT
- POSSIBLE LANDSLIDE

GEOLOGICAL/SEISMIC HAZARD MAP LEGEND					
Legend	Soil Type	Location	Relative Landslide Susceptibility	Liquefaction Hazard	Expansion Condition
A	Granitic Rock	Hard Rock Outcrops and Decomposed Granites, Northern Slopes (Faint Ranch), Central Area (Rampage Way), Southwest Area (Rancho Fainta Drive, Cowles Mountain)	Least Susceptible	Nominal	Very Low
B	Stadium Conglomerate	Northeastern and Northern Slopes (Faint Ranch), Southern Undeveloped Area	Marginal Susceptible (Generally Susceptible to Debris Flow)	Nominal	Low
C1	Alluvium	Main Drainage Channels, Possible Shallow Groundwater, San Diego River	Marginal Susceptible	Moderate to High	Variable
C2	Alluvium/Debris Flow on steep slope	Secondary Drainage and Tributary Channels, Fluvial/Channelized	Variable	Nominal to Low	Moderate
C3	Terrace Deposits/ Older Alluvium	Gentle Slopes Western Area, Flanks of the San Diego River (Carlton Oaks Drive), Central Area (Woodpark Drive)	Generally to Marginally Susceptible (Where underlain by Friars Formation)	Low to Moderate	Variable
D1	Landslides Confirmed	Sloping Southern Area (Route 125 and Fainta Drive), Fainta Ranch, Carlton Hills, Castorock	Most Susceptible	Nominal	Moderate to High
D2	Landslides Possible	Various Areas Throughout Friars Formation	Most Susceptible	Nominal	Moderate to High
D3	Friars Formation	Northern Slopes (Cuyamaca Street, Lake Canyon Road, Fainta Ranch) and Southern Slopes (Mesa Heights Road, Route 125)	Most Susceptible	Nominal	Moderate to High
--	Unmapped Surface Deposits: Undocumented Fill, Topsoil, Colluvium	Undeveloped Areas	Variable	Variable	Variable
--	Unmapped Surface Deposits: Previously Filled Fill	Developed Areas	Variable	Variable	Variable

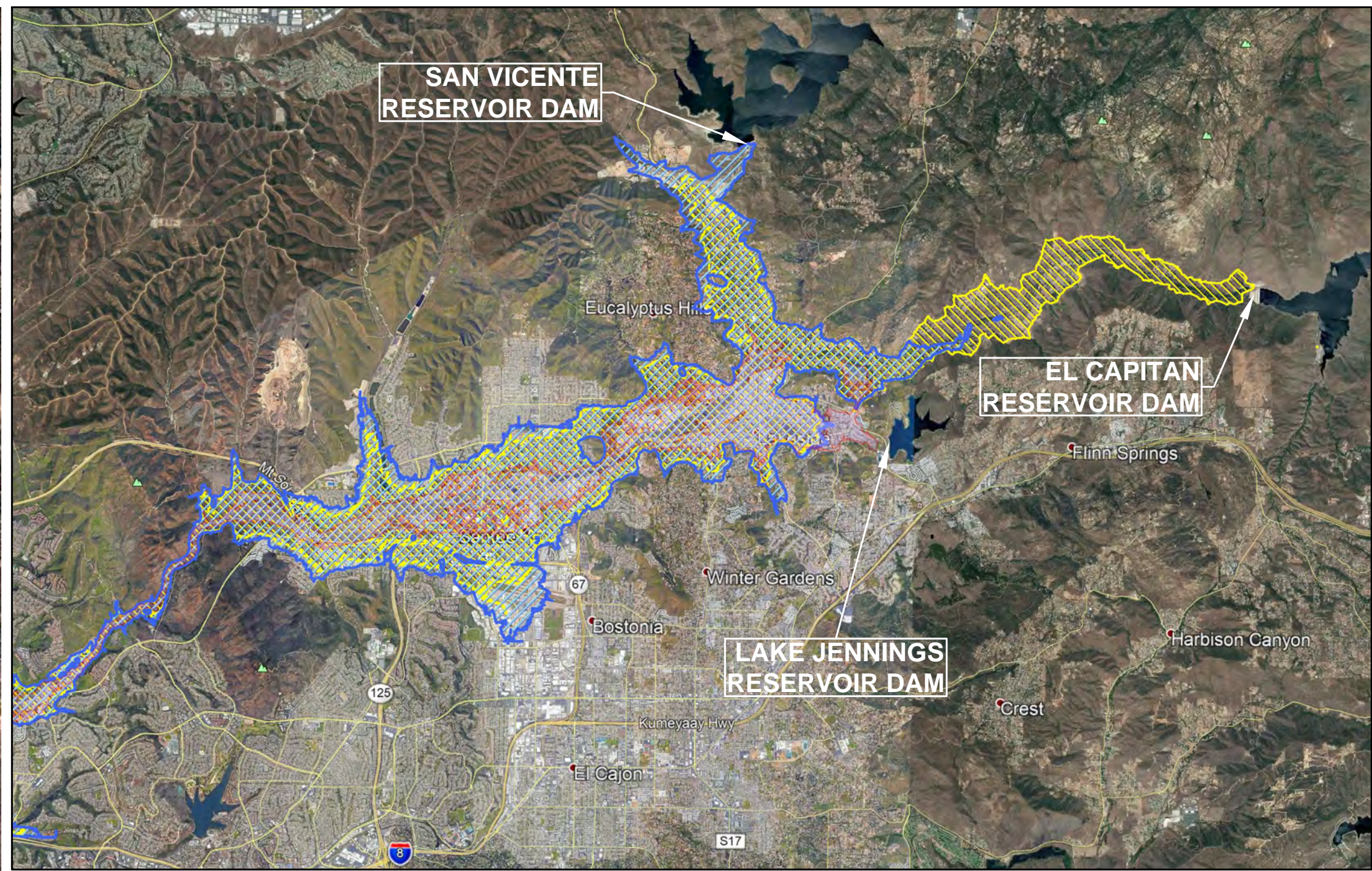
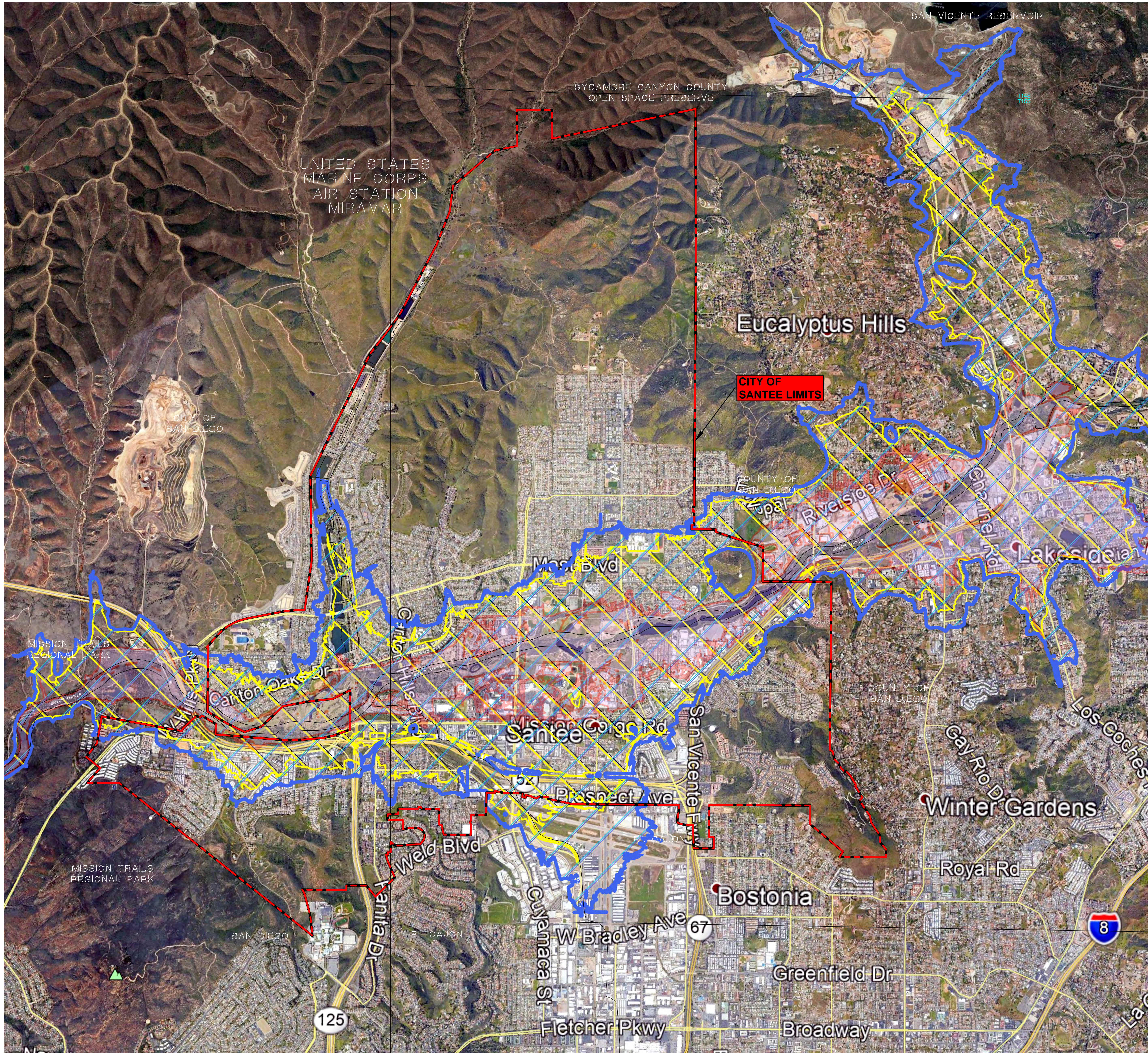
GEOLOGICAL/SEISMIC HAZARD MAP
CITY OF SANTEE SEISMIC SAFETY STUDY
SANTEE, CALIFORNIA

GEOCON
1313 G STREET, SUITE 100
SANTEE, CALIFORNIA 92081
PHONE: (619) 594-4000 FAX: (619) 594-4009

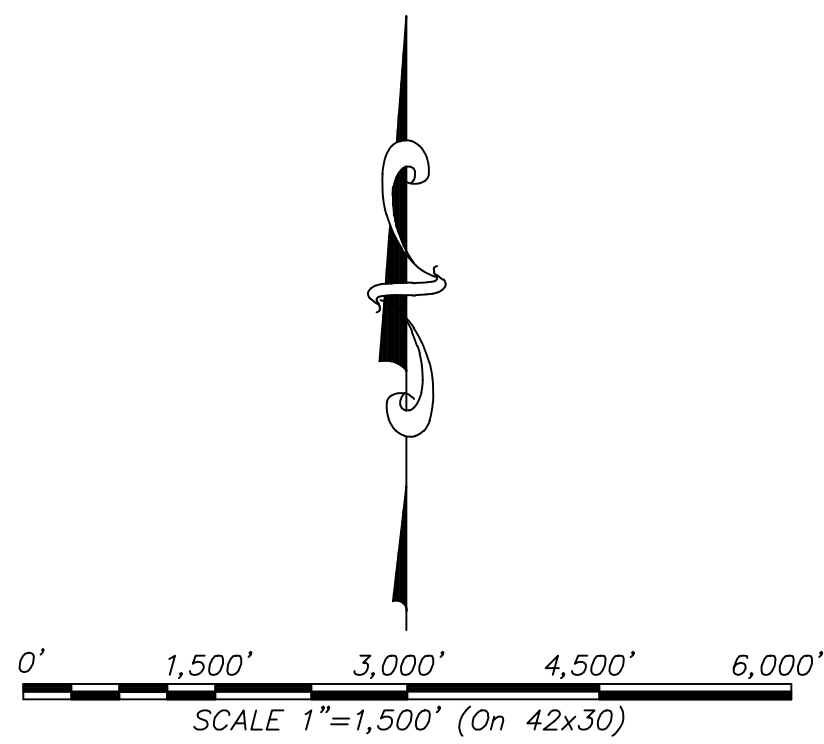
GEOLOGICAL • ENVIRONMENTAL • MATERIALS
6900 FARMERS DRIVE, SAN DIEGO, CALIFORNIA 92121-2974
PHONE: (619) 594-4000 FAX: (619) 594-4009

SCALE 1" = 1,500' DATE 03 - 29 - 2021
PROJECT NO. G2647 - 52 - 01 SHEET 1 OF 1
FIGURE 2




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INUNDATION ZONE VICINITY MAP
NOT TO SCALE



LEGEND

- LAKE JENNINGS (CHET HARRITT) INUNDATION ZONE
- SAN VICENTE INUNDATION ZONE
- EL CAPITAN INUNDATION ZONE

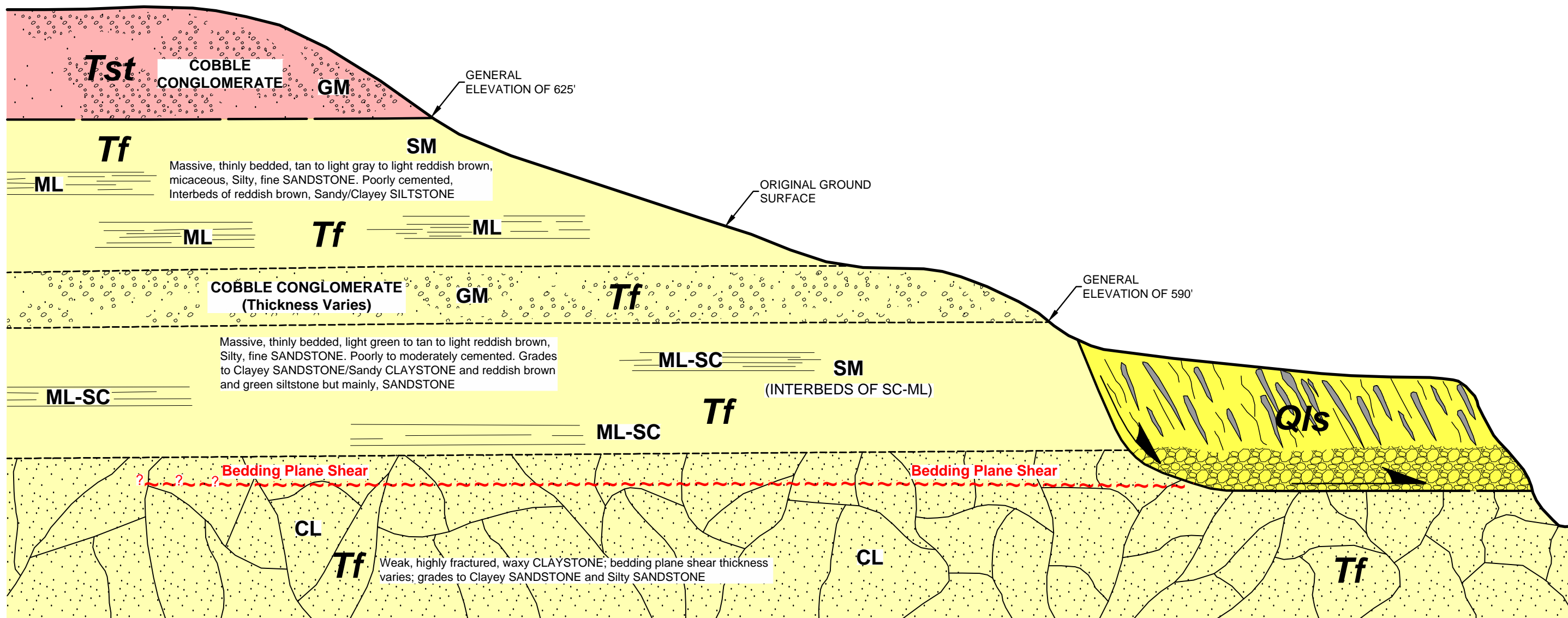
SOURCES: SanGIS/SANDAG GIS data warehouse.

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DAM/RESERVOIR INUNDATION MAP
CITY OF SANTEE SEISMIC SAFETY STUDY
SANTEE, CALIFORNIA

GEOCON 18400 RIVERDALE GEO TECHNICAL ■ ENVIRONMENTAL ■ MATERIALS 6940 FLANKERS DRIVE ■ SAN DIEGO, CALIFORNIA 92121-2974 PHONE (619) 588-4900 ■ FAX (619) 588-4957	SCALE 1" = 1,500'	DATE 03 - 29 - 2021
	PROJECT NO. G2647 - 52 - 01	FIGURE 3
	SHEET 1 OF 1	

Printed: 03/29/2021 1:48PM By: RUBEN AGUILAR File Location: Y:\PROJECTS\G2647-52-01 Santee Seismic Safety Study\G2647-52-01 Santee Seismic Safety Study\Drawings\InundationMap.dwg



CHARACTERISTIC GEOLOGY OF SANTEE AREA

NO SCALE, CONCEPTUAL ONLY

GEOCON LEGEND	
Q/sLANDSLIDE DEPOSITS
TstSTADIUM CONGLOMERATE
TfFRIARS FORMATION

CHARACTERISTIC GEOLOGY OF SANTEE AREA

CITY OF SANTEE SEISMIC SAFETY STUDY
SANTEE, CALIFORNIA

GEOCON
INCORPORATED
GEOTECHNICAL CONSULTANTS
6960 FLANDERS DRIVE - SAN DIEGO, CALIFORNIA 92121 - 297.4
PHONE 858.558-6900 - FAX 858.558-6159



SCALE NOT TO SCALE	DATE 03 - 29 - 2021
PROJECT NO. G2647 - 52 - 01	FIGURE 4
SHEET 1 OF 1	

APPENDIX

A

APPENDIX A

TECHNICAL TABLES FROM SEISMIC SAFETY REPORT DISCUSSIONS

**TABLE A-1
DETERMINATION OF GEOTECHNICAL STUDIES REQUIRED**

Group/Risk Category (Examples)	Group I (Parks, Open Spaces, Golf Courses, Agricultural Land, Landfills, Barns, Storage Shelters)	Group II (Residential, Commercial and Industrial Buildings, Warehouses, Apartment Buildings, Motels, Secondary Roadways)	Group III (Theatres, Lecture Halls, Dining Halls, Schools, Churches, Prisons, Small Healthcare Facilities, Infrastructure Plants, Storage for Explosives/Toxins, Main Roads, Mid to High-Rise Buildings, Large Structures Intended for Human Occupancy)	Group IV (Hazardous Material Facilities, Hospitals, Fire and Rescue, Emergency Facilities and Shelters, Police Stations, Power Stations, Aviation Control Facilities, National Defense, Water Storage)
Stability Category				
Generally Stable Areas. Underlain by Granitic Rock or Gentle Slopes.	Geologic Reconnaissance	Geotechnical Investigation Geologic Reconnaissance	Geotechnical Investigation Geologic Investigation Seismic Hazard Study	Geotechnical Investigation Geologic Investigation Seismic Hazard Study
Moderately Stable Areas. Underlain by Stadium Conglomerate.	Geologic Reconnaissance	Geotechnical Investigation Geologic Investigation	Geotechnical Investigation Geologic Investigation Seismic Hazard Study	Geotechnical Investigation Geologic Investigation Seismic Hazard Study
Generally Unstable Areas. Underlain by Friars Formation, Landslides or Debris Flows.	Geologic Reconnaissance	Geotechnical Investigation Geologic Investigation Seismic Hazard Study	Geotechnical Investigation Geologic Investigation Seismic Hazard Study	Geotechnical Investigation Geologic Investigation Seismic Hazard Study
Potentially Liquefiable Areas. Possibly Underlain by Alluvium and a High Water Table.	Geologic Reconnaissance	Geotechnical Investigation Geologic Investigation Seismic Hazard Study	Geotechnical Investigation Geologic Investigation Seismic Hazard Study	Geotechnical Investigation Geologic Investigation Seismic Hazard Study

TABLE A-2
TYPES OF GEOTECHNICAL STUDIES

Report Type	Description
Geologic Reconnaissance	<ul style="list-style-type: none"> Performed under the supervision of, and signed by a Certified Engineering Geologist (CEG) in the State of California. Conducted during the initial planning stages. Includes a literature search (available reports, published geologic maps, stereo aerial photographs), research on existing problems in the areas, a site description, and a field inspection to identify/assess potential geologic hazards requiring further study. Recommends the scope for additional geotechnical studies. Engineering design recommendations are not included in a Geologic Reconnaissance.
Geologic Investigation	<ul style="list-style-type: none"> Performed under the supervision of, and signed by a Certified Engineering Geologist (CEG) in the State of California. Can be conducted during the environmental review process, but usually occurs at the tentative map stage. Considers the conditions of preliminary grading plans, i.e., hazardous building sites, stabilization, excavations, and/or avoidance of hazardous soil types. Includes literature review, field investigation, subsurface testing, laboratory analysis, and special design criteria. Includes preparation of a Geologic Map and a description of geologic conditions. Recommends the scope for additional geotechnical studies.
Geotechnical Investigation	<ul style="list-style-type: none"> Performed under the supervision of, and signed by a Certified Engineering Geologist (CEG) and licensed Registered Civil Engineering (RCE) practicing in the field of soil engineering or a Geotechnical Engineer (GE) registered in the State of California. Normally conducted in conjunction with Geologic Investigations. Considers final grading plans and tentative maps. Includes literature review, field investigation, subsurface testing, laboratory analysis, and special design criteria. Conclusions and recommendations include foundation design and recommended grading specifications. Includes preparation of a Geologic Map and a description of geologic conditions.
Seismic Hazard Study	<ul style="list-style-type: none"> Performed under the supervision of, and signed by a Certified Engineering Geologist (CEG) and licensed Registered Civil Engineering (RCE) practicing in the field of soil engineering or a Geotechnical Engineer (GE) registered in the State of California. Conducted in accordance with the guidelines set forth by the California Geological Survey.

TABLE A-3
GEOTECHNICAL/SEISMIC HAZARD MAP LEGEND

Legend	Soil Type	Location	Relative Landslide Susceptibility	Liquefaction Hazard	Expansion Condition
A	Granitic Rock	Hard Rock Outcrops and Decomposed Granitics, Northern Slopes (Fanita Ranch), Central Area (Ramsgate Way), Southwestern Area (Rancho Fanita Drive, Cowles Mountain)	Least Susceptible	Nominal	Very Low
B	Stadium Conglomerate	Northwestern and Northern Slopes (Fanita Ranch), Southern Undeveloped Area	Marginally Susceptible (Generally Susceptible to Debris Flow)	Nominal	Low
C1	Alluvium	Main Drainage Channels, Possible Shallow Groundwater, San Diego River	Marginally Susceptible	Moderate to High	Variable
C2	Alluvium/Debris Flow	Secondary Drainage and Tributary Channels, Fluctuating Groundwater	Variable	Nominal to Low	Moderate
C3	Older Alluvium	Gentle Slopes Western Area, Flanks of the San Diego River (Carlton Oaks Drive), Central Area (Woodpark Drive)	Generally to Marginally Susceptible (Where underlain by Friars Formation)	Low to Moderate	Variable
D1	Landslides Confirmed	Sloping Southern Area (Route 125 and Fanita Drive), Fanita Ranch, Carlton Hills, Castlerock	Most Susceptible	Nominal	Moderate to High
D2	Landslides Possible	Various Areas Throughout Friars Formation	Most Susceptible	Nominal	Moderate to High
D3	Friars Formation	Northern Slopes (Cuyamaca Street, Lake Canyon Road, Fanita Ranch) and Southern Slopes (Mesa Heights Road, Route 125)	Most Susceptible	Nominal	Moderate to High
--	Unmapped Surficial Deposits: Undocumented Fill, Topsoil, Colluvium	Undeveloped Areas	Variable	Variable	Variable
--	Unmapped Surficial Deposits: Previously Placed Fill	Developed Areas	Variable	Variable	Variable

TABLE A-4
MODIFIED MERCALLI INTENSITY (DAMAGE) SCALE OF 1931 (ABRIDGED)

Intensity Value	Quantitative Description [Average Peak Velocity (cm/s), Average Peak Acceleration (m/s ²), Rossi-Forel Scale]
I	Not felt except by a very few under especially favorable circumstances. [--, --, I]
II	Felt only by a few persons at rest, especially on upper floors of buildings; delicately suspended objects may swing. [--, --, I to II]
III	Felt quite noticeable indoors, especially on upper floors of buildings, but many people do not recognize it as an earthquake; standing motor cars may rock slightly; vibration like passing truck; duration estimated. [--, --, III]
IV	During the day felt indoors by many, outdoors by few; at night some awakened; dishes, windows and doors disturbed; walls making creaking sound; sensation like heavy truck striking building; standing motor cars rocked noticeably. [1-2 cm/s, 0.015g-0.02g, IV to V]
V	Felt by nearly everyone; many awakened; some dishes, windows etc., broken; a few instances of cracked plaster; unstable objects overturned; disturbances of trees, piles and other tall objects sometimes noticed; pendulum clocks may stop. [2-5 cm/s, 0.03g-0.04g, V to VI]
VI	Felt by all; many frightened and run outdoors; some heavy furniture moved; a few instances of fallen plaster or damaged chimneys; damage slight. [5-8 cm/s, 0.06g-0.07g, VI to VII]
VII	Everybody runs outdoors; damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable in poorly built or badly designed structures; some chimneys broken; noticed by persons driving motor cars. [8-12 cm/s, 0.10g-0.15g, VIII]
VIII	Damage slight in specially designed structures, considerable in ordinary substantial buildings, with partial collapse, great in poorly built structures; panel walls thrown out of frame structures; fall of chimneys, factory stacks, columns, monuments, walls; heavy furniture overturned; sand and mud ejected in small amounts; changes in well water; persons driving motor cars disturbed. [20-30 cm/s, 0.25g-0.30g, VIII+ to IX]
IX	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb; great in substantial buildings, with partial collapse; buildings shifted off foundations; ground cracked conspicuously; underground pipes broken. [45-55 cm/s, 0.50g-0.55g, IX+]
X	Some well built wooden structures destroyed; most masonry and frame structures destroyed with foundations; ground badly cracked; rails bent; landslides considerable from river banks and steep slopes; shifted sand and mud; water splashed (slopped) over banks. [> 60 cm/s, > 0.60g, X]
XI	Few, if any (masonry) structures remain standing; bridges destroyed; broad fissures in ground; underground pipelines completely out of service, earth slumps and land slips in soft ground; rails bent greatly. [--, --, --]
XII	Damage total. Waves seen on ground surfaces. Line of sight and level distorted. Objects thrown upward into the air. [--, --, --]

(g = gravity = 9.80 m/s²)

**TABLE A-5
GEOLOGIC TIME**

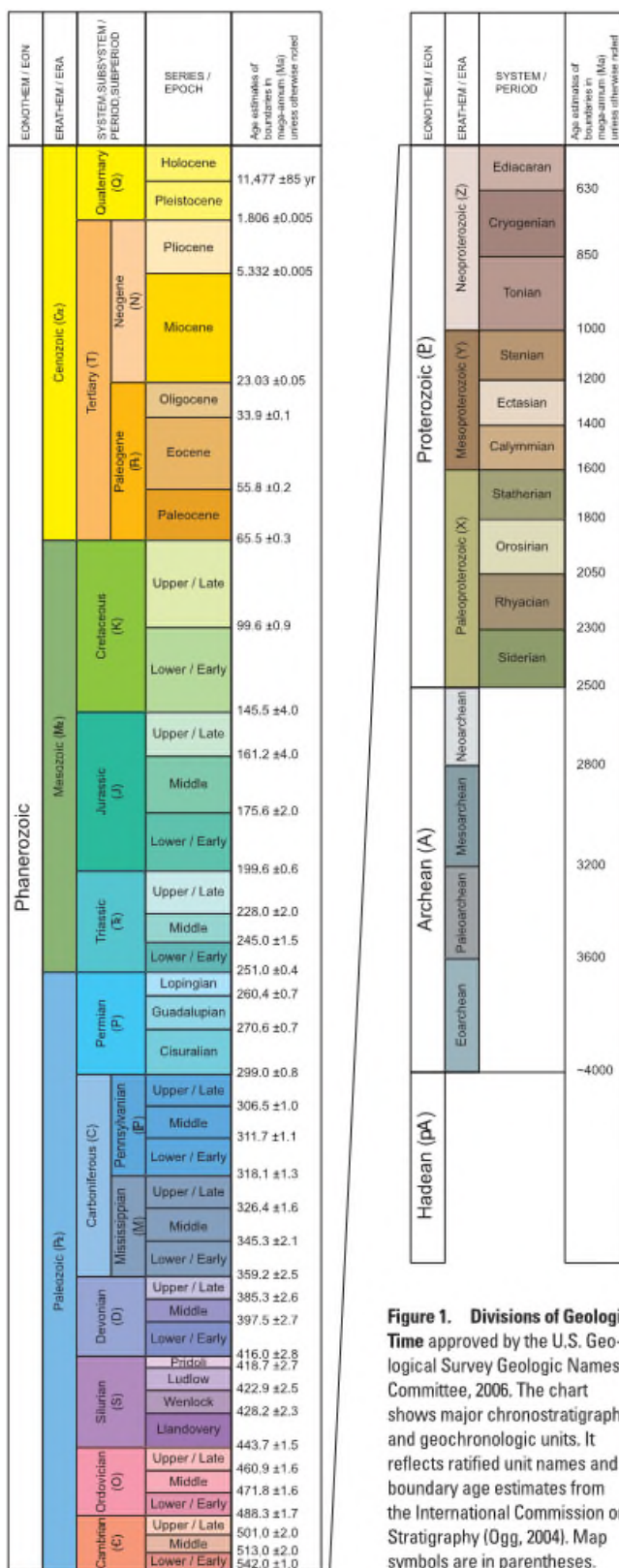


Figure 1. Divisions of Geologic Time approved by the U.S. Geological Survey Geologic Names Committee, 2006. The chart shows major chronostratigraphic and geochronologic units. It reflects ratified unit names and boundary age estimates from the International Commission on Stratigraphy (Ogg, 2004). Map symbols are in parentheses.

APPENDIX

B

APPENDIX B

DEFINITION OF TECHNICAL TERMS

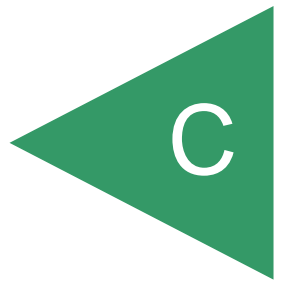
Active Fault	An Active Fault is one that exhibits separation in historic time or along which separation of Holocene deposits can be demonstrated. If Holocene deposits are not offset, but numerous epicenters have been recorded on or in close proximity to the fault, a classification of active may be used.
Alluvium	Surficial, stream deposited materials that have undergone no significant cementation or consolidation; typically, loose sands, gravels, or clays deposits in valleys and other drainage areas in the last 11,000 years.
Bed	A layer or tabular body of sedimentary rock greater than one centimeter thick, that lies essentially parallel to the surface or surfaces on or against which it was formed.
Bedding	The arrangement of sedimentary rocks in layers than are more than one centimeter thick.
Bedding Plane	The surface that separates each successive layer of a sedimentary rock from its proceeding layer.
Bedding Plane Shear	A shear that parallels a bedding plane. Also known as bedding parallel shear.
Boulder	A detached rounded rock that is larger than 12 inches.
Cementation	The process by which loose sediments become cohesive sedimentary rock through the addition of natural cementing agents such as calcium carbonate, iron oxide, or silica.
Cobble	Particles of rock that possess a size of 3 inches to 12 inches.
Clast	An individual constituent, grain, or fragment of rock, produced by weathering of a larger rock mass.
Expansive	Refers to a clayey soil that will expand and contract with changes in moisture content.

Fault	A fracture in rock along which there has been displacement.
Formation	A general term used in describing soil or rock masses that have been mapped as distinct units.
Fracture	A general term for any break in a rock mass.
Friars Formation	The Friars Formation is composed of beds of brown, red, and green mudstones and claystones alternating with loosely to moderately well cemented, fine to medium grained, light gray to brown sandstones. The thickness of these beds ranges from 2 to 40 feet or more. Studies by various geotechnical firms have confirmed that the Friars Formation contain a significant cobble conglomerate bed 25 to 50 feet thick and lying at an elevation of approximately 450 feet.
Gravel	Particle of rock that will pass a 3-inchg sieve but be retained on a No. 4 sieve.
Inactive Fault	A fault is classified Inactive when a fault trace exhibits no separation of Holocene deposits or if the fault is overlain by unfaulted Pleistocene deposits.
Intensity	Intensity refers to the degree or strength of shaking at a specified place. It is not based on the energy released by an earthquake but is a rating assigned by an experienced observer using a descriptive scale with grade indicated by Roman numerals from I to XII. Intensity is a rating of the severity of damage producing properties of the ground motion at a specific location. The scale of measurement is based upon the sensation of persons and upon physical damage to structural and man-made objects. The most widely used and accepted intensity scale is the Modified Mercalli Intensity Scale (Appendix A)
Interbedded	A term used to describe soil or rock material lying between beds, or lying in a bed parallel to other beds of a different material.
Joint	A surface of actual or potential fracture or parting in a rock.
Landslide	Any mass movement that occurs below the soil mantle that is caused by shear failure along one or several surfaces.

Liquefaction	Liquefaction is a process or condition in which a soil mass below the water table suddenly loses its strength during shaking, such as an earthquake, and behaves like a fluid. The primary factor affecting the potential of a soil to liquefy are proximity of the water table to the ground surface; soil type; relative density or void ratio; initial confining pressure; intensity of ground shaking; and, duration of ground shaking. In general, poorly graded materials are more susceptible to liquefaction than are well graded material and of the poorly grade materials, fine sand and silts tend to “liquefy” more readily than do coarse sands, gravelly soils or clay. Typically, soil containing more than about 30 to 40 percent (by weight) clay particles have a very low potential for liquefaction. In general, Modified Mercalli Intensities on the order of VII may create sufficient ground shaking to cause liquefaction of very susceptible deposits. As the intensity of seismic event increases, the range of susceptible deposits also increases.
Magnitude	Magnitude is related to that energy which is radiated from the earthquake source in the form of elastic waves. Basically, magnitude is the rating of a given earthquake related to the earthquake energy released in the hypocentral area and is independent of the base of observation since it is calculated from measurement on seismograms. It is expressed in ordinary numbers and decimals. Magnitude was originally defined by C. F. Richter as a logarithm (base 10) of the maximum amplitude of a Wood-Anderson seismogram at a distance of 100 kilometers (62 miles) from the focus. For other distances or for instruments of other types, conversion to the standard is accomplished.
Massive	A general term used to describe homogeneous sedimentary rock that is free of joints and bedding planes.
Matrix	The natural material in which a rock clast is embedded. In a rock in which certain constituents are much larger than the others, the smaller sized constituents compose the matrix.
Medium-Grained	A general term used to describe grains larger than 1 millimeter and smaller than 2 millimeters.
Mudstone	A rock composed of indefinite and varying proportions of clay, silt, and sand.

Outcrop	Rock that is exposed at the surface of the earth.
Pebble	A rounded rock fragment between 4 millimeters and 64 millimeters in size.
Poorly Sorted	A general term used to describe materials composed of nonuniform sized constituents.
Sand	Applies to unconsolidated minerals or rock particles that are less than 4 millimeters and more than 0.05 millimeters in size.
Sandstone	A consolidated sedimentary rock composed of cemented sand grains.
Sedimentary Rock	A term used to describe rock formed from a sediment. Generally composed of sand to clay-sized particles.
Silt	Applies to unconsolidated rock particles that are greater than 0.005 millimeters and less than 0.05 millimeters in size.
Siltstone	A consolidated rock composed predominantly of silt.
Slopewash	Soil and rock material that is or has been transported down a slope by running water not confined to channels.
Soil Creep	An imperceptibly slow and continuous downward and outward movement of soil on a slope.
Stadium Conglomerate	The cobble-sized clasts of the conglomerate are chiefly volcanic in origin with some quartzite and granitic cobbles and boulders which attain diameters of two to three feet. These clasts (rounded cobbles and boulders) are set in a matrix of red-brown to light brown, poorly to well sorted, and medium to coarse-grained sands. Cementation is highly variable, from strongly cemented to poorly cemented. Thick lenses of well-sorted sandstones are common.
Weathered	The physical disintegration and chemical decomposition of rock due to effects of the atmosphere.
Well-Sorted	Applies to materials composed of particles of approximately uniform size.

APPENDIX



APPENDIX C

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Appendix D. Environmental Justice Existing Conditions Assessment

Environmental Justice Existing Conditions Assessment

City of Santee Safety and Environmental Justice Element

July 2023

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Section 1 Introduction

Government Code (GOV) Section 65040.12[e] defines “Environmental Justice” as the fair treatment of people of all races, incomes, and ethnicity with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies. In practice, pursuing environmental justice involves improving the quality of life for people by reducing exposure to environmental hazards and burdens and improving access to goods and services that promote health and well-being.

In 2016, the State of California passed Senate Bill (SB) 1000—the Planning for Healthy Communities Act—requiring cities and counties to address environmental justice in their general plans. The purpose of the Environmental Justice Element is to develop objectives and policies to minimize pollution and its effects on communities and to ensure residents have the opportunity to provide input in decisions that affect their quality of life. Per California law (GOV Section 65040.12[e]), environmental justice includes, but is not limited to:

- The availability of a healthy environment for all people
- The deterrence, reduction, and elimination of pollution burdens for populations and communities experiencing the adverse effects of that pollution, so that the effects of the pollution are not disproportionately borne by those populations and communities
- Governmental entities engaging and providing technical assistance to populations and communities most impacted by pollution to promote their meaningful participation in all phases of the environmental and land use decision-making process
- The meaningful consideration of recommendations from populations and communities most impacted by pollution into environmental and land use decisions

In June 2020, the Governor’s Office of Planning and Research (OPR) released updated guidelines (OPR Guidelines) for the preparation of Environmental Justice Elements in compliance with SB 1000. OPR Guidelines recommend that local agencies document existing conditions with respect to Environmental Justice Element topic areas to understand the drivers of inequality. Therefore, the City of Santee (City) has prepared this Existing Conditions Assessment to identify areas with greater pollution exposure and reduced access to public goods and services that improve quality of life for residents. The findings of the Existing Conditions Assessment were used to inform Environmental Justice Element policies in the City’s General Plan. The Existing Conditions Assessment is organized by the following Environmental Justice Element topics:

- Pollution exposure, including access to clean air and water;
- Access to public facilities and services;
- Access to healthy food;
- Access to physical activity and recreational opportunities;

- Access to safe and sanitary homes; and
- Unique or compounded health risks, including exposure to climate hazards.

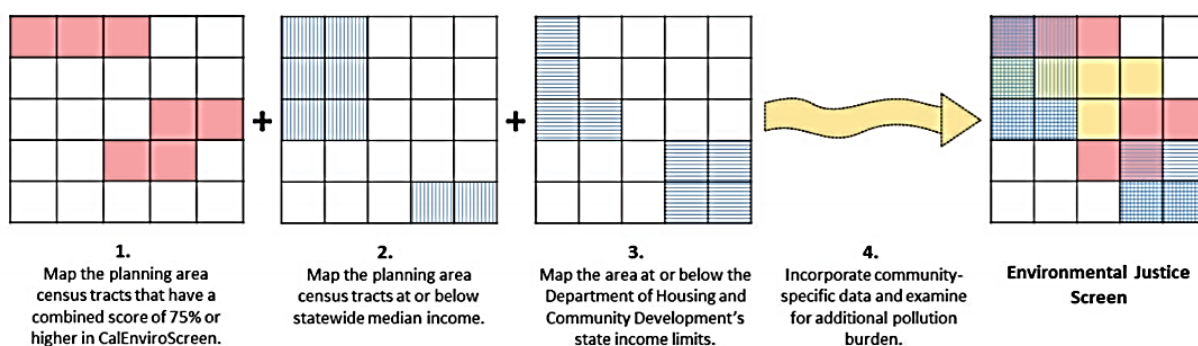
The City utilized indicators to assess existing conditions with respect to each Environmental Justice Element topic area based on public, open-source datasets. Many of the indicators rely on U.S. Census data or other data aggregated at the census tract level. Although census data is the primary and standard source of high-resolution geographic information about the United States population, some indicators have large margins of error, attributable to specific methodological decisions made by the Census Bureau. Furthermore, census tracts do not directly align with City boundaries. Therefore, values assigned at the census tract level may be influenced by conditions outside the City's jurisdiction. In the case of Santee, several census tracts in the southern portion of the City overlap with the City of El Cajon. As a result, scores associated with those census tracts are influenced by conditions in the City of El Cajon. Therefore, the planning team supplemented census data with local data and knowledge where feasible and determined appropriate by the City.

Specifically, the City developed a community survey (Community Survey) to identify what environmental justice topic areas were of greatest concern to residents. The Community Survey was made available in English and Spanish, and 121 responses were received from English-speaking residents. Key findings of the Community Survey (City of Santee 2021) are discussed throughout the Existing Conditions Assessment, and survey results are provided in Appendix B of the Safety and Environmental Justice Element.

Section 2 Disadvantaged Communities

The first step in assessing conditions in support of the Environmental Justice Element was to identify disadvantaged communities. “Disadvantaged communities” are defined as low-income areas that are disproportionately affected by environmental pollution and other hazards that can lead to negative health effects, exposure, or environmental degradation (GOV Section 65302[h][4][A]). SB 1000 defines “disadvantaged communities” as those disproportionately burdened by multiple sources of pollution and with population characteristics that make them more sensitive to pollution. As a result, they are more likely to suffer from a lower quality of life and worsened health outcomes compared to areas that are more affluent. To identify disadvantaged communities within a city or county, OPR Guidelines recommend utilizing the following screening method (**Figure 1**).

Figure 1. Disadvantaged Communities Screening Method



Source: OPR 2020, as adapted by Harris & Associates.

2.1 Disadvantaged Communities Screening Method 1: CalEnviroScreen

CalEnviroScreen is a computer mapping tool published by the Office of Environmental Health Hazard Assessment (OEHHA) that identifies communities that are most affected by pollution and are especially vulnerable to its adverse effects (OPR 2020). CalEnviroScreen uses several factors, called “indicators” to determine whether a community is disadvantaged and disproportionately affected by pollution. These indicators fall into two main categories labeled “pollution burden” and “population characteristics.” Pollution burden indicators include exposure indicators that measure different types of pollution to which residents may be exposed and the proximity of environmental hazards to a community. Population characteristics represent characteristics of the community that can make them more susceptible to environmental hazards (such as poverty, low educational attainment, and linguistic isolation). These main categories can be separated into four distinct sub-categories: 1) Exposure, 2) Environmental Effect, 3) Sensitive Population, and 4) Socioeconomic Factor. A summary of the CalEnviroScreen indicators and how they relate to environmental justice is outlined in **Table 1**.

Table 1. CalEnviroScreen Categories and Indicators

Category	Rationale	Sub-Category	Indicator
Pollution Burden	Exposure to hazardous substances can cause and/or worsen certain health conditions.	Exposure	Ozone concentrations in air
			PM _{2.5} concentrations in air
			Diesel particulate matter emissions
			Drinking water contaminants
			Use of high-hazard, high-volatility pesticides
			Toxic releases from facilities
			Traffic Density
		Environmental Effect	Toxic cleanup sites
			Groundwater threats from leaking underground storage
			Hazardous waste facilities and generators
Population Characteristics	People with lower income levels, educational attainment and fluency in English tend to live in areas that are more affected by air pollution and other environmental toxins. In addition, certain health conditions may be caused or worsened by toxins in the environment.	Sensitive Population	Impaired water bodies
			Solid waste sites and facilities
			Asthma emergency department visits
		Socioeconomic Factor	Cardiovascular disease (emergency department visits for heart attacks)
			Low birth-weight infants
			Educational attainment
			Housing burdened low-income households
			Linguistic Isolation
			Poverty
			Unemployment

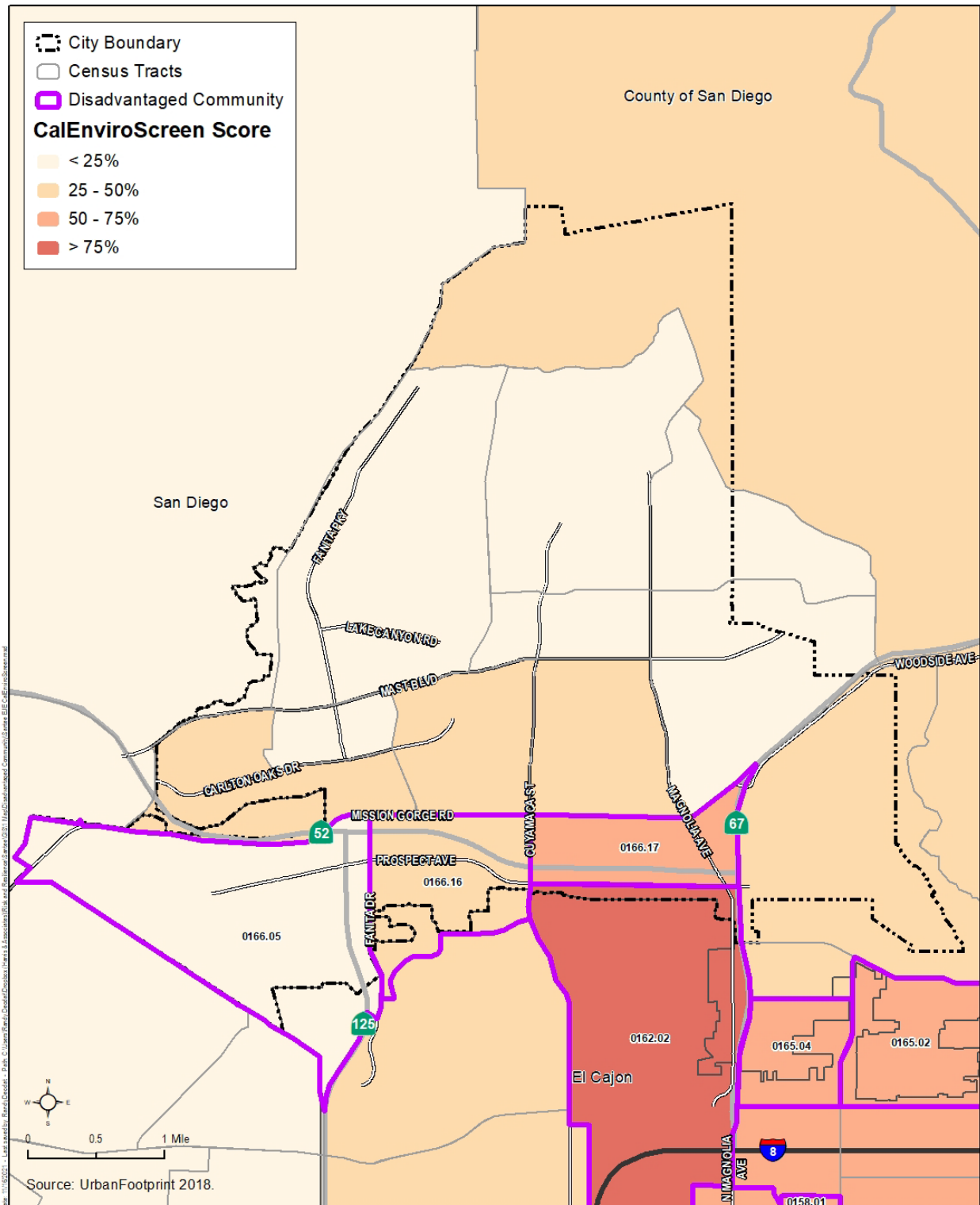
Source: CalEPA 2017.

CalEnviroScreen uses a weighted scoring system to derive average pollution burden and population scores for each census tract¹, and arrives at the final CalEnviroScreen score by multiplying the pollution burden and population characteristics components together.² CalEnviroScreen converts indicator scores to percentiles that can be compared with other areas throughout the state. In general, the higher the score or percentile, the more impacted a community is compared to other areas of the state. For example, a 75th percentile score means that the census tract is higher (more burdened) than 75 percent of other census tracts in California. Census tracts in the highest quartile of scores (75 to 100) are considered to be disadvantaged communities under SB 1000.

Census tracts in the City range in percentile scores between 34 and 88. Only the northern tip of one census tract (0162.02) intersecting the City exceeds the 75th percentile and, therefore, is considered to be disadvantaged, as shown in **Figure 2**.

¹ Although some census tracts follow City boundaries, others overlap City boundaries. As a result, CalEnviroScreen Scores at the census tract level may be affected by conditions outside the jurisdiction's authority (e.g., City of El Cajon).

² The CalEnviroScreen website can be found at <https://oehha.ca.gov/calenviroscreen>.

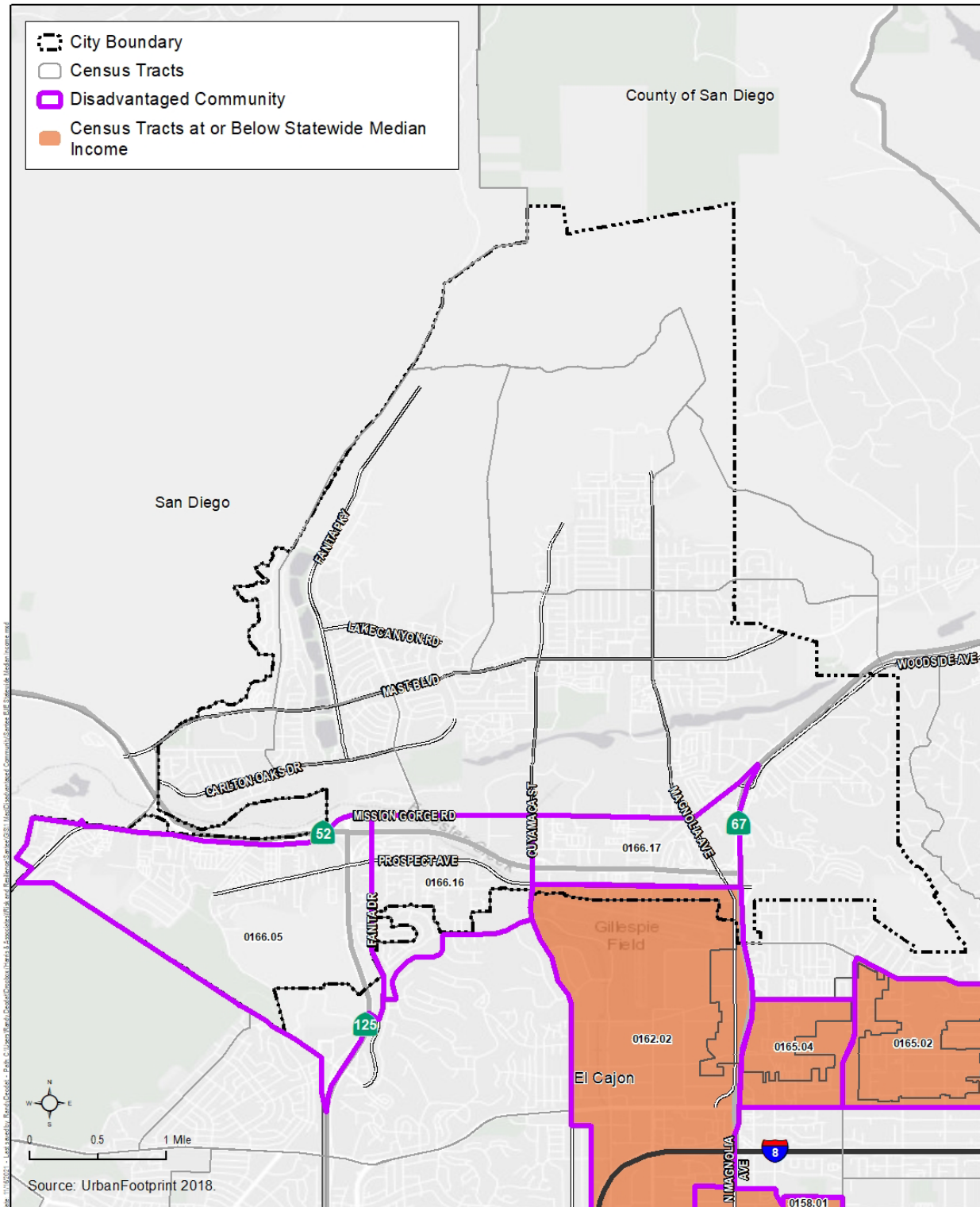


City of Santee
Environmental Justice Element

Figure 2.
Disadvantaged Communities Screening Method 1:
CalEnviroScreen

2.2 Disadvantaged Communities Screening Method 2: Statewide Median Income

In addition to utilizing CalEnviroScreen, OPR Guidelines recommend mapping low-income areas to identify other areas of the City that may be underserved, but do not qualify as disadvantaged communities in CalEnviroScreen. The average statewide median household income (in 2018 dollars) between 2015 and 2019 was \$95,100. **Figure 3** identifies census tracts that meet the second criteria for the OPR disadvantaged communities guidelines - that the median household income is below the statewide household median income and that at least one of the CalEnviroScreen exposure indicators is in the highest 25 percent of all California tracts for that specific indicator. Only the northern tip of one census tract (0162.02) intersecting the City is below the statewide median income threshold and is considered disadvantaged, as shown in **Figure 3**.



City of Santee
Environmental Justice Element

Figure 3.
Disadvantaged Communities Screening Method 2:
Statewide Median Income

2.3 Disadvantaged Communities Screening Method 3: HCD State Income Limit

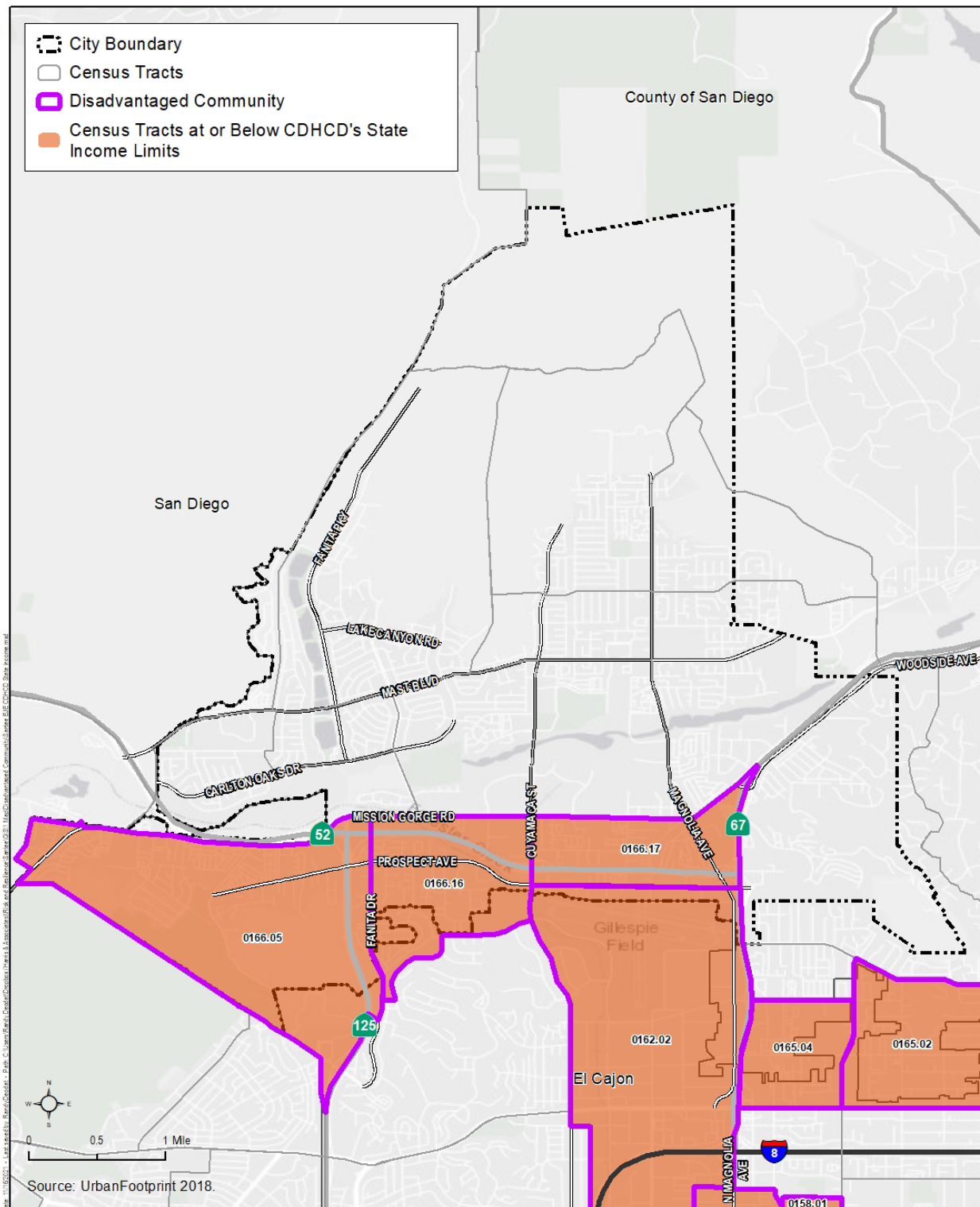
OPR Guidelines also recommend screening for areas that are below the California Department of Housing and Community Development’s (HCD) state income limits. Income limits reflect updated median income and household income levels for extremely low-, very low-, low-, and moderate-income households for California’s 58 counties. The 2021 State Income Limits are on the department’s website at <https://www.hcd.ca.gov/grants-funding/income-limits/state-and-federal-income-limits/docs/income-limits-2021.pdf>. HCD’s 2021 state income limits (**Table 2**) went into effect on April 30, 2020. **Table 2** shows that the median income for a four-person household (“baseline”) in County of San Diego (County) is \$95,100. Income limits are adjusted for family size based on the “baseline” four-person household. Median income thresholds were used to identify census tracts below the state income limit in **Figure 4**.

Table 2. HCD 2021 State Income Limits by Household Size

Number of Persons in Household:		1	2	3	4	5	6	7	8
San Diego County Area Median Income: \$95,100	Extremely Low	25450	29100	32750	36350	39300	42200	45100	48000
	Very Low Income	42450	48500	54550	60600	65450	70300	75150	80000
	Low Income	67900	77600	87300	97000	104800	112550	120300	128050
	Median Income	66550	76100	85600	95100	102700	110300	117900	125550
	Moderate Income	79850	91300	102700	114100	123250	132350	141500	150600

Source: HCD 2021

Figure 4 identifies four census tracts (0162.02, 0166.17, 0166.16, 0166.05) intersecting the City with an average median household income below HCD’s state income limits for the specified region and with at least one of the CalEnviroScreen exposure indicators in the highest 25 percent of all California tracts for that specific indicator.

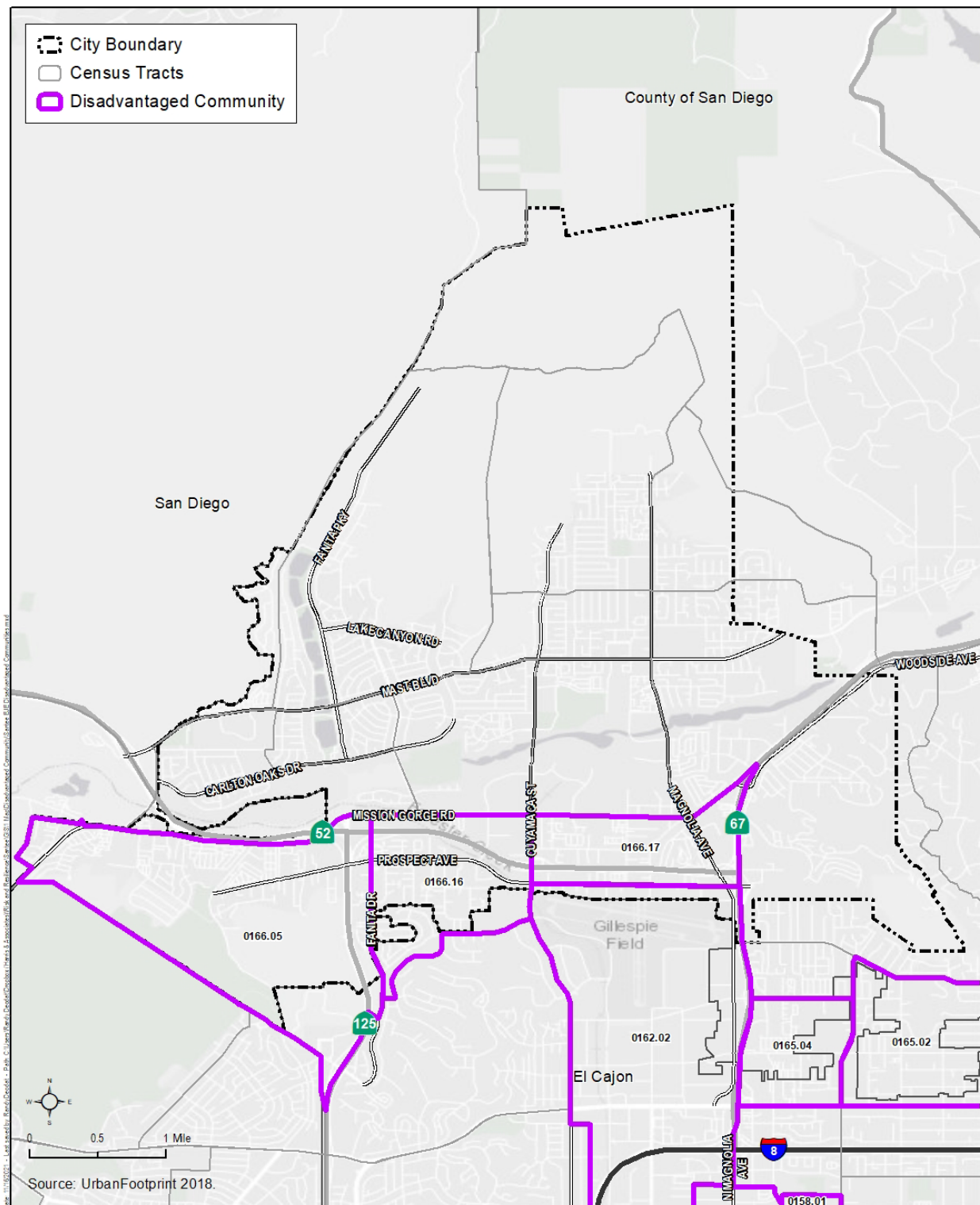


City of Santee
Environmental Justice Element

Figure 4.
Disadvantaged Communities Screening Method 3:
HCD State Income Limits

2.4 Disadvantaged Communities Screening Results

The City overlaid each individual screening criteria layer (Disadvantaged Communities Screening Methods 1-3) to identify all census tracts within the City considered to be disadvantaged. **Figure 5** shows the results of the disadvantaged communities screening method. As shown in **Figure 5**, disadvantaged communities are located in the southernmost portions of the City, west of State Route (SR-) 67, south of Mission Gorge Road, and bound by the City boundary to the west and south. The Existing Conditions Assessment assesses to what extent designated disadvantaged communities are more exposed to environmental burdens or lacks access to public goods and services. When there are designated disadvantaged communities in a local jurisdiction, the State requires the Environmental Justice Element to identify objectives and policies to reduce unique or compounded health risks, promote civic engagement in public decision-making processes, and prioritize improvements and programs in disadvantaged communities.



City of Santee
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Figure 5.
City of Santee Disadvantaged Communities

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Section 3 Pollution Exposure

The following section documents the conditions and factors that contribute to local pollution and identifies areas within the City that experience greater exposure to air and water pollution.

3.1 Air Quality

The City of Santee is located in the San Diego Air Basin (SDAB), and falls under the regulatory authority of the San Diego Air Pollution Control District (SDAPCD). The U.S. Environmental Protection Agency (USEPA) and the California Air Resources Board (CARB) designate air basins or portions of air basins and counties as being in “attainment” or “nonattainment” for criteria pollutants. Areas that do not meet the standards are classified as nonattainment areas. The USEPA classifies the SDAB as nonattainment for 8-Hour Ozone (SDAPCD). Additionally, CARB classifies the SDAB as in nonattainment with the California Ambient Air Quality Standards for 8-Hour Ozone, 1-Hour Ozone, PM₁₀, and PM_{2.5}.

Although air quality is generally regarded as a regional issue, there are also local contributors to air pollution in and near the City. Proximity to high-volume roadways, hazardous waste sites, and heavy industrial land use types and other high-emission sources can result in adverse health impacts. Disadvantaged communities are often disproportionately subjected to adverse air quality due to proximity to polluting activities and are more likely to have underlying medical conditions that may be worsened by pollution.

Poor air quality can result in negative health outcomes ranging from higher rates of asthma to cardiovascular disease and even premature death (CARB 2020). To assess residents’ potential exposure to polluting activities, the City identified residential parcels near major roads & highways and industrial activities, identified as indicators in **Table 3**.

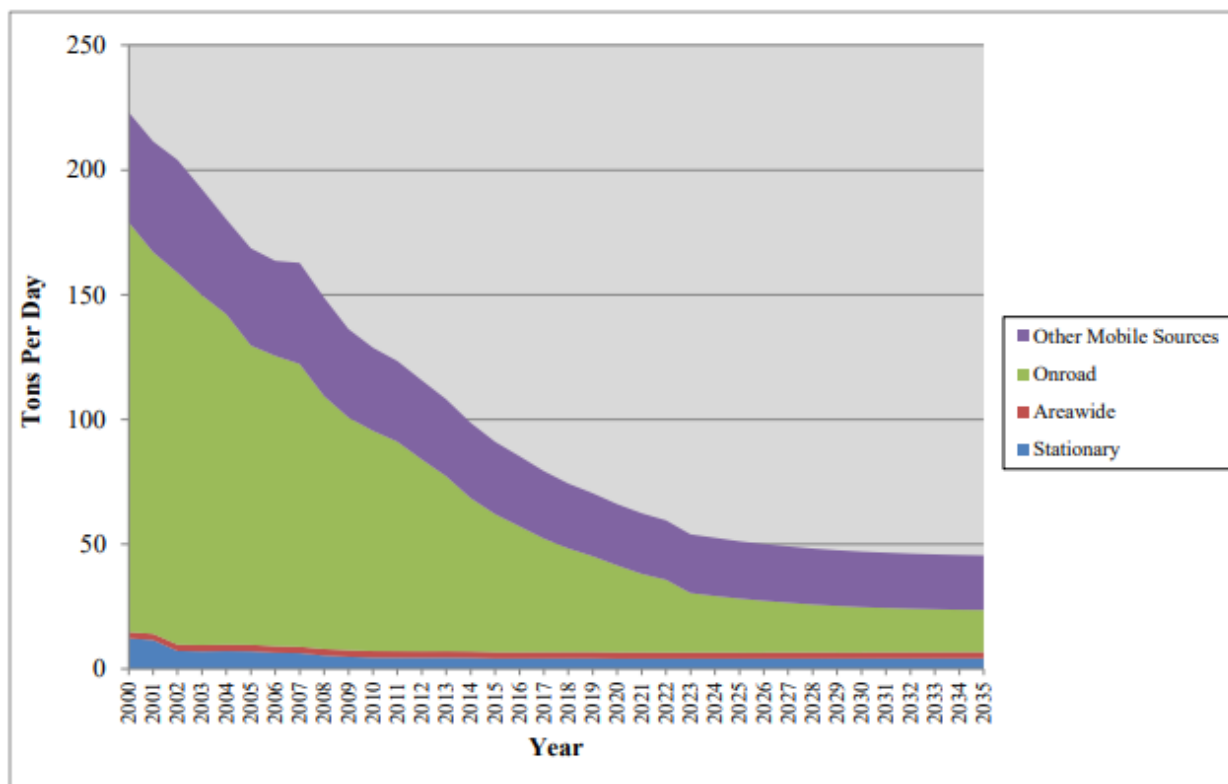
Table 3. Indicators to Identify Areas with Greater Exposure to Air Pollution

Indicator	Description
Proximity of residential zones to major roads	Residential parcels near high-traffic corridor or major roadway
Proximity of residential zones to industrial activities	Residential parcels near industrial parcels
Asthma Prevalence	Asthma ER Visits/10,000 people by Census Tract

Mobile Sources

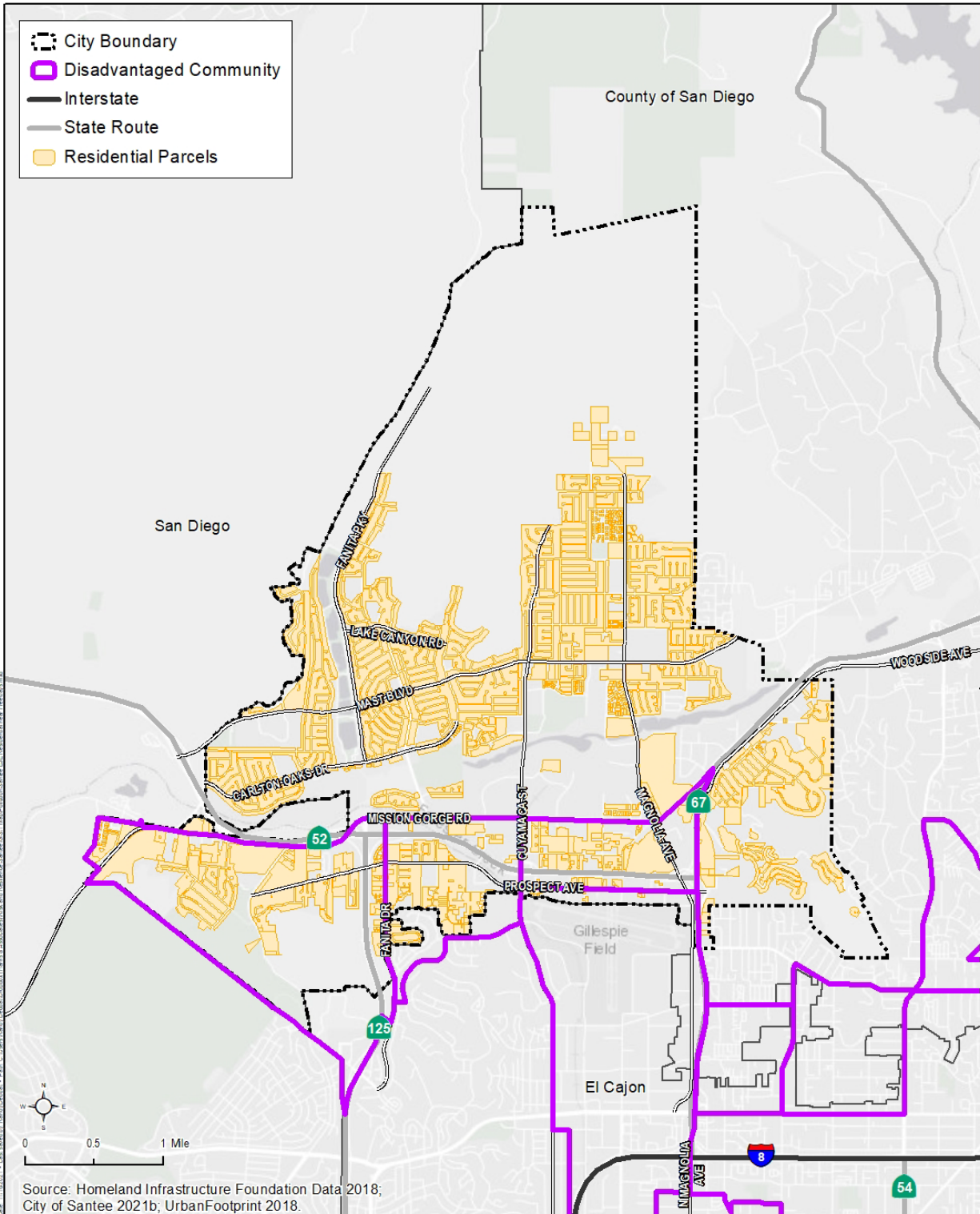
The primary contributor of air pollution (approximately 67 percent) in the SDAB is mobile source emissions from cars and trucks traveling on local freeways and roadways (SDAPCD 2016). As shown in **Figure 6**, nitrogen oxides (NO_x) from on-road vehicles, including motor vehicles operating on roads, highway ramps, and during idling that use gasoline, diesel, and other fuels – account for approximately 50 percent of oxides and nitrogen emissions. In comparison, NO_x emissions from stationary sources – which includes factories, boilers, cement plants, and power plants – account for approximately 6 percent of SDAB’s emissions.

Figure 6. SDAB NO_x Emission Trends



Source: SDAPCD 2016

The City boundary intersects several freeways including SR-52, SR-67, and SR-125. As shown in **Figure 7**, there are many residential land uses in close proximity to these freeways in the City’s disadvantaged communities. Approximately 40 percent of Community Survey respondents indicated that air pollution from traffic and roadways made it difficult to have good health and living conditions (City of Santee 2021).



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Figure 7.
Residential Relative to Freeways

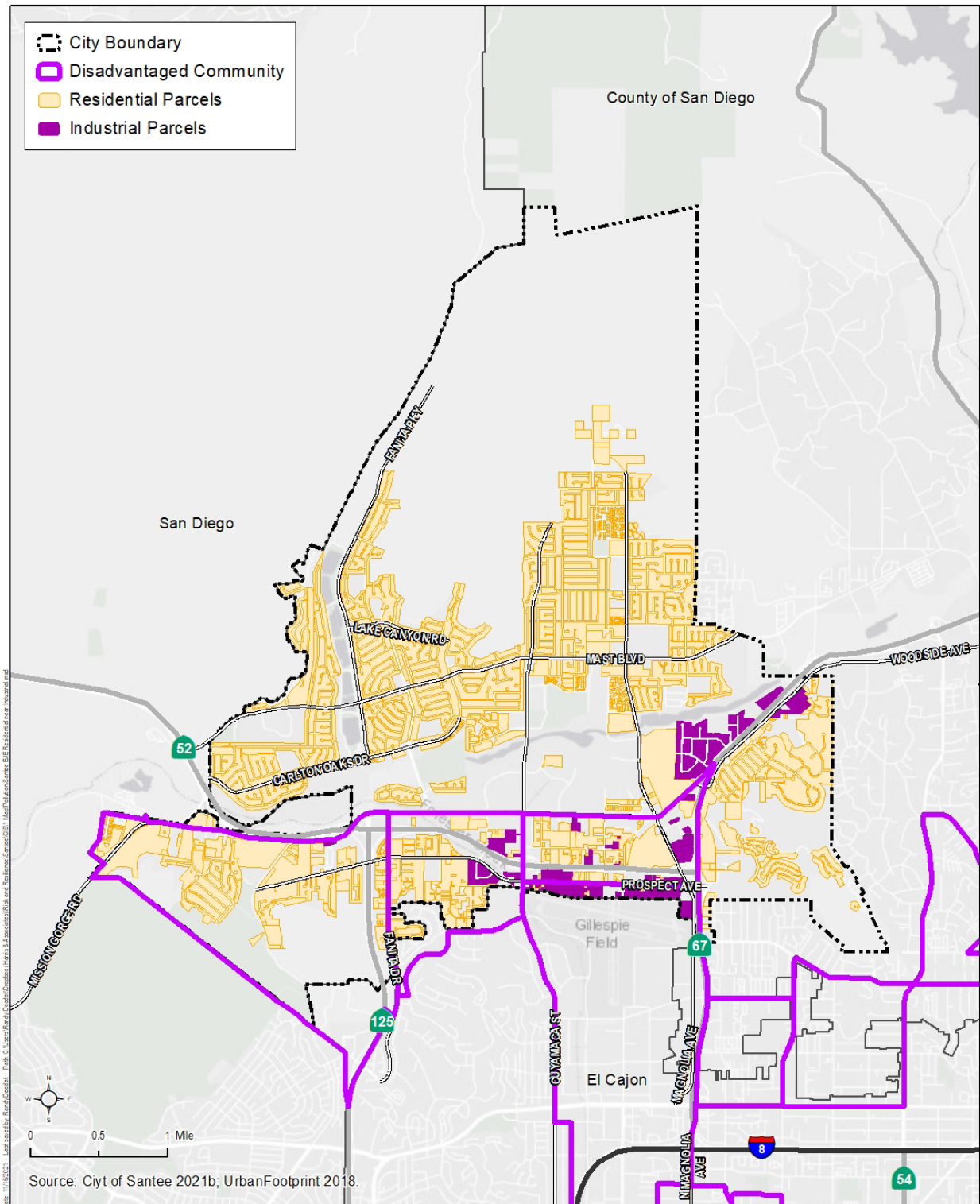
Stationary Sources

While stationary sources of pollution make up a much smaller percentage of total emission sources in the SDAB, the City has several sources of point source air pollution, including the Sycamore Landfill to the northwest of the City, the Marine Corps Air Station (MCAS) Miramar airport to the west of the City, and Gillespie Field to the South. Though these facilities are not regulated or owned by the City, the City acknowledges the potential health risk to those living in close proximity to these facilities.

Of these facilities, the Gillespie Field Airport is located closest to the City's disadvantaged communities, less than one mile south of the City's boundary, on County property located in El Cajon. Residents have expressed concern of increased emissions, air traffic, noise, and low-level flights over homes. The City acknowledges that living near industrial facilities and other industrial-based land uses exposes residents to greater levels of air quality contaminants, and increases the likelihood of associated health impacts. **Figure 8** identifies residential land uses near industrial land use types. As shown in **Figure 8**, there are some residential areas (including mobile home and multi-family land uses) in the southern portion of the City along Prospect Avenue that are located in close proximity to industrial land uses. Nearly 17 percent of Community Survey respondents indicated that air pollution from industrial activity limited their ability to have good health and living conditions (City of Santee 2021).

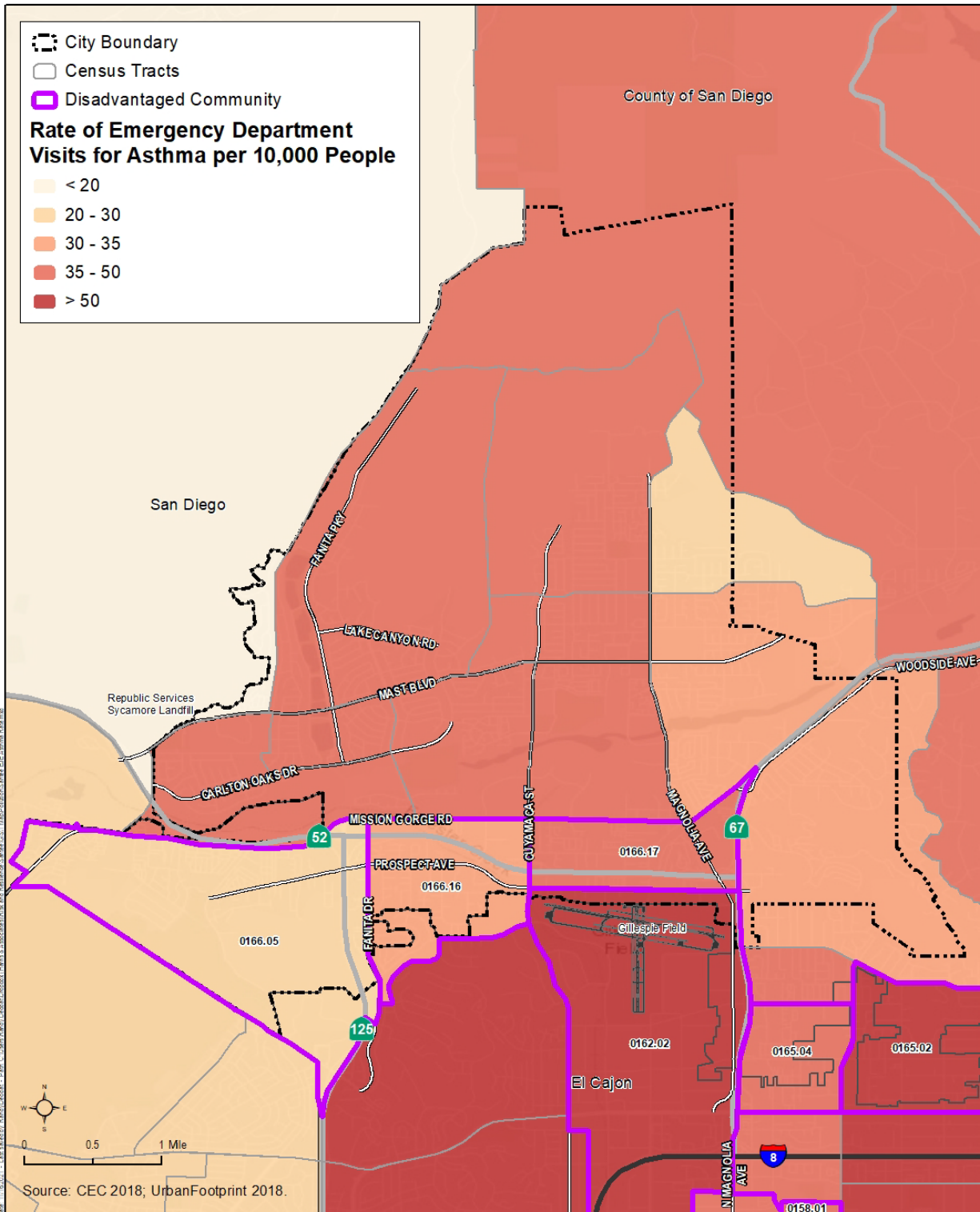
Greater levels of exposure to air contaminants from industrial activity can result in negative health impacts, such as asthma. **Figure 9** shows the distribution of asthma prevalence throughout the City (defined as the number of asthma emergency room visits per 10,000 people). The map indicates that the southern portion of the City, near Gillespie Field and other industrial land uses, has the highest asthma prevalence. The City averages approximately 35 asthma emergency department visits per 10,000 people, compared to 41 countywide (CEC 2018).

While asthma is commonly associated with poor air quality, other potential contributors to high asthma rates include substandard housing conditions (such as excessive moisture and dampness, poor heating and ventilation systems, deteriorated carpeting, second-hand smoke, etc.), as discussed in Section 7.1.



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Figure 8.
Residential Relative to Industrial



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Figure 9.
Asthma Prevalence

3.2 Water Quality, Accessibility, and Affordability

Assembly Bill (AB) 685 (2012) added Section 106.3 to the California Water Code, which declares that “every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes.” More recently, SB 200 (2019) directed the State to “bring true environmental justice” to its residents, and to “begin to address the continuing disproportionate environmental burdens in the state by creating a fund, known as the Safe and Affordable Drinking Water Fund, to provide safe drinking water in every California community, for every Californian” (CA Water Boards 2020).

The City of Santee receives its water from Padre Dam Municipal Water District (PDMWD), which imports 100 percent of its drinking water supply from the San Diego County Water Authority (SDCWA). The water PDMWD imports through the SDCWA comes from the State Water Project and the Colorado River Aqueduct. PDMWD services residents of Santee, El Cajon, Blossom Valley Crest, Harbison Canyon, Alpine, and Lakeside.

As recommended by OPR Guidelines, the City employed OEHHA indicators to assess water quality, accessibility, and affordability.

Water Quality

As shown in **Table 4**, the PDMWD scored 0 out of 4 (with zero being the best) for water quality and each sub-component and indicator, which indicates acceptable levels of water contaminant concentrations and a high level of compliance with regulatory standards. More information on the methodology for each indicator can be found in the 2020 Achieving the Human Right to Water in California: Assessment of the State’s Community Water Systems (CalEPA 2020).

Table 4. OEHHA Right to Water, Water Quality Indicator Scores

Sub-Component	Indicator	Description	Score	Score Explanation
Exposure	High Potential Exposure	Identifies how many contaminants (out of 19) had at least one year with an average annual concentration above MCL.	0	The water system had 0 contaminants with high potential exposure
	Presence of Acute Contaminants	Identifies if any of the contaminants for which there was high potential exposure are acute contaminants as defined by regulatory standards.	0	The water system had 0 acute contaminants with high potential exposure.
	Duration of High Potential Exposure	Identifies for how long high potential exposure occurred for each of the 19 contaminants.	0	The water system had 0 years of high potential exposure.
	Data Availability	Identifies whether data exists for 14 contaminants that should have data following monitoring requirements	0	The water system had all 14 contaminants with the minimum required data in the time period.

Table 4. OEHHA Right to Water, Water Quality Indicator Scores

Sub-Component	Indicator	Description	Score	Score Explanation
Non-Compliance	Non-compliance with primary drinking water standards	Counts how many contaminants received an MCL violation at least once from 2011-2019 for 18 out of 19 contaminants.	0	The water system had 0 contaminants with MCL violations.
	Maximum Duration of Non-Compliance Score	Sums the total number of years for which a system had at least 1 MCL violation in a given year (from 2011-2019), for each contaminant.	0	The water system had 0 years of non-compliance

Source: CalEPA 2020.

Notes: MCL = Maximum Contaminant Levels

As indicated in **Table 4**, PDMWD’s potable water supply meets state and federal drinking water standards. In 2019, the PDMWD’s Water Quality Report found that drinking water met or surpassed every public health requirement set by the SWRCB and the USEPA, with the exception of one incident at the Twin Oaks Treatment Plant³ (PDMWD 2019).

Only 12 percent of Community Survey respondents indicated they were concerned with water quality from industrial activity, though some noted that they were concerned with water quality in general (not just from industrial activity) (City of Santee 2021).

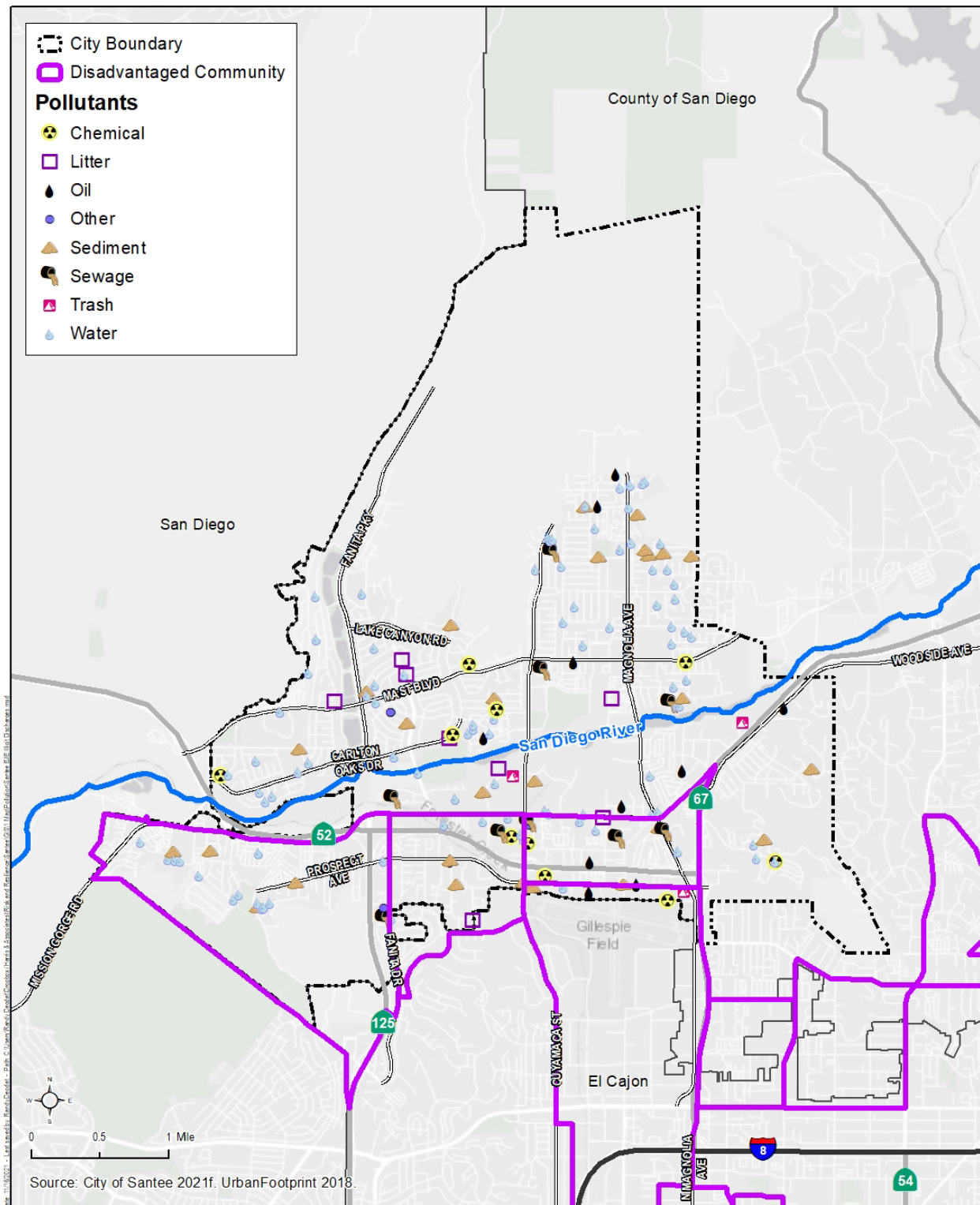
Separate from the potable water drinking system, stormwater runoff water quality can also be affected by illicit discharges, or the release of any non-rain water to the storm drain system. The City of Santee maintains a list of illegal discharges reported through a resident hotline, the City website, and by City employees.

Illicit discharges often involve the following pollutant sources:

- Cooking grease, oil, or residue
- Dust, dirt, drain clog or construction issue
- Over-irrigation or line breaks
- Metal fragments/shavings, or rust
- Any fluid or leak from a vehicle or machinery
- Trash, recycling, or organic matter disposed of illegally
- Pool water or chemicals
- Transport of sewage, fecal coliform, or bacteria
- Pressure or car washing

Figure 10 identifies areas with higher concentrations of illicit discharges. Water, sediment, and oil were the most common pollutants reported between 2018 and 2021

³ The San Diego County Water Authority (SDCWA) experienced a treatment process failure at its regional treatment plant (Twin Oaks).



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Figure 10.
 Storm Water Illicit Discharges

Accessibility

In addition to water quality, the OEHHA Right to Water Framework assesses water accessibility, defined by Padre Dam's ability to provide sufficient and continuous amounts of water to meet everyday household needs (CalEPA 2020). As shown in **Table 5**, the Padre Dam's water system scored 0 out of 4 for water accessibility, indicating good accessibility.

Table 5. OEHHA Right to Water, Water Accessibility Indicator Scores

Sub-Component	Indicator	Description	Score	Score Explanation
Physical Vulnerability	Physical Vulnerability to Water Outages	Examines the system's main water source and how many permanent and back up sources a system could use in the case of emergency	0	The system has 4 or more sources of surface, groundwater, or combined groundwater-surface water.

Source: CalEPA 2020.

Affordability

Another important aspect of environmental justice is ensuring residents (customers) can afford to pay for water to meet their household needs, taking into consideration other household living expenses, as well as the direct and indirect costs associated with obtaining access to the water (CalEPA 2020). The PDMWD scored 3 out of 4 for water affordability based on the indicators listed in **Table 6** below.

Table 6. OEHHA Right to Water, Water Affordability Indicator Scores

Indicator	Description	Score	Score Explanation
Affordability Ratio for Median Household Income (MHI)	Measures the annual system-wide average water bill for 6 hundred cubic feet relative to the annual MHI of the water system	2	The average water bill ranges from 0.75% to 1% of the MHI.
Affordability Ratio for County Poverty Threshold (CPT)	Measures the annual system-wide average water bill for 6 hundred cubic feet relative to the County poverty threshold for the water system's County.	4	The average water bill is $\geq 2.5\%$ of CPT
Affordability Ratio for Deep Poverty Threshold (DPT)	Measures the annual system-wide average water bill for 6 hundred cubic feet relative to the County deep poverty threshold for the water system's County	4	The average water bill is $\geq 2.5\%$ of DPT

Source: CalEPA 2020.

Low-income populations spend a greater percentage of their income on utility bills, and many may struggle to afford their water bill. According to the OEHHA Right to Water Tool, PDMWD does not perform as well with respect to water affordability as it did for water quality and accessibility. Nevertheless, PDMWD meets the federal water affordability target. The USEPA defines water affordability as a rate below four percent of Median Household Income (MHI) – two percent for water and two percent for wastewater. As shown in the Affordability Ratio for Median Household Income, the average water bill ranges from 0.75 percent to less than 1 percent of the Median Household Income.

Key Findings: Pollution Exposure

The City assessed disadvantaged communities exposure to air and water pollution. Disadvantaged communities experience greater exposure to air pollutants due to their proximity to high-traffic corridors and industrial activity.

While drinking water quality is not an issue for the City, Santee's disadvantaged communities experience greater instances of chemical, sediment, and sewage pollutants from illicit storm water discharges due to their proximity to the San Diego River; however, these discharges do not impact the community's potable water quality. Though not analyzed explicitly in this section due to lack of data availability, the pollution source that residents (46 percent of Community Survey respondents) are most concerned about is the prevalence of trash and debris throughout the City (City of Santee 2021), with many specifically pointing to homeless encampments along the river as a source of the pollution.

Section 4 Access to Public Facilities and Services

Access to public facilities and community-serving amenities is important for quality of life, as well as disaster preparedness and recovery capacity. Therefore, an important component of environmental justice is equitable access and connections to public facilities and community services including schools, daycare, public transit, and health care.

The City assessed the access of disadvantaged communities to public facilities and services in Santee, including schools, and daycare centers⁴ as indicated in **Table 7**. Several indicators rely on a buffer analysis, which is used to determine proximity or distance of one feature from another. Buffer analyses are used to identify areas (on a map) within the City that can experience greater environmental exposure or lack physical access to services based on proximity to, or distance from, residential areas. They also provide a metric (approximate percent of residential zoned areas within or outside of a given radius) for the City to gauge progress with respect to a given Environmental Justice Element topic area over time.

Table 7. Indicators to Assess Existing Conditions: Public Facility Access

Indicator	Description
Walkable Access to Schools	Percent of residential parcels further than ½ mile from nearest school
Walkable Access to Daycare Centers	Percent of residential parcels further than ½ mile from nearest day care center
Walkable Access to Transit	Percent of residential parcels further than ½ mile from nearest bus stop
Transit Affordability	Transportation cost as a percentage of income for renters
Transit Quality	Vehicle miles traveled per capita
Distribution of Health Care Facilities	Distribution of medical offices and urgent cares throughout the City
Health Insurance	Percent of population without health insurance

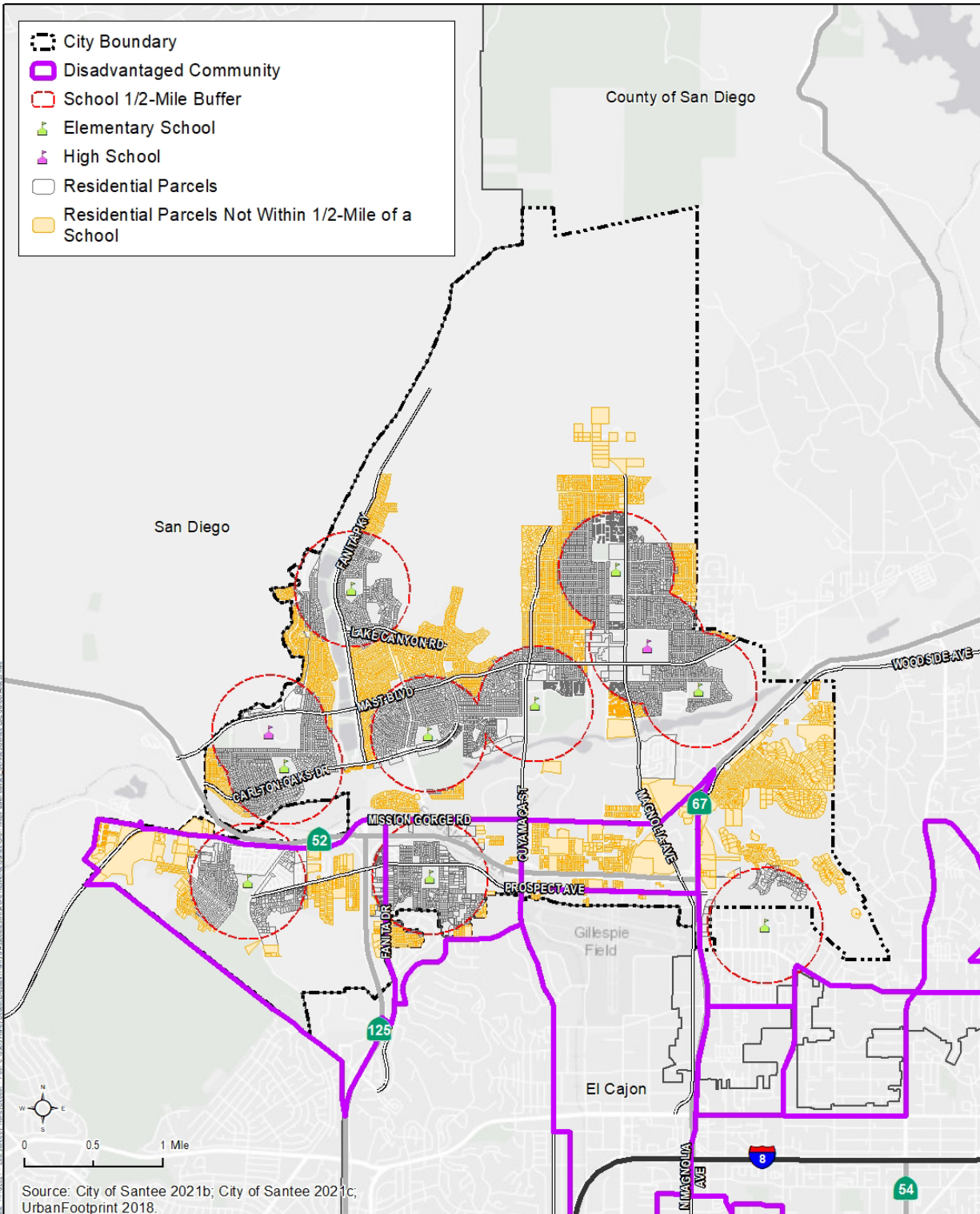
Schools & Daycares

Approximately 33 and 64 percent of residential parcels are within walking distance of schools and day care centers, respectively (**Figure 11** and **Figure 12**). Day care centers refer to child care centers that provide before or after school care, day care, or head start programs. Residential areas in the southeast portion of the City have the least walkable access to schools, as many households are bound by SR-52 and SR-67. Though the southeast portion of the City has the least walkable access to schools, it is not considered to be disadvantaged. Daycare centers are in walkable distance from most residential areas, though the southwest and southeast portions of the City have relatively less access to child care.

While proximity to schools and daycare centers is an important indicator in assessing access, it does not represent the multitude of barriers that prevent low-income families from accessing quality education and daycare services for their children or supplementary resources available to help low-

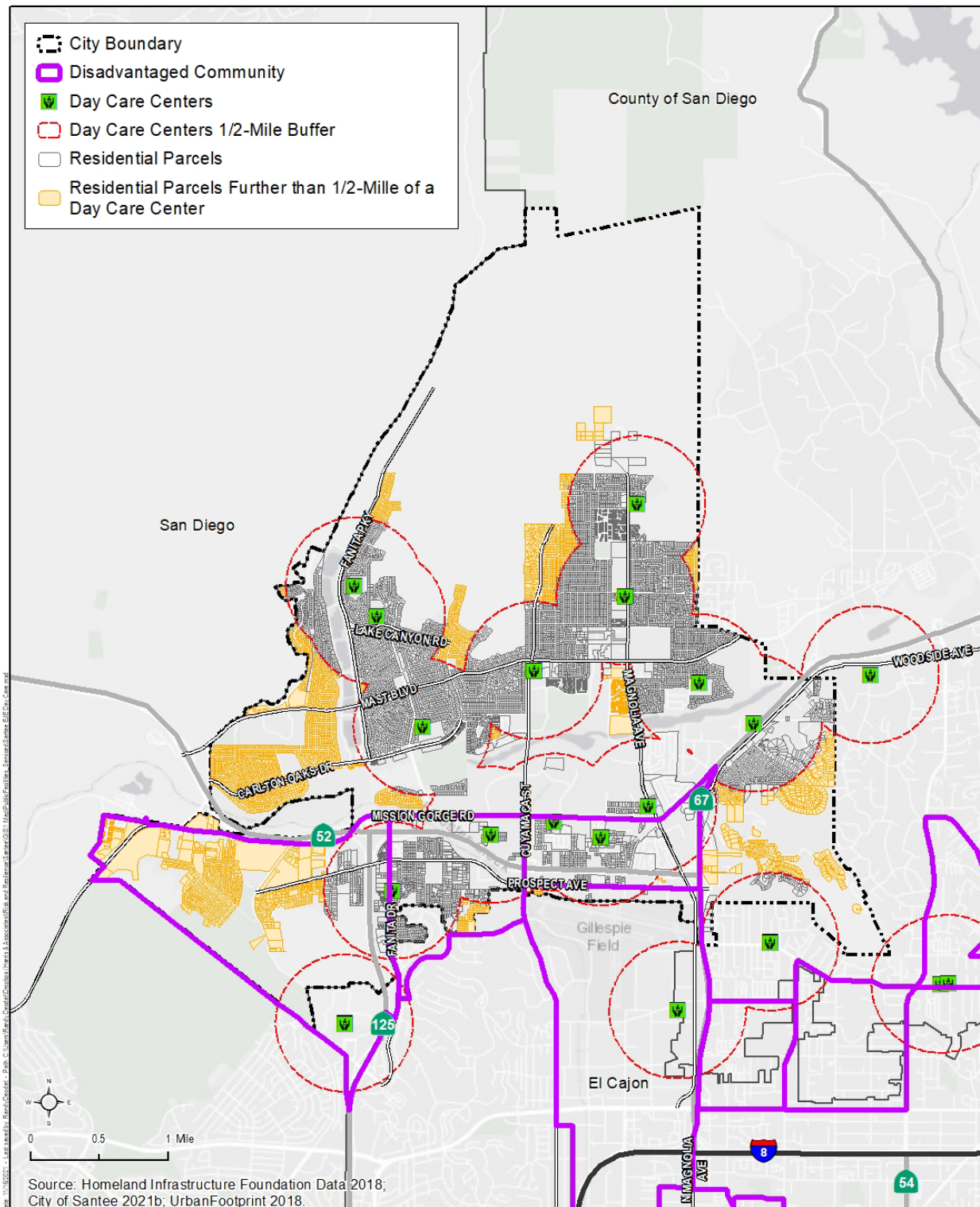
⁴ The assessment only included commercial daycare centers and did not include informal daycare centers in residences.

income families to access such services. For example, one key factor in determining access to daycare is affordability. ProjectSAFE is a year round before and after school program operating at eight schools in the Santee School District from 6:30 a.m. to 6:00 p.m. The out-of-school time program supports the school district through quality child-centered programs that provide a safe environment and a variety of opportunities for children (SSD 2021). Child Development Associates, Inc. (CDA) is a community based, non-profit agency that provides child care reimbursement for parents who cannot afford child care (CDA 2021). The County also offers subsidized child care to qualifying families through their Centralized Eligibility List (SDCCEL 2021).



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Figure 11.
Walkable Access to Schools



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Figure 12.
Walkable Access to Daycare

Public Transit

Studies have shown that a private automobile can cost 13 percent of household income (ITDP 2019). Therefore, access to public transit is another important factor of environmental justice. Assessing baseline conditions related to public transit routes and stops/stations can help identify areas that could benefit from improved transit. Local transit services, including the trolley and fixed route bus service, is provided by the San Diego Metropolitan Transit System (MTS). The project area is also served directly by one trolley transit line provided by MTS: the Green Line.

To assess resident's access to public transportation, the City identified residential parcels outside of a 0.5-mile radius of City bus stops. Approximately 18 percent of residential parcels are located further than 0.5 mile from the nearest transit stop. As shown on **Figure 13**, residential parcels in the southwest (non-disadvantaged communities) and southeast area (designated disadvantaged communities) of the City are outside the 0.5-mile buffer. Specifically, the area southwest of Prospect Avenue and Fanita Drive is a disadvantaged community that lacks walkable access to transit. Approximately 22 percent of Community Survey respondents indicated that public transit was not within walking or biking distance from their home (City of Santee 2021).

In addition to physical proximity, transit quality affects resident's ability to access transit services. Service via the Green Line is provided on 15-minute headways during the weekday commute and varies from 15- to 20-minute headways on the weekend mid-day hours. Though the Green Line offers an opportunity for residents to access employment opportunities in downtown San Diego by transit, it takes an hour to get from the Santee Green Line to the Santa Fe Depot station downtown (compared to 25 minutes by car). Approximately 31 percent of Community Survey respondents indicated that they do not use public transit because it takes too long (City of Santee 2021). Less than one percent of Santee residents utilize mass transit for their commute compared to 5.1 percent nationally (Best Places 2021) and 2.6 percent county-wide (USD 2018).

Affordability is an important factor in making public transit accessible to all residents. The United States Department of Housing and Urban Development (HUD's) Transportation Cost Index estimates transportation costs as a percent of income for renters.⁵ Values range from 0 to 100. The higher the transportation cost index value, the lower the cost of transportation in that census tract. The City has an average transportation cost index value of 68.83, same as the County, indicating generally low costs of transit based on resident incomes. The MTS transit fares are shown below in **Table 8**.

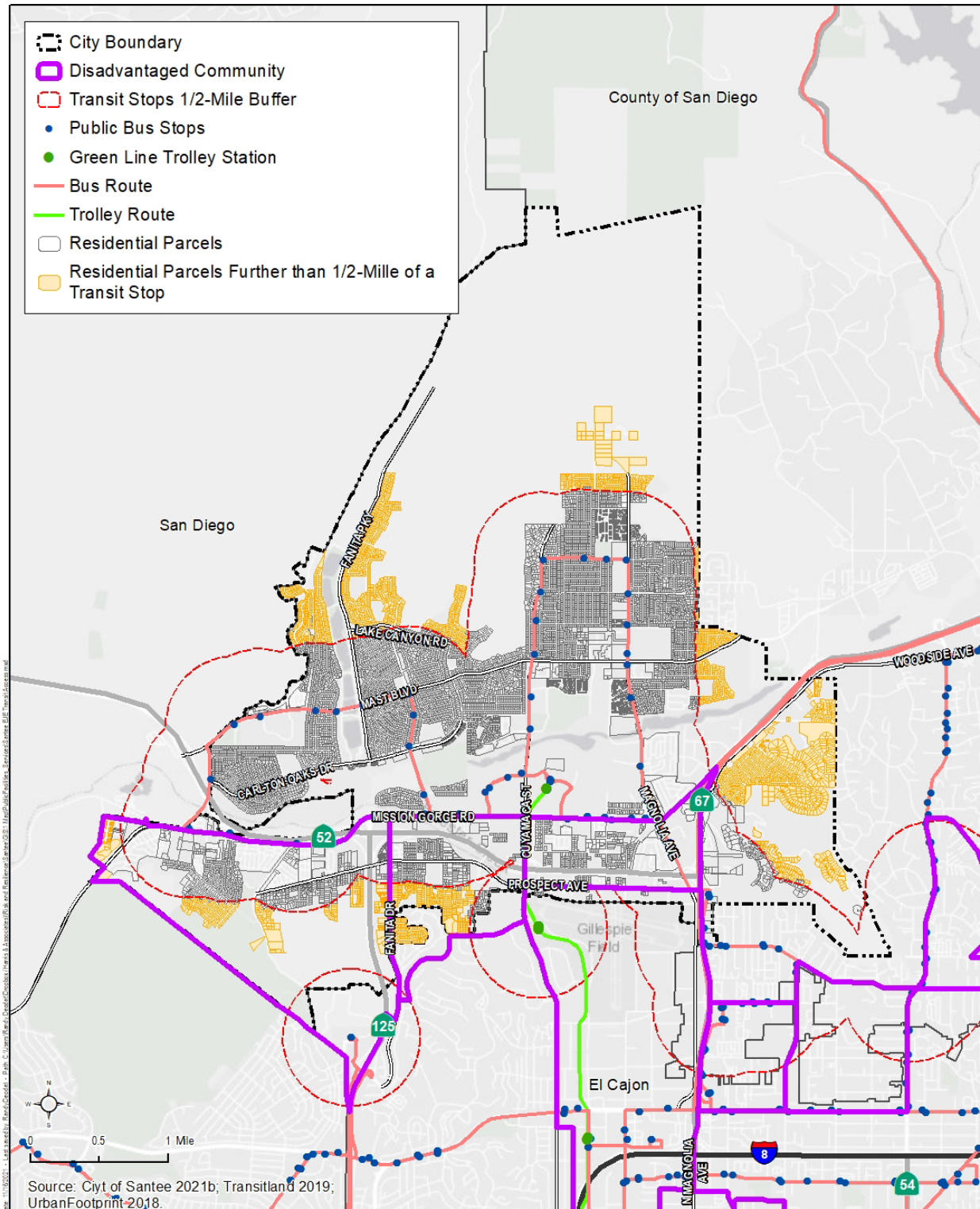
⁵ Renters are defined here as a three-person single-parent family with income at 50% of the median income for renters for the region.

Table 8. MTS Transit Fares

Type	Regular	Discounted*
MTS Trolley (One-Way)	\$2.50	\$1.25
MTS Bus (One-Way)	\$2.50	\$1.25
Regional 30-day Pass	\$72	\$23
1-Day Pass	\$6	\$3

Source: MTS 2021

*Senior/Disabled/Medicare



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Figure 13.
Walkable Access to Transit

Health Care

Populations at higher risk to environmental stressors include those who are uninsured or underinsured or lack access to health care. Approximately 10 percent of City residents are uninsured (PHASC 2017). These groups are also the ones more likely to have greater exposure to environmental stress, resulting in more significant physical and mental health impacts that would require health care. **Figure 14** maps health care facilities, including urgent care facilities and medical clinics, in the City relative to percent of uninsured adults. Urgent care facilities are defined by any location that is capable of providing emergency medical care and must provide emergency medical treatment beyond what can normally be provided by an EMS unit, must be able to perform surgery, or must be able to provide recuperative care beyond what is normally provided by a doctor's office. Medical offices refer to offices providing consultation, diagnosis, therapeutic, preventative, or corrective personal treatment services by doctors and small practitioners of medical and healing arts for humans licensed for such practice by the State. There is a greater percent of uninsured adults in the south and southwestern portion of the City, indicating that disadvantaged communities have less access to healthcare services. Only 17 percent of Community Survey respondents indicated that they lacked affordable and nearby health care services (City of Santee 2021).

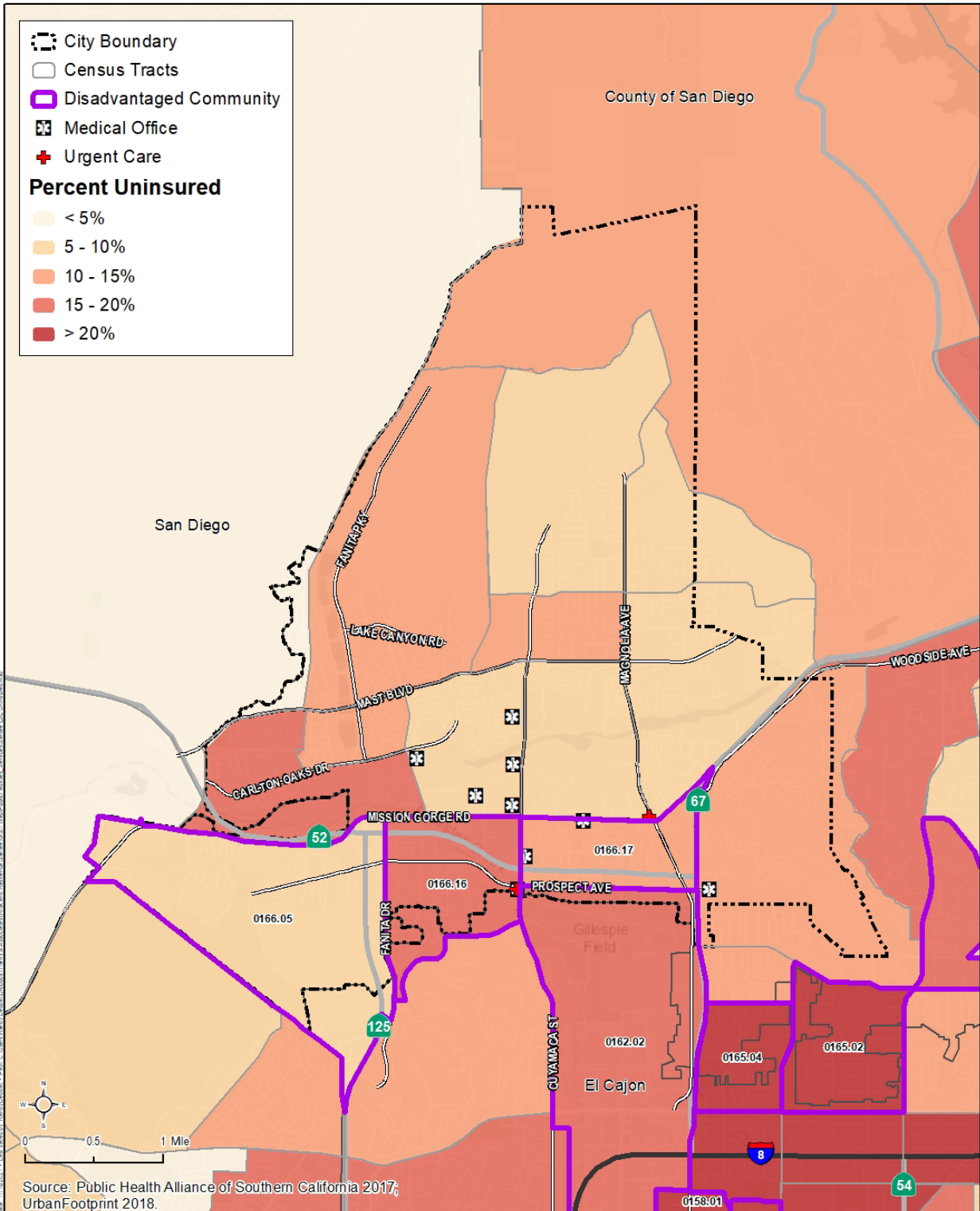
The County's Live Well San Diego initiative developed community indicators to measure the collective impact of their programs on health, safety, and quality of life. While there is no data on life expectancy for Santee residents, the data portal reported that 97 percent of the population is "sufficiently healthy to live independently," up three percent since 2012 and higher than the 95 percent countywide.

Key Findings: Access to Public Facilities and Services

Many residences in disadvantaged communities are not within walking distance to their nearest school. However, residences in disadvantaged communities are generally within walking distance of daycare centers and transit, which can provide residents with opportunities to access other community services without using their personal vehicle. Despite low transit fares and well-distributed bus stops, most residents still rely on their personal vehicle. Nevertheless, 21 percent of Community Survey respondents indicated that heavy traffic restricted access to key destinations.⁶

Residents in disadvantaged communities are less likely to have health insurance, which may result in higher rates of avoidable emergency room visits. There are several medical facilities serving the area in and around Santee's disadvantaged communities.

⁶ While the Community Survey did not ask about traffic, 21% of respondents mentioned it in the open-ended questions.



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Section 5 Access to Healthy Food

While many people associate environmental justice with reducing pollution problems, access to healthy food is similarly essential to improving health outcomes (Kavi et al. 2019). Disadvantaged communities are more likely to have limited access to healthy and affordable foods (PolicyLink 2013). Access to healthy food has become a greater priority given that the percentage of obese adults and children has been increasing, particularly in low-income communities.

Many Californians also experience “food insecurity,” defined as a household’s inability to provide enough food for every person to live an active, healthy life. Although individuals make food choices, those choices are made within the context of what is consistently accessible, affordable, or available. Approximately 11 percent of people in the County experience food insecurity, a decrease in approximately 4 percent since 2015 (UWPHI 2021). However, the 2020 COVID-19 pandemic has caused a public health and economic crisis that has resulted in a significant increase in the number of people experiencing food insecurity in 2020 (Feeding America 2020).

The City assessed disadvantaged communities’ access to healthy food in Santee using the indicators listed below (**Table 9**).

Table 9. Healthy Food Indicators

Sub-Topic	Indicator	Description
Food Access	Food Distribution Sites	Number and location of summer meal sites and food banks
	Modified Retail Food Environment Index	Number of healthy food retailers/ (No. of healthy + No. of less healthy food retailers) *100
Food Insecurity	SNAP Enrollment	Percent of population receiving SNAP/CalFresh benefits
	SNAP Vendors	Location of SNAP/CalFresh Certified Vendors
	Free or Reduced Lunch Program Enrollment	Percent of students in Santee School District that qualify for free and reduced lunches
Community Health	Obesity Rate	Percent of adults and children that are considered obese
	Fast Food/Supermarket Distribution	Location of fast food/convenience stores/supermarkets

Notes: SNAP = Supplemental Nutritional Assistance Program

Food Access

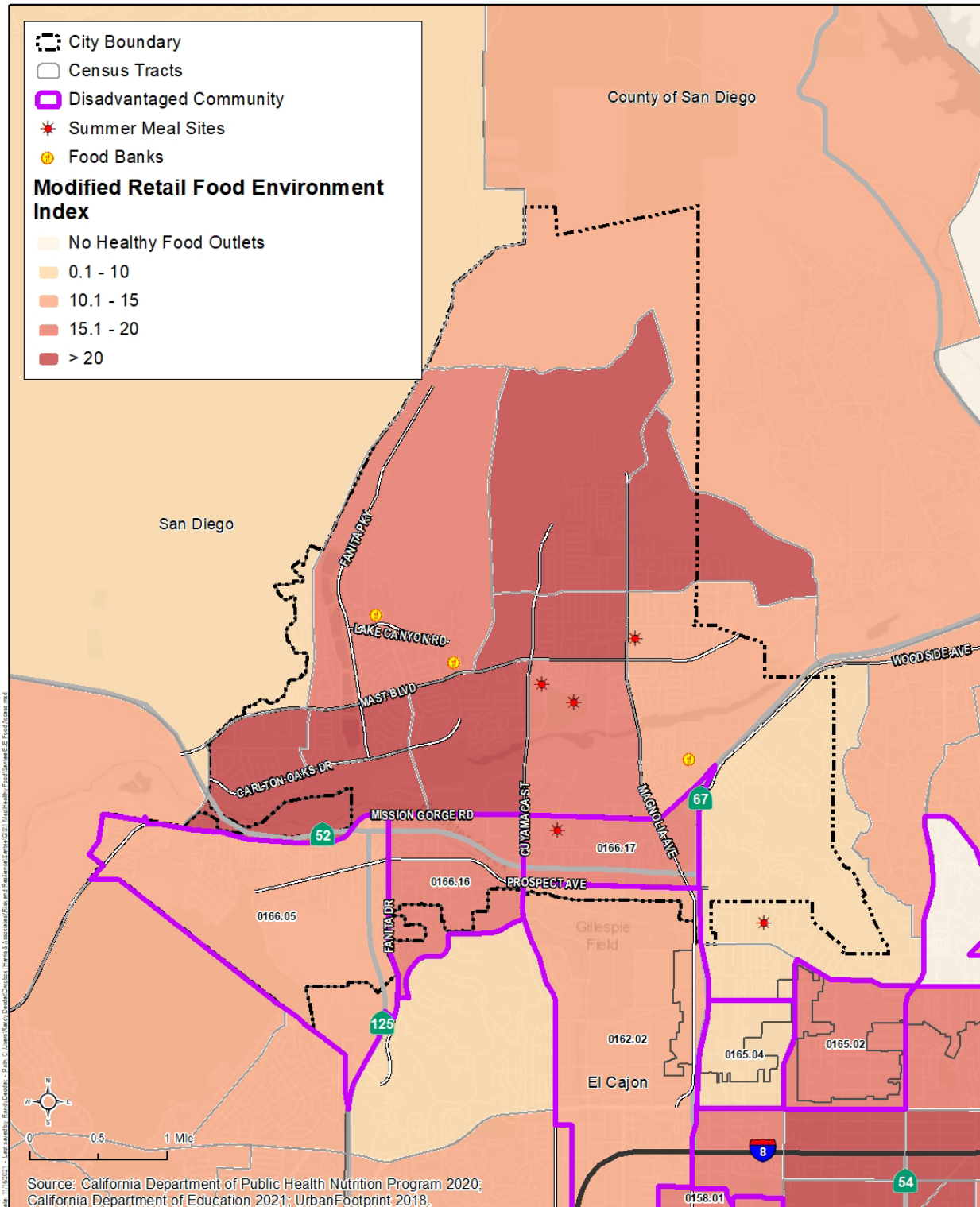
In addition to financial access, physical access to supermarkets, grocery stores, and other retail food establishments is critical to food security. Food deserts are geographic locations where low-income neighborhoods lack physical access to supermarkets. Approximately 3 percent of the population in the County have limited access to healthy foods, defined by percentage of the population that is low income and does not live close to a grocery store (UWPHI 2021).

Figure 15 scores census tracts access to healthy food using the Modified Food Environment Index, which provides an indication (score 0-100) of the number of healthy food retailers relative to the number of less healthy food retailers (CDPH 2020). An index score of zero (lower score) generally corresponds with the concept of a food desert or less access to healthy food. The County's mean Food Environment Index score is 18.5, compared to the City's score of 15.9. The southeastern portion of the City to the east of SR-67 (not considered disadvantaged) has the least access to healthy food. Disadvantaged communities; however, still have less access to healthy food than other areas of the City, as shown in **Figure 15**.

For families that do not have adequate access to healthy foods or are otherwise food insecure, there are several food banks serving Santee residents. In addition to food bank programs, the Summer Meal Program, a federal meal program, provides children from low-income areas access to free nutritious meals during school vacation and off-track periods. There are four summer meal service sites located in the City of Santee. Food banks⁷ and summer meal sites are mapped in **Figure 15** in relation to Modified Food Environment Index scores. The southwest portion of the City has less access to healthy food and is not currently served by a food bank or Summer Meal Program site.

According to the Community Survey, only 12 percent of respondents indicated they lacked grocery stores or markets that provided fresh produce, and 9 percent indicated that affordable produce or food assistance was not accessible to them. Overall, about 9 percent of respondents indicated that lack of access to healthy food was a key issue for the City to address (City of Santee 2021).

⁷ Food banks include food distribution centers and food pantries.



Food Insecurity

Food insecurity describes a household's inability to provide enough food for each person to live a healthy life. Food insecurity is one way to measure and assess the risk of hunger. Numerous programs are available to Santee households to help support nutritious diets and mitigate food insecurity. The Supplemental Nutritional Assistance Program, known as CalFresh in California, provides money to needy families to purchase food. Accessing CalFresh benefits increases the purchasing power of low-income families, enabling them to acquire more healthy and nutritious food. Approximately 6 percent of Santee households receive CalFresh benefits to supplement their food expenditures, compared to 7 percent in the County and 9 percent in California (ACS 2019).

Another program that helps families to access healthy food is the Free and Reduced-Price lunch program. The program provides both breakfast and lunch five days a week. Approximately 38 percent of Santee School District students were eligible for free and reduced-price meals in 2019-2020 (CDE 2020).

In October 2020, Feeding America released a report that provided an analysis of how food insecurity may increase in 2020 due to COVID 19 pandemic. The report identified that pre-pandemic, the United States had the lowest food insecurity rates in more than 20 years, but that the current crisis has reversed improvements made over the past decade (Feeding America 2020).

Community Health

Obesity increases the risk for many chronic diseases such as diabetes, high blood pressure, high cholesterol, heart disease, and many cancers. While all people may be affected by obesity, low-resource and food insecure communities are particularly vulnerable. According to the State of Childhood Obesity in San Diego 2019 Supplemental Report, approximately 36 percent of children in Santee are considered obese or overweight, slightly higher than the county average of 34 percent (SDCOI 2019). The report provides an update to the 2016 State of Childhood Obesity Report, relying on data collected through the FITNESSGRAM® test. To learn about additional indicators measured and tracked through the County's Childhood Obesity Initiative and State of Childhood Obesity Report, please visit the initiative's website here: www.sdcoi.org

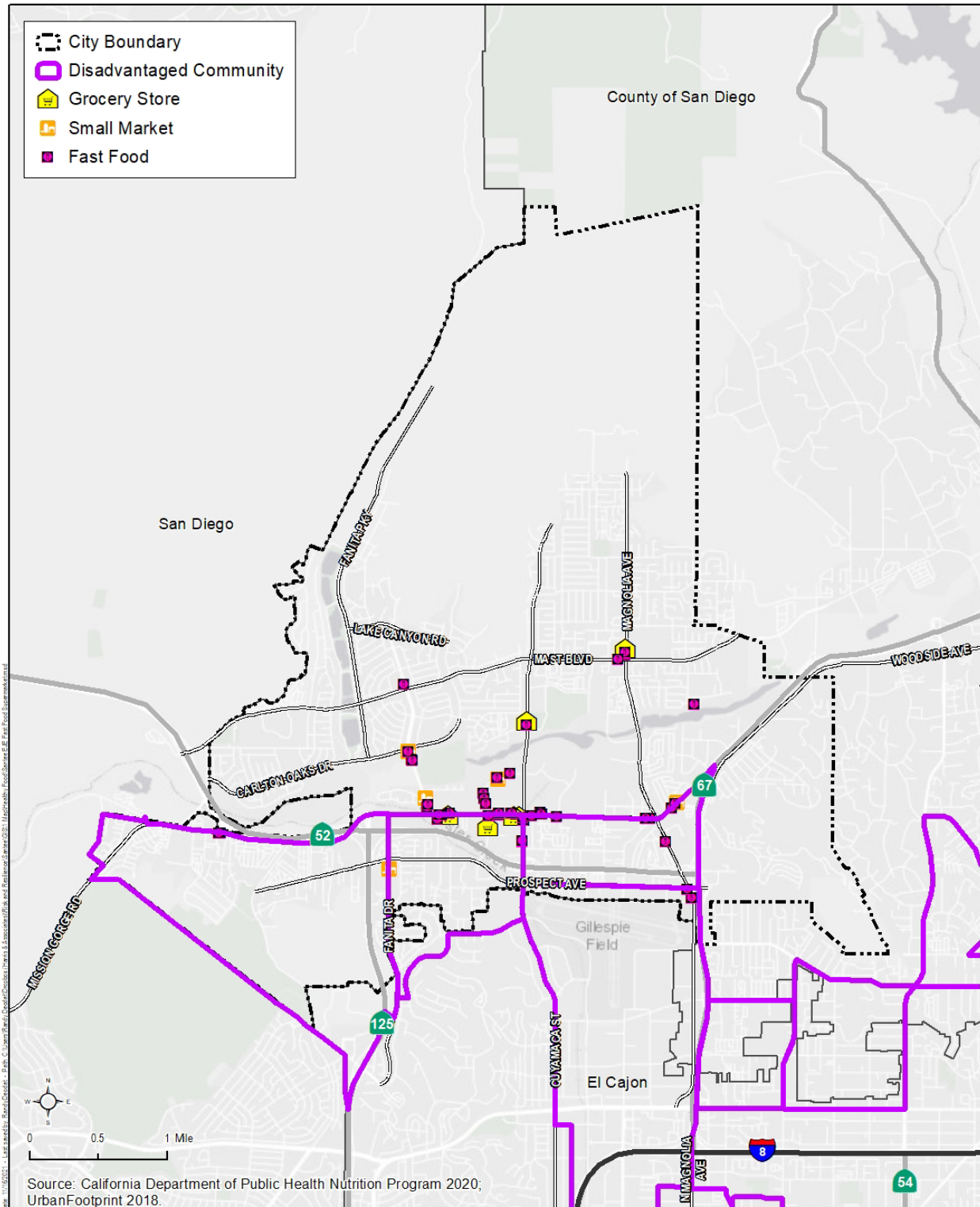
Easy access (close proximity) to fast food restaurants, especially absent adequate access to grocery stores that provide fresh produce, can contribute to higher obesity rates. Low-income and racial-ethnic minorities are more likely than white residents to live near unhealthy food retailers, which has been associated with poor diet (Cooksey-Stowers et al. 2017). Increasing the number of full-service grocery stores relative to fast food restaurants in neighborhoods can help to combat these health conditions. **Figure 16** maps the location of food retailers by type, including fast food restaurants⁸, small markets, and grocery stores⁹, using data layers developed by the California Department of Public Health Nutrition Education & Obesity Prevention Branch (CHDPH 2020).

Key Findings: Access to Healthy Food

The data presented in the Modified Retail Environment Index suggests that disadvantaged communities have slightly less access to healthy food outlets compared to other areas in the City and the County. Less access to healthy food and higher prevalence of fast food establishments in disadvantaged communities may contribute to higher obesity rates. While the City does have several food banks and summer meal program sites, the southwest portion of the City that is considered disadvantaged is not served by these food distribution sites. Overall, Community Survey respondents felt that they had sufficient access to healthy food.

⁸ Includes fast food, pizza, and sandwiches.

⁹ Grocery stores include supermarket chains and large grocery stores.



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Figure 16.
Select Food Retailers Distribution

Section 6 Access to Physical Activity and Recreational Opportunity

Increasing physical activity is one of the most important contributors to improved health. It helps people manage weight; reduces risk of cardiovascular disease, type 2 diabetes, osteoporosis, and some cancers; and improves mental health and well-being. Cities can work to ensure all residents are able to engage in physical activity and recreation by providing adequate and equitable access to parks and recreational centers, as well as investing in infrastructure that supports active transportation. The City assessed residents' access to physical activity using the indicators listed in **Table 10**.

Table 10. Physical Activity and Recreational Opportunity Indicators

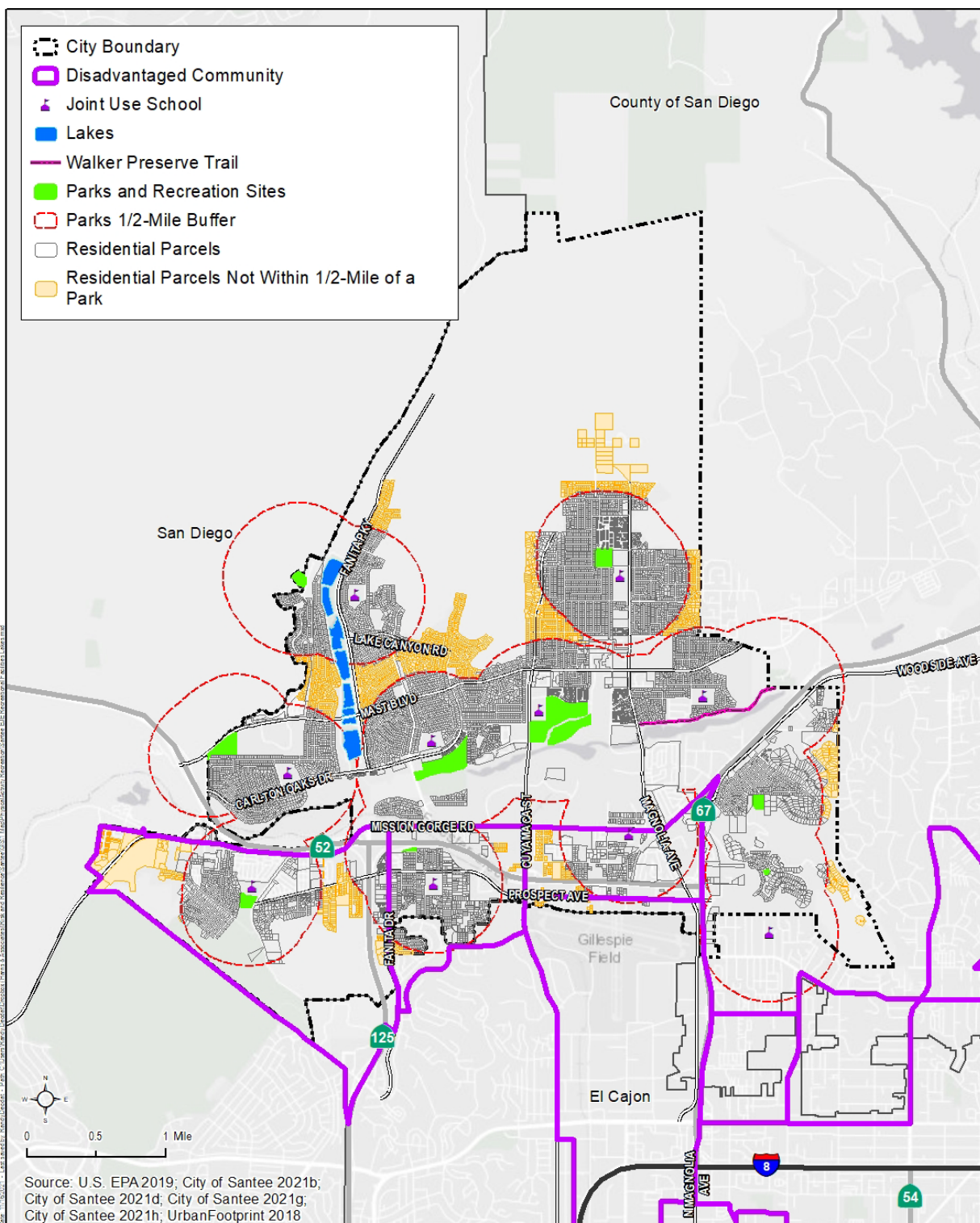
Indicator	Description
Walkable Access to Outdoor Recreation	Provides a measurement of level of service for any location within the City based on "walkable access" referring to ½ mile proximity (10-minute walk) to outdoor recreation facility (including parks).
Parkland to Resident Ratio	Acres of parkland per 1,000 residents
Walkable Access to Indoor Recreation	Provides a measurement of level of service for any location within the City based on "walkable access" referring to ½ mile proximity (10 minute walk) to indoor recreation facility
Walkability/Bikeability	The Walkability Index dataset characterizes every Census 2010 block group in the U.S. based on its relative walkability. Also maps the location of bike paths throughout the City.
Bicycle and Pedestrian Collisions	Number of pedestrian and bike collisions per capita
	Top intersections in Santee with highest number of bicycle-involved and pedestrian-involved collisions, and number of collisions by severity

Note: PRMP = Parks and Recreation Master Plan

Parks and Recreation

Just as low-income communities are more likely to live in close proximity to polluting land uses, they are similarly less likely to have equitable access to parks and recreation centers. Recognizing the role planners have in helping communities increase access to healthier living environments, the City has developed and maintained a Parks and Recreation Master Plan. Last updated in 2017, the plan assesses the City's parks and recreation systems, and plans for future growth of the community.

The Plan provides a level of service analysis of the City's park system. The level of service analysis measures access to recreation by walking, using 15-minute walk time catchment radii around each park. The City supplemented this level of service analysis with one that identifies households that are further than 1/2-mile from a park *or* school (**Figure 17**). Schools are included in the analysis because the City, as of 1986, has a joint-use agreement in place with the Santee School District, wherein the District agreed to make available year-round a minimum of five school sites throughout the City for the operation of the City of Santee (City of Santee 1986). Walker Preserve Trail, a 1.3-mile-long linear park, is also included in **Figure 17**. The trail is along the San Diego River from Magnolia Avenue east to the City limits, connecting to Lakeside Baseball Park and the Lakeside Riverpark Conservancy trail system. Amenities include a picnic shelter, shaded picnic areas, park benches, picnic tables, drinking water fountains, bike racks, and a bike repair station.



City of Santee
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Figure 17.
Walkable Access to Park

In general, these level of service analyses suggest that Santee parks are equitably distributed throughout the City; however, the disadvantaged area bound by Magnolia Avenue, Prospect Avenue, Cuyamaca Street, and Mission Gorge Road is not served by a City park. Only 15 percent of Community Survey respondents indicated they lacked parks or recreation centers within walking or biking distance of their home, and only 9 percent indicated that organized activities and sports at neighborhood parks and recreation centers were not available or affordable (City of Santee 2021).

The 2017 Parks and Recreation Master Plan Update provides a list of key findings and recommendations, including additional need for community and neighborhood parks (City of Santee 2017).

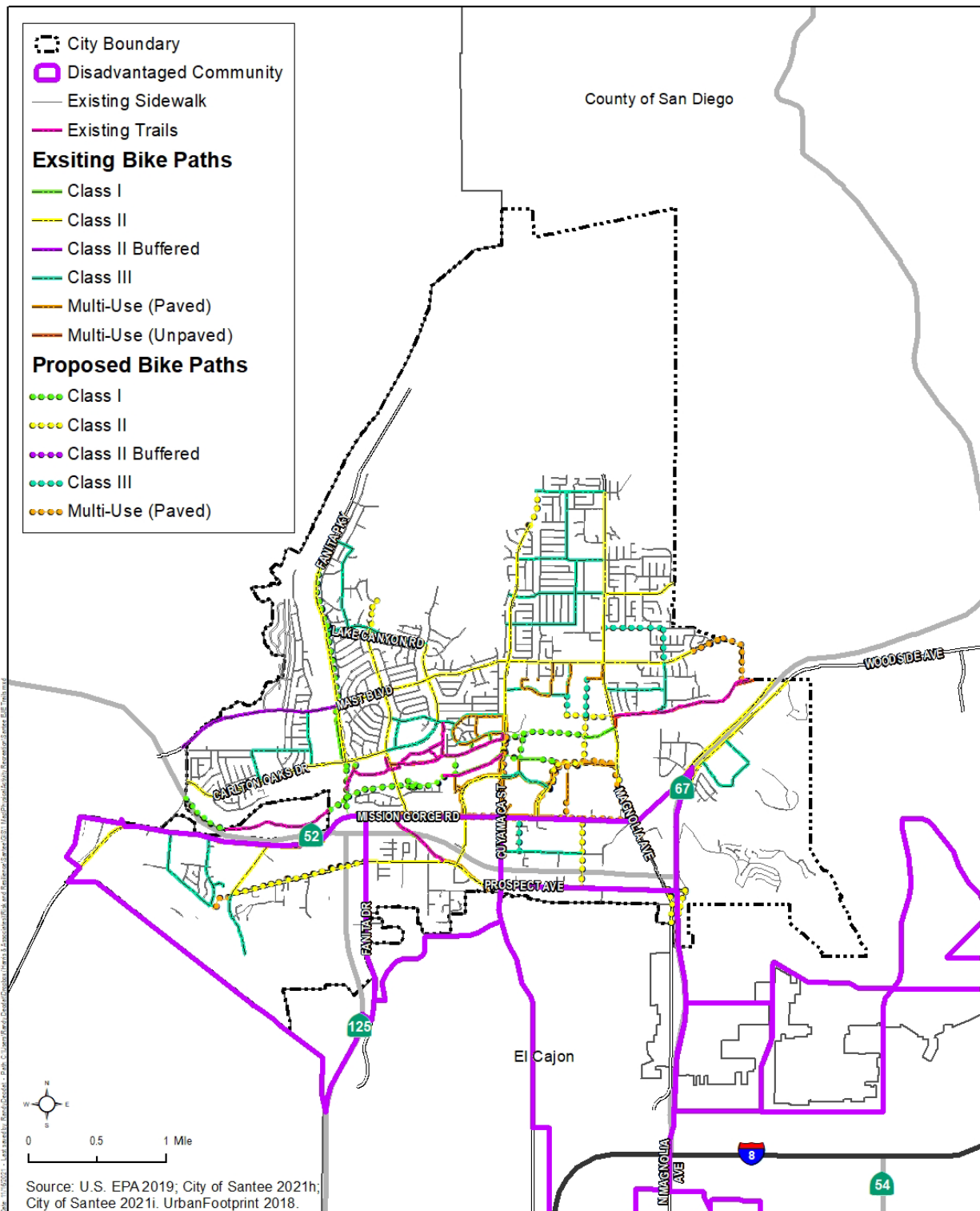
6.1 Active Transportation

Active transportation incorporates physical activity into one's daily routine, such as walking or biking to work, school, or nearby open space or community centers to pursue recreation. According to the National Household Travel Survey (2017), nearly half of the trips people make are under three miles away, and over a fifth are within one mile (FHWA 2017). To help facilitate making these short distance trips by means other than driving, transportation systems can be designed to increase and encourage "active transportation" options (i.e., walking and biking). Providing equitable infrastructure investments to support active transportation can help reduce some of the disparate health outcomes seen across California. Active transportation options also allow for less time spent in vehicles and can help to reduce vehicle miles traveled, resulting in less greenhouse gas emissions and air pollution.

Walkability is a measure of how friendly an area is to walking. Walkability depends upon characteristics of the built environment that influence the likelihood of walking being used as a mode of travel, such as the presence and width of sidewalks, path connection uses, and traffic conditions, including separation from vehicles. Approximately 26 percent of Community Survey respondents indicated there was a lack of sidewalks, crosswalks, and bicycle lanes for people to safely move around the City (City of Santee 2021). **Figure 18** identifies existing sidewalks, trails, existing bike paths by class type, and proposed bike paths by class type throughout the City. Bike path class types include the following:

- **Class I:** Shared-use paths with exclusive right of way for bicyclists and pedestrians, away from the roadway and with minimized cross flows by motor traffic.
- **Class II:** Bike lanes established along streets, defined by pavement striping and signage to delineate a portion of a roadway for bicycle travel.
- **Class III:** Bike routes that designate a preferred route for bicyclists on streets shared with motor traffic not served by dedicated bikeways.
- **Class IV:** Protected bike lane for the exclusive use of bicycles, physically separated from motor traffic with a vertical feature like posts, parking, or inflexible barriers.

Furthermore, as shown in **Figure 18**, disadvantaged communities have less sidewalks, trails, and bike paths than other residential areas in the City.



City of Santee
Environmental Justice Element

Figure 18.
Pedestrian and Bike Paths

The City of Santee recognizes the value of providing opportunities for local residents and visitors to bicycle for work and recreation, as well as to use off-road trails for hiking, equestrian use, and jogging. Such opportunities help to reduce auto trips, improve the environment, and promote healthy lifestyles.

The City's bikeway network is shown in **Figure 18**. As shown in **Figure 18**, bikeways are well-distributed throughout the City, with an exception of the southeast portion of the City, which only has access to one bikeway along Woodside Avenue. Adding proposed bike lanes along Mission Gorge Road will increase opportunities for residents living in the southeast portion to access more destinations via bike. Furthermore, the City trail network connects to off-site trail networks in other jurisdictions. For example, the trails on the west side of the City connect to the City of San Diego Mission Trails Regional Park.

Residents' decision to walk or bike instead of drive is also dependent on their perception of the safety of such activities. **Figure 19** maps the location of bicycle and pedestrian collisions from 2010 to 2020. As expected, these figures indicate a greater number of collisions occur along major intersections, including:

- Carlton Hills Boulevard & Willowgrove Avenue
- Cuyamaca Street & Mission Gorge Road
- Magnolia Avenue & Woodside Avenue
- Mission Gorge Road & Railroad Avenue

Table 11 compares Santee's bicycle and pedestrian per capita (per 1,000) collision data between 2010-2015 and 2015-2020. The City has significantly reduced the number of both pedestrian and bicycle collisions in the last five years.

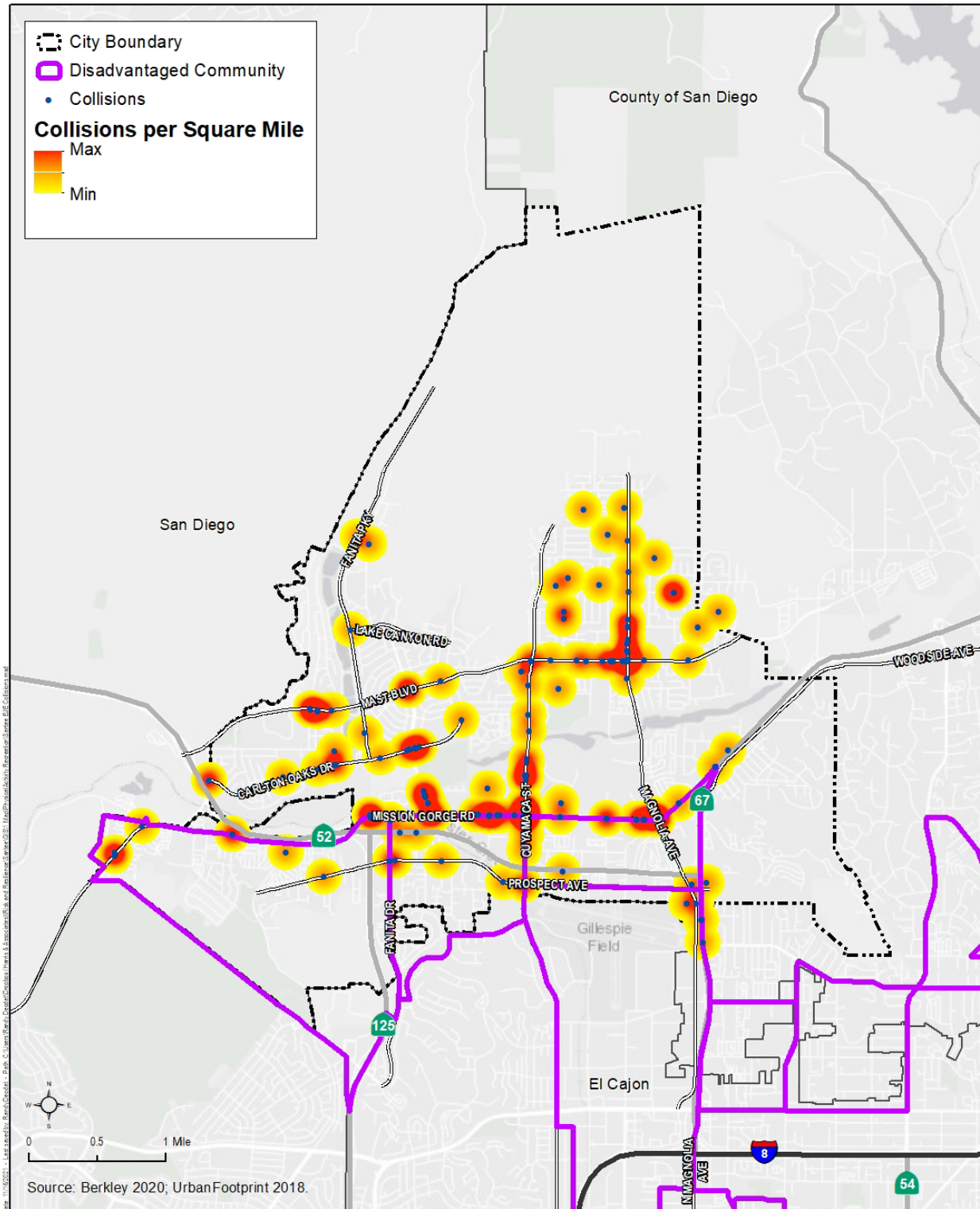
Table 11. Bicycle and Pedestrian Collisions per 1,000 people/yr

Collision Type	Total	2010-2014*	2015-2020**
Pedestrian	27	0.16	0.09
Bicycle	24	0.20	0.08

Source: UC Berkeley 2020

*Using 2015 ACS Estimate for Population = 56,255

** Using 2019 ACS Estimate for Population = 58,081



City of Santee
 Environmental Justice Element

Figure 19.
 Bicycle and Pedestrian Collisions

The City’s Mobility Element of the General Plan, adopted in 2017, provides guidance to decisions that expand and improve the transportation system and accommodate the diverse transportation needs of City residents. The first goal of the Mobility Element is to “Ensure that the existing and future transportation system is accessible, safe, reliable, efficient, integrated, convenient, well-connected and multimodal,” and “accommodate(s) active transportation,” including pedestrians and bicyclists (City of Santee 2017). The City intends to meet this goal by designing complete streets and developing a “connected system of multi-modal corridors that encourage walking, biking, and riding transit” (City of Santee 2017). The City of Santee has completed the first Active Transportation Plan (Active Santee Plan) that provides a framework for the development of a complete system that accommodates bicyclists and pedestrians.

Key Findings: Access to Physical Activity and Recreation

Disadvantaged communities in the southwest portion of the City have less sidewalks and bike paths compared to other areas of the City, limiting the ability to utilize active transportation modes. Though transportation collisions occur near the intersection of Magnolia Ave. and Mast Blvd., there are a significant number of reported collisions on Mission Gorge Rd., which is a heavily trafficked road to the north of designated disadvantaged communities. Nearly 46 percent of Community Survey respondents indicated that limited access to and deterioration of city infrastructure and facilities that support physical activity; including sidewalks, bicycle lanes, parks, and recreation centers, is the most important issue for the City to address to ensure all residents have access to healthy living conditions (City of Santee 2021).

Section 7 Access to Safe, Sanitary, and Affordable Homes

Housing location, quality, affordability, and stability have health implications. Often, individuals who experience unique or compounding health risks face multiple, interrelated barriers to accessing safe, stable, and affordable housing (Taylor 2018). The City assessed residents' access to safe and sanitary homes in Santee using the indicators of housing stock age and cost-burdened households (**Table 12**).

Table 12. Safe, Sanitary and Affordable Housing Indicators

Indicator	Description
Age of residential housing stock	Age of residential housing stock
Substandard Housing	Percent of "substandard housing"
Overcrowded Houses	Percent of overcrowding of owner/renter households
Cost Burdened Households	Percent of households who spend more than 30% of income on rent

Notes: MHI = median household income, SCAG = Southern California Association of Governments

7.1 Housing Quality and Safety

The quality of available housing stock has direct health implications. Older housing that has not been maintained or updated can lead to unsafe conditions due to pest infestation, water intrusion, mold, poor insulation, and exposure to toxins, such as lead and second- and third-hand smoke. Water intrusion, poor insulation, and mold can exacerbate respiratory illnesses such as asthma and chronic obstructive pulmonary disease. Exposure to lead, a known neurotoxin, can have lifelong health consequences for young children. **Figure 20** maps residential housing stock by age, which can be used as a proxy for housing stock quality.

As shown in **Figure 20**, the majority of older residential buildings are located in the southcentral portion of the City between SR-125 and SR-67. In general, areas with older housing stock are also in areas with higher asthma rates. Excessive moisture and dampness, poor heating and ventilation systems, and deteriorated carpeting, all of which are associated with older, substandard housing, may contribute to asthma prevalence in the City (Krieger 2010). Only 7 percent of Community Survey respondents indicated concern about unsafe or unhealthy conditions in homes (such as lead based paint, mold, poor ventilation, poor insulation, or other needed repairs) (City of Santee 2021).

The American Community Survey includes surveys about three factors of what may be considered substandard housing: availability of telephone service, plumbing facilities, and kitchen facilities. In Santee, 227 housing units (1.2 percent) lack telephone service, 112 units (0.6 percent) lack plumbing facilities, and 295 units (1.5 percent) lack complete kitchen facilities (ACS 2019). Approximately 20 percent of Community Survey respondents also indicated that air conditioning is not available or affordable (City of Santee 2021).

The Community Survey also asked residents about their perception of safety in their homes. Many survey respondents indicated safety concerns from vagrant populations living near their neighborhood. While only a few indicated concerns about their home being in a fire or flood zone, nearly 17 percent of respondents indicated that flood, fire, or renter's insurance was not affordable (City of Santee 2021). Community Survey respondents also expressed concern about heavily trafficked neighborhoods, with many cars speeding through residential areas.

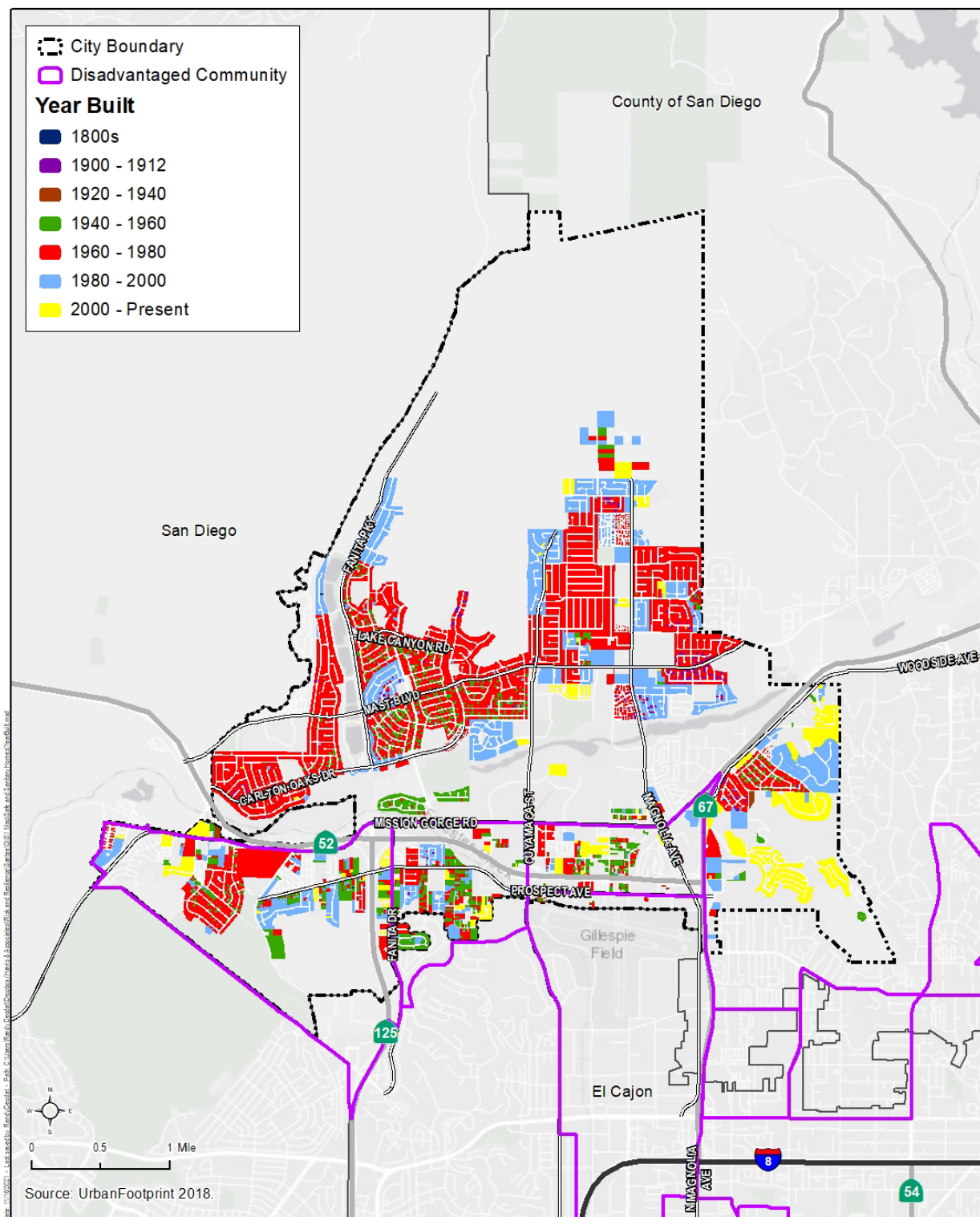


Figure 20.
Residential Housing Stock by Year Built

7.2 Housing Affordability

Jurisdictions can take actions to preserve existing quality, affordable housing stock in addition to pursuing a path to create additional affordable housing. Access to affordable housing helps alleviate undue stress suffered from unstable living conditions. Many families in disadvantaged communities often have relatively low and fixed incomes; thus, affordable housing allows them to put their remaining income toward other goods and services, health care needs, and other necessities. Lower housing costs allow for less financial burden and can allow for more time to pursue other healthy behaviors, such as exercise or cooking healthy meals.

When housing prices rise, household occupancy rates often increase, which can result in overcrowded and unsafe living conditions and increase the risk of spreading infectious diseases. The median value of owner-occupied housing in Santee is \$445,500 and the median household income home cost in Santee is \$527,600, and the median household income is \$87,098. In comparison, the County’s median value of owner-occupied housing is \$563,700, and the median household income is \$78,980 (ACS 2019). **Table 13** compares the average household size between 2020 and 2017 in the City of Santee, relative to the County (ACS 2019).

Table 13. Average Household Size

Jurisdiction	2010	2017
City of Santee	2.72	2.86
County of San Diego	2.75	2.87

Approximately 1.6 percent of owner-occupied households are overcrowded and 6.5 percent of renter-occupied households in the City are overcrowded, defined as a household with more than one person per room (ACS 2019). This suggests that renters are disproportionately affected by overcrowding.

HUD defines moderate cost-burdened households as those “spending more than 30 percent of their income for housing” and severe cost-burdened households as those “spending more than 50 percent of their income on housing” (HUD 2017). Though housing cost burden is measured as a percentage of gross income spent on housing, lower-income households spending the same percent of income on housing as a higher-income household will likely experience more “burden.” Of Santee’s 5,413 *renter* households, 49 percent are moderate cost-burdened, compared to 51 percent county-wide. Additionally, 24 percent are severely cost-burdened compared to 26 percent for low-income renters county-wide (ACS 2019; County of San Diego 2021). However, most Santee residents own their home; only 28 percent of households in Santee are renter-occupied (ACS 2015). Only 31 percent of home-owners are considered cost burdened. Nearly 32 percent of Community Survey respondents indicated that housing affordability was an important issue for the City to address in order to ensure all residents have access to good living conditions (City of Santee 2021). More information on housing affordability can be found in the City’s Housing Element.

Key Findings: Access to Safe, Sanitary, and Affordable Homes

Though housing costs are less expensive than in other areas in the County and State, 49 percent of renters and 32 percent of home-owners are cost-burdened (ACS 2019). Disadvantaged communities are more likely to live in older (and likely lower-quality) homes and spend a greater percentage of their income on housing compared to other areas on the City. High housing costs impact renters in disadvantaged communities more severely, as they often include low-income residents. Community Survey respondents were much more concerned with housing affordability than the safety and quality of homes – 32 percent of respondents thought affordable housing is the most important issue for the City to address, as opposed to the two percent who thought safe and sanitary housing was the most pressing issue.

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Section 8 Unique or Compounded Health Risks

8.1 Climate Change

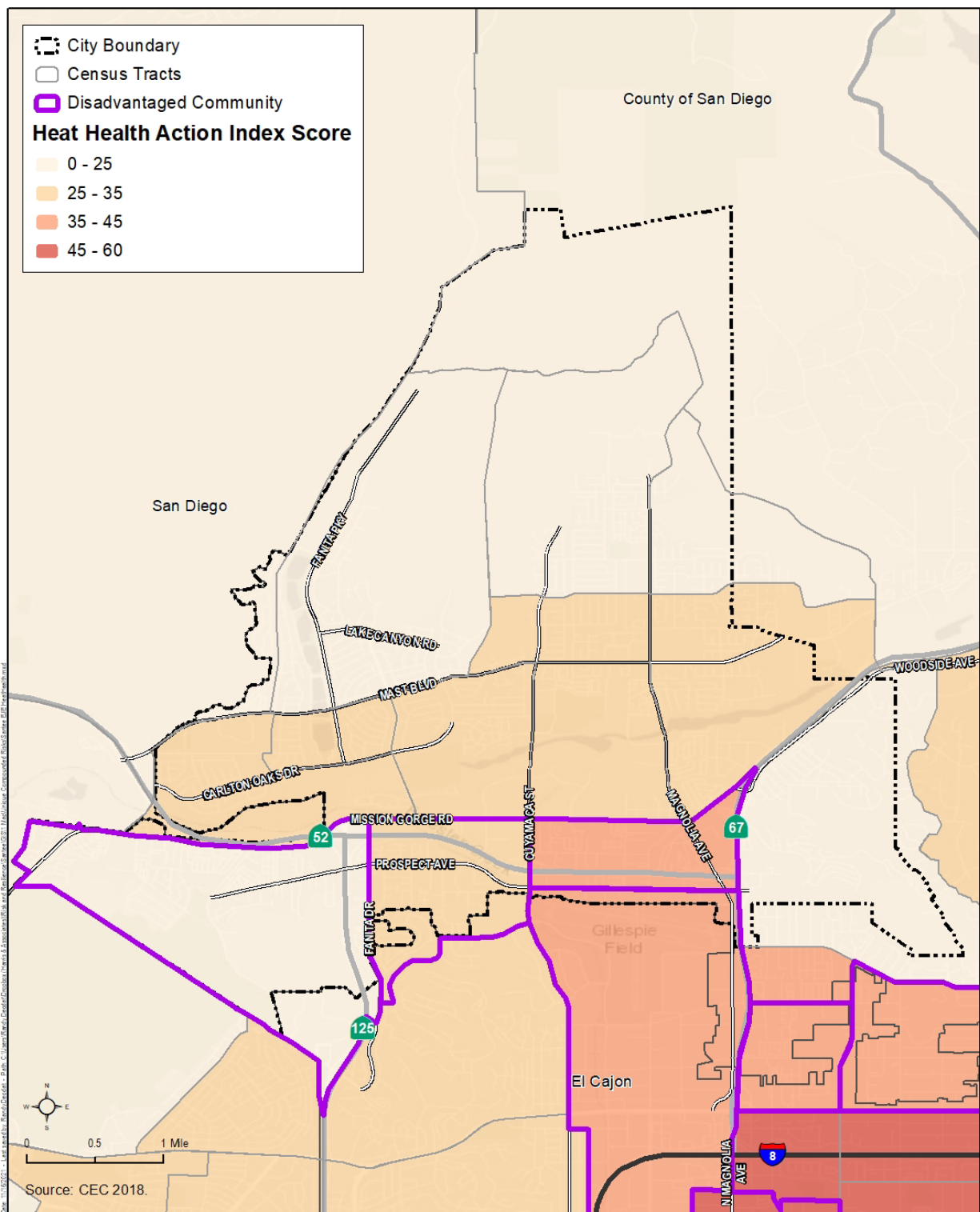
Climate change will likely increase the severity of existing hazards and their associated risks to people in Santee. Climate change may even cause displacement from increased frequency or severity of hazards like flooding, drought, wildfire, extreme heat, and other impacts. In 2018, the City approved the County's Multi-Jurisdictional Local Hazard Mitigation Plan (MJLHMP), which provides an analysis of potential natural and human-caused hazards. The City's General Plan Public Safety Element builds from the 2018 MJLHMP to addresses the potential loss of life, injury, property damage, economic loss, and social dislocation due to hazard events, including those created or exacerbated by climate change.

Climate change is anticipated to present a significant threat to public health for decades to come. It is also known that climate change can disproportionately impact some groups more than others. Disadvantaged communities that suffer disproportionate environmental burdens are also likely to be more vulnerable to climate impacts. Extreme heat is unique in the significant and elevated threat it poses to public health. According to the Center for Climate Change and Health, extreme heat causes more deaths than any other type of natural disaster (Public Health Institute 2016). People living in low-income, disadvantaged communities often experience compounded risk due to poor housing conditions, lack of air conditioning, and unwillingness to use air conditioning due to high energy costs or open doors and windows due to safety concerns. Approximately 21 percent of Community Survey respondents cited heat as the reason they did not walk or bike as a mode of transportation (City of Santee 2021).

To assess heat vulnerability with respect to disadvantaged communities, the City utilized the Heat Health Action Index (HHAI). The HHA score (ranging from 0 to 100) is a statistically weighted result of the indicators that include sensitive populations (i.e., children, elderly, outdoor workers), tree canopy, urban heat island, and ozone exceedance indicators, among others, and is intended to represent total heat and health vulnerability. Higher scores indicate higher heat vulnerability. **Figure 21** shows HHA scores for Santee by census tract. The average HHA score for the City of Santee is 33 compared to 34 for the County.

Key Findings: Unique or Compounded Health Risks

Disadvantaged communities experience unique or compounded health risks due to climate change. The area with the greatest vulnerability to extreme heat, which poses a significant public health threat, is the southern portion of the City. However, overall the City, including disadvantaged communities, is not particularly vulnerable to extreme heat.



City of Santee
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Figure 21.
Heat Health Action Index

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Appendix E. Environmental Justice Community Survey Results

Environmental Justice Community Survey Results

1. What conditions make it difficult for you to have good health and living conditions?

a. Pollution - What sources of pollution, if any, affect your health or quality of life?

Answers	Count	%
Air pollution from freeways/roadways	48	39.7%
Air pollution from industrial activity	21	17.4%
Water pollution from industrial land uses	14	11.6%
Fumes, noises, and/or chemicals from industrial land uses	34	28.1%
Trash and debris	56	46.3%
Other	26	21.5%

b. Health - What barriers, if any, limit your ability to live a healthy lifestyle?

Answers	Count	%
Lack of grocery stores or markets that provide fresh produce	14	11.6%
Lack of affordable produce and/or assistance for food purchase or nutrition (i.e. food stamps)	11	9.1%
Lack of affordable and nearby health care services (e.g., doctors, mental health professionals, dentists, hospitals, health insurance)	20	16.5%
Other	25	20.7%

c. Getting Around and Being Active - What barriers, if any, limit your ability to live an active lifestyle?

Answers	Count	%
Lack of sidewalks, crosswalks, and bicycle lanes for people to safely move around the City	31	25.6%
It is too hot to walk or bike	25	20.7%
Public transit is not within walking or biking distance from my home (i.e., within 1/2 miles away)	27	22.3%
Public transit takes too long	37	30.6%
Lack of parks or recreation centers within walking or biking distance of my home (i.e., within 1.2 miles away)	18	14.9%
Organized activities and sports at neighborhood parks and recreation centers and not affordable or available	11	9.1%
Unsafe physical conditions at parks and recreation centers	19	15.7%
Other	33	27.3%

d. Safe Homes - What conditions, if any, make your home unsafe or unhealthy?

Answers	Count	%
Unsafe or unhealthy conditions in homes (such as lead-based paint, mold, poor ventilation, poor insulation, or other needed repairs)	9	7.4%
Homes are located in areas that flood	5	4.1%
Flood insurance, fire insurance, or renter's insurance is not affordable	21	17.4%
Air conditioning is not available or affordable	24	19.8%
Other	29	24.0%

e. City-Community Relations - What barriers, if any, limit your ability to participate in local decision-making processes?

Answers	Count	%
Information on City proposals and decisions that could affect residents is difficult to find or access	50	41.3%
Information on City proposals or decisions that could affect residents is not communicated in a way that meets the needs of differently-abled residents	23	19.0%
Information on City proposals and decisions that could affect residents is not communicated in my preferred language	2	1.7%
City Council meetings are not held at a time or through a communication channel (i.e., phone, video meeting, email) that is available for residents	30	24.8%
Other	21	17.4%

2. Which issues do you think are the most important for the City to address to ensure that all residents have access to healthy living conditions?

Please select the top 3 issues that affect your quality of life.

Answers	Count	%
Air or water pollution	26	21.5%
Limited access to healthy food and grocery stores	11	9.9%
Limited access to affordable health care	17	14.1%
Limited access to and/or deterioration of city infrastructure and facilities that support physical activity, including sidewalks, bicycle lanes, parks, and recreation centers	55	45.5%
Limited access to safe and sanitary housing	2	1.7%
Limited access to affordable housing	39	32.2%
Other	28	23.1%

3. What improvements would you like to see in your City?



4. How much influence do you think residents have on City decisions that affect community health and environmental issues?

Answers	Count	%
No influence	16	13.2%
Very little influence	48	39.7%
Some Influence	36	29.8%
Strong influence	16	13.2%

5. What is your age in years?

Answers	Count	%
17 or younger	0	0.0%
18 - 24	1	0.8%
25 - 34	8	6.6%
35 - 44	33	27.3%
45 - 64	47	38.8%
65 - 74	20	16.5%
75 and older	2	1.7%
Prefer not to say	7	5.8%

6. Which race/ethnicity category best describes you?

Answers	Count	%
American Indian or Alaska Native	3	2.5%
Asian	3	2.5%
Black or African American	4	3.3%
Hispanic, Latino or Spanish origin	13	10.7%
Middle Eastern or North African	1	0.8%
Native Hawaiian or Other Pacific Islander	2	1.7%
White	66	54.6%
Prefer not to say	37	30.6%

7. What is the highest education level you achieved?

Answers	Count	%
None to some high school	0	0.0%
High school diploma or equivalent	9	7.4%
Vocational training	7	5.8%
Some college	27	22.3%
Associate's degree	23	19.0%
Bachelor's degree or higher	61	50.4%

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