



Santa Clara County
Multijurisdictional Hazard
Mitigation Plan 2023 Update

City of Sunnyvale Annex

February 21, 2024

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1. City of Sunnyvale

1.1. Hazard Mitigation Plan Points of Contact

The point of contact during the Santa Clara County Multijurisdictional Hazard Mitigation Plan (MJHMP) planning process for the City of Sunnyvale was the Office of Emergency Services Coordinator in the Public Safety Department. This annex within the MJHMP was developed using information provided by the City of Sunnyvale’s Local Planning Team.

Table 1: City of Sunnyvale Local Planning Team Members for the 2023 Santa Clara County MJHMP

Name	Position	Organization	Role on Team and in Planning Process
Trudi Ryan	Director, Community Development	City of Sunnyvale	General oversight, hazard identification, and plan development
Ramana Chinnakotla	Director, Environmental Services	City of Sunnyvale	Hazard identification and plan development
Sean Smith	Street Operations Manager	City of Sunnyvale	Hazard identification and plan development
Mary Jeyaprakash	Senior Planner	City of Sunnyvale	Hazard identification and plan development
Suzanne Park	Chief Building Official	City of Sunnyvale	Hazard identification and plan development

The City’s Local Planning Team Members participated in the MJHMP by attending meetings on the Plan Kick-Off, Risk Assessment, Capabilities Assessment, Mitigation Strategy, Wrap-up, and three one-on-one meetings with the planning consultant. In addition, the city filled out the requested forms on each section or provided the requested information verbally to the planning consultant, which were used to draft this annex. The city also shared information regarding public opportunities to participate in the draft plan update utilizing the digital survey and seven in-person and virtual public outreach meetings. Further, the City team was provided the opportunity to review the draft plan prior to submittal to Cal OES and FEMA.

Table 2: External Stakeholders Invited to Be Involved in Planning Process

Agency or Organization	Stakeholder Type	Description
American Red Cross	Representatives of nonprofit organizations, including community-based organizations, that work directly with and/or provide support to underserved communities and socially vulnerable populations, among others.	A nonprofit humanitarian organization that provides emergency assistance, disaster relief, and disaster preparedness education in the United States.
Amateur Radio Emergency Service (ARES)	Representatives of businesses, academia, and other private organizations.	A corps of trained amateur radio operator volunteers organized to assist in public service and emergency communications.
California Office of Emergency Services (Cal OES)	Local and regional agencies involved in hazard mitigation activities.	Office responsible for overseeing and coordinating emergency preparedness, response, recovery, and homeland security activities within the state.
California Department of Forestry and Fire Protection	Local and regional agencies involved in hazard mitigation activities.	The fire department of the California Natural Resources Agency.
California Department of Transportation	Agencies that have the authority to regulate development.	An executive department of the U.S. state of California.
Cattlemen’s Association	Representatives of businesses, academia, and other private organizations.	A nonprofit trade association that represents California's ranchers and beef producers in political affairs.
City of East Palo Alto	Neighboring communities.	A city in San Mateo County, California, United States.
City of Menlo Park	Neighboring communities.	Menlo Park is a city at the eastern edge of San Mateo County.
Cooper-Garrod Estate Vineyards	Representatives of businesses, academia, and other private organizations.	Garrod Farms is a family-owned and operated estate winery and stables.
Department of Homeland Security	Agencies that have the authority to regulate development.	The U.S. federal executive department responsible for public security, roughly comparable to the interior or home ministries of other countries.
Department of Toxic Substances	Agencies that have the authority to regulate development.	An agency of the government of the state of California that protects public health and the environment from hazardous waste.

Agency or Organization	Stakeholder Type	Description
Downtown Streets Team	Representatives of nonprofit organizations, including community-based organizations, that work directly with and/or provide support to underserved communities and socially vulnerable populations.	Teams that restore dignity, inspire hope, and provide a pathway to recover from homelessness.
Emergency Medical Services	Agencies that have the authority to regulate development.	Provides statewide coordination and leadership for the planning, development, and implementation of local EMS systems.
Emergency Services Volunteer Representative	Local and regional agencies involved in hazard mitigation activities.	Organization that ensures public safety, security, and health by addressing and resolving different emergencies.
Federal Aviation Administration	Agencies that have the authority to regulate development.	Offers civil aviation safety enforcement services.
Google	Representatives of businesses, academia, and other private organizations.	American multinational technology company focusing on artificial intelligence, online advertising, search engine technology, cloud computing, computer software, quantum computing, e-commerce, and consumer electronics.
Hidden Villa Farm	Representatives of nonprofit organizations, including community-based organizations, that work directly with and/or provide support to underserved communities and socially vulnerable populations, among others.	Nonprofit educational organization teaching programs on environmental and multicultural awareness.
Intel Corporation	Representatives of businesses, academia, and other private organizations.	An American multinational corporation and technology company headquartered in Santa Clara, California.
Kaiser Permanente—Santa Clara	Representatives of businesses, academia, and other private organizations.	An American integrated managed care consortium.
Life Moves	Representatives of nonprofit organizations, including community-based organizations, that work directly with and/or provide support to underserved communities and socially vulnerable populations, among others.	Provides interim housing and supportive services for homeless families and individuals to rapidly return to stable housing.

Agency or Organization	Stakeholder Type	Description
Moffett Field Ames Research Center, National Aeronautics and Space Administration (NASA)	Representatives of businesses, academia, and other private organizations.	Major NASA research center at Moffett Federal Airfield in California's Silicon Valley.
National Weather Service, National Oceanic and Atmospheric Administration (NOAA)	Local and regional agencies involved in hazard mitigation activities.	Scientific and regulatory agency within the U.S. Department of Commerce.
Pacific Gas and Electric (PG&E)	Representatives of businesses, academia, and other private organizations, and neighboring communities.	One of the largest combination natural gas and electric utilities in the United States.
Regional Water Quality Control Board	Agencies that have the authority to regulate development.	Provides government regulatory services related to water pollution and control.
Rotating Safe Car Park	Representatives of nonprofit organizations, including community-based organizations, that work directly with and/or provide support to underserved communities and socially vulnerable populations.	Allows for temporary overnight parking for homeless individuals or families living out of their cars as a safe alternative to sleeping on the streets or in a homeless shelter.
Santa Clara County CERT	Representatives of nonprofit organizations, including community-based organizations, that work directly with and/or provide support to underserved communities and socially vulnerable populations.	Trains residents to prepare for and respond to life-threatening events in their community.
Santa Clara County FireSafe Council	Representatives of nonprofit organizations, including community-based organizations, that work directly with and/or provide support to underserved communities and socially vulnerable populations.	A nonprofit, grassroots organization that provides education and project assistance for homeowners.
Santa Clara County Local Oversight Program	Local and regional agencies involved in hazard mitigation activities.	Program to oversee assessment and mitigation of contaminated sites to protect groundwater resources, human health, safety, and the environment.
Santa Clara County Parks	Agencies that have the authority to regulate development, and neighboring communities.	Provide, protect, and preserve regional parklands for the enjoyment and education.
Santa Clara County Planning & Development	Agencies that have the authority to regulate development, and neighboring communities.	Plays a key role in supporting economic development and ensuring opportunities for the public to participate in land development.

Agency or Organization	Stakeholder Type	Description
Santa Clara County Sheriff's Office	Agencies that have the authority to regulate development, and neighboring communities.	A local law enforcement agency that serves Santa Clara County, California.
Santa Clara University	Representatives of businesses, academia, and other private organizations.	A private Jesuit university in Santa Clara, California.
Santa Clara Valley Open Space Authority	Neighboring communities	An independent special district in Santa Clara County.
St. Louise Hospital (Santa Clara County Hospital System)	Representatives of nonprofit organizations, including community-based organizations, that work directly with and/or provide support to underserved communities and socially vulnerable populations.	Community hospital.
Stanford Healthcare	Representatives of businesses, academia, and other private organizations, and neighboring communities.	Multispecialty clinic that provides convenient access to advanced, specialty care in the South Bay.
Vista Center for the Blind and Visually Impaired	Representatives of businesses, academia, and other private organizations.	Empowers individuals who are blind or visually impaired to embrace life to the fullest through evaluation, counseling, education, and training.
County of Santa Clara	Neighboring jurisdiction, local agency involved in hazard mitigation.	Response for engaging the whole community in assessing needs and developing strategies to achieve stronger mitigation capabilities within the Santa Clara County Operational Area.
City of Campbell	Neighboring communities.	A city in Santa Clara County.
City of Cupertino	Neighboring communities.	Located in Silicon Valley.
City of Gilroy	Neighboring communities.	A city in Santa Clara County.
City of Los Altos	Neighboring communities.	A city in Santa Clara County.
Town of Los Altos Hills	Neighboring communities.	A city in Santa Clara County.
Town of Los Gatos	Neighboring communities.	A city in Santa Clara County.
City of Milpitas	Neighboring communities.	A city in Santa Clara County.
City of Morgan Hill	Neighboring communities.	A city in Santa Clara County.
City of Mountain View	Neighboring communities.	A city in Santa Clara County.
City of Palo Alto	Neighboring communities.	Located in Silicon Valley.
City of San José	Neighboring communities.	Located in Silicon Valley.
City of Santa Clara	Neighboring communities.	A city near San Jose, in California's Silicon Valley.
City of Saratoga	Neighboring communities.	Located in Silicon Valley.

Agency or Organization	Stakeholder Type	Description
Santa Clara County Fire Department	Local and regional agencies involved in hazard mitigation activities, and neighboring communities.	A California Fire Protection District serving Santa Clara County.
Santa Clara Valley Water District	Representatives of businesses, academia, and other private organizations, and neighboring communities.	Provides stream stewardship, wholesale water supply, and flood protection for Santa Clara County, California.

The City of Sunnyvale met with and solicited input on the draft plan from a broad range of stakeholders including local and regional agencies involved in hazard mitigation activities (including the Chief Building Official and Environmental Services Director), agencies that have the authority to regulate development (including the town’s Community Development Director, Senior Planner, and NOAA), neighboring communities (such as the City of Santa Clara and City of Mountain View), representatives of business, academia, and other private organizations (like the utility company PG&E and major employer Intel), as well as representatives of nonprofit organizations, including community-based organizations, that work directly with and/or provide support to underserved communities and socially vulnerable populations (including the American Red Cross and Downtown Street Teams which helps the unhoused in Sunnyvale).

In addition to inviting a wide range of stakeholders, the City supported public outreach and engagement through distributing a digital survey utilizing social media. This survey reached members of underserved populations, including primarily non-English speaking households.



Figure 1: Sunnyvale Social Media Outreach for Community Meeting



Figure 2: Sunnyvale Social Media Outreach for Public Survey

In addition, the MJHMP was discussed at two virtual and five in-person public meetings across Santa Clara County. These in-person meetings were targeted towards areas with socially vulnerable populations. In this case, the plan focused on those who are socially vulnerable as they belong to an access and functional needs (AFN) population. This plan update utilized the legal definition of AFN for this approach. The California Government Code Section 8593.3 defines Access and Functional Needs as “Individuals who have: Developmental, intellectual, or physical disabilities; Chronic conditions or injuries; Limited English proficiency or non-English speaking; Or individuals who are: older adults, children, or pregnant; living in institutional settings; or Low-income, homeless, and/or transportation disadvantaged.” In Saratoga, according to the U.S. Census an estimated 46.1% of the population speaks a language other than English, a key factor to consider while developing any kind of emergency management and mitigation approach to public outreach. The C-MIST framework is used to integrate AFN populations in the operational area into emergency management through communications, maintain health, independence, support, safety and self-determination, and transportation. These meetings were also designed to be accessible for AFN (access and functional needs) populations. The public was also provided the opportunity to comment on the draft plan.

Comments from the public survey were reviewed, evaluated for alignment with planning priorities, and incorporated as appropriate. The top hazards of concern included wildfire (including wildfire smoke), flooding, and extreme heat. Specifically,, the public highlighted the risk of flooding in Sunnyvale all the way to El Camino. Overall, the public emphasized the need for public education and outreach and partnership building, including with utility and water districts. These suggestions are incorporated into the mitigation actions Sunnyvale has selected.

The participation of the City of Sunnyvale and its stakeholders helped inform the development of the MJHMP and this annex in accordance with current priorities. The new plan continues to expand upon the work of the prior plan including emphasizing partnerships both within jurisdictions and special districts as well as with external stakeholders. Further, there is an increased emphasis on climate change, reflecting the increased understanding of the risk this hazard poses to the OA. The City did not identify additional changes in priorities to be highlighted in their annex.

1.2. Jurisdiction Profile

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation:** 1912
- **Current Population:** 153,091 as of July 1, 2022
- **Population Growth:** Based on data tracked by the California Department of Finance and the U.S. Census Bureau, Sunnyvale has experienced a population increase since the last plan update. The overall population has increased from an estimated 55,811 people in January 2017 to 153,091 on July 1, 2022.
- **Location and Description:** The City of Sunnyvale is located in Santa Clara County, California. It encompasses 24 square miles. Santa Clara County makes up the southern portion of the San Francisco Bay Area. Sunnyvale is bordered by the San Francisco Bay and portions of San José to the north, Moffett Federal Airfield to the northwest, Mountain View to the west, Los Altos to the southwest, Cupertino to the south, and Santa Clara to the east. U.S. Highway 101 and the historic El Camino Real traverse the City.
- **Brief History:** Sunnyvale’s history has always revolved around its economy. Initially, the area’s vast open space and fertile soil were ideal for the fruit orchards that supported the settlement’s first residents. With the arrival of the railroad in 1864, the economic base of the community was able to expand, as canneries to process the fruit from the surrounding orchards were built near

the rail lines. In 1906, the Hendy Iron Works relocated from San Francisco to Sunnyvale, continuing the area's industrial development. By 1940, the population had grown to about 4,400, and the Hendy Iron Works was taken over by Westinghouse to support the war effort. After the war, the defense-related industry arrived, capitalizing on the pleasant climate and Moffett Naval Air Station. Lockheed Missiles & Space Company moved to Sunnyvale in 1956, and soon became Sunnyvale's largest employer. The 1950s and 1960s became the periods of greatest growth for the community, resulting in a population of 96,000 in 1970. The defense era gave way to the high-tech era when the microprocessor was introduced in 1971. During the years that followed, companies with foresight saw the potential of computers and the power of semiconductors. The city became the nexus of research, development, and manufacturing that created Silicon Valley, and that legacy continues today in the era of the Internet.

- **Climate:** Sunnyvale's weather is typical of the Northern California coast, which can be categorized as a Mediterranean climate. It has mild, moist winters and comfortably warm, very dry summers. The average precipitation in inches per year is approximately 15.71. The average temperature ranges from 71 to 53 degrees Fahrenheit (°F). Average daytime summer temperatures are in the high 70s, and during the winter, average daytime high temperatures rarely stay below 50 °F.
- **Governing Body Format:** The City of Sunnyvale is a charter City. The charter authorizes the creation of the City and outlines its powers, functions, and organization. The original Charter of the City of Sunnyvale was established by vote of the people of the City of Sunnyvale as the organic law of the City under the authority of the Constitution of the State of California and became effective on May 18, 1949. The municipal government provided by the Charter is known as the "Council-Manager" form of government. The elective officers of the City consist of a City Council composed of seven members selected from geographic districts within the City. The Mayor and Vice Mayor are directly elected serving two-year and one-year terms, respectively. The City of Sunnyvale consists of 11 departments: City Attorney, City Manager, Community Development, Environmental Services, Finance, Human Resources, Information Technology, Library and Recreational Services, NOVA Workforce Services, Public Safety, and Public Works. The City of Sunnyvale has a strong tradition of community participation, one of which is through service on a board or commission. There are 11 boards and commissions that report to the City Council. The City Council assumes responsibility for the adoption of this plan, while the City Manager will oversee its implementation.

1.3. Development Trends

Development for the City of Sunnyvale can be categorized from moderate to high within the last few years, consisting of residential as well as commercial development. The City of Sunnyvale adopted its general plan in 2011 and is the City's blueprint for long-term growth. The Land Use element of this plan, which was updated in 2022, describes a significant level of future growth. The city can be expected to change based on an increase in population, changing demographics, the need for newer infrastructure, and other forces like climate change. New areas where noticeable change may occur under new Land Use and Transportation goals and policies include designated parcels on El Camino Real, within the newly identified Village Centers, the Lawrence Station area, and the Peery Park industrial and office area.

The City of Sunnyvale is surrounded by other cities and the Bay of San Francisco. All new development will be infill and density. Building higher density projects, will bring more people who will be vulnerable to the current hazards. New development replacing current buildings will strengthen the cities resilience as older buildings are taken out of the building stock and new buildings are built to new codes.

The City of Sunnyvale has not experienced a significant amount of development in previously undeveloped areas, but has had re-development. New buildings are constructed under current structural standards. Population growth has been in decline in recent years, so new population exposure is expected to be minimal in the coming years. Climate change may increase heat, drought, and weather-related risks in the future. Recent and new development may be susceptible to impacts from hazards with

a possibly large geographic extent, such as heavy rain, high winds, extreme heat, and drought. It is not anticipated that there is an increased risk for wildfire and landslide, which have limited risk in Sunnyvale. Rigorous implementation of current building codes is expected to limit increased vulnerability to flood and earthquake. Overall, vulnerability is likely to increase.

Table 3: Recent and Expected Future Development Trends

Criterion	Response						
<p>Has your jurisdiction annexed any land since the development of the previous hazard mitigation plan?</p> <ul style="list-style-type: none"> If yes, give the estimated area annexed and estimated number of parcels or structures. 	No						
<p>Is your jurisdiction expected to annex any areas during the performance period of this plan?</p> <ul style="list-style-type: none"> If yes, please describe land areas and dominant uses. If yes, who currently has permitting authority over these areas? 	No						
<p>Are any areas targeted for development or major redevelopment in the next five years?</p> <ul style="list-style-type: none"> If yes, please briefly describe, including whether any of the areas are in known hazard risk areas. 	<p>Yes, all development in the City is considered redevelopment because the current city is essentially built-upon, and new development requires redevelopment of existing properties.</p> <p>Hazard risk areas:</p> <ul style="list-style-type: none"> Moffett Park is in the floodplain. Numerous industries in the city are hazardous occupancies. 						
<p>How many building permits were issued in your jurisdiction since the development of the previous hazard mitigation plan?</p>		2017	2018	2019	2020	2021	2022
<p>Please provide the number of permits for each hazard area or provide a qualitative description of where development has occurred.</p>	No response						
<p>Please describe the level of buildout in the jurisdiction, based on your jurisdiction's buildable lands inventory. If no such inventory exists, provide a qualitative description.</p>	No response						

1.4. Capability Assessment

1.4.1. Resources for the 2023 Planning Initiative

The following technical reports, plans, and regulatory mechanisms were reviewed to provide information for inclusion into the 2023 Multijurisdictional Hazard Mitigation Plan for both Volume 1 and Volume 2 (City of Sunnyvale Annex). All the below items were additionally reviewed as part of the full capability assessment for the City of Sunnyvale.

- **Sunnyvale General Plan:** The General Plan was reviewed to incorporate relevant information, such as development trends.
- **Building and Zoning Codes:** Current building codes were reviewed to assess capabilities and identify any potential gaps to incorporate in the mitigation strategy.
- **Sunnyvale Economic Development Plan:** This plan was reviewed to identify any potential mitigation gaps and cross planning initiatives.

1.4.2. Full Capability Assessment

An assessment of legal and regulatory capabilities is presented in Table 200 and Table 201. An assessment of fiscal capabilities is presented in Table 202. An assessment of staffing capabilities is presented in Table 203. An assessment of administrative and technical capabilities is presented in Table 204. Information on National Flood Insurance Program (NFIP) compliance is presented in Table 205. An assessment of education and outreach capabilities is presented in Table 206. Classifications under various community mitigation programs are presented in

Table 207. Development and permitting capabilities are presented in Table 208, and the community's adaptive capacity for the impacts of climate change is presented in Table 209.

Table 4: Legal and Regulatory Capabilities: Codes, Ordinances, and Requirements

Legal and Regulatory Capability	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Building Code	Yes	No	Yes	Yes
<i>Comment: 2022 California Building Code</i>				
Zoning Ordinance	Yes	No	Yes	Yes
<i>Comment: Sunnyvale Municipal Code, Title 19</i>				
Subdivision Ordinance	Yes	Yes	Yes	Yes
<i>Comment: Sunnyvale Municipal Code Title 18</i>				
Stormwater Management Ordinance	No	No	No	No
<i>Comment: SMC 12.60</i>				
Other Natural Hazard-Specific Ordinances	No	No	No	No
<i>Comment: None Identified.</i>				
Post-Disaster Recovery	No	No	No	No
<i>Comment: None Identified.</i>				

Legal and Regulatory Capability	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Real Estate Disclosure	No	No	Yes	No
<i>Comment: None Identified.</i>				
Growth Management	Yes	No	Yes	No
<i>Comment: Sunnyvale Municipal Code, Title 9</i>				
Site Plan Review	No	No	No	No
<i>Comment: None Identified.</i>				
Environmental Protection	No	No	No	No
<i>Comment: None Identified.</i>				
Flood Damage Prevention	No	No	No	No
<i>Comment: Sunnyvale Municipal Code, Title 16, Chapter 62</i>				
Emergency Management	Yes	No	No	No
<i>Comment: Sunnyvale Municipal Code, Title 2</i>				
Climate Change	No	No	No	No
<i>Comment: None Identified.</i>				
Acquisition of land for open space and public recreation uses	No	No	No	No
<i>Comment: None Identified.</i>				

Table 5: Planning, Legal, and Regulatory Capabilities

Planning, Legal, or Regulatory Capability	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
General Plan	Yes	No	Yes	Yes
<i>Is the plan compliant with Assembly Bill 2140?</i>				
<i>Comment: Plan was adopted 7/26/2011</i>				
Capital Improvement Plan	Yes	No	No	Yes
<i>How often is the plan updated? Every two years</i>				
<i>Comment: The City has adopted a Capital Improvement Plan and the Sunnyvale website lists project and infrastructure project summaries.</i>				
Floodplain or Watershed Plan	No	No	No	No
<i>Comment: None Identified. City relies on FEMA floodplain maps.</i>				
Stormwater Management Plan	No	No	No	No
<i>Comment: None identified.</i>				
Urban Water Management Plan	Yes	Yes	Yes	Yes
<i>Comment: The City updates the Urban Water Management Plan every 5 years.</i>				
Habitat Conservation Plan	No	No	No	No
<i>Comment: None identified.</i>				

Planning, Legal, or Regulatory Capability	Local Authority	Other Jurisdiction Authority	State Mandated	Integration Opportunity?
Green Infrastructure Plan	No	No	No	No
<i>Comment: None identified.</i>				
Parks or Open Space Plan	No	No	No	No
<i>Comment: None identified, but there is a 'Parks of the Future' document.</i>				
Economic Development Plan	No	No	No	No
<i>Comment: Economy is addressed in the General Plan Land Use and Transportation chapter.</i>				
Transportation Plan	Yes	No	No	Yes
<i>Comment: The General Plan's Chapter 3 - Land Use and Transportation was updated 6/2022.</i>				
Shoreline Management Plan	No	No	No	No
<i>Comment: None identified.</i>				
Community Wildfire Protection Plan	No	No	No	No
<i>Comment: None identified.</i>				
Forest Management Plan	No	No	No	No
<i>Comment: None identified.</i>				
Climate Action Plan	Yes	No	No	Yes
<i>Comment: Sunnyvale has adopted the Climate Action Playbook.</i>				
Comprehensive Emergency Management Plan	Yes	No	No	Yes
<i>Comment: The General Plan Safety Element and the City EOP address emergency management goals, issues, and contingencies.</i>				
Local Emergency Operations Plan	Yes	No	No	Yes
<i>Comment: The City has adopted an EOP in 2017.</i>				
Threat and Hazard Identification and Risk Assessment (THIRA)	No	No	No	No
<i>Comment: None identified.</i>				
Post-Disaster Recovery Plan	No	No	No	No
<i>Comment: None identified.</i>				
Continuity of Operations Plan	No	No	No	No
<i>Comment: None Identified.</i>				
Public Health Plan	No	Yes	No	No
<i>Comment: Santa Clara County Strategic Public Health Plan</i>				

Table 6: Financial Capabilities

Financial Capability	Could the resource be used to fund future mitigation activities?	Has the funding resource been used in the past for mitigation activities? If yes, for what type of mitigation activities?
Community Development Block Grants	Not unless the funds are specifically dedicated to Disaster Response: CDBG-DR funds.	No
Other Federal Funding Programs	Only for public facility buildings that serve the whole community.	No
Capital Improvements Project Funding	Yes	Road Maintenance and Rehabilitation, Streetlight Conduit Replacement, Upgrading Fuel Stations, Emergency Generator Installation projects and Widening and Retrofitting Bridges and Overpasses to meet current seismic requirements receive CIP funding.
Authority to Levy Taxes for Specific Purposes	Yes	Unknown
User Fees for Water, Sewer, Gas or Electric Services	Yes	Unknown
Stormwater Utility Fee	There is no current stormwater utility fee	
Incur Debt through General Obligation Bonds	Yes	Unknown
Incur Debt through Special Tax Bonds	Yes	Unknown
Incur Debt through Private Activity Bonds	No	N/A
Withhold Public Expenditures in Hazard-Prone Areas	Unknown	Unknown
State Funding Programs	Yes	Road Maintenance and Rehabilitation, Streetlight Conduit Replacement, Intelligent Transportation Systems, Traffic Signal Controller Maintenance Replacement and Upgrades, Future Traffic Calming projects and preventative maintenance on various bridges received funding from SB1 and Gas Tax funding sources.
Development Impact Fees for Homebuyers or Developers	No	N/A
Public or Private Partnership Funding Sources	Yes, State and Federal	Yes - Mary Carson water tank seismic retrofitting
Other Funding Sources	No	N/A

Table 7: Staffing Capabilities

Staffing Capability	Have Capability?	Is staffing adequate to enforce regulations?	Is staff trained on natural hazards and mitigation?
Chief Building Official	<ul style="list-style-type: none"> • Yes • Full Time • Community Development 	Yes	Yes
Parks and Recreation Director	<ul style="list-style-type: none"> • No 	N/A	N/A
Emergency Manager	<ul style="list-style-type: none"> • Yes • Full Time • Office of Emergency Services 	Yes	Yes
Community Planner	<ul style="list-style-type: none"> • Yes • Full Time • Community Development Department 	Yes	Yes
Civil Engineer	<ul style="list-style-type: none"> • Yes • Full Time • Public Works 	Yes	Yes
Engineers or professionals trained in building or infrastructure construction practices	Yes – CDD covers private building structures only.	Yes-CDD	Flood and Earthquake hazards-CDD
Planners or engineers with knowledge of land development and land management practices	<ul style="list-style-type: none"> • Yes • Full Time • Community Development and Public Works 	Yes, as appropriate	Yes
Planners or engineers with an understanding of natural hazards	<ul style="list-style-type: none"> • Yes • Full Time • Community Development and Public Works 	Yes	Yes
Surveyors	<ul style="list-style-type: none"> • No 	N/A	N/A
GIS Coordinator or personnel skilled or trained in GIS applications	<ul style="list-style-type: none"> • Yes • Full Time • ITD 	No	No

Staffing Capability	Have Capability?	Is staffing adequate to enforce regulations?	Is staff trained on natural hazards and mitigation?
Public Works Director	<ul style="list-style-type: none"> • Yes • Full Time • Public Works and Parks 	Yes	Yes
Fire Chief	<ul style="list-style-type: none"> • Yes • Full Time • Public Safety 	Yes	Yes
Environmental Director	<ul style="list-style-type: none"> • Yes 	Yes	Yes
Staff with training in benefit/cost analysis	<ul style="list-style-type: none"> • Unknown 	Unknown	Unknown
Scientist familiar with natural hazards in local area	<ul style="list-style-type: none"> • No 	-N/A	-N/A

Table 8: Administrative and Technical Capabilities

Administrative or Technical Capability	Have Capability?	Has the capability been used to assess or mitigate risk in the past? If yes, what type of hazard event?
Maintenance programs to reduce risk	Yes	
Mutual aid agreements	Yes	DPS has the ability to deploy as a single resource or as a crew when requests for mutual aid are received.
Hazard data and information	Yes	The Office of Emergency Services keeps records of extreme weather, pandemics, and other emergencies on the City's share drive.
Hazus analysis or GIS software	Yes	Yes, during emergency notifications, mapping software has helped dispatch and OES send out alerts (weather, dangerous animals on the loose, active threats).
Grant writing	Yes	Yes, the City received FEMA funds for the 2017 President's Day storm damage and for COVID-19 emergency response costs.

Administrative or Technical Capability	Have Capability?	Has the capability been used to assess or mitigate risk in the past? If yes, what type of hazard event?
Does your jurisdiction have any established warning systems or services for hazard events?	Yes	AlertSCC alerts are sent directly to your mobile device, landline, and or email. Alerts for fire, earthquake, Heavy rain, heavy winds, extreme temperatures, crime, and instructions during a disaster. Also, Sunnyvale uses Nixle , which is a zip code-based, opt-in service messaging platform. Rave Mobile Safety is a mass notification platform to communicate internal/work-related emergency conditions to all City staff (e.g., building closure, power outages, criminal activity, Heavy rain, heavy winds, extreme temperatures-related issues). For creek and dam related water emergencies, Valley Water utilizes Blackboard , a mass notification system for jurisdictions.

Table 9: National Flood Insurance Program (NFIP) Compliance

Topic	Response
What department in your jurisdiction is responsible for floodplain management?	Department of Community Development
Who acts as your jurisdiction’s floodplain administrator?	Community Development Director delegated to Building Official
Is the floodplain administrator or NFIP Coordinator certified?	Yes
Is floodplain management an auxiliary function in your jurisdiction?	No
What is the date of adoption of your flood damage prevention ordinance?	Adopted November 1, 1994: Ordinance 2486-94. Update will be adopted in October 2023.
Do floodplain development regulations meet or exceed FEMA or state minimum requirements? If regulations exceed requirements, in what ways?	Yes

Topic	Response
How are the substantial improvement/substantial damage provisions implemented?	Both the Floodplain Administrator and Building Official are authorized to make substantial improvement and substantial damage determinations in accordance with subsection 16.62.120(e) of Sunnyvale's Municipal Code. The Floodplain Administrator and Building Official are responsible for coordinating together to determine market value, compare cost of improvements or repair to market value, making SD/SI determinations, and notifying permit applicants when their work constitutes SD/SI. The Floodplain Administrator is responsible for reviewing all permits. The Floodplain Administrator is responsible for permanently keeping and making available for public inspection all permits as it relates to the administration of these regulations and flood provisions of the building codes.
Provide an explanation of the permitting process for development within the floodplain.	Flood Insurance Manual: https://www.fema.gov/flood-insurance-manual . CRS Manual: https://www.fema.gov/media-library/assets/documents/8768?id=2434
Does your floodplain management program meet or exceed minimum requirements?	Yes
When did your jurisdiction enter the NFIP?	May 15, 1978 Current Effective FIRM: May 18, 2009
Is your jurisdiction in good standing with the NFIP?	Yes
Are the jurisdiction's Flood Insurance Rate Maps (FIRMs) digital, paper, or both?	Digital
Explanation of NFIP administration services within your jurisdiction.	Provide permits, site reviews, and mapping services
Barriers to running an effective NFIP program in your jurisdiction.	None
When was the most recent Community Assistance Visit (CAV) or Community Assistance Contact (CAC)?	March 12, 2015
Is a CAV or CAC scheduled or needed?	Scheduled
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed?	No
Do your flood hazard maps adequately address the flood risk within your jurisdiction?	Yes
Does your floodplain management staff need any assistance or training to support its floodplain management program?	Yes
Does your jurisdiction participate in the Community Rating System (CRS)?	Yes, Class 7

Topic	Response
How many structures are exposed to flood risk within your jurisdiction?	<ul style="list-style-type: none"> In 10% annual chance flood hazard area: 1,020 In 1% annual chance flood hazard area: 1,475 In 0.2% annual chance flood hazard area: 23,666
How many flood insurance policies are in force in your jurisdiction? <ul style="list-style-type: none"> What is the insurance in force? What is the premium in force? 	<ul style="list-style-type: none"> 1,057 policies in force \$275,627,200 insurance in force \$996,831 premium in force
Areas of flood risk with limited NFIP policy coverage.	No
How many total loss claims have been filed in your jurisdiction? <ul style="list-style-type: none"> How many claims were closed without payment or are still open? What is the total amount of paid claims? How many claims were for substantial damage? 	<ul style="list-style-type: none"> 10 total loss claims have been filed 5 claims closed without payment \$68,655.19 total payments for losses
How NFIP compliance will be continued during the next 5 years.	Provide permits, site reviews, and mapping services; public education and outreach

Table 10: Education and Outreach Capabilities

Education or Outreach Capability	Response	How does the personnel, program, or organization relate to disaster resilience and mitigation?	Could the personnel, program, or organization help implement future mitigation activities?
Does your jurisdiction have a Public Information Officer or Communications Office?	Yes	The Public Information Officer can directly communicate hazard or disaster related information.	Yes
Does your jurisdiction have personnel skilled or trained in website development?	Yes	OCM houses the Communications Office which manages the city's website.	Yes
Does your jurisdiction have hazard mitigation information available on your website?	Yes	The City website includes disaster preparedness and emergency services information.	Yes
Does your jurisdiction utilize social media for hazard mitigation education and outreach?	Yes	The City utilizes the Facebook and Instagram platforms.	Yes

Education or Outreach Capability	Response	How does the personnel, program, or organization relate to disaster resilience and mitigation?	Could the personnel, program, or organization help implement future mitigation activities?
Does your jurisdiction have any citizen boards or commissions that address issues related to hazard mitigation?	Yes	The City has various boards and commissions that address hazard mitigation related issues; Boards and Commissions Sunnyvale, CA.	Yes
Does your jurisdiction have any ongoing public education or information programs that could be used to communicate hazard-related information?	Yes	The Department of Public Safety's Office of Emergency Services provides training, support, and services to ensure the City is prepared to respond to and recover from the effects of major emergencies.	Yes
Does your jurisdiction have local citizen groups or nonprofit organizations focused on environmental protection, emergency preparedness, and/or underserved populations?	Yes	The Sunnyvale Office of Emergency Services offers a Community Emergency Response Team (CERT) Basic Training class.	Yes
Does your jurisdiction have natural disaster or safety related school programs?	Yes	Every school, private or public, has their own preplanned natural disaster operational plan. This plan often involves the ICS system. These plans can be found in their "safety plan" that is signed off by a Neighborhood Resource Officer (NRO) each year.	Yes
Does your jurisdiction have public/private partnership initiatives addressing disaster-related issues	No	N/A	N/A

Table 11: Community Classifications

	Participating?	Classification	Date Classified
Community Rating System	Yes	7	
Building Code Effectiveness Grading Schedule	Yes	3	
Insurance Services Office (ISO) Fire Rating	Unknown	-	-
National Weather Service StormReady Program®	No	N/A	N/A
Firewise USA® Program	No	N/A	N/A

Table 12: Development and Permitting Capabilities

Development or Permitting Capability	Response
Does your jurisdiction issue development permits? • If no, who does? If yes, which department?	Yes, Community Development
Does your jurisdiction have the ability to track permits by hazard area?	Yes. The City tracks flood zones.
Does your jurisdiction have a buildable lands inventory?	No. With few exceptions, all private lands are buildable.

Table 13: Adaptive Capacity for Climate Change

Adaptive Capacity Assessment Question	Jurisdiction Rating
Technical Capacity	
Jurisdiction-level understanding of potential climate change impacts	Medium
<i>Comment: Most staff is aware of issues, but more could be done to provide information on specific impacts and how to address.</i>	
Jurisdiction-level monitoring of climate change impacts	Low
<i>Comment: Project specific impacts including greenhouse gas emissions as well as compliance with the City's Climate Action Plan are evaluated on project-by-project basis during California Environmental Quality Act (CEQA) review. If project does not meet the State allowances, mitigation measures are required but the City Council can still approve the project with "overriding considerations" if the project will result in significant Green House Gas (GHG) emissions beyond what can be mitigated. Sunnyvale does not currently have the resources/tools to conduct jurisdiction-level monitoring of climate change impacts.</i>	
Technical resources to assess proposed strategies for feasibility and externalities	Low
<i>Comment: Do not have this capacity.</i>	
Jurisdiction-level capacity for development of greenhouse gas emissions inventory	High

Adaptive Capacity Assessment Question	Jurisdiction Rating
Comment: Sunnyvale has conducted GHG emissions inventories and plans to conduct them biennially per City's Climate Action Plan.	
Capital planning and land use decisions informed by potential climate impacts	Medium
Comment: Project specific impacts including greenhouse gas emissions as well as compliance with the City's Climate Action Plan are evaluated on project-by-project basis during California Environmental Quality Act (CEQA) review. If project does not meet the State allowances mitigation measure are required but the City Council can still approve the project with "overriding considerations" if the project will result in significant GHG emissions beyond what can be mitigated.	
Participation in regional groups addressing climate risks	Medium
Comment: City staff participate in several regional groups addressing climate risks including but not limited to Joint Venture Silicon Valley Public Sector Climate Protection Task Force, Santa Clara Valley Water District South Bay Shoreline Study, and County of Santa Clara Silicon Valley 2.0 Risk Assessment Tool. However, each of these forums tends to be more information sharing. South Bay lacks unified approach to adaptation planning and response. It seems there are multiple entities involved but not a single lead agency.	
Implementation Capacity	
Clear authority/mandate to consider climate change impacts during public decision-making processes	Low
Comment: Sunnyvale's adopted Climate Action Plan and Adaptation Chapter. Action A.3.1 calls for City to "analyze and disclose possible impacts of climate change on the project or plan area with an emphasis on sea level rise." Project specific impacts including greenhouse gas emissions as well as compliance with the City's Climate Action Plan are evaluated on project-by-project basis during California Environmental Quality Act (CEQA) review. If project does not meet the State allowances mitigation measure are required but the City Council can still approve the project with "overriding considerations" if the project will result in significant GHG emissions beyond what can be mitigated.	
Identified strategies for greenhouse gas mitigation efforts	Medium
Comment: City Council adopted Sunnyvale's Climate Action Plan in May 2014. City is currently implementing; however, while plan will meet the State's near-term 2020 target, CAP does not meet 2030 or 2050 GHG reduction targets. City Council considering actions to update CAP to meeting long-term targets and formally adopt State targets as local goal.	
Identified strategies for adaptation to impacts	Low
Comment: Sunnyvale's CAP includes a chapter on Adaptation; however, the identified actions are general and emphasize participation on regional groups. The City could benefit through the development of a City specific adaption plan; however, resources and capacity are limited.	
Champions for climate action in local government departments	Medium
Comment: Most staff are generally aware of Climate Change issues, especially CDD, DPW, ESD involved in CAP and development projects. Staff could benefit from more information about specific climate impacts to Sunnyvale and by having more tools and resources on how to address adaption as a part of their work.	
Political support for implementing climate change adaptation strategies	High
Comment: Elected officials, Sustainability Commission, and community groups (SunnyvaleCool, Livable Sunnyvale, etc.) are actively engaged on climate issues and supportive of City action.	
Financial resources devoted to climate change adaptation	Low
Comment: City currently has no funding dedicated to climate change adaptation; any funding would have to come from the General Fund.	

Adaptive Capacity Assessment Question	Jurisdiction Rating
Local authority over sectors likely to be negative impacted	Low
<i>Comment:</i>	
Public Capacity	
Local residents' knowledge of and understanding of climate risk	Medium
<i>Comment: Small group of Sunnyvale resident community is aware and actively engaged; broader community is aware but not engaged.</i>	
Local residents' support of adaptation efforts	Low
<i>Comment: Small group of Sunnyvale resident community is aware and actively engaged; broader community is aware but not engaged or interested in changing their behaviors or taking actions on climate issues.</i>	
Local residents' capacity to adapt to climate impacts	Medium
<i>Comment: Not a lot of information on specific adaptation actions a resident can take; broader community may be aware but not engaged or interested in changing their behaviors or taking actions on climate issues.</i>	
Local economy current capacity to adapt to climate impacts	Medium
<i>Comment: Most large companies in area are engaged and take precautions to adapt/mitigate their own effects on climate. Mid-size and small companies may not have the resources to address or engage on the issue.</i>	
Local ecosystems capacity to adapt to climate impacts	Low
<i>Comment: North Sunnyvale borders the South San Francisco Bay and its wetland and marsh habitats. This area is included in the South San Francisco Shoreline Study. The goal of the Shoreline Study is to protect the parts of Santa Clara County's shoreline with the highest potential damages and threats to human health and safety from flooding, using a combination of flood protection levees and wetlands. This approach using natural infrastructure would provide increased flood protection and restored Bay habitats, as well as a flood protection system that can evolve in the future. The Shoreline Study is coordinated with another project in the area, the South Bay Salt Pond Restoration Project, which seeks to restore historic wetlands on 15,100 acres of former salt ponds in the South Bay. This study is moving forward in phases and the first phase selected is the Alviso Reach which does not include Sunnyvale.</i>	

1.4.3. Opportunities to Expand Upon and Improve Existing Capabilities

The hazard mitigation planning process presented the opportunity for the community to discuss and evaluate their current capabilities however, building mitigation capabilities is an ongoing process. New capabilities can be added which will support mitigation. Current capabilities can also be enhanced to actively support mitigation and reduce risk. Significant efforts have been made to increase the capabilities of jurisdictions across the OA. By participating in this plan update, each community is reinforcing their support for mitigation and understanding of the capabilities they need to successfully implement mitigation measures. Actions that can expand and improve existing authorities, plans, policies, and resources for mitigation include:

- Developing a Climate Action Plan which incorporates hazard data and actions to adapt to a changing climate.
- Budgeting and passing policies and procedures for mitigation actions.
- Adopting and implementing stricter mitigation regulations.
- Approving the training of staff for mitigation activities.

- Approving mitigation updates to existing plans as new needs are recognized.
- Continuing to update plans as necessary to ensure they are current and reflect the needs of the community or special district.
- Further developing warning systems and messaging.
- Creating and implementing additional public education and outreach offerings and increasing the volume of translated materials.
- Ensuring grant opportunities are capitalized upon to meet mitigation goals.

Each type of the four FEMA-identified capabilities were evaluated, in addition to OA-priority capabilities like adaptive capacity. Gaps and limitations, if any, are discussed in the tables above. Additional jurisdiction-specific opportunities to expand on and improve capabilities for reducing risk include:

- Continue to participate in the Community Rating System and identify additional actions to both reduce flood risk and reduce flood insurance premiums.
- Support public outreach and engagement on hazard mitigation, climate risks, and climate adaptation.
- Expand engineering capabilities to support public infrastructure mitigation measures.
- Update the city's Climate Action Plan including hazard data and actions to adapt to a changing climate.
- Support staff in increasing their familiarity with anticipated natural hazard and climate impacts, particularly local impacts and risk reduction related tools and resources.
- Identify and utilize additional federal or local funding sources for hazard mitigation. Since the last update, multiple new grant programs that support mitigation measures have been established. FEMA's annual BRIC grant program funds a variety of mitigation actions, including infrastructure projects, nature-based solutions, climate adaptation, hazard resistant building codes, and projects benefitting disadvantaged communities.
-

1.5. Integration with Other Planning Initiatives

This section describes the process for integrating the hazard mitigation plan into local planning mechanisms.

1.5.1. Existing Integration

The following plans and programs currently integrate the goals, risk assessment and/or recommendations of the 2017 hazard mitigation plan:

- **Sunnyvale General Plan:** The General Plan is aligned with and includes references to the HMP and will be amended with the new plan update.
- **Building and Zoning Codes:** Current building codes are and will be incorporated to reflect mitigation priorities per city process.
- **Public Outreach Programs:** Programs include direct outreach to property owners of earthquake vulnerable buildings and general public education through the City website and utility mailers.
- **Government Functions:** Day-to-day government functions ensure building permit applicants comply with the hazard mitigation requirements.

- **Stormwater Management Plans and Procedures:** Planning applications require a preliminary review of stormwater management plans.

These plans and programs will continue to integrate the 2023 hazard mitigation plans and goals and will be updated to match new information as each of these plans and programs are updated.

1.5.2. Opportunities for Future Integration

The following plans and programs do not currently integrate the goals, risk assessment and/or recommendations of the hazard mitigation plan, but provide an opportunity for future integration:

- **Capital Improvement Plan:** There is an opportunity to include mitigation actions, projects, and priorities in the next Capital Improvement Plan. The plan is updated every 2 years and is expected to be completed in 2024.
- **Climate Action Plan:** The city is considering updating the CAP, or actions within the CAP. Adaptation actions that relate to the impacts of climate change and associated hazards as described in this plan's risk assessment could be incorporated if and when this update occurs. The Draft Game Plan 2028 will go before city council in March 2024.
- **Urban Water Management Plan:** This plan is updated every 5 years. There will be the opportunity to incorporate additional hazard data, GIS products, goals, and actions into this plan next update. This plan was last published in 2020 and anticipated to be renewed in 2025.

The Department of Community Development houses the Planning responsibilities for the City of Sunnyvale. The Director of Community Development, as well as the city's Senior Planner, participated in this plan update. They, along with the city's other team members, will be responsible for disseminating information on this plan and ensuring it's integration into other planning mechanisms moving forward.

1.6. Jurisdiction-Specific Natural Hazard Event History

Table 210 lists all past occurrences of natural hazards within the jurisdiction.

Table 14: Natural Hazard Events

Type of Event	FEMA Disaster # (if applicable)	Date	Preliminary Damage Assessment
COVID-19 Pandemic	DR-4482	3/22/2020	Unknown

1.7. Jurisdiction-Specific Vulnerabilities

- Hazus earthquake models show potential structural losses of \$2.2 billion for a 100-year probabilistic earthquake and \$8 billion for a 500-year probabilistic earthquake. Of the fault-based scenarios, the highest loss-estimates for Sunnyvale were from the San Andreas fault, with an estimated \$2 billion in damage, which is 6.17% of the total replacement value. Although specific population impact counts are not available, it can be anticipated that numerous human impacts from injuries, disruption to basic services, and people seeking shelter from being displace from homes will occur. Sunnyvale has mostly moderate liquefaction potential, which contributes to the effects of ground shaking.
- Sunnyvale is less at risk to wildfire than many cities in the OA. 366 structures and 1,037 people are located in wildfire hazard areas. These structures are valued at \$15 million, or 0.53% of the total replacement value. Sunnyvale is primarily urban, so wildfire risk is primarily concentrated in

undeveloped open space near the bay. Wildfire is expected to increase as climate change contributes to increasingly dry and hot conditions. Vegetation management in open space can reduce wildfire risk.

- Sunnyvale has the 4th highest number of people within potential dam inundation areas. 30,143 people are at risk. \$6.3 billion in structures are exposed to inundation from dam failure of the Stevens Creek Dam. Because dam ownership and maintenance are the dam owner's responsibility, public education of dam risk and ability to evacuate safely are important methods for risk reduction in the city.
- Hazus was used to generate loss estimates from riverine flooding. 13,969 people (9% of total) are within the 1% annual flood hazard zone, and 21,284 (13.75%) are within the 0.2% annual flood hazard zone. Both are the 4th highest population percentage exposed to flood in the OA. Damage estimates for a 1% flood hazard are \$833 million, or 9.02% of the total replacement value. \$1.36 billion in losses are estimated for a 0.2% flood, which is 4.64% of the total value. Levees help reduce flood risk to a significant portion of Sunnyvale. Proper maintenance and monitoring of levees is needed to maintain these benefits. Areas of high social vulnerability do overlap with potential flooding areas.
- Landslide potential is of less concern for Sunnyvale than many cities in the OA. 611 people (0.39% of the total population) are in potential landslide areas. Structures potentially at risk to landslide have a total value of \$200 million. Landslide potential in Sunnyvale is most common along highway interchanges, which will likely be smaller slope failures possibly related to heavy rain events or earthquake. Slopes along creeks may also experience erosion and failure.
- It is anticipated that the impacts of drought will be consistent across the OA. Drought impacts make vegetation more vulnerable to disease and wildfire. Extended drought may necessitate limits on landscape irrigation or higher costs for irrigation, which can have economic impacts. Although agriculture is not a primary economic sector in the OA, drought can have severe negative impacts on growth of crops and gardens. Droughts are expected to become more common and possibly of greater intensity or longevity due to ongoing climate change. Conservation and other water management efforts are needed to help maintain an adequate water supply. Water use restrictions will likely have greater negative impact on low-income households and other disadvantaged communities.
- Impacts from inclement weather such as heavy rain, hail, and wind are likely to be very similar across the OA. Individual events may impact only limited areas, but the entire OA is at risk to similar conditions. Heavy rain may cause localized flooding on roadways and low-lying areas which may disrupt transportation for the general public and can also delay emergency response. Heavy rain can also have cascading impacts on landslide potential or strain the capacity of dams. High winds can disrupt power, communication and other services and cause damage to structures. Trees and branches may fall during high winds and damage aboveground power lines. High winds can also contribute to wildfire risk. Extreme heat or cold can be harmful to health, particularly for those with inadequate housing with adequate warming and cooling systems, which may be a greater risk for those in older housing or multi-unit housing or those with less income for higher energy costs associated with cooling. Climate change will likely increase the number of extreme heat events in the future, and events may extend over a longer number of days. This can contribute to increased health risks for older populations, outdoor workers, and unhoused populations. Extended extreme heat events can also strain power systems and contribute to rolling blackouts. Climate change may also change precipitation patterns and heavy rain or wind events.
- Extreme cold events are infrequent and expected to occur less in the future due to warming trends associated with climate change. Impacts to critical facilities, infrastructure, and other assets are minimal. Primary concerns associated with extreme cold are potential health impacts to vulnerable populations such as unhoused individuals, outdoor workers, or individuals without adequate heat in their homes. The very young and very old have more difficulty maintaining body temperature and may be more likely to be adversely affected by extremes in cold and heat.

- Sunnyvale has no assets directly at risk to tsunamis. Tsunami risk is not profiled in this annex.

Repetitive loss records are as follows:

- Number of Federal Emergency Management Agency (FEMA)-identified Repetitive-Loss Properties (RL): 0
- Number of FEMA-identified Severe-Repetitive-Loss (SRL) Properties: 0
- Number of RL Properties or SRL Properties that have been mitigated: 0

Other noted vulnerabilities include:

- Ten URM buildings remain in Sunnyvale, all of which are located in the South Murphy Avenue historical area, which is exempt from the State URM legislation; none of these URMs are residential structures.
- A major industrial zone in the City is in an area considered to be more vulnerable to damage resulting from an earthquake. This land is at or below sea level and is protected by a system of dikes and levees.
- The San Francisco Public Utilities Commission system needs to be upgraded and designed to current seismic standards so that it is able to deliver water even in the event of a major earthquake.
- Minor roadway and pedestrian crossing flooding during heavy rain events occurs at Fair Oaks/Tasman, Evelyn/Hendy, and Fair Oaks/California. Flooding may cause unsafe conditions for vehicle and pedestrian access and cause damage to cars. Flooding may also restrict access to nearby Valley Transportation Authority (VTA) and Caltrain stations. Some residents in these areas may not have access to private transportation and, therefore, likely use public transit to commute to work or reach essential services.
- Private property, utility easements, and public infrastructure along the east areas of Stevens Creek. Areas along Robin Way, Mockingbird Lane, W. Cardinal Drive, and W. Knickerbocker Drive with steep slopes have an increased risk of damage from landslides. Extra maintenance efforts or capital improvement projects may need to occur to ensure drainage systems remain adequate and function properly.

1.7.1. Social Vulnerability

As seen in Figure 136, Sunnyvale has a complex mix of low to moderately high social vulnerability. This indicates a variety of social characteristics that may make recovery from a disaster more difficult for some residents. More resources may be needed to address the specific needs of individuals in these areas. The Social Vulnerability Index shows that some census tracts in the city have as high as 21% of the population below the 150% poverty estimate and 32% in cost-burdened occupied housing units with an income of less than \$75,000 (more than 30% of income spent on housing). In the central portion of the city, as much as 46 % of housing is in multi-unit structures of 10 or more units. Those in multi-unit housing are often more likely to be displaced following a disaster but may also have fewer financial resources to seek alternate housing.

U.S. Census Bureau Quick Facts indicate that 59% of Sunnyvale's population speaks a language other than English at home, 49.6% of the population is of Asian origin, and 49.4% of the population is foreign born. These are important considerations in public education outreach efforts to inform residents of hazard risks.

Heavy rain, wind, extreme heat or cold, and drought can occur throughout the city, so all vulnerable populations could potentially experience greater impacts from those hazards. Earthquake, liquefaction,

and flood risk are also high throughout the city and could potentially impact all vulnerable populations. In particular, cultural or language barriers may limit their access to information regarding hazard risks and post-disaster relief. Landslide susceptibility is minimal in Sunnyvale and not a high concern for vulnerable populations. Wildfire hazard is also limited, but poor air quality from wildfires in nearby jurisdictions could contribute to health consequences for vulnerable populations such as children or people over age 65, outdoor workers, or those with respiratory or other chronic health conditions.

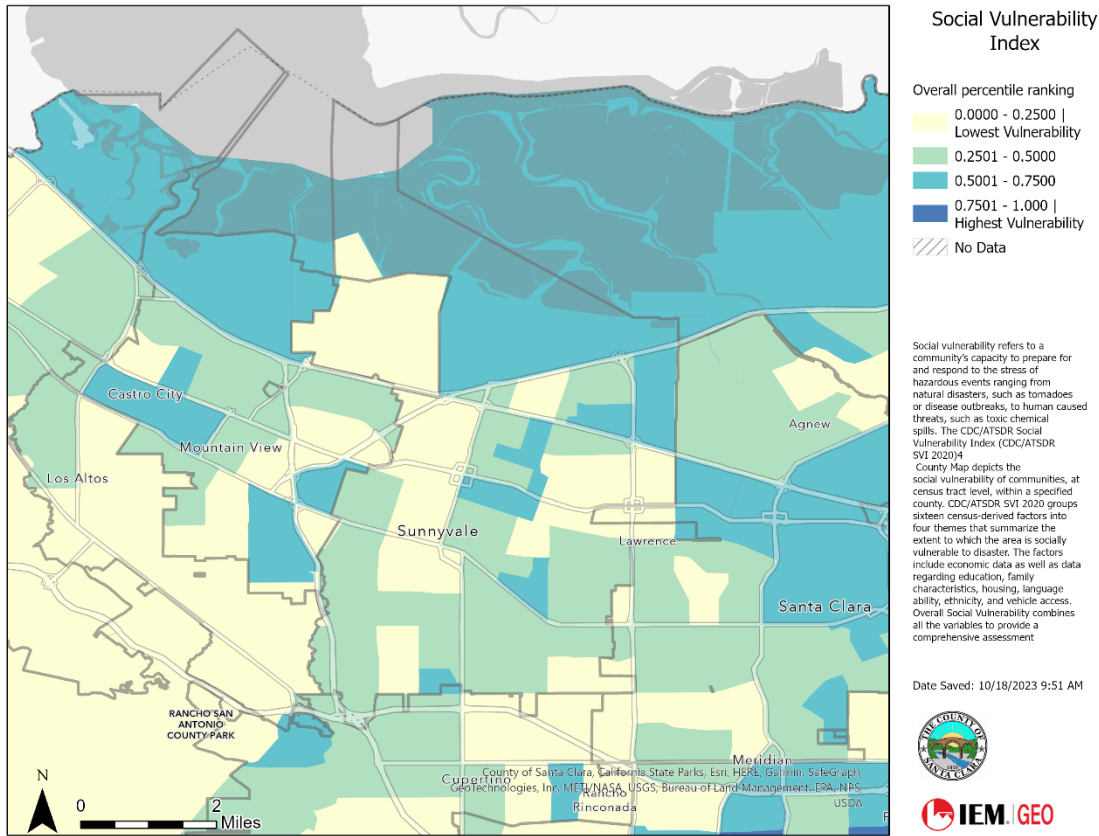


Figure 3: Sunnyvale Social Vulnerability

The Climate and Economic Justice Screening Tool (CEJST) in Figure 137 identifies census tracts that are overburdened and underserved. Two tracts in Sunnyvale meet the thresholds for disadvantaged communities. Linguistic isolation, percentage of individuals with less than a high school diploma, exposure to air pollutants, traffic proximity and volume, and proximity to superfund and hazardous waste sites are among the factors contributing to Sunnyvale’s disadvantaged status.

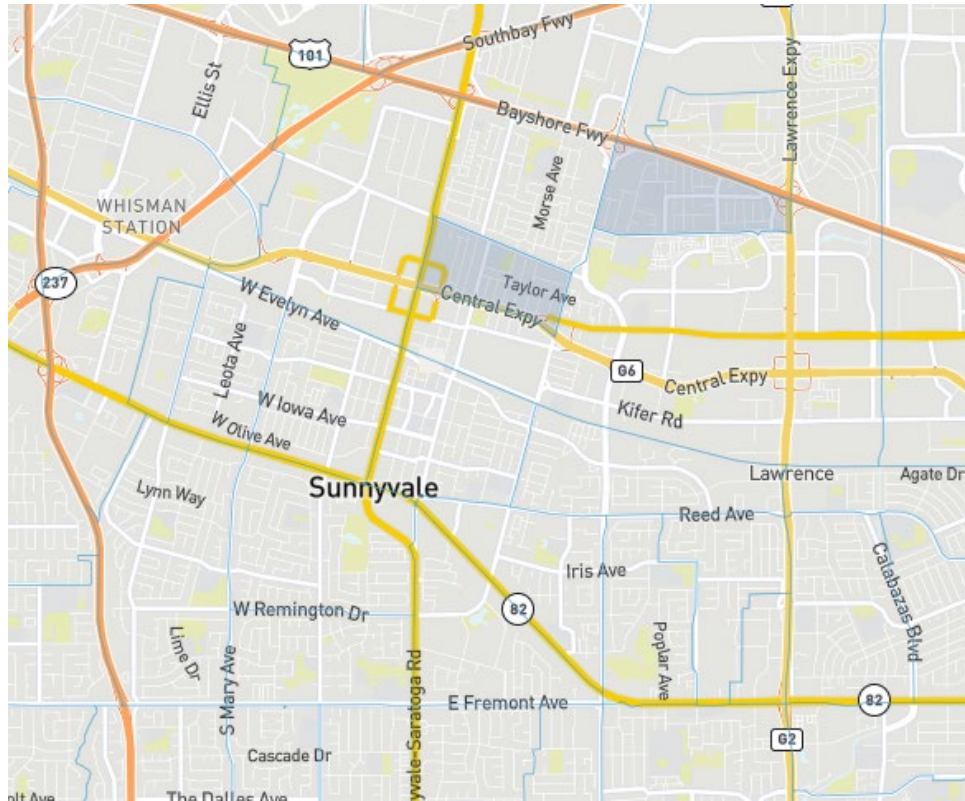


Figure 4: CEJST Disadvantaged Communities in Sunnyvale

1.8. Hazard Risk Index

Table 211 presents the hazards of concern from highest risk index number to lowest, as assigned by the City of Sunnyvale.

Table 15: Hazard Risk Index

Hazard	Probability	Life Impact	Property Impact	Percentage of Area Impacted	Maximum Probable Extent
Earthquake	Highly Likely	Catastrophic	Catastrophic	Significant	Major
Dam/Levee Failure	Unlikely	Catastrophic	Catastrophic	Significant	Major
Heavy Rain	Highly Likely	Minor	Limited	Minimal	Moderate
High Wind	Likely	Minor	Limited	Minimal	Moderate
Extreme Heat	Likely	Minor	Limited	Minimal	Moderate
Extreme Cold	Likely	Minor	Limited	Minimal	Moderate
Wildfire	Likely	Limited	Minor	Minimal	Moderate
Drought	Likely	Minor	Minor	Extensive	Weak
Flood	Occasional	Minor	Minor	Minimal	Moderate
Climate Change	Occasional	Minor	Minor	Negligible	Weak

Hazard	Probability	Life Impact	Property Impact	Percentage of Area Impacted	Maximum Probable Extent
Landslide/Mass Movement	Unlikely	Minor	Minor	Negligible	Weak

Table 16: Comparison of Sunnyvale Risk Scores to Operational Area (OA)

Risk Score	Earth-quake	Dam/Levee Failure	Heavy Rain	High Wind	Extreme Heat	Wildfire	Drought	Flood	Landslide	Climate Change
Sunnyvale	2.9	2	1.25	1.15	1.15	1.05	0.9	0.3	0.85	0.3
OA	2.24	1.19	1.44	1.44	1.44	1.68	1.21	0.90	0.36	1.13

1.9. Future Needs to Understand Risk and Vulnerability

A better understanding of the City’s vulnerable population, especially those needing assistance in evacuation, are needed. An evaluation of public properties would be helpful in assessing the level of seismic retrofits needed. Additionally, timely inspections and assessment of bridges, culverts, and other critical infrastructure would be beneficial in proactively identifying potential vulnerabilities.

1.10. Status of Previous Plan Actions

Participants were asked to report the status of their mitigation actions listed in the previous plan as a part of this plan update. Where further information isn’t provided, the answers are defined as follows:

- *Completed* – work on this action is totally complete.
- *Completed and ongoing* – work on this action is complete; however, it is an ongoing project that will continue to be implemented. An example is a public outreach campaign that was created and will continue to be implemented.
- *In progress* – work on this action has begun and is in progress, but the action is not yet complete.
- *Retain* – work on this action has not begun yet, the action is still relevant, and it should be in the 2023 MJHMP.
- *No longer relevant* – Action item is no longer relevant due to reduce or eliminated risk, it no longer being feasible, there has been a change in jurisdictional or organizational priorities, or another reason as stated.

Unless specifically requested otherwise, only those actions listed as “retain” are incorporated into the 2023 action plan.

Table 17: Status of Action Items from the 2017 MJHMP

Action Item Number*	Action Item Description	Hazard(s) Mitigated	Current Status and Comments
SNY-1	Flex couplings being added to the Mary Carson Water Tank #1. This is a water storage tank owned by the City.	Earthquake	Complete

Action Item Number*	Action Item Description	Hazard(s) Mitigated	Current Status and Comments
SNY-2	Flex coupling will be added to the Mary Carson Water Tank #2.	Earthquake	Complete
SNY-3	Widening and retrofitting to meet current seismic requirements of the Fair Oaks Overpass Bridge.	Earthquake	Complete
SNY-4	Widening and retrofitting to meet current seismic requirements of the Old Mountain View-Alvsio Overpass Bridge.	Earthquake	Complete
SNY-5	Flood related improvement project on the East Channel. This project is in the permitting stage.	Flood	In progress
SNY-6	Flood related improvement project on the West Channel. This project is in the permitting stage.	Flood	In progress
SNY-7	Develop a disaster recovery plan.	All Hazards	No longer relevant. No longer a priority for the City.
SNY-8	Review/update the debris management plan.	All Hazards	Complete
SNY-9	Enhance emergency preparedness page on City website by cross-referencing different City department mitigation efforts like flood control projects and climate change initiatives.	All Hazards	Complete
SNY-10	Where appropriate, support retrofitting, purchase or relocation of structures located in high hazard areas and prioritize those structures that have experienced repetitive losses.	All Hazards	On going
SNY-11	Integrate the hazard mitigation plan into other plans, ordinances and programs that dictate land use decisions within the community.	All Hazards	On going
SNY-12	Actively participate in the plan maintenance protocols outlined in Volume 1 of the hazard mitigation plan.	All Hazards	Complete
SNY-13	<p>Continue to maintain good standing and compliance under the National Flood Insurance Program (NFIP). This will be accomplished through the implementation of floodplain management programs that will, at a minimum, meet the requirements of the NFIP:</p> <ul style="list-style-type: none"> • Enforcement of the flood damage prevention ordinance. • Participate in floodplain identification and mapping updates. • Provide public assistance/information on floodplain requirements and impacts. 	Flood	Ongoing

1.11. Hazard Mitigation Action Plan and Evaluation of Recommended Actions

Table 214 lists the actions that make up the City of Sunnyvale hazard mitigation action plan. The maps in Figure 138 through Figure 145 present the City's critical infrastructure, facilities, and identified hazard areas.

Descriptions of the expected time frames for actions are provided below:

- Short term: 1–5 years
- Medium term: 5–10 years
- Long term: Over 10 years
- Ongoing: Currently being funded and implemented under existing programs

The planning partners utilized the following criteria to prioritize action items into the categories of high, medium, or low.

- High Priority— A project that:
 - Meets multiple goals and objectives (i.e., multiple hazards);
 - Addresses multiple hazards;
 - Has benefits that exceed cost;
 - Has funding secured or is an ongoing project;
 - Meets eligibility requirements for Hazard Mitigation Assistance grants;
 - Can be completed in the short term (1 to 5 years);
 - Addresses immediate short-term impacts of climate change;
 - Benefits underserved and/or socially vulnerable populations; AND
 - Considers the Multi-Benefit Criteria utilized by the Santa Clara County Climate Collaborative, including equity, long-term value, ecosystem benefit, community benefit, and cross-jurisdictional alignment.
- Medium Priority— A project that:
 - Meets multiple goals and objectives;
 - Addresses multiple hazards;
 - Has benefits that exceed costs;
 - Has funding has not been secured, but that is grant eligible under Hazard Mitigation Assistance grants or other grant programs;
 - Project can be completed in the short term (1-5 years), once funding is secured. Medium priority projects will become high priority projects once funding is secured;
 - Addresses immediate short-term impacts of climate change;
 - Benefits underserved and/or socially vulnerable populations; AND
 - Considers the Multi-Benefit Criteria utilized by the Santa Clara County Climate Collaborative, including equity, long-term value, ecosystem benefit, community benefit, and cross-jurisdictional alignment.

- Low Priority— A project that:
 - Will mitigate the risk of at least one hazard;
 - Has benefits that do not exceed the costs or are difficult to quantify;
 - Does not have secured funding;
 - Is not eligible for Hazard Mitigation Assistance grant funding;
 - Has a timeline for completion that is long term (greater than 5 years). Low priority projects may be eligible for other sources of grant funding from other programs;
 - May address impacts of climate change;
 - May benefit underserved and/or socially vulnerable populations; AND
 - Considers the Multi-Benefit Criteria utilized by the Santa Clara County Climate Collaborative, including equity, long-term value, ecosystem benefit, community benefit, and cross-jurisdictional alignment.

Table 18: City of Sunnyvale 2023 Action Items

Action Item Number	Action Item Description	Hazard(s) Mitigated	Lead Position, Office, Department, or Division Responsible for Implementation	Potential Funding Sources	Expected Timeline for Completion	Priority
1.	Include the Safety Element as part of the General Plan references to Climate Action Playbook and the MJHMP.	Climate Change, Drought, Flood	Environmental Services Department (ESD)/ Department of Public Safety (DPS)/ Department of Public Works (DPW)/ Community Development Department (CDD)	General fund	Short term	High
2.	Create and enforce environmental justice policies.	Climate Change, Drought, Flood	ESD/DPS/DPW/CDD (Depending on issue)	General fund	Short term	High
3.	Install solar panels at existing and future city-owned facilities.	Climate Change, Heavy Precipitation/Atmospheric River, Extreme Heat, High Wind, Wildfires	ESD/DPW	General fund, DOE SETO Grants	Long term	Medium
4.	Upgrade pedestrian and bicyclist infrastructure with green infrastructure and additional mitigation methods to protect non-motorists during evacuations and from Heavy rain, heavy winds, extreme temperatures.	Climate Change, Heavy Precipitation/Atmospheric River, Extreme Heat, High Wind, Wildfires	DPW	General fund, DOT Grants, IJJA Funding, RAISE Grants, FHAA Transportation Funding	Long term	Medium

Action Item Number	Action Item Description	Hazard(s) Mitigated	Lead Position, Office, Department, or Division Responsible for Implementation	Potential Funding Sources	Expected Timeline for Completion	Priority
5.	Install charging stations for electric vehicles at all existing and future facilities, especially along evacuation routes.	Climate Change, Wildfires	DPW	General fund, DOT Grants, DOE Grants, BIL Funding, FHWA Funding	Short term	Medium
6.	Retrofit earthquake-vulnerable structures, including URM's.	Earthquake	CDD	General fund, FEMA HMA Grants	Long term	Medium
7.	Install emergency generators in all existing and future critical facilities.	All Hazards, including Earthquake, Flood, Dam Failure, Heavy Rain, High Wind	DPW	General fund, FEMA HMA Grants	Short term	Medium
8.	Replace the Public Safety Emergency Generator with one with more capacity.	Hazardous Materials, Power Outages, Earthquake, Flood, Heavy Rain, High wind	DPW	General fund, FEMA HMA Grants	Short term	Medium
9.	Upgrade Fuel Stations to be more resilient to hazards.	All Hazards	DPW	General fund, USDA Grants, DOE Grants	Short term	Medium
10.	Address gaps in data and missing information within this Annex for the next plan update.	All Hazards, including Earthquake, Flood, Dam/Levee Failure, Wildfire, Drought, Heavy Rain, High Wind, Landslide	All Departments	General fund, FEMA HMA Grants	Short term	Medium

Action Item Number	Action Item Description	Hazard(s) Mitigated	Lead Position, Office, Department, or Division Responsible for Implementation	Potential Funding Sources	Expected Timeline for Completion	Priority
11.	Partner with Valley Water to complete levee restoration and upgrade projects to protect high-risk areas, including Moffett Park. Partner with ongoing feasibility study with USACE to identify preferred alignment and develop cost estimate.	Climate Change: Sea Level Rise, Earthquake, Dam/Levee Failure	Environmental Services Department (ESD)/ Santa Clara Valley Water District, U.S. Army Corps of Engineers.	USACE, Valley Water	Short-term	Medium
12.	Continue to collaborate with San Francisco Public Utilities Commission in upgrading water transmission systems to current seismic standards to ensure reliable water supply following a major earthquake. Sierra Mountain tunnel system continuing thru 2024.	Earthquake	SFPUC	General fund, San Francisco Public Utilities Commission	Short-term	High

Action Item Number	Action Item Description	Hazard(s) Mitigated	Lead Position, Office, Department, or Division Responsible for Implementation	Potential Funding Sources	Expected Timeline for Completion	Priority
13.	To maintain access to public transportation, install measures to manage flooding or improve flow remediation, particularly in pedestrian areas noted in jurisdictional vulnerabilities where flood control is impractical. Procure and deploy signage, road closures, sandbags, or other flood management strategies when outflow backs into streets.	Flooding, Heavy Rain	Sunnyvale Environmental Services Department/Department of Public Works	General fund, FMA	Short-term	Medium
14.	Inspect steep slopes along the creek and execute capital projects to rehabilitate outfalls and surrounding failing creek embankments.	Landslide, Heavy Rain, Flood	Sunnyvale Environmental Services Department/Department of Public Works	General fund	Short-term	Medium

Action Item Number	Action Item Description	Hazard(s) Mitigated	Lead Position, Office, Department, or Division Responsible for Implementation	Potential Funding Sources	Expected Timeline for Completion	Priority
15.	Coordinate with Santa Clara Valley Water District and City of Mountain View to improve and enhance creek slope infrastructure to make slope more reliable.	Landslide, Heavy Rain	Sunnyvale Environmental Services Department/ Department of Public Works, SCVWD	General Fund, City of Mountain View, Santa Clara Valley Water District, PA Mitigation	Short-term	Medium
16.	Conduct vegetation management, wildfire fuels reduction projects in public areas such as the closed Sunnyvale landfill and Baylands park, including use of goats to consume fuel, to reduce wildfire risk.	Wildfire	Sunnyvale Environmental Services Department	General fund	Short-term	Medium
17.	Partner with SCVWD to implement rebate program for drought-tolerant landscaping and replacing water fixture.	Drought, Climate Change	Sunnyvale Environmental Services Department	General fund, SCVWD	Short-term	Medium

Action Item Number	Action Item Description	Hazard(s) Mitigated	Lead Position, Office, Department, or Division Responsible for Implementation	Potential Funding Sources	Expected Timeline for Completion	Priority
18.	Create canopy cover and open space across Moffett Park to reduce stormwater runoff, address heat island effects, and increase resilience to climate change.	Climate Change, Drought, Heavy Rain, Extreme Heat	Sunnyvale Environmental Services Department	General fund, BRIC	Short-term	Medium
19.	Provide education through classes or other materials on reducing water use in landscaping, recycled water programs, and other methods to reduce demand on potable water.	Drought, Climate Change	Sunnyvale Environmental Services Department	General fund	Short-term	Medium
20.	Actively pursue funding for undergrounding of utilities in accordance with the guidelines of Public Utilities Commission and PG&E Tariff Rule 20-A.	Heavy Rain, High Wind, Earthquake, Landslide, Flood	Sunnyvale Environmental Services Department	General fund, PG&E, private/public partnerships	Long-term	Medium

Action Item Number	Action Item Description	Hazard(s) Mitigated	Lead Position, Office, Department, or Division Responsible for Implementation	Potential Funding Sources	Expected Timeline for Completion	Priority
21.	Develop and maintain public education materials and outreach in multiple languages to ensure the public is knowledgeable regarding hazard disaster preparedness.	All hazards, including Drought, Dam Failure, Climate Change, Earthquake, Flood, Landslide, Heavy Rain, High Wind, Extreme Temperature, Wildfire	Environmental Services Department	General Fund	Short-term	Medium

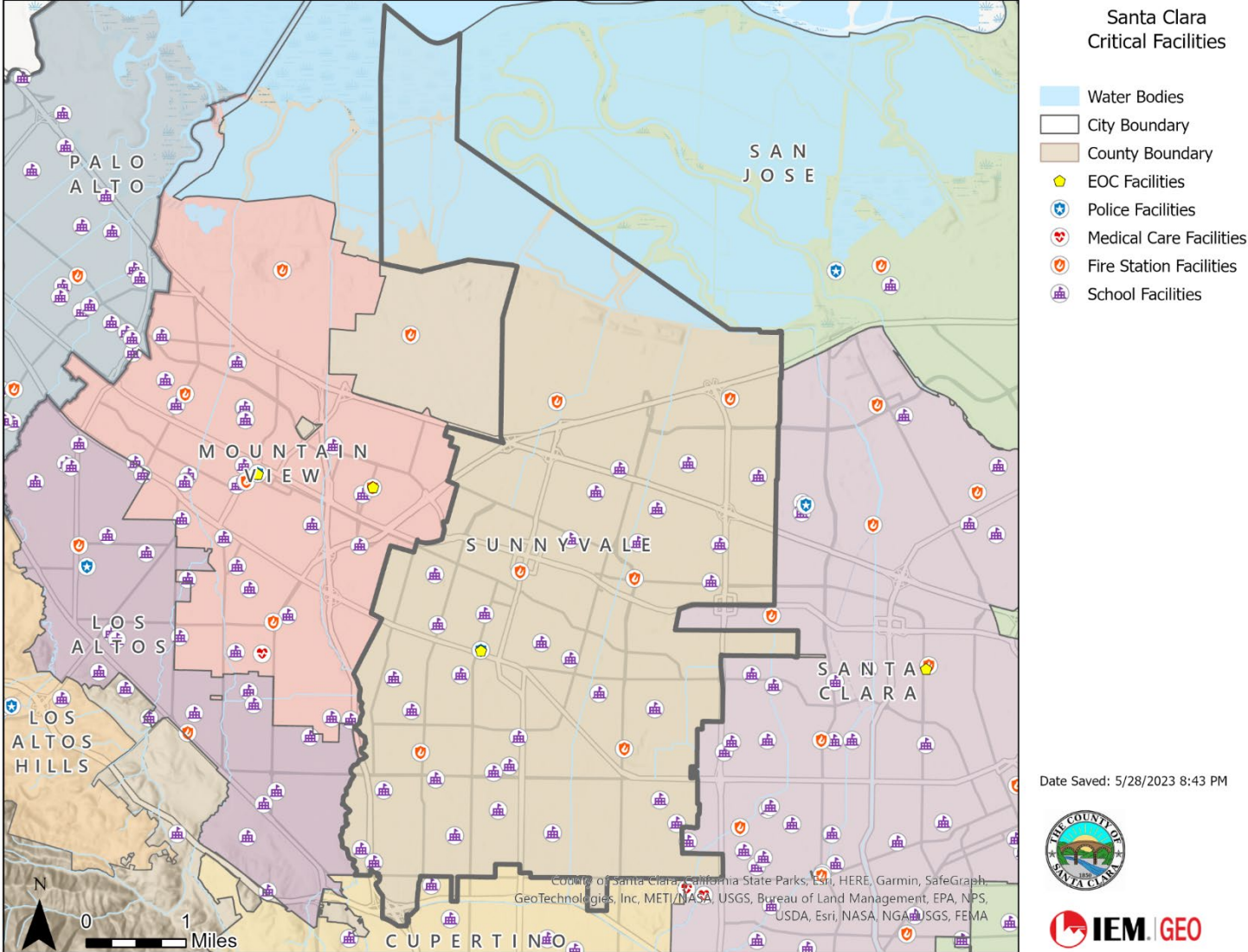


Figure 5: City of Sunnyvale Critical Facilities

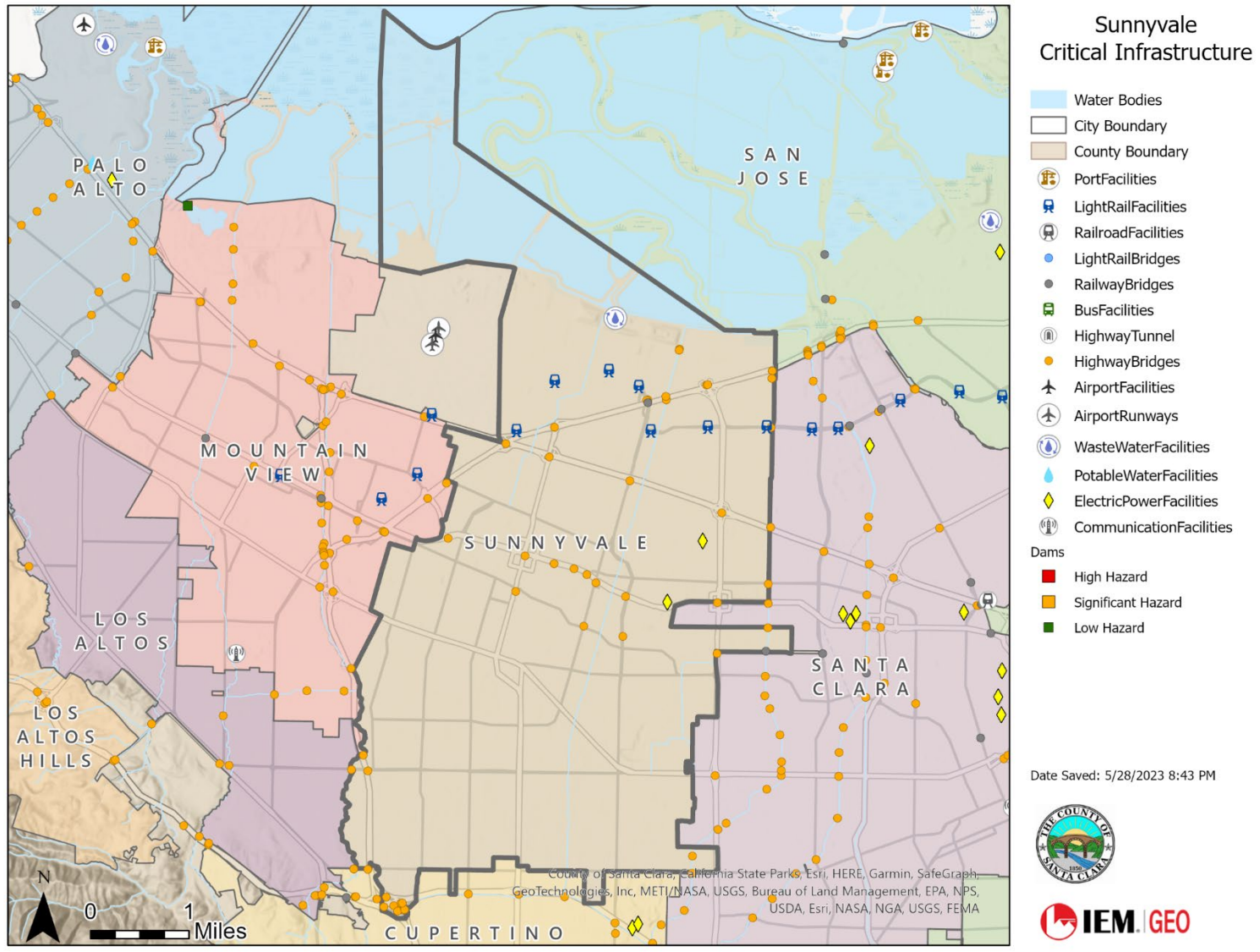


Figure 6: City of Sunnyvale Critical Infrastructure

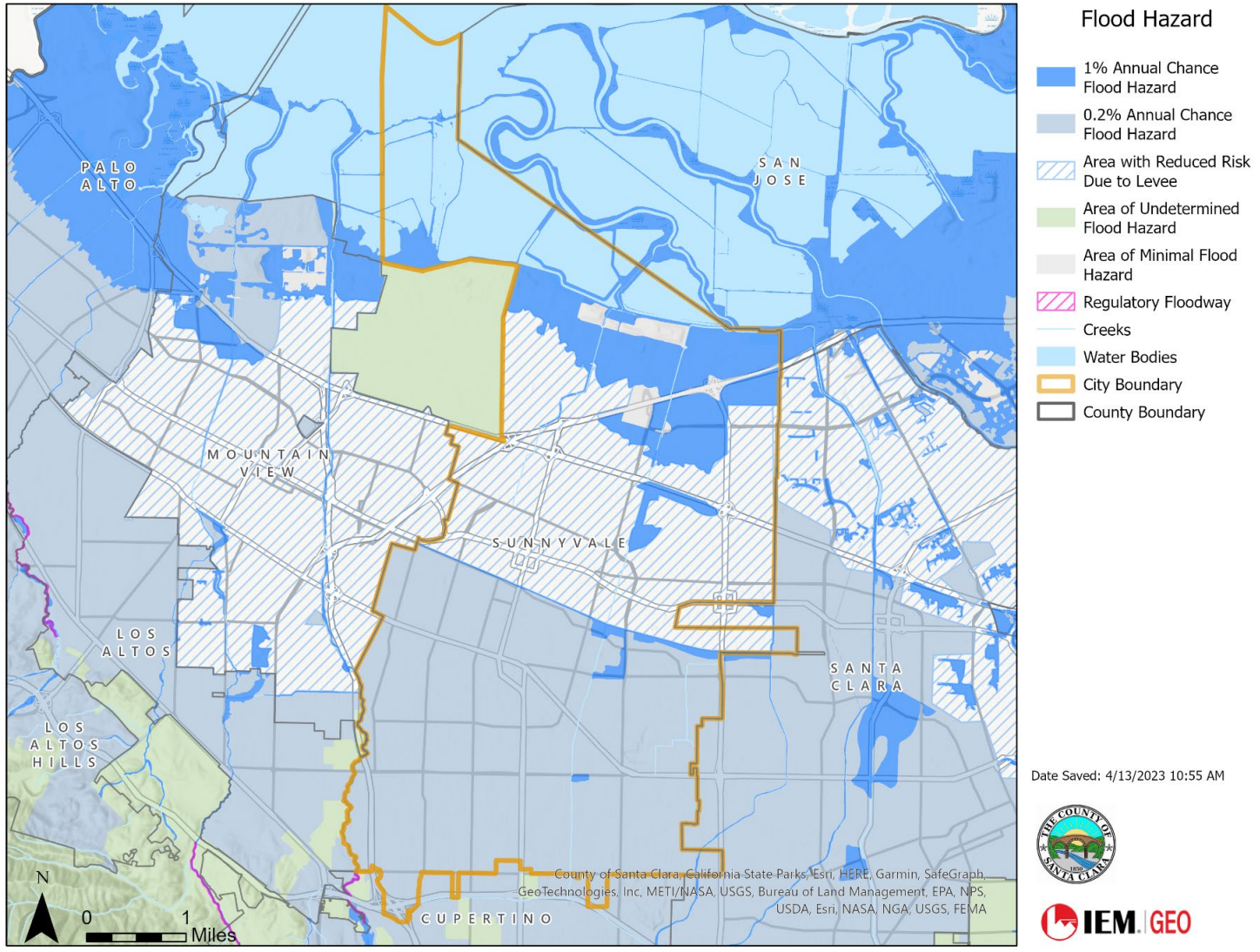


Figure 7: City of Sunnyvale Flood Hazard Area Map

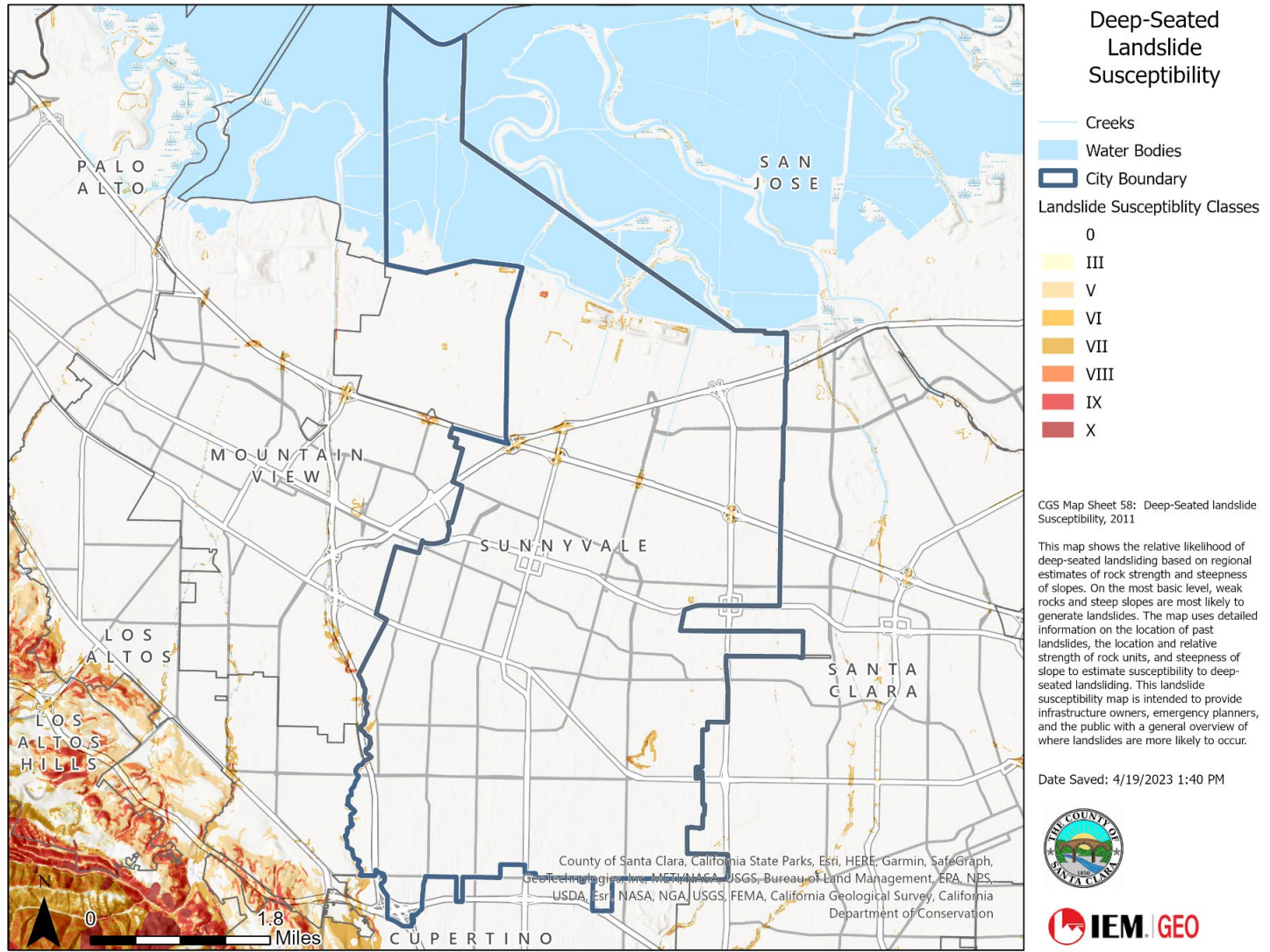


Figure 8: City of Sunnyvale Deep-Seated Landslide Susceptibility

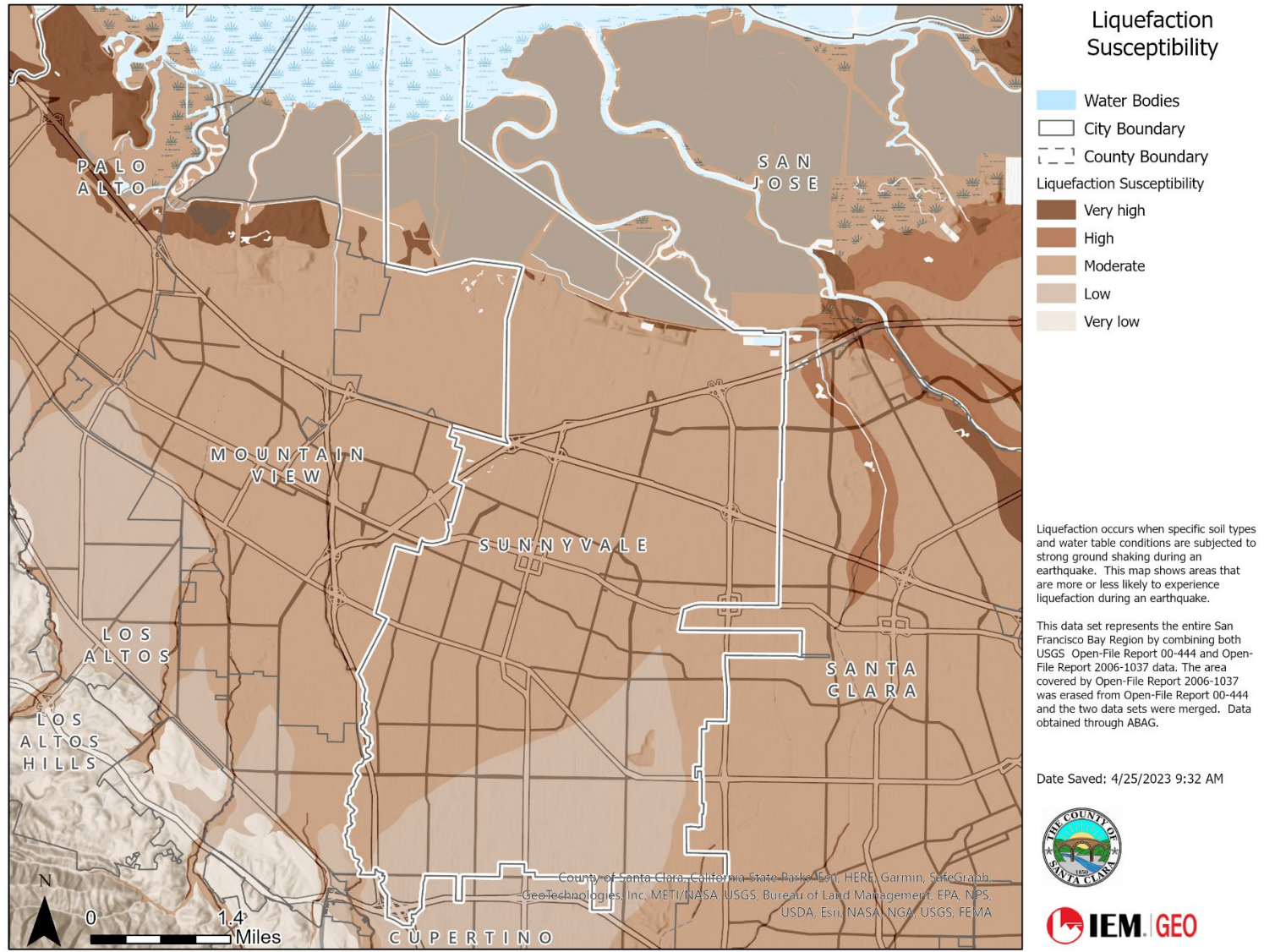


Figure 9: City of Sunnyvale Liquefaction Susceptibility

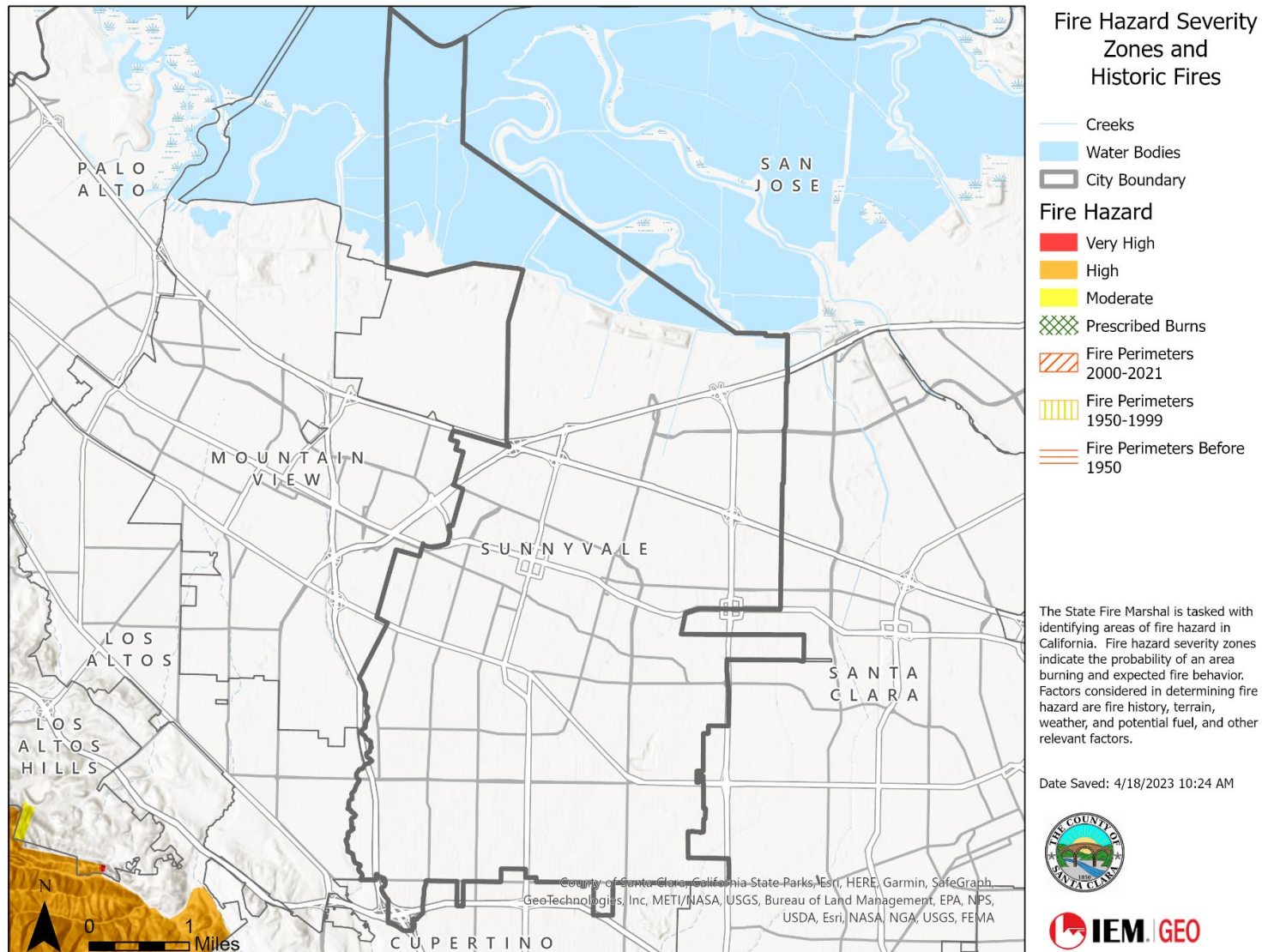


Figure 10: City of Sunnyvale Fire Hazard Severity Zones

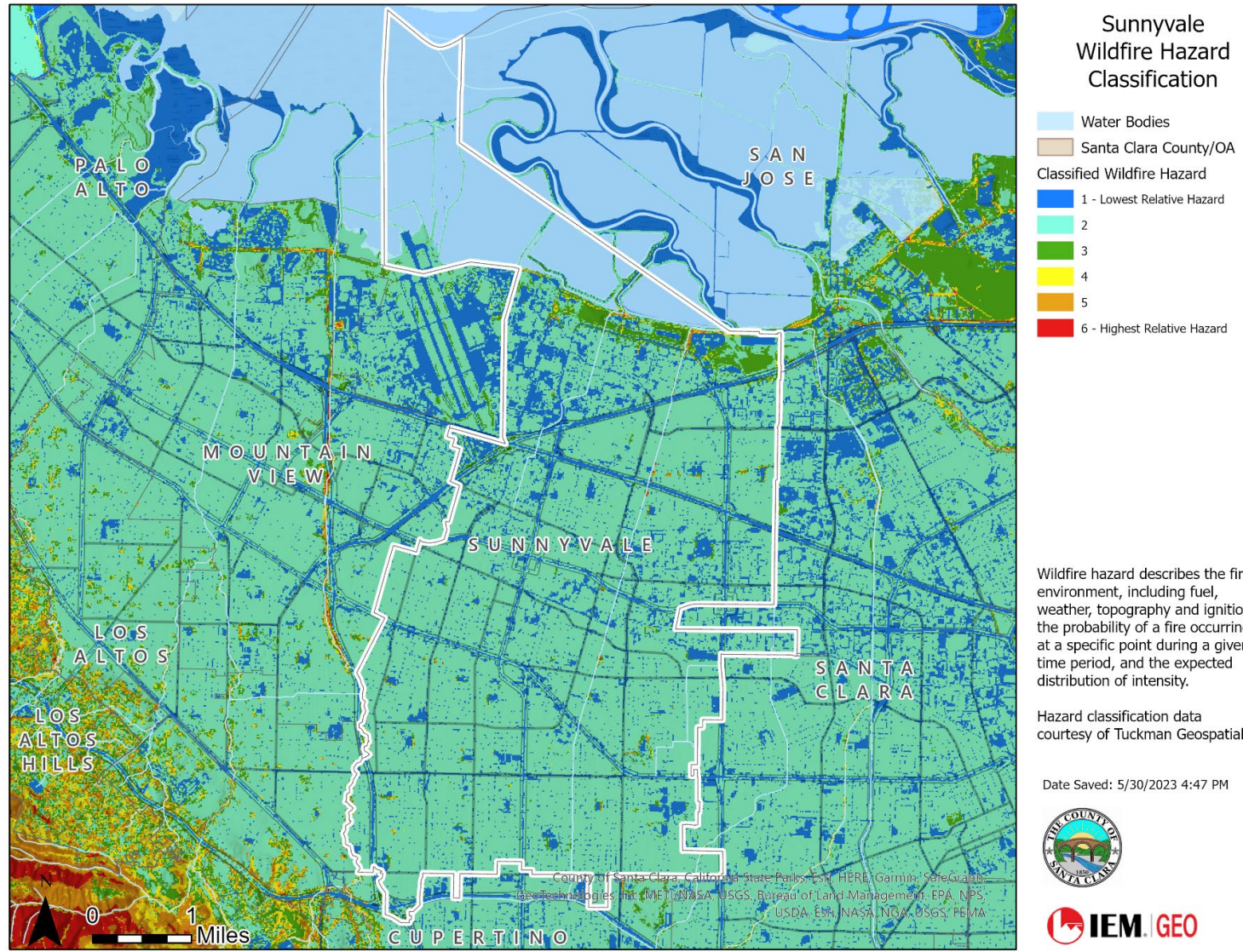


Figure 11: City of Sunnyvale Wildfire Hazard Classification

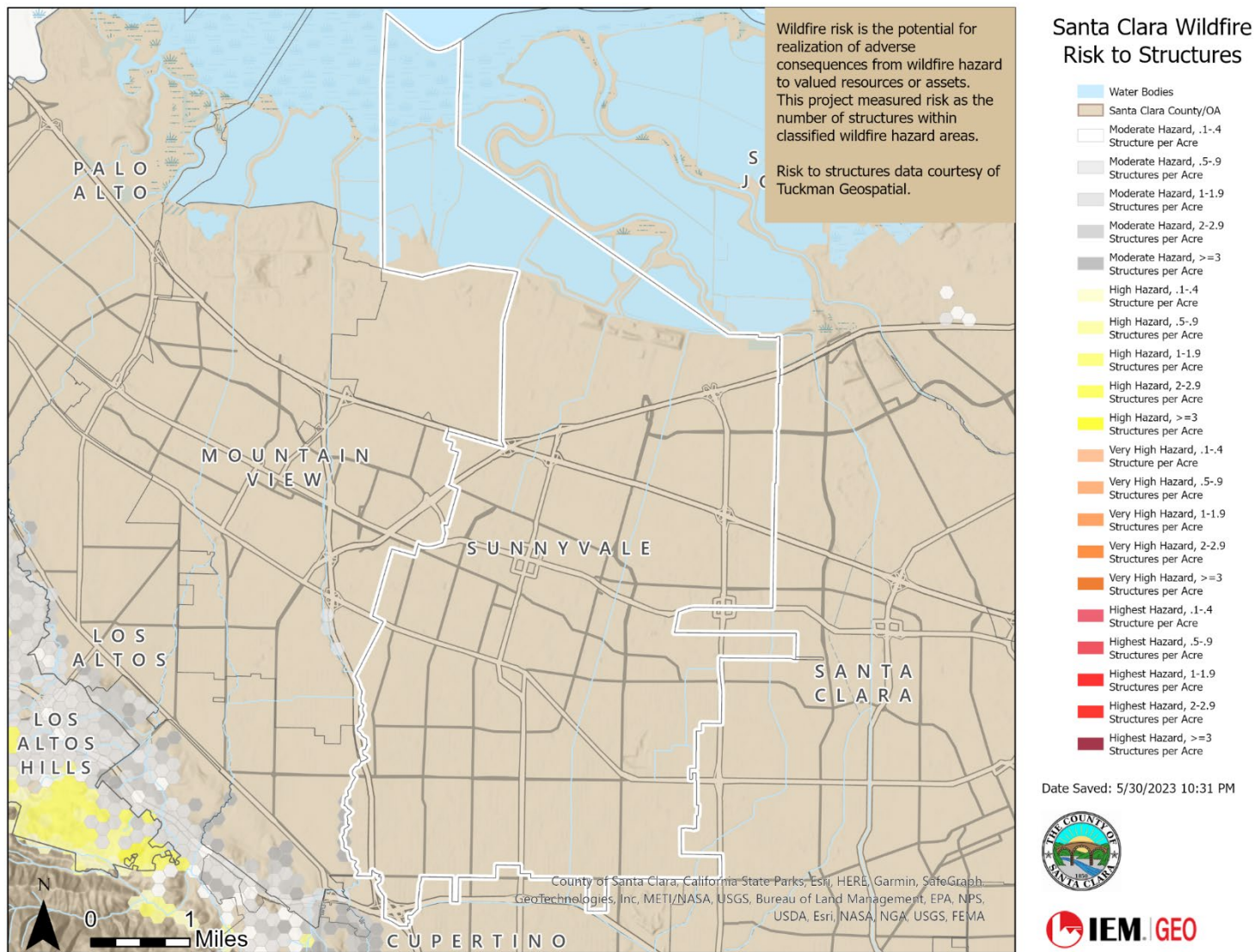


Figure 12: City of Sunnyvale Wildfire Risk to Structures