



U.S. Department of Homeland Security
FEMA Region 9
1111 Broadway, Suite 1200
Oakland, CA 94607

FEMA

September 29, 2025

Joyce Lee
Emergency Services Coordinator
City of Chino Hills
14000 City Center Drive
Chino Hills, CA 91709

Reference: Hazard Mitigation Plan Approval
City of Chino Hills, CA

Dear Joyce Lee:

The 2025 City of Chino Hills Hazard Mitigation Plan was officially adopted by the City of Chino Hills and submitted for final review and approval to the Federal Emergency Management Agency (FEMA). FEMA confirms this plan meets the requirements of the Code of Federal Regulations, Title 44, Part 201, Section 6 (44 C.F.R. 201.6).

FEMA approves this plan for five years with an effective date of September 17, 2025, which is the completion date of our final review. To maintain grant eligibility, the City of Chino Hills must review, update, and resubmit the plan to FEMA before **September 16, 2030**.

While local mitigation plans may include additional content to meet Element H: Additional State Requirements or other local objectives, FEMA's approval only applies to elements required by its *Local Mitigation Planning Policy Guide* (FP-206-21-0002).

This plan approval ensures eligibility for project grants under FEMA's Hazard Mitigation Assistance programs, including the Hazard Mitigation Grant Program (HMGP), HMGP Post-Fire, Flood Mitigation Assistance (FMA), and Safeguarding Tomorrow Revolving Loan Fund (STORM RLF). Funding requests are reviewed individually for eligibility and other program requirements.

Thank you for your continued commitment to reducing risk and enhancing community safety. If you have any questions about the planning or review process, please contact the FEMA Region 9 Hazard Mitigation Planning Team at fema-r9-mitigation-planning@fema.dhs.gov.

Sincerely,

KATHRYN J LIPIECKI

Digitally signed by KATHRYN J
LIPIECKI
Date: 2025.09.27 09:31:02 -07'00'

Kathryn Lipiecki
Director, Mitigation Division
FEMA Region 9

City of Chino Hills Hazard Mitigation Plan Approval Notice
September 29, 2025
Page 2 of 2

Enclosure (1)

City of Chino Hills Plan Review Tool, dated September 17, 2025

cc: Alison Kearns, Planning and Implementation Branch Chief, FEMA Region 9
Robyn Fennig, State Hazard Mitigation Officer, California Governor's Office of
Emergency Services
Victoria LaMar-Haas, Hazard Mitigation Planning Chief, California Governor's Office of
Emergency Services

RESOLUTION NO. 2025R-040

A RESOLUTION OF THE CITY OF CHINO HILLS,
ADOPTING THE 2025 HAZARD MITIGATION PLAN
UPDATE, AUTHORIZING FUTURE NON-SUBSTANTIVE
AMENDMENTS TO THE PLAN, AND RESCINDING
RESOLUTION NO. 2020R-055

WHEREAS, the preservation of life and property is an inherent responsibility of local, state and federal government; and

WHEREAS, the goal of a Hazard Mitigation Plan is to minimize, reduce, or eliminate loss of life and/or property, and

WHEREAS, this Hazard Mitigation Plan represents a comprehensive description of the City's commitment to identifying, reducing, preventing, or eliminating potential impacts of disasters caused by natural and manmade hazards; and

WHEREAS, the City of Chino Hills previously adopted its Hazard Mitigation Plan with the adoption of Resolution No. 2020R-055; and

WHEREAS, the City of Chino Hills desires to rescind Resolution No. 2020R-055 and adopt the updated Hazard Mitigation Plan in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS, the City has undertaken a comprehensive planning effort in developing the Hazard Mitigation Plan by organizing resources, assessing risks, and developing and implementing a mitigation plan and monitoring process; and

WHEREAS, the Hazard Mitigation Plan is a Federal requirement under the Disaster Mitigation Act of 2000 for the City to receive Federal funds for disaster recovery and mitigation; and

WHEREAS, the Hazard Mitigation Plan is an extension of the State of California Multi-Hazard Mitigation Plan and will be reviewed and exercised periodically and revised as necessary to meet changing conditions; and

WHEREAS, the City of Chino Hills agrees to adopt this Hazard Mitigation Plan and urges all officials, employees, public and private organizations, and citizens individually and collectively, to do their share in furthering the goals and objectives of hazard mitigation within the City of Chino Hills.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF CHINO HILLS DOES RESOLVE, DETERMINE, AND ORDER AS FOLLOWS:

SECTION 1. Resolution 2020R-055 is hereby rescinded.

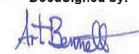
SECTION 2. The City Council approves the Hazard Mitigation Plan of the City of Chino Hills as shown in "Attachment A".

SECTION 3. The City Council authorizes the Director of Emergency Services to make necessary administrative and operational changes to the plan that are keeping with the intent of the plan as approved.

SECTION 4. The City Council authorizes the Director of Emergency Services, or his duly appointed representative, to perform all duties required to carry out the Hazard Mitigation Plan.

SECTION 5. The City Clerk shall certify as to the adoption of this resolution.

PASSED, APPROVED, AND ADOPTED 9th day of September 2025.

DocuSigned by:

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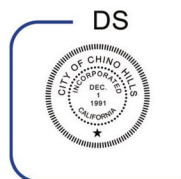
ART BENNETT, MAYOR

ATTEST:

DocuSigned by:

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CHERYL BALZ, CITY CLERK



APPROVED AS TO FORM:

Signed by:

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MARK D. HENSLEY, CITY ATTORNEY

STATE OF CALIFORNIA)
COUNTY OF SAN BERNARDINO) §
CITY OF CHINO HILLS)

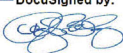
I, CHERYL BALZ, City Clerk of the City of Chino Hills, DO HEREBY CERTIFY that the foregoing Resolution No. 2025R-040 was duly adopted at a regular meeting of the City Council of the City of Chino Hills held on the 9th day of September 2025, by the following vote, to wit:

AYES: COUNCIL MEMBERS: BENNETT, JOHSZ, MARQUEZ, MORAN, ROGERS

NOES: COUNCIL MEMBERS: NONE

ABSENT: COUNCIL MEMBERS: NONE

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the official seal of the City of Chino Hills, California, on the day and year last written below.

DocuSigned by:

1044881BFA20430...



CHERYL BALZ, CITY CLERK

9/10/2025
DATE

City of Chino Hills

HAZARD MITIGATION PLAN

2025



September 9, 2025

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DISCLAIMER LANGUAGE

Rincon Consultants, Inc. (hereinafter referred to as "Rincon") prepares local hazard mitigation plans that evaluate climate change hazards, including wildfire, based on numerous sources, including third party consultants, State and Federal mapping resources, and various software modeling programs that are considered industry standard best practices. While Rincon has made every effort to ensure the accuracy and reliability of the information provided, the hazards analyzed in its reports are intended for informational purposes only and should not be construed as definitive or exhaustive. Each situation may differ based on site-specific conditions, weather, and other factors that may impact the analysis, as well as the limitations of the mitigation measures themselves. Wildfire is unpredictable, and the specific conditions of wildfire could result in fire behavior that diverges from the assumptions used in this analysis. There is no guarantee that wildfire behavior and specific treatment to avoid such behavior will follow or prevent wildfire impacts. Rincon is not responsible for any damage to life or property that might occur based on the hazard analysis results and any accompanying recommendations.

1.0 INTRODUCTION

The Hazard Mitigation Plan (HMP) is a “living document” that should be reviewed, monitored, and updated to reflect changing conditions and new information. As required, the HMP must be updated every five (5) years to comply with regulations and Federal mitigation grant conditions. In that spirit, this HMP is an update of the City of Chino Hills 2020 Hazard Mitigation Plan approved by FEMA on July 29, 2020. The current HMP presents updated information regarding hazards faced by the City of Chino Hills as determined by the Planning Team for the 2020 HMP Update. The HMP also presents mitigation measures to help reduce consequences from hazards, and outreach/education efforts within the City since 2020. Pre-identifying the local hazards provides City emergency planners with a rationale for prioritizing emergency preparedness actions for specific hazards.

1.1 PARTICIPATING JURISDICTIONS

Many agencies, organizations, businesses, and non-governmental entities contend with natural hazards. The Planning Team members contacted representatives of these various entities to solicit input and concerns relative to natural and man-made hazards, and to determine how their programs could best collaborate with the City’s mitigation program.

• Chino Valley Independent Fire District • City of Chino • City of Brea • City of Yorba Linda • Chino Valley Unified School District	• Community Members • Community Organizations • Local Utility Companies • Chino Valley Chamber of Commerce • San Bernardino County Sheriff's Department/Chino Hills Police Department
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1.2 PURPOSE OF THE PLAN

Emergencies or disasters may cause death, significant damage to our communities, businesses, public infrastructure, and our environment, and leave people injured or displaced. A disaster could lead to massive costs for response and recovery, along with significant economic losses. Hazard mitigation reduces or eliminates losses of life and property. After disasters, repairs and reconstruction are often carried out merely to restore areas to their pre-disaster state. Such efforts expedite a return to normalcy; however, the replication of pre-disaster conditions results in a cycle of damage, reconstruction, and repeated damage. Mitigation is one of the primary phases of emergency management specifically dedicated to breaking the cycle of damage. Hazard mitigation is distinguished from other disaster management functions by measures that make the City's development and the natural environment safer and more disaster resilient. Mitigation generally involves the alteration of physical environments, significantly reducing risks and vulnerability to hazards by altering the built environment so that life and property losses can be avoided or reduced.

The City, like other communities, could suffer severe harm from hazardous events. Even smaller disasters can have substantial effects. While the City cannot be entirely immune to hazardous events, this HMP can help create a safer community for residents, workers, and visitors. The plan offers a comprehensive assessment of the natural, human-caused, and climate-related hazards the City faces, along with a coordinated strategy to mitigate these threats. It identifies resources and information that can help community members, City staff, and local officials understand local threats and make informed decisions. Furthermore, the HMP can support increased coordination and collaboration between the City, other public agencies, local employers, service providers, community members, community organizations, and other key stakeholders.

This HMP will assist the City in reducing risks from natural hazards by identifying resources, information, and strategies for risk reduction while helping to guide and coordinate mitigation activities throughout the City. The HMP provides an action plan to reduce risks from natural hazards through education and outreach programs and to foster the development of partnerships, and implementation of

preventative activities such as land use programs that restrict and control development in areas subject to damage from natural hazards.

As a Multi-Jurisdictional Planning Team, the partners were able to review, provide input, and help to develop common goals and objectives for mitigation efforts. The individual stakeholders can then take the goals and objectives back to their agencies for discussion, ranking, and project development. The Multi-Jurisdictional Planning Team can then integrate all projects into the appropriate project listing to be acted upon by the appropriate agency for the listed project.

The resources and information within this HMP establish a basis for coordination and collaboration among agencies and the public in the City to identify and prioritize future mitigation projects and assist in meeting the requirements of federal assistance programs.

1.3 AUTHORITY

FEDERAL AUTHORITY

The City is not mandated to prepare an HMP, but it is highly encouraged to do so by state and federal regulations. In 2000, FEMA adopted revisions to the Code of Federal Regulations. This revision is known as the “Disaster Mitigation Act (DMA).” DMA 2000, Section 322 (a-d) requires that local governments, as a condition of receiving federal disaster mitigation funds, have an HMP that describes the process for assessing hazards, risks, and vulnerabilities, identifying and prioritizing mitigation actions, and engaging/soliciting input from the community (public), key stakeholders, and adjacent jurisdictions/agencies. This plan is governed by the following regulations and guidelines:

Federal Laws

- Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), as amended.

Federal Regulations

- 44 CFR Part 201 Mitigation Planning
- 44 CFR, Part 60, Subpart A, including § 60.3 Flood plain management criteria for flood-prone areas
- 44 CFR Part 77 Flood Mitigation Grants
- 44 CFR Part 206 Subpart N. Hazard Mitigation Grant Program

Federal Guidance

- FEMA Local Mitigation Planning Policy Guide (FP 206-21-0002), effective April 19, 2023.

State Authority California Government Code Section 8685.9 (Assembly Bill 2140) limits the state's contribution to disaster relief funds to 75 percent of the costs not covered by federal efforts unless the local government has a valid hazard mitigation plan integrated into their general plan. If integrated into their general plan, the state can cover more than 75 percent of the remaining costs.

California Government Code Section 65302.6 mandates that all California cities and counties prepare a general plan with a safety element addressing various hazards and public safety issues. The safety element can be a separate chapter or part of another section. Communities can incorporate an HMP into their safety element if it meets state requirements, which strengthens the implementation of the HMP as the General Plan is a long-term plan for community growth and development.

California Government Code Section 65302 (g)(4) (Senate Bill No. 379) will, upon the next revision of a local hazard mitigation plan on or after January 1, 2017, or, if the local jurisdiction has not adopted a local hazard mitigation plan, beginning on or before January 1, 2022, require the safety element to be reviewed and updated as necessary to address climate adaptation and resiliency strategies applicable to that city or county.

This HMP aligns with the existing standards and regulations set forth by the California Office of Emergency Services (Cal OES) and the FEMA. It is based on the best available science, and its mitigation actions and strategies reflect best practices and community values. The HMP fulfills the criteria of current state and federal guidelines, thereby qualifying the City for all suitable benefits under state and federal laws and practices. It's important to note that while FEMA is responsible for reviewing and certifying this HMP, and Cal OES is responsible for conducting a preliminary review, it does not grant FEMA or Cal OES an increased role in the governance of the City or authorize either agency to take any specific action in the community.

1.4 PLAN UPDATE

The information in this Plan, including the hazard profiles, threat assessments, and mitigation actions, is based on the best available information, practices, technology, and methods available to the City and Hazard Mitigation Planning Committee when this Plan was prepared. As factors change, including technologies, community demographics and characteristics, best practices, and hazard conditions, it is necessary to update the Plan to remain relevant. Additionally, Title 44, Section 201.6(d)(3) of the Code of Federal Regulations requires that HMPs be reviewed, revised, and resubmitted for approval every five years to remain eligible for federal benefits.

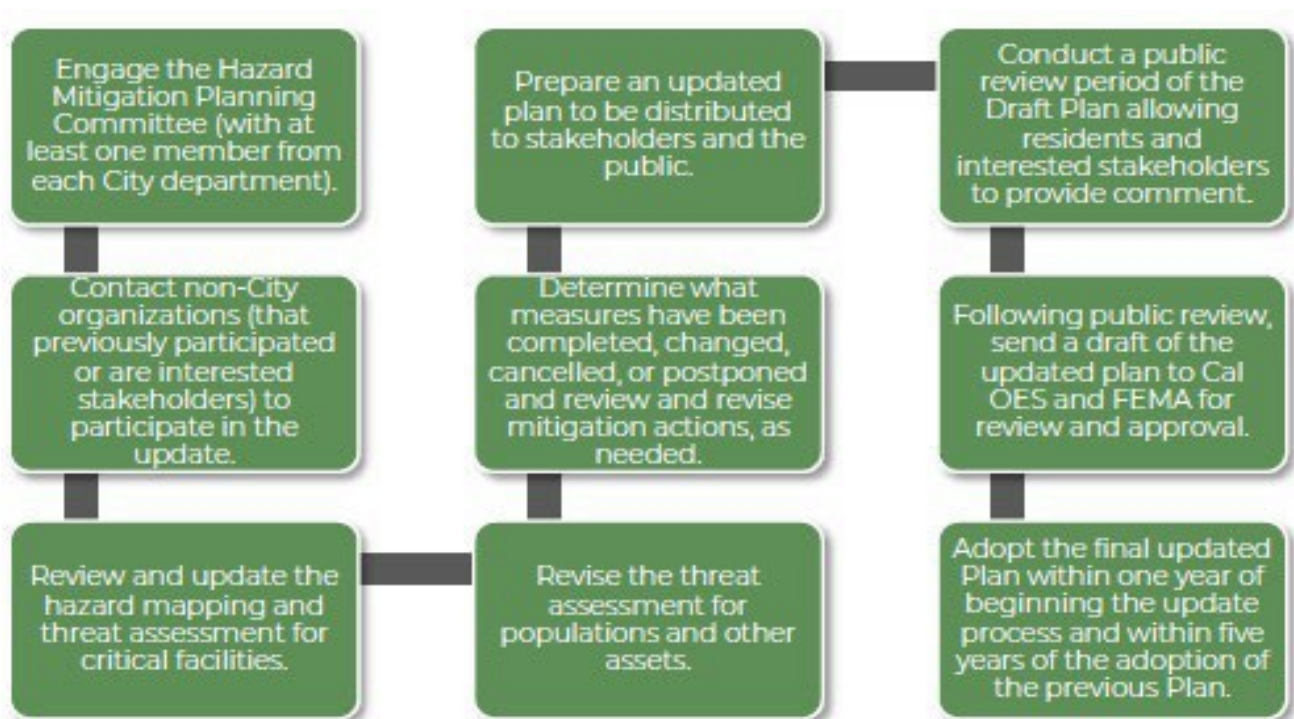
UPDATE METHOD AND SCHEDULE

The update process will begin no later than four years after this Plan is adopted, allowing a year for the update process before the Plan expires. However, it is recommended that you begin the update process

three years after plan adoption if the funding source for the plan will be a mitigation grant. Depending on the circumstances, the HMP project manager (appointed by the City Manager) or their designee may also choose to begin the update process sooner. Some reasons for accelerating the update process may include:

- A presidential disaster declaration for Chino Hills or an area that includes part or the entire City
- A hazard event that results in one or more fatalities in Chino Hills

The update process will add new and updated methods, demographic data, community information, hazard data and events, considerations for threat assessments, mitigation actions, and other necessary information, keeping the Plan relevant and current. The HMPC will determine the best process for updating the Plan, which should include the following steps:



In 2024, the Hazard Mitigation Planning Team identified three new hazards to focus their mitigation efforts on extreme heat (medium probability, low impact), high winds (high probability, medium impact), and dam inundation (low probability, low impact).

The City's mitigation strategy is derived from the in-depth review of the existing vulnerabilities and capabilities outlined in subsequent sections of this plan, combined with a vision for creating a disaster-resistant and sustainable community for the future. This vision is based on informed assumptions, recognition of both mitigation challenges and opportunities, and demonstrated by the goals and

objectives outlined below. Upon review of the City’s 2020 Hazard Mitigation Plan, no changes were made to the overall mitigation goals in the 2025 updates of the plan. These goals remain relevant and continue to reflect the City’s core priorities of identifying and reducing the risks associated with each of the hazards identified in the plan, protecting life and property, promoting community resilience, and encouraging sustainable development. Updates in this plan refine and provide several mitigation actions, incorporate current data, and adjust to meet recent regulatory requirements and include community input, rather than altering the goals themselves. The mitigation measures identified under each objective include an implementation plan for each measure. The measures were individually evaluated during discussions of mitigation alternatives and the conclusions were used as input when priorities were decided. All priorities are based on the consensus of the Planning Team. Mitigation measures are categorized generally for all hazards and specifically for the three new hazards examined in the risk assessment section: extreme heat, high winds, and dam inundation.

MITIGATION 5-YEAR PROGRESS REPORT

Table 1 provides the status of those mitigation projects listed in the approved 2020 plan.

Table 1 Status of Mitigation Projects

Mitigation Project	Complete	Deleted	Deferred	Ongoing	Hazard	Funding Source(s)	Timeframe	Priority Ranking
Adopt the 2019 California Building Code and California Residential Code	X				Earthquake	Grant Funded	Short-term	High
Sleepy Hollow Neighborhood Community Outreach - retrofitting education about sill plates and cripple walls		X			Earthquake	Project Ongoing, carried forward from 2011	Long-term	High
Promote residential retrofitting by offering free inspection for unanchored sill plates and unreinforced cripple walls		X			Earthquake	Capital Improvement Program; Federal Grants	Short-term	Med
Host an annual Emergency Preparedness Workshop for all residents				X	All Hazards	PDM Grant; Federal Grants	Long-term	High

Develop a multi-hazard public awareness program				X	All Hazards	City Capital Improvement Project to reconstruct water and hydrant system	Long-term	Med
Install storm drains, curbs, and gutters in the Los Serranos area.				X	Flooding	Grant funded	Long- term	Med
Reduce the spread of wildfires and protect homes by providing additional fuel breaks in the Carbon Canyon area.				X	Fire	No funding source at this time	Long-Term	High
Collaborate with the Chino Valley Fire District to develop and implement a wildfire safety and preparedness public education program.				X	Fire	Fire personnel	Short Term	High
Utilize hazard data and critical facility identification to create detailed maps to track risk for various hazards.	x				All Hazards	Information Technology	Short Term	High
Video Sewer Lines - Assessment for potential problems in city sewer lines				X	Flooding	Public Works	Long-Term	High
Enhance water-saving capabilities through the Tune-Up Program to repair leaking sprinklers, irrigation valves, and breaks in lines.				X	Drought	Public Works	Long-Term	High

Mitigation Project	Complete	Deleted	Deferred	Ongoing	Hazard	Funding Source(s)	Timeframe	Priority Ranking
Remove turf and install drought-resistant plants on City land and parkways.				X	Drought	Public Works	Long-Term	Med
Reduce fire hazard by removing Arundo Donax's growth and debris in Carbon Canyon Creek.				X	Fire	Public Works	Long-Term	Med
Increase water use efficiency through the Pressure Regulator Replacement Program, use of weather-based irrigation controls, and high-efficiency nozzles.				X	Drought	Public Works	Long-Term	Med
Install quick-connect emergency generator hook-ups for critical facilities.				X	All Hazards	Public Works	Long-Term	High

1.5 COMMUNITY PROFILE

PHYSICAL SETTING

The City of Chino Hills encompasses 28,769 acres or approximately 45 square miles in the rolling hills of southwestern San Bernardino County and is located at the juncture of Los Angeles, Orange, and Riverside Counties. Chino Hills shares boundaries with the cities of Chino, Pomona, Brea, Diamond Bar, and Corona. Access to the community is provided by the Pomona Freeway (SR-60), the Chino Valley Freeway (SR-71), and Carbon Canyon Road (SR-142). Grand Avenue is a major arterial providing access to the Orange Freeway (SR-57) through the City of Diamond Bar.

When adopted, in 1982 the City's Specific Plan called for clustered residential development along the Highway 71 corridor and major arteries. Open space and canyon areas in the City are covered with chaparral, coastal sage scrub, deciduous woodlands, and grasslands. Chino Hills State Park, consisting of

Figure 1 Location of Chino Hills



During the 1920s and 1930s, an area called Sleepy Hollow became a weekend getaway from the fast pace of Los Angeles. By 1928, Sleepy Hollow was a summer resort with about 90 cabins, some of which are still in use today. The Los Serranos Golf and Country Club, which opened in 1925, was also a favorite spot for city dwellers. Originally, members of the golf club could purchase small lots in the community. The club members would erect cabanas on their property, or rent casitas for a festive getaway. The natural beauty of Chino Hills in the early 1900s is preserved in Chino Hills State Park. A grassroots

organization known as “Hills for Everyone” was the guiding force behind the preservation of 12,500 acres of land that became the largest California State Park located in an urban setting.

By the late twentieth century, Chino Hills and its surrounding communities began to rapidly urbanize. Prior to incorporation, Chino Hills was part of unincorporated San Bernardino County. In 1979 the County initiated the development of the Chino Hills Specific Plan, a document that planned for the eventual development of 18,000 acres of Chino Hills lands. The area had been protected from haphazard development because the land was not flat enough to be built inexpensively. It was clear, however, that development pressures were moving toward Chino Hills. The Chino Hills Specific Plan was the first in the State of California to be designed for an unincorporated area. The Specific Plan called for clustered residential development in order to protect as much open space as possible. Commercial development was slated along the Highway 71 corridor and major arterials.

By 1982, when the Specific Plan was approved, there were approximately 4,000 homes and 12,000 residents in Chino Hills. By the late 1980s, Chino Hills residents were actively exploring the pros and cons of cityhood. The residents ultimately decided that incorporation would allow them greater control over the community’s future, and on December 1, 1991, Chino Hills incorporated and became a city.

CLIMATE

The City benefits from a mild, temperate climate, with average monthly temperatures ranging from the low 40s to the low 90s. Monthly rainfall averages from a high of 3.0 inches to no rain at all. At times temperatures will rise to the low 100s and humidity will drop considerably, resulting in extreme fire conditions. Additionally, Chino Hills is subject to Santa Ana winds of 25 to 40 miles per hour, with gusts up to 60 to 75 miles per hour. These winds come out of the desert, blow to the southwest, and are often accompanied by hot temperatures. At times, warm temperatures, very low humidity, and stronger winds combine to create an increased risk of fire danger and the need for the National Weather Service to issue a Red Flag Warning.

DEMOGRAPHICS

At the time of incorporation, the population of the City was 42,000. From 2000 to 2008 its population grew from 66,787 to 78,957, a gain of 12,170 or 18.2%. San Bernardino County grew 20.2% during this period. Chino Hills’ 2008 population of 78,957 made it the 15th largest city in the Inland Empire. The 2020 American Community Survey from the U. S. Census Bureau shows the City’s current population at 78,411.

The average median family income in Chino Hills, per the U. S. Census Bureau, American Fact Finder as of 2023 is \$127,294. Income levels in the City are high in large part because it has a very well-educated population. As of 2023, the American Community Survey from the Census Bureau

found that 45% of its adult residents aged 25 years and older had a bachelor's degree or higher, including 15.9% with graduate degrees. At the other end of the spectrum, 23.2% of the adults living in the City had a high school diploma or less education.

Chino Hills is an ethnically diverse city. In 2023 the largest share of the population at 41% is Asian, a significant increase from 31.9% in 2015. The City's second largest group at 29% is Caucasian. The third largest group at 28% is Hispanic. African-Americans make up 4% of Chino Hills' population, a slight increase from 3.9% in 2015.

The 2023 American Community Survey found Chino Hills to be a moderately aged city. The median age of its residents is 39.6 years old. The City's largest age group was aged 50 to 54. The City's second largest group was residents aged 60 to 64 years old. The third largest group was aged 25 to 29 years of age.

EXISTING LAND USE

The City of Chino Hills General Plan - Land Use Element supports the City's vision to preserve and enhance high quality, balanced development; the rural character of the natural environment; ample private and public services; sustainable land use patterns; community character; and healthy living.

The Land Use Element establishes the type, intensity, and pattern of land uses, it both shapes and is shaped by housing, transportation, noise, air quality, infrastructure, public services, natural resources, safety, open space, and recreation.

The existing land use table (Table 2) is based on data obtained within the City's General Plan Figure 2. The General Plan is broken out into 15 land uses:

1. **Agriculture/Ranch** – Land use that preserves large single-family residential lots (5 acre minimum) with related agricultural operations (0 to 0.2 du/ac)
2. **Rural Residential** – Single-family residential land use, large lots (1/2 acre min. 0.2-2 du/ac)
3. **Low Density Residential** – Single-family residential use (7,200 s.f. lots, 2 to 6 du/ac)
4. **Medium Density Residential** – Attached multi-family residential use (6 to 12 du/acre)
5. **Medium-Density Residential Housing** – Sites appropriate for moderate-income housing (9 to 12.5 du/ac)
6. **High Density Residential** – Attached multi-family residential use (12 to 25 du/acre)
7. **Very High Density Residential** – Attached multi-family residential use (25 to 35 du/acre)
8. **Urban High-Density Residential Housing** – Sites appropriate for lower-income housing adjacent to commercial and civic uses (30 to 93 du/ac)
9. **Commercial** – Includes a variety of uses such as retail sales, service commercial, restaurants, hotels, and professional offices

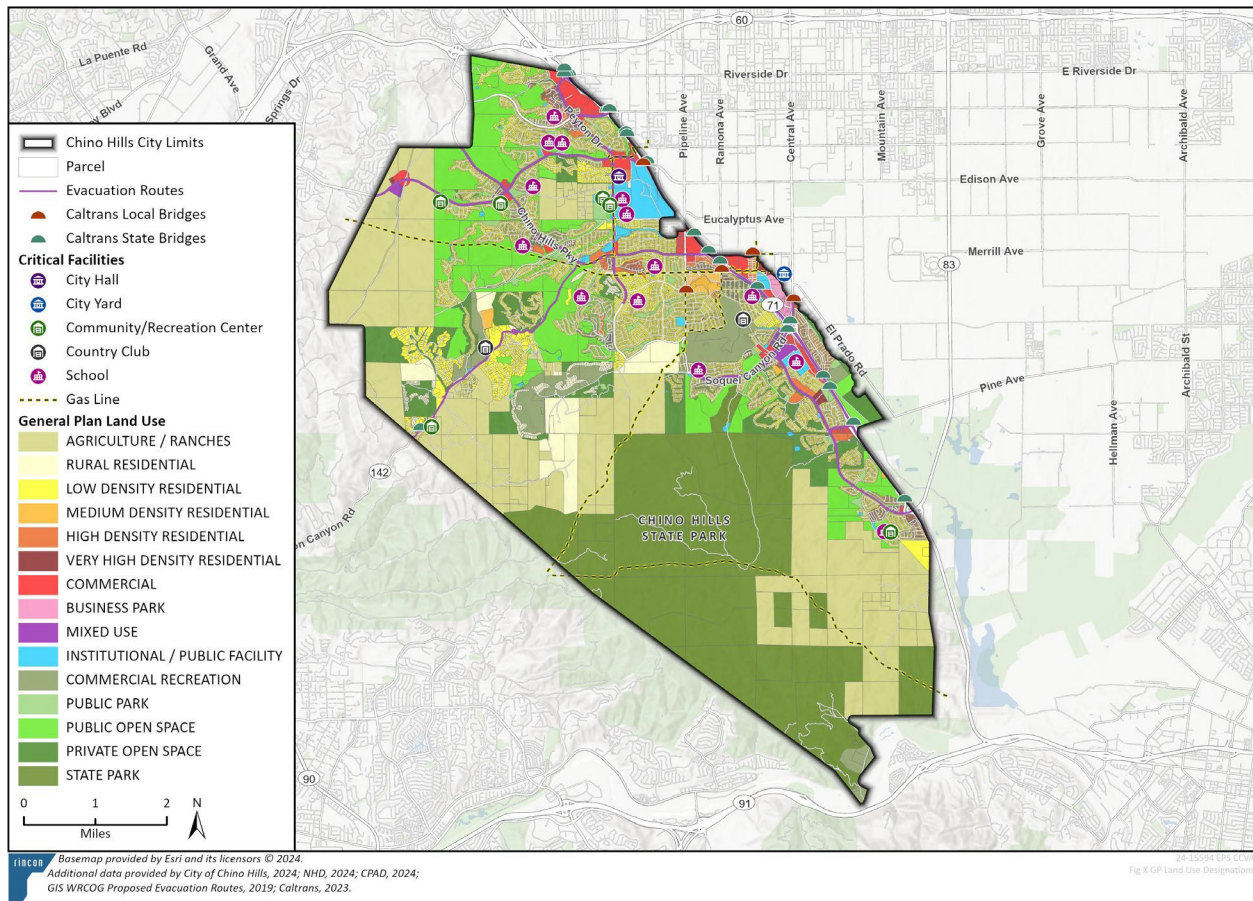
10. **Business Park** – Light industrial uses (i.e. warehouse, storage, light manufacturing, etc.)
11. **Institutional** – Includes government uses (City Hall, library, police, and fire) and institutional uses (churches and schools)
12. **Commercial Recreation** – Outdoor recreation uses such as golf courses
13. **Public Park** – City-owned parks with active recreational areas and passive open space areas, including such uses as sports fields, picnic areas, playgrounds/tot lots, landscaped areas, parking, and other support facilities including structures
14. **Public Open Space** – Natural open space, conservation areas, and trails
15. **Private Open Space** – Privately owned open space areas within private developments
16. **State Park** – Property within the City boundaries owned and operated by the Chino Hills State Park, natural open space, trails, visitor facilities, ranger facilities
17. **Institutional/Public Facility** – Public and private institutional uses such as City and other government entities
18. **Mixed Use** – Sites appropriate for a mix of multi-family residential development and commercial
19. **Mixed-Use Housing** – Sites appropriate for lower-income housing with a commercial center

Table 2 Land Use Designations Table

Land Use Designation	General Plan Acres	Percent of Total Acres
Residential		
Agriculture/Ranches	7,169	26.7%
Rural Residential	782	3.0%
Low Density Residential	3,644	13.6%
Medium Density Residential	353	1.3%
Medium Density Residential Housing	130	0.5%
High Density Residential	309	1.2%
Very High Density Residential	34	0.1%
Urban High-Density Residential Housing-	8	0.0%
Very High-Density Residential Housing	61	0.2%
Subtotal	12,489	46.6%
Commercial		

Commercial	398	1.4%
Business Park	63	.2%
Commercial Recreation	806	3.0%
Subtotal	1,267	4.8%
Open Space		
Public Park	295	1.1%
Public Open Space	3,182	11.9%
Private Open Space	1,460	5.5%
Chino Hills State Park	7,325	27.3%
Subtotal	12,262	45.8%
Institutional/Public Facility	643	2.4%
Mixed Use	56	0.2%
Mixed Use Housing Overlay	36	0.1%
Total	26,754*	100%

Figure 2 Land Use Designations Map



DEVELOPMENT TRENDS

Much of the land in the City designated for development has been built out. The vacant land that remains primarily consists of hillside properties or properties constrained by natural resources or hazards, and will accommodate only limited growth. Outside pressures for growth are expected to come from current or new state regulations that call for adequate housing sites. To accommodate requirements of the Regional Housing Needs Assessment (RHNA), future multi-family sites that can support very high density development must be identified. Other outside pressures for growth come from state and regional directives for mixed use and transit-oriented development. Opportunities for such development will depend on future regional transit links, and will likely occur along major arterials.

All future development projects that will take place is planned to occur in accordance with the General Plan Land Use Zones and will consider all potential hazards identified within this Plan. Additionally, all development will be in compliance with all Fire, Flood, and Seismic codes of the County and State at the time of development.

2.0 Plan Revision and Adoption

ADOPTION BY LOCAL GOVERNMENT

The public review period for the City's HMP ended on April 17, 2025. Comments requiring edits or modifications to the plan content were made prior to submission of the plan to Cal OES and FEMA. The plan will be submitted to Cal OES and FEMA, initiating the agency review process on or about April 21, 2025. Upon completion of the formal agency review process, City staff will submit the HMP for final adoption.

A Resolution of the City of Chino Hills, adopting the Hazard Mitigation Plan as required by the Disaster Mitigation Act of 2000 (Resolution No. ____) was adopted on _____, (Resolution is located before the Table of Contents).

The Resolution will include support for the State of California Enhanced State Multi-Hazard Plan, August 2023.

PROMULGATION AUTHORITY

This Hazard Mitigation Plan will be reviewed and approved by the following Promulgation Authorities:

Art Bennett,
Mayor Brian
Johsz, Vice Mayor
Ray Marquez, Council
Member Peter Rogers,
Council Member Cynthia
Moran, Council Member

PRIMARY POINT OF CONTACT

The Point of Contact for information regarding this plan is:

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3.0 PLANNING PROCESS

3.1 Preparing for the Plan

Using the 2023 FEMA Local Mitigation Planning Policy Guide and Local Mitigation Plan Review Tool as a guide, the City adopted a comprehensive approach to develop its annex to the San Bernardino County Multi-hazard Multi-jurisdictional Mitigation Plan.

Additionally, it was concluded that the Plan would include information and data supplied by supporting local agencies, public involvement and public comments received during the planning process, and other sources developed through discussions during Planning Team meetings.

Drafting the HMP was accomplished in eight Phases.

- 3.1.1 Phase I – Establish the Planning Team
- 3.1.2 Phase 2 – Coordination with other Jurisdictions, Agencies, and Organizations
- 3.1.3 Phase 3 – Public Involvement
- 3.1.4 Phase 4 – Assess the Hazards
- 3.1.5 Phase 5 – Set Goals
- 3.1.6 Phase 6 – Review and Propose Possible Mitigation Measures
- 3.1.7 Phase 7 – Draft the Hazard Mitigation Plan
- 3.1.8 Phase 8 – Adopt the Plan

The Planning Team agreed that the City’s 2020 Hazard Mitigation Plan was not sufficient to meet the requirements set forth by 44 CFR Section 201.6. Due to the numerous and intense disasters that have occurred around the world in the past five years, the Planning Team put special emphasis on adding new hazards of concern & promoting sustainable hazard mitigation. This includes the sound management of natural resources, local economic and social resiliency, and the recognition that hazards and mitigation must be understood in the largest possible social and economic context.

It is impossible to predict exactly when and where disasters will occur or the extent to which they will impact the City; however, with careful planning and collaboration among public agencies, stakeholders, and citizens, it is possible to minimize losses that can occur from disasters.

PLANNING TEAM

The Planning Team was assembled to oversee the development of the Plan. This Team consisted of City staff, and citizens in the planning area. A technical subcommittee consisting of key City staff was also assembled to provide technical support to the Planning Team.

The Planning Team met quarterly in person and through email to review the previous plan, provide input on identifying new risks, previous update guidance, identify issues, review stakeholder and public input, evaluate and assign priorities and provide mitigation input. Each member of the planning team provided their subject matter expertise to inform the plan update. The Planning Team also provided background documents and facilitated data collection. The resulting Plan, along with the entire planning process, is a living document that will continue to place mitigation as a priority in the City.

This HMP was compiled and authored under the direction of the following Planning Team members:

Table 3 Planning Team Participants

Name	Title	Jurisdiction or Agency	Technical Area
Joyce Lee	Emergency Services Coordinator	City of Chino Hills	Emergency Management
Rod Hill	Assistant City Manager	City of Chino Hills	Administration
Carl Hassel	Engineering Manager	City on Chino Hills	Infrastructure
Fe Rama	Assoc. Engineer	City on Chino Hills	Infrastructure
Daniel Bobadilla	Public Works Director	City of Chino Hills	Infrastructure
Mark Wiley	Water & Sewer Manager	City of Chino Hills	Infrastructure
Sean O'Connor	Maintenance & Operations Manager	City of Chino Hills	Infrastructure, Parks & Open Space
Michael Hofflinger	Planning Manager	City of Chino Hills	Housing, Health, and Social Services
Valerie McClung	Community Relations Manager	City of Chino Hills	Emergency Management, Public Information
Melissa Armit	Community Services Manager	City of Chino Hills	Recreation
Bradley Fliehm	Building Official	City of Chino Hills	Infrastructure
Nicole Freeman	Public Information Officer	City of Chino Hills	Public Information
Johnnie Davis	GIS Analyst	City of Chino Hills	Information Technologies
Michael Goss	Senior IT Analyst	City of Chino Hills	Information Technologies
Dan Renear	Detective	Chino Hills Police Dept.	Law Enforcement

Randy Naquin	Sergeant	Chino Hills Police Dept.	Law Enforcement
Danielle, O'Toole	Fire Marshal	Chino Valley Fire District	Fire Services
Jeremy Ault	Deputy Chief	Chino Valley Fire District	Fire Services
David Garrett	Store Manager	Costco	Public
Teri Thomas	Store Manager	Lowes	Public

Table 4 Planning Team/Stakeholder Team /Public Outreach Meetings

Date	Item	Location
5/2/2024	Planning Team Kickoff Meeting	Chino Hills City Hall
6/26/2024	Concerts in the Park Booth, Public Outreach	Chino Hills Veteran's Park
7/8/2024	Filipino American Seniors Association Public Outreach	Chino Hills Community Center
7/9/2024	Happy Life Public Outreach	Chino Hills Community Center
7/26/2024	55+ Club Public Outreach	Chino Hills Community Center
8/14/24	Stakeholder Meeting	Chino Hills City Hall
8/22/2024	Public Workshop	Chino Hills City Hall
9/25/2024	Planning Team Meeting	Chino Hills City Hall
11/20/2024	Stakeholder Meeting	Chino Hills City Hall
3/19/25	Chino Hills Chamber of Commerce Breakfast Public Outreach	Chino Hills Community Center

3.2 COORDINATION WITH OTHER JURISDICTIONS, AGENCIES, AND ORGANIZATIONS

There are many agencies, organizations, businesses and non-governmental entities that contend with natural hazards. Planning Team members contacted representatives of these various entities to solicit input and concerns relative to natural and man-made hazards and to determine how their programs could best collaborate with the City's mitigation program (Table 5). (Refer to Appendix A for list of stakeholders)

Table 5 Coordination Jurisdictions, Agencies, and Organizations

Jurisdiction or Agency	Title	Name	Technical Area
Chino Valley Fire District	Fire Marshal	Danielle O'Toole	Fire Service
Chino Valley Fire District	Deputy Chief	Jeremy Ault	Fire Service
San Bernardino County Sheriff Dept., Chino Hills Police Dept.	Sergeant	Randy Naquin	Law Enforcement
City of Chino	Emergency Services Coordinator	Denise School	Law Enforcement
City of Brea	Emergency Manager	Lisa Keyworth	Emergency Management
City of Yorba Linda	Emergency Management Coordinator	Christopher Pena	Emergency Management
Inland Empire Utility Agency	Safety Officer	Tony Arellano	Water (Lifeline)
Southern California Edison	Government Relations Manager	Melissa Boyd	Energy (Lifeline)
SoCalGas	Area Manager	Larry Taylor	Energy (Lifeline)
Frontier Communications	Emergency Operations Coordinator	Nora Garrido	Communication (Lifeline)
United States Army Corp. Engineers	Emergency Manager	David Kingston	Flood Control
American Red Cross	Disaster Program Manager	Erin Fox	Community Based Organization
Social Work Action Group	Chino Hills Supervisor	Laurissa Call	Community Based Organization
Inland Valley Humane Society	Director of Operations	MaryAna DeLosSantos	Community Based Organization
Inland Valley Humane Society	Community Outreach Director	Melissa Matherly	Community Based Organization

Chino Valley Unified School District	Maintenance and Operations	Martin Silveira	Education
Chino Valley Unified School District, Chino Hills High School	Assistant Principal	Viviana Gentry	Education
Chino Valley Unified School District, Ruben S. Ayala High School	Assistant Principal	Patricia Durham	Education
Boys Republic	Program Manager	Duffy Blau	Education

3.3 PUBLIC INVOLVEMENT/OUTREACH

Under FEMA guidelines, local hazard mitigation planning processes should create opportunities for the public to be involved in plan development—at a minimum, during the initial drafting stage and plan approval. Several key activities of the HMP include stakeholder engagement, vulnerable populations outreach and future outreach opportunities.

Since the 2020 HMP was approved, the City has consistently provided outreach to the community, other governmental agencies, and non-governmental agencies by way of community meetings, preparedness fairs, and ongoing meetings with neighboring cities and agencies. In November 2008, there was a federally declared disaster (Freeway Complex Fire) that provided an enhanced community-wide level of awareness in support of hazard mitigation efforts. In October 2020, there was another federally declared disaster (Blue Ridge Fire) that yet again enhanced resident awareness, preparation for disasters and support of local hazard mitigation efforts. As a result of both fires, evacuees of the Freeway Complex Fire and Blue Ridge Fire vocalized their need for enhanced property protection. Chino Hills staff used these opportunities to reach out to the community through the Fire Safe Council and community workshops to include this group in the hazard mitigation planning process as well as emergency preparedness planning. In 2024, the City conducted a public survey to assess the public's concerns regarding hazards in the community, offering the survey both online and in person in multiple languages.

Since September 2011, the City of Chino Hills has held an Annual Emergency Preparedness Workshop for the public. This yearly workshop consists of presentations on preparedness from the American Red Cross, Chino Valley Fire District, Chino Hills Police Department, Inland Valley Humane Society, Southern California Gas Company, Southern California Edison, Allied Restoration (a local emergency preparedness vendor), Honeyville Farms (a local food preparedness vendor) and City staff. Topics covered have included wildfire, extreme heat, earthquake, and numerous other disaster topics. Residents are also given the opportunity to learn how to put an emergency kit together, how to harden their home against disasters, & the importance of creating a family emergency plan. This event draws hundreds of families from Chino Hills and the City of Chino. Attendees are quizzed on their emergency preparedness knowledge before they get a prize. The City continues to support the Fire Safe Council and Neighborhood Watch programs where emergency preparedness information is distributed.

Other outreach opportunities include the City's annual participation in the Chino Valley Fire District's Open House. This event draws hundreds of families from Chino Hills and the City of

Chino. Attendees are quizzed on their emergency preparedness knowledge before they get a prize. The City continues to support the Fire Safe Council and Neighborhood Watch programs where emergency preparedness information is distributed. City staff also participates in the Met-Net group. This group was formed to manage emergencies together. This group includes representatives from the cities of Chino, Chino Hills, Chino Valley Fire District, Chino Valley Unified School District, California Institution for Men, CDCR-Prado Fire Camp, California Institution for Women, Caltrans, local hospitals, Chino Airport, Omnitrans, San Bernardino Department of Public Health, Monte Vista Water District, non-governmental agencies, utility companies, and the Union Pacific Railroad, among others. This group was formed to discuss mitigation programs and “Managing Emergencies Together.”

The City released an online survey to community members to gather feedback on the planning process and hazards of concern. The City received 230 responses from community members and stakeholders during the survey period. The survey was provided in English, Spanish, and Mandarin, the three most common languages spoken in Chino Hills and was provided both online on the City website, on flyers via QR code, on the City’s social media accounts & printed copies at the Community Center. Responses were received from all zip codes and areas within Chino Hills, as well as from individuals who work in the City. Based on these responses three hazards stood out as the most concerning to the public: Earthquake, Wildfire, and Drought.



The results from the survey were provided to the HMPC. The data was then analyzed, reviewed, and incorporated by the HMPC within the HMP content to ensure changes in community priorities were captured. The data provided by the survey presented unique local insight into hazard concerns and assessed the public’s overall opinion and perception of the hazards that affect Chino Hills.

The City promoted and provided information on both the Local Hazard Mitigation Plan Survey and the HMP Public Review Draft via multiple outreach platforms including the City website, City social media, local PEG Cable TV Channel, Notify Me City News & Announcement Subscribers, via Press Release and coverage by the local newspaper, and on the City’s local LED sign on Peyton Drive.

- The City of Chino Hills Instagram account
- The City of Chino Hills Facebook account
- The City of Chino Hills X account
- Local PEG Cable TV Channel - City TV 3 (Spectrum) & 41 (Verizon)
- City Website www.chinohills.org
- City Notify Me Website Subscribers via Email and Text
- Champion Newspaper
- City LED Sign

Additional outreach included a City Press Release, in person and face-to-face engagement via attendance at some special events which are listed below, and direct emails to various groups such as Chino Valley Chamber of Commerce and Boys Republic of Chino Hills.

Table 4 outlines the times the planning team meetings, stakeholder team meetings, and public outreach opportunities that occurred during the update of the Hazard Mitigation Plan. The City of Chino Hills invited the Public Works and Parks and Recreation Commissions and the City Council to the Public Workshop to engage in the planning process. At the Public Workshop the City had translators for Spanish and Mandarin speakers as well as printed copies of the Local Hazard Mitigation Plan Survey in English, Spanish, and Mandarin. The planning committee also emailed the Local Hazard Mitigation Plan Survey to all City staff to allow for their participation in the plan update. The planning committee advertised the Local Hazard Mitigation Plan Survey at the City's volunteer ham radio group Chino Hills Auxiliary Radio Team (CHART)'s monthly meeting. The planning committee also reached out to the vulnerable populations in Chino Hills such as the unhoused outreach group S.W.A.G., senior groups such as the 55+ club, Happy Life, & Filipino American Seniors Association (FASA), and parents of children with access and functional needs that attend City provided events. In addition, City staff also placed hard copies of the hazard identification survey in English, Spanish, and Mandarin (in addition to the electronic copies) and information at the Community Center. This allowed staff to help residents using this facility with accessing the survey and answering any questions, residents had. In addition to reaching out to specific groups, the planning team also hosted a booth at the annual Concerts in the Park to engage the public in the update process and provide them an opportunity to take the Local Hazard Mitigation Plan Survey.

Recognizing that other vulnerable populations do exist in the City, this update focused on the one of greatest concerns. For the next update, the City intends to focus on expanding outreach as applicable.

MONITORING, EVALUATING AND UPDATING THE PLAN

This section details the formal plan maintenance process that will ensure the City's HMP remains an active and relevant document. The HMP maintenance process includes a schedule for monitoring and evaluating the plan for effectiveness annually and producing an updated plan every five years, or when a significant disaster or incident may occur. This chapter also describes how the City will integrate public participation throughout the plan maintenance and implementation process. Finally, this chapter explains how the City intends to incorporate the mitigation strategies outlined in this HMP into existing planning mechanisms and programs, such as the City's comprehensive land use process, capital improvement planning process, and building code enforcement and implementation.

When members of the HMPC are not updating the Plan, they should meet at least once a year to go over mitigation action implementation and evaluate the Plan's effectiveness. These meetings should include the following:

- Discussion of the timing of mitigation action implementation
- Mitigation action implementation evaluation and determination of success
- Mitigation action prioritization revisions, if deemed necessary

- Mitigation action integration into other mechanisms, as needed

The first of these meetings will be held in the 2025-2026 fiscal year. To the extent possible, HMPC meetings should be scheduled at an appropriate time in the City's annual budgeting process, which will help ensure that funding and staffing needs for mitigation actions are considered. When the HMPC meets to evaluate the Plan, members should consider these questions:

- What hazard events, if any, have occurred in Chino Hills in the past year? What were the impacts of these events on the community? Were the impacts mitigated, and if so, how?
- What mitigation actions have been successfully implemented? Have any mitigation actions been implemented but not successfully, and if so, why?
- What mitigation actions, if any, have been scheduled for implementation but have not yet been implemented?
- What is the schedule for implementing future mitigation actions? Is this schedule reasonable? Does the schedule need to be adjusted for future implementation, and are such adjustments appropriate and feasible?
- Have any new issues of concern arisen, including hazard events in other communities or regions that are not covered by existing mitigation actions?
- Are new data available that could inform updates to the Plan, including data relevant to the hazard profiles and threat assessments?
- Are there any new planning programs, funding sources, or other mechanisms that can support hazard mitigation activities in Chino Hills?

FORMAL REVIEW PROCESS

The HMP's format allows the City to review and update sections when new data becomes available. Review of the HMP will be tasked to the City's Emergency Services Coordinator. The City of Chino Hills Hazard Mitigation Plan will be reviewed on an annual basis to determine the effectiveness of programs, and to reflect changes in land development or programs that may affect mitigation priorities. New data can be easily incorporated, resulting in a Plan that will remain current and relevant to the City. Changes or additions to the City's HMP will be logged on the Record of Changes (Table 6) (exhibit 3.3.2) below, and maintained by the Emergency Services Coordinator.

Table 6 Record of Changes

Section Number	Responsible Party	Topic	Completed

THROUGH EXISTING PROGRAMS

An integral part of the 2020 Hazard Mitigation Plan update, running concurrently with the General Plan Safety Element. The current General Plan was updated in 2014 and adopted in 2015, and the General Plan update is expected to be complete and adopted in early 2025. It contains policies relevant to the Hazard Mitigation Plan. Specifically, the current General Plan Safety Element contains policies that address:

- Maintain and update the City Emergency Operations Plan (EOP) and City of Chino Hills Hazard Mitigation Plan (HMP), as required, to respond to extraordinary emergency situations associated with natural disasters, man-made disasters, technological incidents, and national security emergencies.
- Regulate development in high-risk seismic, landslide and liquefaction hazard areas to avoid exposure to hazards.
- Restrict development in areas prone to flooding or within dam inundation areas.
- Actively collaborate with regional, state and federal fire agencies to coordinate and implement wildfire mitigation measures and fuel load modification reduction zones, including load clearing, prescribed burns, fire breaks, livestock grazing, and public and private road clearance and other mitigation activities for areas proximal to the city.
- Minimize risk to life and property from production, use, and storage of hazardous materials and waste.

These General Plan Safety Element policies are carried forward in the City Building and Safety codes and many of the projects contained in the City Capital Improvement Plans. The HMP incorporates goals and objectives to implement these various existing planning documents. (Section 5.11, 5.11.1)

In addition, as part of the HMP process, the City of Chino Hills Planning Team obtained updated hazard maps and reports, and examined the hazards identified by the Planning Team in 2023. They also reviewed the significant incidents that occurred in the City of Chino Hills since the last HMP update.

Upon adoption, the 2025 HMP goals and actions will be incorporated into the updates of existing City planning documents. For example, the Local Hazard Mitigation Plan will be adopted into the Safety Element of the General Plan when the next General Plan update is completed, which is expected in 2025.

Much of the information from the Hazard Mitigation Plan will also be included in the Chino Hills Emergency Operations Plan (EOP), standard operating procedures as applicable, Capital Improvement Programs (CIP), Information & Data Systems, and the General Plan including the Safety Element. Keeping all of these plans in congruence with one another is a key component to the planning process.

CONTINUED PUBLIC INVOLVEMENT

A critical part of maintaining an effective and relevant HMP in ongoing public review and comment. Consequently, the City is dedicated to the direct involvement of its citizens in providing feedback and comments on the plan on a continued basis. The City developed a community survey and provided it to residents via the City website, public meetings, and City facilities' counters to see which hazards are creating the greatest concern for the community. Many of these surveys were returned and the community provided feedback that demonstrated that their concerns mirrored the City's, with earthquakes and wildfire being among the top issues. As a result, these concerns were reviewed and discussed at length with the Planning Team and as a result have been included in this plan. Residents are encouraged to share their hazard mitigation thoughts/concerns via the City website Hazard Mitigation page, social media, Council Meetings, annual Emergency Preparedness Workshop or by contacting the Emergency Services Coordinator.

The public will continue to be apprised of Local Hazard Mitigation Plan actions through the City's website, public workshops and attendance at special events, and through the local media. All proposed changes to the plan will be subject to citizen review prior to City Council action. The City will follow its standard public input process, consistent with the process used in the initial plan development, which is described in Section 3 of this Plan.

PLAN RESOURCES

The City referred to several plans, studies, technical reports, datasets, and other resources to prepare the Plan's hazard assessment, mapping, threat assessment, and other components.

Table 7 provides some of the hazard mitigation planning committee's primary resources to prepare this plan.

Table 7 Key Resources for Planning Development

Section	Key Resources Reviewed	Data Incorporated from Resources
Multiple Resources	• Cal-Adapt • California Department of Conservation • California Geological Survey • California Office of Emergency Services	• Science and background information on different hazard conditions
	• California State Hazard Mitigation Plan • City of Chino Hills General Plan • FEMA Local Hazard Mitigation Plan Guidance • National Oceanic and Atmospheric Administration • National Weather Service • US Geological Survey • US Census Bureau 2023 • American Community Survey • San Bernardino County Vulnerability Assessment • San Bernardino County Hazard Mitigation Plan	• Records of past disaster events in and around Chino Hills • Current and anticipated climate conditions in and around Chino Hills • Projections of future seismic conditions and events

Community Profile	• US Census Bureau 2023 American Community Survey • California Energy Commission	• Demographic information for Chino Hills and San Bernardino County • History of the region • Economic trends in Chino Hills • Commute patterns in Chino Hills • Local land-use patterns • Background information on utilities serving Chino Hills • Current Climate information in Chino Hills
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Hazard Assessment		
Flood Hazards, including Dam Failure	• FEMA Map Service Center • San Bernardino County Flood Control District • California Levee Database	• Records of past flood events in and around Chino Hills • Locations of flood-prone areas in Chino Hills
Human-Caused Hazards	• Global Terrorism Database	• Historical records of terrorism
Seismic Hazards	• California Geological Survey • United States Geological Survey	• Science and background information on seismic hazards • Historical record of seismic hazard events in and around Chino Hills
Severe Weather Hazards	• NOAA • National Weather Service	• Records of past weather events
Wildfire Hazards	• California Department of Forestry and Fire Prevention • Fire and Resource Assistance Program	• Records of past fire events • Location of fire hazard zones in and around Chino Hills
Note: Sections that are not individually mentioned in this table relied primarily on sources identified in multiple sections.		

4.0 RISK ASSESSMENT

The risk assessment is the process of measuring the potential impact to life, property and economic impacts resulting from natural hazards. The Risk Assessment intends to identify, as much as practicable given existing/available data, the qualitative and quantitative vulnerabilities of a community. The results of the risk assessment allow for a better understanding of the impacts of hazards to the community. It provides a foundation for developing and prioritizing mitigation actions to reduce damage from hazards through increased preparedness and response times and, the better allocation of resources to areas of greatest vulnerability.

This Risk Assessment Section evaluates the potential loss from a hazard event by assessing the vulnerability of buildings, infrastructure, and people including vulnerable populations within the City. It identifies the characteristics and potential consequences of hazards, how much of the City could be affected by a hazard, and the impact on City assets. The Risk Assessment approach consists of three (3) components:

- Hazard Identification – Identification and screening of hazards
- Hazard Profiles – Review of historic occurrences and assessment of the potential for future events
- Vulnerability Assessment – Determination of potential losses or impacts to buildings, infrastructure

4.1 HAZARD IDENTIFICATION

In order to identify potential vulnerability to all hazards that could impact the City, a risk assessment was performed. It focused on the following parameters:

- Hazard Identification
- The Impact of Hazards on Physical, Social, and Economic Assets
- Vulnerability Identification
- Estimates of the Cost of Damage or Costs that can be Avoided Through Mitigation
- Projected impact of hazards due to climate change HAZARD SCREENING CRITERIA

Per FEMA Guidance, the first step in developing the Risk Assessment is identifying the hazards. The City's HMP Planning Team reviewed the previous hazard mitigation plans and other relevant documents to determine screened hazards creating the greatest concern for the community. Table 8 provides a crosswalk of hazards identified in the 2011, 2015, and 2020 City of Chino Hills Hazard Mitigation Plan (HMP) Updates, the 2022 San Bernardino County Multi-jurisdictional Hazard Mitigation Plan Update, the 2024 City of Chino Hills General Plan Safety Element, and the 2023 California State Hazard Mitigation Plan. There were 18 different hazards identified based on document review. A document review crosswalk was used to develop a preliminary hazards list providing a framework for City HMP Planning Team members to evaluate which hazards were truly relevant to the City and the community and which ones are not. For example, volcanic activity was considered to be of little relevance to the City while earthquake, wildfire, and drought were indicated in almost all hazard documentation.

Table 8 Document Review Crosswalk

***HMP = Hazard Mitigation Plan**

Hazards	2011 City of Chino Hills HMP	2020 City of Chino Hills HMP	2025 City of Chino Hills HMP	2024 City of Chino Hills General Plan Safety Element	2022 County of San Bernardino Multijurisdictional HMP Update	2023 CA State HMP
Climate Change			■	■	■	■
Dam Inundation				■	■	■
Drought and Water Shortage	■	■	■	■	■	■
Earthquake/Geologic Hazards	■	■	■	■	■	■
Extreme Heat	■	■	■	■	■	■
Extreme Cold					■	■
Flood	■	■	■	■	■	■
Hazardous Waste				■		■
High Winds/Straight Line Winds	■		■		■	■
Hail					■	
Infestation					■	■
Lightning					■	
Terrorism		■	■		■	■
Tornado					■	
Volcanic Activity						■
Wildfire Activity	■	■	■	■	■	■
Winter Storm (Heavy Snowfall)					■	■
Landslides/slope failure				■	■	■

In addition to a document review, previous hazard occurrences were used to identify hazards for this HMP. Previous hazard occurrences provide a historical view of hazards that have affected the City in the past and thus provide a window into the potential hazards that can affect the City in the future. Information about federal and state disaster declarations in San Bernardino County was compiled from FEMA and Cal OES's databases, as shown in Table 8. Though not a complete snapshot of hazard incidences in the City (since not all hazard events are locally, federally or state declared), Table 8 provided the City HMP Planning Team with solidified accounts of the types and extent of disasters that have affected the City. Dating back to 1812 when earthquakes with magnitudes greater than approximately 5.0 resulted in moderate to strong damaging earthquake ground motions in the vicinity of the City.

As indicated in Table 8, large regional incidents have affected San Bernardino County, including the wildfires of 1999, 2003, 2008, and 2024. Most recently, disasters for biological incidents (2020), cyber-attacks (2015), flood (2023), fire (2020), and winter, tropical, and severe storms (2021, 2022, 2023, 2024) were declared in San Bernardino County.

The hazard data was analyzed based on the impacts to public safety, health, buildings, transportation, infrastructure, critical facilities, and cost effectiveness. The initial threat assessment of each hazard is based upon the following sources:

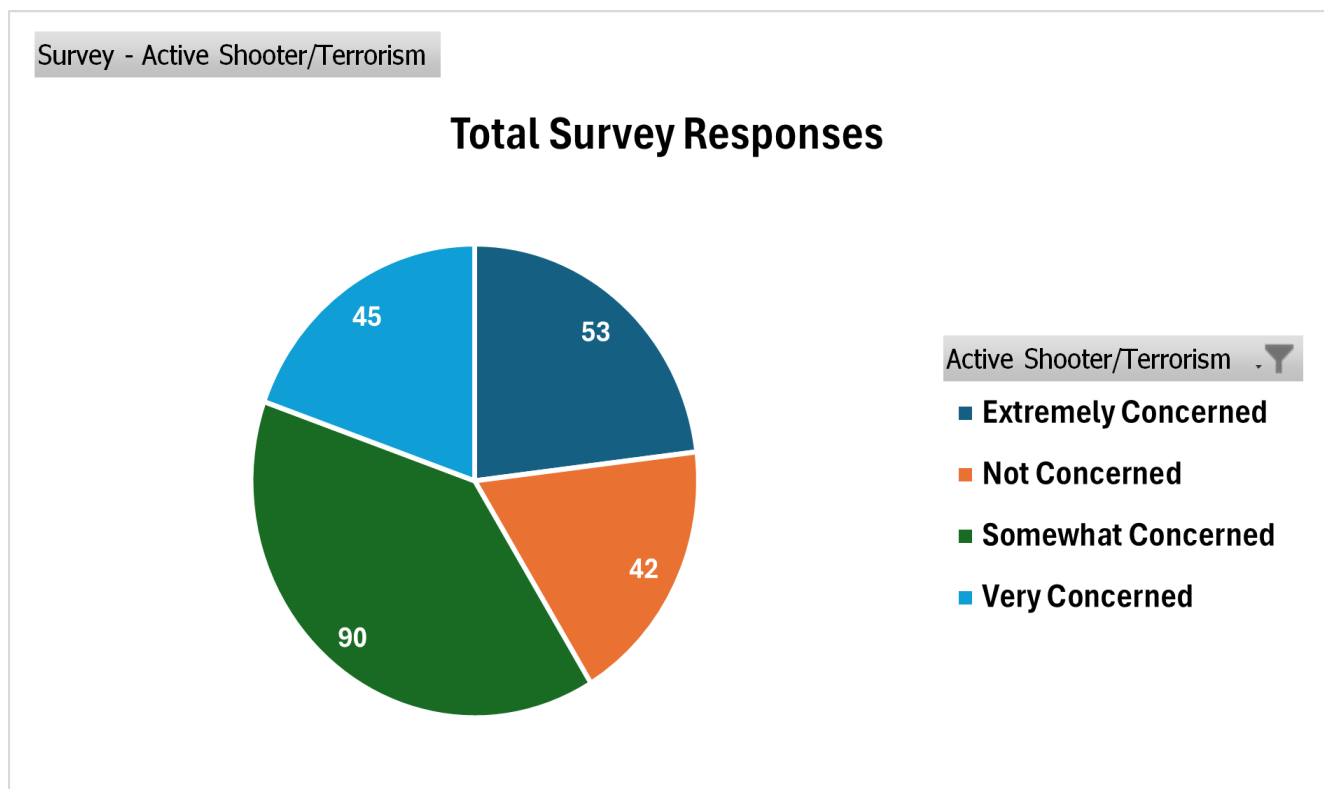
1. Historic occurrence of the hazard – Assessment is based on frequency, magnitude, and potential impact of the hazard.
2. Mitigation potential of the hazard – This criterion considers if there are mitigation or counter measures possible to prevent or alleviate the risk.
3. Expert opinion – Evaluation of threats includes a literature review and the expertise of the Planning Team.
4. Published data and information – Assessment is based on data and/or information from credible publications or websites, i.e. U.S. Geological Survey, California Geological Survey, National Weather Service

HAZARD PRIORITIZATION

The Planning Team also reviewed and utilized the results of the community survey provided to residents via the City website, public meetings, and City facilities' counters to assess the level of concern for the natural hazard that could impact the community. The community was asked if they are "Not Concerned", "Somewhat Concerned", "Very Concerned", or "Extremely Concerned". The results obtained from the survey for each hazard are briefly described below:

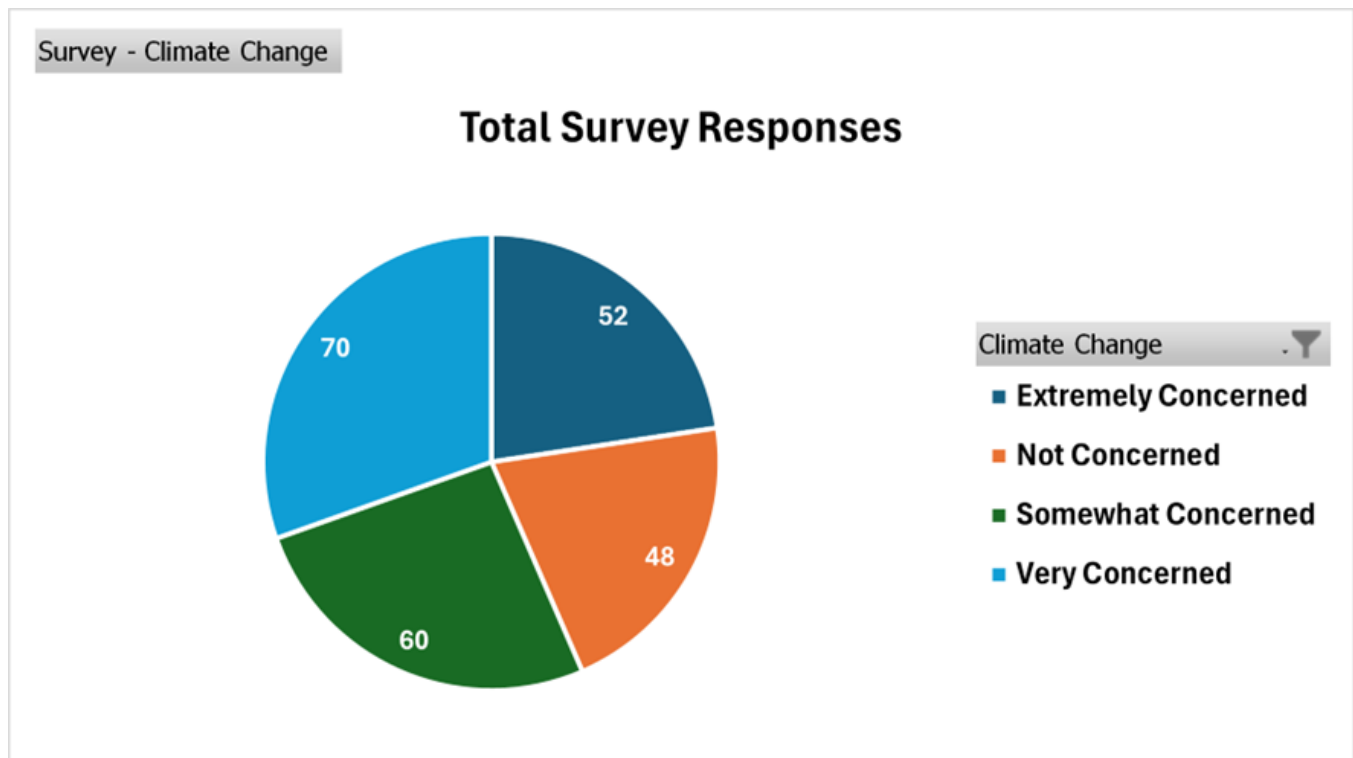
Active Shooter/Terrorism: The public survey revealed a mixed response to concerns about active shooter and terrorism hazards. Of the 230 respondents, 53 individuals (23%) expressed being "Extremely Concerned," while 45 (20%) were "Very Concerned." The largest group, 90 respondents (39%), were "Somewhat Concerned," and 42 (18%) indicated they were "Not Concerned." These results reflect varied levels of concern within the community (Figure 3).

Figure 3 Community Responses to Concerns About Active Shooter/Terrorism



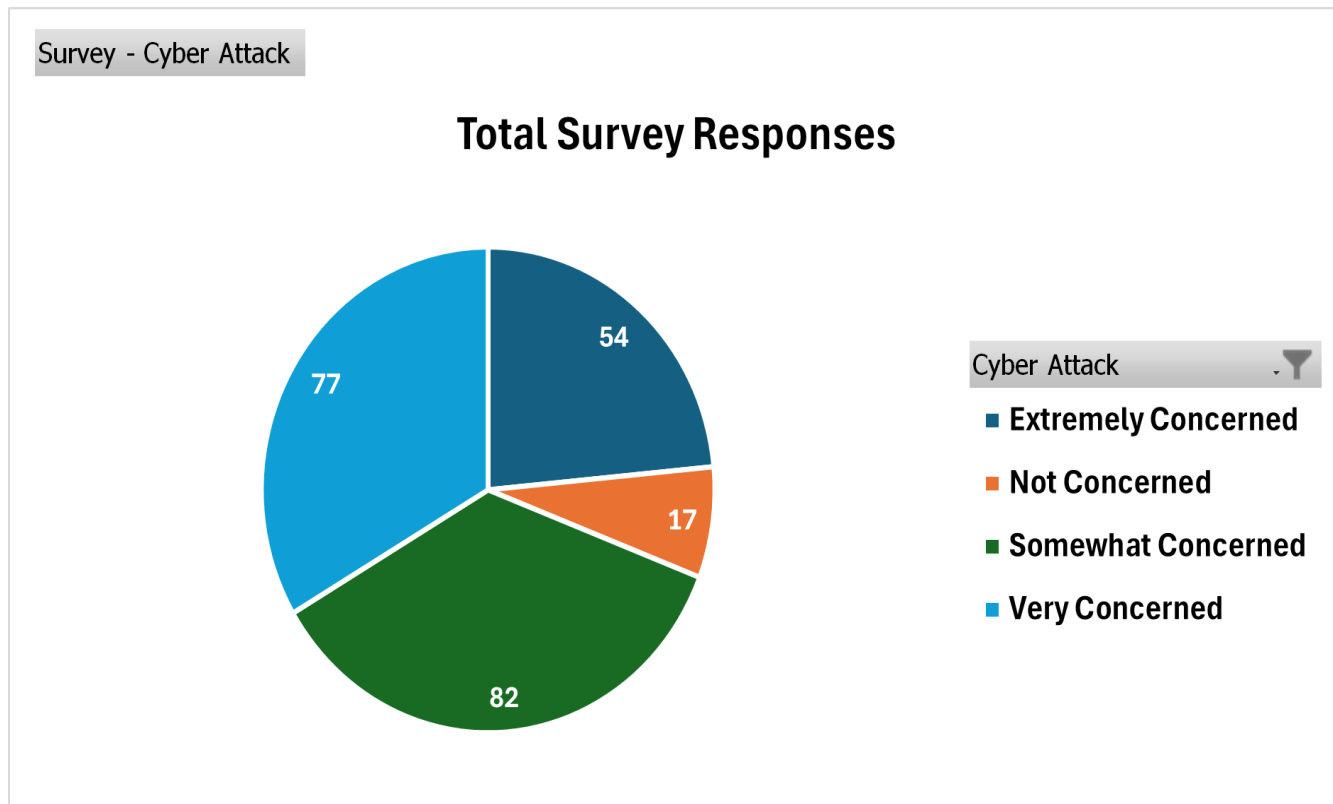
Climate Change: Climate change obtained a notable level of concern from the Chino Hills community. Out of 230 respondents, 52 (23%) were "Extremely Concerned," and 70 (30%) were "Very Concerned." The "Somewhat Concerned" category accounted for 60 respondents (26%), while 48 (21%) were "Not Concerned," showing that most residents have some degree of concern over climate change (Figure 4).

Figure 4 Community Responses to Concerns About Climate Change



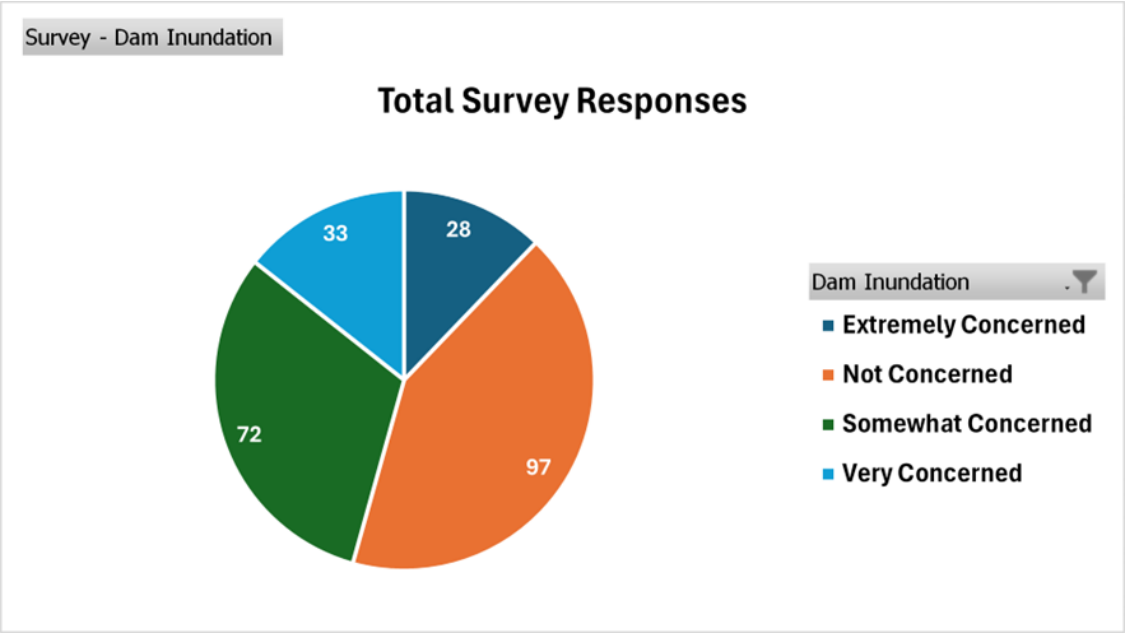
Cyber Attack: Concerns about cyber attacks were high among survey respondents. Out of 230 people, 54 (23%) were "Extremely Concerned," and 77 (33%) were "Very Concerned." Another 82 respondents (36%) were "Somewhat Concerned," while only 17 individuals (7%) indicated they were "Not Concerned." This highlights significant anxiety about potential cyber threats (Figure 5).

Figure 5 Community Responses to Concerns About Cyber Attack



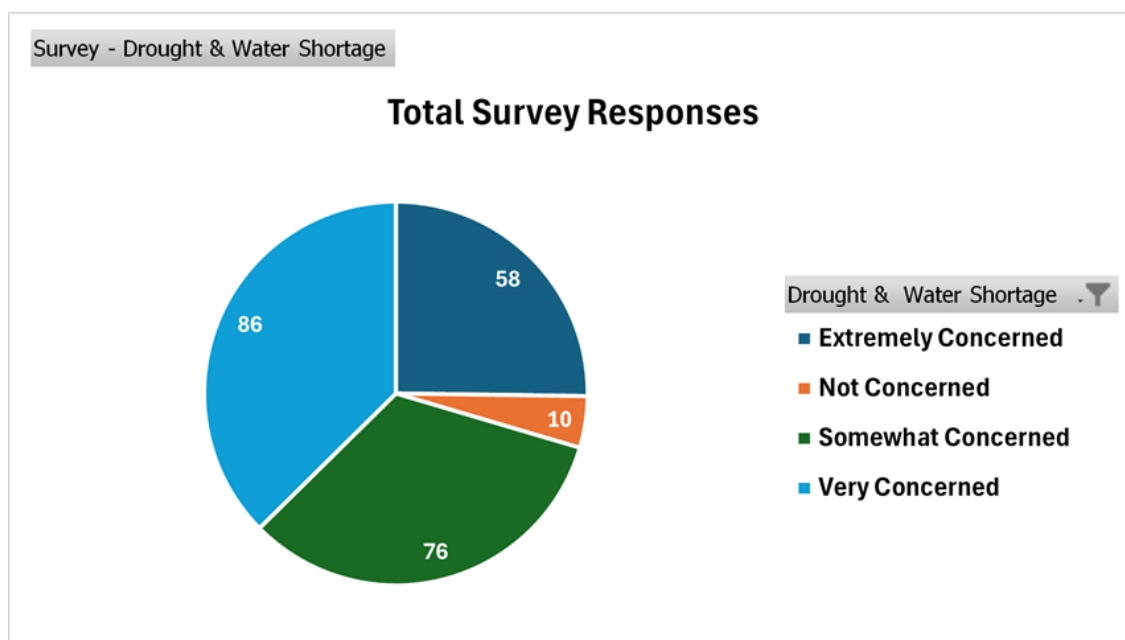
Dam Inundation: The community's concern over dam inundation was relatively low, with 97 respondents (42%) indicating they were "Not Concerned." Only 28 respondents (12%) were "Extremely Concerned," and 33 (14%) were "Very Concerned." Meanwhile, 72 respondents (31%) were "Somewhat Concerned," showing a general but not widespread worry (Figure 6).

Figure 6 Community Responses to Concerns About Dam Inundation



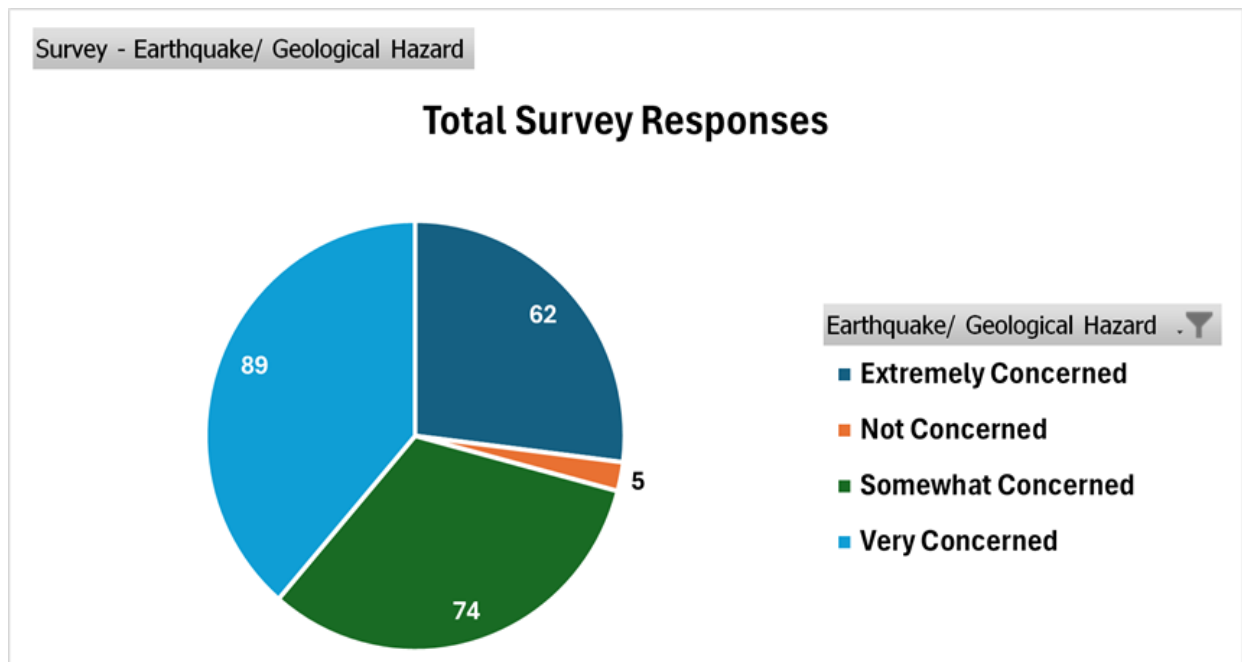
Drought and Water Shortage: Drought and water shortage were significant concerns for the Chino Hills community, with 86 respondents (37%) expressing that they were "Very Concerned" and 58 (25%) saying they were "Extremely Concerned." Another 76 (33%) were "Somewhat Concerned," while only 10 (4%) indicated no concern, emphasizing the community's recognition of water-related hazards (Figure 7).

Figure 7 Community Responses to Concerns About Drought and Water Shortage



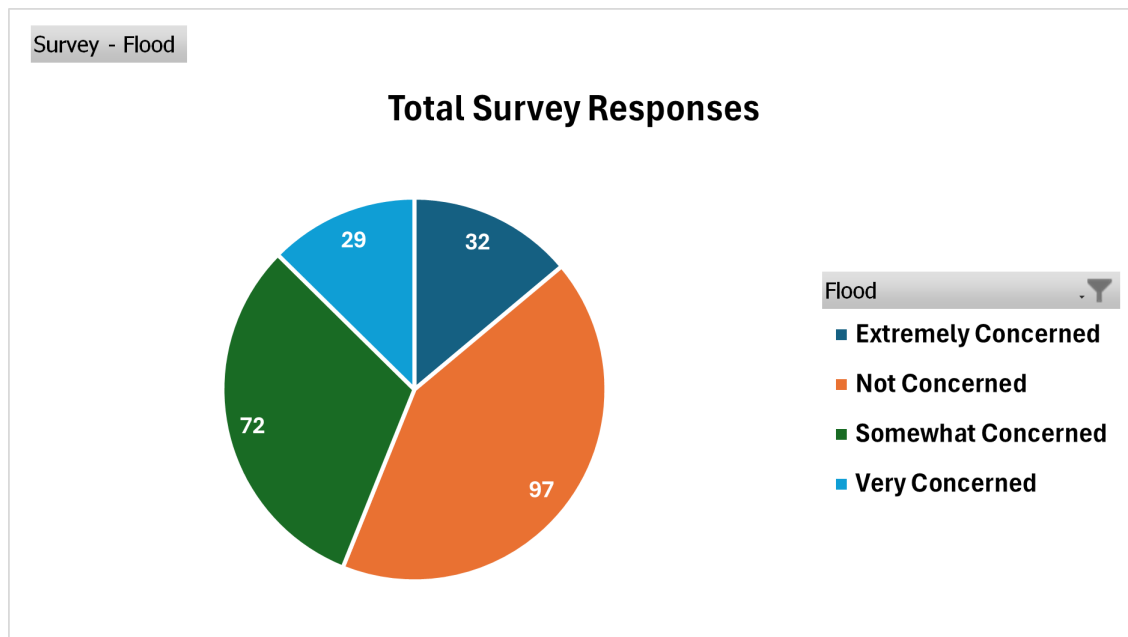
Earthquake and Geological Hazard: Earthquake hazards prompted the highest levels of concern, with 89 respondents (39%) being "Very Concerned" and 62 (27%) "Extremely Concerned." Of the 230 respondents, 74 (32%) were "Somewhat Concerned," and only 5 (2%) were "Not Concerned," indicating a strong awareness of the seismic risks in the area (Figure 8).

Figure 8 Community Responses to Concerns About Earthquake and Geological Hazard



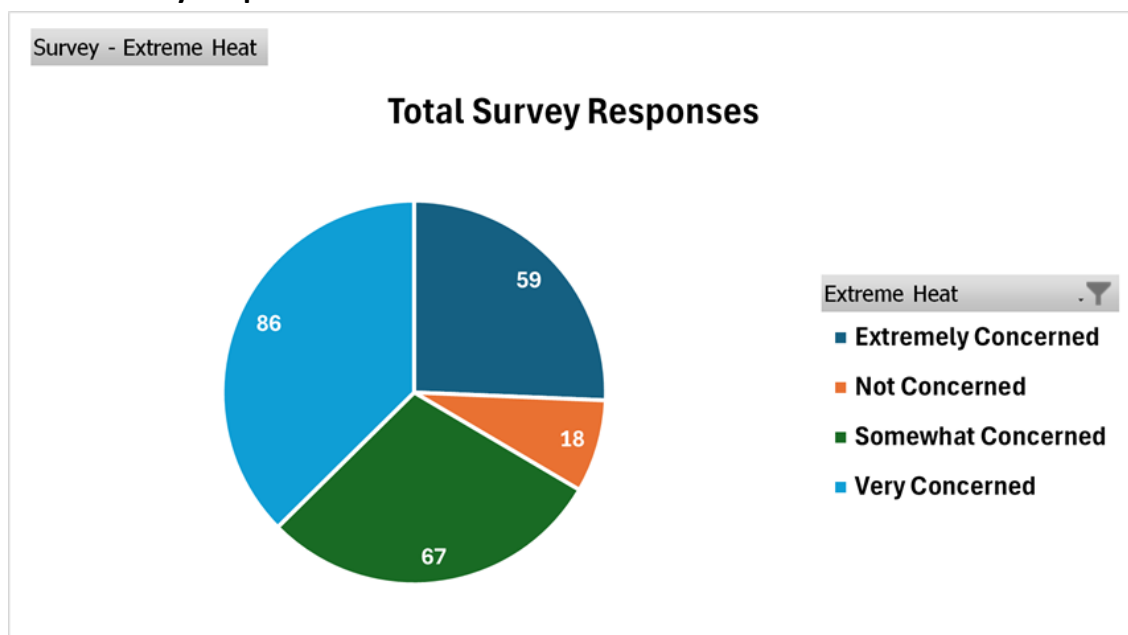
Flood: The community showed relatively low concern about flooding, with 97 respondents (42%) indicating they were "Not Concerned." Only 32 respondents (14%) were "Extremely Concerned," and 29 (13%) were "Very Concerned." A total of 72 respondents (31%) were "Somewhat Concerned," reflecting moderate concern over flooding risks (Figure 9).

Figure 9 Community Responses to Concerns About Flood



Extreme Heat: Concerns about extreme heat were prominent, with 86 respondents (37%) "Very Concerned" and 59 (26%) "Extremely Concerned." Another 67 respondents (29%) were "Somewhat Concerned," while only 18 (8%) were "Not Concerned." These numbers reflect a strong recognition of the risks associated with extreme heat events (Figure 10).

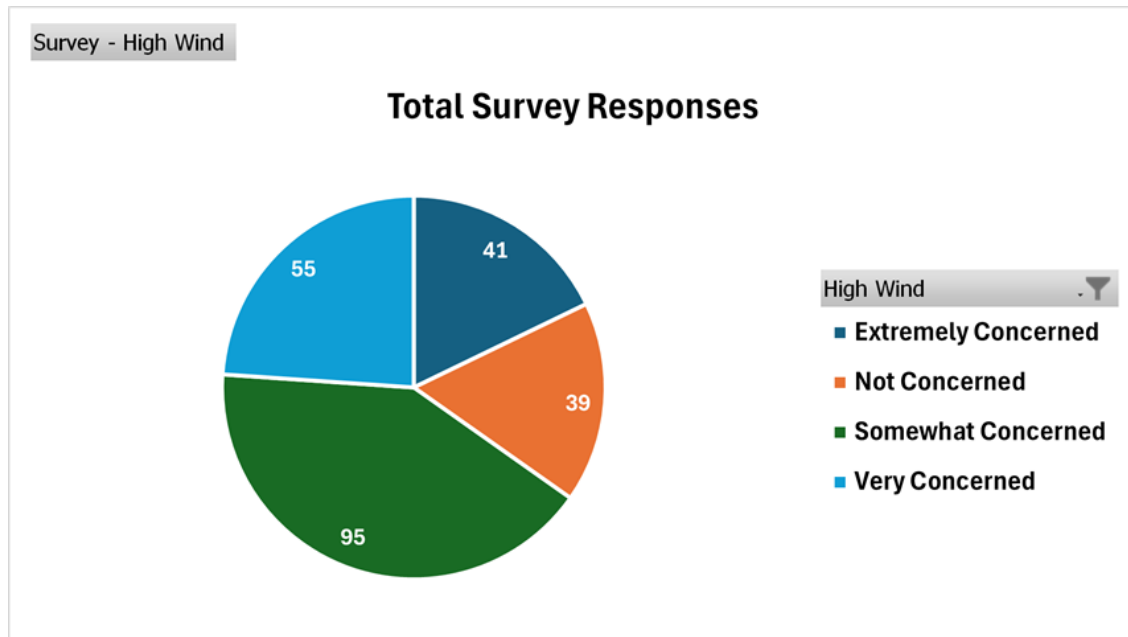
Figure 10 Community Responses to Concerns About Extreme Heat



High Wind: The survey results show moderate concern about high wind hazards, with 55 respondents (24%) being "Very Concerned" and 41 (18%) "Extremely Concerned." The majority, 95 respondents (41%),

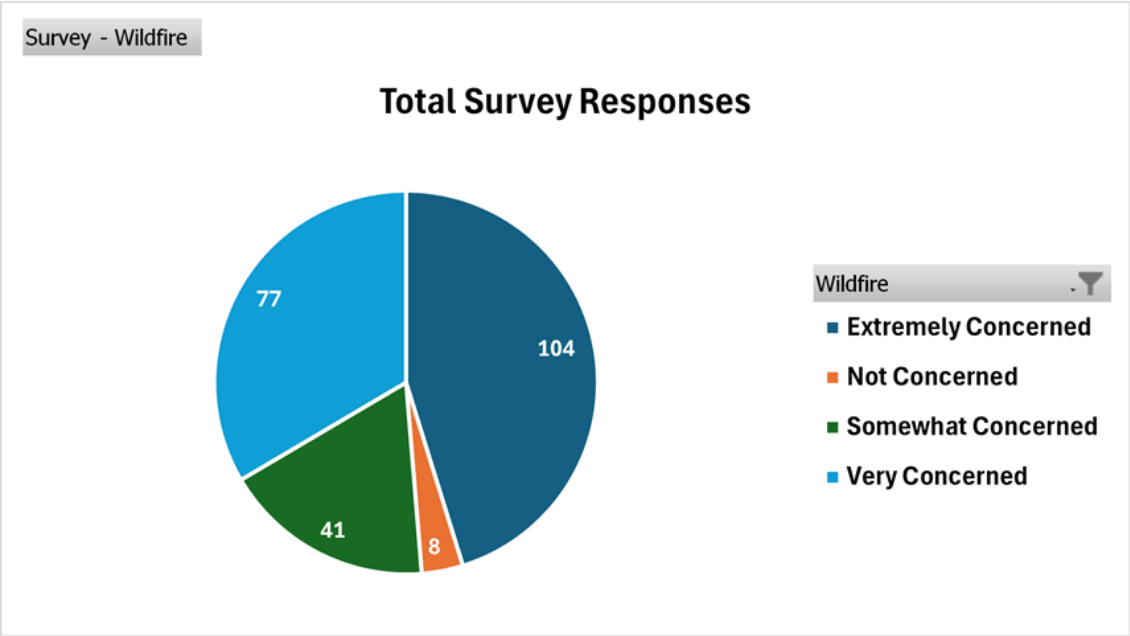
were "Somewhat Concerned," while 39 (17%) were "Not Concerned." This indicates a balanced distribution of concern regarding high winds (Figure 11).

Figure 11 Community Responses to Concerns About High Wind



Wildfire: The community expressed significant concern about wildfire hazards, with 104 respondents (45%) being "Extremely Concerned" and 77 (33%) "Very Concerned." A smaller group, 41 respondents (18%), were "Somewhat Concerned," while only 8 (3%) were "Not Concerned." This indicates a strong overall concern regarding wildfire risks (Figure 12).

Figure 12 Community Responses to Concerns About Wildfire



In the 2020 HMP extreme heat was listed as a low probability, low impact hazard due to the infrequent occurrence of these events and the City’s capacity to mitigate the impacts of extreme heat events. However, extreme heat events have occurred more frequently and are more severe than previously identified. The 2020 HMP did not include high winds or dam inundation as hazards of concern within the City. In recent years, the City has experienced repeated high wind events that have exacerbated fire events or that have damaged City infrastructure. In addition, Chino Hills does have the potential impact that failure of a dam or other water retention structure may pose to the community. Because of the potential for these hazards to impact the community, the Planning Team has included extreme heat, high winds, and dam inundation as part of the HMP update.

HAZARD PRIORITIZATION - METHOD

The Planning Team utilized a non-numerical ranking system for the update process. This process consisted of generating a non-numerical ranking (High, Medium, or Low) rating for the: 1) probability and 2) impact from each screened hazard. Table 9 below indicates how the hazards were ranked and the definition of “High,” “Medium,” and “Low” probability and impacts. As shown in Figure 13, where red boxes represent the higher priority hazards; orange represents the medium level and yellow boxes represent lowest level of priority, the high priority hazards of concern are Drought and Water Shortage, Earthquake/Geologic Hazards, and Wildfire Activity.

The probability indicators are based on the likelihood of the event occurring based on history and trends. Events categorized as “highly likely” have either occurred in Chino Hills in the past and/or

will inevitably happen again. Those events categorized as “Possible,” are events that are becoming a greater and a more common threat locally and nationally. These “Possible” events are unpredictable and may or may not ever occur in Chino Hills. These events can have a high impact on the City and warrant a proactive approach to preparation and mitigation. Events that are categorized as “Low” do not have a strong historical record of occurrence in Chino Hills and would result in having low impact to the City if they were to happen. Table 10 presents the history of the hazards in Chino Hills, as well as their probabilities, impacts, and a brief description on how they could impact the City.

Table 9 Hazard Ranking Methodology

Probability	Definition (Qualitative)	Quantified Probability	Impact Category	Definition
High – Highly Likely/Likely	Events occur frequently	One or more events every 1-5 years (>20% annual probability)	High – Catastrophic/Critical	Major, widespread impacts on life, property, critical facilities, and the economy
Medium – Possible	Events occur occasionally	One event every 6-20 years (5-20% annual probability)	Medium – Limited	Moderate impacts, localized disruptions to service or facilities
Low – Unlikely	Events are rare	One event every 20+ years (5% annual probability)	Low – Negligible	Limited impacts, minimal disruptions to the community or services

Figure 13 Hazard Probability Indicator

Chino Hills Hazard Assessment Matrix				
Probability		Impact		
		High	Medium	Low
	High	Earthquake Wildfire Drought	High Winds	
	Medium	Terrorism/Cyber-attack		Extreme Heat

	Low			Flooding Dam Failure
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Table 10 Hazard History

Hazard	History	Probability	Impact	Details
Drought and Water Shortage	Yes	High	High	The City has developed the Water Supply Contingency Plan in the event of an extreme water shortage due to an extended drought.
Earthquake/ Geologic Hazards	Yes	High	High	The city is in proximity to multiple active/potentially active faults (Chino Fault, Elsinore Fault, San Andreas Fault Zone, etc.) and is in one of the most landslide-prone areas of Southern California.
Wildfire Activity	Yes	High	High	A significant portion of the city is in within the very high or high fire hazard severity zone. In addition, wildfire frequency and intensity will likely increase in the future due to climate change.
Terrorism/ Cyber Security	Little	Med	High	Since terrorism can happen anytime, anywhere, 100% of the population is vulnerable to terrorism.
Extreme Heat	Yes	Med	Low	Extreme heat events likely to increase the risk of mortality/morbidity due to heat-related illness and exacerbation of existing chronic health conditions. Extreme heat events can also lead to drought.
Flood	Low	Low	Low	Most of the flood risk within the city is due to heavy rainfall and resulting stream and drainage

				canal overflows.
High Winds	Yes	High	Med	Several high wind (50+ mph winds) events a year.
Dam Inundation	Little	Low	Low	Will include if there are updated risk maps available

4.2 CLIMATE CHANGE

Climate change refers to any distinct change in measures of climate lasting for a long period of time, more specifically major changes in temperature, rainfall, snow, or wind patterns. Climate change may be limited to a specific region, or may occur across the whole Earth. Climate change may result from:

- Natural factors (e.g., changes in the Sun’s energy or slow changes in the Earth’s orbit around the Sun);
- Natural processes within the climate system (e.g., changes in ocean circulation); and
- Human activities that change the atmosphere’s make-up (e.g., burning fossil fuels) and the land surface (e.g., cutting down forests, planting trees, building developments in cities and suburbs, etc.).

The effects of climate change are varied: for example, warmer and more varied weather patterns, melting ice caps, and poor air quality. As a result, climate change impacts the pace and scale of a number of natural hazards which will continue to accelerate due to the effects of climate change.

The 2023 State of California Multi-Hazard Mitigation Plan stated that climate change is already directly affecting California, and many of the hazards are amplified or accelerated by climate change impacts. The State has also seen increased average temperatures, more extreme hot days, fewer cold nights, a lengthening of the growing season, shifts in the water cycle with less winter precipitation falling as snow, and both snowmelt and rainwater running off sooner in the year. In addition to changes in average temperatures and precipitation patterns, the intensity of extreme weather events is also changing. It is essential to consider climate mitigation in hazard mitigation efforts to ensure that mitigation actions do not unintentionally worsen the effects of climate change.

Climate change is not a standalone hazard, but it has the potential to worsen other natural hazards in the City. Therefore, climate change will be addressed under each relevant hazard profile, when applicable, with a discussion on how the hazard would interact with or become more severe due to the effects of climate change. In addition, in 2024, the City updated their Climate Change Vulnerability Assessment (CCVA) as part of the General Plan Safety Element update. The City CCVA describes in detail the climate hazards and the potential impacts on Chino Hills assets including vulnerable populations, natural and recreational resources, buildings, services and critical infrastructure. In addition, the CCVA also provides a detailed analysis of Chino Hills’ adaptive capacity to climate hazards that could adversely affect the City.

REGULATORY ENVIRONMENT

Recent legislation related to climate change emphasizes strengthening resilience to climate change

impacts. The Clean Air Act allows the EPA to regulate air pollution and greenhouse gas emissions. The federal Inflation Reduction Act allocates \$142 billion for programs that reduce GHG emissions and protect communities from climate related hazards. Key initiatives of the Inflation Reduction Act target protecting forests from wildfires, supporting urban forests, and climate smart agricultural and forestry practices.

The Sustainable Communities and Climate Protection Act of 2008

The Sustainable Communities and Climate Protection Act of 2008 (Sustainable Communities Act, SB 375, Chapter 728, Statutes of 2008) looks to reduce GHG emissions through coordinated transportation and land use planning with the goal of more sustainable communities.

General Plans: Safety Element-Climate Adaptation (SB 375) and Fire, Flood, and Adaptation Safety Element Updates (SB 1035)

The Office of Planning and Research's General Plan Guidelines and SB 379 builds upon the flood planning inclusions into the safety and housing elements and the hazard mitigation planning safety element inclusions in general plans outlined in AB 162 and AB 2140, respectively. SB 379 focuses on a new requirement that cities and counties include climate adaptation and resiliency strategies in the safety element of their general plans.

In addition, SB 379 and SB 1035 mandate that jurisdictions update their safety elements to address climate vulnerability and adaptation. Additionally, they are required to revise the sections related to fire, flooding, and climate adaptation in the safety element every eight years, coinciding with the next housing element update.

CALIFORNIA ADAPTATION PLANNING GUIDE (APG)

The State of California has been taking action to address climate change for over 20 years, focusing on both greenhouse gas emissions reduction and adaptation. In 2020, the California Governor's Office of Emergency Services updated the California Adaptation Planning Guide which is designed to help local government, regional entities, and climate organizations incorporate best practices and current science and research into their adaptation plans.

The (APG) continues the State's effort by providing guidance and support for communities addressing the unavoidable consequences of climate change. California is made up of diverse regions with different economies, geographies, and cultures. This means each of these regions experience climate change impacts and opportunities in unique ways. The state supports a "regions-up" approach, which recognizes the importance of regional-scale adaptation planning and action. This Strategy aims to include space for regional leadership and identify when and how the state can best support regional action.

The western portion of San Bernardino County, along with its adjacent urban areas, is part of the Los Angeles region. This area is home to approximately 18 million people and continues to grow, representing nearly half of California's total population and having a higher population than 45 other states. Numerous ecosystems flourish throughout the region's coasts, mountains, and interior landscapes. According to the California's Fourth Climate Change Assessment, projected climate changes for the Los Angeles region include:

- Warming: Average maximum temperatures may rise by 4-5 degrees Fahrenheit by mid- century and 5-8 degrees Fahrenheit by late century.

- Extreme temperatures: The hottest day of the year could be up to 10 degrees Fahrenheit warmer by late century, with an increase in extremely hot days.
- Extreme weather: Despite minor changes in average precipitation, both dry and wet extremes are expected to increase. The wettest day of the year could see 25-30% increases in some areas, along with more frequent atmospheric river events.
- Wildfire risk: The risk of wildfires in Southern California may increase, though there is uncertainty regarding future changes in burned areas.

Communities in the Los Angeles region should consider evaluating the following climate change impacts:

- Reduced water supply
- Increased temperature
- Reduced precipitation
- Diminished snowpack
- Wildfire risk
- Public health and social vulnerability

PAST OCCURRENCES

Climate change has never been directly responsible for any declared disasters. However, climate change will continue to compound the impact of future disasters in scope and severity. Past flooding, wildfire, levee failure, and drought disasters may have been exacerbated by climate change, but it is difficult to make direct connections between climate change and individual disasters. In addition, unlike earthquakes and floods that occur over a finite time period, climate change is an on-going hazard that depends on many factors, including geographic location. Some regions, communities, and populations are already experiencing the effects of climate change, while others may not experience them for decades or can avoid or minimize them through mitigation actions.

LOCATION/GEOGRAPHIC EXTENT

Incorporated in December 1, 1991, it has been 40+ years since the City laid out its vision of being a community with high-quality residential and commercial areas in a rural setting. The City's updated 2024 General Plan focuses on maintaining a high quality of life through sustainable land use, healthy living, and community character. The plan includes energy efficiency, renewable energy use, waste recycling, sustainable transportation, and a CCVA to ensure that all aspects of conservation, including climate change are included in current and future development plans and projects for the City's anticipated growth. To that end, the City has implemented a number of sustainability and conservation efforts and seeks to continue those efforts through local planning and partnerships.

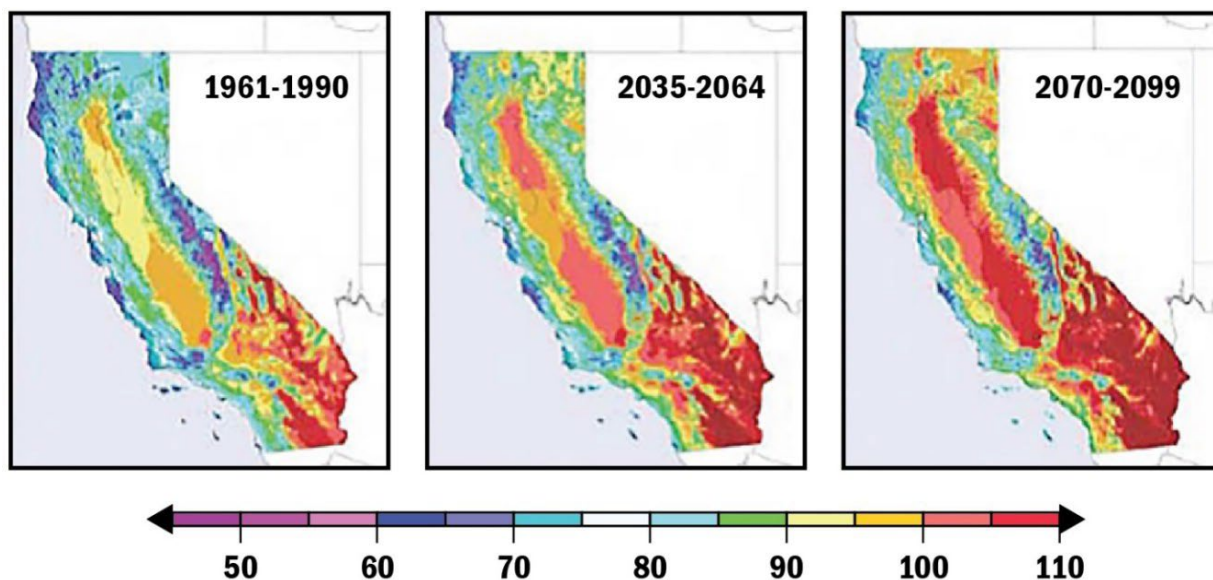
The effects of climate change are not limited by geographical borders. San Bernardino County, the State of California, the United States, and the rest of the world are all at risk of climate change. The Fourth California Climate Change Assessment for the Los Angeles Region, which includes San Bernardino County, describes the climate projections and synthesizes the literature on observed changes and projected future changes to key aspects of the region's climate. The data presented represent a "projection" of potential future climate scenarios, they are not predictions. Projections throughout this section are outlined by two

separate Representative Concentration Pathways (RCP), where RCP 4.5 is a medium emissions scenario where global emissions peak by the year 2040, and RCP 8.5 is a high emissions scenario in which global emissions continue to rise through the end of the 21st century.

The Los Angeles area, which includes San Bernadino County and Chino Hills, has already started to take steps to prepare for a changing climate. However, to fully manage these changes, a deeper understanding, strategic planning, and significant financial and human resources will be needed. While models are essential for decision-making, it is also crucial that Chino Hills build capacity within the community to engage in climate adaptation decisions.

By establishing avenues for strong stakeholder involvement in planning processes and development decisions, the City will enhance awareness of climate effects, foster a shared understanding of critical vulnerabilities, and allow local views and preferences to steer the choice of adaptation strategies to mitigate and prevent the exacerbation of natural hazards due to climate changes. Chino Hills will incorporate climate change considerations into long-term decisions, particularly those related to mitigating the impacts of natural hazards, to better equip communities to handle the future impacts of climate change.

Figure 14 California Historical and Projected Temperature Increases - 1961 to 2099

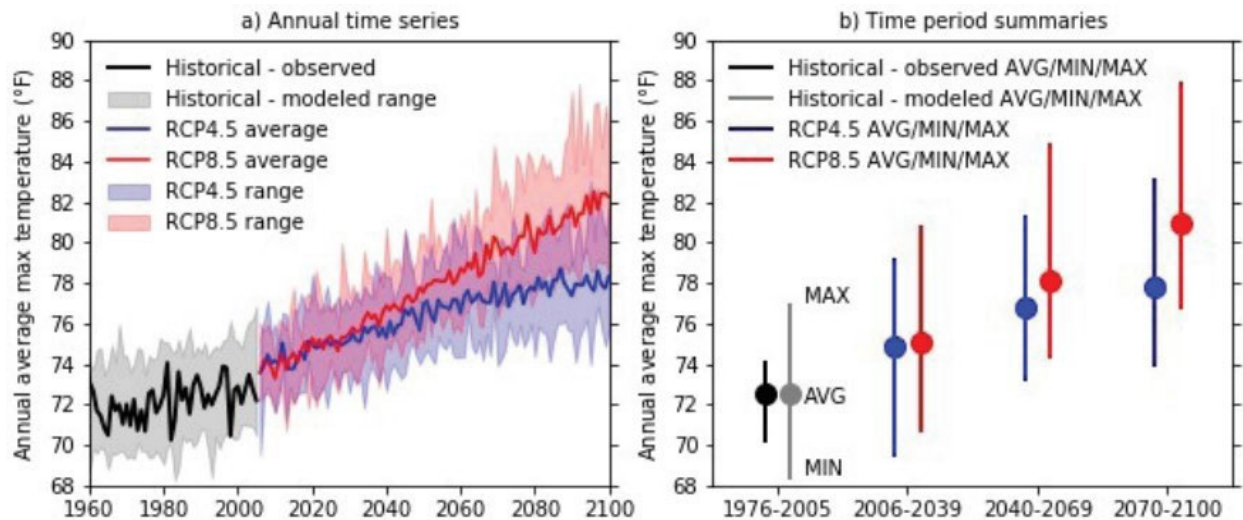


Source: Dan Cayan; California Climate Adaptation Strategy

CALIFORNIA HISTORICAL AND PROJECTED TEMPERATURE AND PRECIPITATION CHANGES

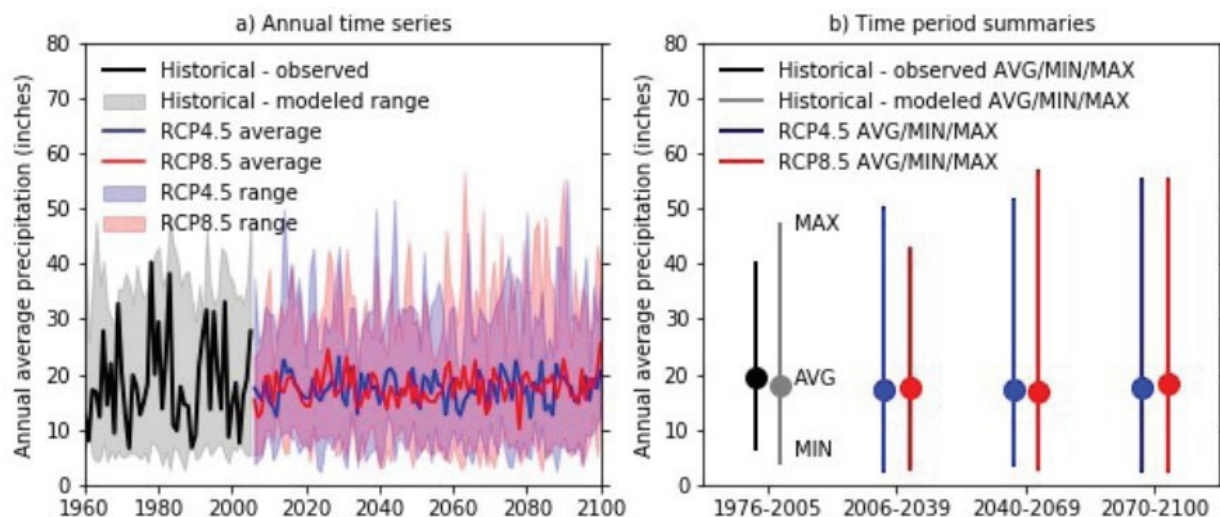
Observations over the past century indicate that temperature has increased across southern California. The top 5 warmest years in terms of annual average temperature have all occurred since 2012: 2014 was the warmest, followed by 2015, 2017, 2016, and 2012. According to climate projections, warming is expected to increase across the Los Angeles region in the coming decades. Figure 15 presents the historical observed, modeled, and projected future (RCP4.5 - blue, RCP8.5 - red) annual average maximum temperature over the Los Angeles region.

Figure 15 Projected Temperature Changes in Annual Average for the Los Angeles Region



Precipitation over the Los Angeles region is also highly variable from year to year. Climate model projections disagree on the trend of future precipitation change over southern California, but generally project small mean changes (either positive or negative) compared to the region's large historical variability. However, the models suggest that the frequency of atmospheric river events and extremely dry years are projected to increase over Southern California. Figure 16 presents the historical observed, modeled, and projected future (RCP4.5 - blue, RCP8.5 -red) annual average precipitation changes over the Los Angeles region.

Figure 16 Projected Precipitation Variability over the Los Angeles Region



For Chino Hills, the average maximum temperatures are expected to increase as well. The current average maximum temperature of 76.7°F is expected to increase between 80.5°F (RCP 4.5) to 81.5°F (RCP 8.5) by the mid of the century (2035-2064) and between 82°F (RCP 4.5) to 85.1°F (RCP 8.5) by the end of the century (2070-2099). Temperature increases affect various hazards, including extreme heat, drought,

and wildfire. Climate projections also project changes in the frequency of dry periods and an increase in precipitation intensity of the largest storms or wet periods at Chino Hills, even though projections indicate that annual precipitation totals will remain relatively stable, decreasing slightly by approximately 0.4 inches by the end-century. Although changes in average precipitation are small, both wet and dry periods are expected to be more extreme, which can increase the risk of related natural hazards. In Chino Hills, precipitation changes are expected to affect drought, flooding, and wildfire.

4.3 HAZARD PROFILES

This section describes the types of hazards that could occur in Chino Hills. Hazard profiles are designed to help communities evaluate and compare the hazards that may impact their community by considering various hazard factors. Each type of hazard has unique characteristics, and the impact associated with a specific hazard can vary depending on the magnitude and location of each event. The probability of occurrence of a hazard in a given location impacts the priority assigned to that hazard. Each hazard will impact different communities in different ways, based on geography, local development, population distribution, age of buildings, and mitigation measures already implemented.

The various maps within this Plan help to describe the causes and characteristics of each hazard and identify which part of the City's population, infrastructure, and environment may be vulnerable to each specific hazard. A profile of each hazard discussed in this plan is provided in each hazard section. For a full description of the history of hazard specific events, please see the appropriate hazard section. This section presents additional information regarding the hazards of concern (detailed below) as hazard profiles.

4.4 EARTHQUAKE

EARTHQUAKE/GEOLOGIC HAZARD PROFILE

Earthquakes occur when tectonic plates, called faults, in the Earth's crust move relative to one another. Southern California is located on a boundary of two tectonic plates, the North American Plate and the Pacific Plate, causing the area to be considered seismically active. Numerous faults considered active or potentially active have been mapped in Southern California, including in the vicinity of and within the City. Earthquakes on faults can trigger several geologic phenomena that can cause severe property damage and loss of life, including ground shaking, fault rupture, liquefaction, subsidence, and seiches (waves in enclosed bodies of water). Earthquakes can also cause a variety of localized and potentially destructive hazards such as: structure fires, dam failures and release of toxic chemicals. Chino Hills could be impacted by any or all of these hazards.

Earthquakes are normally classified by the severity of their magnitude or their seismic intensity. "Magnitude" is defined as a measure of the amount of energy released when a fault ruptures. The intensity of seismic ground shaking at any given site is a function of several factors. Primarily the magnitude of the earthquake is determined by the distance from the epicenter to the area of concern, the type of geologic material between the epicenter and the site, and the topographic conditions of the site. The amount of damage is also controlled to a certain extent by the size, shape, age, and engineering characteristics of the affected structures. Most buildings in the City are of wood-frame construction, which, while not immune to structural damage, is notably resilient to earthquake shaking, particularly when designed per current building codes.

REGULATORY ENVIRONMENT

Numerous building and zoning codes exist at a state and local level to decrease the impact of an earthquake event and resulting liquefaction on residents and infrastructure. Building and zoning codes include the Alquist-Priolo Earthquake Fault Zoning Act of 1972, Seismic Hazards Mapping Act of 1990, 2013 California Standards Building Code (CSBC), and the 2015 City's General Plan. To protect lives and infrastructure in the City the following building and zoning codes are used.

STATE

The 1971 San Fernando earthquake resulted in the destruction of numerous structures built across its path. This led to passage of the Alquist-Priolo Earthquake Fault Zoning Act. This Act prohibits the construction of buildings for human occupancy across active faults in the State of California. Similarly, extensive damage caused by ground failures during the 1989 Loma Prieta earthquake focused attention on decreasing the impacts of landslides and liquefaction. This led to the creation of the Seismic Hazards Mapping Act. This Act increases construction standards at locations where ground failures are probable during earthquakes. Active faults in San Bernardino County have been included under the Alquist-Priolo Geologic Hazards Zones Act and Seismic Hazards Mapping Act.

LOCAL

The City adopted the 2022 California Building Standards Code (also known as Title 24). Title 24 includes Appendix A: Guidelines for the Seismic Retrofit of Existing Buildings.

The 2022 CSBC is based on the International Building Codes (IBC), which is widely used throughout the United States. CSBC was modified for California's conditions to include more detailed and stringent building requirements. The City's Community Development department utilizes the 2022 CSBC and the American Society of Civil Engineers Standard (ASCE) No.7 to regulate the infrastructure in the City. This includes unreinforced masonry (URM) buildings. For new buildings, the City includes earthquake safety provisions, with enhancements for essential services buildings, hospitals, and public schools.

In 2022 the City prepared a Geotechnical Conditions Update for the City. The report is intended to provide a baseline geotechnical conditions update to be used in the preparation of the planned City update's to the General Plan. The report also discusses potential seismic hazards that might influence development of buildings or other civil works within the City.

GENERAL PLAN GEOLOGIC HAZARD REDUCTION POLICIES

The following goals, policies, and actions support the City of Chino Hills Safety Plan and its vision to protect the community from unreasonable risks caused by natural and man-made hazards:

Goal S-1: Protect the Community from Geologic Hazards:

- Policy S-1.1: Regulate development in high-risk seismic, landslide and liquefaction hazard areas to avoid exposure to hazards.
- Action S-1.1.1: Observe prudent land use planning in the Fault Hazard Zone delineated for the Chino Fault, restricting high occupancy and emergency operation facilities and limiting residential development.

- City of Chino Hills – General Plan, pages 5-28
- Action S-1.1.2: Conduct site-specific studies on soils, seismicity, and groundwater conditions to evaluate the potential for liquefaction and related ground failure phenomena in canyon floors and the alluvial flatlands.
- Action S-1.1.3: Regulate development of utility structures over 100 feet (ft) in height in geologic hazard areas when adjacent to existing or planned sensitive land uses.
- Action S-1.1.4: Continue to regularly update Building and Fire Codes to provide for seismic safety design.
- Action S-1.1.5: Support and encourage the seismic retrofitting and strengthening of existing facilities to minimize damage in the event of seismic or geologic hazards.
- Action S-1.1.6: Discourage any grading beyond that necessary to create adequate and stable building pads.
- Action S-1.1.7: Require all development to conform to the grading guidelines contained in the City Development Code.
- Action S-1.1.8: Require fault zones to be clearly identified on tract and parcel maps to increase public awareness of fault rupture hazards.
- Action S-1.1.9: Within geologic hazard overlay areas, require developments to minimize landscape irrigation.
- Action S-1.1.10: Require new development to minimize peak runoff as required by the Municipal Code.

EARTHQUAKES – HISTORICAL OCCURRENCES

The Planning Team noted the following regional and local events for the seismic activity in Chino Hills. Table 11 shows earthquakes greater than Magnitude 5.0 that have occurred in southern California.

Table 11 Earthquakes Greater than Magnitude 5.0 Occurred in Southern California

Date	Magnitude	Location
12/8/1812	6.9	Southwest of San Bernardino County - 40 Fatalities
12/21/1812	7.1	West of Ventura – 1 fatality
1/9/1857	7.9	Fort Tejon – 1 fatality
2/24/1892	7.8	Imperial Valley
12/25/1899	6.7	San Jacinto – 6 fatalities
6/23/1915	6.3	Imperial Valley – 6 fatalities
4/21/1918	6.8	Imperial Valley – 1 fatality
3/11/1933	6.4	Long Beach – 115 fatalities
5/19/1940	7.1	Imperial Valley – 9 fatalities
2/9/1971	6.6	San Fernando – 65 fatalities
10/15/1979	6.4	Imperial Valley – California Border

7/8/1986	6.1	North Palm Springs
10/1/1987	5.9	Whittier Narrows – 8 fatalities
11/24/1987	6.5	Superstition Hills – 2 fatalities
11/24/1987	6.7	Superstition Hills
6/28/1991	5.6	Sierra Madre – 2 fatalities
4/23/1992	6.2	Joshua Tree
6/28/1992	7.3	Landers – 3 fatalities
6/28/1992	6.5	Big Bear
1/17/1994	6.7	Northridge – 60 fatalities
10/16/1999	7.12	Hector Mine
2/22/2003	5.2	Big Bear City
6/12/2005	5.2	Southern California
7/29/2008	5.5	Chino Hills
4/5/2010	7.2	Sierra El Mayor – Northern Baja California
3/29/2014	5.1	Brea, Fullerton, La Habra California
7/4/2019	6.4	Ridgecrest
7/5/2019	5.4	Ridgecrest
7/5/2019	7.1	Ridgecrest – 1 fatality
06/05/2021	5.3	Calipatria
8/20/2023	5.1	Ojai

Table 12 shows earthquakes that have resulted in a declaration affecting San Bernardino County since 1991.

Table 12: Earthquakes Affecting San Bernardino County Resulting in a Declaration

Event	Date	Declaration	Declaration Number	Impact to City
Ridgecrest Earthquake	7/4/2019	Yes	EM-3415-CA	No direct impact to city or local declaration. Public Assistance made available to County.

PROBABILITY OF FUTURE EVENTS AND CLIMATE CONSIDERATIONS

Chino Hills is located in a seismically active region of Southern California, intersected by several faults

including the Chino, Whittier, and Elsinore Fault Zones. Based on Table 9, the probability of future earthquakes in Chino Hills is categorized as High (one or more events every 1-5 years, >20% annual probability). Based on regional data and seismic modeling from the U.S. Geological Survey (USGS), the probability of an earthquake with a magnitude of 6.7 or greater occurring in the greater Southern California region within the next 30 years is approximately 60%. While earthquakes are not influenced by climate change in the same way as meteorological hazards, secondary effects such as increased risk of landslides or infrastructure vulnerability due to concurrent extreme heat, drought, or wildfire may amplify earthquake impacts in the future. The City remains at high risk of damaging seismic events, particularly given its proximity to active fault lines and the dense urban infrastructure that could be affected by strong ground shaking.

LOCATION/GEOGRAPHIC EXTENT

The Chino Hills is located in the eastern Puente Hills, in the northern portion of the Peninsular Ranges geomorphic province. The Peninsular Ranges province is characterized by a series of northwest to southeast-oriented valleys, hills, and mountains separated by faults associated with, and parallel to the San Andreas Fault System. Two of these faults, the Chino and the Whittier, are located in and near the City, respectively. These faults, and the bedrock and sediment types that occur in the area, control to a large extent the potential geologic impacts discussed below.

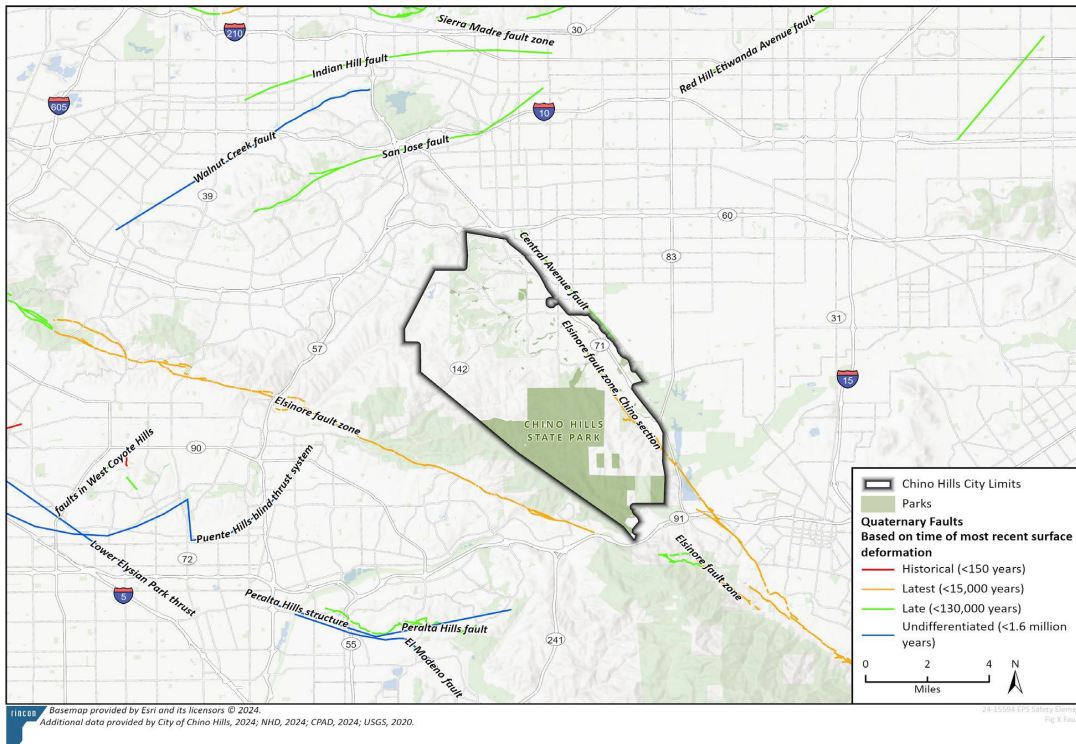
The hilly portions of the City are underlain by bedrock of the Puente Formation. The sea that originally covered the area receded westward as the land rose, and a complex process of faulting and folding formed the following hills that we know today as the Puente (Chino) Hills. The rocks of the Puente Formation, originally deposited in horizontal layers on the ocean floor, are now folded, and dip between 10 and 20 degrees from the horizontal. Locally, beds of the Puente Formation dip as steep as 45 to 60 degrees. The folded nature of these rocks, especially where thinly bedded or laminated, combined with the steepness of the terrain in the central and western portions of the City, makes this one of the most landslide-prone areas in Southern California.

The location of active and potentially active earthquake faults within or proximate to Chino Hills is illustrated in Figure 17, which presents –active and potentially active faults in southern California. The geologic and seismologic characteristics of these faults are discussed below.

Figure 17 Major Faults in Southern California

These faults are:

a. *Chino Fault*



The Chino Fault is considered a northern splay of the Elsinore Fault Zone. The Chino Fault extends approximately 13 miles southeast through the City toward the City of Corona where it joins the Elsinore Fault Zone near the southern terminus of Main Street in Corona. The California Geological Survey re-evaluated the Chino fault in 2002 as a result of these recent findings and has zoned the Chino fault as active pursuant to the guidelines of the Alquist-Priolo Earthquake Fault Zone Act. Two historic earthquakes are attributed to the Chino fault: the February 16, 1989 magnitude 3.2 strike-slip earthquake that occurred at a depth of approximately 4.3 kilometers and the December 14, 2001 magnitude 3.9 strike-slip earthquake that occurred at a depth of approximately 13.8 kilometers.

b. *Whittier Fault*

The Whittier Fault is considered a southwestern splay of the Elsinore Fault Zone. The Whittier Fault extends approximately 25 mile southwest of the City through the City of Yorba Linda. Elsinore Fault Zone

The Elsinore Fault extends approximately 124 miles from near the border with Mexico to its northern terminus near Whittier Narrows. The Uniform California Earthquake Rupture Forecast (UCERF2) and the Working Group on California Earthquake Probability (WGCEP 95) identify five fault segments within the Elsinore Fault Zone - Whittier, Glen Ivy, Temecula, Julian, and Coyote Mountains segments, from north to south.

c. *San Jose Fault*

The San Jose Fault is located north of the City and extends approximately 12 miles from the

south side of the San Jose Hills northeast to near Claremont.

d. *Puente Hills Blind Thrust*

The Puente Hills Blind Thrust is a north-dipping thrust that extends approximately 24 miles east across the Los Angeles basin from downtown Los Angeles to Brea. A blind thrust fault is a buried fault, the surface of which does not break the surface. The fault is manifested at the surface by series of folds above the fault surface, including the Montebello Hills, and west and east Coyote Hills. The fault is subdivided into three segments: Los Angeles, Santa Fe Springs, and Coyote Hills. At least four large earthquakes (i.e., magnitude 7.2 to 7.5) are believed to have occurred on the fault in the past 11,000 years. The 1987 Whittier Narrows earthquake occurred on the Puente Hills Blind Thrust.

e. *Sierra Madre-Cucamonga Fault Zone*

The Sierra Madre-Cucamonga Fault Zone is located along the boundary between the southern margin of the San Gabriel Mountains and the northern portions of the San Fernando and San Gabriel valleys. The Sierra Madre-Cucamonga Fault Zone extends approximately 59 miles from near Interstate 405 in the San Fernando Valley to Lytle Creek.

f. *San Jacinto Fault Zone*

The San Jacinto Fault Zone is located east of the City and is one of the most seismically active faults in California. The fault zone extends approximately 155 miles from the area near Cajon Pass where the San Jacinto fault joins the San Andreas Fault south to the Imperial Valley. The San Jacinto fault zone is divided into eight segments based on fault geometry, historical seismicity, and slip rate data. The segments of the San Jacinto Fault Zone are San Bernardino Valley, San Jacinto Valley, Anza/Clark, Coyote Creek, Borrego Mountain, and the subparallel Superstition Mountain and Superstition Hills segments.

g. *San Andreas Fault Zone*

The San Andreas Fault extends southeast from where the fault joins the Kings Range Thrust and Mendocino Fault Zone approximately 807 miles to the Gulf of California. The San Andreas Fault is one of the most active faults and has the highest measured slip rate in California. The San Andreas Fault is the only known source of Magnitude 8.0 earthquakes in southern California.

Additional San Bernardino County Faults

There are many smaller faults within San Bernardino County capable of a major earthquake (Figure 18). Other geologic hazards include liquefaction and landslides, both occur during and after earthquakes. Table 13 shows earthquakes greater than Magnitude 4.0 that have been felt within the San Bernardino County area.

Figure 18 Active Smaller Faults within San Bernadino County

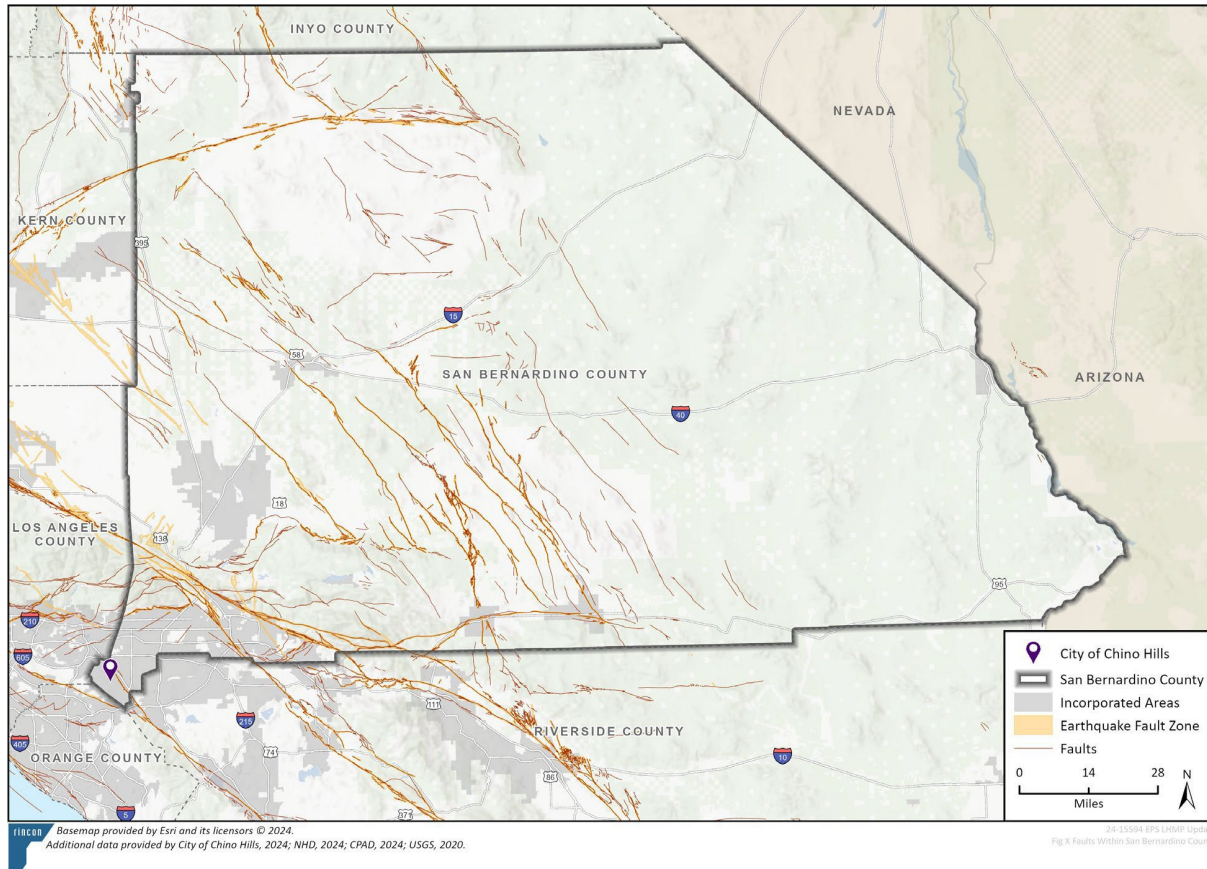


Table 13 Earthquakes Greater than Magnitude 4.0 Felt within the San Bernardino County

Date	Magnitude	Location
7/29/2009	5.4	Chino Hills
9/14/2011	4.1	Calimesa
1/15/2014	4.4	Fontana
7/5/2014	4.6	Running Springs
3/29/2014	5.1	Brea (Chino Fault)
7/25/2015	4.2	Fontana
9/16/2015	4.0	Big Bear Lake
12/30/2015	4.4	Muscoy
1/6/2016	4.4	Banning
1/24/2016	4.1	Ludlow
8/22/2017	4.1	Trona
12/05/2018	4.2	Trona
07/09/2019	4.5-4.0-4.3-4.0	Trona
07/22/2019	4.2	Twentynine Palms
01/25/2020	4.6	Barstow
06/08/2020	4.3	Searles Valley
05/26/2022	4.3	Trona
01/25/2024	4.2	San Bernardino

EARTHQUAKE – INDUCED LANDSLIDES AND LIQUEFACTION

Earthquake-generated strong ground motions can worsen existing unstable slope conditions. Typical earthquake-induced landslides in the terrain of the Chino Hills area could include rotational slumps, rock falls, shallow slumps, and slides commonly associated with moderate to steep road cuts and natural slopes. Figure 19 shows the landslide vulnerability at Chino Hills. If the slope materials become saturated, strong ground motions could also trigger mudslides and mudflows. Properly designed and constructed engineered slopes will generally perform well during an earthquake.

Liquefaction is a soil strength and stiffness loss phenomenon that typically occurs in loose, saturated cohesionless soils as a result of strong ground shaking during earthquakes. The potential for liquefaction at a site is usually determined based on the results of a subsurface geotechnical investigation and the groundwater conditions beneath the site. Hazards to buildings associated with liquefaction include bearing capacity failure, lateral spreading, and differential settlement of soils below foundations, which can contribute to structural damage or collapse. Portions of the city may be underlain by loose, saturated alluvial materials subject to liquefaction. Areas considered most susceptible to liquefaction include the low-lying areas in the eastern portion of the city within the Chino Basin and canyon areas (Figure 20).

Figure 19 Landslide Susceptibility Map

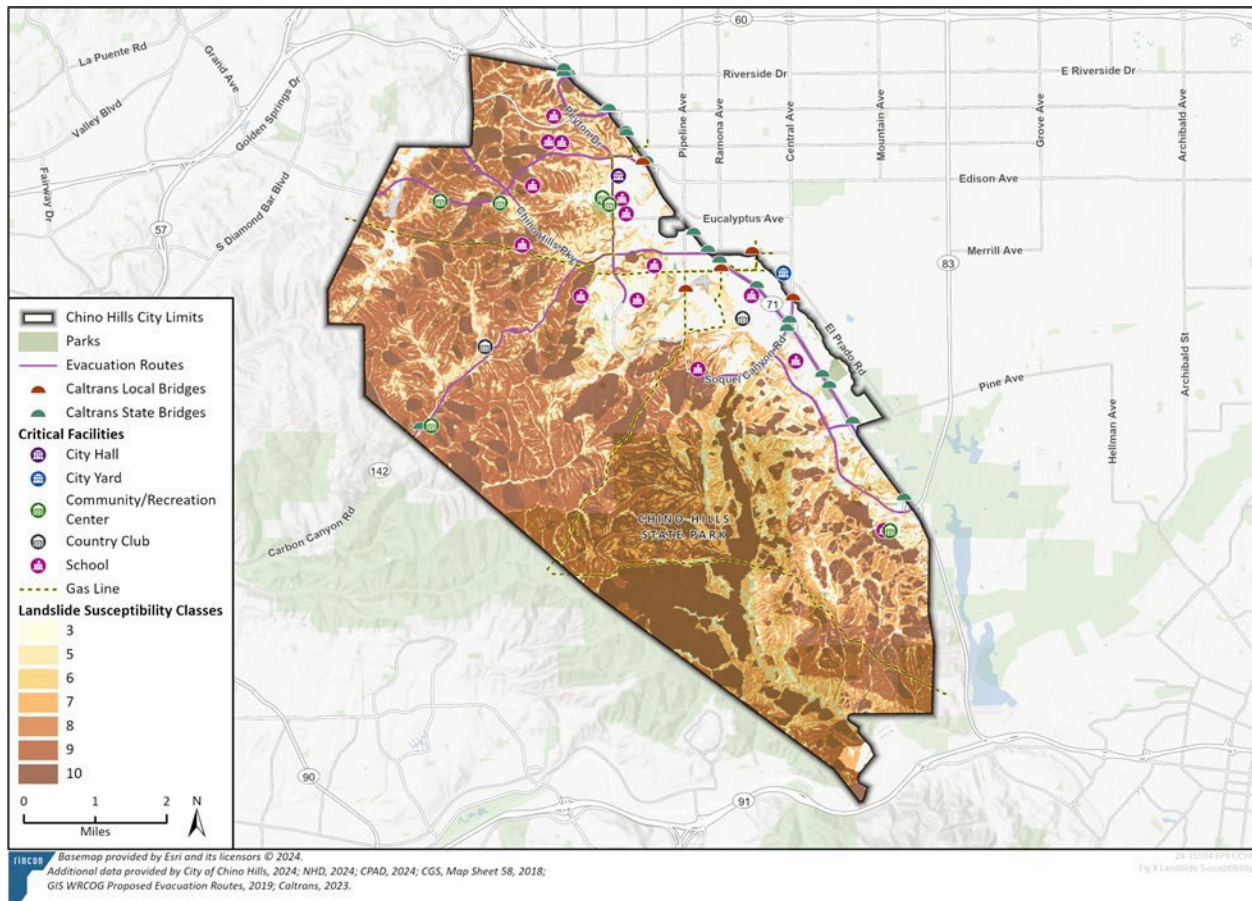
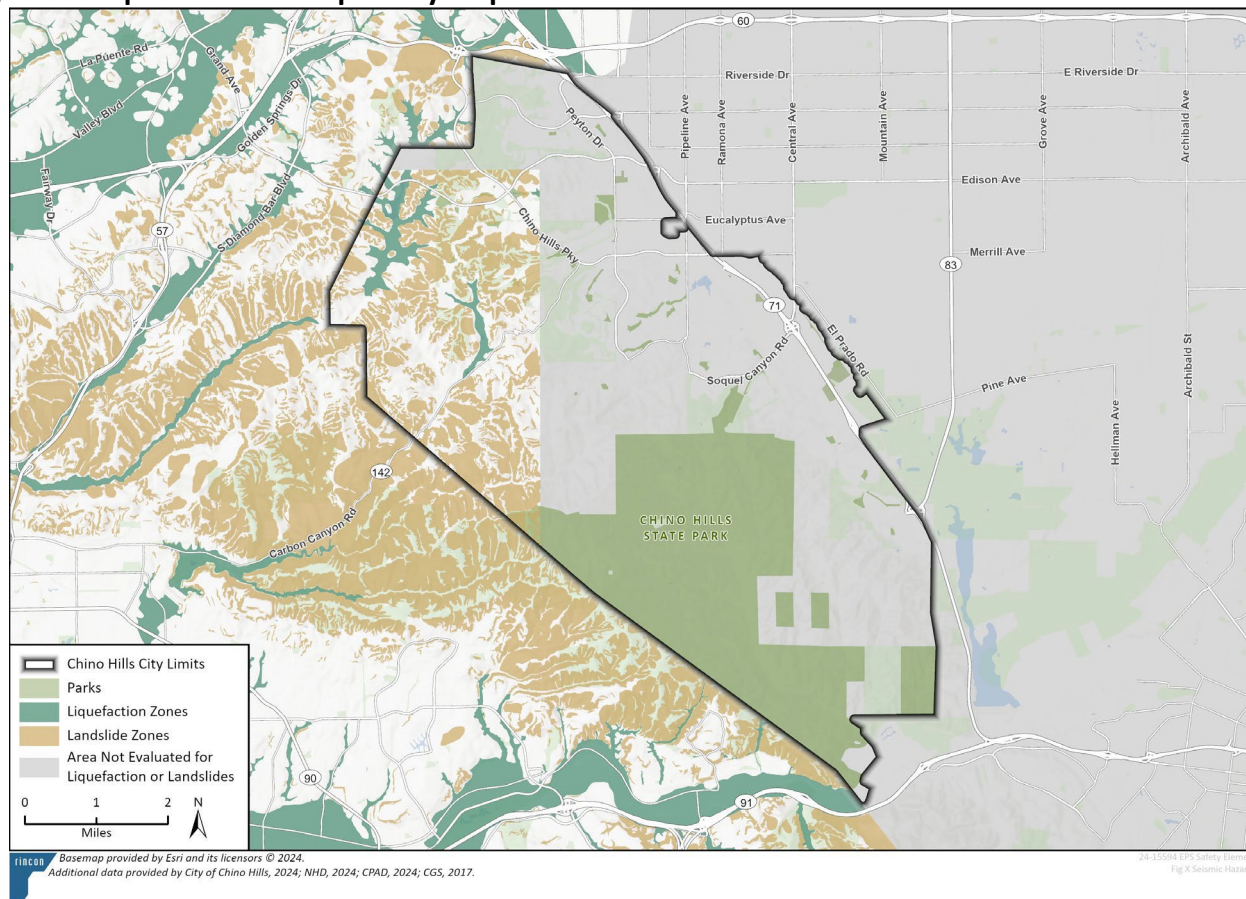


Figure 20 Liquefaction Susceptibility Map



MAGNITUDE/SEVERITY

The most common method for measuring earthquakes is magnitude, which measures the strength of earthquake. Although the Richter scale is known as the measurement for magnitude, the majority of scientists currently use either the Moment Magnitude Scale (M) or Modified Mercalli Intensity (MMI) Scale. The effects of an earthquake in a particular location are measured by intensity. Earthquake intensity decreases with increasing distance from the epicenter of the earthquake.

The magnitude of an earthquake is related to the total area of the fault that ruptured, as well as the amount of offset (displacement) across the fault. As shown in Table 14, there are seven earthquake magnitude classes, ranging from great to micro. A magnitude class of great can cause tremendous damage to infrastructure in Chino Hills, compared to a micro class, which results in minor damage to infrastructure.

Table 14 Earthquake Magnitude Classes

Magnitude Class	Magnitude Range (M = Magnitude)	Description
Great	$M > 8$	Tremendous damage
Major	$7 \leq M < 7.9$	Widespread heavy damage
Strong	$6 \leq M < 6.9$	Severe damage
Moderate	$5 \leq M < 5.9$	Considerable damage
Light	$4 \leq M < 4.9$	Moderate damage
Minor	$3 \leq M < 3.9$	Rarely causes damage
Micro	$M < 3$	Minor damage

The MMI Scale measures earthquake intensity as shown in Table 15. The MMI Scale has 12 intensity levels. Each level is defined by a group of observable earthquake effects, such as ground shaking and/or damage to infrastructure. Levels I through VI describe what people see and feel during a small to moderate earthquake. Levels VII through XII describe damage to infrastructure during a moderate to catastrophic earthquake.

Table 15 Earthquake Magnitude and Modified Mercalli Intensity Scale

Magnitude (M_w)	Intensity (Modified Mercalli Scale)	Description
1.0 – 3.0	I	I. Not felt except by very few people under especially favorable conditions.
3.0 – 3.9	II – III	II. Felt by a few people, especially those on upper floors of buildings. Suspended objects may swing.
		III. Felt quite noticeably indoors. Many do not recognize it as an earthquake. Standing motorcars may rock slightly.
4.0 – 4.9	IV – V	IV. Felt by many who are indoors; felt by a few outdoors. At night, some awakened. Dishes, windows, and doors rattle.
		V. Felt by nearly everyone; many awakened. Some dishes and windows broken; some cracked plaster; unstable objects overturned.
5.0 – 5.9	VI – VII	VI. Felt by everyone; many frightened and run outdoors. Some heavy furniture moved; some fallen plaster or damaged chimneys.

		VII. Most people alarmed and run outside. Damage negligible in well-constructed buildings; considerable damage in poorly constructed buildings.
6.0 – 6.9	VII – IX	VIII. Damage slight in special designed structures; considerable in ordinary buildings; great in poorly built structures. Heavy furniture overturned. Chimneys, monuments, etc. may topple.
		IX. Damage considerable in specially designed structures. Buildings shift from foundations and collapse. Ground cracked. Underground pipes broken.
7.0 and Higher	VIII and Higher	X. Some well-built wooden structures destroyed. Most masonry structures destroyed. Ground badly cracked. Landslides on steep slopes.
		XI. Few, if any, masonry structures remain standing. Railroad rails bent; bridges destroyed. Broad fissure in ground.
		XII. Virtually total destruction. Waves seen on ground. Objects thrown into the air.

Frequency/Probability

While earthquakes occur less frequently than other primary natural hazard events, they have accounted for the greatest combined losses (deaths, injuries, and damage costs) in disasters since 1950 in California and have the greatest catastrophic disaster potential (Cal EMA 2010).

The United States Geological Survey (USGS) estimates that the probability of an earthquake occurring over the next 30 years in Southern California with a magnitude of 6.7 or greater, is 93 percent. Table 15 from the USGS lists the average time between earthquakes in the Southern California region, together with the likelihood of having one or more such earthquakes within the next 30 years (starting from 2014). “Readiness” indicates the factor by which likelihoods are currently elevated, or lower, because of the length of time since the most recent large earthquakes. The values from the USGS include aftershocks. It is important to note that actual repeat times will exhibit a high degree of variability and will almost never exactly equal the average listed in Table 16. While earthquakes are not influenced by climate change in the same way as meteorological hazards, secondary effects such as increased risk of landslides or infrastructure vulnerability due to concurrent extreme heat, drought, or wildfire may amplify earthquake impacts in the future. The City remains at high risk of damaging seismic events, particularly given its proximity to active fault lines and the dense urban infrastructure that could be affected by strong ground shaking.

Table 16 Southern California Region Earthquake Probability

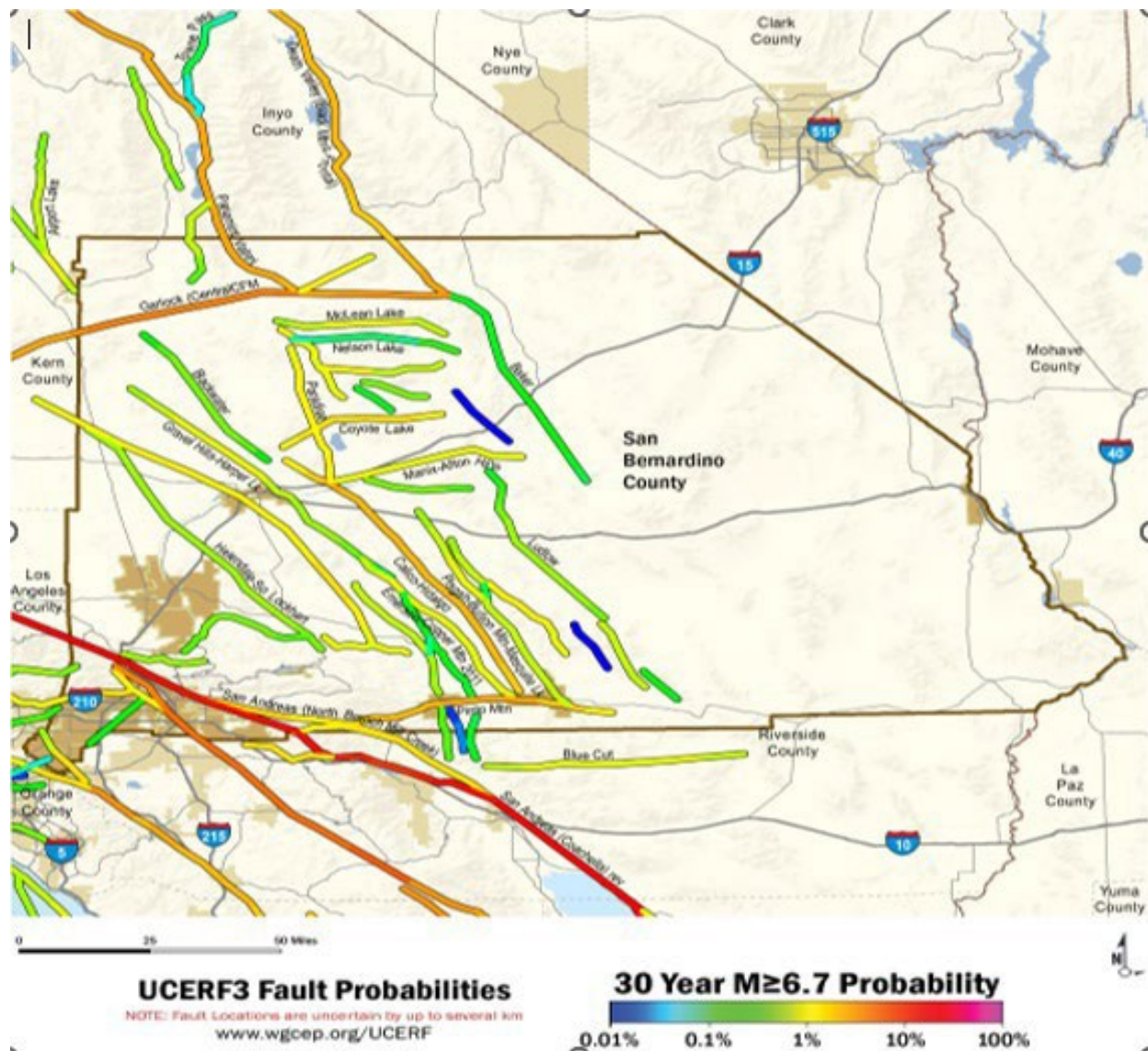
Magnitude (Greater than or Equal to)	Average Repeat Time (Years)	30-year Likelihood of One or More Events	Readiness
5	0.7	100%	1.0
6	2.3	100%	1.0
6.7	12	93%	1.0
7	25	75%	1.1
7.5	87	36%	1.2
8	522	7%	1.3

Source: USGS UCERF3: A New Earthquake Forecast for California's Complex Fault System FS 2015- 3309

FAULT PROBABILITIES

Figure 21 shows the locations of major faults in California, associated with probabilities, including the four (4) major faults in Southern California in relation to San Bernardino County region. These faults are the Southern San Andreas, the San Jacinto, the Elsinore, and the Garlock Faults. There are also many smaller faults within San Bernardino County capable of producing significant earthquakes. However, these four faults are considered by the USGS and the California Geological Survey (CGS) to be the most dangerous in the County. (California Geological Survey Special Publication 42, Interim Revision 2007, "Fault-Rupture Hazard Zones in California" - Alquist-Priolo Earthquake Fault Zoning Act).

Figure 21 Locations of Major Faults in California Associated with Probabilities



CLIMATE CHANGE

The potential direct effects of climate change on earthquake probability are currently unknown. The occurrence of fault rupture and ground shaking is caused by seismic activity, which is not linked to climate change. Therefore, fault ruptures or ground shaking are not more likely to happen as climate change impacts become more significant. However, climate change can increase the risk of cascading hazards associated with earthquakes, such as landslides. Additionally, climate change may make areas more vulnerable to liquefaction. For instance, more intense rain events in southern California could increase the amount of water saturation in loose soils. Saturated soils are prone to liquefaction or ground failure during an earthquake. Consequently, heavy rain combined with local earthquakes and strong ground shaking could raise the likelihood of liquefaction.

4.5 WILDFIRE

HISTORICAL PROFILE – WILDFIRES

Patterns of fire variability over time is a reliable indicator of ecosystem sustainability, and thus understanding the natural role of fire in chaparral ecosystems is necessary for proper fire management. Fire regimes can vary considerably by vegetation and landscape. Thus, they offer a convenient way to categorize areas for study and management purposes. Fire regimes are described by the following characteristics: frequency, rotation, spatial extent, magnitude, and seasonality. Figure 22 shows the fire perimeters for Chino Hills.

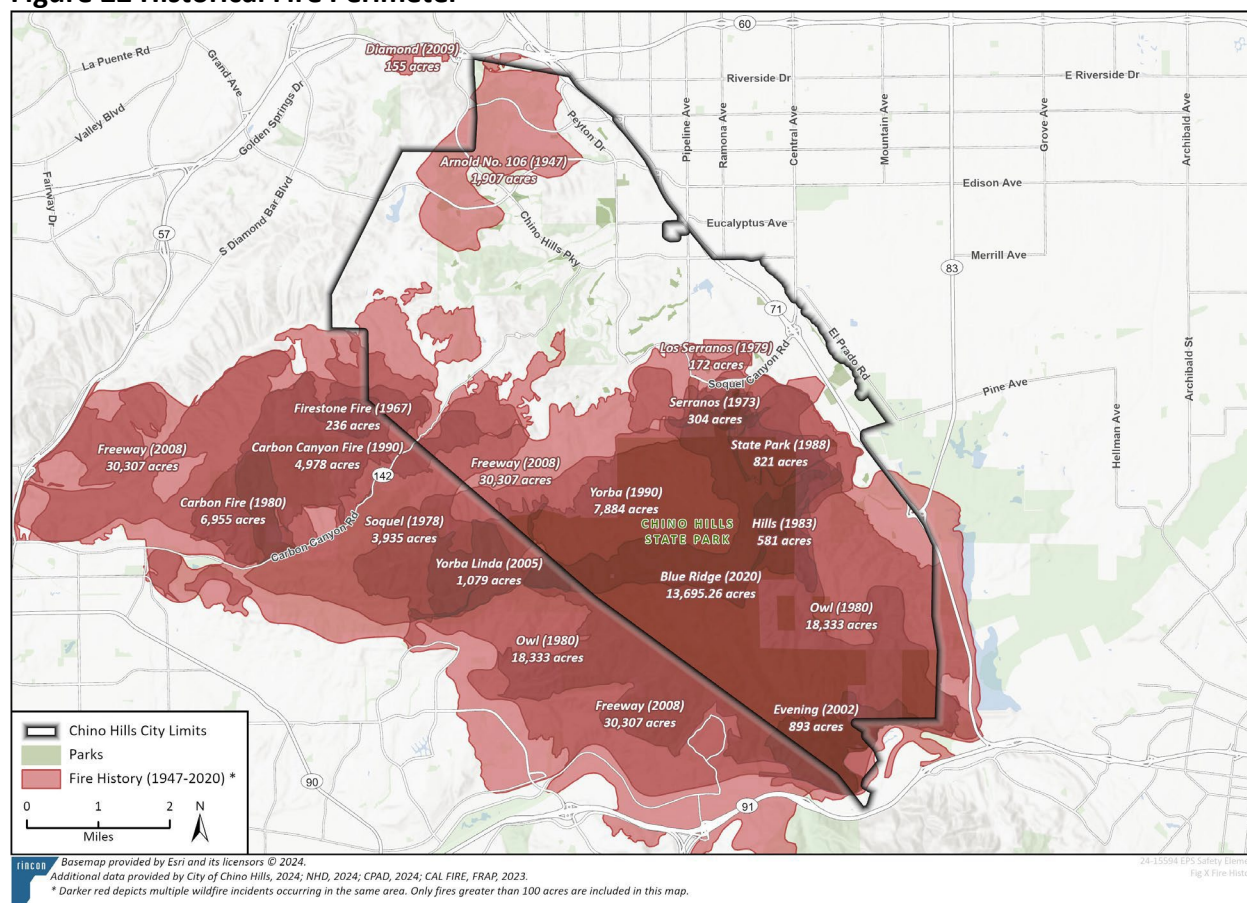
As defined in the California Fire Protection (CAL FIRE) Strategic Fire Plan, a wildfire event is an unwanted wildland fire including unauthorized man-made fires, escaped wildfire use events, escaped prescribed wildfire projects, and all other wildfires.

Fire hazards in the City include wildland, urban, and earthquake-related fire potential. The National Fire Protection Association defines a wildland fire as “any forest, grass, brush or tundra fire involving lands not under cultivation.” An urban fire is a fire that occurs in developed areas that may include structures and vehicles. An earthquake-induced fire is a widespread fire following an earthquake.

Open space and canyon areas in the City are covered with chaparral, coastal sage scrub, deciduous woodlands, and grasslands. Introduced vegetation includes landscaping plants and agricultural species. The chaparral and coastal sage plant communities are highly combustible due to volatile oils contained in the plant tissues. Wildfires in the City pose a high threat to natural resources, structures, and human safety. The high risk posed by fires is due to the combined effects of:

- Climate (dry summers with Santa Ana wind conditions);
- Steep, rugged terrain (limiting accessibility to fire-fighting vehicles and personnel);
- Vegetation (highly combustible chaparral and similar plant communities that contain high concentrations of volatile oils);
- Development patterns (wildland and urban areas intermixed in the foothills and near canyon bottoms) where development is located adjacent to highly flammable vegetation.

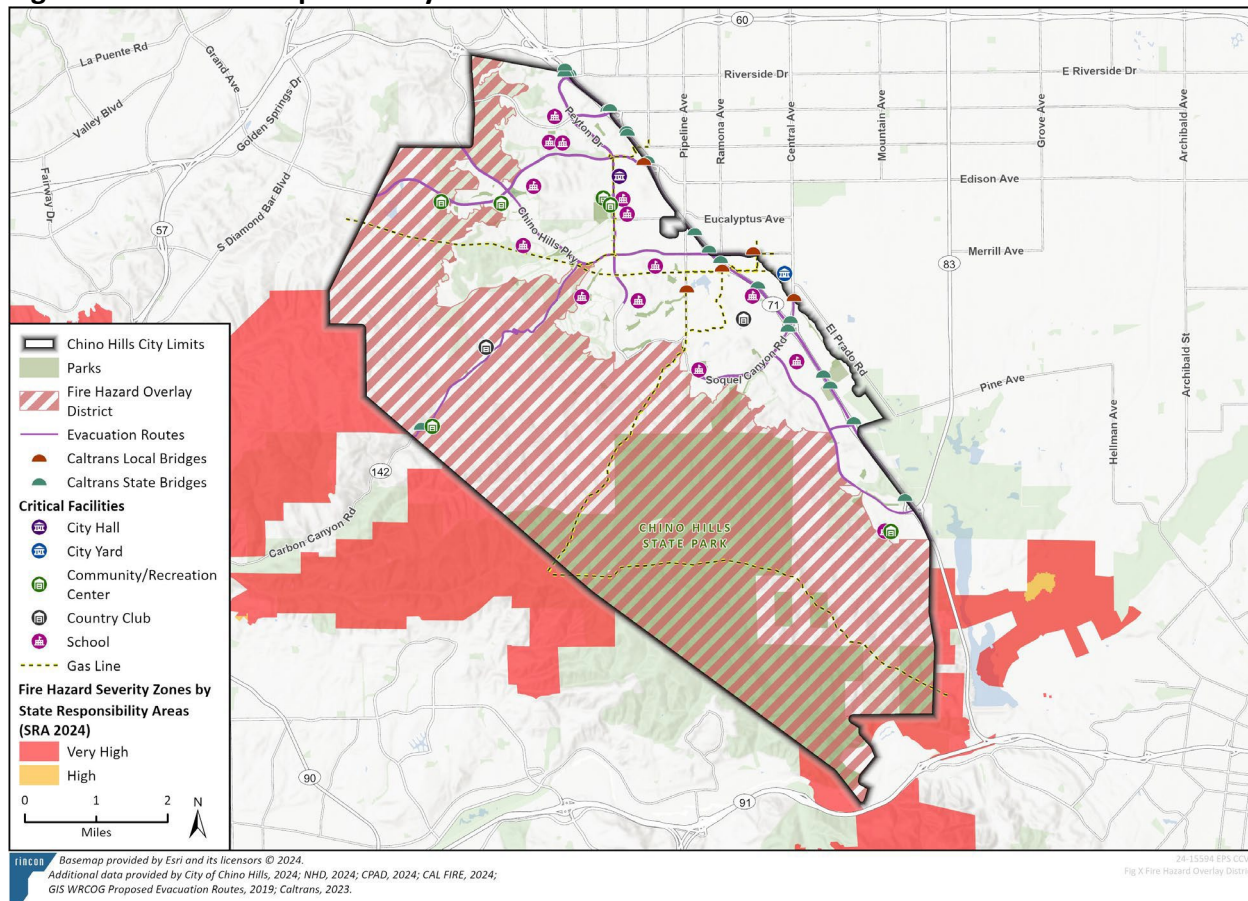
Figure 22 Historical Fire Perimeter



REGULATORY ENVIRONMENT

Wildfire regulatory requirements are mandated by the State of California and the City of Chino Hills. Three types of responsibility areas fire hazard zones may fall under: Local Responsibility Area (LRA), State Responsibility Area (SRA), or Federal Responsibility Area (FRA) Figure 23. LRAs are incorporated into cities, urban regions, and agricultural lands where the local government is responsible for wildfire protection. SRAs are areas where the state has financial responsibility for wildfire protection and prevention. FRAs are lands on which neither the State nor the local government has legal responsibility for providing fire protection.

Figure 23 Wildfire Responsibility Areas



STATE

A wildfire SRA is a designated area in California where the state, through the California Department of Forestry and Fire Protection (CAL FIRE), is primarily responsible for wildfire management, including prevention and suppression. SRAs typically include rural lands, forests, and areas with significant vegetation that pose a high fire risk. These areas do not cover cities or federal lands, which fall under local or federal jurisdiction, respectively.

Wildfire SRA Fire Safe Regulations outline basic wildland fire protection standards for local jurisdictions. SRA Fire Safe Regulations (if policed) can decrease the risk of wildfire events in the wildland interface. SRA Fire Safe Regulations do not supersede local regulations, which equal or exceed minimum state regulations. The State statute for wildfire protection is Public Resources Code, Section 4290. Requirements in the code include information on the following (CA Fire Alliance n.d.):

1. Road Standards for Fire Equipment Access
2. Standards for Signs Identifying Streets, Roads and Buildings
3. Minimum Private Water Supply Reserves for Emergency Fire Use
4. Fuel Breaks and Greenbelts

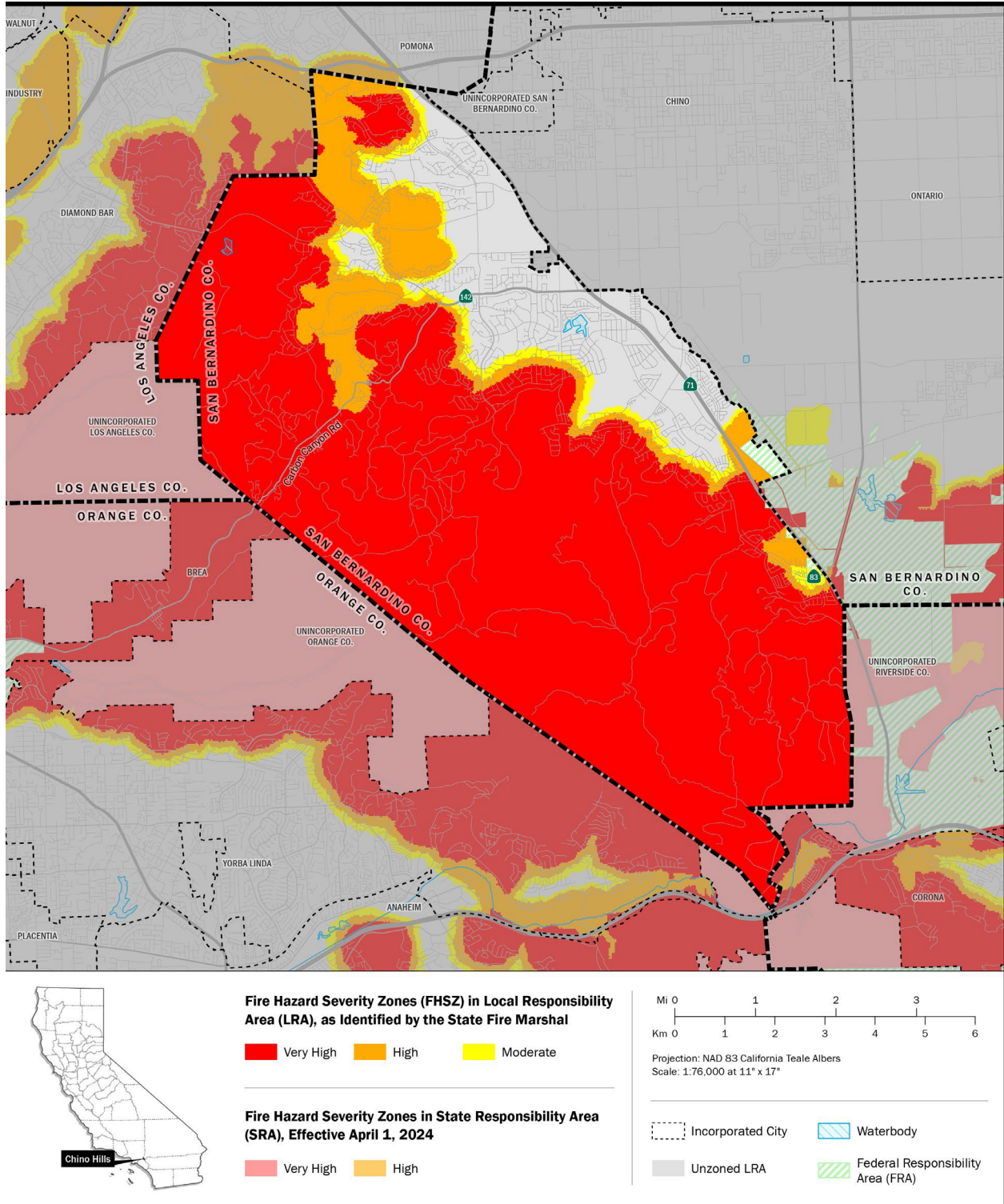
LOCAL

The City of Chino Hills is located in a LRA. As a local fire authority for the City, the Chino Valley Fire District (CVFD) provides fire suppression and fire prevention services. The CVFD operates seven fire stations, a training facility, and administrative offices.

The CVFD maintains a contract with the California Department of Forestry (Cal Fire) for wildland fire protection for 12,000 acres within its respective jurisdiction. Figure 24 shows the wildfire susceptibility in Chino Hills.

The CVFD participates in the State of California Master Mutual Aid System. In addition, CVFD has cooperative agreements with other local fire agencies. The CVFD provides Advanced Life Support (ALS) care to Chino Hills. CVFD paramedic facilities are identified in Table 17 below. Private ambulance companies also provide emergency transport in Chino Hills. Nearby hospital facilities that provide emergency medical care on-site include Chino Valley Medical Center in Chino, Placentia-Linda Hospital in Placentia, Montclair Hospital in Montclair, Pomona Valley Hospital in Pomona, San Antonio Community Hospital in Upland, and Citrus Valley Medical Center in West Covina.

Figure 24 Local Responsibility Area – Fire Hazard Severity Zones 2025



Source: CalFire, as identified by the State Fire Marshal, Updated 2025 Map

Table 17 CVFD Facilities

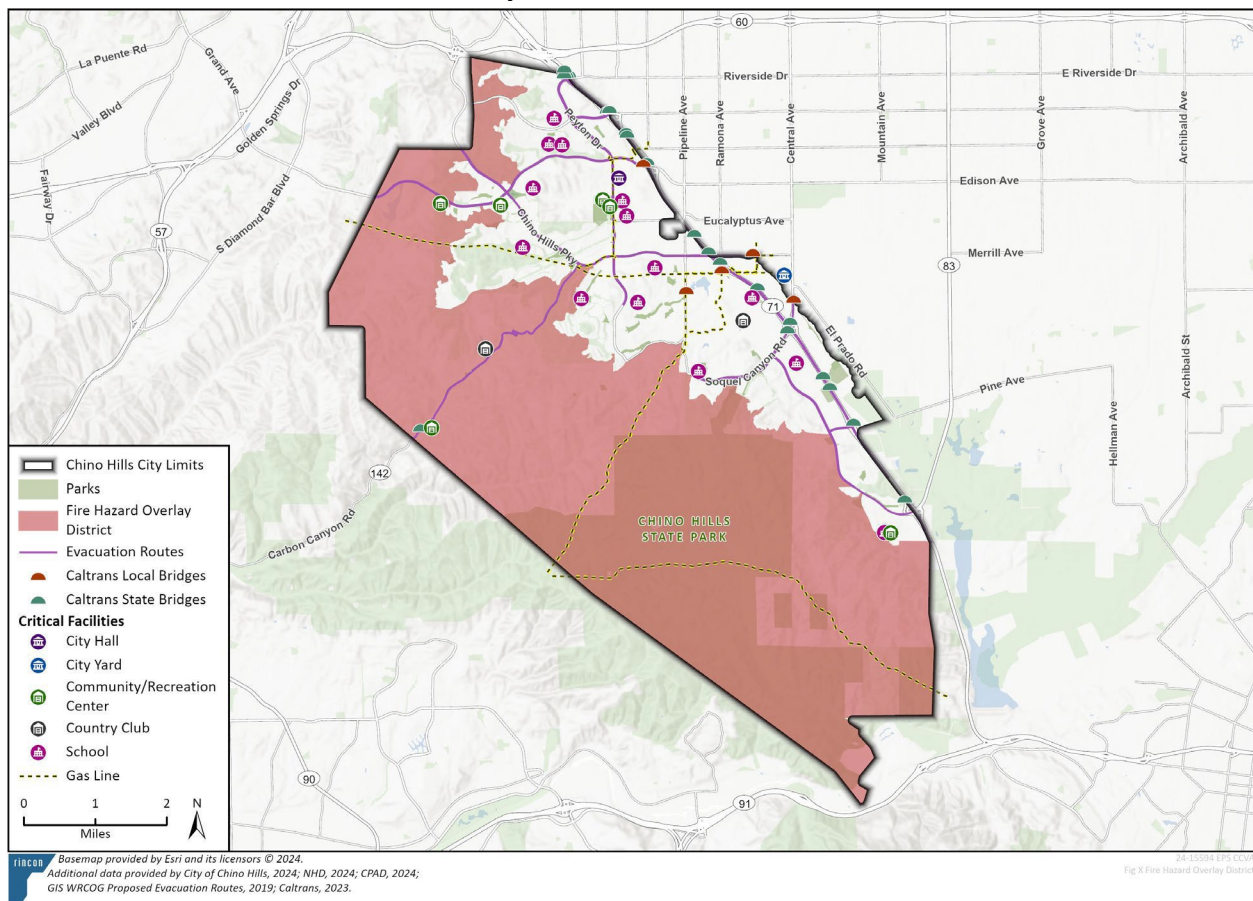
Facility Name	Location	Description
Fire Administration	14011 City Center Dr. Chino Hills	Houses offices of Fire Chief, Deputy Chief, Fire Marshal, Community Risk Reduction & Administrative Staff
Station 61	5078 Schaefer Ave. Chino	Covers central portion of the service area. Houses a Paramedic Engine Company, Chino Valley Fire District's truck company and varied specialized apparatus. One Battalion Chief is stationed here.
Station 62	5551 Butterfield Ranch Rd. Chino Hills	Houses a paramedic engine and a paramedic squad.
Station 63	7550 Kimball Ave. Chino	Serves the airport and eastern Chino area. Houses a Paramedic Engine Company & a paramedic squad.
Station 64	16231 Canon Lane Chino Hills	Houses a Paramedic Engine Company & brush patrol.
Station 65	12220 Ramona Ave. Chino	Houses a Paramedic Engine Company. & a paramedic squad. Serves the northern end of Chino.
Station 66	13707 Peyton Drive. Chino Hills	Houses a Paramedic Engine Company , paramedic squad & battalion chief. Primarily responds to calls in the northwest portion of the district.
Station 67	5980 Riverside Drive Chino	Houses a Paramedic Engine Company & a paramedic squad.
Training Facility	5092 Schaefer Ave. Chino	Centralized location for conducting training for all Fire District personnel, which includes offices for personnel assigned to the training division.
Fire Administration	14011 City Center Dr. Chino Hills	Houses offices of Fire Chief, Deputy Chief, Fire Marshal, Fire Prevention & Administrative Staff

To reduce wildfire risk, the City adopted a Fire Hazard Overlay District and established and enforces policies that are carried over in the General Plan Safety Element Goals, Policies, and Actions. The Fire Hazard Overlay District does not cover the entire extent of the areas identified as very high, high, and moderate fire hazard severity zones designated by CAL FIRE in the Local Responsibility Area map for Chino Hills. Figure 25 depicts the spread location of the City's Fire Hazard Overlay District bordering and fully encompassing areas with natural resources. Approximately 75% of Chino Hills is located within the City's fire hazard overlay. Lands within the fire hazard overlay include Chino Hills State Park, the Tres Hermanos area, the Carbon Canyon area, and the southern portion of the City generally west of Butterfield Ranch

Road and south of Soquel Canyon Drive.

The Chino Hills Fire Hazard Overlay Map identifies areas in the City subject to wildland fire hazards and areas not subject to wildland fire hazard. The map classifies areas subject to wildland fires as the Fire Hazard District, which comprises land subject to a very high to extreme fire hazard risk. Within the Fire Hazard Overlay district, the City established standards to protect structures and residents from the potential hazards associated with wildland fires. The standards permit fire-fighting vehicles to have adequate access into areas between fire hazardous areas or “fuel modified” areas and the development perimeter, so that a wildland fire can be contained at the development perimeter and prevented from spreading to structures.

Figure 25 Chino Hills Fire Hazard Overlay District



Fire prevention strategies concentrate on educating the public and the enforcement of fire codes. Fire suppression strategies focus on containment and control while protecting structures in the threatened areas. Suppression activities may utilize natural firebreaks; direct suppression of the fire by hose lines, aircraft, bulldozers, and hand crews; increasing defensible spaces around homes; utilizing fire suppression foams; and mop up and total extinguishment of the fire.

CARBON CANYON COMMUNITY WILDFIRE PROTECTION PLAN

The City participates in the Carbon Canyon Wildfire Protection Plan (CWPP). The CWPP identifies and prioritizes areas for hazardous fuel reduction treatments and recommends the types and methods of

treatment that will protect Carbon Canyon (a high risk wildland fire area within Chino Hills). It was collaboratively developed and can benefit the at risk communities of Brea, Chino Hills, Chino, Corona, Diamond Bar, La Habra Heights, Placentia, Rowland Heights, and Yorba Linda (San Bernardino, Orange, Los Angeles, and Riverside County communities).

WILDFIRES - HISTORICAL EVENTS AFFECTING CHINO HILLS

There have been 19 major wildfires consuming 40 or more acres between 1947 and 2024 affecting Chino Hills. These fires consumed a total of 50,557 acres. The most recent fire was the Blue Ridge Fire in October 2020. This fire burned over 13,000 acres. There have been seven additional wildfires within the Canyon in the surrounding wildland urban interface bordering the City. Figure 22 shows the historical fire perimeters that affected Chino Hills. Table 18 presents the list of wildfire incidents that affected the City from 1947 until the present. Table 19 presents the list of wildfire incidents in San Bernardino County resulting in a declaration from 1991 until the present.

Table 18 Wildfires Historical Occurrences Affecting Chino Hills

Date	Name	Cost	Acres (amount affected in Chino Hills)
10/26/ 2020	Blue Ridge Fire	\$13 Million	13,964 Acres 5,964 homes evacuated 15,031 residents evacuated
10/16/ 2020	California Wildfires	Not Available	N/A
09/06/ 2020	El Dorado Fire	Not available	N/A
09/04- 05/20 20	Creek, El Dorado, and Valley Fires	Not available	N/A
08/02/ 2020	Apple Fire	Not available	N/A
06/12/ 2018 *	Euclid Fire	Not available	N/A
07/28/ 2019 *	Star Fire	Not available	N/A
10/16/ 2014 *	Bane Fire	Not available	N/A
11/15/ 2008- 11/19/ 2008	Freeway Complex Fire (Freeway & Landfill Fires)	\$16.1 Million	30,305 acres

06/27/ 1990	Carbon Canyon Fire	Not available	4,979
09/14/ 1983	Hills Fire	Not available	581
11/16/ 1980	Carbon Fire	Not available	6,955
01/1/1 980	Owl Fire	Not available	18,332
06/19/ 1979	Ranch Fire	Not available	61
06/19/ 1979	Los Serranos Fire	Not available	171
10/23/ 1978	Soquel Fire	Not available	3,934
09/9/1 973	Serranos Fire	Not available	304
10/30/ 1967	Firestone Fire	Not available	236
07/3/1 947	Arnold Fire	Not available	1,906

* Incident from California Department of Forestry and Fire Protection, Incident Database, <https://www.fire.ca.gov/incidents/>, accessed May 21, 2024 and NOAA: National Centers for Environmental Information, Storm Events Database, <https://www.ncdc.noaa.gov/stormevents/>, accessed May 21, 2024

Table 19 Wildfire Historical Declarations Affecting San Bernardino County

Event	Date	Declaration	Declaration Number	Impact to Chino Hills
California Bridge Fire	9/10/2024- 9/24, 2024	Yes	FM-5537-CA	No local impact or local declaration made. Public Assistance was made available for San Bernardino County.

California Line Fire	9/7/2024-10/12/2024	Yes	FM-5535-CA	No local impact or local declaration made. Public Assistance was made available for San Bernardino County.
California Blue Ridge Fire	10/26/2020	Yes	FM-5381-CA	Local emergency declared (Resolution No. 2020R-086) \$13 million in damage 13,964 Acres 5,964 homes evacuated 15,031 residents evacuated
California Wildfires	9/4/2020-11/17/2020	Yes	DR04569-CA	No local impact or local declaration made. Individual and Public Assistance was made available for San Bernardino County.
California el Dorado Fire	9/5/2020-9/24/ 2020	Yes	FM-5350-CA	No local impact or local declaration made. Public Assistance was made available for San Bernardino County.

California Apple Fire	8/2/2020-8/ 11/2020	Yes	FM-5325-CA	No local impact or local declaration made. Public Assistance was made available for San Bernardino County.
California Hillside Fire	10/31/2019	Yes	FM-5301-CA	No local impact or local declaration made. Public Assistance was made available for San Bernardino County.
California Blue Cut Fire	8/16/2016-8/22/2016	Yes	FM-5147-CA	No local impact or local declaration made. Public Assistance was made available for San Bernardino County.
California Pilot Fire	8/7/2016-8/16/ 2016	Yes	FM-5144-CA	No local impact or local declaration made. Public Assistance was

				made available for San Bernardino County.
California North Fire	7/17/2015, - 7/ 21/2015	Yes	FM-5089-CA	No local impact or local declaration made. Public Assistance was made available for San Bernardino County.
California Hill Fire	9/2/2011- 9/5/ 2011	Yes	FM-2955-CA	No local impact or local declaration made. Public Assistance was made available for San Bernardino County.
California Sheep Fire	10/3/2009- 10/9/2009	Yes	FM-2841-CA	No local impact or local declaration made. Public Assistance was made available for San Bernardino County.
California Pendleton Fire	8/31/2009- 9/5/2009	Yes	FM-2836-CA	No local impact or local declaration made. Public Assistance was made available for San Bernardino County.

California Oak Glen Fire	8/30/2009- 9/8/ 2009	Yes	FM-2833-CA	No local impact or local declaration made. Public Assistance was made available for San Bernardino County.
California Freeway Complex Fire	11/15/2008- 11/20/2008	Yes	FM-2792-CA	Local emergency declared (Resolution No. 08R-83) \$16.1 million in damage 30,305 Acres
California Wildfires	10/21/2017- 3/31/2008	Yes	DR-1731-CA	No local impact or local declaration made. Individual and Public Assistance was made available for San Bernardino County.
Wildfires in California	10/21/2007- 3/31/2008	Yes	EM_3279- CA	No local impact or local declaration made. Welfare was made available for San Bernardino County.
California Grass Valley Fire	10/22/2007	Yes	FM-2738-CA	No local impact or local declaration made. Public Assistance was made available

				for San Bernardino County.
California Butler 2 Fire	9/14/2007-9/20/2007	Yes	FM-2728-CA	No local impact or local declaration made. Public Assistance was made available for San Bernardino County.
California Sawtooth Fire Complex	7/11/2006-7/25/2006	Yes	FM-2653-CA	No local impact or local declaration made. Public Assistance was made available for San Bernardino County.
Wildfires in California	10/21/2003-3/31/2004	Yes	DR-1498-CA	No local impact or local declaration made. Individual Assistance and Welfare made available for San Bernardino County.
California Old Fire	10/25/2003-11/14/2003	Yes	FM- 2503-CA	No local impact or local declaration made. Public Assistance was made available for San Bernardino County.
California Grand Prix Fire	10/21/2003-11/12/2003	Yes	FM-2501-CA	No local impact or local declaration made. Public

				Assistance was made available for San Bernardino County.
California Bridge Fire	9/5/2003-9/10/ 2003	Yes	FM-2497-CA	No local impact or local declaration made. Public Assistance was made available for San Bernardino County.
California Locust Fire	8/18/2003-8/21/2003	Yes	FM-2491-CA	No local impact or local declaration made. Public Assistance was made available for San Bernardino County.
California Williams Fire	9/22/2002-9/29/2002	Yes	FSA-2464-CA	No local impact or local declaration made. Public Assistance was made available for San Bernardino County.
California Louisiana Fire	6/26/2002-6/30/2002	Yes	FSA-2433-CA	No local impact or local declaration made. Public Assistance was made available for San Bernardino County.

California Blue Cut Fire	6/16/2002- 6/2/2002	Yes	FSA-2425- CA	No local impact or local declaration made. Public Assistance was made available for San Bernardino County.
California Extreme Fire Hazards	8/24/1999- 11/29/1999	Yes	EM-3140-CA	No local impact or local declaration made. Public Assistance was made available for San Bernardino County.
California Fires, Mud & Landslide s, Soil Erosion, Flooding	10/26/1993- 4/22/1994	Yes	DR-1005-CA	No local impact or local declaration made. Individual and Public Assistance was made available for San Bernardino County.

Data from Federal Emergency Management Agency, Disasters and Other Declarations Database, <https://www.fema.gov/disaster/declarations> accessed June 10, 2025 and NOAA: National Centers for Environmental Information, Storm Events Database, <https://www.ncdc.noaa.gov/stormevents/>, accessed June 10, 2025

LOCATION/GEOGRAPHIC EXTENT

Approximately 80 percent of Chino Hills is located within the City's designated Fire Hazard Overlay District (FHO) as defined in the General Plan. The rest of the city is located outside of the overlay.

The FHO district includes wildland areas that are marginally developable, areas that are not likely to be developed due to site constraints or open space requirements, and the area of transition between wildland and areas that are partially developed or that are likely to be developed in the future. The natural

ungraded slopes within the FHO are often greater than thirty percent (30%).

Areas not located within the FHO district are largely developed and contain minimal slopes.

The FHO district and regulations are established to mitigate against the threat of wildland fires. The standards set forth in the regulations provide additional opportunities for firefighting vehicles to have access to wildland interface areas. An additional intent of these standards is to prevent structures from becoming a barrier between firefighting equipment/personnel and wildland areas. The potential impact of wildland fires beyond the FHO district cannot be overstated. Even if a brush fire starts in an undeveloped area within the FHO district, “branding” of wind-transported embers up to a mile or more from the fire, especially during Santa Ana wind conditions, could ignite combustible roofs and awnings having a devastating effect on Chino Hill communities. In January 2025 the Eaton Canyon Fire and Palisades Fire were both driven by powerful Santa Ana winds, caused extensive damage, and highlighted the risk of embers traveling significant distances to ignite new fires. These events underscore the importance of ensuring that structures do not become barriers to firefighting efforts, as even a small fire in an undeveloped area can have devastating consequences for nearby communities.

The (Cal Fire) Fire Hazard Severity Zone Map for Chino Hills indicates where the different levels of fire severity are located in the City (Figure 24). The City's Fire Hazard Overlay map will be updated per Cal Fire latest maps upon release.

FREQUENCY/PROBABILITY OF FUTURE OCCURRENCES

In San Bernardino County, wildfire season commences in the summer when temperatures are high, humidity is low, and conditions remain dry. The season continues into the Fall, when the County experiences high-velocity, very dry winds coming out of the desert. The City has over 3,000 acres of open space, and undeveloped lots contiguous to residential development. Residential landscaping, fencing, and outbuildings increase fuel loading, spotting, and fire intensity.

The frequency and severity of wildland fires is also dependent upon other hazards, such as lightning, drought, and infestations (such as the recent bark beetle infestation in the San Bernardino National Forest). If not promptly controlled, wildland fires may grow into an emergency or disaster. Even small fires can threaten lives and resources and destroy improved properties. In addition to affecting people, wildland fires may severely affect livestock and pets. Such events may require emergency watering/feeding, evacuation, and shelter. The indirect effects of wildland fires can be catastrophic. High temperatures, low humidity, and clear sunny days characterize summer months.

Landscape Fire and Resource Management Planning Tools (USGS LANDFIRE), is a shared program between the wildland fire management programs of the U.S. Department of Agriculture Forest Service and U.S. Department of the Interior, providing landscape scale geo-spatial products to support cross-boundary planning, management, and operations. Historical fire regimes, intervals, and vegetation conditions are mapped using the Vegetation Dynamics Development Tool (VDDT). This USGS data supports fire and landscape management planning goals in the National Cohesive Wildland Fire Management Strategy, the Federal Wildland Fire Management Policy, and the Healthy Forests Restoration Act.

As part of the USGS Landfire data sets, the Mean Fire Return Interval (MFRI) layer quantifies the average period between fires under the presumed historical fire regime. MFRI is intended to describe one component of historical fire regime characteristics in the context of the broader historical time period

represented by the LANDFIRE Biophysical Settings (BPS) layer and BPS Model documentation.

MFRI is derived from the vegetation and disturbance dynamics model VDDT (Vegetation Dynamics Development Tool) (LF_1.0.0 CONUS only used the vegetation and disturbance dynamics model LANDSUM). This layer is created by linking the BpS Group attribute in the BpS layer with the Refresh Model Tracker (RMT) data and assigning the MFRI attribute. This geospatial product should display a reasonable approximation of MFRI, as documented in the RMT. Figure 26 presents fire return interval for Chino Hills and illustrates the probability of wildfire occurrences in the City of Chino Hills.

Wildfires will remain a recurring and escalating hazard for Chino Hills, with the probability of future events increasing due to climate change and persistent drought conditions. According to Cal FIRE's Fire Hazard Severity Zones mapping, large portions of Chino Hills are in a Very High Fire Hazard Severity Zone (VHFHSZ), particularly along the wildland-urban interface (WUI) near Carbon Canyon and Chino Hills State Park. Based on Table 9, the probability of future wildfires in Chino Hills is categorized as High (one or more every 1-5 years, >20% annual probability). Future conditions, including rising average temperatures, reduced fuel moisture, and Santa Ana wind patterns, will likely increase the speed, intensity, and footprint of wildfires in the region, resulting in greater risk to life, property, and infrastructure.

Historical data and modeling support a high probability of wildfire in Chino Hills. Based on USGS LANDFIRE data, the Mean Fire Return Interval (MFRI) in the shrubland and chaparral areas surrounding the City ranges from 30 to 60 years, depending on vegetation type and slope. CAL FIRE incident records indicate that four wildfires have impacted or threatened the Chino Hills area between 2000 and 2023, including the 2008 Freeway Complex Fire and the 2020 Blue Ridge Fire, which burned approximately 13,964 acres and prompted evacuations in the City. According to CAL FIRE's 2023 Strategic Fire Plan, the Southern Californian region, including Chino Hills, may see a 20–50% increase in fire activity by 2045 due to climate change, making future wildfires more likely, faster-spreading, and more damaging.

EXPLANATION

City of Chino Hills

USGS FIRE REGIME

11-15 Years	21-25 Years	31-35 Years	41-45 Years	51-60 Years	71-80 Years	91-100 Years	126-150 Years
16-20 Years	26-30 Years	36-40 Years	46-50 Years	61-70 Years	81-90 Years	101-125 Years	Urban/Indeterminant Regime

The City's Fire Hazard Overlay Map identifies areas in the City subject to wildland fire within the Fire Hazard Overlay district, however the Fire Hazard Overlay district does not cover the entire extent of moderate, high, and very high fire hazard severity zones in the LRA and SAR. The City establishes standards to mitigate potential wildland fire impacts on structures and City residents. The standards permit fire-fighting vehicles to have adequate access into areas between fire hazardous areas or "fuel modified" areas and the development perimeter, so that firefighters have an improved ability to contain a wildland fire at the development perimeter can more effectively work to prevent wildland fires from spreading to structures, although wildfires are unpredictable and containment is not always possible.

The following standards have been established for future development within the high fire severity zones in Chino Hills:

- Policy S-4.2: Continue to reduce fire risk through City development and operation policies.
 - Action S-4.2.1: Continue to implement and enforce fuel modification zones.
 - Action S-4.2.2: Encourage residents to plant and maintain fire-retardant slope cover to reduce the risk of brush fire in areas adjacent to canyons.
 - Action S-4.2.3: Maintain stringent site design and maintenance standards for areas with high fire hazard potential.
 - Action S-4.2.4: Continue to provide for public education programs to enhance public awareness of fire safety, including the storage of flammable materials, use of fire-retardant building materials, and vegetation management in the perimeter of structures.
 - Action S-4.2.5: Encourage the Fire District to review its agreement to coordinate for mutual aid and fire services with fire agencies from adjacent cities and counties.
 - Action S-4.2.6: Work with the Fire District to enforce all existing codes and ordinances regarding fire protection, building inspection, and vegetation management.
 - Action S-4.2.7: Maintain evacuation plans for areas in greatest danger of fire.

Fire prevention strategies concentrate on educating the public and the enforcement of fire codes. Fire suppression strategies focus around containment and control in order to help protect structures in the threatened areas. Suppression activities may utilize natural firebreaks; direct suppression of the fire by hose lines, aircraft, bulldozers, and hand crews; increasing defensible spaces around homes; utilizing fire suppression foams; and mop up and total extinguishment of the fire. New ordinances have also been adopted to decrease potential impacts due to fires, such as Ordinance No, 2022-01

CLIMATE CHANGE

The frequency and intensity of wildfires have increased significantly within California over the past two decades (Kalansky Et al. 2018) because of climate change. For Chino Hills this trend is projected to continue through mid- and end-century projections (CEC 2024). Therefore, climate change is expected to cause an increase in temperatures and more frequent and intense drought conditions. Drought following a fire can also slow the recovery of vegetation after a fire (increasing runoff during rain events), alter the types of vegetation that grow in the affected area (potentially shifting from coastal sage shrubs and chaparral to grasses), and potentially contribute to additional fire risk as grasslands tend to promote more frequent fires (Langridge 2018).

According to California's Fourth Climate Change Assessment, if greenhouse gas (GHG) emissions continue to increase, California is projected to experience a 50% rise in fires larger than 25,000 acres and a 77% increase in average burned area by 2100. Statistical models indicate that southern California will experience a larger number of wildfires and burned area by the mid-21st century due to climate change. In the region, overall burned area is projected to increase over 60% for Santa Ana-based fires and over 75% for non-Santa Ana fires (Hall et al. 2018).

In addition, warmer weather, reduced snowpack, and earlier snowmelt can be expected to increase wildfire risk through fuel hazards and ignition risks. These changes can also increase plant moisture stress and insect populations, both of which affect forest health and reduce forest resilience to wildfires. An increase in wildfire intensity and extent will increase public safety risks, property damage, fire suppression and emergency response costs to government, watershed and water quality impacts, vegetation conversions, and habitat fragmentation.

4.6 DROUGHT

HAZARD PROFILE – DROUGHT

Drought is a normal, recurrent feature of climate. It occurs almost everywhere, although its features vary from region to region. Drought severity depends on numerous factors, including duration, intensity, and geographic extent, as well as regional water supply demands by humans and vegetation. The severity of drought can be aggravated by other climatic factors, such as prolonged high winds and low relative humidity.

Drought originates from a deficiency of precipitation over an extended period, usually one or more seasons. Drought can result in a water shortage for some activity, group, or environmental sector. Drought is a complex natural hazard, which is reflected in the following four definitions commonly used to describe it:

- **Agricultural** – drought is defined principally in terms of naturally occurring soil moisture deficiencies relative to water demands of plant life, usually arid crops.
- **Hydrological** – drought is related to the effects of precipitation shortfalls on stream flows and reservoir, lake, and groundwater levels.
- **Meteorological** – drought is defined solely on the degree of dryness, expressed as a departure of actual precipitation from an expected average or normal amount based on monthly, seasonal, or annual time scales.
- **Socioeconomic** – drought associates the supply and demand of economic goods or services with elements of meteorological, hydrologic, and agricultural drought. Socioeconomic drought occurs when the demand for water exceeds the supply as a result of weather-related supply shortfall. It may also be called a water drought.

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

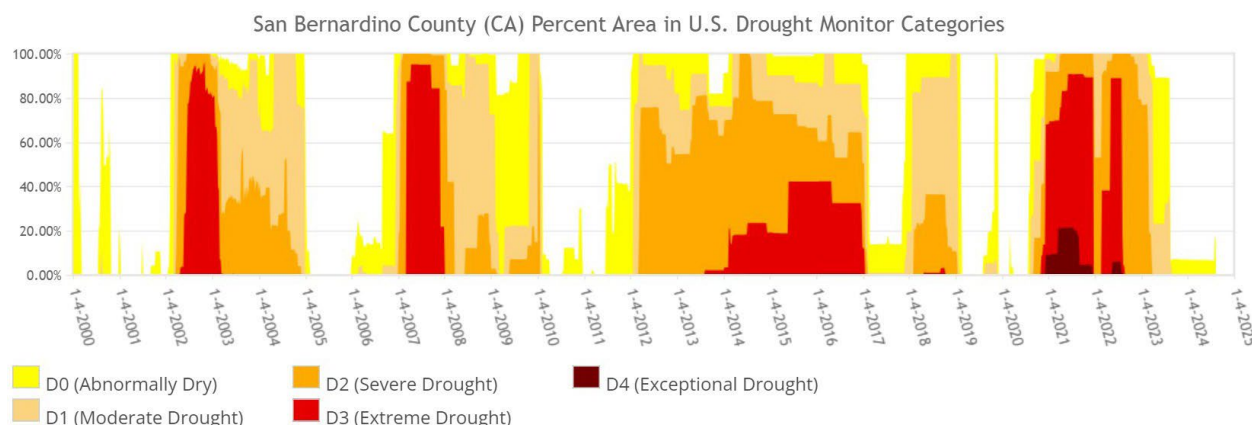
PAST OCCURRENCES

There have been five drought events since 1896 in Chino Hills. There has not been a drought event resulting in local disaster declaration in the City of Chino Hills. Previous occurrences of drought are described as follows:

- **1975 to 1977:** California experienced the two driest years (1976 and 1977) in the State's history in 1976 and 1977. The drought was declared an Emergency (FEMA-EM-3023) on January 20, 1977. Total crop damages statewide totaled \$2.67 billion dollars for both years (\$888.5 million in 1976 and \$1.8 billion in 1977).
- **2006 to 2009:** A California State-declared three-year drought of below-average rainfall, low snowmelt runoff, and the largest court-ordered water restricting in state's history. The dry conditions damaged crops, deteriorated water quality, and caused extreme wildfire danger. Approximately \$300 million in agricultural revenue loss, and a potential
- \$3 billion in economic losses over time.
- **2012 to 2016:** San Bernardino County first declared a local drought emergency in 2014. This drought was, at the time, the most severe drought in over 100 years. In order to abide by the State Water Resources Control Board's mandatory water reductions, the San Bernardino Municipal Water Department Board of Water Commissioners authorized implementation of Stage IIA of the department's Water Supply Contingency Plan on June 1, 2015. The State Water Board will adjust emergency water conservation regulations through the end of January 2017, in recognition of the differing water supply conditions across the state, and develop proposed emergency water restrictions for 2017 if the drought persists.
- **April 7, 2017:** Governor Edmund G. Brown Jr. ended the drought state of emergency in most of California, while maintaining water reporting requirements and prohibitions on wasteful practices, such as watering during or right after rainfall. Executive Order B-40-17 lifts the drought emergency in all California counties except Fresno, Kings, Tulare and Tuolumne, where emergency drinking water projects continued to help address diminished groundwater supplies.
- **2020 to 2023:** This period represents the driest three-year period on record, breaking the old record set by the previous drought from 2013 to 2015. In 2022, the majority of the state was in severe or extreme drought conditions. The state ranked driest on record for much of 2022, including driest ever January-March, January-May, and January-October. In October 2022 Governor's emergency proclamation expanded prior drought emergency proclamations to cover all of California's 58 counties. The drought was eliminated through almost all the state with the atmospheric rivers from December 2022 to March 2023. The City moved to stage 3 conservation in May 26, 2022, and in May 9, 2023 the City moved to stage 2 conservation.

Though the U.S. Drought Monitor shows no current drought, the region's status has consistently fluctuated between no drought and extreme drought as shown the drought status of San Bernardino County for the past 24 years (Figure 27). The county experienced Moderate to Exceptional drought periods approximately 75 percent of the time, specifically 2002-2005, 2007- 2010, 2012-2017, 2018-2019 and 2021-2023.

Figure 27 Drought in San Bernardino County (2000 – 2024)



From the U.S. Drought Monitor website, <https://droughtmonitor.unl.edu/DmData/TimeSeries.aspx>, 8-15-2024



REGULATORY ENVIRONMENT

The County and participating jurisdictions have a number of regulatory requirements and documents to address planning for drought in the County. This includes Watershed Water Quality Management Plans (WQMP) for San Bernardino County and the Mojave and Santa Ana Watersheds. On June 21, 2013, the Executive Officer approved the revised Technical Guidance Document for Water Quality Management Plan (TGD-WQMP).

The 1972 Federal Water Pollution Control Act, also known as the Clean Water Act (CWA) provides the basis for the protection of all inland surface waters, estuaries, and coastal waters. California's Porter-Cologne Water Quality Control Act of 1970 established the Regional Water Quality Control Board as the agency responsible for implementing the CWA and Porter-Cologne requirements in the Santa Ana Watershed.

In 2006, California state lawmakers adopted AB 1881. This provided guidelines and timelines for the revision of the State's Model Water Efficient Landscape Ordinance (MWELO) and mandated that every city, county or other agency within the State adopt MWELO or be in compliance with it through their own ordinance by January 2010. On January 1, 2010, the San Bernardino County Water Efficient Landscape Ordinance was implemented. In 2009, the State adopted the Water Conservation Act (SB-X7-7). The Water Conservation Act requires a 20% reduction of urban per capita water use by 2020. In 2014, The Sustainable Groundwater Management Act was passed into law requiring local jurisdictions with medium and high priority basins to develop Groundwater Sustainability Plans within 20 years.

Since 2016, California has made key improvements to its drought response. In 2018, legislation required larger urban water suppliers to plan for 5 years of drought, up from 3 years, in the water shortage contingency plan element of their Urban Watershed Master Plans. In addition, SB 552 (2021) outlines new requirements for small water suppliers, county governments, DWR, and the State Water Resources Control Board (Water Board) to implement more proactive drought planning and be better prepared for future water shortage events or dry years.

URBAN WATER QUALITY MANAGEMENT PLAN

The 2020 update of the City of Chino Hills (City) Urban Water Management Plan (UWMP) was prepared in accordance with the California Urban Water Management Planning Act (Act) of 1983 and its amendments. The Act requires that an Urban Water Management Plan be prepared by all water purveyors having more than 3,000 accounts or supplying more than 3,000 acre-ft of water annually. Since its passage in 1983, several amendments have been added to the Act. Plans are required to be submitted every five years. The City adopted previous Plans for 1995, 2000, 2005, 2010, 2015, and 2020.

As with the 2015 UWMP, the 2020 UWMP incorporates Senate Bills 610 and 221, as well as Senate Bill 7, legislation and serves as the primary source documentation for future Water Supply Assessments and Written Verifications. The 2015 UWMP include the requirements of the Delta Legislation of 2009. Senate Bill 7 (SBx7-7), also known as the Water Conservation Act, which was required to be included in the 2015 UWMP.

The City's 2020 UWMP provides a framework for long term water supply planning and informs the public of its plans. The City has planned for adequate water supplies for existing and future demands. Since its passage in 1983, several amendments have been added to the California Water Code and Urban Water Management Planning Act. The State Department of Water Resources (DWR) published a final guidebook in March 2021 to assist urban water suppliers understand the most recent revisions and prepare the 2020 UWMPs. The City has followed the guidance issued in DWR's guidebook in preparation of the 2020 UWMP.

According to the 2020 UWMP Chino Hills' water supply sources are considered to be highly reliable over the next 25 years. The overall availability of imported Bay Delta supplies to Southern California have been decreasing over time due to ecosystem decline and regulatory decisions limiting exports. Availability is expected to continue to decrease due to drought, climate change, and additional regulation. Despite this, Chino Hills expects that its full contract value of water to be available in the future. This reliability is due to the long-term investments that the Metropolitan Water District has made as the primary regional wholesale supplier, which include storage, water transfers, water banking, flexible operations, conservation, and alternate supplies.

In addition, Chino Hills' groundwater supplies from the local Chino Basin are also expected to be highly reliable into the future. Long-term management of the Basin by the Chino Basin Watermaster and the Optimum Basin Management Program has resulted in sustainable groundwater yields through active monitoring, management, accounting, and recharge. Currently, the Chino Basin has a "Very Low" prioritization under the Sustainable Groundwater Management Act (SGMA). Although the safe yield of the Basin may be recalculated from time to time, indications are that the source will continue to be reliable. The Watermaster expects to meet its recharge and replenishment goals through 2050.

The City's 2020 UWMP was prepared by integrating information from the 2021 Citywide Water and Recycled Water Master Plan, Groundwater Management Plan, General Plan, the 2015 UWMP and among other city planning documents.

TECHNICAL GUIDANCE DOCUMENT FOR WATER QUALITY MANAGEMENT PLAN

Approved on June 21, 2013, the Technical Guidance Document for Water Quality Management Plan (TGD-WQMP) provides direction to project proponents on the regulatory requirements applicable to a private

or public development activity, including public works transportation projects, from project conception to completion.

LOCATION/GEOGRAPHIC EXTENT

The City is located within the South Coast hydrologic region of Southern California. From 2001 to 2020, the City received an average rainfall of approximately 13.9 inches. The average air temperature was approximately 62.7 degrees Fahrenheit. Table 20 provides yearly average evapotranspiration (ETO), precipitation, and average air temperature of the City of Chino Hills, as provided by the California Irrigation Management Information System (CIMIS) website for data recorded from 2001 to 2020.

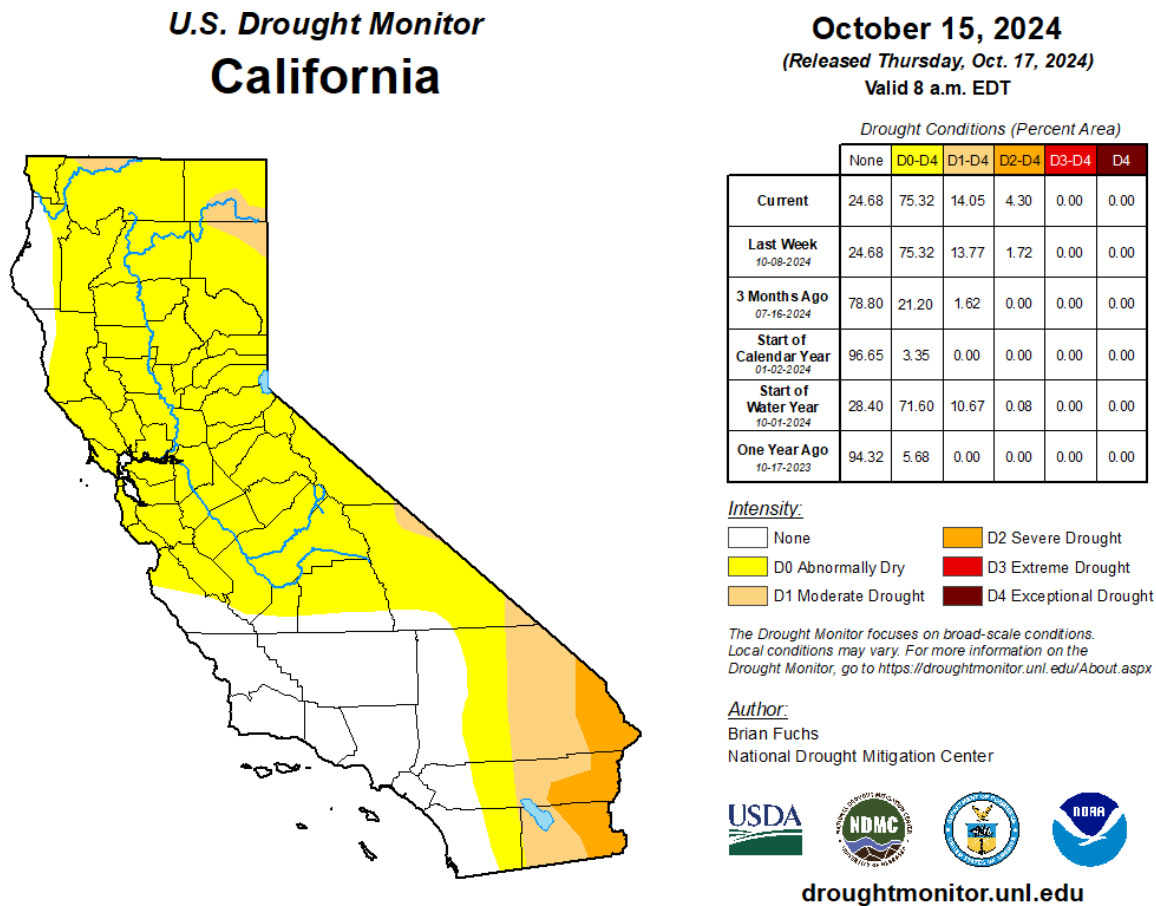
Table 20 City of Chino Hills Climate

Year	Average ETo (in)	Total Precipitation (in)	Average Max Air Temperature (°F)
2001	46.6	15.9	60.9
2002	48.8	7.4	60.8
2003	46.9	14.8	62.3
2004	51.2	19.9	61.8
2005	48.8	23.4	62.0
2006	49.1	12.2	62.3
2007	51.4	4.6	61.7
2008	50.1	14.8	62.6
2009	48.7	10.4	62.2
2010	47.2	28.8	60.9
2011	47.2	10.5	60.8
2012	49.5	9.9	62.5
2013	51.2	4.2	63.8
2014	52.9	5.9	65.4
2015	50.3	8.2	65.1
2016	49.2	12.9	64.5
2017	51.2	27.0	65.2
2018	56.2	11.3	64.1
2019	51.7	24.8	62.2
2020	55.1	12.2	63.2
Average	50.2	13.9	62.7

MAGNITUDE/SEVERITY

The magnitude of drought is usually measured in time and the severity of the hydrologic deficit. There are several resources available to evaluate drought status and estimate future expected conditions. The National Integrated Drought Information System (NIDIS) Act of 2006 (Public Law 109-430) prescribes an interagency approach for drought monitoring, forecasting, and early warning. The NIDIS maintains the U.S. Drought Portal which is a web-based access point to several drought related resources. Resources include the U.S. Drought Monitor (USDM) (Figure 28) and the U.S. Seasonal Drought Outlook (USSDO) (Figure 29).

Figure 28 U.S. Drought Monitor - California



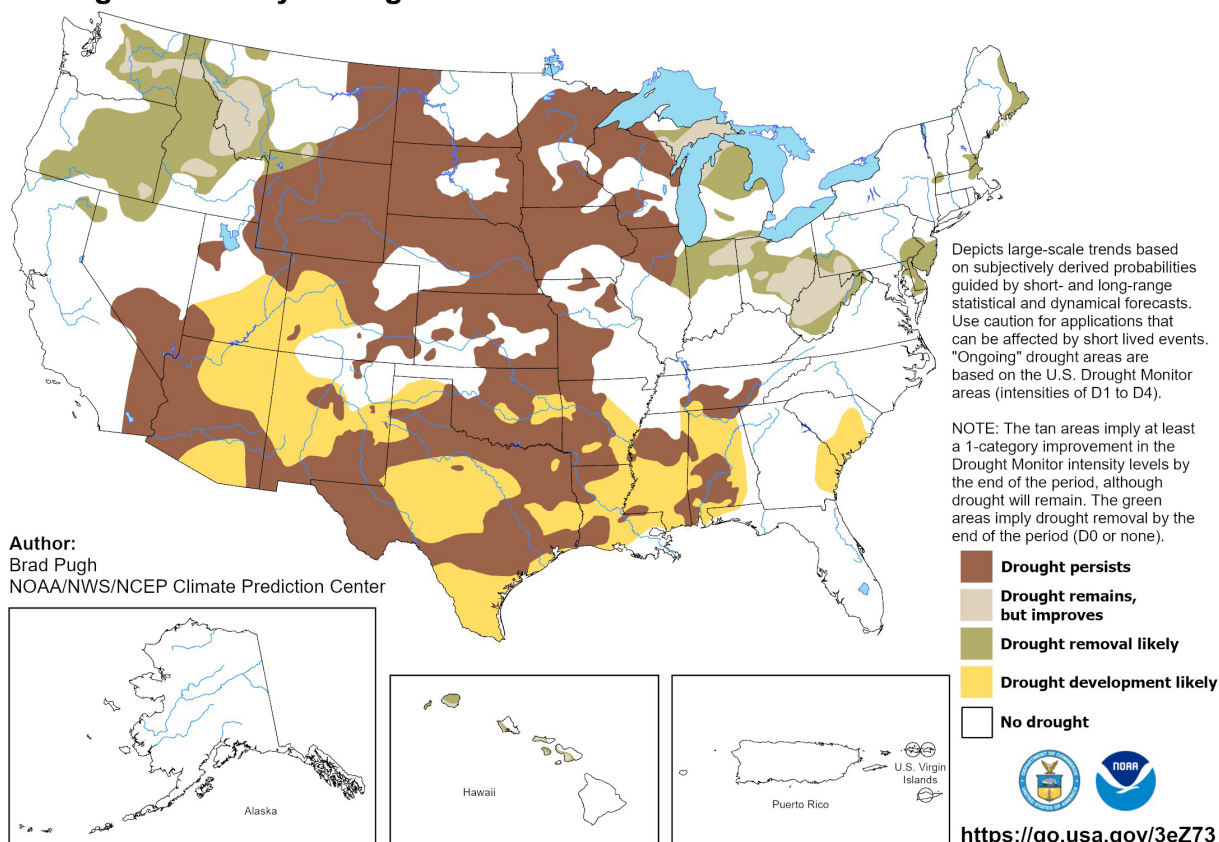
Source <https://droughtmonitor.unl.edu/CurrentMap/StateDroughtMonitor.aspx?CA>

Figure 29 U.S. Seasonal Drought Outlook

U.S. Seasonal Drought Outlook

Drought Tendency During the Valid Period

Valid for October 17, 2024 - January 31, 2025
Released October 17, 2024



Source: https://www.cpc.ncep.noaa.gov/products/expert_assessment/sdo_summary.php

U.S. CALIFORNIA DROUGHT MONITOR

The USDM provides a summary of drought conditions across the United States and Puerto Rico and is developed and maintained by the National Drought Mitigation Center (www.drought.unl.edu). USDM includes the U.S. Drought Monitor Map (Figure 28). This map is updated weekly by combining a variety of drought database and indicators, and local expert input into a single composite drought indicator. The map denotes four levels of drought intensity (ranging from D1 - D4) and one level of "abnormal dryness" (D0). In addition, the map depicts areas experiencing agricultural (A) or hydrological (H) drought impacts. These impact indicators help communicate whether short- or long-term precipitation deficits are occurring.

FREQUENCY/PROBABILITY OF FUTURE OCCURRENCES

According to California's Fourth Climate Change Assessment, prepared in 2018, the southern California region recently experienced an exceptional drought during 2011-2015, exacerbated by anthropogenic warming that led to historically warm temperatures, dry soils, and precipitation deficits. Climate projections indicate that such conditions will become more frequent and persistent across the 21st century. Atmospheric patterns like the "Ridiculously Resilient Ridge", a persistent high-pressure system

in the northeastern Pacific Ocean, have become more common, blocking storm systems and reducing precipitation stateside.

Based on Table 9, the probability of future droughts in Chino Hills is categorized as High (one or more events every 1-5 years, >20% annual probability). These droughts affect the entire planning area, placing consistent stress on local and imported water supplies, vegetation, and open space areas. As climate change continues to drive higher temperatures, lower snowpack, and shifting precipitation patterns, droughts are expected to intensify in duration and severity, resulting in increased fire risk, water use restrictions, and infrastructure strain.

Drought in this context is not confined to a specific location within the city, but uniformly impacts residential areas, parks, and wildland-urban interface zones. As such, mitigation efforts must be citywide and adaptive to long-term hydrologic changes driven by climate variability.

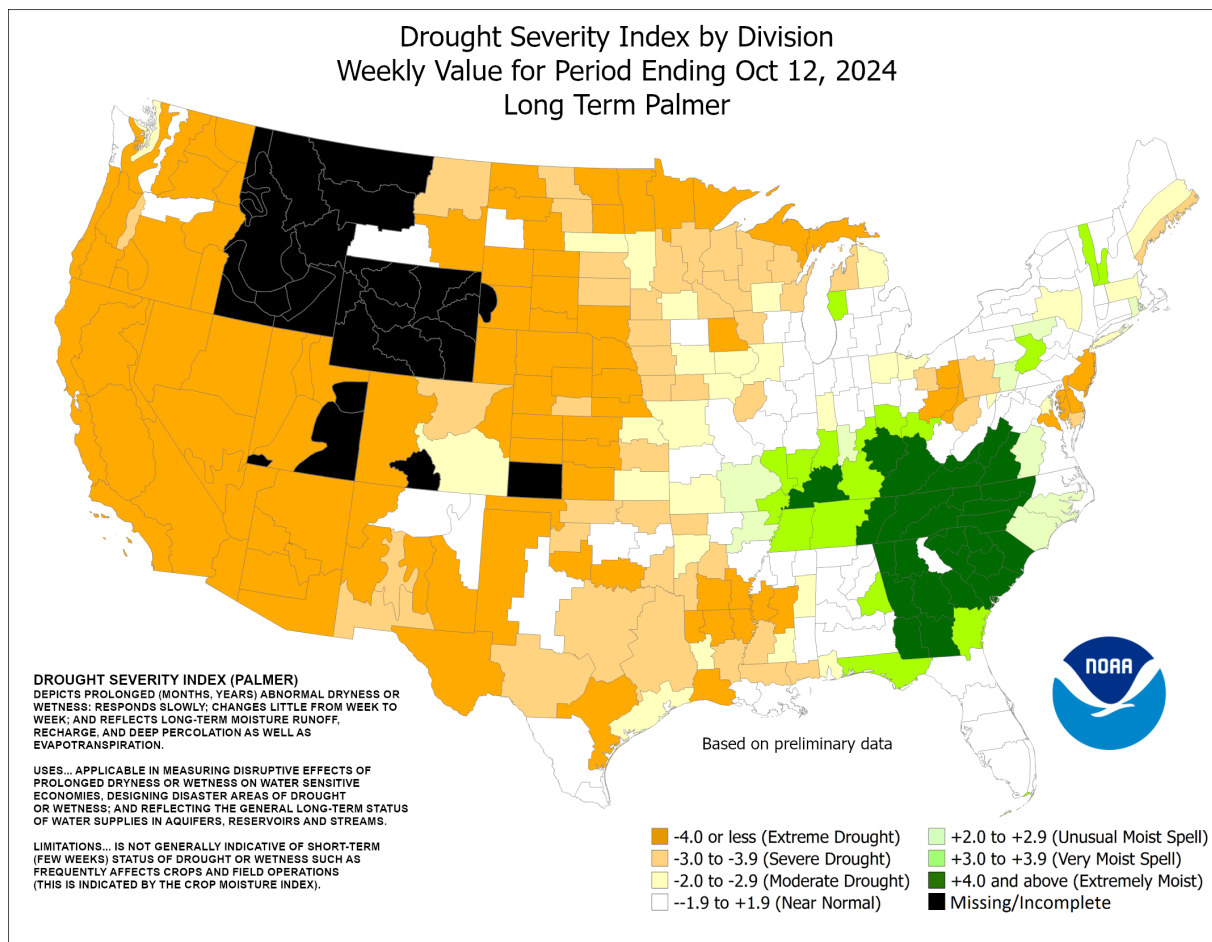
U.S. SEASONAL DROUGHT OUTLOOK

For western States with mountainous terrain and complex regional microclimates, it is also useful to supplement the Palmer Drought Severity Index (PDSI) values with other indices such as Surface Water Supply Index and Standardized Precipitation Index (SPI). The Surface Water Supply Index takes snowpack and other unique conditions into account. The National Drought Mitigation Center (NDMC) uses the SPI to identify emerging drought months sooner than the PDSI. It is computed on various time scales to monitor moisture supply conditions. The SPI is the number of standard deviations that precipitation value would deviate from the long-term mean.

DROUGHT SEVERITY INDEX

A number of indices measure how much precipitation for a given period has deviated from historically established norms. The primary indicator for the USDM (Figure 28) and USSDO (Figure 29) for the western United States is the PDSI. The PDSI is widely used by the USDA to determine when to grant emergency drought assistance to affected areas. PDSI is a commonly used index that measures the severity of drought for agriculture and water resource management. It is calculated from observed temperature and precipitation values and estimates soil moisture. However, the PDSI is not considered consistent enough to characterize the risk of drought on a nationwide basis (FEMA, 1997) and is not well suited to the dry, mountainous areas in the western United States. As shown in Figure 30 the PDSI for San Bernardino County is high.

Figure 30 Palmer Drought Severity Index

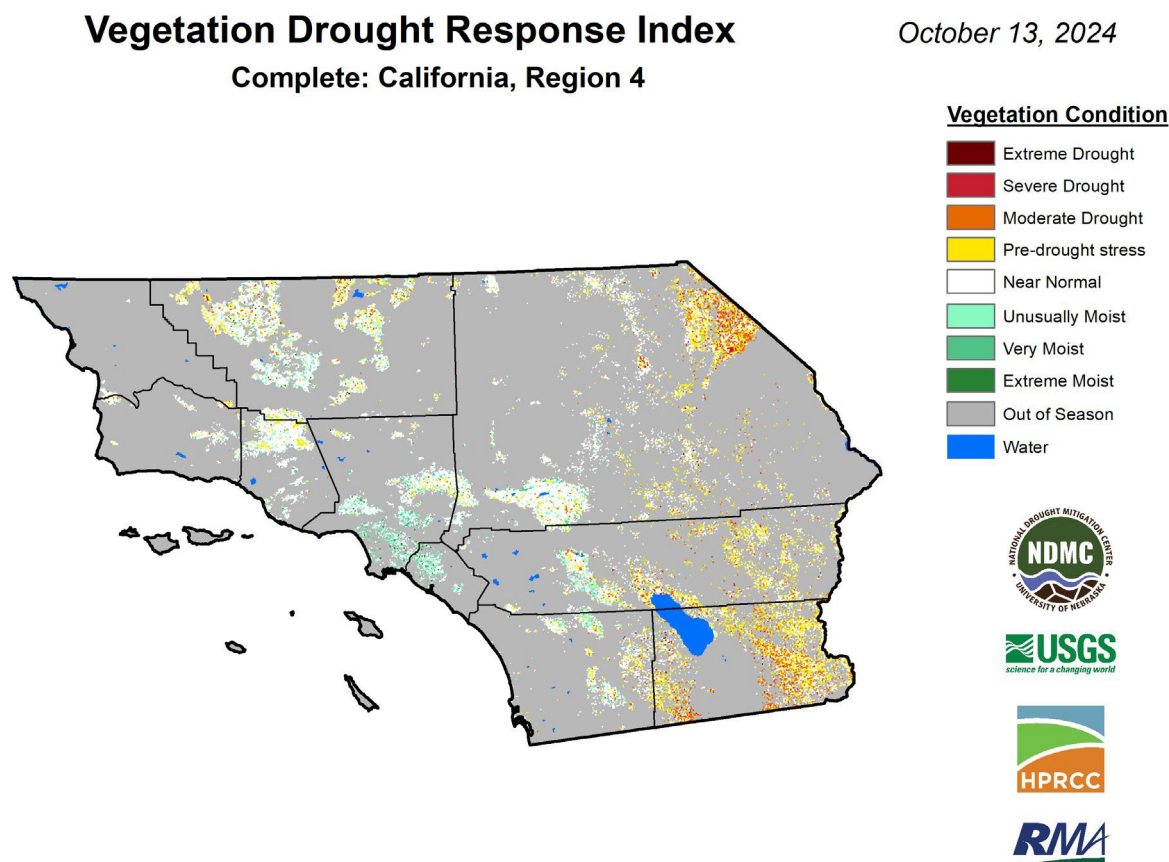


Source: <https://climatedataguide.ucar.edu/climate-data/palmer-drought-severity-index-pdsi>

VEGETATION DROUGHT RESPONSE INDEX

The Vegetation Drought Response Index, or VegDRI, is a bi-weekly depiction of vegetation stress across the contiguous United States. VegDRI is a fine resolution (1-km²) index based on remote sensing data, and incorporates climate and biophysical data to determine the cause of vegetation stress (Figure 31). Development of the VegDRI map and associated products is a joint effort by the National Drought Mitigation Center (NDMC), the U.S. Geological Survey's (USGS) National Center for Earth Resources Observation and Science (EROS), and the High Plains Regional Climate Center (HPRCC) illustrates the VegDRI results for Southern California for October 13, 2024.

Figure 31 Vegetation Drought Response Index



Source: <https://vegdiri.unl.edu/> DROUGHT 2012-2016 - LOCAL IMPACT

The drought that spanned water years 2012 through 2016 included the driest four-year statewide precipitation on record (2012-2015) and the smallest Sierra-Cascades snowpack on record (2015, with 5 percent of average). It was marked by extraordinary heat: 2014, 2015 and 2016 were California's first, second and third warmest years in terms of statewide average temperatures. The City of Chino Hills responded to the State's emergency actions and executive orders by adopting Ordinance No. 13.08. This ordinance addressed the need for water conservation and detailed the restrictions and requirements of all four stages of conservation. From voluntary limit of water usage to limiting the number of days, time of day, and length of watering per residence to reduce the amount of water consumption. To assist residents in determining the amount of their consumption, the water utility bill was redesigned to show their prior usage amounts and their current usage amounts. The City also identified areas of City property to replace grass with drought tolerant plants, increased the number of areas using recycled water, and worked with local water agencies to advertise and promote landscape conversions to drought tolerant landscaping. These efforts assisted the City is reaching the reduction limits designated by the State.

In preparation for continuing drought conditions, the City also prepared for a reduction in our water allocation from the water agencies. This plan also addresses the possible need for obtaining additional or replacement sources for water in the event of a major earthquake or disaster (See City of Chino Hills 2020 UWMP, Water Shortage Contingency Planning). The 2020 UWMP added a Drought Risk Assessment that examines water supply reliability over a five-year period from 2021 to 2025. The Drought Risk Assessment also included demands under climate change.

More frequent and more severe drought events expected under climate change conditions will likely affect the reliability of the State Water Project (SWP) supplies. In addition, it is expected that higher temperatures will contribute to less snowpack, more rain, and an increase in early spring snowmelt. These conditions could stress the ability of SWP reservoirs to capture runoff as effectively as in the past, which may further affect overall reliability. Despite uncertainties in the future reliability of the SWP, Inland Empire Utilities Agency (IEUA) and Metropolitan Water District (MWD) currently project available allocations of imported water that are sufficient to meet the City's demand. In addition, the City and IEUA continue to invest in a diverse array of water supply sources outside of imports, such as recycled water.

The Chino Hills General Plan – Conservation Element includes the goals, policies and action items to “Ensure Adequate Water Supply and Delivery.”

- Policy CN-4.1: Promote water conservation.
 - Action CN-4.1.1: Continue to implement water conservation programs to sustain potable water sources.
 - Action CN-4.1.2: Promote use of drought tolerant plant materials and low-water usage irrigation systems.
 - Action CN-4.1.3: Promote low-water-use plantings and materials in City street medians and parkways.
 - Action CN-4.1.4: Continue to use reclaimed water for non-potable water supplies wherever not precluded by public health considerations.
- Policy CN-4.2: Plan for water resources and distribution.
 - Action CN-4.2.1: Continue master plan water supply and distribution to meet current and projected City demands.
 - Action CN-4.2.2: Implement water master plan policies through the City's Capital Improvement Program.
- Policy CN-4.3: Protect water quality.
 - Action CN-4.3.1: Protect water resources from urban runoff and other potential pollution sources through implementation of best management practices and area- wide Urban Storm Water Runoff Programs.
 - Action CN-4.3.2: Require reclaimed water to meet the Regional Quality Control Board requirements.

- Action CN-4.3.3: Support appropriate ground water contamination investigations and cleanup efforts by the local water agencies, the Regional Water Quality Control Board, and responsible private parties.

CLIMATE CHANGE

According to the 2023 California State Hazard Mitigation Plan, climate change is expected to have long-term effects on California's water supply, particularly by reducing the amount of snowpack in the mountains. Climate change models indicate that by the end of the century, there could be a significant reduction, with half or more of the Sierra Nevada snowpack disappearing. The overall impact will be worsened drought conditions due to decreased winter storage capacity in mountain snowpack and warmer temperatures.

The record warm temperatures California experienced in the winters of 2014 and 2015 illustrate how future droughts may unfold, with greatly reduced spring runoff into major reservoirs and water temperatures too warm to support anadromous fish populations in many areas. Climate change is intensifying drought impacts, as observed in the 2012-2016 and in the 2020-2022 drought years.

The Los Angeles region relies on water from the Colorado River and the State Water Project. Both of these sources begin with mountain snowpack. Climate change will result in drastically reduced supply from these sources. Declining snowpack in the San Gabriel Mountains, San Geronio Mountains, and San Jacinto Mountains will lead to permanently diminished local water supply. Higher temperatures will melt the snowpack earlier and drive the snowline higher, resulting in less snowpack to supply water to California users. Droughts are likely to become more frequent and persistent in the 21st century.

Climate change will increase the likelihood that low-precipitation years will coincide with above-average temperature years, contributing to drought conditions. While the overall average precipitation for Chino Hills is not anticipated to change dramatically by mid- or end-century, this does not reflect a lack of change in the risk of drought. Increasing variability of precipitation events is expected to lead to year-to-year precipitation becoming more volatile and the number of dry years in a row increasing (CEC 2024).

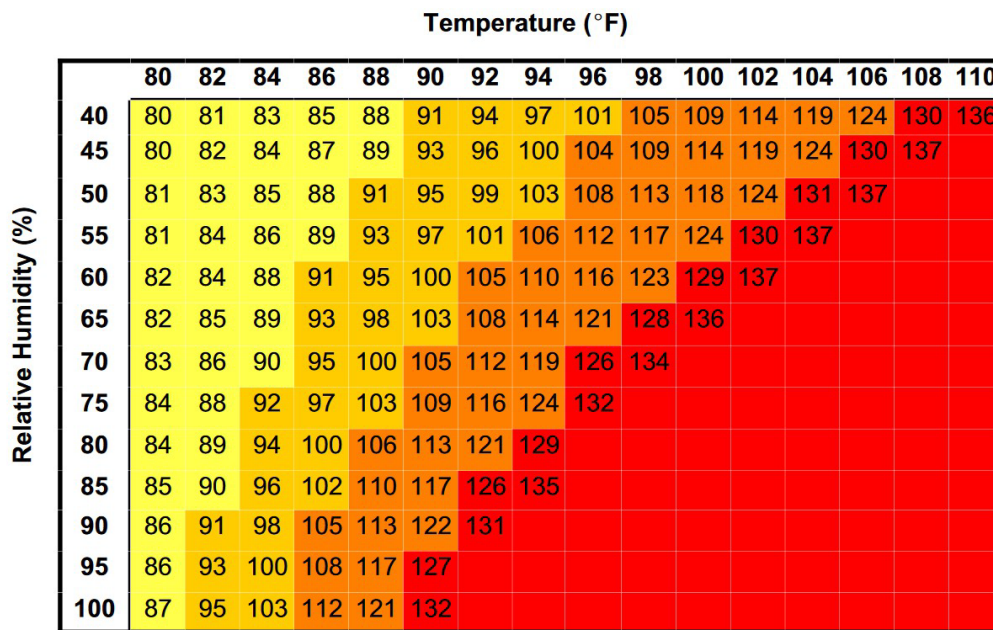
4.7 EXTREME HEAT

HAZARD PROFILE – EXTREME HEAT

Extreme heat events are characterized by abnormally high temperatures compared to the normal range, and they can manifest in three ways: extreme heat days, warm nights, and extreme heat waves, which is a series of consecutive extreme heat days and warm nights. Different regions experience extreme heat events differently due to variations in historic high temperatures. For example, extreme heat on the coast feels different from extreme heat in the High Desert due to the impact of humidity on perceived heat. Extreme heat conditions generally refer to temperatures that are significantly higher than average for a particular regional location and time of year. Extreme or excessive heat can be combination of high heat and humidity, leading to heat-related illness.

The heat index, developed by NOAA (Figure 32), provides a comprehensive measure to indicate how hot it feels to humans by considering both air temperature and humidity. When it is humid, sweat does not evaporate well, making the body feel even hotter than the temperature suggests. For example, on a 90-degree day with 50% humidity, it feels like 95°F, but with 90% humidity, it feels like a sweltering 122°F. High humidity impedes the body's ability to cool itself through sweat evaporation, intensifying the perceived temperature and creating risks of heat-related illnesses. NOAA's heat index chart allows users to assess these combined effects, which is crucial for understanding the risk of heat-related illnesses during hot weather. The dangers of extreme heat increase with time and exposure. A prolonged period of extreme heat can be particularly dangerous.

Figure 32 Heat Index



Likelihood of Heat Disorders with Prolonged Exposure and/or Strenuous Activity

 Caution
 Extreme Caution
 Danger
 Extreme Danger

Source NOAA: <https://www.noaa.gov/jetstream/synoptic/heat-index> HISTORICAL PROFILE

Extreme heat events affect all parts of the city equally. In Chino Hills, an extreme heat day is when the temperature exceeds 99.8°F, while a warm night is when the temperature exceeds 65.8°F. Based on data from Cal-Adapt, which utilizes information from NOAA, considering the period from 1950 to 2005, the City normally experiences an average of four extreme heat days and nights each year. As temperatures continue to rise across California, the frequency of extreme heat days is expected to increase.

Over the past 20 years, the region has experienced six extreme heat events (2006, 2012, 2013, 2016, 2021, and 2022). In September 2022, California experienced one of the most severe heatwaves in its history, when temperature records for September were shattered across the

western portion of the United States and brought scorching temperatures that set all-time record highs. The extreme heat fueled wildfires and stressed the power grid before an eastern Pacific tropical storm moved into the region and broke the warm spell. On September 7, 2022, more than 61 million people were under active extreme heat advisories, watches, and warnings, according to the National Weather Service.

Table 21 provides a comprehensive list of the most impactful extreme heat events in San Bernardino County that have affected the City of Chino Hills since 2006. The City of Chino Hills has not declared an emergency before due to an extreme heat event.

Table 21: Extreme Heat Historical Events in San Bernardino County

Event Name	Dates	Declaration (If Any)	Affected Counties	Impacts to Chino Hills
2006 North American Heat Wave	7/23/2006-7/29/2006	None	All Counties in California	During the July 2006 statewide heat wave, Chino Hills experienced prolonged high temperatures exceeding local thresholds for extreme heat. The City, along with the greater San Bernardino County region, faced increased energy demand, potential power reliability concerns, and elevated health risks to vulnerable populations, prompting

				the activation of regional cooling centers. No local declaration was made.
Southern California Heat Wave	7/6/2012-7/13/2012	None	San Bernardino, Riverside, Los Angeles, Orange, San Diego, Imperial	Chino Hills experienced consecutive days of extreme heat, with temperatures nearing 105°F. The event strained local energy systems, increased fire danger, and triggered public health advisories, though no local emergency was declared. No local declaration was made.

Excessive Heat	7-1-2013-7/3/2013	None	San Bernardino, Riverside, San Diego,	Chino Hills experienced an increased energy demand, fire danger, and an increased use of cooling centers. No local declaration was made.
2016 Heat Wave	6/19/2016-6/21/2016	None	San Bernardino, Los Angeles, Riverside, Orange, Kern, Fresno, San Diego	Chino Hills was impacted by an intense heat wave with temperatures exceeding 110°F. The extreme heat contributed to elevated wildfire risk, regional Flex Alerts for energy conservation, and increased demand on cooling centers, though no local emergency declaration was made. No local declaration was made.
Excessive	6/14/2021-	None	San	Chino Hills

Heat	6/21/2021		Bernardin o, Orange, Riverside, San Diego	experienced a spike in power demand, fire risk increased, and use of cooling centers increased. No local declaration was made.
Excessive Heat	7/7/2021- 7/12/2021	None	San Bernardin o	Chino Hills experienced a spike in power demand, fire risk increased, and use of cooling centers increased. No local declaration was made.
Excessive Heat	8/3/2021- 8/5/2021	None	San Bernardin o	Chino Hills experienced a spike in power demand, fire risk increased, and use of cooling centers increased. No local declaration was made.
Excessive Heat	8/25/2021- 8/29/2021	None	San Bernardin o, Riverside	Chino Hills experienced a spike in power

				demand, fire risk increased, and use of cooling centers increased. No local declaration was made.
Excessive Heat	9/4/2021-9/5/2021	None	San Bernardino, Riverside	Chino Hills experienced a spike in power demand, fire risk increased, and use of cooling centers increased. No local declaration was made.
Excessive Heat	9/12/2021-9/13/2021	None	San Bernardino	Chino Hills experienced a spike in power demand, fire risk increased, and use of cooling centers increased. No local declaration was made.
Excessive Heat	10/28/2021 - 10/28/2021	None	San Bernardino, Riverside	Chino Hills experienced a spike in power demand, fire risk increased,

				and use of cooling centers increased. No local declaration was made.
Excessive Heat	6/9/2022-6/12/2022	None	San Bernardino	Chino Hills experienced a spike in power demand resulting in a Energy Emergency Alert 2, fire risk increased, and use of cooling centers increased. No local declaration was made.
Excessive Heat	7/21/2022-7/22/2022	None	San Bernardino	Chino Hills experienced a spike in power demand resulting in a Energy Emergency Alert 2, fire risk increased, and use of cooling centers increased. No local declaration was made.
State of Emergenc	8/31/2022-9/7/2022	Executive Order N-	All Counties	Chino Hills experienced

y due to Extreme Heat Event		15-22	in California	prolonged triple-digit temperature s that strained the energy grid and increased local cooling needs. While the City did not experience direct infrastructur e failure, power conservation efforts were implemente d regionally, and the City supported public outreach on heat safety during Flex Alerts. No local declaration was made.
Excessive Heat	9/1/2022- 9/9/2022	None	San Bernardin o	Chino Hills experienced a spike in power demand resulting in a Energy Emergency Alert 2, fire risk increased, and use of cooling centers

				increased. No local declaration was made.
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Data from NOAA Storm Events Database, <https://www.ncdc.noaa.gov/stormevents/> accessed June 11, 2025

Excessive heat events often occur during Santa Ana Winds and create conditions that worsen wildfires. These winds remove moisture from the air, leading to evaporation and dry vegetation. The dry vegetation acts as fuel for wildfires, and the strong Santa Ana winds drive the spread of wildfires, particularly within Chino Hills.

Extreme heat does not cause physical damage to buildings, but it can impact the operations of the City and may result in human health concerns such as heat stroke. The operations of the City, as well as the day-to-day activities of residents and businesses, may be hindered due to extreme heat. Cooling centers may be used to address the health effects of extreme heat. Additionally, extreme heat events can increase the burden on power suppliers due to increased electricity consumption and may result in power outages. Very high temperatures can also cause roads to deform and buckle as the pavement expands in the heat, especially in poorly maintained areas. Power lines and other electrical grid components become less effective in higher temperatures and may be damaged due to stress during extreme heat events.

FREQUENCY/PROBABILITY OF FUTURE OCCURRENCES

Based on previous occurrences and weather trends in southern California, extreme heat events will likely continue to occur in the region and throughout the city, and even increase due to climate change. Cal-Adapt estimates that the City could have between 13 and 16 days and 28 and 37 nights of extreme heat days between 2035 and 2064. Based on Table 9, the probability of future extreme heat events in Chino Hills is categorized as Medium (one event every 6-20 years, 5-20% annual probability). The probability of power outages as a secondary impact is considered high, based on the continued Santa Ana wind and wildfire conditions in the southern California region.

CLIMATE CHANGE

Extreme heat is one of the most significant health impacts of climate change and already causes more deaths each year in the United States than floods, storms, and lightning combined. Climate change is expected to significantly increase the frequency and intensity of extreme heat days in Chino Hills, leading to public health and environmental challenges. The number of extreme heat days in southern California is expected to increase considerably by the middle of the century as a result of climate change. The intensity and frequency of extreme heat are also projected to increase over the region. The average hottest day of the year is expected to increase from 4.2 to 5.1°F by 2050 and 5.3 to 8.4°F by the late 21st century.

In addition, the extended duration of heatwaves and the increase in both extreme heat days and warm nights will significantly impact public health, particularly for vulnerable populations such as older adults, young children, individuals with chronic diseases, unhoused individuals, and outdoor workers. These groups are at greater risk for heat-related illnesses, such as heat exhaustion, dehydration, and

cardiovascular stress. Extreme heat is also expected to disproportionately burden low-income residents and communities of color across the region. The urban heat island (UHI) effect will likely worsen these impacts in densely populated areas without access to cooling resources like green spaces or air conditioning. Infrastructure will also suffer, with potential damage to roadways, strain on electrical grids, and increased emergency service demands. Additionally, natural resources, including vegetation and wildlife, will face heightened stress and mortality rates due to prolonged heat exposure. Extreme heat is also significant because it contributes to other climate impacts. It increases concentrations of ground-level ozone, which leads to poor air quality. Additionally, extreme heat and drought reduce soil moisture and increase plant mortality, leading to larger wildfires and poorer air quality.

Table 19 lists the historical extreme heat events affecting the County of San Bernardino and their impacts on the City of Chino Hills.

4.8 FLOOD

FLOOD HAZARD – HISTORICAL PROFILE

Floods are the second most common and widespread of all natural disasters faced by the region, cities, and towns like Chino Hills. Most communities in the United States have experienced some kind of flooding during or after spring rains, heavy thunderstorms, winter snow thaws, or summer thunderstorms.

A flood, as defined by FEMA's National Flood Insurance Program (NFIP) is: "A general and temporary condition of partial or complete inundation of two or more acres of normally dry land area or of two or more properties (at least one of which is the policyholder's property) from:

- Overflow of inland or tidal waters, or
- Unusual and rapid accumulation or runoff of surface waters from any source, or
- Mudflow, or
- Collapse or subsidence of land along the shore of a lake or similar body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels."

Floods can be slow or fast rising but generally develop over a period of hours or days. Mitigation includes any activities that prevent an emergency, reduce the chance of an emergency happening, or lessen the damaging effects of unavoidable emergencies. Investing in mitigation measures now, such as: engaging in floodplain management activities, constructing barriers such as levees, and purchasing flood insurance will help reduce the amount of structural damage and financial loss from other types of property damage should a flood or flash flood occur.

The standard for flooding is the 1% annual chance flood, commonly called the 100-year flood, the benchmark used by FEMA to establish a standard of flood control in communities throughout the country. The 1% annual chance flood is also referred to as the base flood.

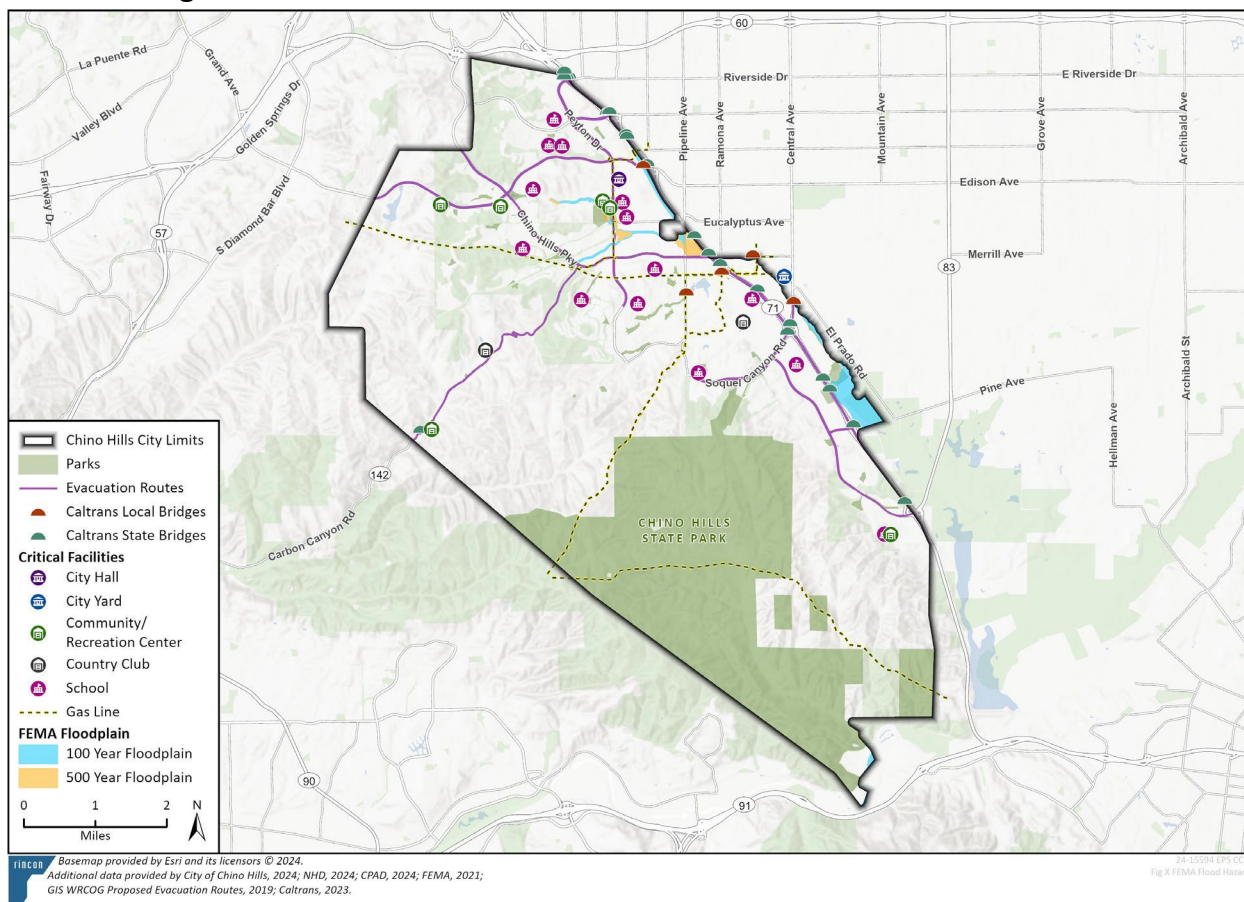
The 1% annual chance flood is the flood that has a 1% chance of being equaled or exceeded in any given year and it could occur more than once in a relatively short period of time. By comparison, the 10% flood (10-year flood) means that there is a 10% chance for a flood of its size to occur in any given year.

REGULATORY ENVIRONMENT

California Government Code §65302(g) requires local governments to assess the potential impact that failure of a dam or other water retention structure may pose to the community. The Safety Element must also assess the impact of flooding from storm activity, such as 1% annual chance (100-year return period) and 0.2% annual chance (500-year return period) floods. The potential damage posed by more frequent, smaller-scale floods that occur when storm drain systems become overburdened during strong winter storms is also addressed. These floods can damage property and hinder emergency response activities, such as evacuation and fire department access to fire hydrants. Most rainfall in the City area occurs in the winter months between December and March. Runoff from the City generally drains east and south, toward Chino Creek and Prado Flood Control Basin, and on to the Santa Ana River Basin. Canyons on the west side of the City, including Tonner Canyon, Carbon Canyon, Soquel Canyon, and Aliso Canyon drain westward toward Los Angeles and Orange Counties. With the exception of Tonner Canyon, which drains into the San Gabriel River watershed, the remaining canyons drain into the lower reaches of the Santa Ana River Basin. All the canyons in the City are prone to seasonal flooding. Localized flooding has occurred historically in the Chino Hills area, generally when drainage facilities are too small to convey the storm flows generated from increased urbanization and paved surfaces in the area. Severe erosion along many natural channels, and debris-clogged drainages, compound the problem. Localized flooding has been known to occur in some areas of the City, notably the lowlands bounded by Pipeline, Eucalyptus and Merrill Avenues and the Chino Creek Channel, also the section of Peyton Road between Eucalyptus Avenue and Carbon Canyon Road. Sheet flooding has occurred in the Los Serranos area north of the golf course and along portions of English Road.

Portions of the City have been mapped by the Federal Insurance Administration as part of the National Flood Insurance program. The Flood Insurance Rate Maps (FIRMs) show that most of the areas mapped were designated Zone X and Zone D. Zone X covers areas of minimal flooding. Zone D is identified as an area where flood hazards are undetermined but possible. Areas on both sides of Carbon Canyon Creek and Little Chino Creek have been classified into Zones A, AE and X. Zone A is an area with a 1% annual chance of flooding. Those portions of Zone A where the base flood elevations have been determined are classified as Zone AE. Zone X is defined as an area with an annual chance of flooding of between 1% and 0.2%; areas subject to a 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from the 1% annual chance flood. The basic flood Zones A, D and X mapped in the Chino Hills area are shown on Figure 33.

Figure 33 Flooding and Inundation Zones



NATIONAL FLOOD INSURANCE PROGRAM (NFIP)

The NFIP makes federally backed flood insurance available to homeowners, renters, and business owners in participating communities. Like most communities participating in NFIP, FEMA has prepared a detailed Flood Insurance Study (FIS) for areas of San Bernardino County, including the Chino Hills. The study presents water surface elevations for floods of various magnitudes, including the 1% annual chance of flood and the 0.2% annual chance of flood. Base flood elevations and the boundaries of the 100- and 500- year floodplains are shown on FIRM maps. More information on location and geographic extent of the FIRM maps for the City are provided in this section. The FIRM maps for the City can be accessed through the FEMA Flood Map Service Center (MSC) (<https://msc.fema.gov/portal/home>).

The City of Chino Hills entered the regular phase of the NFIP on July 11, 1997. As a participant in the NFIP, Chino Hills is dedicated to regulating development in the FEMA regulated floodplain areas in accordance with NFIP criteria.

The City of Chino Hills actively participates in the National Flood Insurance Program (NFIP) and has taken several steps to meet and exceed NFIP requirements:

- The City adopted minimum floodplain management criteria via local regulation. In 2024, Title 15 of the Chino Hills Municipal Code was updated to conform to the latest federal guidance on flood damage prevention. Ordinance No.408 requires proposed construction in floodplains to meet elevation requirements and mitigate hydrostatic pressure. It also includes subdivision and design guidelines for development within Special Flood Hazard Areas (SFHAs).
- The City has adopted the most recent Flood Insurance Rate Maps (FIRM maps) applicable to its

jurisdiction. The following FIRMs are currently in effect:

- 06071C8600J – Effective 5/8/2024
- 06071C8615H – Effective 8/28/2008
- 06071C9325J – Effective 5/8/2024
- 06071C9330H – Effective 8/28/2008
- 06071C9335J – Effective 5/8/2024
- 06071C9340H – Effective 8/28/2008
- 06071C9345J – Effective 5/8/2024
- 06071C9400H – Effective 8/28/2008
- The City has designated Daniel Bobadilla, Public Works Director/City Engineer, as the official Floodplain Administrator in accordance with the Municipal Code. He is responsible for implementing NFIP requirements and coordinating floodplain management efforts.

Before a permit to build in a floodplain area is issued, Chino Hills ensures that two basic criteria are met:

- All new buildings and developments undergoing substantial improvements must, at a minimum, be elevated to protect against damage by the 100-year flood.
- New floodplain developments must not aggravate existing flood problems or increase damage to other properties.

Structures permitted or built in the County/City before the NFIP regulatory requirements were incorporated into the City of Chino Hills ordinances (before the effective date of the City of Chino Hills FIRM) are called “pre-FIRM” structures. For the City of Chino Hills, pre-FIRM structures are those permitted or built before July 11, 1997.

Extensive FEMA NFIP databases are used to track claims for every participating community including Chino Hills. NFIP insurance data provided by FEMA indicates that as of November 2, 2024, there were 9 policies in Chino Hills resulting in 3,300,000 of insurance in force; this amounts to **\$5,845** in total premiums. The City of Chino Hills has had no repetitive loss by flooding.

LOCATION/GEOGRAPHIC EXTENT

Chino Hills is located within the San Gabriel Valley. The city is characterized by its rolling hills and a network of canyons and washes that can serve as natural drainage channels during heavy rainfall. The Santa Ana River, a major waterway in Southern California, forms the eastern boundary of Chino Hills and Chino Creek runs along almost the entire eastern boundary of the city. The city's topography and proximity to creeks make it susceptible to flooding, particularly during intense storms or periods of prolonged heavy rainfall.

PRIVATE DRAINAGE

Many of the soils in the Chino Hills area have a high erosion potential. Erosion is not only unsightly but can destabilize adjacent slopes. Channeling drainage away from slopes to maintained storm drains minimizes erosion potential on graded slopes. On private property, the individual property owners are often responsible for inspection of their down drains and removal of debris. Removal of debris on a regular basis prevents private drain systems from clogging or overflowing, which could channel water and mud downslope with the potential for damage to adjacent properties and structures. Residential drainages often connect into the larger storm drain system, which empties into natural drainages such as canyon

areas. Paved concrete channels or flood velocity reduction structures are sometimes necessary in natural drainages to prevent erosion caused by channeled runoff.

EROSION-INDUCED FLOODING

Significant hillside erosion can also occur following a wildland fire. In November 2008, the Freeway Complex Fire burned over 30,000 acres, a significant portion of which was within the City of Chino Hills. Debris-laden floods emanating from recently burned slopes during rainstorms can result in large amounts of sediment deposited in the channels draining the area. To mitigate this hazard, runoff from unimproved areas should be controlled and channeled to adequate drainage facilities.

Erosion on slopes can be minimized by covering them with drought-resistant vegetation. Other erosion control measures that can be used to control slope erosion include riprap, gabions, and concrete lining. Locating structures in the flow path of hillside gullies or swales should be prohibited unless adequate drainage and debris protection is designed into the project.

PUENTE HILLS

This drainage basin consists of approximately 870-acres and is located at the northeast corner of the City. It is generally bounded by Grand Avenue on the south, Monteverde on the west, Chino Avenue on the north, and SR-71 on the east. The predominant land use is low density residential between Grand Avenue and Chino Avenue, and high density residential along Chino Avenue and Peyton Drive. Commercial land use is located east of Peyton Drive at Chino Avenue and Grand Avenue. Some institutional and public open space land uses are located along the Grand Avenue corridor.

ENGLISH CHANNEL

This drainage basin totals approximately 1,497 acres. The east half of this basin is comprised of agriculture/ranches land use and is located west of Peyton Drive. Housing is predominantly low density residential located along both Grand Avenue and Chino Hills Parkway. Public open space is scattered throughout the residential areas in the western half of the basin.

LITTLE CHINO CREEK

This drainage basin totals approximately 3,014 acres. East of Peyton Drive and north of Eucalyptus Avenue the land use is institutional. The western half of the basin is predominantly public open space. The residential land use throughout the basin is primarily low density residential with some rural residential and high density residential mixed in.

LAKE LOS SERRANOS

This drainage area consists of approximately 1,205 acres. It is bounded generally by both Glen Ridge Drive and Village Drive on the north, Chino Creek Channel on the east, the ridgeline west of Peyton Drive on the west, and both Valle Vista Drive and Val Verde Avenue on the south. The basin is fully developed with residential and commercial development.

LOWER LOS SERRANOS

This drainage area consists of approximately 4,487 acres and is the largest of all the basins in Chino Hills. The eastern half of the basin consists of mostly residential and commercial developments. The western half is open space with rolling hills. Natural ridgelines create the boundary for the basin along with SR-71 as the eastern boundary. A combination of natural wash and man-made infrastructure convey the flow southwesterly.

SLAUGHTER CANYON

The Slaughter Canyon Basin consists of mostly undeveloped rolling hills with developed residential areas to the east. Runoff from the undeveloped and developed areas drains toward Butterfield Ranch Road and is collected by a series of inlets and storm drains. The storm drain collection pipes vary in size from 36" at the upstream end to 84" at the downstream end. The entire basin ultimately drains to a detention basin along SR-71. A culvert under the highway conveys the flows to an open space outside the City boundary. This drainage basin totals approximately 818 acres.

ALISO CANYON

The Aliso Canyon Basin consists of mostly rolling hills with some residential development to the east. The basin outfall is located at the southeast corner where culverts cross SR-71 and convey the flow to a wash. This drainage basin totals approximately 404 acres.

SOUTHEAST CHINO HILLS

The Southeast Chino Hills Basin consists of predominantly undeveloped rolling hills. The drainage pattern for this basin flows towards the east. The culvert along the SR-71 conveys concentrated flow across the freeway into the Santa Ana River Floodplain/Prado Dam Basin. There are ponding areas at the upstream end of the culvert. This drainage basin is the most southerly basin in the City consisting of approximately 837 acres of the Chino Hills State Park.

TONNER CANYON

This drainage basin totals approximately 3,040 acres and consists of mostly undisturbed rolling hills. Natural rills, gullies and washes convey the flow from north to south with an outlet point located at the City limits.

CARBON CANYON

This drainage basin totals approximately 2,587 acres and consists of some low density residential developments. The basin is predominantly undisturbed rolling hills. Natural rills, gullies and washes convey the flow from north to south with an outlet point located at the City limits.

SOQUEL CANYON

This drainage basin totals approximately 1,717 acres and consists of mainly undisturbed rolling hills. A natural wash conveys the basin runoff to the west into another drainage basin.

All of the basins drain easterly towards Prado Dam Reservoir (Prado Dam) except Carbon Canyon, Soquel Canyon, and Tonner Canyon, which drain westerly towards Orange County. All the current regional storm

drain facilities within Chino Hills collect storm water from local urban storm drain systems and discharge to San Antonio Creek, and eventually discharge to the Prado Dam Reservoir (Prado Dam).

Inundation occurs when a dam or water retention structure fails due to a seismically induced event or due to inadequate structural design or construction. Water retention structures within Chino Hills include numerous dams and reservoirs, culverts, levees, stock ponds, and other flood control works.

FLOOD INUNDATION ZONES

A majority of the flood risk within the City of Chino Hills is specifically subject to inundation as a result of heavy rainfall and resulting stream and drainage canal overflows. The extent of the flooding associated with a 1% annual probability of occurrence (the base flood or 100-year flood) is used as the regulatory boundary by many agencies, and helps identify the location and extent of flooding across Chino Hills (Figure 33). This area is also referred to as Special Flood Hazard Area (SFHA), and is a convenient tool for accessing vulnerability and risk in flood-prone communities. The SFHA is the area where the NFIP's floodplain management regulations must be enforced and the area where the mandatory purchase of flood insurance applies. The SFHA is shown on NFIP, Flood Insurance Rate Maps (FIRMs) (Figure 33).

Table 19 shows 100-year and 500-year floodplain zones, which are estimated inundation areas based on a flood that has a 1% and 0.2% chance of occurring in any given year. Chino Hills contains over 9,776 acres of identified flood hazard areas. Table 22 provides the total area for both the 100-year and 500-year flood hazard areas.

Table 22 Special Flood Hazard Area in Chino Hills

Flood Hazard Type	Sum of Acres	Sum of Square Miles
100-Year Flood	260	0.41
100-Year, Floodway	20	0.03
500-Year Flood	9,358	14.62
500-Year, Protected by Levee	139	0
Total	9,776	15.28

MAGNITUDE/SEVERITY

In urban areas like Chino Hills, flood problems are intensified because new homes and other structures, and new streets, driveways, parking lots, and other paved areas decrease the amount of open land available to absorb rainfall and runoff, thus increasing the volume of water that must be carried away by waterway.

FREQUENCY/PROBABILITY OF FUTURE OCCURRENCES

The FIRM maps not only identify the flood hazard zones for insurance and floodplain management purposes, but also provide a statement of probability of future occurrence.

Based on Table 9, the probability of future flooding in Chino Hills is categorized as Low (one event every 20+ years, <5% annual probability). A 500- year flood has a 0.2% chance of occurring in any given year; a

100-year flood has a 1% chance, a 50-year flood has a 2-% chance, and a 10-year flood has a 10% chance of occurrence. Although the recurrence interval represents the long-term average period between floods of specific magnitude, significant floods could occur at shorter intervals or even within the same year. The FIRM maps typically identify components of the 500-year and 100-year floodplains (as shown in Figure 33.

HISTORICAL – FLOODING EVENTS AFFECTING CHINO HILLS

In the last 15 years, the City of Chino Hills and the San Bernardino County Flood Control District have constructed facilities which have substantially alleviated flood potential. Additionally, scattered areas throughout the City may exist with minor vulnerability to flooding. However, local flooding has been minimized in the City due to completion of mitigation projects previously identified in the 2011 Hazard Mitigation Plan and recent infrastructure built in completion of the 210 Interstate freeway, thereby minimizing flooding potential. Table 23 lists the historical floods events that impacted the City.

Table 23 Historical Flooding Events Affecting Chino Hills

Date	Location	Response and Recovery Costs		
		City	State	Federal
2015	Peyton Drive both directions south of Eucalyptus Ave- street flooding	n/a	n/a	n/a
2010	Peyton Drive/Eucalyptus Ave-street flooding	\$281	n/a	n/a
2010	Peyton Drive between Morningfield Drive and English Road/Boys Republic-street flooding	n/a	n/a	n/a
2008	Peyton Drive/Eucalyptus Ave-street flooding	n/a	n/a	n/a
2007	Peyton Drive/Eucalyptus Ave/Carbon Canyon Road- street flooding	n/a	n/a	n/a
2005	East Lane- Mudslide due to heavy rain and flooding	n/a	n/a	n/a
2003	Pipeline S/O Chino Hills Parkway – street flooding	n/a	n/a	n/a
2003	Los Serranos – street flooding various locations	n/a	n/a	n/a
1998	Los Serranos – street flooding various locations	n/a	n/a	n/a
1995	Los Serranos – street flooding various locations	n/a	n/a	n/a
1993	Los Serranos – street flooding various locations	n/a	n/a	n/a

Table 24 lists the historical flood events that have affected San Bernardino County.

Table 24: Flood Events Affecting San Bernardino County Resulting in a Declaration

Event	Date	Declaration	Declaration Number	Impact to City
California Severe Winter Storms, Straight-line Winds, Flooding, Landslides, and	2/21/2023-7/10/ 2023	Yes	DR-4699-CA	No direct impact to city or local declaration. Individual & Public Assistance made available to County.

Mudslides				
California Severe Winter Storms, Flooding, Landslides, and Mudslides	2/8/ 2023- 2/31/ 2023	Yes	EM-3592- CA	No direct impact to city or local declaration. Public Assistance made available to County.
Winter Storms, Flooding, and Debris and Mud Flows in California	12/17/2010- 1/4/ 2011	Yes	DR-1951- CA	No direct impact to city or local declaration. Welfare made available to County.
California Severe Storm, Winter Storm, Mud & Landslides, Flooding	1/5/1993- 3/20/1993	Yes	DR-979-CA	No direct impact to city or local declaration. Individual & Public Assistance made available to County.
California Snow Storm, Heavy Rain, High Winds, Flooding, Mudslide	2/10/1992- 2/18/1992	Yes	DR-935-CA	No direct impact to city or local declaration.

Data from Federal Emergency Management Agency, Disasters and Other Declarations Database, <https://www.fema.gov/disaster/declarations> accessed June 10, 2025 and NOAA: National Centers for Environmental Information, Storm Events Database, <https://www.ncdc.noaa.gov/stormevents/>, accessed June 10, 2025

CLIMATE CHANGE

Climate projections indicate that there will be more frequent and longer dry periods punctuated by increased precipitation intensity of the largest storms or wet periods (Hall et al. 2018). Projections for Chino Hills predict that annual precipitation totals will remain relatively stable, decreasing slightly by approximately 0.4 inches by the end of the century. However, as already observed in recent years, precipitation changes are largely observed as more extreme variability with intense wet years followed by extreme drought (CEC 2024), which causes soils to dry decreasing their capacity to absorb and drain water, increasing flood possibility. Climate change is projected to increase the intensity of extreme precipitation events in the Los Angeles, San Bernardino and Riverside area (Hall et al. 2018). These areas are expected to experience up to 30 percent more precipitation on the wettest day of the year and the intensity and frequency of atmospheric river events are also projected to increase because of climate change.

Climate change may cause areas throughout Chino Hills to experience more frequent stormwater flooding. Stormwater systems may be overwhelmed more frequently as more extreme rain events occur, causing localized flooding, which could impact properties and leave roads temporarily unusable.

Intense rainfall events, periodically ones with larger than historical runoff, will continue to affect California with more frequent and/or more extensive flooding. Storms and snowmelt may coincide and produce higher winter runoff. Together, these changes will increase the probability of dam and levee failures in the San Bernardino County Flood Control District.

4.9 DAM FAILURE

Dams are natural or manmade structures that stop or restrict the flow of water, generally for the purpose of storing water, controlling flooding, or generating electricity. Manmade dams often create artificial lakes, known as reservoirs which can be used for storing water for irrigation, water supply, electricity generation, and/or recreational use. As dams get older, they often deteriorate leading to increased costs for repairs. Dam failure can result in flooding that threatens people and property. Flood caused by dam failures are often sudden and violent compared to regular stream, river, and coastal floods. Development located downstream of a dam can pose a risk to human life and damages to structures may be significant. Most dam failures are not caused by storm events, but are instead associated with structural failures, mechanical failures, or hydraulic failures. In addition, earthquakes can lead to dam failures by causing structural damage to the dam.

REGULATORY ENVIRONMENT

The National Dam Inspection Act, enacted in 1972, authorized the USACE to inventory and inspect dams throughout the country, including non-federal dams. In 1975, the USACE published the National Inventory of Dams (NID) which documented known dams in the United States and its territories. Since then, the USACE has continued to maintain and update the NID. Today the NID contains information on more than 91,000 dams within the U.S. and its territories.¹

Executive Order (EO) 12148, published in 1979, established FEMA and granted FEMA the authority to coordinate all national efforts related to dam safety. The National Dam Safety Program Act, enacted in 1996 and reauthorized several times since, formally established the National Dam Safety Program. The National Dam Safety Program, led by FEMA, is a partnership between states, territories, federal agencies, and other stakeholders that works to establish and maintain dam safety programs to reduce the risk to human life, property, and the environment through the following efforts:

- Supporting State dam safety programs through State assistance grants
- Providing training for dam owners
- Performing research to address a variety of issues and needs related to dam safety
- Promoting public safety and awareness for preparing for, mitigating against, responding to, and recovering from dam safety incidents

Approximately 80 percent of dams within the United States are regulated by State agencies. In California, the State has jurisdiction over any dam over 6 ft in height impounding 50 acre-ft or more of water or any dam over 25 ft in height impounding 15 acre-ft or more of water, with some exceptions. The California Water Code establishes the DWR; Division of Safety of Dams (DSOD) as the regulatory agency overseeing the design, construction, and maintenance of dams within the state. The DSOD is responsible for identifying downstream hazard classification for dams under their jurisdiction. Downstream hazard potential for jurisdictional dams are classified from low to extremely high, as shown in Table 25.

¹ USACE. 2024. A Closer Look at the NID. <https://nid.sec.usace.army.mil/#/what-is-nid/closer-look>

Table 25 DSOD Downstream Hazard Potential Classification

Downstream Hazard Potential Classifications	Potential Downstream Impacts to Life and Property
Low	No probable loss of human life and low economic and environmental losses. Losses are expected to be principally limited to the owner's property.
Significant	No probable loss of human life but can cause economic loss, environmental damage, impacts to critical facilities, or other significant impacts.
High	Expected to cause loss of at least one human life
Extremely High	Expected to cause considerable loss of human life or would result in an inundation area with a population of 1,000 or more.

Source: California Department of Water Resources Division of Safety of Dams. 2023. Dams Within Jurisdiction of the State of California, Dams Listed Alphabetically by County. <https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/All-Programs/Division-of-Safety-of-Dams/Files/Publications/DAMS-WITHIN-JURISDICTION-OF-THE-STATE-OF-CALIFORNIA-LISTED-ALPHABETICALLY-BY-COUNTY-SEPTEMBER-2023.pdf>

Under Senate Bill 92, adopted in 2017, dams under the jurisdiction of the DSOD are required to prepare inundation maps for the dam and related structures, with the exception of dams classified with a low downstream hazard potential. These dam inundation maps must be reviewed and approved by the DSOD. Dam owners are also required to prepare Emergency Action Plans based on the approved dam inundation maps. These plans identify potential emergency conditions and actions to follow to minimize the loss of life and property damage. Emergency Action Plans must be approved by the Governor's Office of Emergency Services (Cal OES).

LOCATION/GEOGRAPHIC EXTENT

There are two small dams within the City of Chino Hills, Rancho Cielito Dam (known as Los Serranos Lake or Rancho Cielito Reservoir) and Chino Ranch No. 1 (Arnold Reservoir) that could cause localized flooding if damaged. In addition, two dams located outside of the city limits, the San Antonio Dam (San Antonio Reservoir), and the Prado Dam (Prado Dam Reservoir), could cause flooding in Chino Hills in the event of a dam failure (Figure 34).

Figure 34 Potential Dam Inundation in Chino Hills

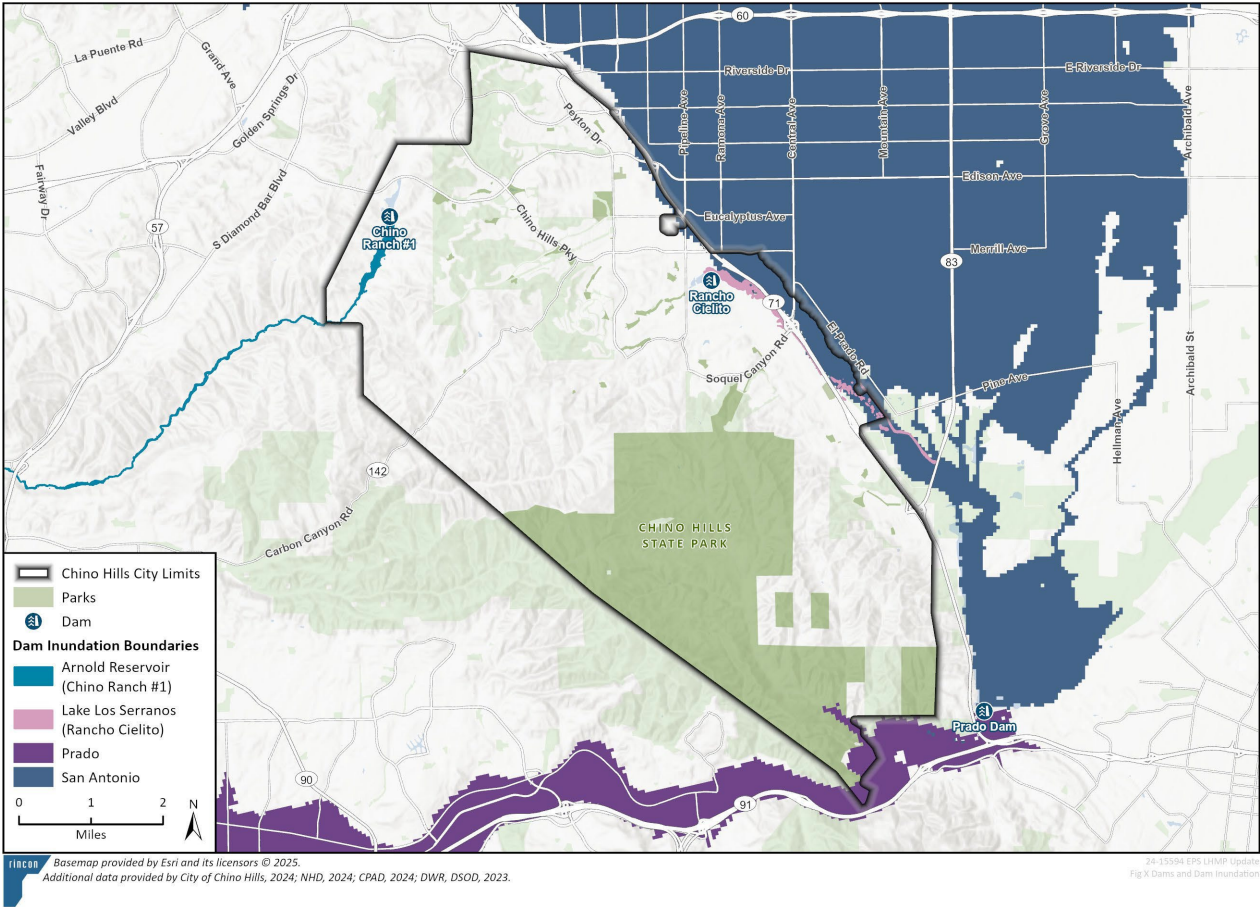


Table 26 Dam Inundation Areas

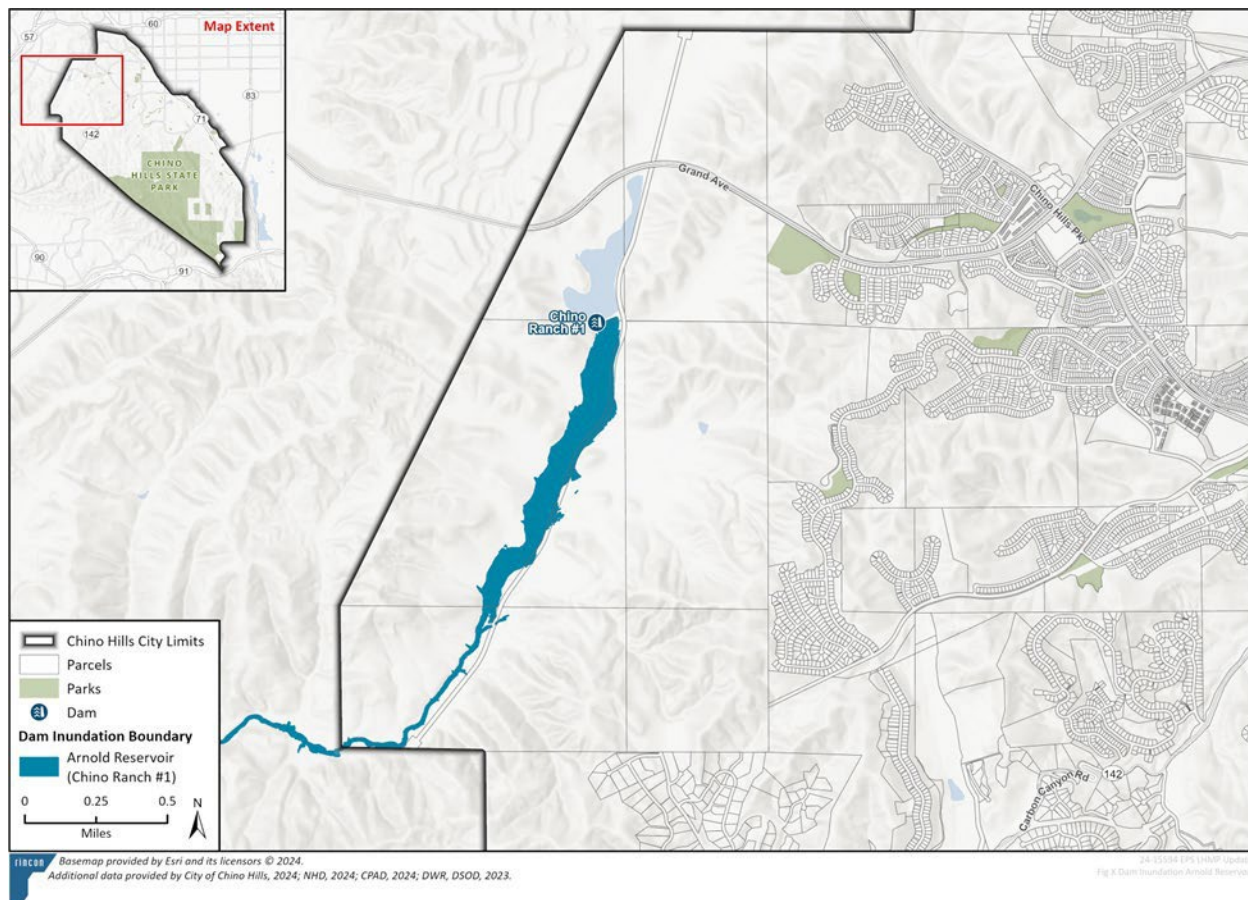
Dam Name	Year Built	Regulatory Agency	Dam Height	Reservoir	Reservoir Capacity	Risk
Chino Ranch No. 1 Dam	1918	DSOD	22 ft	Arnold Reservoir	137 acre ft	Significant
Rancho Cielito No. 808-0 Dam	1912	DSOD	9 ft	Los Serranos Lake/ Rancho Cielito Reservoir	110 acre ft	High

Prado Dam	1941	USACE	566 ft	Prado Dam Reservoir	217,000 acre ft	High
San Antonio Dam	1956	USACE	160 ft	San Antonio Reservoir	7,703 acre ft	Low

Chino Ranch No. 1 Dam (Arnold Reservoir)

Chino Ranch No. 1 Dam (Arnold Reservoir) is located in Tonner Canyon in the northwest corner of the City. The Chino Ranch No. 1 Dam forms the Arnold Reservoir and is a 22-foot high dam that was built in 1918. Arnold Reservoir has a reservoir crest elevation of 969.6 ft and a design storage capacity of 137-acre ft. In the event of dam rupture, presently undeveloped portions of Tonner Canyon would be inundated (Figure 35).

Figure 35 Arnold Reservoir Inundation

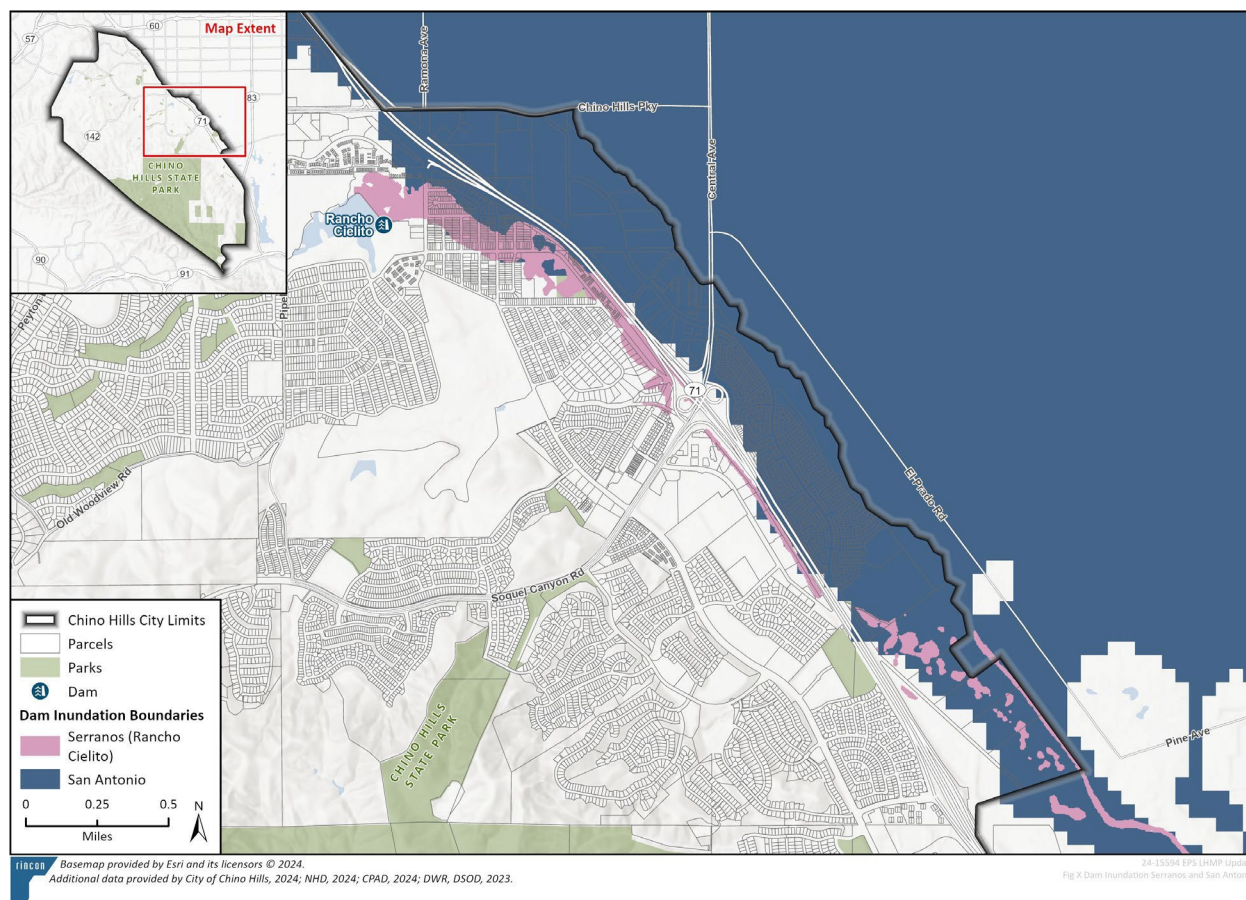


Rancho Cielito No. 808-0 Dam (Los Serranos Lake/Rancho Cielito Reservoir)

The Rancho Cielito No. 808-0 Dam (Los Serranos Lake/Rancho Cielito Reservoir) is an earthen dam located in the Los Serranos area of Chino Hills. It is a 9-foot high dam that was constructed in 1912 to store well

water for agricultural purposes. Los Serranos Lake, also known as the Rancho Cielito Reservoir, has a reservoir storage capacity of 110 acre ft. and a dam crest elevation of 644.6 ft above Mean Sea Level (MSL). The Rancho Cielito Dam is within the jurisdiction of the DSOD and therefore in the event of dam rupture, the area down gradient from the lake with an elevation below about 642 ft MSL could be inundated. Inundation waters would likely flow east to southeast toward SR-71, where water would pond behind the freeway and flow southward to the closest storm drain (Figure 36). Ultimately, floodwaters would flow into Chino Creek and the Prado Dam Flood Control Basin.

Figure 36 Rancho Cielito Reservoir and San Antonio Dam Inundation



Prado Dam (Prado Dam Reservoir)

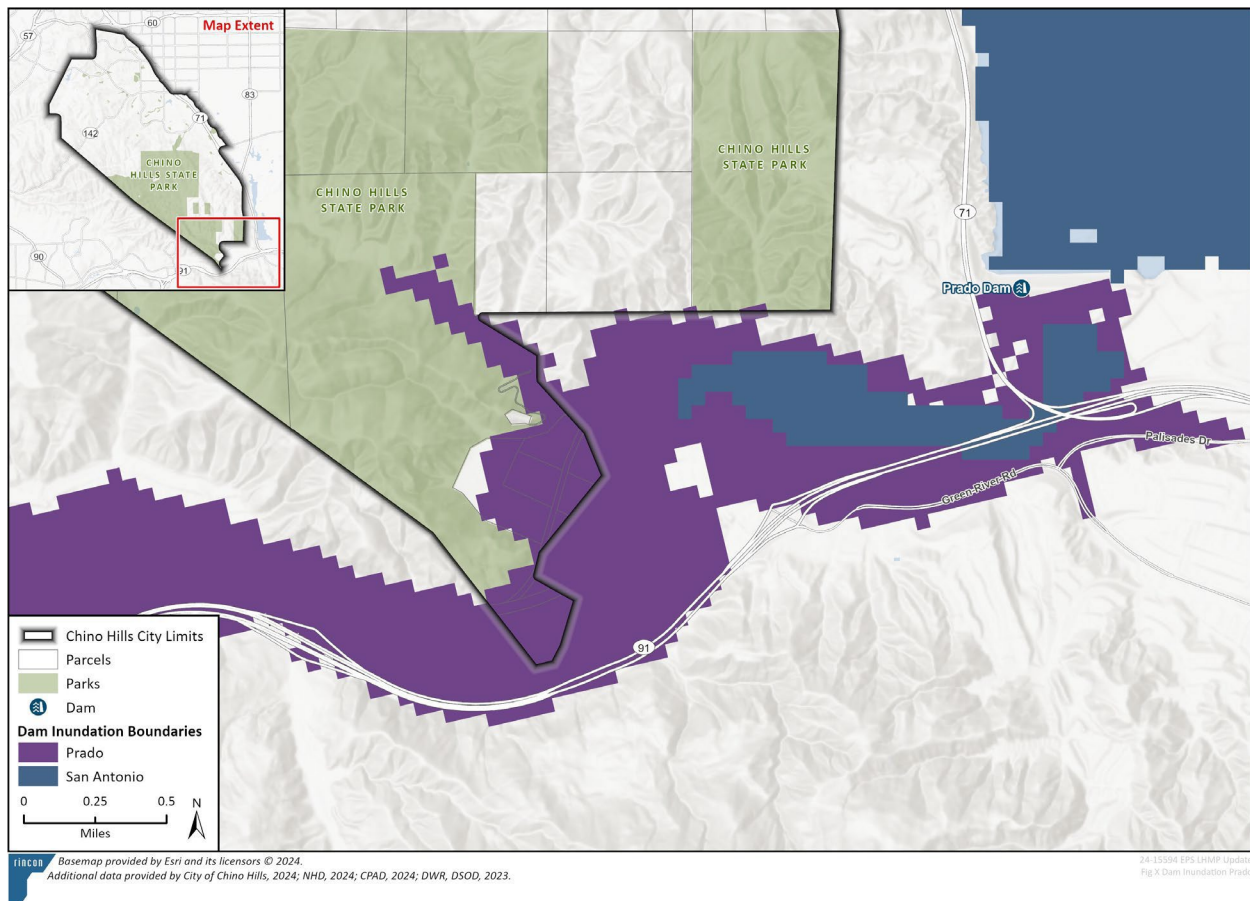
The Prado Dam (Prado Dam Reservoir) is located southeast of and down gradient from Chino Hills. It is a rock-fill dam on the Santa Ana River located two miles west of the city of Corona, in Riverside County. The dam was constructed in 1941 by U.S Army Corps of Engineers (USACE), Los Angeles District to serve as the primary flood control facility for the Santa Ana River watershed, providing flood control for portions of Orange, Riverside, and San Bernardino Counties. Prado Dam is owned and operated by the USACE and is not a DSOD jurisdictional dam. Prado Dam was originally designed to protect against a 200-year flood event. With increased urbanization throughout the Santa Ana River watershed, this decreased to protecting against a 70-year flood event, with the downstream channel only having capacity for a 50-year flood event (Figure 37).

The USACE initiated the Santa Ana River Project (SARP) in 1964 to increase flood protection to protect against a 100-year flood event. The SARP includes modification of the lower river channel

from Prado Dam to the Pacific Ocean, construction of the Seven Oaks Dam and Reservoir, and enlargement of the Prado Dam to increase reservoir storage capacity. The USACE and Orange County Flood Control District (OCFCD) are in the process of implementing infrastructure improvements to enlarge the Prado Dam and Reservoir to accommodate additional flood control capacity. Improvements include raising the height of the dam by 28.4 ft (from 566 ft to 594.4 ft), constructing new outlets, levees, and dikes, and increasing the reservoir area from 6,695 acres to 10,256 acres. To date, the Prado Dam embankment has been raised and new outlets constructed. However, incomplete improvements include raising the dam spillway, constructing protective dikes, and expanding the reservoir. Upon completion of the improvements, the total capacity of Prado Dam Reservoir will increase from 217,000 acre ft to 362,000 acre ft. While the SARP is designed to provide 100-year flood protection, urbanization upstream of the dam has exceeded the growth anticipated under the design. Climate change will increase the frequency and severity of extreme precipitation events, which will impact flooding throughout the Santa Ana River watershed. There is some uncertainty regarding the actual level of flood protection of the Prado Dam and SARP due to rapid growth combined with increased precipitation due to climate change.^{2,3}

In 2022, the USACE designated Prado Dam as a high-risk dam. Dam failure of the Prado Dam would have an impact on the City of Chino Hills. A 100-year flood event would cause water to back into the City limit. A dam failure would drain the basin and have no impact on the City.

Figure 37 Prado Dam Inundation



² Santa Ana Watershed Project Authority. 2010. One Water One Watershed 2010 Integrated Regional Water Management Plan. <https://sawpa.gov/owow/owow-irwm-plans/owow-1-0-plan/>

³ Santa Ana Watershed Project Authority. 2019. One Water One Watershed Plan Update 2018. <https://sawpa.gov/owow/owow-irwm-plans/owow-2-0-plan/>

San Antonio Dam (San Antonio Reservoir)

The San Antonio Dam (San Antonio Reservoir) is an earthen flood control facility on San Antonio Creek located approximately 10 miles northeast and up gradient from the northeastern portions of Chino Hills. The dam is located at the mouth of the canyon where the San Antonio Creek emerges from the San Gabriel Mountains. San Antonio Dam is operated by the USACE, Los Angeles District, and was constructed as a flood control and water conservation project. The 160- foot high dam facility was constructed between 1952 and 1956 with a crest elevation of 2,260 ft MSL and a reservoir storage capacity of 7,703 acre ft.

The dam forms the San Antonio Reservoir which is mostly located in San Bernadino County but a small portion falls within Los Angeles County. Flood releases from the San Antonio Reservoir are discharged into the Prado Reservoir. In 2021, the USACE designated San Antonio Dam as a low- risk dam. In the event of dam rupture, the floodwaters would be mostly contained within Chino Creek, with floodwaters expected to reach the intersection of Ramona Avenue and SR-71 (Figure 36).

FREQUENCY/ PROBABILITY OF FUTURE OCCURRENCES

While dam failure events are rare, they can be catastrophic when they occur. In Chino Hills, future dam inundation events remain difficult to predict precisely, as failure may result from a variety of triggering events including major earthquakes, extreme rainfall, overtopping, or internal structural issues. Climate change has increased concern over extreme precipitation events, which may contribute to increased stress on aging dam infrastructure.

The dams upstream of Chino Hills, some of which are between 70 and over 100 years old, are monitored regularly by the California Division of Safety of Dams (DSOD). These inspections evaluate structural integrity, age, seismic vulnerability, spillway conditions, and maintenance practices. While no dam inundation incidents have affected Chino Hills to date, their age and proximity warrant continued risk awareness.

Based on Table 9, the probability of a dam failure impacting Chino Hills is categorized as Low (one event every 20+ years, <5% annual probability). According to national estimates from the Association of State Dam Safety Officials (ASDSO), the annual probability of a dam failure in the United States is estimated at approximately 1 in 10,000 per dam per year, although this varies based on dam condition and type. Given the number of dams nearby Chino Hills and the region's seismic risk, the overall likelihood of a dam failure impacting the City is considered low, but the consequences would be high. As such, dam failure is categorized as a low-probability, high-impact hazard for Chino Hills. Preparedness planning remains critical, particularly in light of cascading risks such as a major earthquake followed by an extreme weather event.

HISTORICAL – DAM INUNDATION EVENTS AFFECTING CHINO HILLS

Chino Hills has not experienced any significant dam inundation events in its recorded history. A review of available federal, state, regional, and local disaster declaration databases found no declarations related to dam failure that have affected the City of Chino Hills. While multiple high-hazard dams are located in surrounding areas, none have experienced structural failure or required emergency releases that resulted in inundation impacting the community. This absence of dam-related disasters reflects both the continued structural integrity of these dams and the effectiveness of existing monitoring, maintenance, and emergency action planning by dam operators and regulatory agencies.

CLIMATE CHANGE

The effects of climate change may indirectly affect the likelihood of dam failure. More frequent and severe extreme weather events could cause dam failure as a result of structural damage or overtopping from high winds and extreme precipitation. While the City cannot measure climate change impacts related to dam failure, the City can anticipate that the risk of dam failure will increase with climate change. More frequent dam inspections and maintenance, particularly after an event that may have resulted in damage to a dam in the vicinity of the city, could reduce some of this risk.

4.10 TERRORISM PROFILE/CYBER ATTACKS

There is no single, universally accepted definition of terrorism; however, FEMA defines “terrorism” as intentional, criminal, malicious acts. FEMA document 386-7 refers to terrorism specifically as the use of Weapons of Mass Destruction (WMD), including biological, chemical, nuclear, and radiological weapons; arson, incendiary, explosive, and armed attacks; industrial sabotage and intentional hazardous materials releases; and “cyberterrorism.”

FEMA developed the Integrated Emergency Management System (IEMS) using an all-hazards approach. While the IEMS was established as an “all-hazards” approach, responding to the threat of terrorism (referred to as counterterrorism) came to be viewed as the responsibility of law enforcement, defense, and intelligence agencies. Furthermore, defensive efforts to protect people and facilities from terrorism (referred to as antiterrorism) were generally limited to the government sector, the military, and some industrial interests.

While the term “mitigation” refers generally to activities that reduce loss of life and property by eliminating or reducing the effects of disasters, in the terrorism context it is often interpreted to include a wide variety of preparedness and response actions. For the purposes of this document, the traditional meaning will be assumed; that mitigation refers to specific actions that can be taken to reduce loss of life and property from manmade hazards by “modifying the built environment” or “antiterrorism” to reduce the risk and potential consequences of these hazards.

ANTITERRORISM REGULATORY ENVIRONMENT

In 2004, the City of Chino Hills in the wake of the 1995 Oklahoma City bombing, the 2001 World Trade Center, and Pentagon attacks on the United States of America, developed a “Terrorism Annex.” The purpose of this Annex is to support the City of Chino Hills in preparing for, and responding to any/all threats to the safety of its citizens. The specific focus of this Annex is to address potential and actual terrorist events. It augments the City’s Emergency Operations Plan (EOP), which guides the City’s overall

preparation for and response to emergencies and disasters.

Adopted on February 9, 2012, and last updated on July 30, 2022, the United Facilities Criteria (UFC) 4-010-01 defines the United States Department of Defense's (DOD) minimum antiterrorism standards for both new and existing buildings. The document applies to DOD buildings, National Guard buildings, visitor centers and museums, visitor control facilities and expeditionary structures. Historic preservation compliance for implementation of antiterrorism standards, philosophy, design strategies and assumptions are all taken into account. Site planning, structural design, architectural design, and electrical and mechanical design are discussed in detail in Appendix B.

COUNTERTERRORISM REGULATORY ENVIRONMENT

On December 2, 2015, two armed gunmen opened fire at a San Bernardino County Department of Public Health training event and holiday party at the Inland Regional Center of San Bernardino, California. This event, known as the Waterman Terrorism Incident, resulted in the death of 14 people and injury of 22 additional people. After the Waterman Terrorism Incident on December 2, 2015, two full-time positions with a regional FBI-led terrorist task force (FBI's Joint Terrorism Task Force) were created. These task force officers have the clearance to conduct terrorism investigations in the County. The Task Force includes partners from Homeland Security Investigations (HSI), the San Bernardino Police Department, the San Bernardino County Sheriff's Department, the Riverside County Sheriff's Department, the Ontario Police Department, the Riverside Police Department, the Corona Police Department, the Chino Police Department, and the Chino Hills Police Department (the City contracts with the San Bernardino County Sheriff's Department for Law Enforcement services). The Chino Hills station has a Terrorism Liaison Officer assigned to it. For more information regarding the positions, contact the San Bernardino Police Department at (909) 384-5742.

According to the State of California Department of Justice's Antiterrorism program website, the Antiterrorism program works with federal, state and local law enforcement agencies to detect, investigate, prosecute, dismantle, prevent and respond to domestic and international terrorist activities.

The State of California Bureau of Security and Investigative Services' Power to Arrest Course includes a Weapons of Mass Destruction (WMD) & Terrorism Awareness section. More information regarding the course can be found in the Bureau of Security and Investigative Services California Code of Regulations.

CYBERSECURITY REGULATIONS

In 2021, the National Defense Authorization Act established the role of the national cybersecurity director, a Senate-confirmed official that serves as the principal cybersecurity adviser to the president. The national cybersecurity director is responsible for coordinating federal agencies to present a unified response from the federal government in addressing cybersecurity. Multiple federal government agencies are responsible for regulating various aspects of cybersecurity in the United States, including the following key agencies:

- Department of Homeland Security, Cybersecurity and Infrastructure Security Agency (CISA)
- Department of Defense, U.S. Cyber Command
- National Security Administration, Cybersecurity Directorate
- Office of Management and Budget

- Department of Justice

There are few federal cybersecurity regulations, and the ones that exist, focus on specific industries. The three main cybersecurity regulations are the 1996 Health Insurance Portability and Accountability Act (HIPAA), the 1999 Gramm-Leach-Bliley Act, and the 2002 Homeland Security Act, which included the Federal Information Security Management Act (FISMA). These three regulations mandate that healthcare organizations, financial institutions and federal agencies should protect their systems and information. For example, FISMA, which applies to every government agency, “requires the development and implementation of mandatory policies, principles, standards, and guidelines on information security.” But these regulations do not address numerous computer-related industries, such as Internet Service Providers (ISPs) and software companies. Furthermore, these regulations do not specify what cybersecurity measures must be implemented and require only a “reasonable” level of security.

State governments have attempted to improve cybersecurity by increasing public visibility of firms with weak security. In 2003, California passed the Notice of Security Breach Act which requires that any company that maintains personal information of California citizens and has a security breach must disclose the details of the event. Personal information includes name, social security number, driver’s license number, credit card number or financial information.

In 2004 the California State Legislature passed California Assembly Bill 1950 which also applies to businesses that own or maintain personal information for California residents. This regulation dictates that businesses maintain a reasonable level of security and that these required security practices also extend to business partners. This regulation is an improvement on the federal standard because it expands the number of firms required to maintain an acceptable standard of cybersecurity. However, like the federal legislation, it requires a “reasonable” level of cybersecurity, which leaves much room for interpretation until case law is established. Several additional State laws address data privacy and cybersecurity efforts, including the California Consumer Privacy Act (CCPA), California Consumer Privacy Act, California Data Breach Notification Law, California Financial Information Privacy Act, and Health Insurance Portability and Accountability Act. These acts protect the collection and use of personal information, including financial and health information of Californians and requires businesses and agencies to notify residents of security breaches involving their personal information.

San Bernardino County Board of Supervisors documented support of S. 412 which directs the U.S. Department of Homeland Security (DHS) to extend services offered by the National Cybersecurity and Communications Integration Center (NCCIC) to state and local governments upon request. NCIC is an around-the-clock cyber situational awareness, incident response and management center that is a national nexus of cyber and communication integration for the federal government, intelligence community and law enforcement. Its mission is to reduce the likelihood and severity of incidents that may significantly compromise the security and resilience of the nation’s critical information technology and communications networks.

PAST OCCURRENCES

There have been two terrorist attacks recorded in San Bernardino County. Table 27 describes both attacks. There have been no recorded terrorist attacks in Chino Hills. To date, the city of Chino Hills has not experienced any officially declared terrorism or cybersecurity-related disasters at the federal, state, county or local levels. However, like many municipalities, the City remains aware of the evolving nature

of cyber threats and the potential risks posed by domestic or international terrorism. While no physical terrorist incidents have occurred within city limits, and no major cyberattacks have resulted in declared emergencies, the City has experienced cybersecurity incidents such as data systems disruptions in 2014-2015 and again in 2023 that required internal response and recovery measures. These incidents, while impactful to city operations, did not rise to the level of formal emergency declarations but underscored the importance of continued investment in cyber resilience and preparedness.

Table 27 Terrorist Attacks Affecting San Bernardino County

Date	Perpetrator Group	Fatalities	Injured	Target Type
3/16/1970	White Extremists	0	1	Government (General)
12/2/2015	Unaffiliated Individuals	16	17	Government (General)

There have been three recent cyberattacks that have impacted governmental agencies in San Bernardino County, shown in Table 28.

Table 28 Cyber Attacks Affecting San Bernardino County

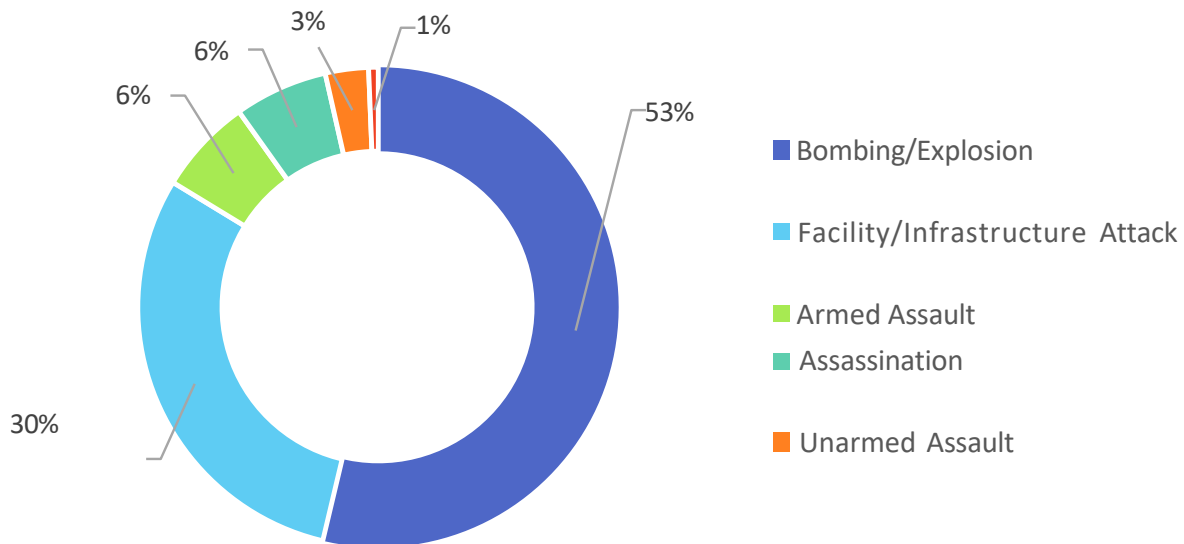
Date	Target	Event Description
12/16/2014 - 1/9/2015	City of Chino Hills	Cyberattack caused by ransomware infection on a staff member's workstation. The infection spread to some shared drives and resulted in five staff members workstations being infected.
9/10/2015 - 10/5/2015	City of Chino Hills	Cyberattack caused by ransomware. Ransomware targeted a file that was caught by antivirus software. No impact to the City.
April 2023	San Bernardino County Sheriff's Department	Cyberattack (ransomware) that caused the Department to shut down most of systems, including email, internet, computers, and dispatch. The event affected over 4,500 user accounts and 320 servers and 5.8 million sensitive files were stolen. The attack was likely caused by a malicious hyperlink.

The state of California has experienced 674 terrorist attacks from 1970-2020 (Global Terrorism Database). The number of terrorist attacks in the state have decreased dramatically since the early 1970s, from approximately 100 attacks per year down to 10 or less attacks per year in the late 2010s.

Figure 38 shows the types of terrorist attacks in the state of California from 1970 to the present. Most of the terrorist attacks since 1970 have been bombings/explosions (342 attacks), followed by facility/infrastructure

attacks.

Figure 38 Types of Terrorist Attacks in California

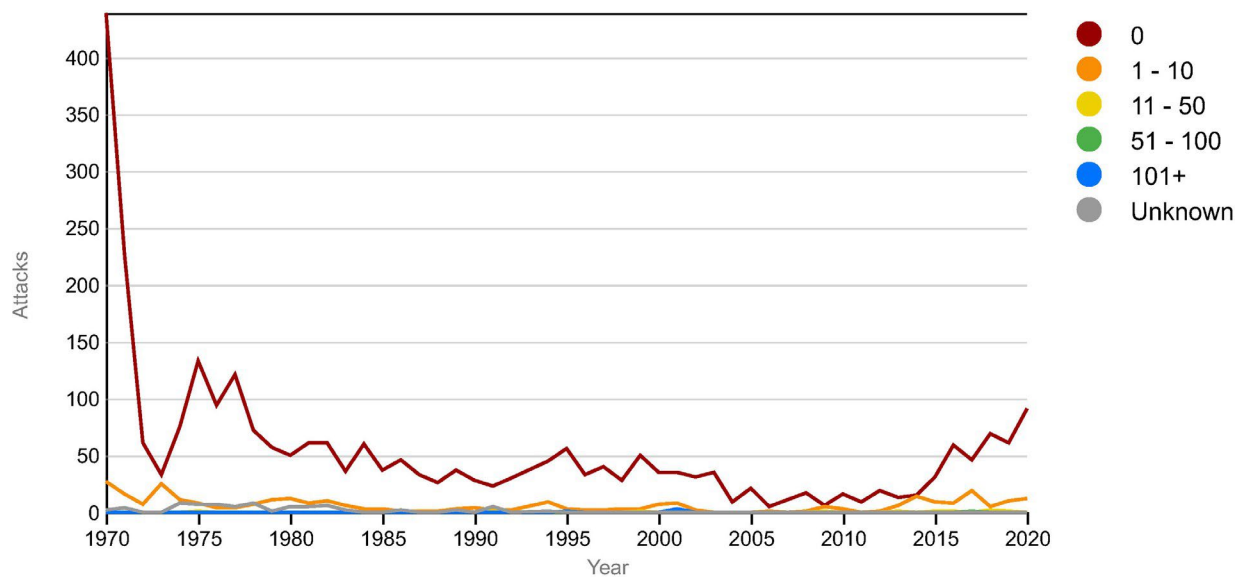


Source: [Global](#) Terrorism Database

TYPES OF TERRORIST ATTACKS IN CALIFORNIA FROM 1970- PRESENT

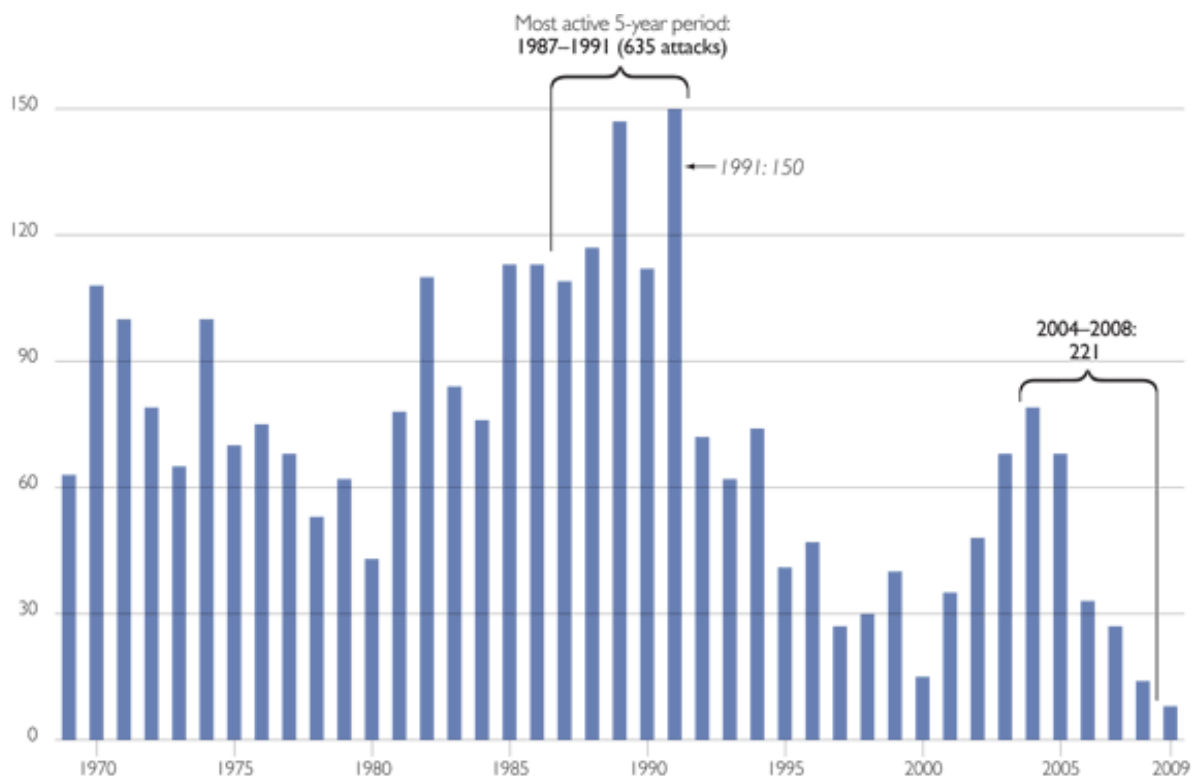
As seen in Figure 40, since 1970, the number of terrorist attacks in the United States has steadily decreased. According to the heritage.org website, most terrorist attacks on America happen outside our nation's borders. The number of international terrorist attacks against the United States from 1970-2020 is shown in Figure 39 and Figure 40.

Figure 39 Terrorist Attack Fatalities



Source: Global Terrorism Database (GTD). 2022. <https://www.start.umd.edu/>

Figure 40 International Terrorist Attacks Against the United States



Note: The number of terrorist attacks in 2009 should be interpreted with caution because the reporting of terrorist incidents is incomplete. While the recording of terrorist incidents in the RAND data for 2009 was completed for North America, Latin America and the Caribbean, and Europe, data collection for Africa, the Middle East, South Asia, Southeast Asia, East Asia, Oceania, and Central Asia (including the former Soviet Union states in Central Asia) stopped in January 2009.

Source: Calculations by the Heritage Foundation's Center for Data Analysis based on data from the RAND Database of Worldwide Terrorism Incidents, at <http://www.rand.org/insrd/projects/terrorism-incidents.html> (April 18, 2011).

Source: Global Terrorism Database (GTD). 2022.

https://www.start.umd.edu/gtd/search/Results.aspx?chart=fatalities&casualties_type=b&casualties_max=&dtp2=all&country=217

LOCATION/ GEOGRAPHIC EXTENT

Unlike natural hazards, which often follow patterns and can be forecasted, manmade hazards such as acts of terrorism are much more unpredictable. Terrorists have the ability to choose targets and tactics and can often adjust conditions to achieve their objective. Terrorist attacks are often in a more specific location rather than a widespread, more predictable area such as a flood plain. As demonstrated in the Waterman Terrorism Incident, “homegrown terrorists” (self- radicalizing and pull-off their attacks without any help or communication with people in other countries) are even harder to detect and predict.

Translating most manmade hazard profiles into meaningful geospatial information is difficult at best. Instead, the Planning Team will use an asset-specific approach, identifying potentially at- risk critical facilities and systems in the community. Once a comprehensive list of assets has been developed, it will be prioritized so that the community’s efforts can be directed to protect the most important assets first. Then, beginning with the highest priority assets, the vulnerabilities of each facility or system to each type of hazard will be assessed (FEMA, 2003).

MAGNITUDE/ SEVERITY

As previously discussed, predicting terrorist attacks cannot be done with the same level of accuracy as predicting a natural hazard and its potential impacts on the community. However, we can learn from past terrorist incidents. Table 29 profiles 10 different types of terrorist attacks and technological hazards.

Table 29 Event Profiles for Terrorism and Technological Hazards

Hazard	Application Mode	Hazard Duration	Extent of Effects; Static/Dynamic	Mitigating and Exacerbating Conditions
Conventional Bomb/Improvised Explosive Device	Detonation of explosive device on or near target; delivery via person, vehicle, or projectile.	Instantaneous; additional "secondary devices" may be used, lengthening the time duration of the hazard until the attack site is determined to be clear.	Extent of damage is determined by type and quantity of explosive. Effects generally static other than cascading consequences, incremental structural failure, etc.	Overpressure at a given standoff is inversely proportional to the cube of the distance from the blast; thus, each additional increment of standoff provides progressively more protection. Terrain, forestation, structures, etc. can provide shielding by absorbing and/or deflecting energy and debris. Exacerbating conditions include ease of access to target; lack of barriers/shielding; poor construction; and ease of concealment of device.

Hazard	Application Mode	Hazard Duration	Extent of Effects; Static/Dynamic	Mitigating and Exacerbating Conditions
Chemical Agent*	Liquid/aerosol contaminants can be dispersed using sprayers or other aerosol generators; liquids vaporizing from puddles/containers; or munitions.	Chemical agents may pose viable threats for hours to weeks depending on the agent and the conditions in which it exists.	Contamination can be carried out of the initial target area by persons, vehicles, water and wind. Chemicals may be corrosive or otherwise damaging over time if not remediated.	Air temperature can affect evaporation of aerosols. Ground temperature affects evaporation of liquids. Humidity can enlarge aerosol particles, reducing inhalation hazard. Precipitation can dilute and disperse agents but can spread contamination. Wind can disperse vapors but also cause target area to be dynamic. The micro-meteorological effects of buildings and terrain can alter travel and duration of agents. Shielding in the form of sheltering in place can protect people and property from harmful effects.

Hazard	Application Mode	Hazard Duration	Extent of Effects; Static/ Dynamic	Mitigating and Exacerbating Conditions
Arson/ Incendiary Attack	Initiation of fire or explosion on or near target via direct contact or remotely via projectile.	Generally, minutes to hours.	Extent of damage is determined by type and quantity of device/ accelerant and materials present at or near target. Effects generally static other than cascading consequences, incremental structural failure, etc.	Mitigation factors include built-in fire detection and protection systems and fire-resistive construction techniques. Inadequate security can allow easy access to target, easy concealment of an incendiary device and undetected initiation of a fire. Non-compliance with fire and building codes as well as failure to maintain existing fire protection systems can substantially increase the effectiveness of a fire weapon.
Armed Attack	Tactical assault or sniping from remote location.	Generally, minutes to days.	Varies based upon the perpetrators' intent and capabilities.	Inadequate security can allow easy access to target, easy concealment of weapons, and undetected initiation of an attack.

Hazard	Application Mode	Hazard Duration	Extent of Effects; Static/Dynamic	Mitigating and Exacerbating Conditions
Biological Agent	Liquid or solid contaminants can be dispersed using sprayers/aerosol generators or by point or line sources such as munitions, covert deposits and moving sprayers.	Biological agents may pose viable threats for hours to years depending on the agent and the conditions in which it exists.	Depending on the agent used and the effectiveness with which it is deployed, contamination can be spread via wind and water. Infection can be spread via human or animal vectors.	Altitude of release above ground can affect dispersion; sunlight is destructive to many bacteria and viruses; light to moderate wind will disperse agents but higher winds can break up aerosol clouds; the micro-meteorological effects of building and terrain can influence aerosolization and travel of agents.
Cyber Terrorism	Electronic attack using one computer system against another.	Days to Weeks	Generally, no direct effects on built environment.	Inadequate security can facilitate access to critical computer systems, allowing them to be

				used to conduct attacks.
Agro- terrorism	Direct, generally covert contamination of food supplies or introduction of pests and/or disease agents to crops and livestock.	Days to months.	Varies by type of incident. Food contamination events may be limited to discrete distribution sites, whereas pests and diseases may spread widely. Generally, no effects on built environment.	Inadequate security can facilitate adulteration of food and introduction of pests and disease agents to crops and livestock.

Hazard	Application Mode	Hazard Duration	Extent of Effects; Static/ Dynamic	Mitigating and Exacerbating Conditions
Radiological Agent**	Radioactive contaminants can be dispersed using sprayers/aerosol generators, or by point or line sources such as munitions, covert deposits and moving sprayers.	Contaminants may remain hazardous for seconds to years depending on material used.	Initial effects will be localized to site of attack; depending on meteorological conditions, subsequent behavior of radioactive contaminants may be dynamic.	Duration of exposure, distance from source of radiation, and the amount of shielding between source and target determine exposure to radiation.
Nuclear Bomb**	Detonation of nuclear device underground, at the surface, in the air or at high altitude.	Light/heat flash and blast/shock wave last for seconds; nuclear radiation and fallout hazards can persist for years. Electromagnetic pulse from a high altitude detonation lasts for seconds and affects only unprotected electronic systems.	Initial light, heat and blast effects of a subsurface, ground or air burst are static and are determined by the device's characteristics and employment; fallout of radioactive contaminants may be dynamic, depending on meteorological conditions.	Harmful effects of radiation can be reduced by minimizing the time of exposure. Light, heat and blast energy decrease logarithmically as a function of distance from seat of blast. Terrain, forestation, structures, etc. can provide shielding by

				absorbing and/or deflecting radiation and radioactive contaminant s.
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Hazard	Application Mode	Hazard Duration	Extent of Effects; Static/Dynamic	Mitigating and Exacerbating Conditions
Hazardous Material Release (fixed facility or transportation)	Solid, liquid and/or gaseous contaminants may be released from fixed or mobile containers.	Hours to days.	Chemicals may be corrosive or otherwise damaging over time. Explosion and/or fire may be subsequent. Contamination may be carried out of the incident area by persons, vehicles, water and wind.	As with chemical weapons, weather conditions will directly affect how the hazard develops. The micro-meteorological effects of building and terrain can alter travel and duration of agents. Shielding in the form of sheltering in place can protect people and property from harmful effects. Non-compliance with fire and building codes as well as failure to maintain existing fire protection and containment features can

				substantially increase the damage from a hazardous materials release.
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* Source: Jane’s Chem-Bio Handbook
** Source: FEMA, Radiological Emergency Management Independent Study Course
Source: FEMA State and Local Mitigation Planning- how-to guide: Integrating Manmade Hazards

FREQUENCY/ PROBABILITY OF FUTURE OCCURRENCES

Unlike natural hazards, the probability of terrorism and cyberattacks is challenging to quantify due to their intentional and adaptive nature. However, the risk is considered elevated due to the increasing reliance on digital systems, the regional significance of nearby infrastructure, and past incidents in the surrounding area. Terrorist acts and cyberattacks can occur at any time and in any location, though critical infrastructure, government services, and densely populated venues are generally at higher risk. Based on Table 9, the probability of terrorism or cyber attack incidents in Chino Hills is categorized as Medium (one event every 6-20 years, 5-20% annual probability).

While the City of Chino Hills has not been the direct target of a terrorist act, San Bernardino County

experienced a mass-casualty terrorist attack in 2015, underscoring the regional potential for such incidents. Based on historical trends and federal threat assessments, the likelihood of a terrorist event occurring in Chino Hills is considered low, but the impact would be high if such an event targeted critical facilities or large gatherings.

In contrast, cybersecurity threats are considered high-probability hazards, particularly for local governments. According to the Multi-State Information Sharing and Analysis Center (MS-ISAC), ransomware attacks against state and local governments increased by more than 140% between 2020 and 2022, with phishing and malware incidents continuing to rise. Based on regional agency experience and threat environment, the City of Chino Hills faces an estimated 50–70% annual likelihood of attempted cyberattacks, particularly phishing, ransomware, and denial of service (DDoS) intrusions.

Climate-related stressors, such as extreme heat or wildfire, may also increase dependence on digital communications and emergency systems, compounding the risk during hazard events. In response, the City of Chino Hills Information Technology Division employs robust cybersecurity protocols, including real-time system monitoring, third-party audits, and daily briefings from CISA and Cal OES. These efforts support a proactive mitigation strategy, although evolving threats and increasing attack frequency continue to pose a persistent hazard.

CLIMATE CHANGE

Although climate change is not directly responsible for terrorism, climate change is a significant destabilizing factor that cultivates a conducive atmosphere for violent extremist groups. In regions that are vulnerable to climate-related threats and heavily dependent on their environment for survival, the correlation between climate change and violence tends to intensify. This correlation could also have implications for violent extremism.

According to the 2023 California State Hazard Mitigation Plan, climate change could potentially increase the frequency and severity of cyber-attacks as resources become more limited. Due to prominent hacks and leaks and less trust in financial institutions, individuals are increasingly turning to online shopping, trading, and cryptocurrencies as an alternative to traditional financial institutions. Furthermore, an indirect impact of climate change on cyber security could be politically motivated, with eco-terrorist hackers targeting companies or agencies based on disagreements with their policies or practices (Brode, 2022).

Nevertheless, it is important to note that the likelihood of climate change impacting mass casualty incidents or acts of terrorism is more likely to have an impact on a national or international level.

4.11 HIGH WINDS – HAZARD PROFILE

High winds are common throughout the region and can occur at any time of the year. In Chino Hills, high winds are frequently associated with the Santa Ana Winds which are dry winds flowing east to west through the mountain passages of Southern California. The Santa Ana Winds typically occur from September to May and can cause damage to property due to their high speeds. These winds can also exacerbate wildfire risk, as the dry winds can rapidly spread flames. According to the USGS, the most destructive fires are driven by the Santa Ana Winds, often resulting from power line failures.⁴ In addition to the Santa Ana Winds, high wind events frequently occur during severe storms. While these wind events are less likely to contribute to wildfire risk, they can uproot trees, blow and break branches, clog drains, cause fatalities, and damage power lines, telephone lines, or other infrastructure. High winds can also blow smoke, leading to poor air quality and health issues related to smoke inhalation.

The Beaufort Wind Scale was developed in 1805 by Sir Francis Beaufort and is still used today. The scale estimates wind speed and its effects, measuring wind speeds on a scale of zero to 12. Table 30 shows the Beaufort Wind Scale ratings.

⁴ USGS. 2021. Research Spotlight: Ignitions and Wind Speed are Strongest Drivers of Area Burned in Santa Ana Wind Fires. <https://www.usgs.gov/news/research-spotlight-ignitions-and-wind-speed-are-strongest-drivers-area-burned-santa-ana-wind>

Table 30 Beaufort Wind Scale

Force	Speed (miles per hour)	Description	Specifications for Use on Land
0	0-1	Calm	Calm, smoke rises vertically
1	1-3	Light Air	Direction of wind shown by smoke drift, but not by wind vanes.
2	4-7	Light Breeze	Wind felt on face; leaves rustle; ordinary vanes moved by wind.
3	8-12	Gentle Breeze	Leaves and small twigs in constant motion; wind extends light flag.
4	13-18	Moderate Breeze	Raises dust and loose paper; small branches are moved.
5	19-24	Fresh Breeze	Small trees in leaf begin to sway; crested wavelets form on inland waters.
6	25-31	Strong Breeze	Large branches in motion; whistling heard in telegraph wires; umbrellas used with difficulty.
7	32-38	Near Gale	Whole trees in motion; inconvenience felt when walking against the wind.
8	39-46	Gale	Breaks twigs off trees; generally impedes progress.
9	47-54	Severe Gale	Slight structural damage occurs (chimney-pots and slates removed)
10	54-63	Storm	Seldom experienced inland; trees uprooted; considerable structural damage occurs.

11	64-72	Violent Storm	Very rarely experienced; accompanied by wide-spread damage.
12	72-82	Hurricane	N/A

Source: National Weather Service. 2024. Beaufort Wind Scale.
<https://www.weather.gov/mfl/beaufort>

NOAA's National Severe Storms Laboratory defines damaging winds, often called "straight-line" winds, as winds that exceed 50 miles per hour. Damaging winds frequently occur during severe thunderstorm events, where winds can reach up to 100 mph

REGULATORY ENVIRONMENT

The California Building Code (CBC), Title 24 of the California Code of Regulations, establishes standards for the building, planning, and construction of all structures within the state. Section 1609 of the 2022 CBC mandates buildings and structures be designed to withstand minimum wind loads to ensure the safety and welfare of people and property. Chino Hills has adopted the most recent version of the CBC (2022) and enforces the standards of the CBC through the building permit, inspection, and code enforcement processes.

To minimize wildfire risk associated with high winds, the California Public Utilities Commission has established procedures for utilities to proactively cut power to electrical lines if there is an imminent and significant risk that strong winds may topple power lines or cause major vegetation-related issues leading to increased risk of wildfires. These events, called Public Safety Power Shutoffs (PSPSs), can help reduce wildfire risk, however, they can also leave communities and essential facilities without power. PSPS events reduce wildfire risk by minimizing the chance of power lines, electrical equipment, or other infrastructure sparking a fire during dangerous weather conditions. Factors considered when implementing PSPSs include wind speed, humidity levels, local terrain and vegetation moisture levels. Other factors that may be considered include the condition of local power infrastructure, historic fire data, and current fire activity.

LOCATION/GEOGRAPHIC EXTENT

The entirety of the city may be subject to high wind events. The Santa Ana Winds generally flow from east to west and can affect the entire city. These events generally occur in the fall and winter. Similarly, severe storm events can occur anywhere within the city and most frequently occur in the winter.

The National Weather Service issues watches and warnings to alert the public of high wind events. In the last 10 years, the City of Chino Hills and San Bernardino County have experienced several high wind events that have damaged infrastructure and property. Table 31 presents historical high wind events affecting the City.

In January 2017, A series of storms caused several trees to fall in numerous areas throughout the city. A tree fell and impacted an iron fence at English Springs Park. Flooding was caused due to drain clogging off of Zenobia Lane. The road between Carbon Canyon and Chino Hills Parkway was closed due to flooding. Flooding also occurred at Soquel Canyon and Chino Hills Parkway. Minor debris removal was also required at several V-Ditches and slopes.

During the Blue Ridge Fire in 2020, strong winds fanned the Blue Ridge Fire, causing the fire to spread rapidly. In 2023, several trees fell due to a windstorm, which resulted in a fatality. Wind events in January 2025 resulted in power outages lasting several days in which battery backups became depleted and generators had to be manually wired up to maintain wireless communication between numerous City Facilities.

HISTORICAL-HIGH WIND EVENTS AFFECTING CHINO HILLS

Chino Hills has not experienced any significant high wind events that resulted in a local declaration. However, San Bernardino County was included in FEMA Disaster Declaration DR-4699-CA, issued on April 3, 2023, for a series of severe winter storms, straight-line winds, flooding, landslides, and mudslides occurring from February 21, to July 10, 2023. While this declaration made Individual and Public Assistance available to the County, there were no reported damages in Chino Hills that warranted a local emergency proclamation related specifically to high wind impacts.

FREQUENCY/ PROBABILITY OF FUTURE OCCURRENCES

High wind events in Chino Hills most commonly occur in the fall and winter months, primarily driven by Santa Ana Wind conditions or as part of severe winter storm systems. These events can produce wind gusts exceeding 60 miles per hour, resulting in downed power lines, fallen trees, and increased wildfire risk due to rapid vegetation drying.

Based on Table 9, the probability of high wind events in Chino Hills is categorized as High (one or more events every 1-5 years, >20% annual probability). According to historical data from the National Weather Service and Cal-Adapt climate projections, Chino Hills can expect 3 to 5 high wind events per year, with at least one event annually producing sustained gusts above 50 mph.

The Fourth California Climate Change Assessment suggests that while Santa Ana wind events may become less frequent, their intensity is expected to increase by 10–20% by mid-century, particularly during periods of elevated wildfire danger and drought. Additionally, severe winter storm events are projected to become more erratic and extreme, contributing to higher probabilities of damaging wind conditions. These events may increasingly coincide with other hazards such as wildfire, heavy rain, or power outages, amplifying their overall impact on the community.

Table 31 Historical – High Wind Events Affecting Chino Hills

Date	Location	Response & Recovery Costs		
		City	State	Federal
January 2017	Regional	n/a	n/a	n/a
10/26/2020	Blue Ridge Fire	n/a	\$389,510	n/a
1/10/2023	Grand Ave & Founders Drive	n/a	n/a	n/a

CLIMATE CHANGE

According to California’s Fourth Climate Change Assessment for the Los Angeles Region, which includes San Bernardino County, Santa Ana winds are a unique climatic feature that occurs from October to April in southern California. These winds bring very dry air, which can lead to wildfire outbreaks in the region. There is significant year-to-year variation in these events, and evidence suggests that their intensity may be linked to long-term climate patterns such as El Niño-Southern Oscillation and the Pacific Decadal Oscillation. However, no significant trends in the intensity, duration, or frequency of Santa Ana winds were found during the period from 1948 to 2010.

Nowadays there is still uncertainty about future changes to Santa Ana events patterns. One study that examined two global climate models found that there may be an increase in future Santa Ana events. The Fourth Climate Change Assessment notes that late season Santa Ana winds may continue to be most frequent in December and January, and are likely to become hotter with climate change. Other studies have suggested that the number of Santa Ana events may decrease by around 20% in the future. This is because a relatively greater warming over the interior land masses may weaken the ocean-to-desert temperature gradient that partly drives Santa Ana winds. However, given the anticipated increases in temperatures throughout the region, future events are anticipated to become more severe in some cases, even if the total number of events decreases.⁵

4.12 VULNERABILITY ASSESSMENT

METHODOLOGY

A vulnerability assessment was conducted for each of the identified priority hazards. Geospatial data is essential in determining population and assets exposed to particular hazards. Geospatial analysis can be conducted if a natural hazard has a particular spatial footprint that can be overlaid against the locations of people and assets. In the City of Chino Hills, wildfire, earthquake, flood, and the potential for landslides have known geographic extents and corresponding spatial information about each hazard.

⁵ California Energy Commission. California’s Fourth Climate Change Assessment Statewide Summary Report. 2018. https://www.energy.ca.gov/sites/default/files/2019-11/Statewide_Reports-SUM-CCCA4-2018-013_Statewide_Summary_Report_ADA.pdf

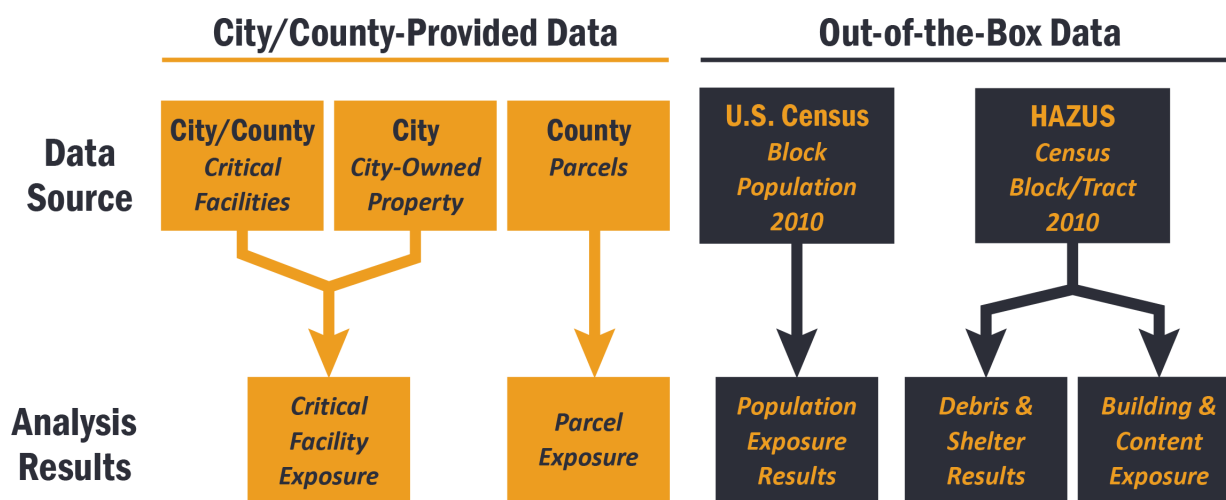
Several sources of data are necessary to conduct a vulnerability analysis. Figure 41 provides an exhibit

of the data inputs and outputs used to create the vulnerability analysis results presented in this section. U.S. Census data is the primary source in determining natural hazard exposure to residents. Census data has been used to determine the population at risk, which is generally referred to as population exposure. Population exposure is provided for wildfire, flooding, dam failure, severe weather, earthquakes and landslides as potential hazards later in this section.

Together with the U.S. Census data, asset data was used to provide a snapshot of how City assets are affected by natural hazards. For purposes of this vulnerability analysis, asset data includes parcels and critical infrastructure within the Chino Hills boundaries. Critical infrastructure is described as assets that are essential for people and a community to function such as utilities, Chino Hills and San Bernardino County owned facilities, bridges, schools, and other community facilities that provide essential services to residents.

Critical facilities data was developed from a variety of sources including Chino Hills and San Bernardino County owned and maintained data, state and federal government datasets, and private industry datasets. A critical infrastructure spatial database was developed to translate critical facilities information into georeferenced⁶ points. Critical facility points are intersected with the spatial hazard layers to develop a list of “at risk” critical facilities. The Chino Hills and San Bernardino County critical facilities that intersect with natural hazards are referred to as facilities with hazard “exposure.” Exposure results are presented later in this section.

Figure 41 Data Inputs And Outputs Used for the Vulnerability Analysis



Lastly, FEMA’s Hazus - 5.1 software was implemented to conduct detailed loss estimation for floods and earthquakes. Hazus is a nationally applicable standardized methodology that contains models for estimating potential losses from earthquakes, floods, hurricanes, and tsunamis. Hazus uses Geographic Information Systems (GIS) technology to estimate physical, economic, and social impacts of disasters. For purposes of this planning effort, Hazus was used to graphically illustrate the limits of identified high-risk locations due to possible earthquakes and floods.

The vulnerability and potential impacts from priority hazards that do not have specific mapped areas or the data to support additional vulnerability analyses are discussed in more general terms in alphabetical order following the discussion on wildfire, flooding, dam failure and earthquake hazards.

5

To georeference something means to define its existence in physical space. That is, establishing its location in terms of map projections or coordinate systems. The term is used both when establishing the relation between raster or vector images and coordinates, and when determining the spatial location of other geographical features.

POPULATION AND ASSETS

To describe vulnerability for each hazard, it is important to understand the “total” population and “total” assets at risk. The exposure for each hazard described in this section will refer to the percent of total population or percent of total assets. This provides the possible significance or vulnerability to people and assets for the natural hazard event and the estimated damage and losses expected during a “worst case scenario” event for each hazard. Sections below provide a description of the total population, critical facilities, and parcel exposure inputs.

Population

To develop hazard-specific vulnerability assessments, populations near natural hazard risks should be determined to understand the total “at risk” population. We can understand how geographically defined hazards may affect Chino Hills by analyzing the extent of the hazard in relation to the location of population. For purposes of the vulnerability assessment, approximately 80,676 Chino Hills’ population is exposed to one or more hazards within or near the City’s boundaries. Each natural hazard scenario affects the City of Chino Hills’ residents differently depending on the location of the hazard and the population density of where the hazard could occur. Vulnerability assessment sections presented later in this section summarize the population exposure for each natural hazard.

VULNERABLE POPULATIONS

The severity of a disaster depends on both the physical nature of the extreme event and the socioeconomic nature of the populations affected by the event. While all people in a community situated in vulnerable areas could be impacted by natural hazards, some are already and will continue to be more vulnerable to those hazards than others. It is important to consider various factors such as age, physical and mental health, socioeconomic status, access to essential services, and other influences that can impact how people prepare for and protect themselves and their belongings from potential hazards. Even if a hazard affects an entire city equally, different individuals may experience its effects differently.

For example, older adults and young children are at higher risk for experiencing a heat-related illness during an extreme heat event. Several factors influence sensitivity to hazards, including an individual’s health, age, ability, experience of structural inequality, inequities in access to health care, economic opportunity, education and other resources, and inequities found in basic needs and exposure to environmental stressors (Cal OES 2020). Higher-income households are more likely to have the means to make their homes resilient to flooding or to relocate to a less flood-prone area, in contrast to lower-income households. Therefore, a higher-income household is less likely to suffer significant damage during a flood compared to a lower-income household,

even if both experience the same amount of rainfall. Vulnerable populations should be prioritized when

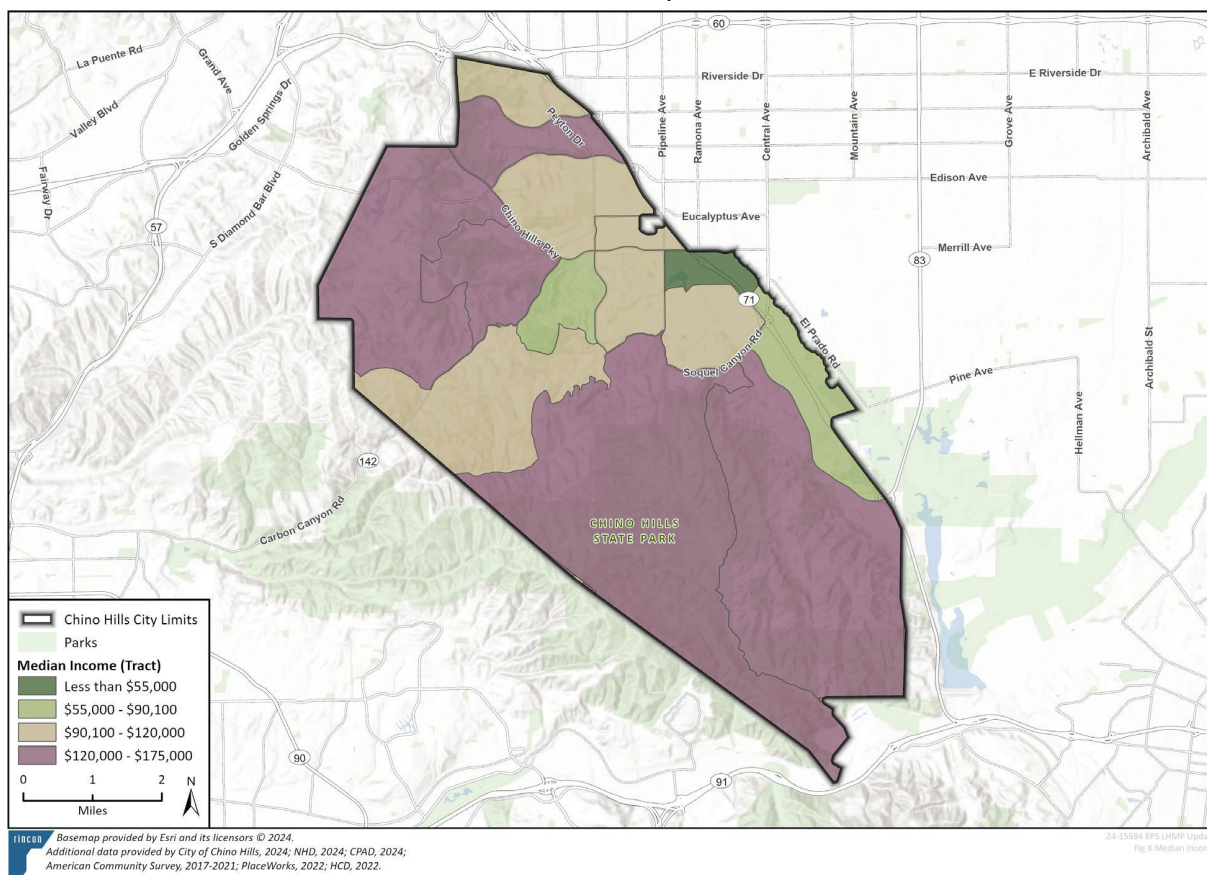
considering adapting and mitigating natural hazards, adopting policies, and planning adaptation projects.

Income and Housing Condition

Income or wealth is one of the most important factors in natural hazard vulnerability. This economic factor affects vulnerability of low-income populations in several ways. Lower income populations are less able to afford housing and other infrastructure that can withstand extreme events. Low-income populations are less able to purchase resources needed for disaster response and are less likely to have insurance policies that can contribute to recovery efforts. Lower income elderly populations are less likely to have access to medical care due to financial hardship. Because of these and other factors, when disaster strikes, low-income residents are far more likely to be injured or left without food and shelter during and after natural disasters.

Figure 42 shows the median household income distribution for the City of Chino Hills in 2022. The “median” is the value that divides the distribution of household income into two equal parts (e.g., the middle). The average median household income in the City of Chino Hills between 2018 and 2022 was \$117,548,000 in California during the same period the median house household income was \$91,905.

Figure 42 Median Household Income Distribution Map



Age

Children and the elderly tend to be more vulnerable during an extreme natural disaster. They have less physical strength to survive disasters and are often more susceptible to certain diseases. The elderly often also have declining vision and hearing and often miss reports of upcoming natural hazard events. Children, especially young children, have the inability to provide for themselves. In many cases, both children and the elderly depend on others to care for them during day-to-day life.

Finally, both children and the elderly have fewer financial resources and are frequently dependent on others for survival. In order for these populations to remain resilient, before and after a natural hazard event, it may be necessary to augment City residents with resources provided by the City, state and federal emergency management agencies and organizations. See Figure 43 and Figure 44 for location of vulnerable population by age within the City of Chino Hills.

Figure 43 **POPULATION UNDER 18**

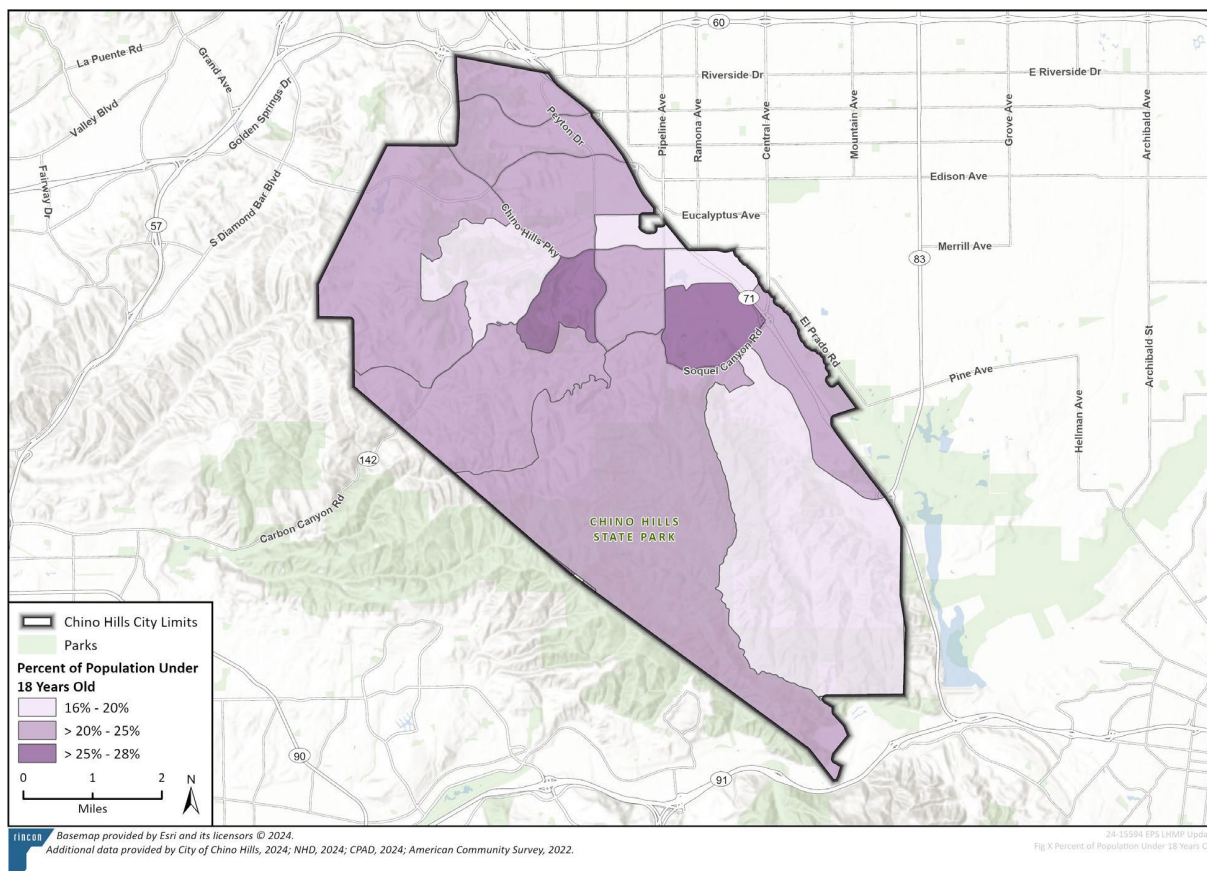
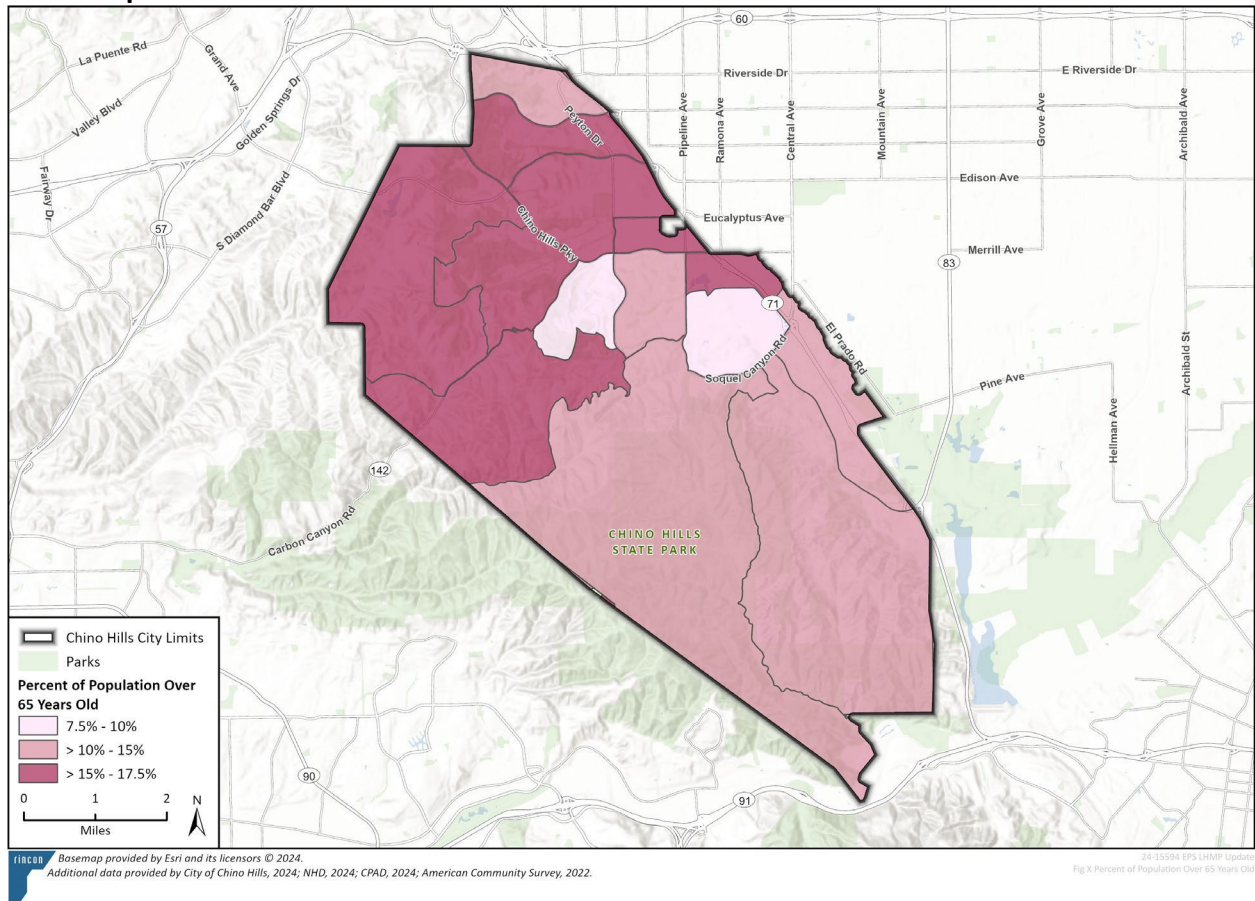


Figure 44 Population Over 65



CRITICAL FACILITIES

Critical facilities are of particular concern when conducting hazard mitigation planning. Critical facilities are defined as essential services, and if damaged, would result in severe consequences to the health, safety, and welfare of the public.

An inventory of critical facilities based on data from the County and other publicly sourced information were used to develop a comprehensive inventory of facility points and lifelines. Critical facility points include fire stations, buildings containing hazardous materials (HAZMAT), schools, transportation, utilities, and government buildings. Lifelines include transportation routes only. A current representation of the critical facilities and lifelines are provided in Table 32 and Table 33. Some critical facility information has been omitted from documentation due to national security purposes. Chino Hills Public Works Department manages and maintains a complete list of critical facilities.

Table 32 Critical Facilities

Infrastructure Type	Total Feature Count
Essential Facility	27
Emergency Operations Center	2
Fire Station	2
Government Facility	2
Hospital	0
Police Station	1
School	20
High Potential Loss	98
Dams	0
Economic Element-Major Employer	0
HAZMAT	2
Historic/Cultural Resource - Historic	0
Utility-Communication Facility	1
Utility-Electric Power Facility	0
Utility-Natural Gas Facility	0
Utility-Potable Water Facility	43
Utility-Waste Water Facility	8
Vulnerable Population-Senior Care	0
Vulnerable Population-Adult Residential Care	5
Vulnerable Population-Child Care	0
Vulnerable Population-Flood Zone	1
Vulnerable Population-Foster/Home Care	0
Vulnerable Population-Mobile Home Park	0
Vulnerable Population-RV Park	1
Federal Communications Commission Antenna Structure Registration (FCC ASR) Facility	1
Environmental Protection Agency Facility Registry Service (EPA FRS) Facility	36
Transportation and Lifeline	11
Highway Bridge	11
Railway Bridge	0

Bus Facility	0
Rail Facility	0
Airport Facility	0
Grand Total	109

Table 33 Transportation and Lifeline Facilities (Total Linear Miles)

Infrastructure Type	Total Linear Miles
Railway	0.25
Roads	303
Driveway	2
Highway	0
Local Traffic	228
Major Highway	13
Major Road	41
Other Ramps	1
Other Thoroughfare	10
Parking Lot	0
Ramps	8
Traffic Circle	0
Grand Total	304

4.13 HAZUS-MULTI-HAZARD INPUTS

Hazus is a standardized risk modeling methodology used to identify areas with high risk for natural hazards. Hazus is also used to estimate the physical, economic, and social impacts of natural hazards using inventory information on buildings, infrastructure, and population. FEMA manages the Hazus program, which supports models for estimating the risk of damage from earthquakes, floods, hurricanes, and tsunamis. For Chino Hills, the only hazards modeled by Hazus are earthquakes and flood. Hazus 5.1 was used to analyze the City of Chino Hills building risk to flood and earthquake hazards. Hazus software operates on structure square footage, structure replacement, and content replacement costs aggregated to the census block and census tract levels depending on type of hazard analysis.

Jurisdictions can integrate their local inventory data with Hazus to generate more accurate estimates. Chino Hills utilized 2024 parcel land and improvement value data from the San Bernardino County Assessor's Office to estimate property and structure values and replacement costs for the city's hazards of concern. Losses and replacement costs are estimated for each hazard (including hazards not analyzed using Hazus) for buildings in high-risk areas and those building's contents (furniture, equipment not integral to the structure, and supplies). Hazus

estimates building value and building content value based on the occupancy type (e.g. one-story single-family residence without a basement) and square footage.⁷

HAZUS

Note: The Hazus software utilizes different census level information inputs to develop loss estimates depending on the hazard module. The flood module uses census block information while the earthquake module uses census tract information. It is important to understand the total values of each as estimated damage to the community is presented on a percent of total value basis.

4.14 VULNERABILITY ASSESSMENT - FLOODING

Flood hazard mapping is provided by the Federal Emergency Management Agency (FEMA) based on Flood Insurance Rate Maps (FIRMS). Flood hazard areas shown on the FIRM are identified as a Special Flood Hazard Area (SFHA), which are defined as the area that will be inundated by the flood event having a one percent chance of being equaled or exceeded in any given year. The one percent annual chance flood is also referred to as the base flood or 100-year flood. Within Chino Hills, current FIRM maps identify SFHAs labeled as Zone A, Zone AE, and Zone X (shaded). Zone A are areas inundated by 100-year flooding, for which no base flood elevation (FBE) has been established; Zone AE are areas inundated by 100-year flooding for which FBEs have been determined; and Zone X (shaded) areas are areas of moderate flood hazard, usually the area between the limits of the 100-year and 500-year floods. The identified SFHAs within Chino Hills are generally areas adjacent to existing creek beds, including the Little Chino Creek, Chino Creek, and Carbon Canyon Creek.

Current FIRM maps also identify Zone X (unshaded) areas within Chino Hills, which are areas of minimal flood hazard, usually outside the 100-and 500-year floodplains.

The flood hazard map (Figure 33) is updated to include current FIRM information and dam inundation areas, and carried forward within the Safety Element of the General Plan.

POPULATION LIVING WITH FLOOD RISK

Of greatest concern in the event of a flood is the potential for loss of life. Using 2022 ACS data, an estimate was made of the population exposed to the 100-and 500-year floodplain. The results of the population overlay are shown in Table 34.

Table 34 Population Exposed to National Flood Insurance Program Flood Zones

Flood Zone	Population
100-Year Flood	3,382
500-Year Flood	1,084
Grand Total	4,466

⁷ 2022. FEMA. Hazus Inventory Technical Manual.

https://www.fema.gov/sites/default/files/documents/fema_hazus-6-inventory-technical-manual.pdf

RESIDENTIAL PARCEL VALUE WITH FLOOD RISK

The City's parcel layer was used as the basis for the inventory of improved residential parcels within the FEMA National Flood Insurance Program (NFIP) flood zones. In some cases, a parcel will be within multiple flood zones. GIS was used to create centroids, or points, to represent the center of each parcel polygon – this is assumed to be the location of the structure for analysis purposes. The centroids were then overlaid with the floodplain layer to determine the flood risk for each structure. The flood zone in which the centroid was located was assigned to the entire parcel. This methodology assumed that every parcel with a square footage value greater than zero was developed in some way. Table 35 shows the count of at-risk parcels and their improvement and land exposure values.

Table 35 Parcels Exposed to NFIP Flood Zones

Flood Hazard Zone	Improved Parcel Count	Improvement Value Exposure (*1000)	Land Value Exposure (*1000)	Total Exposure (*1000)
100-Year Flood	47	\$68,614	\$41,462	\$110,076
500-Year Flood	3	\$1,786	\$5,151	\$6,937
Grand Total	50	\$70,400	\$46,613	\$117,014

While there are several limitations to this methodology, it does allow for potential loss estimation. It should be noted that the analysis may include structures in the floodplain that are elevated at or above the level of the base flood elevation, which will likely decrease potential flood damage to these structures. Also, it is important to remember that the County Assessor's values are well below actual market values; thus, the actual value of assets at risk may be significantly higher than those included herein. To promote equity and support high-risk and underserved populations throughout the community, the Chino Hills HMP will prioritize mitigation actions based on broad community benefits rather than property values or household income, emphasizing both monetary and non-monetary benefits to reduce vulnerability and enhance resilience across all areas.

CRITICAL FACILITIES EXPOSURE

Critical facilities data were overlain with flood hazard data to determine the type and number of facilities within the 100-and 500-year floodplain. Flooding poses numerous risks to critical facilities and infrastructure, including:

- Roads or railroads that are blocked or damaged can prevent access throughout the area and can isolate residents and emergency service providers needing to reach vulnerable populations or to make repairs.
- Bridges washed out or blocked by floods or debris from floods also can cause isolation.
- Creek or river floodwaters can back up drainage systems causing localized flooding.

- Floodwaters can get into drinking water supplies causing contamination.
- Sewer systems can be backed up causing waste to spill into homes, neighborhoods, rivers, and streams. Underground utilities can also be damaged.

Table 36 and Table 37 provide an inventory of critical facilities in the floodplain for Chino Hills and provide the locations of lifelines relative to the floodplain in the areas of the City. With a total of 15 essential facilities, and 13 miles of transportation and lifeline structures located in either the 100-or 500-year flood zone, the impact to the community could be devastating if these critical facilities were damaged or destroyed during a flood event.

Table 36 Critical Facility Exposed to NFIP Flood Zones

Infrastructure Type	100-Year Flood Zone	500-Year Flood Zone	Total Feature Count
Essential Facility			
Emergency Operations Center	0	0	0
Fire Station	0	0	0
Government Facility	0	0	0
Hospital	0	1	1
Police Station	1	0	1
School	0	0	0
High Potential Loss			
Dams	0	0	0
Economic Element-Major Employer	0	0	0
Hazmat	0	0	0
Historic/Cultural Resource - Historic	0	0	0
Utility-Communication Facility	0	0	0
Utility-Electric Power Facility	0	0	0
Utility-Natural Gas Facility	0	0	0
Utility-Potable Water Facility	0	0	0
Utility-Waste Water Facility	0	0	0
Vulnerable Population-Senior Care	0	0	0
Vulnerable Population-Adult Residential Care	0	0	0
Vulnerable Population-Child Care	0	4	4
Vulnerable Population-Flood	0	0	0

Zone			
Vulnerable Population- Foster/Home Care	0	1	1
Vulnerable Population- Mobile Home Park	0	0	0
Vulnerable Population-RV Park	0	0	0
FCC ASR	0	0	0
EPA FRS Facility	1	6	7

Transportation and Lifeline			
Highway Bridge	1	0	1
Railway Bridge	0	0	0
Bus Facility	0	0	0
Rail Facility	0	0	0
Airport Facility	0	0	0
Grand Total			15

Table 37 Lifelines Exposure to NFIP Flood Zones

Infrastructure Type	100-Year Flood Zone (Miles)	500-Year Flood Zone (Miles)	Total Feature Count
Railway	0	0	0
Roads			303
Major Highway	1.362	0.522	1.884
Highway	1.015	0	1.015
Major Road	2.723	1.730	4.453
Local Road	3.361	1.942	5.302
Other Thoroughfare	0	0	0
Ramp	0.179	0.270	0.449
Other Ramp	0.052	0.006	0.058
Traffic Circle	0	0	0
Alley	0	0	0
Driveway	0.042	0	0.042
Total	8.734	4.470	13.203

LOSS ESTIMATION RESULTS

The Hazus analysis was used to assess the risk from and vulnerability to flooding within Chino Hills. Hazus buildings data is aggregated to the census block level, known as the General Building Stock (GBS), which has a level of accuracy acceptable for hazard mitigation planning purposes. The following sections describe risk to and vulnerability of the GBS within the Chino Hills' mapped regulatory floodplain. The total value of exposed buildings and content within the Chino Hills' planning area was generated using Hazus and is previously summarized in Table 38.

Hazus calculates losses to structures from flooding by considering the depth of flooding and type of structure. Using historical flood insurance claim data, the software estimates the percentage of damage to structures and their contents by applying established depth-damage curves. Damage estimates are then translated to estimated dollar losses. The results are summarized in Table 39 and Table 40. An estimated \$62,326,000 of damage could occur in the Chino Hills regulatory floodplain if all flooding sources experienced a 100-year flood event. An all- encompassing event (all tributaries flooding to the

NFIP 100-year flood zone) is estimated to cause losses of 0.1 percent of the total GBS within the City boundaries. An estimated \$451,977,000 of damage could occur if all flooding sources experienced a 500- year flood event, representing 0.0 percent of the total GBS within the City boundaries. While there are several limitations to the FEMA Hazus model, it does allow for potential loss estimation. It should be noted that the analysis may include structures in the floodplain that are elevated at or above the level of the base flood elevation, which will likely mitigate flood damage. Also, it is important to remember that the replacement costs are well below actual market values, thus, the actual value of assets at risk may be significantly higher than those included herein.

Table 38 Flood Loss Estimation (based on depth) in NFIP Flood Zones

Flood Hazard Zone	Building Loss (*1000)	Contents Loss (*1000)	Inventory Loss (*1000)	Relocation Cost (*1000)	Income Loss (*1000)	Rental Income Loss (*1000)	Wage Loss (*1000)	Total Loss Value (*1000)
100-Year	\$18,108	\$24,246	\$3,934	\$2,886	\$4,393	\$1,392	\$7,367	\$62,326
500-Year	\$111,341	\$176,392	\$21,864	\$18,590	\$52,596	\$11,742	\$59,452	\$451,977
Grand Total	\$129,449	\$200,638	\$25,798	\$21,476	\$56,989	\$13,134	\$66,819	\$514,303

Table 39 100 Year Flood Loss Estimation (based on depth) In NFIP Flood Zones

Building Type	Building Loss (*1000)	Contents Loss (*1000)	Inventory Loss (*1000)	Relocation Cost (*1000)	Income Loss (*1000)	Rental Income Loss (*1000)	Wage Loss (*1000)	Total Loss Value (*1000)
Residential	\$5,252	\$2,587	\$0	\$900	\$89	\$302	\$211	\$9,341
Commercial	\$6,141	\$9,167	\$2,996	\$1,368	\$3,252	\$1,024	\$4,007	\$27,955
Industrial	\$5,396	\$9,707	\$936	\$165	\$170	\$31	\$164	\$16,569
Agriculture	\$0	\$6	\$2	\$2	\$7	\$0	\$2	\$19
Religious	\$1,179	\$1,867	\$0	\$280	\$495	\$28	\$1,174	\$5,023
Government	\$9	\$68	\$0	\$0	\$0	\$0	\$910	\$987
Education	\$131	\$844	\$0	\$171	\$380	\$7	\$899	\$2,432
Grand Total	\$18,108	\$24,246	\$3,934	\$2,886	\$4,393	\$1,392	\$7,367	\$62,326

Table 40 500 Year Flood Loss Estimation (based on Depth) in NFIP Flood Zones

Building Type	Building Loss (*1000)	Contents Loss (*1000)	Inventory Loss (*1000)	Relocation Cost (*1000)	Income Loss (*1000)	Rental Income Loss (*1000)	Wage Loss (*1000)	Total Loss Value (*1000)
Residential	\$695	\$410	\$0	\$201	\$163	\$115	\$385	\$1,969
Commercial	\$57,495	\$81,039	\$12,166	\$15,646	\$49,976	\$11,016	\$39,926	\$267,264
Industrial	\$47,899	\$87,771	\$9,698	\$1,270	\$767	\$215	\$1,325	\$148,945
Agriculture	\$0	\$24	\$0	\$19	\$46	\$0	\$18	\$107
Religious	\$1,816	\$2,288	\$0	\$383	\$639	\$40	\$1,514	\$6,680
Government	\$3,065	\$3,986	\$0	\$838	\$551	\$347	\$15,212	\$23,999
Education	\$371	\$874	\$0	\$233	\$454	\$9	\$1,072	\$3,013
Grand Total	\$111,341	\$176,32	\$21,864	\$18,590	\$52,596	\$11,742	\$59,452	\$451,977

4.15 VULNERABILITY ASSESSMENT – WILDFIRE

Risk to Chino Hills from wildfire is of significant concern. High fuel loads in the hills, along with geographical and topographical features, create the potential for both natural and manmade- caused fires that can result in loss of life and property. These factors, combined with natural weather conditions common to the area, including periods of drought, high temperatures, low relative humidity, and periodic winds, can result in frequent and sometimes catastrophic fires. During the May to October fire season the dry vegetation and hot and sometimes windy weather, combined with continued growth in the WUI areas, results in an increase in the number of ignitions. Any fire, once ignited, has the potential to quickly become large and out-of-control. In addition, similar to trends throughout the state, wildfire risk in Chino Hills is likely to increase due to climate change. According to California’s Fourth Climate Change Assessment, California will likely see a 50 percent increase in fires larger than 25,000 acres and a 77 percent increase in average area burned by the year 2100. In Southern California, shifting wind patterns, including changes in Santa Ana wind patterns, and changes in precipitation patterns are expected to exacerbate wildfire risk. Fire season, which historically occurred from May to October, is beginning earlier and ends later each year and wildfires are now taking place year-round.⁸

Potential losses from wildfire include: human life, structures and other improvements, natural and cultural resources, quality and quantity of water supplies, cropland, timber, and recreational opportunities. Short and long-term economic losses could also result due to loss of business and other economic drivers associated with Chino Hills summer season activities. Smoke and air pollution from

wildfires can be a severe health hazard. In addition, catastrophic wildfire can create favorable conditions for other hazards such as flooding, landslides, and erosion during the rainy season.

Generally, there are three major factors that sustain wildfires and predict a given area's potential vulnerability to burn. These factors are fuel, topography, and weather.

- **Fuel** – Fuel is the material that feeds a fire and is a key factor in wildfire behavior. Fuel is generally classified by type and volume. Fuel sources are diverse and include everything from dead tree leaves, twigs, and branches to dead standing trees, live trees, brush, and cured grasses. Manmade structures are also considered a fuel source, such as homes and other associated combustibles. The type of prevalent fuel directly influences the behavior of wildfire. Fuel is the only factor that is under human control. Carbon Canyon is especially prone to wildfire, in part due to the high fuel load in the area.
- **Topography** – An area's terrain and slope affect its susceptibility to wildfire spread. Both fire intensity and rate of spread increase as slope increases due to the tendency of heat from a fire to rise via convection. The arrangement of vegetation throughout a hillside can also contribute to increased fire activity on slopes.
- **Weather** – Weather components such as temperature, relative humidity, wind, and lightning also affect the potential for wildfire. High temperatures and low relative humidity dry out fuels that feed wildfires, creating a situation where fuel will ignite more readily and burn more intensely. Thus, during periods of drought the threat of wildfire increases. Wind is the most hazardous weather factor. The greater the wind, the faster a fire can spread and the more intense it can be. Wind shifts and wind speed can occur suddenly due to temperature changes or the interaction of wind with topographical features such as slopes or steep hillsides. As part of a weather system, lightning also ignites wildfires, often in terrain that is difficult to reach for firefighters.

Factors contributing to the high, widespread wildfire risk in Chino Hills include:

- Nature and frequency of ignitions, including increased frequency of manmade ignitions as a result of increased population density and development
- Steep slopes, canyons, and hills throughout the western and central parts of the city
- Abundant vegetation, including grasses that become dry in the summer
- Hot, dry summer and fall seasons

⁸ California Governor's Office of Emergency Services. 2023. California State Hazard Mitigation Plan. https://www.caloes.ca.gov/wp-content/uploads/Hazard-Mitigation/Documents/2023-California-SHMP_Volume-1_11.10.2023.pdf

- Frequent wind events during the fall season

In addition to the factors that increase the risk of wildfire in Chino Hills, several characteristics increase the possibility of losses from wildfires, including:

- Narrow and often one-lane and/or dead-end roads complicating evacuation and emergency response
- High fire risk in areas that are difficult to access for firefighting
- Residential development within and along the foothills
- Large population vulnerable to wildfires due to age, low income, and/or housing conditions

POPULATION AT RISK

Wildfire risk is of greatest concern to populations residing in the moderate, high, and very high wildfire hazard zones. ACS 2022 data was used to estimate populations within the hazard zones. There are a significant number of people living within areas of wildfire risk.⁹ Table 41 exhibits the population totals in each wildfire severity zone.

Table 41 Population at Risk from Wildfire

Fire Hazard Severity Zone	Population
Moderate	6,056
High	34,949
Very High	3,846
Grand Total	44,851

RESIDENTIAL PARCEL VALUE AT RISK

Potential losses due to wildfire were quantified using land and improvement value data from the San Bernardino County Assessor's Office. Table 42 exhibits portions of Chino Hills that have significant assets at risk to wildfire in the moderate, high and very high fire severity zone

Table 42 Residential Building and Content at Risk from Wildfire

Fire Hazard Severity Zone	Improved Parcel Count	Improvement Value Exposure (*1000)	Land Value Exposure (*1000)	Total Exposure (*1000)
Very High	507	\$382,110	\$224,566	\$606,676
High	8,451	\$3,707,835	\$1,938,949	\$5,646,784
Moderate	3,288	\$1,287,218	\$621,653	\$1,908,871
Non-Wildland/Non-Urban	16	\$6,412	\$3,439	\$9,851
Urban Unzoned	9,070	\$3,509,777	\$1,661,917	\$5,171,694,
Total	21,332	\$8,893,353	\$4,450,524	\$13,343,877

⁹ 2024. United States Census Bureau. 2022 American Community Survey 5-year estimates.

CRITICAL FACILITIES AT RISK

Critical facilities data were overlain with fire hazard severity zone data to determine the type and number of facilities within each risk classification. Table 43 lists the critical facilities within the high and very high wildfire hazard zones for Chino Hills.

Table 43 Critical Facility Exposure to Wildfire

Infrastructure Type	High	Very High	Total Feature Count
Essential Facility			
Emergency Operations Center	0	0	0
Fire Station	0	1	1
Government Facility	0	0	0
Hospital	0	0	0
Police Station	0	0	0
School	3	0	3
High Potential Loss			
Dam	0	0	0
Economic Element-Major Employer	0	0	0
Hazmat	0	0	0
Historic/Cultural Resource-Historic	0	0	0
Utility-Communication Facility	0	0	0
Utility-Electric Power Facility	0	0	0
Utility-Natural Gas Facility	0	0	0
Utility-Potable Water Facility	0	0	0
Utility-Waste Water Facility	0	0	0
Vulnerable Population-Adult Residential Care	0	0	0
Vulnerable Population-Child Care	1	0	1
Vulnerable Population-Foster/Home Care	0	0	0
Vulnerable Population-Mobile Home Park	0	0	0
Vulnerable Population-RV Park	0	0	0
Vulnerable Population-Senior Care	1	0	1
EPA FRS Facility	2	1	3
Transportation and Lifeline Facilities			
Highway Bridge	1	1	2
Railway Bridge	0	0	0

Bus Facility	0	0	0
Rail Facility	0	0	0
Airport Facility	0	0	0
Grand Total			11

Transportation and lifeline facilities, defined as fundamental services required for a community to function, within high and very high fire hazard severity zones are at risk of damage that could result in loss of functionality or require costly repairs. Table 44 list the critical transportation facilities within the high and very high wildfire hazard zones for Chino Hills.

Table 44 Transportation and Lifeline Facilities with Wildfire Risk (Total Linear Miles)

Infrastructure Type	High (Miles)	Very High (Miles)	Total Linear Miles
Railway	0.00	0.00	0.00
Roads			
Major Highway	3.43	0.00	3.43
Highway	0.00	0.00	0.00
Major Road	15.39	2.06	17.45
Local Road	94.79	13.03	107.82
Other Thoroughfare	9.65	0.63	10.28
Ramp	2.59	0.00	2.59
Other Ramp	0.08	0.00	0.08
Traffic Circle	0.00	0.00	0.00
Alley	0.00	0.00	0.00
Driveway	1.12	0.00	1.12
Grand Total	127.05	15.72	142.77

4.16 VULNERABILITY ASSESSMENT - EARTHQUAKE

Major Impacts from earthquakes are primarily the probable number of casualties and damage to infrastructure occurring from ground movement along a particular fault (USGS, 2009). The degree of infrastructure damage depends on the magnitude, depth at which the earthquake occurs, distance from the fault, duration of shaking, type of surface material, presence of high groundwater, topography, and the design, type, and quality of infrastructure construction. Figure 45 presents the geological faults in southern California.

The U.S. Geological Survey, California Geological Survey developed the third Uniform California Earthquake Rupture Forecast (UCERF3) to forecast the magnitude, location, and likelihood of potentially damaging earthquakes within the state. UCERF 3 was first released in 2013 and builds upon the previous

model, UCERF2. This model has been used to update the U.S. Geological Survey National Seismic Hazard Maps, used in building codes. To analyze earthquake risk for Chino Hills residents, the Great Shakeout scenario was chosen modeled by the California Integrated Seismic Network (CISN). The 2008 Great Southern California Shakeout was based on a potential magnitude 7.8 earthquake on the southern San Andreas Fault— approximately 5,000 times larger than the magnitude 5.4 earthquake that shook southern California on July 29, 2008. Such an earthquake will cause unprecedented damage to Southern California—greatly dwarfing the massive damage that occurred in Northridge’s 6.7-magnitude earthquake in 1994 (Figure 46). The hazard footprint for this scenario was used to develop exposure results for population, critical facilities, and single-family residential parcel values. FEMA Hazus analyses was used to conduct loss estimation for both scenarios, and include building and content loss estimation results based on peak ground acceleration, peak ground velocity, and peak spectral acceleration modeled for the 7.8 earthquake on the San Andreas Fault (Figure 47).

Important to note: Building codes provide one of the best methods of addressing natural hazards. When properly designed, and constructed per code, the average building can withstand many of the impacts of natural hazards. Hazard protection standards for all new and improved or repaired buildings can be incorporated into the local building code to reduce future flood losses.

Figure 45 Geological Faults in Southern California

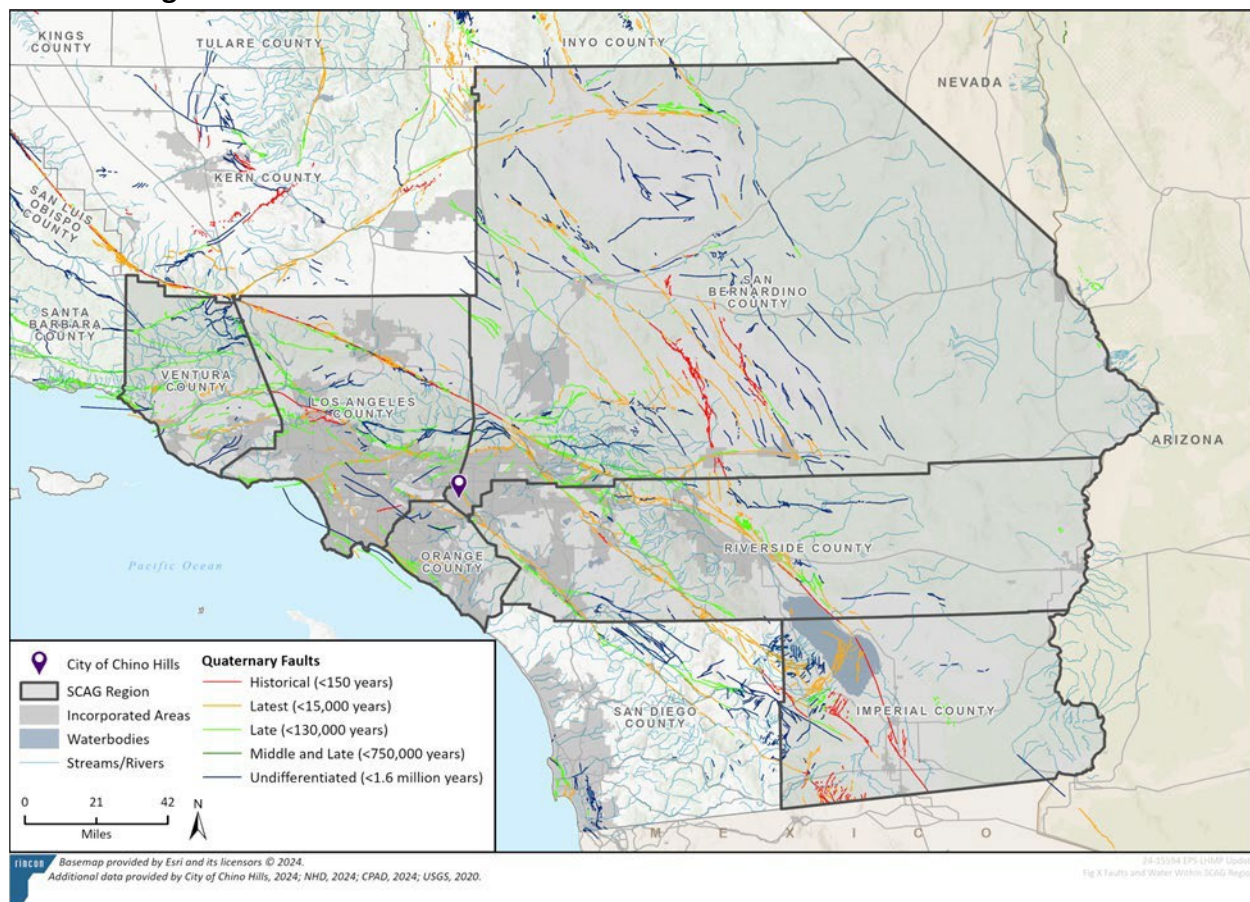


Figure 46 Shake Map for Magnitude 6.7 Earthquake – Chino Hills Fault

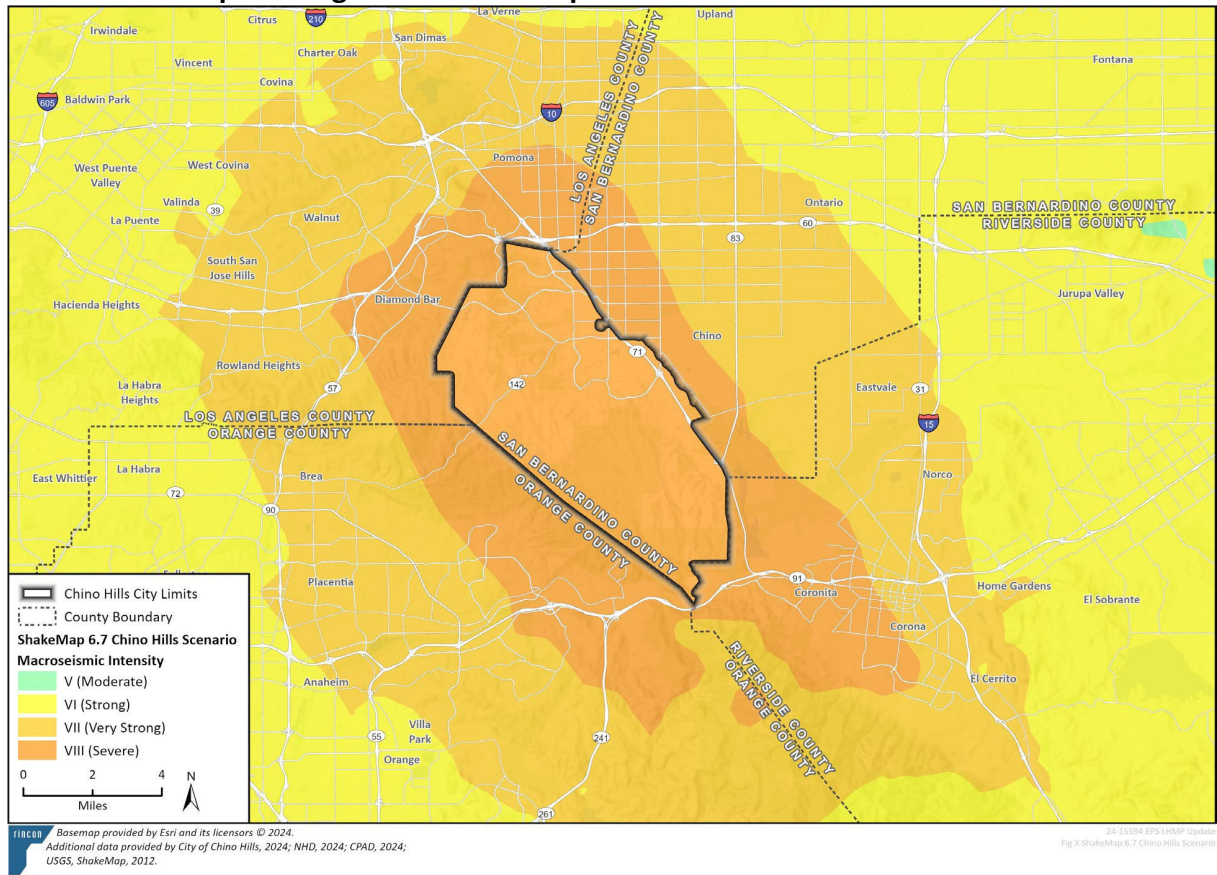
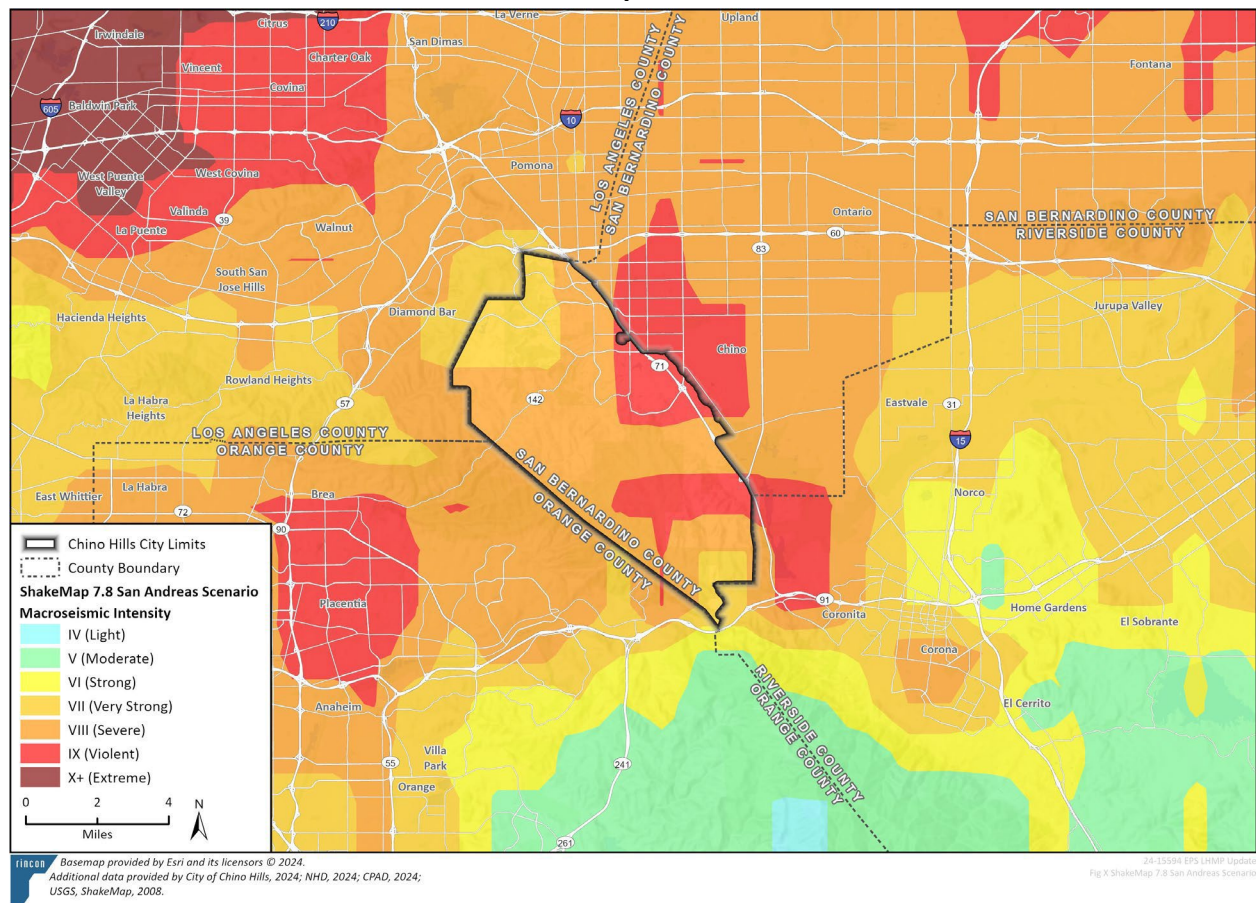


Figure 47 Shakeout Scenario – San Andreas Earthquake Fault



POPULATION AT RISK

According to 2022 ACS data, the total population of Chino Hills is 78,223. Depending on the time of day (the population differs based on employment opportunities) and exact location of the modeled epicenter, the earthquake scenarios could result in varied impacts. Table 45 exhibits the population totals in each modeled earthquake severity zone. Population location is based upon information taken during the 2020 U.S. Census.

Table 45 Population Exposure to the Great Shakeout EQ Shake Severity Zone

Earthquake Severity Zone	Population
VII - Very Strong	13,903
VIII - Severe	40,497
IX - Violent	24,670
Grand Total	79,070

RESIDENTIAL PARCEL VALUE AT RISK

The County's parcel layer was used as the basis for the inventory of improved residential parcels. GIS was used to create centroids, or points, to represent the center of each parcel polygon – this is assumed to be

the location of the structure for analysis purposes. The centroids were then overlaid with the shake severity zones to determine the at-risk structures. The analysis indicates residential parcels the chosen scenario will experience similar, but different shaking patterns. The type and year of construction will greatly influence damage for structures subject to similar shaking. Table 46 shows the count of at-risk structures and their associated improvement and land exposure values.

Table 46 Residential Parcel Value Exposure from Southern California Great Shakeout

Shake Severity Zone	Improved Parcel Count	Improvement Value Exposure (*1000)	Land Value Exposure (*1000)	Total Exposure (*1000)
IV - Light	-	-	-	-
V - Moderate	-	-	-	-
VI - Strong	-	-	-	-
VII - Very Strong	4,360	\$1,756,973	\$893,755	\$2,599,416
VIII - Severe	10,426	\$4,697,255	\$2,363,129	\$7,049,526
IX - Violent	6,547	\$2,439,125	\$1,193,640	\$3,887,189
Total	21,333	\$8,893,353	\$4,450,524	\$13,536,126

CRITICAL FACILITIES WITH DAMAGE POTENTIAL

Earthquakes pose numerous risks to critical facilities and infrastructure. Seismic risks, or losses, that are likely to result from exposure to seismic hazards include:

- Casualties (fatalities and injuries).
- Utility outages.
- Economic losses for repair and replacement of critical facilities, roads, buildings, etc.
- Indirect economic losses such as income lost during downtime resulting from damage to private property or public infrastructure.

Roads or railroads that are blocked or damaged can prevent access throughout the area and can isolate residents and emergency service providers needing to reach vulnerable populations or to make repairs.

Linear utilities and transportation routes are vulnerable to rupture and damage during and after a significant earthquake event. The cascading impact of a single failure can have effects across multiple systems and utility sectors. Degrading infrastructure systems and future large earthquakes with epicenters near critical regional infrastructure could result in system outages that last weeks for the most reliable systems, and multiple months for others.

Table 47 provides an inventory of critical facility locations (points only) with earthquake exposure to the Great Shakeout Scenario. The building codes have been amended to include provisions for seismic safety at various benchmark years. Depending on “year built,” each critical facility presented in the tables may have varying damage potential.

Table 47 Critical Facilities with Exposure from Southern California Great Shakeout

Infrastructure Type	Violent Zone (IX)	Severe Zone (VIII)	Very Strong Zone (VII)	Strong Zone (VI)	Total Feature Count
Essential Facility					
Emergency Operations Center	0	1	1	0	2
Fire Station	0	2	0	0	2
Government Facility	0	0	0	0	0
Hospital	0	0	0	0	0
Police Station	0	1	0	0	1
School	7	11	2	0	20
High Potential Loss					
Dams	0	0	0	0	0
Economic Element-Major Employer	0	0	0	0	0
Hazmat	1	1	0	0	2
Historic/Cultural Resource - Historic	0	0	0	0	0
Utility-Communication Facility	0	0	0	0	0
Utility-Electric Power Facility	0	0	0	0	0
Utility-Natural Gas Facility	0	0	0	0	0
Utility-Potable Water Facility	0	0	0	0	0
Utility-Waste Water Facility	0	0	0	0	0
Vulnerable Population-Senior Care	2	3	0	0	5
Vulnerable Population-	0	0	0	0	0

Adult Residential Care					
Vulnerable Population-Child Care	8	7	2	0	17
Vulnerable Population-Flood Zone	0	0	0	0	0
Vulnerable Population-Foster/Home Care	1	0	0	0	1
Vulnerable Population-Mobile Home Park	0	0	0	0	0
Vulnerable Population-RV Park	0	0	0	0	0
Federal Communications Commission Antenna Structure Registration (FCC ASR) Facility	1	0	0	0	1
Environmental Protection Agency Facility Registry Service (EPA FRS) Facility	19	16	1	0	36
Transportation and Lifeline					

Highway Bridge	7	4	0	0	11
Railway Bridge	0	0	0	0	0
Bus Facility	0	0	0	0	0
Rail Facility	0	0	0	0	0
Airport Facility	0	0	0	0	0
Grand Total	98				

HAZMAT FIXED FACILITIES

Although earthquakes are low probability events, they produce hazardous materials (HazMat) threats at very high levels when they do occur. Depending on the year built and construction of each facility containing HazMat, earthquake initiated hazardous material releases (EIHR) potential will vary. HazMat contained within masonry or concrete structures built before certain benchmark years reflecting code improvements may be of particular vulnerability.

TRANSPORTATION

Earthquake events can significantly impact bridges which often provide the only access to some neighborhoods. Since soft soil regions generally follow floodplain boundaries, bridges that cross water courses are considered vulnerable. Since most of the City's bridges provide access across City roads and interstates, most are somewhat vulnerable to earthquakes. Key factors in the degree of vulnerability are the bridge's age and type of construction which indicate the standards to which the bridge was built. Special attention will be paid to the multiple bridges that cross interstates. Interstates would serve as major emergency response and evacuation routes.

UTILITIES

Linear utilities and transportation infrastructure would likely suffer considerable damage in the event of an earthquake. Due to the amount of infrastructure and sensitivity of utility data, linear utilities are difficult to analyze without further investigation of individual system components. Table 48 provides best available linear data and it should be assumed that these systems are exposed to breakage and failure.

**Table 48 Lifelines with Earthquake Risk: Southern California Great Shakeout Scenario
(Total Linear Miles)**

Infrastructure Type	Violent Zone (IX) (Miles)	Severe Zone (VIII) (Miles)	Very Strong Zone (VII) (Miles)	Total Linear Miles
Major Highway	7.11	5.96	0.08	13.15
Highway	0.3	0	0	0.3
Major Road	9.46	21.75	11.09	42.3
Local Road	70.53	119.88	38.35	228.76
Other Thoroughfare	0.23	6.74	3.31	10.28
Ramp	3.99	4.03	0.11	8.13

Other Ramp	0.44	0.26	0	0.7
Traffic Circle	0.05	0	0	0.05
Alley	0	0	0	0
Driveway	0	1.41	0.15	1.56
Total	92.11	160.03	53.09	305.23
Major Highway	7.11	5.96	0.08	13.15
Highway	0.3	0	0	0.3

LOSS ESTIMATION RESULTS

The Hazus Level 2 analysis was used to assess the risk from and vulnerability to earthquake shaking within Chino Hills. Hazus buildings data is aggregated to the census tract level for earthquake models, known as the General Building Stock (GBS), which has a level of accuracy acceptable for planning purposes. Where possible the GBS was enhanced using GIS data from the county as described previously. The following sections describe risk to and vulnerability of the GBS within the City Hazus calculates losses to structures from earthquake shaking by considering the amount of ground displacement and type of structure. The software estimates the percentage of damage to structures and their contents by applying established building fragility curves. Damage estimates are then translated to estimated dollar losses.

For each Great Shakeout Scenario ground shaking data (shakemaps) were acquired from CISEN and imported into HazusHazus. The shakemap data consists of peak ground velocity, peak ground acceleration, peak spectral acceleration at 0.3 seconds, and peak spectral acceleration at 1.0 seconds. The earthquake module operates on census tracts that often include population and structures in the incorporated cities and the unincorporated area within a single tract. Due to this fact the results include census tracts that have a substantial portion of land within the incorporated area (loss estimates for some tracts will include structures in incorporated cities).

Table 49 summarizes the loss estimation for the Great Shakeout Scenario and Table 50 presents the total loss estimation for the Great Shakeout Scenario. It is important to understand that the Hazus earthquake module uses the census tract as its enumeration unit rather than the more detailed census block. The loss estimation values for earthquakes are much higher than those of the flooding and dam failure due to this fact.

Table 49 Earthquake Loss Estimation

Building Type	Structural Damage (\$)	Non-Structural Damage (\$)	Building Damage (\$)	Contents Damage (\$)	Business Inventory Loss (\$)	Relocation Cost (\$)	Income Loss (\$)	Rental Income Loss (\$)	Wage Loss (\$)
Agricultural	203,230	92,420	295,650	69,430	66,120	22,440	2,340	650	920
Commercial	1,001,780	6,461,100	7,462,890	3,852,510	909,280	134,710	298,990	370,270	293,200
Educational	212,150	1,644,700	1,856,850	528,130	0	59,940	15,220	5,850	35,720
Government	14,630	224,580	239,200	130,330	0	3,280	390	3,310	46,230
Industrial	213,400	1,810,020	2,023,390	1,240,100	178,090	28,430	6,860	10,570	11,530
Religious	49,790	483,940	533,740	277,040	0	19,380	4,700	2,810	11,090
Residential	1,001,780	6,461,100	7,462,890	3,852,510	909,280	134,710	298,990	370,270	293,200
Grand Total	2,696,760	17,177,860	19,874,610	9,950,050	2,062,770	402,890	627,490	763,730	691,890

Table 50 Earthquake Total Loss Estimation

Building Type	Total Loss
Agricultural	\$457,560
Commercial	\$13,321,880
Educational	\$2,501,760
Government	\$422,740
Industrial	\$3,498,960
Religious	\$848,750
Residential	\$13,321,880
Grand Total	\$34,373,530

Although it is not possible to estimate the number of casualties and extent of damage generated by a moderate to severe seismic event, recently developed planning scenarios indicate that within the Inland Empire/Chino Valley:

- Initial property damage may exceed \$34 million.
- Dependent on time of day and day of week, 3,000 - 14,000 fatalities and 12,000 – 55,000 injuries requiring hospitalization are anticipated.
- 4,000 – 5,000 long-term homeless may seek City assistance

Critical Lifelines

A moderate to severe earthquake close to the City is likely to cause disruption of surface and rail transportation, rupture of water and gas lines, and power outages (Table 44).

Bed Loss at Chino Valley Medical Center and Canyon Ridge Hospital

The City of Chino has one acute care hospital within its boundaries. Chino Valley Medical Center has 126 beds for normal patient housing. Approximately 56% (71) of the total number of beds may be lost during a major earthquake.

In addition to Chino Valley Medical Center, Canyon Ridge Hospital is within the City of Chino boundaries. Although primarily a non-medical treatment facility, its loss of bed space could have an impact on the City of Chino Hills.

The Pomona Valley Hospital Medical Center in Pomona is an accredited acute care hospital with a total of 427 beds, and a loss of bed space could impact Chino Hills.

Impact on Local State Highways

- State Highway 60 – Closed for over 72 hours.
- State Highway 60, as it passes through the north portion of the City, will probably be closed due to complete or partial collapse.
- State Route 71 – Southwest of Chino Hills – Closed for over 72 hours.

- Closed from the junction with Chino Hills Parkway to 2 miles south of Chino Hills Parkway by damage to the roadway in this area of high ground water and potential for intense shaking.

Impact on Local Airports

C-130 and C-141 aircraft require a minimum 5,000 ft. runway for landing and take-off. Chino Airport has one 6,200 ft. and one 3,800 ft. runway. Both stand a good chance of remaining intact and, therefore, may provide a means of logistical support. Assistance efforts may be hampered by lack of electrical power, fuel and functional communications equipment. Ontario International Airport is expected to serve as a major source of logistical support for the region in the event of a major earthquake.

IMPACT ON LOCAL COMMUNICATIONS SYSTEMS

COMMERCIAL TELEPHONE SYSTEMS

Telephone systems will be overloaded from post-earthquake calls within the area and from the outside. Many instruments will be shaken off their bases. This situation will be further complicated by physical damage to equipment due to ground shaking, loss of electrical power and subsequent failure of some auxiliary power sources. Key system facilities are located near the San Andreas Fault in areas subject to intense ground shaking. Telephone systems in the metropolitan area between Los Angeles and San Bernardino may have systemic failures which cannot be overcome by rerouting. It is probable that repair will be delayed since telephone company employees will experience difficulty gaining access to work areas.

PUBLIC SAFETY AND LOCAL GOVERNMENT RADIO SYSTEMS

Within the City's 800 MHz radio systems, it can be anticipated that the radio system will operate at about 80% effectiveness for the first 12 hours after a major earthquake, quickly increasing to 100%. This level of effectiveness is anticipated for Police, Fire, and Local Government radios. It is unlikely that the public safety radio systems or Local Government radio systems will be jammed with non-essential communications.

COMMERCIAL TELEVISION AND RADIO BROADCAST SYSTEMS

Radio and TV facilities could be out of operation in San Bernardino County for up to 24 hours due to staffing, power supply and/or transmission line problems.

CITY WATER SUPPLY AND WASTE DISPOSAL

Water reservoirs in the City are generally adequate to provide at least a three-day supply of water. The City will be dependent upon private contractors for repair of broken main distribution lines. Numerous broken transmission lines will limit service to portions of the City.

Location and severity of damage, as well as availability of public and private repair teams will determine repair time. Residents may be dependent for a time upon tanker trucks or stored supplies to satisfy basic needs. Rationing of water may be necessary to ensure adequate supplies for firefighting and for transportation to areas more seriously affected.

Sewage collection systems will sustain widespread damage, particularly in the southern portion of the City. Sewage treatment facilities are located on structurally weak ground and will be subjected to liquefaction and possible electrical power loss.

DAMAGE TO ELECTRIC POWER SUPPLY

Damage to power plants and their ancillary facilities can be expected to reduce generating capacity by 50%. The potential impact of this reduction in local output is lessened, however, by the availability of power from other sources outside the affected area and by the obvious significant increase in consumer demand that will occur.

Immediate concerns will focus on repairs necessary to restore power to areas of greatest need. Major restoration efforts will include repairs necessary to route power through major substations, repair of damaged and collapsed transmission line towers, reactivation of equipment at local substations, and replacement of fallen poles, burned transformers, etc.

NATURAL GAS SUPPLY

Damage to natural gas facilities will consist primarily of:

- (a) isolated breaks in major transmission lines
- (b) innumerable breaks in mains and individual service connections within the distribution system

This will be particularly true in areas of intense ground shaking and/or poor ground near the southern portion of the City. These leaks will affect a major portion of the City, resulting in a loss of service for extended periods. Sporadically distributed fires should be expected from ruptures both in transmission lines and the distribution system.

Two major gas supply lines belonging to SoCalGas may be ruptured by seismically triggered landslides or rock falls in the Cajon Pass corridor and possibly by fault rupture. (Refer to Natural Gas facilities planning scenario map, grid G5, Publication 60, California Division of Mines and Geology). In addition, SoCalGas owns several gas transmission lines and a high-pressure distribution line that runs through the city.

CRITICAL FACILITIES AT RISK

Critical facilities data were overlain with landslide hazard severity zone data to determine the type and number of facilities within each risk classification. Table 51 and Table 52 list the critical facilities in the landslide hazard zones for jurisdiction.

Table 51 Critical Facilities at Risk from Landslide

Infrastructure Type	Total Feature Count
Essential Facility	
Emergency Operations Center	0
Fire Station	0
Government Facility	0
Hospital	0
Police Station	0
School	0
High Potential Loss	
Dam	0
Economic Element-Major Employer	0
Hazmat	0
Historic/Cultural Resource-Historic	0
Utility-Communication Facility	0
Utility-Electric Power Facility	0
Utility-Natural Gas Facility	0
Utility-Potable Water Facility	0
Utility-Waste Water Facility	0
Vulnerable Population-Adult Residential Care	0
Vulnerable Population-Child Care	3
Vulnerable Population-Flood Zone	0
Vulnerable Population- Foster/Home Care	0
Vulnerable Population-Mobile Home Park	0
Vulnerable Population-RV Park	0
Vulnerable Population-Senior Care	1
EPA FRS Facility	2
Transportation and Lifeline Facilities	
Highway Bridge	1
Railway Bridge	0
Bus Facility	0
Rail Facility	0
Airport Facility	0
Grand Total	7

Table 52 Transportation and Lifeline Facilities at Risk from Landslide (Total Linear Miles)

Infrastructure Type	Total Linear Miles
Railway	0.00
Roads	
Major Highway	3.17
Highway	0.00
Major Road	24.01
Local Road	118.69
Other Thoroughfare	9.36
Ramp	1.54
Other Ramp	0.06
Traffic Circle	0.00
Alley	0.00
Driveway	0.96
Grand Total	157.79

CLIMATE CHANGE

Climate change is expected to significantly impact landslide occurrences and their severity in Chino Hills. With projections indicating increased precipitation variability and more intense precipitation events, due to its hilly characteristics, the region has an increased vulnerability to landslides. Rising temperatures can lead to more frequent and severe wildfires, which in turn increase the likelihood of post-fire landslides due to reduced vegetation cover and altered soil properties. Additionally, prolonged periods of drought followed by heavy rains can weaken soil stability, exacerbating landslide risks. These changes not only threaten critical infrastructure and natural habitats but also amplify the vulnerability of at-risk populations residing in landslide-prone areas.

4.17 VULNERABILITY ASSESSMENT - DAM FAILURE

The primary danger associated with dam failure is the high velocity flooding downstream of the dam and limited warning times for evacuation. Vulnerability varies by community and depends on the particular dam profile and the nature and extent of the failure. Vulnerable population is present directly below downstream elements of the dam, especially those incapable of escaping the area within the allowable time frame. This population includes the elderly and young who may be unable to self-evacuate from the inundation area. The vulnerable population also includes those who would not have adequate warning from a television or radio emergency warning system.

- Federally regulated dams have an adequate level of oversight and sophistication in the development of emergency action plans for public notification in the unlikely event of

failure; however, the protocol for notification of downstream citizens of imminent failure needs to be tied to local emergency response planning.

- Mapping for federally regulated dams is already required and available; however, mapping for non-federal-regulated dams that estimates inundation depths is needed to better assess the risk associated with dam failure from these facilities.
- Most dam failure mapping required at federal levels requires determination of the probable maximum flood. While the probable maximum flood represents a worst-case scenario, it is generally the event with the lowest probability of occurrence. Mapping of dam failure scenarios for non-federal-regulated dams that are less extreme than the probable maximum flood, but have a higher probability of occurrence, can be valuable to emergency managers and community officials downstream of these facilities. This type of mapping can illustrate areas potentially impacted by more frequent events to support emergency response and preparedness actions.
- The concept of residual risk associated with structural flood control projects should be considered in the design of capital projects and the application of land use regulations.
- Addressing security concerns and the need to inform the public of the risk associated with dam failure is a challenge for public officials.

POPULATION AT RISK

Populations located in a dam failure inundation zone can be exposed to the risk of a dam failure. The potential for loss of life is affected by the capacity and number of evacuation routes available to populations living in areas of potential inundation.

Table 53 Population Exposure to Dam Failure

Dam Inundation Zone	Population
Dam Inundation Zone	2,734
Grand Total	2,734

RESIDENTIAL PARCEL VALUE AT RISK

Data from the San Bernardino County Assessor's Office was used to estimate property and structure values and replacement costs for parcels in dam inundation zones. Table 54 shows the count of at-risk structures and their associated building and content exposure values to dam failure.

The most vulnerable properties are those closest to the dam itself as they would experience the largest, most destructive surge of water. A total of \$75,245,199 worth of buildings and contents are exposed to dam failure hazards within the city of Chino Hills.

Table 54 Structures at Risk from Dam Failure

Dam Inundation Zone	Improved Parcel Count	Improvement Value Exposure (*1000)	Land Value Exposure (*1000)	Total Exposure (*1000)
Dam Inundation Zone	174	\$40,615	\$34,630	\$75,245

CRITICAL FACILITIES AT RISK

Critical Facilities at risk to dam inundation are on file with the City of Chino Hills and for national security purposes can only be accessed through a responsible jurisdiction department, usually Public Works. As a general note, low-lying areas are vulnerable to dam inundation, especially transportation routes. This includes all roads, railroads, and bridges in the flow path of water. The most vulnerable critical facilities are those in poor condition that would have difficulty withstanding a large surge of water. Utilities such as overhead power lines and communication lines could also be vulnerable. Loss of these utilities could create additional compounding issues for emergency management officials attempting to conduct evacuation and response actions.

Table 55 Critical Facilities At Risk from Dam Failure

Infrastructure Type	Total Feature Count
Essential Facility	
Emergency Operations Center	0
Fire Station	0
Government Facility	0
Hospital	0
Police Station	0
School	0
High Potential Loss	
Dam	0
Economic Element-Major Employer	0
Hazmat	0
Historic/Cultural Resource-Historic	0
Utility-Communication Facility	0
Utility-Electric Power Facility	0
Utility-Natural Gas Facility	0
Utility-Potable Water Facility	0
Utility-Waste Water Facility	0
Vulnerable Population-Adult Residential Care	0
Vulnerable Population-Child Care	0
Vulnerable Population-Flood Zone	0
Vulnerable Population- Foster/Home Care	0
Vulnerable Population-Mobile Home Park	0
Vulnerable Population-RV Park	0
Vulnerable Population-Senior Care	0
EPA FRS Facility	0
Transportation and Lifeline Facilities	
Highway Bridge	1
Railway Bridge	0
Bus Facility	0
Rail Facility	0
Airport Facility	0
Grand Total	1

Table 56 Transportation and Lifeline Facilities at Risk from Dam Failure (Total Linear Miles)

Infrastructure Type	Total Linear Miles
Railway	0.00
Roads	
Major Highway	0.66
Highway	0
Major Road	0
Local Road	5.95
Other Thoroughfare	0
Ramp	0.26
Other Ramp	0
Traffic Circle	0
Alley	0
Driveway	0
Grand Total	6.87

PLANNED DEVELOPMENT

The City has six overlay districts including Biotic Resources, Geologic Hazard, Fire Hazards, Small Lot, Scenic Resources, and Equestrian and Large Animal Overlay. Each overlay district was created to implement policies relative to special land uses and environmental, hazard or safety conditions. The Safety Element identifies hazards and hazard abatement provisions to guide local decisions related to zoning, subdivisions, and land use entitlement permits.

4.18 VULNERABILITY ASSESSMENT - DROUGHT

Drought should not be viewed as merely a physical phenomenon or natural event. Its impacts on society result from the interplay between a natural event (less precipitation than expected resulting from natural climatic variability) and the demand people place on water supply.

Due to the lack of defined geographical boundaries, the vulnerability assessment for drought differs from other natural hazards. The impacts of drought can be categorized as economic, environmental, or social. Many economic impacts occur in agriculture and related sectors, including forestry and fisheries, because of the reliance of these sectors on surface and subsurface water supplies. In addition to obvious losses in yields in crop and livestock production, drought is associated with increases in insect infestations, plant disease, and wind erosion. Droughts also bring increased problems with insects and diseases to forests and reduce growth. The incidence of forest and range fires increases substantially during extended droughts, which in turn places human and wildlife populations, buildings, infrastructure and critical facilities, at higher levels of risk.

Income loss is another indicator used in assessing the impacts of drought because so many sectors are affected. Reduced income for farmers has a ripple effect. Retailers and others who provide goods and services to farmers face reduced business. This leads to unemployment, increased credit risk for financial

institutions, capital shortfalls, and loss of tax revenue for local, state, and federal governments. Less discretionary income affects the recreation and tourism industries. Prices for food, energy, and other products increase as supplies are reduced. In some cases, local shortages of certain goods result in the need to import these goods from outside the stricken region.

LOSS ESTIMATION RESULTS

No standardized methodology exists for estimating losses due to drought. Drought does not generally have a direct impact on critical and non-critical facilities and building stock. Instead, drought vulnerability is primarily measured by its potential impact on sectors of the County's economy and natural resources. In San Bernardino County some of the potential impacts to the economy include the following:

- Reduced agricultural and livestock production
- Loss of timber from increased wildfires
- Decreased municipal and industrial water supply
- Loss of recreation/tourism STATEWIDE MANDATORY WATER REDUCTIONS

AB 1668 and SB 606, adopted in 2018, establish frameworks for the implementation and oversight of new, long-term standards for efficient water use for urban retail water suppliers. These bills also provide incentives for water suppliers to recycle water and require urban and agricultural water suppliers to set annual water budgets and prepare for drought.

The State Water Resources Control Board (State Water Board) maintains the authority to adopt emergency regulations for water conservation. State emergency regulations expire one year from their effective dates unless modified or readopted by the State Water Board. Local water suppliers can also adopt stricter water conservation measures than the State Water Board. In addition, the City has adopted a Stage II Conservation Ordinance that prohibits specific water-wasting practices and developed a watering schedule, watering hour restrictions, and additional end-user watering restrictions.

4.19 VULNERABILITY ASSESSMENT - EXTREME HEAT

Extreme heat events are likely to occur more frequently and more intensely due to climate change, resulting in increased public health risks from heat-impacted diseases and air quality degradation. Some populations will be more at risk to heat illness and decreased air quality during an extreme heat event, including older adults, young children, individuals with high outdoor exposure, low-income residents, and individuals with chronic health conditions. Individuals with lower incomes are more likely to live in housing without adequate insulation or air conditioning and are less likely to receive medical attention in the event of heat-related illness.

Extreme heat events may also result in significant impacts to energy infrastructure, including power generation facilities and transmission and distribution lines, as a result of increased demand for electricity for air conditioning. This strain on energy systems could lead to rolling blackouts if the electricity supply cannot match the increase in demand. Over time, increased stress on energy systems could also lead to the degradation of electrical infrastructure, potentially increasing maintenance and operation costs.

CRITICAL FACILITIES EXPOSURE

Critical facilities at risk from extreme heat include power infrastructure, roadways, and active transportation routes due to damages through sustained heat. Electrical infrastructure is also at risk to grid overload through increased power demand. Facilities most vulnerable to electricity disruptions include hospitals, nursing homes, and emergency responders.

4.20 VULNERABILITY ASSESSMENT - TERRORISM/CYBER-ATTACKS

Translating most manmade hazard profiles into meaningful geospatial information is difficult at best. Terrorist attacks or cyber-attacks could occur anywhere within the city. As such, the entire city is vulnerable to terrorism and cyber-attacks, including all facilities, infrastructure, and systems in the city. Special consideration should be given to areas with high density and those containing vulnerable populations (young, old, and those whose primary language is not English). Facilities at high risk may include gathering places, critical facilities/ transportation, and lifelines and utilities.

Since terrorism can happen anytime, anywhere, 100% of the population is vulnerable to terrorism. In particular, people with access and functional needs, the elderly, and the very young are especially vulnerable because they often rely heavily on others in their daily lives. Persons with English as a second language are also vulnerable as they may not receive warnings or notifications related to an incident in their primary language. AB 1638, passed in 2023, requires emergency response agencies that serve jurisdictions where five percent or more of the population speaks a language other than English to provide information in that language in the event of an emergency. The Chino Hills General Plan Safety Element includes policies related to the education of at-risk and underserved communities, including non-English speakers. Policy Action S-2.1.1 of the Safety Element requires all emergency preparedness information, including printed material, radio broadcasts, video, websites, and other media, is made available in all languages spoken by at least five percent of the population.

CRITICAL FACILITIES EXPOSURE

Critical facilities may include essential facilities (such as hospitals, police and fire stations, evacuation centers, etc.), transportation systems, lifeline utility systems, high potential loss facilities (such as nuclear power plants, dams and military installations, etc.), and hazardous material facilities.

Gathering facilities should also receive special attention. Places of mass gathering not only present terrorists with potential opportunities for mass casualties, symbolism and high impact media coverage, they pose a broad range of security challenges for their owners and operators. The National Counter Terrorism Committee has noted that places of mass gathering have been specifically identified by religious and political extremists as attractive targets. Places of mass gathering incorporate a diverse range of facilities including, but not limited to, sporting venues, shopping and business precincts, tourism/entertainment venues/attractions, hotels and convention centers, major events and public

transport hubs. This also includes significant one- off events.

4.21 VULNERABILITY ASSESSMENT - HIGH WINDS

Given the city's history of high wind events, it is likely high wind events will continue to impact the city. High wind events are likely to continue to coincide with the Santa Ana Winds and extreme storm events throughout the fall and winter. Infrastructure at risk from high wind events include urban trees, power lines, and telephone lines. Older infrastructure and infrastructure that is not frequently inspected and maintained are most at risk.

Populations that are most vulnerable to high wind events include those who are reliant on access to electricity, such as individuals with medical devices, nursing homes, and hospitals. In addition, populations that use landlines and do not have mobile phone devices could be significantly impacted by damaged telephone and power lines as they would this could interfere with access to emergency alerts and emergency response services. Elderly individuals are especially vulnerable in the event of a power outage or disruption of landline service.

CRITICAL FACILITIES EXPOSURE

Critical facilities at risk from high winds may include power and communications infrastructure. Facilities most vulnerable to electricity and communications disruptions include hospitals, nursing homes, and emergency responders.

5.0 COMMUNITY CAPABILITIES

5.1 OVERVIEW

The City of Chino Hills is committed to protecting and maintaining the health, safety and welfare of the community every day and takes extra measures to reduce the impacts of natural or man-made hazards. The City uses various tools, assets, and authorities to effectively prepare for, mitigate, respond to, and recover from emergencies and disasters. These efforts include both voluntary and mandatory measures, individual and community initiatives, private and public actions, as well as preventive and responsive strategies. Example mitigation activities include educating the public, enforcing building and development codes, constructing capital improvement projects, adopting strategic plans, establishing incentive programs, and improving emergency preparedness and response efforts.

The City of Chino Hills is known for its outstanding customer service and responsiveness to the community, fostering a strong and collaborative relationship between local government and the community. The City actively engages with residents to build positive relationships that promote transparency and trust. The capabilities outlined in this section reflect the City's commitment to developing programs and policies that keep the community informed, strong, and resilient. This commitment extends beyond the items listed as the City continuously seeks input, evaluates community needs, and provides resources while maintaining fiscal responsibility.

Engagement efforts include opportunities for the community to engage with the City Council, and the City's Parks & Recreation, Planning, and Public Works Commissions at public meetings, as well as various local committee meetings, public forums, and community workshops. The City also gathers valuable feedback through community-wide surveys to ensure that its goals align with residents' expectations and concerns.

Through the use of strategic plans, tools, and programs, Chino Hills is well-positioned to expand its mitigation activities. As community needs and plan reviews reveal gaps, existing programs are adapted or new programs are developed to better serve residents.

Every California city must adopt a comprehensive, long-term General Plan. The General Plan must cover a local jurisdiction's entire planning area and address the broad range of issues associated with the City's development. The General Plan is the City's constitution or blueprint for its long-range physical development. Through this General Plan, Chino Hills defines a path that recognizes the City's many assets, including its high quality of life, beautiful surrounding hillsides, and excellent location adjacent to State Route (SR) 71.

At the same time, the General Plan addresses the critical issues that Chino Hills will face as it matures and approaches build-out, specifically:

- Are there opportunities for new commercial and employment-generating land uses?
- Where will future growth occur?
- What are the opportunities to enhance the community's sustainability through transit and mixed-use development?
- How will Chino Hills ensure its older and special neighborhoods continue to be maintained?
- How will Chino Hills ensure its special and cohesive community identity is retained?
- How will the City maintain its rural setting?
- How will the City be able to designate space for its State-mandated allocation of housing units under the Regional Housing Needs Assessment?
- Is traffic adequately managed?
- How should the community maintain its open spaces?
- Are there opportunities for additional open space and recreational facilities?
- How can the City support more energy-efficient facilities and practices?

The State of California recommends that the General Plan be updated every 8-10 years; depending mostly on whether or not the plan is meeting the community's needs. The City of Chino Hills General Plan was last updated in 2015 and is currently undergoing an update (expected to be adopted in May 2025). There are seven mandatory elements in a General Plan:

1. Land Use Element
2. Circulation Element
3. Housing Element
4. Conservation Element
5. Safety Element*
6. Parks & Recreation and Open Space
7. Noise Element

*Included in the Safety Element to ensure compliance with Assembly Bill 2911, Assembly Bill 747, and Senate Bill 99 is a scenario-based evacuation analysis, and existing neighborhoods are identified with limited egress. The analysis is an appendix to the Safety Element and was prepared by Kittleson, which helps identify locations where there is a greater potential for traffic congestion and have the need for additional control measures in the event of an evacuation. These scenarios are intended to model a potential range of different evacuation scenarios, but not all possible scenarios. Emergency evacuations can occur due to any number of events and at any location, beyond those specifically identified in the appendix report. In addition, emergency movement is unpredictable, and the specific conditions of an emergency evacuation could result in evacuation behavior that diverges from the assumptions used in

the analysis. This analysis serves only to represent informed estimates of likely potential evacuation scenario footprints and capacity constraints based on available data and does not guarantee that evacuations will follow modeling that is used for analysis purposes. Emergency evacuation assessment is an emerging field, and the legislative requirement does not specify a standard methodology to follow.

In addition to the seven mandatory elements included in the General Plan, the City of Chino Hills also includes an optional Economic Development Element. Through its goals, policies, and actions, this General Plan will guide the City of Chino Hills during the next 20 years with an overriding goal of maintaining the City's high quality of life.

Since the adoption of the 2020 Local Hazard Mitigation Plan, the City of Chino Hills has experienced limited changes in development within hazard-prone areas. The most notable changes involve new residential construction and proposed rezoning within wildfire hazard zones.

- **Wildfire Zones:**

Two residential developments—Serenity Grove (formerly Paradise Ranch, 50 SFR) and Shady View (159 SFR)—are currently under construction in areas already zoned for residential use but located within designated Fire Hazard Severity Zones. These projects increase the number of structures and residents potentially exposed to wildfire risk.

In addition, several parcels, including Canyon Estates, Western Hills Golf Course, and the Wang property, have been identified for increased residential density as part of the City's 2025 General Plan Update. These areas are also located in wildfire hazard zones and the increased density may heighten vulnerability to wildfires.

- **Other Hazards:**

At this time, the City has not identified any changes in development since 2020 that would significantly increase or decrease vulnerability in areas subject to earthquake, flood, dam inundation, drought, high wind, or extreme heat hazards.

- **Cybersecurity and Terrorism:**

Similarly, no known development or operational changes have occurred that would alter the City's vulnerability to manmade hazards such as terrorism or cyberattacks. The City's Information Technology Division continues to maintain strong cyber resilience practices.

Following these development trends and planning priorities, the City continues to assess and improve its hazard mitigation capabilities. Section 5.2 shows the capabilities assessment for Chino Hills. Within each resource described a section titled "Expansion and Improvement" is provided, which helps the City recognize specific areas where each capability may be modified to align with mitigation priorities and actions to be taken in the future.

5.2 PLANNING AND REGULATORY CAPABILITIES

Hazard	Plan/Program /Regulation	Responsible Dept./Agency	Comments
Multi-Hazard	California Building Codes	Community Development	The California Building Code is the building code of the City for regulating the erection, construction, enlargement, alteration, repair, moving, removal, demolition, conversion, occupancy, equipment, use, height, area, and maintenance of all buildings and/or structures in the City (Ord. No. 306, § 2, 12-13-2016). The California Building Code 2019 Edition Volumes 1 and 2 including Appendix Chapters "C," "F," "H," and "J," are adopted by reference, subject to amendments. The California Building Code and its appendix chapters are on file for public examination in the office of the City Clerk or on the City website. Expansion and Improvement: Adherence to building codes, including local regulations, helps manage growth and control land use patterns. As codes are updated, they address known hazards, reducing risks and potentially minimizing losses. Rather than referencing a specific adopted version, it may be more effective to refer to the “adopted Title 24 Building Standards,” as these standards are updated every three years.
Multi-Hazard	Land Use Designations	Community Development	The Land Use Element establishes the primary basis for the zoning provisions within Title 16 of the Chino Hills Municipal Code (“Municipal Code”). As required by California Government Code §65860, all zoning must be consistent with the General Plan. An action, program, or project is considered consistent with the General Plan if it supports or furthers the objectives and policies of the General Plan and not obstruct the attainment of those objectives and policies.

			Expansion and Improvement: Focus on balancing community needs and ensuring compatibility of uses and development patterns.
Multi-Hazard	Overlay Districts	Community Development	The City identified overlay districts and established policies for these districts through the 1994 General Plan and the Municipal Code. These overlay districts included Biotic Resources, Geologic Hazard, Fire Hazards, Small Lot, and Scenic Resources. Each overlay district was created to implement policies relative to special land uses and environmental or safety conditions. Of the original overlay districts, six remain relevant and are carried forward in the 2015 and 2025 General Plan Update. In addition, a new overlay district, Equestrian and Large Animal Overlay, was created in 2014 and added to the City's General Plan. Expansion and Improvement: Continue to reevaluate and assess overlay district relevance upon each General Plan update.
Drought	Urban Water Management Plan	Public Works	The 2020 Urban Water Management Plan (UWMP) may help define water delivery and water security. Expansion and Improvement: The UWMP and HMP will be aligned in describing and developing mitigation actions to address climate change and drought. Water demand reduction strategies contained in the UWMP will continue to be considered for inclusion as mitigation activities in the HMP.

Drought	Water Supply Contingency Plan	Public Works	The 2020 Water Supply Contingency Plan was developed by the Chino Hills Public Works Department in the event of an extreme water shortage due to an extended drought. It is a part of the UWMP and has been accepted by the State. Expansion and Improvement: Replace critical infrastructure as needed.
Drought	Water Conservation Ordinance	Public Works	The 2017 Water Conservation Ordinance increased water efficiency standards for new and retrofitted landscapes through more efficient irrigation systems, greywater usage, onsite storm water capture, and limiting the portion of landscapes that can be covered in turf. Expansion and Improvement: Continue to update the Water Conservation Ordinance as needed to increase water efficiency standards in the City.
Drought	California Drought Contingency Plan	California Department of Water Resources	Section VI provides an overview of drought preparedness strategies from the California Water Plan Update (see separate entry). Section VII provides a brief description of local, utility, and State agency drought response roles. Situation and assessment reports will be distributed to appropriate agencies and will be posted on the Department of Water Resources drought website (water.ca.gov/drought). Expansion and Improvement: The California Drought Contingency Plan and HMP will be aligned in describing and developing mitigation actions to address climate change and drought. Water demand reduction strategies contained in the California Drought Contingency Plan should be considered for inclusion as mitigation activities in the HMP.

Flood	Flood Resistant Construction	Public Works	The City of Chino Hills adopted building code 1512 to ensure the City remains compliant with California Building Codes, which stipulate existing Flood Resistant Construction standards. Expansion and Improvement: Continue to incorporate most current California Building Codes to remain compliant with Flood Resistant Construction standards.
Flood	Floodplain Ordinance	Public Works	The City of Chino Hills created a Floodplain Ordinance in 2023 to align with the National Flood Insurance Program (NFIP) requirements. Expansion and Improvement: Provide education on NFIP to residents in flood-prone areas.
Flood	NFIP Community Rating System	Public Works	The NFIP's Community Rating System (CRS) is a voluntary program created by the Federal Emergency Management Agency (FEMA) which began in late 1989 with the first communities entering the program in 1990. The CRS program provides reduced flood insurance premiums for policyholders in communities that go above and beyond the base requirements of the NFIP which also helps to better protect residents from the effects of damaging floods. Expansion and Improvement: Continue to provide education on NFIP to residents in flood-prone areas.
Earthquake	Geologic Hazard Overlay District	Community Development, City Manager's Office	The Geologic Hazard Overlay District applies to the Chino Hills fault hazard zone, as delineated in the General Plan Safety Element. The Geologic Hazard Overlay District standards and requirements are also applied to areas where landslides, liquefaction hazards, and other geologic hazards are known or suspected to occur, as identified in the General Plan Safety Element. (Ord. 68 § 9.51.020, 1995)

			Expansion and Improvement: Update Geologic Hazard Overlay District information as new and pertinent information becomes available.
Wildfire	Fire Hazard Overlay District	City of Chino Hills	To mitigate wildfire impacts, the City adopted a Fire Hazard Overlay District, establishing enforceable policies that are carried over in the updated goals, policies and actions of the 2025 General Plan Safety Element. Expansion and Improvement: Cal Fire has revised mapping for the Local Responsibility Area (LRA) fire hazard severity zones. The City will be required to adopt and amend the Fire Hazard Overlay District. Based on the State's findings, the City will not be able to shrink the designated areas; however, it could add to them, similar to what the City currently has with the Fire Hazard Overlay District.
Wildfire	Carbon Canyon Community Wildfire Protection Plan (CWPP)	Carbon Canyon Fire Safe Council	The City of Chino Hills participates in the Carbon Canyon Community Wildfire Protection Plan (CWPP). The CWPP identifies and prioritizes areas for hazardous fuel reduction treatments and recommends the methods of treatment that will mitigate impacts from wildfires on Carbon Canyon (a high-risk wildland fire area within Chino Hills). Expansion and Improvement: Consider creating a city-wide Wildfire Protection Plan since there are areas outside of Carbon Canyon that would also benefit.
Wildfire	Wildland Protection Agreement	Chino Valley Fire District	The Chino Valley Fire District contracts with CAL FIRE for wildland fire protection services for 12,000 acres in Chino Hills. This includes 4,027 acres of wildland area within Chino Hills State Park. Expansion and Improvement: Collaborate with California State Parks regarding Chino Hills State Park and Chino Valley Fire District to enforce the Wildland Protection Agreement.

Climate	City of Chino Hills General Plan Update	Community Development	The City's General Plan contains a "Conservation Element" to ensure all aspects of conservation, including climate change, are included in current and future development plans and projects. Expansion and Improvement: The HMP will be informed by referencing the Safety Element of the General Plan. The City will adopt the approved HMP as part of the General Plan Safety Element to meet the requirements of AB 2140.
Multi-Hazard	City Emergency Operations Plan	City of Chino Hills	This Emergency Operations Plan (EOP) explains how the City will respond to a major emergency or disaster and coordinate between the Emergency Operations Center (EOC) and field-level Incident Commanders. The EOP includes the hazards with a description of each, the concept of operations during a major emergency or disaster, the role of the EOC, and the coordination that occurs between the EOC and City's departments and other local, state, and federal governments in times of disaster. Expansion and Improvement: Continue to Inform the hazard section of the EOP using hazard data from the HMP, as the two are closely correlated.
Climate	Climate Action Plan	Community Development	The City cooperates with regional agencies to develop and implement the policies of the Climate Action Plan, which are expected to achieve a reduction of Green House Gas emissions. The Conservation Element of the City's General Plan sets forth these policies to align with the Climate Action Plan and any current and expected future City activities. Expansion and Improvement: The City continues to monitor The County of San Bernadino's Climate Action Plan thresholds to ensure Chino Hills meets the goals of greenhouse gas reduction.

Terrorism/ Cyber- Attack	City of Chino Hills 2025 General Plan Update - Safety Element	City Manager's Office	The Chino Hills Police Department has a dedicated Terrorism Liaison Officer on staff. The Police Department actively educates the public on how to respond during an active shooter incident, and to recognize the signs of terrorist activities to encourage reporting them. The City's Information Technology Division has implemented the following mitigating actions against a possible cyber-attack: • Enhanced current security system(s) and maximized security controls by eliminating unnecessary services and monitoring privilege settings. • Ensured all software receives security updates promptly and scheduled regular scans of the City network. • Protected sensitive or malicious inbound/outbound data with a firewall and remains vigilant with log monitoring. Expansion and Improvement: Strengthen the relationship between the City and Chino Hills Police Department to provide staff and the public with the most up-to-date terrorism/cyber security information.
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5.3 ADMINISTRATIVE AND TECHNICAL CAPABILITIES TABLE

Staff/Personnel Resources	Responsible Dept. / Agency	Comments
Planners or Engineers (with land use/land development knowledge, natural and/or man-made hazards knowledge)	Public Works, Community Development	The Community Development Department is responsible for playing a critical role in achieving the City Council's goals and objectives relative to land use, urban design, and the quality and sustainability of the built environment. The Department conducts site plan reviews for residential, commercial, and manufacturing developments. They also process conditional use permits, variances, zoning changes, and General Plan amendments. Expansion and Improvement: Integrate mitigation actions and strategies into the Capital Improvements Program and annual budgeting.
Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors)	Public Works, Community Development	The Community Development Department is responsible for overseeing, planning, designing, and implementing infrastructure projects. Expansion and Improvement: Integrate mitigation actions and strategies into the Capital Improvements Program and annual budgeting.

Floodplain Management	Community Development	The City Building Official is responsible for the administration of the National Flood Insurance Program (NFIP) Floodplain for the City. Expansion and Improvement: Utilize code compliance as a means of incorporating mitigation into new projects conducted by residents and businesses.
Land / Building surveyors	Community Development	The Community Development Department uses contract services for land surveying. Expansion and Improvement: Provide opportunities for continued education to Community Development staff to maintain state-of-the-art knowledge of new code and regulatory requirements.
Grant writers or fiscal staff to handle large/complex grants	Public Works, Community Development, City Manager's Office	Various City departments obtain grants for mitigation projects. The City Manager's Office receives an Emergency Management Performance Grant (EMPG) for emergency management staff. The City also retains an outside grant writing agency to assist with grant applications and management, as needed. Expansion and Improvement: Look for and assess

		opportunities for new grant funding.
City Clerk's Office/Records Management	City Clerk's Office	The City Clerk's Office is responsible for all City records management, supervising and coordinating City Elections, preparing and updating the City's Conflict of Interest code, filings, responding to public records requests, processing passports, and directing the retention and destruction of official records in accordance with applicable laws and regulations. Expansion and Improvement: Prioritize new initiatives at the local level that support mitigation activities within the City.
Communications	City Manager's Office	In the City Manager's Office the Community Relations Division is responsible for delivering all emergency communications in multiple languages across numerous communication platforms (website, local PEG Cable TV, social media, text messages, emails, and emergency hotline), and serves as the main point of contact with the news media. Division personnel conduct public outreach for all City departments, as needed.

		Expansion and Improvement: Continues to strengthen relationships with City Departments, residents, community organizations, and businesses, and provide effective communication platforms to meet the critical need for transparent accurate, and timely delivery of emergency messaging to the public.
Care and Sheltering	City Manager’s Office, Community Services, American Red Cross, Inland Valley Humane Society & S.P.C.A.	The City’s Community Services Division has been trained in Care and Sheltering Operations. The City partners with the American Red Cross for sheltering operations, and Inland Valley Humane Society & S.P.C.A. for animal sheltering during times of disaster. Expansion and Improvement: Maintain relationships with American Red Cross and Inland Valley Humane Society & S.P.C.A. to stay informed of current human and animal care and sheltering processes.

Public Safety	Chino Hills Police Department/San Bernardino County Sheriff's Department	The Chino Hills Police Department is tasked with protecting life and property while preserving peace. This department is responsible for responding to emergencies, investigating criminal activity, conducting emergency preparedness activities, traffic control, and executing evacuations. Expansion and Improvement: Continue to foster collaboration between the City and law enforcement to work together to protect the community.
Emergency Management	City Manager's Office	The City Manager's Office, is responsible for developing , coordinating, and managing programs that prevent, prepare for, respond to, recover from, and mitigate natural and human-caused disasters and emergencies. Expansion and Improvement: Continue to obtain the most current and relevant emergency management training and education.

Fire Department	Chino Valley Fire District	Chino Valley Fire District serves the communities of Chino, Chino Hills, and surrounding unincorporated areas of San Bernardino County. They provide fire suppression, paramedic, and inspection services along with urban search and rescue, swift water rescue, and hazardous materials response. They also offer CPR and AED training. Expansion and Improvement: Continue to foster collaboration between the City and Fire District to work together to protect the community.
Public Works	Public Works	The Public Works Department is responsible for the operation and maintenance of the City's vital infrastructure which includes streets, sidewalks, parks, landscaping, water & sewer services, water quality, storm drains, and public facilities. Expansion and Improvement: Improve the understanding of the role that daily activities play in hazard mitigation.

City Attorney	City Manager's Office	The City Attorney is responsible for reviewing and approving resolutions and ordinances and providing legal direction for risk management and possible litigation. Expansion and Improvement: Provide opportunities for the City Attorney to review updates to regulatory information and provide expert review of City resolutions and ordinances that may address hazard mitigation.
Human Resources	City Manager's Office	The Human Resources Division is responsible for plans, coordination, and administration of a comprehensive human resources management program for the City of Chino Hills and its employees. This includes the recruitment and retention of highly qualified employees, organizational and employee development, employee/labor relations, and maintaining competitive employee compensation. In addition, the Division administers the City's workers' compensation and employee safety programs. Expansion and Improvement: Continue to train and educate employees on their roles as disaster service workers and in the Emergency Operations

		Center, and expand the City's Safety Committee training.
Risk Management	City Manager's Office	The City Manager's Office is responsible for identifying, evaluating, and managing the City's risk and liability programs. This includes claims administration, cost recovery, the maintenance of liability/insurance coverage as well as compliance with governmental regulation. Expansion and Improvement: Increase knowledge and information through better data collection and tracking to avoid risks.

Information Technology	City Manager's Office	The Information Technology (IT) Division is responsible for supporting all City departments with reliable software, computers, and information systems. The most critical support required of IT is the acquisition and maintenance of citywide technology infrastructure, network and server architecture, business applications, communication systems, desktop computing, and print management. The IT Division provides short- and long-term direction in planning, researching, selecting, and deploying future technologies. Expansion and Improvement: Increase system redundancy and resiliency through improvements to technology and connectivity.
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Financial Services	Finance	The Finance Department is responsible for maintaining reliable accounting, payment of bills, financial reporting, preparation of the annual budget, prudent fiscal planning, payroll processing, debt administration, and City investments. Expansion and Improvement: Assist with key mitigation activities associated with cost tracking hazard events and disasters, identifying grant funding opportunities, grant reporting and administration, and establishing financial risk calculations that can help assist with the budgeting of operations, maintenance, and capital improvements.
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Planning Commission	Community Development	The members of the City’s Planning Commission are appointed by the City Council to advise them on site plan reviews, residential design reviews, design and development standards, and to make General Plan conformity findings on City land sales, as well as provide recommendations regarding amendments to the Development Code and General Plan. The Commission may be responsible for implementing mitigation items pertaining to the Commission's scope. Expansion and Improvement: Provide continued education opportunities to members of the Planning Commission to maintain current & pertinent knowledge of new code and regulatory requirements.
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GIS	City Manager's Office	The City's GIS staff is responsible for , providing complex mapping and data management of City facilities, land use, and potential hazards. GIS Staff support visualization of complex data sets using geo-location and data correlation. Expansion and Improvement: Acquire and conduct training for GIS staff on the latest versions of ArcGIS.
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5.4 EDUCATION AND OUTREACH CAPABILITIES

Staff/Personnel Resources	Responsible Dept. / Agency	Comments
San Bernardino County Emergency/Disaster Readiness website sbcfire.org/oes	San Bernardino County OES	The San Bernardino County Fire website has educational material on making an emergency plan, stocking supplies, staying informed, and getting involved. Expansion and Improvement: Provide links to the County website on the City's website. Conduct outreach on City social media platforms and provide a link to the appropriate County website page.

City of Chino Hills Website - Emergency Management Content chinohills.org/EmergencyPreparedness	City Manager's Office	This is a one-stop shop for emergency preparedness information. The public can learn what types of hazards they can expect to face in Chino Hills, what to do in an emergency, and where to go to obtain critical emergency information and stay connected. Expansion and Improvement: Continue to update the website to reflect the most current emergency preparedness information.
Chino Hills National Night Out	City Manager's Office	National Night Out is a community-oriented program where neighbors get together to promote neighborhood watch, strengthen their ties to the City and public safety, and increase crime prevention awareness. Expansion and Improvement: Include new informational handouts for National Night Out events focusing on family and individual preparedness and advertise mitigation activity success stories.

Chino Hills Emergency Preparedness Workshop	City Manager's Office	Every September the City hosts an Emergency Preparedness Workshop to increase community readiness and teach the importance of this shared responsibility to prepare for all types of hazards. Expansion and Improvement: Expand informational booths to include new vendors and increase resident participation.
Government Emergency Telephone System	City Manager's Office	As Disaster Service Workers/Responders, the City utilizes the Government Emergency Telephone System (GETS) to assist employees with reporting to City management in the event of Emergency Operations Center activation. Expansion and Improvement: Continue to enroll new employees in the GETS program, provide training on GETS and how to conduct calls, and ensure staff conduct monthly test GETS calls.

Notify Me	City Manager's Office Chino Hills Police Department/ San Bernardino County Sheriff's Department Chino Valley Fire District	Residents in Chino Hills can register to receive emergency alerts as an email or text message from the City, Police Department, and the Fire District when it relates to active fires or evacuations. Alerts are also posted for major Citywide road closures. Expansion and Improvement: Continue to provide education on Notify Me to residents, and encourage residents to sign up or update their profiles quarterly.
Chino Hills Auxiliary Radio Team	City Manager's Office	The City recruits and maintains a Chino Hills Auxiliary Radio Team (CHART). This group is an amateur radio communications team with the responsibility to provide emergency communications should regular methods be disrupted and/or damaged due to a disaster. Expansion and Improvement: Develop an outreach plan to recruit new volunteers for CHART.

Southern California Edison Website – Public Safety Power Shutoffs sce.com/PSPS	Southern California Edison	Southern California Edison (SCE) is the power provider for Chino Hills and has educational material on their website for Public Safety Power Shutoffs (PSPS) that can be executed in times of extreme fire danger and Red Flag Warnings. Expansion and Improvement: Continue to provide education to the public on PSPS events and how to sign up for PSPS alerts.
Southern California Edison Website- Microgrid Incentive Program sce.com/partners/partnerships/microgrid-incentive-program	Southern California Edison	California’s investor-owned utilities (Pacific Gas and Electric Company, San Diego Gas and Electric, and Southern California Edison) are preparing to launch a new program to help provide clean, local energy to communities that need it most. The Microgrid Incentive Program (MIP) is a competitive grant program providing \$200M in funding to communities facing outages, power shutoffs, and other events driven by climate change. Expansion and Improvement: Apply for the MIP for City projects that qualify and provide education to the public on how the MIP may benefit them.

Emergency Preparedness Education ready.gov	U.S. Department of Homeland Security	The U.S. Department of Homeland Security has a website to provide readiness information, preparedness tips, and education for all hazards. Expansion and Improvement: Continue to provide residents education on current preparedness, mitigation, and response guidelines.
California Office of Emergency Services (CAL OES) Emergency Preparedness Education caloes.ca.gov	California Office of Emergency Services (CAL OES)	The California Governor’s Office of Emergency Services and the California Office of Emergency Services has a website to provide readiness and preparedness tips and education for all hazards. Expansion and Improvement: Continue to provide residents education on current preparedness, mitigation and response guidelines.

5.5 LOCAL FISCAL CAPABILITIES

Financial Resources	Responsible Dept. / Agency	Comments
General Fund Revenue	All City of Chino Hills Departments	The City's main fund is the General Fund, which primarily comes from taxes, and accounts for all revenue not required to be placed in another fund. The budget is balanced and provides the funds necessary to carry out City programs and cover operating costs. Expansion and Improvement: There is not a dedicated budget line for items for hazard mitigation. Continue to request funds for hazard mitigation projects during the annual budgeting process using funding from the general fund.
Capital Improvements Program (CIP)	City Council, Public Works or Other	CIPs should have infrastructure improvements with mitigation benefits. Most improvements have some degree of hazard mitigation benefits. Expansion and Improvement: Train staff on the cost-benefit of infrastructure mitigation.

Permitting Fees	Community Development	Permitting fees cover the costs to provide development, planning, and building and safety services. Expansion and Improvement: The permitting fees may cover some of the costs for service during disaster recovery.
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General Fund Unrestricted Reserve	All City of Chino Hills Departments	The City’s budget includes our General Fund unrestricted reserve which serves as a rainy- day fund for unforeseen circumstances and emergencies. Expansion and Improvement: Where permissible, the reserve may be considered during the annual budgeting process for funding mitigation projects.
Utility Funds	Finance	The City’s Utility Funds are a positive fund budget covering both water and sewer services. Expansion and Improvement: Where permissible, the reserve may be considered during the annual budgeting process for funding mitigation projects.
State and County Community Development Block Grants (CDBG)	California Department of Housing and Community Development Department (HCD)	Programs Include: Community Development (CD) Economic Development (ED) Disaster Recovery Initiative (DRI) Neighborhood Stabilization Program (NSP) Expansion and Improvement: Where applicable, CDBG grants should be used to fund mitigation projects that enhance the resiliency of low-income and underserved communities.

Hazard Mitigation Grant Program (HMGP)	City Manager's Office	Provides support for pre- and post-disaster mitigation plans and projects. Expansion and Improvement: Monitor and track opportunities on the Cal OES mitigation website to initiate applications for grant funding.
Building Resilient Infrastructure and Communities (BRIC)	Grant Funding	Provides support for pre-disaster mitigation plans and projects. Expansion and Improvement: Train staff on notice of intent (NOI) procedures and track opportunities on the Cal OES mitigation website to initiate applications for grant funding.
Flood Mitigation Assistance Grant Program (FMA)	Grant Funding	Mitigates structures and infrastructure that have been repetitively flooded. Expansion and Improvement: Train staff on notice of intent (NOI) procedures and track opportunities on the Cal OES mitigation website to initiate applications for grant funding.

5.6 SAN BERNARDINO COUNTY CAPABILITIES

The following sections summarizes San Bernardino County programs and capabilities by hazard type. Understanding these current County capabilities is essential for developing effective City mitigation activities and implementation strategies. Recognizing these County capabilities may help reduce duplication of efforts at the local level. The examples in the following tables provide details on possible County capabilities that jurisdictions can coordinate with or use as implementation mechanisms for local mitigation activities.

5.7 MULTI-HAZARD CAPABILITIES

Table 57 Planning and Regulatory Mitigation Capabilities Summary

Hazard	Plan/Program/Regulation	Responsible Dept./Agency	Comments
Multi-Hazard	Mountain Mutual Aid	Fire District	Mountain Mutual Aid is an operational group of emergency responders. It is comprised of all the agencies and volunteer relief groups that would be and have been involved in any and all disasters on the mountain. Note: Their main and most frequent call to service is in response to a wildfire. They meet monthly and maintain themselves in a constant state of readiness. Expansion and Improvement: Continue outreach and recruitment of new volunteers in the operational area.

5.8 COUNTY WILDFIRE MITIGATION PROGRAMS

The County of San Bernardino has a comprehensive set of programs to mitigate the potential for catastrophic wildfires in the nation. San Bernardino County has a strong history of comprehensive, multi-agency cooperation and coordination in.

WILDFIRE MITIGATION PROGRAMS

Hazard	Program	Responsible Dept./ Agency	Comments
Wildfire	Community-Based Fuels Reduction Program	Fire District	This program is designed to create Community-Based Fuels Reduction programs across the mountain communities. For more information see the County OES website or Hazard Mitigation Plan. oes.sbcounty.gov/
			Expansion and Improvement: Educate the public on the benefits of participating in the Community-Based Fuels Reduction Program.
Wildfire	Fire Hazard Abatement	Fire District	The Fire Hazard Abatement is designed to reduce the potential for an individual's property to be the source of fire and structural ignitability. Expansion and Improvement: Educate the public on the benefits of weed abatement programs in reducing the risk of wildfires.
Wildfire	Southern California Edison	Southern California Edison	SCE removes dead trees near power lines to reduce fire hazards. For more information see the sce.com/wildfire/situational-awareness Expansion and Improvement: Strengthen relationships with local SCE partners.

Wildfire	Inland Empire Fire Safe Alliance	Inland Empire Fire Safe Alliance	The Alliance was created to act as a forum for all Fire Safe Councils in San Bernardino County. For more information see the County OES website or Hazard Mitigation Plan. oes.sbcounty.gov/ Expansion and Improvement: Strengthen the relationship between our local Carbon Canyon Fire Safe Council and other Fire Safe Alliance groups.
Wildfire	Community Wildfire Protection Plans (CWPP)	Fire District	CWPPs are designed to provide a means for a community to have input into and actively participate in the planning, strategy, goals, and objectives of creating a fire-safe community. For more information see the County OES website or Hazard Mitigation Plan.
			Expansion and Improvement: The City should develop and adopt a CWPP. oes.sbcounty.gov/
Wildfire	Organized Group Volunteer Activities	Fire District	There are several volunteer citizen groups throughout the County that can provide significant resources that are not provided by traditional governmental agency services. For more information see the County OES website or Hazard Mitigation Plan. oes.sbcounty.gov/ Expansion and Improvement: Provide public with information on how to become a volunteer explorer with the County Fire District.

5.9 EDUCATION AND OUTREACH CAPABILITIES

The flood mitigation programs were established by San Bernardino County Flood Control District to protect life and property. These programs are typically designed to mitigate flood hazards to life and property, and critical infrastructure. Also, these programs can be used as a public education and information capability for local jurisdictions.

County Flood Mitigation Programs

Hazard	Program	Responsible Dept./Agency	Comments
Flood	Flood Area Safety Taskforce (FAST)	Flood Control District	The FAST Organization stresses liaison with the communities, provides for community education and information, and places an emphasis on community and city partnerships. For more information see the County OES website or Hazard Mitigation Plan. Expansion and Improvement: Strengthen relationships with other local FAST partners. oes.sbcounty.gov/
Flood	Alluvial Fan Task Force	Alluvial Fan Task Force	The Alluvial Fan Task Force reviews current information regarding alluvial fan floodplains, determines future research needs, and, if appropriate, develops recommendations relating to alluvial fan floodplain management, with an emphasis on alluvial fan floodplains that are being considered for development. For more information see the County OES website or Hazard Mitigation Plan. Expansion and Improvement: Strengthen relationships with other local area Alluvial Fan Task Force partners.
Flood	Storm Ready	Flood Control District	San Bernardino County is a StormReady County, meaning the county has taken flood preventative measures. For more information see the County OES website or Hazard Mitigation Plan. Expansion and Improvement: Educate residents on StormReady program and preparedness actions.

5.10 SAN BERNARDINO PUBLIC EDUCATION AND ALERT PROGRAMS

San Bernardino County Fire District hosts a number of different public education and alert programs.

Public Education and Alert Programs

Hazard	Program	Responsible Dept./Agency	Comments
Multi-Hazard	Emergency Alert System (EAS)	San Bernardino County	EAS is administered by the Sheriff of San Bernardino County and the Operational Area. Activation of the San Bernardino County EAS is before emergency events and conditions of concern to a significant segment of the population of the County. The message must be a voice message. It must originate from the Sheriff's Communications Center or the County Operational Area Emergency Operations Center. Expansion and Improvement: Regularly update EAS system with current resident information and test system on a regular basis.
Multi-Hazard	Telephone Emergency Network System (TENS)	Chino Hills Police Department/ San Bernardino County Sheriff's Department	TENS automates the calling process to send voice and text messages by phone, pager, cell, and/or e-mail to thousands of residents and businesses within minutes to alert them of an immediate threat and/or evacuation order. Expansion and Improvement: Regularly update TENS system with current resident information and test system on a regular basis.

Multi-Hazard	Ready SB County	San Bernardino County Fire Office of Emergency Services	Ready SB County is a mobile application created through the San Bernardino County Office of Emergency Services. The app provides residents with multiple resources to assist them in preparing for a disaster. Ready SB County is a free download from the Apple App or Google Play Store and can immediately help residents prepare themselves for emergencies. Expansion and Improvement: Educate the public on the benefits of the ReadySB app and how to use the app in the event of an emergency to obtain current information.
Multi-Hazard	Smart911	Chino Hills Police Department/ San Bernardino County	Smart911 provides residents with public safety information during an emergency. The app also allows residents to provide information regarding pets in their homes and information on any access and functional needs they may have and require assistance with during an emergency.
		Sheriff's Department	Expansion and Improvement: Educate the public on the benefits of Smart 911 and how to use the app in the event of an emergency to obtain the most up to date information.

5.11 STATE AND FEDERAL FISCAL RESOURCES

To augment local resources, the table in this section provides a list of potential funding programs and resources provided by state and federal agencies and programs which can be used for local hazard mitigation activities.

Grant Funding

The City of Chino Hills utilizes grant funding for its mitigation and emergency preparedness programs. Below are examples that have been used in the past for mitigation projects:

- Emergency Management Performance Grant Program (EMPG)
- Homeland Security Grant Program (HSGP)
- Hazard Mitigation Grant Program (HMGP)
- Fire Prevention and Safety Grants
- Pre-Disaster Mitigation (PDM) Program

- Fire Management Assistance Grants (FMAG) Program
- State & Local Cybersecurity Grant Program

Potential Funding Programs/Grants from State and Federal Agencies

Agency / Grant Name	Potential Programs/Grants
California Department of Water Resources (DWR) California DWR Proposition 84 Integrated Regional Water Management (IRWM) Program	<i>DWR has a number of IRWM grant program funding opportunities. Current IRWM grant programs include planning, implementation, and stormwater flood management.</i> Proposition 84, the Safe Drinking Water, Water Quality, and Supply, Flood Control, River and Coastal Protection Bond Act, provides \$20,000,000 (P.R.C. §75001-75130) for IRWM Planning and Implementation. CA Dept. of Water Resources' Flood Emergency Response Projects are posted on the webpage at:
California Grants Portal	The California Grants Portal is a project by the California State Library that provides a list of grants and loans offered by California state agencies. Grant topics on the California Grants Portal include: Environment & Water, Disadvantaged Communities, Education, Health & Human Services, Housing, Community & Economic Development, Parks & Recreation, Employment, Labor & Training, Agriculture, Business, Individual & Nonprofit. grants.ca.gov
United States Department of Energy - Grant, Loan and Financing Programs	The U.S. Department of Energy supports a number of grant, loan and financing programs related to energy efficiency and renewables. Project selections are merit-based with an emphasis on potential energy, environmental, and economic benefits. energy.gov/funding-financing

California Housing and Community Development (HCD) Emergency Solutions Grant (ESG) Program	The California Housing and Community Development (HCD) Emergency Solutions Grant (ESG) Program aims to fund projects that serve homeless individuals and families with supportive services, emergency shelter/transitional housing, assisting persons at risk of becoming homeless with homelessness prevention assistance, and providing permanent housing to the homeless population. The Homeless Emergency Assistance and Rapid Transition to Housing (HEARTH) Act of 2009 places new emphasis on assisting people to quickly regain stability in permanent housing after experiencing a housing crisis and/or homelessness. hcd.ca.gov/grants-and-funding/programs-active/emergency-solutions-grants
California State Office of Historic Preservation (OHP) / Statewide Historic Preservation Plan	California State Office of Historic Preservation's Local Government Unit (LGU) offers guidance and assistance to city and county governments to preserve historic properties including damage from natural hazards.
United States Department of Energy / Energy Efficiency and Conservation Block Grant Program	Provides funding for weatherization of structures and development of building codes/ordinances to ensure energy efficiency and restoration of older homes. 1.eere.energy.gov/wip/eeecbg.html
Department of Homeland Security (DHS) / FEMA Grants	FEMA offers a variety of grants such as Flood Mitigation Assistance, Emergency Operations Center (EOC) Grant Program, Homeland Security Grant Program (HSGP), and Building Resilient Infrastructure and Communities (BRIC). For more information on current grants visit: fema.gov/grants
Office for Victims of Crime: Antiterrorism and Emergency Assistance Program (AEAP)	The Office for Victims of Crime supports communities responding to terrorist attacks and cases of mass violence. The AEAP Assistance Programs include crisis response, consequence management, criminal justice support, crime victim compensation and training and technical assistance. More information can be obtained at: ovc.gov/AEAP

Homeland Security Targeted Violence and Terrorism Prevention Grant Program	The Targeted Violence and Terrorism Prevention (TVTP) Grant Program provides funding for state, local, tribal, and territorial governments; nonprofits; and institutions of higher education to establish or enhance capabilities to prevent targeted violence and terrorism. The Center for Prevention Programs and Partnerships (CP3) and the Federal Emergency Management Agency (FEMA) administer the program. It is the only federal grant program Solely dedicated to helping local communities develop and strengthen their capabilities in this area. Since 2020, the TVTP Grant Program has provided nearly \$90 million across five funding cycles via 178 awards, training 38,250 people, and reaching 28,418 people across 41 states and the District of Columbia. dhs.gov / tvtpgrants
California Proposition 4 The Water Bond (AB1471)	Authorize \$3.8 billion in general obligation bonds for state water supply infrastructure projects, such as public water system improvements, surface and groundwater storage, drinking water protection, water recycling and advanced water treatment technology, water supply management and conveyance, wastewater treatment, drought relief, emergency water supplies, and ecosystem and watershed protection and restoration. The State Water Resources Control Board (State Water Board) will administer Proposition 1 funds for five programs. The estimated implementation schedule for each is outlined in Five Categories: ▪ Water Recycling ▪ Drinking Water ▪ Stormwater Groundwater Sustainability

Assistance to Firefighters Grant Program (AFG); Fire Prevention and Safety (FP&S)	The primary goal of the FP&S Grants is to enhance the safety of the public and firefighters with respect to fire and fire-related hazards. The Grant Programs Directorate administers the FP&S Grants as part of the AFG Program. FP&S Grants are offered to support projects in two activity areas: 1). Fire Prevention and Safety (FP&S) Activity Activities designed to reach high-risk target groups and mitigate the incidence of death and injuries caused by fire and fire-related hazards. 2). Research and Development (R&D) Activity. To learn more about how to prepare to apply for a project under this activity, please see the FP&S Research and Development Grant Application Get Ready Guide. fema.gov/fire-prevention-safety-grants
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NATIONAL FLOOD INSURANCE PROGRAM

Chino Hills participates in the National Flood Insurance Program (NFIP), which was created by Congress in 1968 to provide flood insurance at subsidized rates to homeowners who live in flood-prone areas. Individual communities have the option to participate in the NFIP, although property owners who live in nonparticipating communities with flood-prone areas will not be able to buy flood insurance through the program. Additionally, nonparticipating communities with mapped floodplains cannot receive federal grants or loans for development activities in flood-prone areas and cannot receive federal disaster assistance to repair flood-damaged buildings in mapped floodplains. Although participation is not a dedicated hazard mitigation action, Chino Hills will continue to participate in NFIP and comply with the program’s requirements.

MITIGATION GOALS

This section presents mitigation goals and objectives identified to reduce or avoid long-term vulnerabilities to the identified hazards. The planning Team reviewed the mitigation goals and objectives from the 2020 HMP to ensure alignment with the updated risk assessment, community vulnerabilities, and capability gaps identified in this 2025 update. Some mitigation measures from the 2020 HMP were retained where they remain relevant, effective, and not yet fully implemented. As a result, several existing goals were refined, and new goals were developed to address evolving hazards, climate-related impacts, and public input.

These goals reflect the hazards that pose the greatest threat to the City of Chino Hills, including wildfire, earthquake, drought, flooding, and extreme heat. Each goal is supported by measurable objectives and mitigation actions designed to reduce or eliminate risk, improve long-term resilience, and strengthen emergency response capabilities. These were developed based on the risk assessment findings in Section 4, the capabilities assessment in Section 5, and community

feedback.

5.11.1 ALL HAZARDS EMERGENCY PREPAREDNESS GOALS

GOAL 1: INCREASE THE EMERGENCY MANAGEMENT CAPABILITY OF THE CITY OF CHINO HILLS.

OBJECTIVE 1: Enhance and expand the disaster preparedness programs and provide outreach to the public to encourage community preparedness through workshops and events.

OBJECTIVE 2: Seek to update information on natural, environmental, and man-made hazards, as well as vulnerabilities and mitigation measures by coordinating planning efforts and creating partnerships with appropriate local, county, state, and federal agencies.

OBJECTIVE 3: Enhance and expand Emergency Operations Center training for all staff.

MITIGATION MEASURES

- Coordinate with Southern California Edison to create and maintain a database of residents with special access and functional needs for a more comprehensive evacuation response plan.
- Provide an annual emergency training exercise to improve readiness of the City's Emergency Operations Center staff.
- Test City response capabilities by promoting and participating in the annual Great American Shakeout Exercise.
- Provide SEMS and NIMS training to all new City employees who have a role in the Emergency Operations Center.
- Update the City's Emergency Operations Plan on a consistent basis.

GOAL 2: PROTECT THE CONTINUITY OF LOCAL GOVERNMENT TO ENSURE NO SIGNIFICANT DISRUPTION OF SERVICES DURING OR DUE TO A DISASTER.

OBJECTIVE 1: Protect and sustain redundant and reliable local emergency operations and communication facilities during and after disasters.

MITIGATION MEASURES

- Continue to work with the planning team to develop business continuity plans for the city.
- Add hand-held radios to enhance emergency communications and prevent

disruption of services during a disaster.

GOAL 3: IMPROVE COMMUNITY EMERGENCY PREPAREDNESS, COLLABORATION, AND OUTREACH.

OBJECTIVE 1: Educate and encourage residents to be self-sufficient for a minimum of two weeks versus 72 hours.

OBJECTIVE 2: Encourage residents to develop emergency plans and practice those plans.

OBJECTIVE 3: Encourage local businesses and faith-based organizations to develop emergency and business continuity plan.

MITIGATION MEASURES

- Conduct community disaster preparedness workshops semi-annually.
- Reconnect with volunteer organizations and establish a main point of contact to create a more streamlined response to a disaster.
- Encourage residents to have back up power sources and portable power sources to reduce secondary hazards posed by PSPS.
- Encourage residents to prioritize and execute development of family preparedness and communication plan.
- Encourage residents to follow guidance for defensible space around their homes.

GOAL 4: DEVELOP AND IMPLEMENT MITIGATION STRATEGIES THAT OPTIMIZE PUBLIC FUNDS IN AN EFFICIENT AND COST-EFFECTIVE WAY.

OBJECTIVE 1: Seek mitigation projects that provide the highest degree of hazard protection at the least cost.

OBJECTIVE 2: Consider the impacts of hazards on future land uses in the City of Chino Hills by coordinating with other planning mechanisms such as the updated General Plan and the accompanying Safety Element.

OBJECTIVE 3: Maximize the use of outside sources of funding.

OBJECTIVE 4: Use public funding to protect public services and critical infrastructure.

MITIGATION MEASURES

- Encourage property-owner and home hardening and self-protection measures.

5.11.2 WILDFIRE

GOAL 1: SIGNIFICANTLY REDUCE LOSS OF LIFE AND INJURIES; MINIMIZE DAMAGE TO STRUCTURES AND PROPERTY AS WELL AS DISRUPTION OF ESSENTIAL SERVICES AND HUMAN ACTIVITIES.

OBJECTIVE 1: Ensure that enforcement of relevant state regulations and local ordinances significantly reduce loss of life and injuries.

OBJECTIVE 2: Encourage new development to occur in locations avoiding or minimizing exposure to hazards and implement enhanced design requirements to improve resiliency in future disasters.

OBJECTIVE 3: Ensure that mitigation measures are incorporated into repairs, major alterations, new development, and redevelopment practices, especially in areas subject to substantial hazard risk.

OBJECTIVE 4: Educate the public to increase their awareness of hazards, emergency response, and recovery.

MITIGATION MEASURES

- Continue to reduce the fire hazard by removing combustibles and/or invasive species in all areas of the City within the fire hazard overlay district when feasible.
- Educate and work with property owners to create/adopt an Urban Forest Management Plan (UFMP).
- Create/adopt a citywide City Wildland Protection Plan to increase communication, coordination, and collaboration between wildland/urban interface property owners, City planners, and fire prevention crews, and officials to address risks, existing mitigation strategies, and federal assistance programs.
- Collaborate with the Chino Valley Fire District to continue implementing the Wildfire Safety and Preparedness Public Education Program.
- Assess dead and decaying trees and vegetation for removal to mitigate fire risk as part of an Urban Forest Management Plan.

5.11.3 EARTHQUAKE

GOAL 1: SIGNIFICANTLY REDUCE THE LOSS OF LIFE AND INJURIES; MINIMIZE DAMAGE TO STRUCTURES AND PROPERTY AS WELL AS DISRUPTION OF ESSENTIAL SERVICES AND HUMAN ACTIVITIES.

OBJECTIVE 1: Continue to require geological and geotechnical investigations of all new developments in areas of potential seismic or geological hazards as part of the environmental and development review process.

OBJECTIVE 2: Encourage homeowners and building owners to retrofit and rehabilitate wood frame structures built prior to 1952, mobile homes, precast concrete tilt-up buildings built prior to 1973, unreinforced masonry structures, and soft-story buildings.

OBJECTIVE 3: Continue to use the environmental and development review process to ensure prudent development and redevelopment of all land within the moderate-to-high landslide susceptibility zones.

MITIGATION MEASURES

- Install auto shutoff valves and flex couplings at water reservoirs.
- Conduct community outreach focusing on earthquake preparedness and home mitigation projects.
- Test capabilities by promoting and participating in the annual Great Shakeout Exercise.
- Maintain an active list of “at-risk” structures within the city to facilitate expedited safety inspections after significant seismic events.
- Add educational information to the city website informing the public about the benefits of earthquake retrofits, seismic gas shutoff valves, and auto shutoff valves for water service, including grant and financing resources available to the public.

5.11.4 FLOOD

GOAL 1: SIGNIFICANTLY REDUCE LOSS OF LIFE AND INJURIES; MINIMIZE DAMAGE TO STRUCTURES AND PROPERTY AS WELL AS DISRUPTION OF ESSENTIAL SERVICES AND HUMAN ACTIVITIES.

OBJECTIVE 1: Increase public awareness of risks from flood hazards.

OBJECTIVE 2: Restrict all new development in areas prone to flooding or within dam inundation areas.

OBJECTIVE 3: Ensure that enforcement of relevant state regulations and local ordinances significantly reduce loss of life and injuries

OBJECTIVE 4: Encourage new development to occur in locations avoiding or minimizing exposure to hazards and enhance design requirement to improve resiliency in future disasters.

OBJECTIVE 5: Ensure that mitigation measures are incorporated into repairs, major alterations, new development, and redevelopment practices, especially in areas subject to substantial hazard risk.

MITIGATION MEASURES

- Ensure proper drainage through retrofitting and replacing storm drains, curbs, gutters and any other infrastructure needed in the City as funding becomes available.
- Continue to provide sandbags to the community to mitigate flooding and erosion issues.
- Provide required oversight on engineering design standards and California Building Code requirements for projects located within identified seismic hazard zones.
- Ensure that proposed developments are compliant with the Chino Hills Floodplain Damage Prevention and Floodplain Management ordinance where applicable.
- Conduct frequent cleaning of storm drain intakes, especially before and during the rainy season.
- Monitor locations that frequently flood during rain events and identify improvements to alleviate these conditions.

5.11.5 DROUGHT

GOAL 1: PROTECT THE HEALTH, SAFETY AND GENERAL WELFARE OF THE CITIZENS OF THE CITY OF CHINO HILLS BY ENSURING THAT A RELIABLE AND ADEQUATE SUPPLY OF WATER DURING DROUGHT CONDITIONS IS AVAILABLE.

OBJECTIVE 1: Ensure that an adequate supply of water is available and that it meets anticipated quality standards.

MITIGATION MEASURES

- Develop a “Water Shortage Contingency Plan” that can be implemented to reduce the likelihood of a more severe water shortage stages in the future.
- Use drought-tolerant plants when installing new or retrofitting City-Owned landscapes. Limit turf that is not drought tolerant, and only grass areas where no feasible drought tolerant alternatives exist.
- Encourage and educate the public on the use of drought tolerant plants and landscaping.
- Expand the City’s recyclable water system, where feasible.

5.11.6 TERRORISM/CYBER ATTACKS

GOAL 1: PROTECT THE HEALTH, SAFETY AND WELFARE OF THE CITIZENS OF THE CITY OF CHINO HILLS FROM TERRORIST/ACTIVE SHOOTER SITUATIONS.

OBJECTIVE 1: Provide educational and training opportunities for residents on how to identify and report suspicious activity(s) related to terrorism.

OBJECTIVE 2: Provide City staff training on how to respond during an active shooter situation.

OBJECTIVE 3: Provide training on situational awareness.

OBJECTIVE 4: Provide training on ways to minimize risk to cyber security threats.

MITIGATION MEASURES

- Regularly update security software and educate business owners and residents on current internet-based threats.
- Conduct proactive community policing during special events. Ensure that all staff involved in community policing are trained to engage with and respect community members while maintaining security.
- Disseminate information and provide training on cyber threats, potential terrorist activity, or civil unrest to City staff and continually follow up with information on further developments.
- Ensure operational resiliency of critical infrastructure (ICS/SCADA) relating to water treatment, water distribution, wastewater collection and finance systems.
- Ensure redundancy to all critical infrastructure, Information Technology systems, and Finance systems.

5.11.7 EXTREME HEAT

GOAL 1: REDUCE THE RISK OF HEAT RELATED INJURY OR LOSS OF LIFE DUE TO EXTREME HEAT EVENTS.

Objective 1: Provide public education on how to deal with extreme heat and inform the public on the availability of Cooling Centers.

MITIGATION MEASURES

- Increase the use and construction of shade structures within new developments, City facilities, parks, and trails to reduce urban heat island impacts.
- Evaluate and assess the need for long-term designated cooling centers and shelters in the City to provide sufficient relief from extreme heat. Assess the need to expand services as the frequency, length, and severity of future heat waves potentially change as a result of climate change.
- During the design review process, promote passive cooling design (brise-soleil, shade trees, long roof overhangs, locating windows away from southern facades, etc.) in new developments.
- Ensure all City critical facilities have generators and back up power infrastructure as needed for long-term needs.

5.11.8 HIGH WIND

GOAL 1: REDUCE THE RISK OF INJURY, PROPERTY DAMAGE, AND ECONOMIC LOSS RESULTING FROM WIND RELATED HAZARDS.

OBJECTIVE 1: Inform and educate the community of the potential of high wind events, and share the importance of proper tree maintenance, and potential hazards around the home.

MITIGATION MEASURES

- Conduct targeted outreach to residents and businesses before the severe winds/weather (Santa Ana Wind events) on proper tree maintenance and identification of potentially hazardous trees.
- Remove or trim trees determined to be susceptible to blowing over during a severe wind event, becoming a debris hazard, and threat to underground powerlines, where feasible.

5.11.9 DAM INUNDATION

GOAL 1: PROVIDE ADEQUATE PROTECTION TO MINIMIZE DAMAGE FROM FLOODING DUE TO DAM INUNDATION.

OBJECTIVE 1: Ensure and monitor open communication with dam owners.

MITIGATION MEASURES

- Coordinate with dam owners/operators, state, and federal agencies to collectively identify threats to the City and the region, and identify ways to retrofit/strengthen the dams under their control.
- Ensure staff attend training with Dam operators to ensure City preparedness.

5.12 MITIGATION PRIORITIES

As part of the mitigation actions development and review, the HMPC also prioritized the actions. The prioritization efforts looked at the risks and threats from each hazard, financial costs and benefits, technical feasibility, and community values, among others. HMPC members were asked to identify their priority actions through a voting exercise. The HMPC was asked to rank the mitigation actions as “high priority,” “medium priority,” or “low priority.” The mitigation actions in Table 58 were prioritized based on their potential to reduce hazard risk, cost-effectiveness, technical feasibility, alignment with community capabilities, and stakeholder input. High-priority actions typically address hazards with the greatest potential for widespread disruption, such as wildfire, earthquakes, or power outages, and focus on critical infrastructure or vulnerable populations. Actions ranked as “low” or medium” may still be important but face implementation barriers or require further planning.

Table 58 Mitigation Action Implementation Plan

Mitigation Action		Potential Funding Sources	Responsible Dept./Agency	Relative Cost	Time Frame	Priority
All Hazards						
P1	Coordinate with Southern California Edison to create and maintain a database of residents with special needs to affect a more comprehensive evacuation response plan.	General Fund, FEMA Emergency Management Performance Grant (EMPG), Cong. Direct Spending (CDS) Pre-Disaster Mitigation	Fire	\$	Ongoing	Medium
P2	Provide an annual emergency exercise to improve readiness of the City's Emergency Operations Center staff.	General Fund, FEMA Emergency Management Performance Grant (EMPG), Cont. Direct Spending (CDS) FEMA Pre-Disaster Mitigation	Emergency Management	\$	Ongoing	High
P3	Test capabilities by promoting and participating in the annual Great American Shakeout Exercise.	General Fund, FFEMA Emergency Management Performance Grant (EMPG)	Emergency Management	\$	Ongoing	Medium
P4	Provide SEMS and NIMS training to all new City EOC employees.	General Fund, FFEMA Emergency Management	Emergency Management	\$	Ongoing	High

		Performance Grant (EMPG)				
P5	Update the City's Emergency Operations Plan on a consistent basis.	General Fund, FEMA Emergency Management Performance Grant (EMPG)	Emergency Management	\$\$	Ongoing	High
P6	Continue to work with the Planning Team to develop business continuity plans for the City.	General Fund, FEMA Emergency Management Performance Grant (EMPG)	Emergency Management, Planning	\$\$	Ongoing	Low
P7	Add hand-held radios to enhance emergency communications and prevent disruption of services during a disaster.	General Fund, Hazard Mitigation Grant Program (HMGP), FEMA Emergency Management Performance Grant (EMPG)	Emergency Management	\$\$	Ongoing	High
P8	Conduct community disaster preparedness workshops semi- annually.	General Fund, FEMA FEMA Emergency Management Performance Grant (EMPG), (EMPG)	Emergency Management	\$\$	Ongoing	Medium
P9	Reconnect with volunteer organizations and establish a main point of contact to create a more streamlined response to a disaster.	General Fund, FEMA Emergency Management Performance Grant (EMPG)	Emergency Management	\$	Ongoing	Medium

P10	Encourage residents to have back up power sources and portable power sources to reduce secondary hazards posed by PSPS events.	General Fund	Emergency Management	\$	Ongoing	High
P11	Encourage residents to prioritize and execute development of family preparedness and communication plan.	General Fund	Emergency Management	\$	Ongoing	High
P12	Encourage property-owner and home hardening and self-protection measures.	General Fund, California Earthquake Authority Program (Seismic only)	Public Works, Community Development	\$	Ongoing	High
P13	Encourage residents to follow guidance for defensible space around their homes.	General Fund	Emergency Management, Fire	\$	Ongoing	High
Wildfire						
	Continue to reduce fire hazard by removing combustibles and/or invasive species in all areas of the city within the fire hazard overlay district when feasible.	General Fund, Hazard Mitigation Grant Program (HMGP), CalFire Wildfire Prevention Grant	Fire, Public Works	\$\$	Ongoing	High
	Work with property owners to create/adopt an Urban Forest Management Plan (UFMP).	General Fund, CalFire Urban and Community Forestry Grant Program, Sustainable	Fire, Public Works	\$	Initiate	Low

		Forestry Initiative, Urban Forest Improvement Grant Program				
	Create/Adopt a citywide City Wildland Protection Plan to increase communication, coordination, and collaboration between wildland/urban interface property owners, City planners, and fire prevention crews and officials to address risks, existing mitigation strategies, and federal assistance programs.	General Fund, CalFire Urban and Community Forestry Grant Program, USDA Community Wildfire Defense Grant Program	Fire, Public Works, Community Development	\$	Initiate	Medium
	Collaborate with the Chino Valley Fire District to continue implementing the Wildfire Safety and Preparedness Public Education Program.	General Fund, CalFire Wildfire Prevention Grant	Fire, Emergency Management	\$	Ongoing	Low
	Assess dead and decaying trees and vegetation for removal to mitigate fire risk as part of an Urban Forest Management Plan.	L&L, General Fund, Hazard Mitigation Grant Program (HMGP), CalFire Wildfire Prevention Grant	Fire, Public Works	\$\$	Ongoing	High
Earthquake						
	Install auto shutoff valves and flex couplings at water reservoirs.	Water Fund, State Water Resource Control Board (SWRCB) Drinking Water	Public Works	\$\$	Ongoing, 10 Year	Medium

		State Revolving Fund (SWSRF)				
	Conduct community outreach focusing on earthquake preparedness and home mitigation projects.	General Fund, CA Earthquake Authority Earthquake Brace and Bolt and Soft Story Program	Emergency Management, Community Relations	\$	Ongoing	Medium
	Maintain an active list of “at-risk” structures within the city to facilitate expedited safety inspections after significant seismic events.	General Fund	Community Development	\$\$	Implement, Ongoing	Medium
	Add educational information to the city website informing the public about the benefits of earthquake retrofits, seismic gas shutoff valves, and auto-shutoff valves for water service, including grant and financing resources available to the public.	General Fund	Public Works	\$	Implement	Medium
Flooding						
	Ensure proper drainage through retrofitting and replacing storm drains, curbs, gutters, and any other infrastructure needed in the City as funding becomes available.	CIP, Hazard Mitigation Grant Program (HMGP), FEMA Flood Mitigation Assistance Grant Program	Public Works	\$\$\$	Ongoing	Low

	Continue to provide sandbags to the community to mitigate flooding and erosion issues.	General Fund	Fire	\$	Ongoing	Medium
	Provide required oversight on engineering design standards and California Building Code requirements for projects located within identified seismic hazard zones.	General Fund	Community Development	\$	Ongoing	Medium
	Ensure that proposed developments are compliant with the Chino Hills Floodplain Damage Prevention and Floodplain Management ordinance where applicable.	General Fund	Community Development	\$	Ongoing	Medium
	Conduct frequent cleaning of storm drain intakes, especially before and during the rainy season.	General Fund	Public Works	\$	Ongoing	High
	Monitor locations that frequently flood during rain events and identify improvements to alleviate these conditions.	General Fund	Public Works	\$	Ongoing	Medium
Drought						
	Develop a "Water Shortage Contingency Plan" that can be implemented to reduce the likelihood of a more severe water shortage stages in the future.	Water Fund, Bureau of Reclamation (BOR) WaterSMART: Drought Contingency Planning Grants	Public Works	\$\$	Ongoing	Low

	Use drought-tolerant plants when installing new or retrofitting City-Owned landscapes. Limit turf that is not drought tolerant, and only grass areas where no feasible drought tolerant alternatives exist.	Water Fund, Bureau of Reclamation (BOR) WaterSMART: Water Energy and Efficiency Grants, Bureau of Reclamation (BOR): Small-Scale Water Efficiency Grants	Public Works	\$\$	Ongoing	High
	Encourage and educate the public on the use of drought tolerant plants and landscaping.	Water Fund	Public Works	\$	Ongoing	Low
	Expand the City's recyclable water system, where feasible.	Water Fund, State Water Resource Control Board (SWRCB) Water Recycling Fund Program, Bureau of Reclamation (BOR) Title XVI Grant Program	Public Works	\$\$\$	Ongoing	Medium
Terrorism/Cyber Attacks						
	Regularly update cyber security software and educate business owners and residents on current internet-based threats.	General Fund, FEMA: State and Local Cybersecurity Grant Program	Police, Information Technology	\$	Ongoing	High

	Conduct proactive community policing during special events. Ensure that all staff involved in community policing are trained to engage with and respect community members while maintaining security.	General Fund	Police	\$	Ongoing	Medium
	Disseminate information and provide training on cyber threats, potential terrorist activity, or civil unrest to City staff and continually follow up with information on further developments.	General Fund, FEMA: State and Local Cybersecurity Grant Program	Police, Information Technology	\$	Ongoing	Medium
	Ensure operational resiliency of critical infrastructure (ICS/SCADA) relating to water treatment, water distribution, wastewater collection and finance systems.	Water Fund, SCADA CIP, FEMA: State and Local Cybersecurity Grant Program, State Water Resource Control Board (SWRCB) Drinking Water State Revolving Fund(DWSRF)/ Clean Water State Revolving Fund (CWSRF)	Information Technology, Public Works, Finance	\$\$	Ongoing	High
	Ensure redundancy to all critical infrastructure, Information Technology systems, and Finance systems.	General Fund, FEMA: State and Local Cybersecurity Grant	Information Technology, Public Works, Finance	\$\$	Ongoing	High

		Program				
Extreme Heat						
	Increase the use and construction of shade structures within new developments, City facilities, parks, and trails to reduce urban heat island impacts.	General Fund, Developer Funds, Integrated Climate Adaption and Resilience Program (ICARP) Extreme Heat and Community Resiliency Grant, US Forest Service and Community Forest Program	Public Works, Community Development	\$	Ongoing	Low

	Evaluate and assess the need for long-term designated cooling centers and shelters in the City to provide sufficient relief from extreme heat. Assess the need to expand services as the frequency, length, and severity of future heat waves potentially change as a result of climate change.	General Fund, Integrated Climate Adaption and Resilience Program (ICARP) Extreme Heat and Community Resiliency Grant, CA Strategic Growth Council Community Resilience Centers	Community Services	\$	Ongoing	Low
	During the design review process, promote passive cooling design (brise-soleil, shade trees, long roof overhangs, locating windows away from southern facades, etc.) in new developments.	Developer Funds	Community Development	\$	Ongoing	Low
	Ensure all City critical facilities have generators and backup power infrastructure as needed for long-term needs.	General Finds, Hazard Mitigation Grant Program (HMGP), CalOES Community Power Resiliency Program	Public Works, Community Services	\$\$	Ongoing	High

High Winds						
	Conduct targeted outreach to residents and businesses before the severe winds/weather (Santa Ana Wind events) on proper tree maintenance and identification of potentially hazardous trees.	General Fund	Public Works	\$	Ongoing	Medium
	Remove or trim trees determined to be susceptible to blowing over during a severe wind event, becoming a debris hazard, and threat to underground power lines, where feasible.	L&L, General Fund, Hazard Mitigation Grant Program (HMGP)	Public Works	\$\$\$	Ongoing	High
Dam Inundation						
	Coordinate with dam owners/operators, state, and federal agencies to collectively identify threats to the City and the region and identify ways to retrofit/strengthen the dams under their control.	General Fund	Emergency Management, Public Works	\$	Ongoing	Low
	Ensure staff attend training with Dam operators to ensure City preparedness.	General Fund	Emergency Management, Public Works	\$	Ongoing	Low

EVALUATION OF POTENTIAL HAZARD MITIGATION ACTIONS

The HMPC prepared a set of potential mitigation actions based on the hazard profiles, threat assessment, capabilities assessment, community survey results, discussions among HMPC members, and existing best practices. Next, the HMPC evaluated these potential actions using the following criteria: FEMA requires local governments to evaluate potential mitigation actions' monetary and nonmonetary costs and benefits. While local governments are not required to assign specific dollar values to each action, they should identify the general size of costs and benefits. The HMPC may elect to include measures with high costs or low benefits, but such measures should benefit the community and make

appropriate use of local resources. Also, FEMA directs local governments to consider the following questions as part of the financial analysis:

- What is the frequency and severity of the hazard type to be addressed by the action,
- and how vulnerable is the community to this hazard?
- What impacts of the hazard will the action reduce or avoid?
- What benefits will the action provide to the community?

The HMPC also reviewed and revised the potential hazard mitigation actions using the STAPLE/E (Social, Technical, Administrative, Political, Legal, Economic, and Environmental) criteria (Table 59). The HMPC did not formally assess every potential mitigation action under all STAPLE/E criteria but used the criteria to guide and inform the discussion. The HMPC also discussed how the criteria might evaluate grant applications the City may submit to receive funding for HMP implementation.

Table 59 STAPLE/E Criteria

Issues	Criteria
Social	• Is the action socially acceptable to community members? • Would the action mistreat some individuals? • Is there a reasonable chance of the action causing a social disruption?
Technical	• Is the action likely to reduce the risk of the hazard occurring, or will it reduce the hazard's effects? • Will the action create new hazards or make existing hazards worse? • Is the action the most useful approach for the City to take, given the City and community members' goals?

- Administrative**
- Does the City have the administrative capabilities to implement the action?
 - Are there existing City staff who can lead and coordinate the measure's implementation, or can the City reasonably hire new staff for this role?
 - Does the City have enough staff, funding, technical support, and other resources to implement the action?
 - Are there administrative barriers to implementing the action?
- Political**
- Is the action politically acceptable to City officials and other relevant jurisdictions and political entities?
 - Do community members support the action?
- Legal**
- Does the City have the legal authority to implement and enforce the action?
 - Are there potential legal barriers or consequences that could hinder or prevent the implementation of the action?

RESPONSIBLE DEPARTMENT

Table 58 includes the identification of key responsible departments that will be focused on the future implementation of mitigation strategies and actions identified by the City.

RELATIVE COST ESTIMATES

To meet the cost estimation requirements of the hazard mitigation planning process, the HMPC identified relative cost estimates based on their understanding of the mitigation action intent and their experience developing identical or similar programs/implementing projects. Three cost categories based on the City's typical cost criteria were used for budgeting purposes:

- Low cost (\$): \$100,000 or less
- Medium cost (\$\$): \$100,001 to \$999,999
- High cost (\$\$\$): Greater than 1,000,000

TIMEFRAMES

58 includes timeframes that provide general timing durations due to the nature of the mitigation actions identified by the City. The following timeframes are used based on the following conditions:

Ongoing (As Needed): Actions that identify this timeframe include activities that City staff would conduct in response to a request by internal (City Departments) or external (Property Owners) forces.

Implement: Actions that identify this timeframe include activities that City staff can implement as timing permits.

Initiate: Actions that identify this timeframe include activities that City staff can initiate immediately.

5.12.1 CAPABILITIES IMPROVEMENT/EXPANSION

The ability to expand current mitigation capabilities will generally be reliant upon the budgeting allocated for each department/program for that fiscal year. The level at which these programs may or may not be expanded depends on the funding. FEMA provides guides that highlight some of the ways jurisdictions can expand mitigation. Strategies for increasing current mitigation capabilities may include:

1. The city should actively identify, adopt, and enforce the most current set of development codes and standards available. Strongly encouraging new development to be constructed to higher standards than currently required increases community resilience.
2. Engaging parts of the community that may not be actively involved in mitigation efforts.
3. Expanding the number and types of organizations involved in mitigation planning and implementation increases efficiency and bandwidth.
4. Fostering new relationships to bring underrepresented populations and partners to the hazard mitigation planning process.

5.12.2 IMPLEMENTATION STRATEGY

An implementation strategy is the key to any successful planning effort. The implementation strategy identifies who has lead responsibility for the project, potential funding source(s) for implementation, estimated timeframe for completion, and the priority ranking defined as follows:

- Responsible Agency: City Department and/or other agency assigned that responsibility
- Funding source(s): Potential internal and external funding source(s)
- Timeframe: Short-term (less than 2 years); Long-term (more than 2 years)
- Priority Ranking: High, Medium or Low (as defined in Mitigation Priorities section above)

6.0 Appendix A

- I. List of Chino Valley Stakeholder Committee Members
- II. List of Chino Hills Planning Committee Meetings
- III. Public Outreach Efforts for Hazard Mitigation Planning Process

**City of Chino Hills
Local Hazard Mitigation Plan Update Stakeholder Meeting
Sign-In Sheet**

Wednesday, August 14, 2024

Name	Title	Agency/Department	Email	Initials
Joyce Lee	Emergency Services Coordinator	City of Chino Hills	jlee@chinohills.org	YL
Valerie McClung	Community Relations Manager	City of Chino Hills	vmcclung@chinohills.org	VM
Denise School	Emergency Services Coordinator	City of Chino	dschool@chinoed.org	DNS
Lisa Keyworth	Emergency Manager	City of Brea	lkey@ci.brea.ca.us	LK
Christopher Pena	Emergency Management Coordinator	City of Yorba Linda	cpena@yorbainlandca.gov	CP
Tony Avellano	Safety Officer	IEUA	tsavellano@ieua.org	TA
Melissa Boyd	Public Information Officer	SCE	melissa.boyd@sce.com	MB
Larry Taylor	Area Manager	SoCal Gas	LXTaylor@socialgas.com	LT
Nora Garrido	Emergency Operations Coordinator	Frontier Communications	nora.garrido@ftr.com	
David Kingston	Emergency Management	USACE	David.A.Kingston@usace.army.mil	
Erin Fox	Disaster Program Manager	America Red Cross	erin.fox@redcross.org	Virtual
Laurissa Call	Chino Hills Supervisor	Social Work Action Group	laurissa@thswag.org	
MaryAna DeLosSantos	Director of Operations	Inland Valley Humane Society	MDelosSantos@ivhspsca.org	Virtual
Melissa Matherly	Community Outreach Director	Inland Valley Humane Society	mmatherly@ivhspsca.org	
Matrin Silveria	Maintenance and Operations	Chino Valley Unified School District	matrin_silveria@chino.k12.ca.us	
Viviana Gentry	Assistant Principal	Chino Valley Unified School District	Viviana_Gentry@chino.k12.ca.us	VSG
Patricia Durham	Assistant Principal	Chino Valley Unified School District	Patricia_Durham@chino.k12.ca.us	
Duffy Bleu	Program Manager	Boys Republic	dblesu@boyspublic.org	
Danielle Phillip	External Affairs Specialist	IEUA	dphillip@ieua.org	DP
Ron Huu	ACU	Curry		



14000 City Center Drive • Chino Hills, CA 91709 • (909) 364-2600

You are invited to help us make a difference!

The City of Chino Hills has begun the process to prepare the 2025 update to the Local Hazard Mitigation Plan (LHMP). The LHMP will serve as a blueprint for minimizing property damage and protecting lives from the impacts of future disasters in the City. We invite you to participate in the update process.

You are receiving this invitation because you or your agency has been identified as a key participant in the LHMP update process at the "Stakeholder Group" level. If interested, we welcome you (or anyone you designate to represent your agency) to assist the LHMP Project Management Team by providing documentation review and your feedback along with other stakeholders during certain points of the planning process.

You are invited to **attend this meeting and one other future stakeholder meeting** that will likely be held at the end of 2024. Chino Hills strives to embody both representative and equitable engagement to include all members of the community in our emergency response planning process. Your organization/school/business has been identified as a leader in the community and the City of Chino Hills would greatly appreciate your input on how to best reduce the likelihood and or effects of potential hazards such as fires, earthquakes, floods etc. that could affect our city. Our first stakeholder meeting will discuss the preliminary results of the risk assessment we have completed and is scheduled for **Wednesday, August 14th, 2024, from 3:00 p.m. to 4:30 p.m.** in the Chino Hills City Council Chambers on the first floor at 14000 City Center Drive. Light refreshments will be provided. We would prefer you to attend in person however, we can consider offering a Zoom alternative, if requested.

We anticipate the LHMP update process to continue through mid-2025. If you are interested in attending this first meeting, please kindly respond to this email with your R.S.V.P. as soon as possible and indicate the name and contact information of the representative from your agency/organization who will attend.

If you have any additional questions, please do not hesitate to contact me at (909) 364-2713.

Thank you for your time and consideration.

Sincerely,

Joyce Lee
Emergency Services Coordinator
City of Chino Hills

**City of Chino Hills
Local Hazard Mitigation Plan Update Stakeholder Meeting**

Wednesday, November 20, 2024

Name	Title	Agency/Department	Email	Initials
Joyce Lee	Emergency Services Coordinator	City of Chino Hills	jlee@chinhills.org	
Valerie McClung	Community Relations Manager	City of Chino Hills	vmccclung@chinhills.org	
Dante School	Emergency Services Coordinator	City of Chino	dtschool@chinhills.org	
Lisa Keyworth	Emergency Manager	City of Brea	ljsak@ci.brea.ca.us	
Christopher Pena	Emergency Management Coordinator	City of Yorba Linda	cpena@yocalindca.gov	
Tony Avellano	Safety Officer	IEUA	tsa@ieua.org	
Melissa Boyd	Public Information Officer	SCE	melissa.boyd@sce.com	
Larry Taylor	Area Manager	Socal Gas	LTaylor@socalgas.com	
Nora Garrido	Emergency Operations Coordinator	Frontier Communications	nora.y.garrido@FTR.com	
David Kingston	Emergency Management	USACE	David.A.Kingston@usace.army.mil	
Erin Fox	Disaster Program Manager	America Red Cross	erin.fox@redcross.org	
Laurissa Cail	Chino Hills Supervisor	Social Work Action Group	laurissac@theewad.org	
MaryAnn DelosSantos	Director of Operations	Inland Valley Humaine Society	MDeLosSantos@ivhs2002.org	
Melissa Mathierly	Community Outreach Director	Inland Valley Humaine Society	mathierlym@ivhs2002.org	
Melvin Silvera	Maintenance and Operations	Chino Valley Unified School District	melvin_silvera@chino.k12.ca.us	
Viviana Gentry	Assistant Principal	Chino Valley Unified School District	Viviana_Gentry@chino.k12.ca.us	
Patricia Durham	Assistant Principal	Chino Valley Unified School District	Patricia_Durham@chino.k12.ca.us	
Duffy Brea	Program Manager	Brea Republic	dbrea@brea.org	
Isaac Hernandez	Disaster Program Manager	American Red Cross	isaac.hernandez@redcross.org	

City of Chino Hills
Local Hazard Mitigation Plan Update Planning Committee Meeting
Sign-In Sheet
Thursday, May 2, 2024

Name	Title	Agency/Department	Email	Initials
Joyce Lee	Emergency Services Coordinator	City of Chino Hills	jlee@chinohills.org	JK
Rod Hill	Asst. City Manager	City of Chino Hills	rhill@chinohills.org	RH
Carl Hassel	Engineering Manager	City of Chino Hills	chasel@chinohills.org	CH
Daniel Bobadilla	Public Works Director	City of Chino Hills	dbobadilla@chinohills.org	DB
Mark Wiley	Water & Sewer Manager	City of Chino Hills	mwiley@chinohills.org	MW
Sean O'Connor	Maintenance & Operations Manager	City of Chino Hills	soconnor@chinohills.org	SO
Michael Hoffinger	Planning Manager	City of Chino Hills	mhoffinger@chinohills.org	M.H.
Valerie McClung	Community Relations Mgr.	City of Chino Hills	vmcclung@chinohills.org	VM
Melissa Armit	Community Services Manager	City of Chino Hills	marmis@chinohills.org	MA
Bradley Flehmman	Building Official	City of Chino Hills	bfliehmann@chinohills.org	BF
Nicole Freeman	Public Information Officer	City of Chino Hills	nfreeman@chinohills.org	NF
Johnnie Davis	GIS Analyst	City of Chino Hills	jdavis@chinohills.org	JD
Michael Goss	Senior IT Analyst	City of Chino Hills	mgoss@chinohills.org	MG
Dan Renear	Detective	City of Chino Hills/ Police Department	drenear@abcsd.org	—
Randy Narquin	Sergeant	City of Chino Hills/ Police Department	rnarquin@abcsd.org	RN
Danielle O'Toole	Deputy Fire Marshal	Chino Valley Fire District	dotoole@chvalfire.org	joined online
Jeremy Ault	Deputy Chief	Chino Valley Fire District	jault@chvalfire.org	—
David Garrett	Store Manager	Costco	w473edrn@costco.com	—
Teri Thomas	Store Manager	Lowes	teri.l.thomas@store.lowes.com	—

City of Chino Hills
Local Hazard Mitigation Plan
Planning Committee Meeting #1
May 2, 2024

Meeting Agenda

Local Hazard Mitigation Plan

Lead Agency: City of Chino Hills

Planning Committee Meeting #1

May 2, 2024

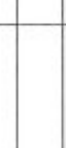
3:30 p.m. to 5:30 p.m.

Purpose of Meeting: This is the Kick-off meeting regarding the development of the City's Local Hazard Mitigation Plan. The purpose of the meeting is to provide information about the Plan, the update process, review the Hazards of Concern, and review the status of existing actions.

i.	Welcome & Introductions	Joyce Lee	3:30
	- Welcome! - Sign-in if in person - Please introduce yourself!		
ii.	What is a Hazard Mitigation Plan	Eric Vaughan	3:45
	- The planning process - Stakeholder and public involvement - Planning process		
iii.	How the Plan will benefit the Community	Eric Vaughan	4:00
iv.	Committee Participation Overview	Joyce Lee	4:05
	3 meetings total - Participation & Feedback		
v.	Community Outreach Plan Review	Eric Vaughan	4:10
	- Stakeholder Identification - Public Survey - Community Workshops (2)		
vi.	Hazards of Concern Review	Eric Vaughan	4:25
	- Current State & County plans - Recent Disaster history - Hazards of Concern Ranking		
vii.	Existing Action Review	Joyce Lee	4:40
viii.	Changes in Development Discussion	Joyce Lee	4:50
ix.	Roundtable/Questions		5:15
x.	Adjourn		5:30

City of Chino Hills
Local Hazard Mitigation Plan Update Planning Committee Meeting
Sign-In Sheet

Wednesday, September 25, 2024

Name	Title	Agency/Department	Email	Initials
Joyce Lee	Emergency Services Coordinator	City of Chino Hills	jlee@chinhills.org	
Rod Hill	Asst. City Manager	City of Chino Hills	rhill@chinhills.org	
Carl Hassel	Engineering Manager	City of Chino Hills	chassel@chinhills.org	
Daniel Bobadilla	Public Works Director	City of Chino Hills	dbobadilla@chinhills.org	DB
Mark Wiley	Water & Sewer Manager	City of Chino Hills	mwiley@chinhills.org	
Sean O'Connor	Maintenance & Operations Manager	City of Chino Hills	socconnor@chinhills.org	
Michael Hofflinger	Planning Manager	City of Chino Hills	mhofflinger@chinhills.org	
Valerie McClung	Community Relations Mgr	City of Chino Hills	vmcclung@chinhills.org	
Melissa Armit	Community Services Manager	City of Chino Hills	marmit@chinhills.org	
Bradley Flehmann	Building Official	City of Chino Hills	bflehmann@chinhills.org	
Micole Freeman	Public Information Officer	City of Chino Hills	mfreeman@chinhills.org	
Johanne Davis	GIS Analyst	City of Chino Hills	jdavis@chinhills.org	
Michael Goss	Senior IT Analyst	City of Chino Hills	mgoss@chinhills.org	
Dan Renner	Detective	City of Chino Hills/ Police Department	drenner@sbcsd.org	
Randy Naquin	Sergeant	City of Chino Hills/ Police Department	rnaquin@sbcsd.org	
Danette O'Toole	Deputy Fire Marshal	Chino Valley Fire District	dotoole@chvalfire.org	
Jeremy Ault	Deputy Chief	Chino Valley Fire District	jault@chvalfire.org	
David Garrett	Store Manager	Costco	wd73adgm@costco.com	
Teri Thomas	Store Manager	Lowe's	teri.thomas@stores.lowes.com	
RADCLIFFE, JEAN	DEPUTY	CHINO HILLS POLICE	JRADCLIFFE@SBCSO.ORG	
Deane Winkler	Water Supervisor	City of Chino Hills	dwinkler@chinhills.org	

City of Chino Hills
Hazard Mitigation Plan
Planning Committee Meeting #2
September 25, 2024

Meeting Agenda

Local Hazard Mitigation Plan

Lead Agency: City of Chino Hills

Planning Committee Meeting #2
September 25, 2024
3:00-5:00 p.m.

Purpose of Meeting: The meeting will include a discussion to draft mitigation actions, public comments on hazard assessment, plan integration, and public review of the plan, including a public workshop.

- | | | |
|-------|---|-----------|
| i. | Welcome & Introductions <ul style="list-style-type: none">Welcome!Sign-in if in personRoll-call | Joyce Lee |
| ii. | Recap of Hazard Assessment, Stakeholder Meeting , Public Workshop & Survey | Joyce Lee |
| iii. | Capabilities Assessment & Draft Mitigation Actions | Joyce Lee |
| iv. | Public Comments on Hazard Assessment | Joyce Lee |
| v. | Plan Integration | Joyce Lee |
| vi. | Public Review of the Plan & Review Workshop | Joyce Lee |
| vii. | Roundtable/Questions | Joyce Lee |
| viii. | Adjourn | Joyce Lee |



Chino Hills 55+ Club
General Meeting Agenda
July 26, 2024

- Call to Order & Welcome
- Pledge of Allegiance
- Approval of Minutes for June 28, 2024
- City Report
- Joyce Lee – Chino Hills Emergency City Services
- Information Officer's Report
- Vice President's Report
 - Membership Renewal
 - Due by July 26, 2024
 - Renewals are accepted before the meeting and at the first break.
 - Zelle is now an acceptable payment method for renewals – Andrea has instructions.
- Travel Time
 - Bert Fortier's trip to Maine, Quebec City, and Montreal
- National Thread a Needle Day
- Mixer
- Break
- President's Report
 - 2024 Senior Fair Volunteers
 - Senior Fair rescheduled to 9/20.
 - Next Outings
 - Trip to Temecula – October 2, 2024

Chino Hills 55+ Club
General Meeting Minutes
Chino Hills Community Center
July 26, 2024

Officers Present

The Officers present were President, Jane DeFrank, Vice President, Debi Hernandez, Information Officer/Web Administrator, Sharon Stuewe, Treasurer, Andrea Welch, and Secretary, Judy MacDonald.

Call to Order

The meeting was called to order by President, Jane DeFrank at 10:02 am. Military veteran, Paul Christensen led the Pledge of Allegiance.

Minutes

Minutes from the June 28, 2024, General Meeting were approved.

City Report

Jake was in attendance to offer news and upcoming activities.

- A "Golden Summer Luau" will be held at the Chino Hills Community Center (CHCC) on Wednesday, August 21, from 1:00 to 3:00 pm. Tickets are \$5.00 each. Prizes, music, refreshments, and hula lessons will be provided.
- Jake reminds us that numerous drop-in activities are available at CHCC.
- The Recreation Guide will be obtainable in the first week of August.
- Jake is currently working on a Senior Survey. He has asked that we fill out the questionnaire to help him determine the wants and needs of our senior community.

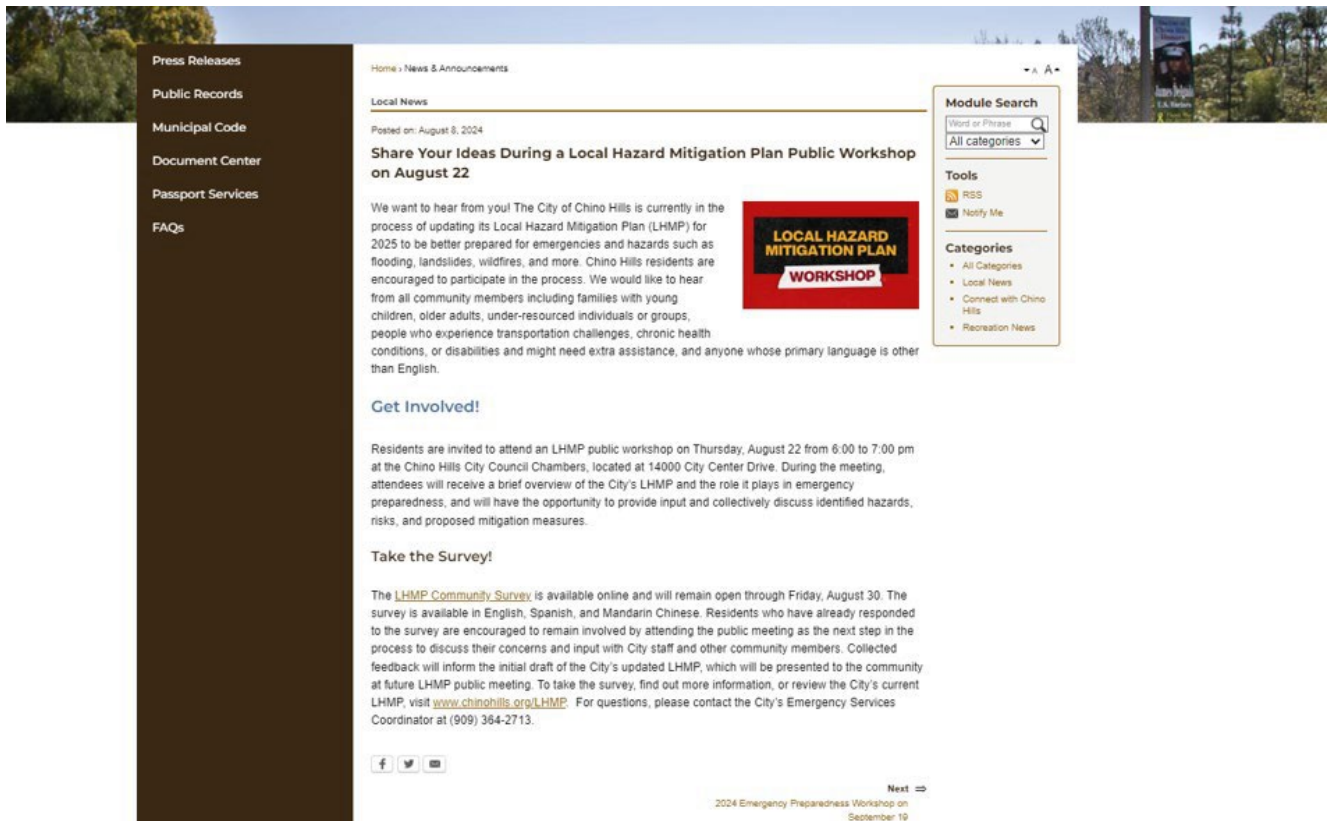
Additional information for these and other recreation events is available at <https://www.chinohills.org> or by contacting the Recreation Office at (909) 364-2700.

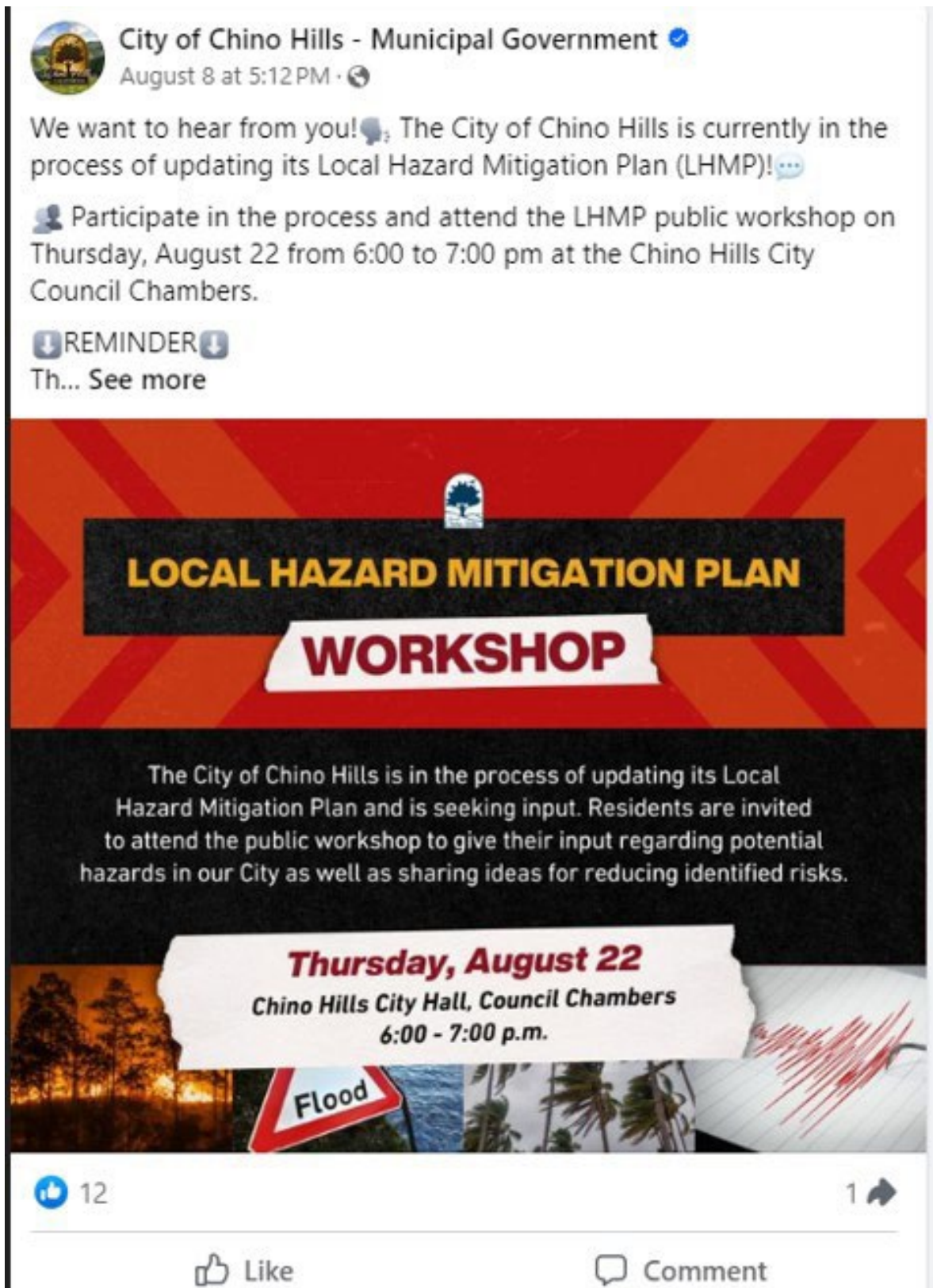
Guest Speaker

Joyce Lee, the Emergency Services Coordinator for the City, spoke about the Local Hazard Mitigation Plan Update Survey. In an attempt to obtain feedback from the community, residents are encouraged to complete the survey. Copies of the survey are available at the front desk of the CHCC, or on the City's website at <https://www.chinohills.org/lhmps survey>

Information Officer's Report

Sharon shared some news that she obtained from the City of Chino Hills website. A new pedestrian crosswalk has been installed between St. Paul the Apostle Catholic Church and the City buildings. This signal will be especially helpful to the students who walk from Ayala High School to the James S. Thalman Library after school.





City of Chino Hills - Municipal Government ✓
August 8 at 5:12 PM · 🌐

We want to hear from you! 🗣️ The City of Chino Hills is currently in the process of updating its Local Hazard Mitigation Plan (LHMP)! 🗨️

👤 Participate in the process and attend the LHMP public workshop on Thursday, August 22 from 6:00 to 7:00 pm at the Chino Hills City Council Chambers.

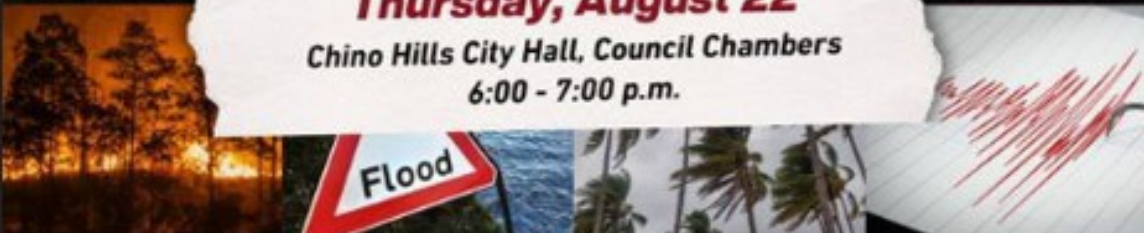
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LOCAL HAZARD MITIGATION PLAN WORKSHOP

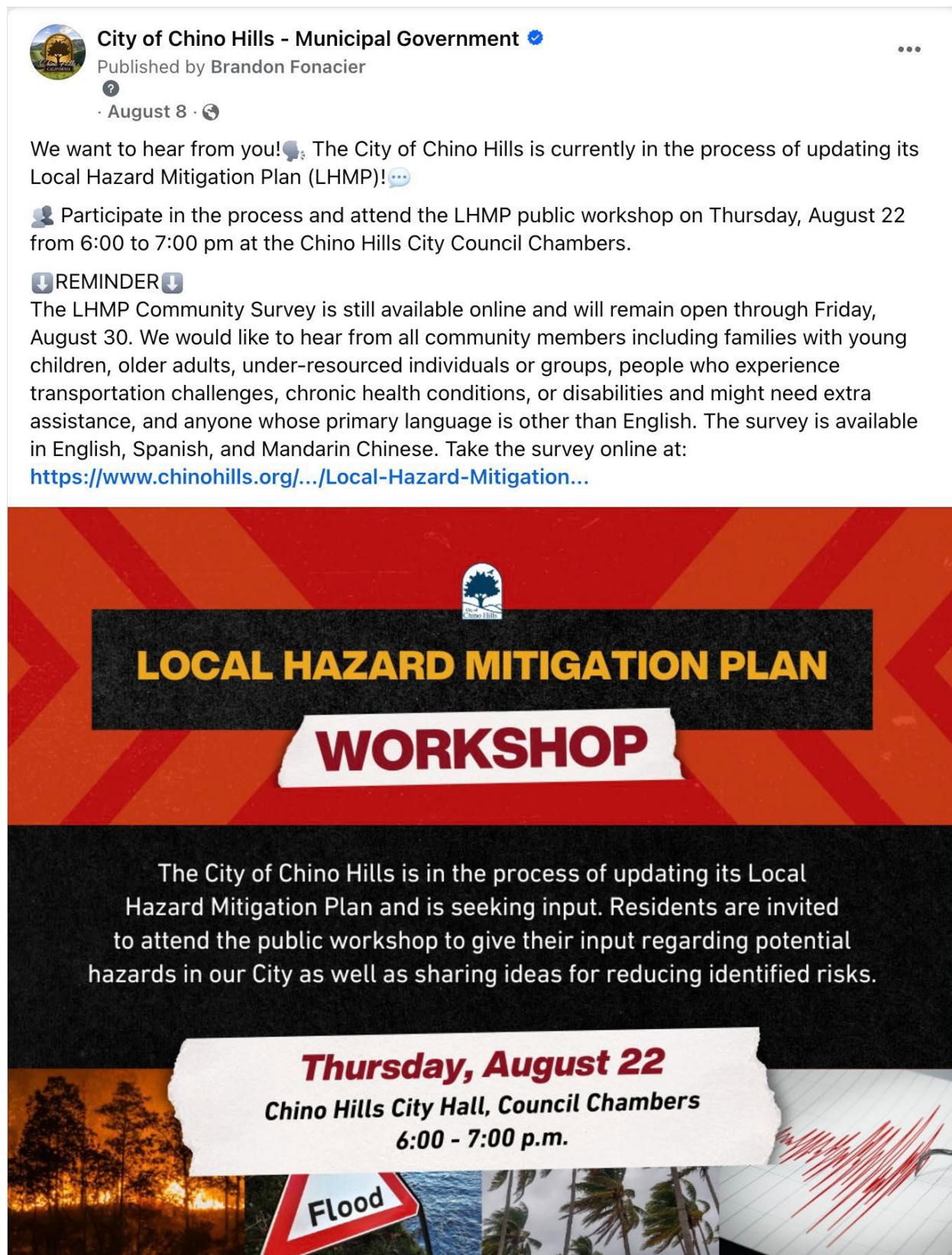
The City of Chino Hills is in the process of updating its Local Hazard Mitigation Plan and is seeking input. Residents are invited to attend the public workshop to give their input regarding potential hazards in our City as well as sharing ideas for reducing identified risks.

Thursday, August 22
Chino Hills City Hall, Council Chambers
6:00 - 7:00 p.m.



👍 12 1 ➡

👍 Like 💬 Comment



The image shows a Facebook post from the City of Chino Hills - Municipal Government, published by Brandon Fonacier on August 8. The post is about updating the Local Hazard Mitigation Plan (LHMP) and includes details about a public workshop on Thursday, August 22, from 6:00 to 7:00 pm at the Chino Hills City Council Chambers. It also mentions that the LHMP Community Survey is still available online through Friday, August 30, and provides a link to the survey. Below the post is a poster for the 'LOCAL HAZARD MITIGATION PLAN WORKSHOP'. The poster features a red and black background with a city logo at the top. The text on the poster states that the City of Chino Hills is updating its LHMP and is seeking input from residents. It invites residents to attend the public workshop to provide input on potential hazards and ideas for reducing risks. The workshop is scheduled for Thursday, August 22, at the Chino Hills City Hall, Council Chambers, from 6:00 to 7:00 p.m. The bottom of the poster includes images of a flood, palm trees, and a hand-drawn sketch of a hazard.

City of Chino Hills - Municipal Government 
Published by Brandon Fonacier
· August 8 · 

We want to hear from you!  The City of Chino Hills is currently in the process of updating its Local Hazard Mitigation Plan (LHMP)! 

 Participate in the process and attend the LHMP public workshop on Thursday, August 22 from 6:00 to 7:00 pm at the Chino Hills City Council Chambers.

 REMINDER 

The LHMP Community Survey is still available online and will remain open through Friday, August 30. We would like to hear from all community members including families with young children, older adults, under-resourced individuals or groups, people who experience transportation challenges, chronic health conditions, or disabilities and might need extra assistance, and anyone whose primary language is other than English. The survey is available in English, Spanish, and Mandarin Chinese. Take the survey online at:
<https://www.chinohills.org/.../Local-Hazard-Mitigation...>


LOCAL HAZARD MITIGATION PLAN
WORKSHOP

The City of Chino Hills is in the process of updating its Local Hazard Mitigation Plan and is seeking input. Residents are invited to attend the public workshop to give their input regarding potential hazards in our City as well as sharing ideas for reducing identified risks.

Thursday, August 22
Chino Hills City Hall, Council Chambers
6:00 - 7:00 p.m.



LOCAL HAZARD MITIGATION PLAN WORKSHOP

The City of Chino Hills is in the process of updating its Local Hazard Mitigation Plan and is seeking input. Residents are invited to attend the public workshop to give their input regarding potential hazards in our City as well as sharing ideas for reducing identified risks.

Thursday, August 22
Chino Hills City Hall, Council Chambers
6:00 - 7:00 p.m.

cityofchinohillsgov Chino Hills, California

cityofchinohillsgov We want to hear from you! The City of Chino Hills is currently in the process of updating its Local Hazard Mitigation Plan (LHMP).

Participate in the process and attend the LHMP public workshop on Thursday, August 22 from 6:00 to 7:00 pm at the Chino Hills City Council Chambers.

REMINDER

The LHMP Community Survey is still available online and will remain open through Friday, August 30. We would like to hear from all community members including families with young children, older adults, under-resourced individuals or groups, people who experience transportation challenges, chronic health conditions, or disabilities and might need extra assistance, and anyone whose primary language is other than English. The survey is available in English, Spanish, and Mandarin Chinese. Take the survey online at: www.chinohills.org/LHMPSurvey (🔗 in bio)

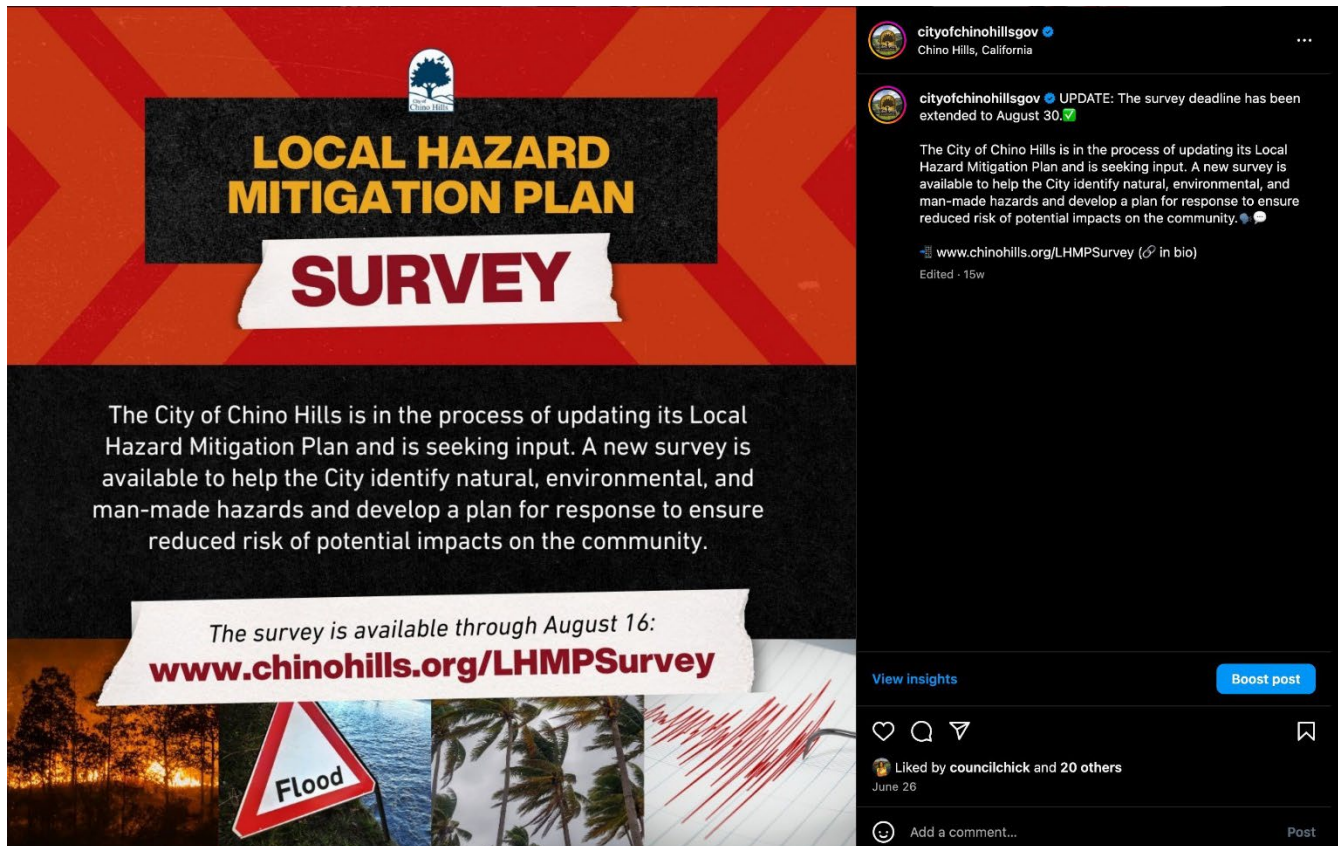
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LOCAL HAZARD MITIGATION PLAN SURVEY

The City of Chino Hills is in the process of updating its Local Hazard Mitigation Plan and is seeking input. A new survey is available to help the City identify natural, environmental, and man-made hazards and develop a plan for response to ensure reduced risk of potential impacts on the community.

The survey is available through August 16:
www.chinohills.org/LHMPSurvey

cityofchinohillsgov Chino Hills, California

cityofchinohillsgov UPDATE: The survey deadline has been extended to August 30. ✓

The City of Chino Hills is in the process of updating its Local Hazard Mitigation Plan and is seeking input. A new survey is available to help the City identify natural, environmental, and man-made hazards and develop a plan for response to ensure reduced risk of potential impacts on the community. 🗣️

www.chinohills.org/LHMPSurvey (🔗 in bio)

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👍🗨️📌

👤 Liked by councilchick and 20 others
June 26

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City of Chino Hills - Municipal Government

Published by Brandon Fonacier

June 26

The City of Chino Hills is in the process of updating its Local Hazard Mitigation Plan and is seeking input. A new survey is available to help the City identify natural, environmental, and man-made hazards and develop a plan for response to ensure reduced risk of potential impacts on the community.

The survey is available through August 16: <https://www.chinohills.org/forms.aspx?FID=195>

The graphic features a red and orange chevron background. At the top center is the City of Chino Hills logo. Below it, a black banner contains the text "LOCAL HAZARD MITIGATION PLAN" in yellow. Underneath, a white banner with a torn edge contains the word "SURVEY" in red. The middle section has a black background with white text explaining the survey. At the bottom, a white banner with a torn edge provides the survey URL. The bottom edge of the graphic is a collage of four images: a forest fire at night, a "Flood" warning sign, palm trees, and a red scribble on a white background.

LOCAL HAZARD MITIGATION PLAN

SURVEY

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The survey is available through August 16:
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City of Chino Hills @Chino_Hills · Jun 26

The City of Chino Hills is in the process of updating its Local Hazard Mitigation Plan and is seeking input. A new survey is available to help the City identify natural, environmental, and man-made hazards and develop a plan for response. 🗨️💬

➡️📄: chinohills.org/LHMPSurvey

LOCAL HAZARD MITIGATION PLAN

SURVEY

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The survey is available through August 16:
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Press Release

PR24 – 037

14000 City Center Drive, Chino Hills, CA 91709

CONTACT: Nicole Freeman
Ph: (909) 364-2609

Valerie McClung
Ph: (909) 364-2618

DATE: June 26, 2024

CITY OF CHINO HILLS SEEKS PUBLIC INPUT FOR LOCAL HAZARD MITIGATION PLAN COMMUNITY SURVEY

Chino Hills, CA – The City of Chino Hills is currently in the process of updating its Local Hazard Mitigation Plan (LHMP) for 2025 to be better prepared for an emergency or hazard such as flooding, landslides, wildfires, and more. Chino Hills residents are encouraged to help the City identify natural and man-made hazards they find of most concern within the community by taking a quick three- to four-minute survey online at www.chinohills.org/LHMPSurvey.

Hazard mitigation planning helps the City identify natural, environmental, and man-made hazards and develop a plan for response to ensure reduced risk of potential impacts on the community such as loss of life or property. The City is required to update its LHMP every five years to ensure the City is properly assessing the probability of various types of hazards and identifying projects that could potentially reduce hazard risks in the community. Once these risks are identified, City staff along with our police and fire agencies develop long-term strategies to protect people and property from similar events and improve emergency management during a hazard event. The LHMP must be updated every five years to remain eligible for State and Federal grant funding and to be eligible to obtain FEMA mitigation grant funds should our community experience a declared disaster.

Public input is an important part of the LHMP update process and residents are encouraged to take the short three- to four-minute survey and find more information, including a copy of the City's current LHMP plan, online at www.chinohills.org/LHMPSurvey. The survey will be available online now and will remain open until Friday, August 16. For questions, please contact the City's Emergency Services Coordinator at (909) 364-2713.

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