AGENDA
REGULAR MEETING
AGOURA HILLS PLANNING COMMISSION
Civic Center - Council Chambers
30001 Ladyface Court, Agoura Hills, California 91301
Thursday, April 16, 2026
6:00 PM

Please silence all cell phones and other electronic devices during the meeting.

ATTEND OR WATCH THE MEETING

*For in-person attendance, the Council Chambers will open to the public at 5:30 p.m. To watch the live stream or archived meeting, visit the City's website at **agourahillscity.gov** and click the dark green "Watch Meetings" button under Quick Links or search "Agoura Hills Planning Commission" on **YouTube** and select the meeting by date.*

PUBLIC PARTICIPATION (PUBLIC COMMENT)

Option A: To provide public comments in-person in the Council Chambers

Members of the public may attend the meeting in person in the Council Chambers and speak or submit a written comment on any item listed on the Agenda. If you wish to speak, complete a Speaker's Card for each item and submit to the Agency Secretary prior to the public comment portion of the item. Public testimony is limited to three (3) minutes per speaker; a speaker's time may not be transferred to another speaker. Written public comments submitted at the meeting are not read aloud by the Agency Secretary.

Option B: To submit written public comments prior to the meeting

*Members of the public may submit written comments on any item listed on the Agenda. To ensure the Planning Commission has time to review and/or consider information prior to the meeting, please include the item number or topic in the subject line and **email comments@agourahillscity.gov by 4:00 p.m. on the meeting date.** Public comments are not read into the record by the City. Any comments submitted after the deadline may not be considered during the Planning Commission's deliberations or included in the official record. However, the public may attend the meeting to make or submit written comments in person.*

CALL TO ORDER

PLEDGE OF ALLEGIANCE

ROLL CALL

Chair Jessica Reinhardt
Vice Chair Brit Sharon
Commissioner Meril Platzer
Commissioner Morgan Roth
Commissioner Bruce Stein

EXCUSED ABSENCE

APPROVAL OF AGENDA

PUBLIC COMMENTS

(This section is reserved for persons wishing to address items not listed on the Agenda that are under the subject matter jurisdiction of the Planning Commission. Please refer to “Public Participation” above for full details on how to speak or submit written public comments under this category.)

CONSENT CALENDAR

(Items on the Consent Calendar may be approved by a single motion and vote. Unless pulled by the Planning Commission, there will be no separate discussion of these items. This section is reserved for persons wishing to address items on the Consent Calendar. Please refer to “Public Participation” above for full details on how to speak or submit written public comments under this category.)

1. Approve Minutes of the Regular Planning Commission Meeting of March 19, 2026
   RECOMMENDATION: Approve the Minutes, as presented

PUBLIC HEARING

(Both the Applicant or the Appellant, should they be different parties, will be given 15 minutes to present their positions to the Planning Commission and five (5) minutes each for rebuttal time. All other public testimony is limited to three (3) minutes. Please refer to “Public Participation” above for full details on how to submit written public comments or speak under this category. After the rebuttal, the Chair will close the Public Hearing and the Planning Commission will deliberate the matter. Except in rare instances where a Commissioner might have a question of someone in the audience, this discussion is only among the Commissioners and City Staff. No further public comments are permitted.)

2. Conduct a Public Hearing to Consider Adoption of a Resolution Recommending the City Council Adopt a Resolution Approving a General Plan Amendment to Revise the Table of Contents and the Safety Element (Chapter 5, Community Safety) with the Updated Multi-Jurisdictional Hazard Mitigation Plan, the Adopted Evacuation Plan, and the Updated Evacuation Analysis (Case No. GPA-2024-0007) and Make Findings of Exemption Under the California Environmental Quality Act
   RECOMMENDATION: Adopt a Planning Commission resolution recommending the City Council adopt a resolution approving a general plan amendment to revise the table of contents and the Safety Element (Chapter 5, Community Safety) with the updated Multi-Jurisdictional Hazard Mitigation Plan, the adopted evacuation plan, and the updated evacuation analysis (Case No. GPA-2024-007) and make findings of exemption under the California Environmental Quality Act.

PLANNING COMMISSION / STAFF COMMENTS

ADJOURNMENT

The next Regular Planning Commission Meeting will be held at 6:00 p.m., on May 7, 2026, in the Council Chambers of the Civic Center. The Civic Center is located at 30001 Ladyface Court, Agoura Hills, California.

In compliance with the Americans with Disabilities Act, if you need special assistance to participate in a Planning Commission meeting or other services offered by the City of Agoura Hills, please contact the City Clerk's Office at (818) 597-7300. Notification at least 48 hours prior to the meeting or time when services are needed will assist City staff in assuring that reasonable arrangements can be made to provide accessibility to the meeting.

Copies of staff reports or other written documentation, relating to each item of business described in this Agenda, are posted to the City's website at ***agourahillscity.gov*** *and are on file in the office of City Clerk Kimberly M. Rodrigues, Agoura Hills City Hall, 30001 Ladyface Court, Agoura Hills, California, 91301.*

The telecast of the Thursday, April 16, 2026, Regular Planning Commission Meeting will be shown on Channel 10 for Time Warner Cable subscribers and Channel 3 for Charter subscribers and run daily until the next regularly scheduled Planning Commission meeting. The broadcast schedule is as follows: Sa-10am; Su-3pm; M-7pm; T-10am; W-3pm; Th-10am; and F-7pm.

Date Posted: April 10, 2026

CITY OF AGOURA HILLS

REPORT TO PLANNING COMMISSION

DATE: APRIL 16, 2026

TO: HONORABLE CHAIR AND MEMBERS OF THE PLANNING COMMISSION

FROM: ROBBY NESOVIC, COMMUNITY DEVELOPMENT DIRECTOR

BY: KIMBERLY RODRIGUES, CITY CLERK

SUBJECT: APPROVE MINUTES OF THE REGULAR PLANNING COMMISSION MEETING OF MARCH 19, 2026

RECOMMENDATION

Approve the Minutes as presented.

Attachments

PC Minutes 031926.pdf

MINUTES
REGULAR MEETING
AGOURA HILLS PLANNING COMMISSION
Civic Center - Council Chambers
30001 Ladyface Court, Agoura Hills, California 91301
Thursday, March 19, 2026
6:00 PM

Chair Reinhardt announced: "*The Planning Commission meeting was called to order at 6:00 p.m. Due to technical issues difficulties, portions of the meeting were not properly webcast, so the Planning Commission was recessed until 7:30 p.m. It is now 7:30 p.m. We are now calling the meeting back to order at 7:30 p.m. and we will be repeating the Agenda from the beginning for the benefit of the public so that the record is complete.*"

The Planning Commission meeting was reconvened at 7:30 p.m. by Chair Reinhardt.

The Pledge of Allegiance was led by Commissioner Platzer.

Present were: Chair Jessica Reinhardt, Vice Chair Brit Sharon, Commissioner Meril Platzer, and Commissioner Bruce Stein.

Absent was: Commissioner Morgan Roth.

Also Present were: Assistant Director of Planning Robby Nesovic, Assistant City Attorney Travis Kaya, Senior Planner Angela Georgeff, Associate Planner Katrina Garcia, Executive Assistant Michele Hubbs, and City Clerk/Recording Secretary Kimberly M. Rodrigues.

EXCUSED ABSENCE

ACTION: Commissioner Stein moved to excuse the absence of Commissioner Roth. Vice Chair Sharon seconded. The motion carried 4-0, by the following roll call vote:

AYES: Chair Reinhardt, Vice Chair Sharon, and Commissioners Platzer and Stein.

NOES: None.

ABSTAIN: None.

ABSENT: Commissioner Roth.

APPROVAL OF AGENDA

ACTION: Commissioner Stein moved to approve the Agenda, as presented. Commissioner Vice Chair Sharon seconded. The motion carried 4-0, by the following roll call vote:

AYES: Chair Reinhardt, Vice Chair Sharon, and Commissioners Platzer and Stein.

NOES: None.

ABSTAIN: None.

ABSENT: Commissioner Roth.

PUBLIC COMMENTS

No public comments were received.

CONSENT CALENDAR

No public comments were received.

ACTION: Commissioner Stein moved to approve Consent Calendar Item No. 1, as presented. Commissioner Platzer seconded. The motion carried 4-0, by the following roll call vote:

AYES: Chair Reinhardt, Vice Chair Sharon, and Commissioners Platzer and Stein.

NOES: None.

ABSTAIN: None.

ABSENT: Commissioner Roth.

1. Approve Minutes of the Regular Planning Commission Meeting of February 19, 2026

PUBLIC HEARING

2. Conduct a Public Hearing to Consider the Adoption of a Resolution for an Addendum to the Certified Palo Comado Ranch Project Final EIR; and Adoption of a Resolution for a New Single-Family Residence

Chair Reinhardt opened the Public Hearing at 7:34 p.m.

Following presentation of the staff report, and a question-and-answer period with staff, Chair Reinhardt inquired if any Commissioners had any ex parte communications to disclose.

- Commissioner Platzer disclosed she had visited the site.
- Commissioner Stein disclosed he had visited the site.

Chair Reinhardt invited the Applicant to speak.

The following person spoke:

Adam Yona, Westlake Village, representing the Applicant

Following a question-and-answer period with the Applicant, Chair Reinhardt opened the floor for public testimony.

There being no public comments, rebuttal from the Applicant, or further questions of staff, Chair Reinhardt closed the Public Hearing at 8:08 p.m.

During deliberations, each Planning Commissioner *(Reinhardt, Sharon, Platzer, and Stein)* disclosed they could make all the findings to approve the project.

Chair Reinhardt deferred to Assistant City Attorney Kaya, who read the staff recommendation to adopt a Resolution adopting an Addendum to the Certified Palo Comado Ranch Tract Final Environmental Impact Report (EIR) and making the required environmental findings pursuant to CEQA; and adopt a Resolution approving Conditional Use Permit Case No. CUP-2023-0025, Site Plan/Architectural Review Permit Case No. SPR-2023-0043, an Oak Tree Permit Case No. OAK-2023-0083, and a Lot Merger Case No. LOT-2023-0009 to allow a new single-family residence with accessory structures, encroachment into several oak trees and remove one live oak tree and 11 dead oak trees, and to merge two legal parcels, located on a vacant site at 6511 Chesebro Road; and make findings of consistency with the Final EIR for the Palo Comado Ranch Project.

With no further discussion, Chair Reinhardt called for a motion and second to approve the staff recommendation.

ACTION: Commissioner Stein moved to approve the staff recommendation to adopt **Resolution No. 26-1317;** A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF AGOURA HILLS, CALIFORNIA, ADOPTING AN ADDENDUM TO THE CERTIFIED PALO COMADO RANCH PROJECT FINAL ENVIRONMENTAL IMPACT REPORT (EIR); AND MAKING THE REQUIRED ENVIRONMENTAL FINDINGS PURSUANT TO CEQA and, adopt **Resolution No. 26-1318;** A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF AGOURA HILLS, CALIFORNIA, APPROVING CONDITIONAL USE PERMIT CASE NO. CUP-2023-0025, SITE PLAN/ ARCHITECTURAL REVIEW PERMIT CASE NO. SPR-2023-0043, AN OAK TREE PERMIT CASE NO. OAK-2023-0083, AND A LOT MERGER CASE NO. LOT-2023-0009 TO ALLOW A NEW SINGLE-FAMILY RESIDENCE WITH ACCESSORY STRUCTURES, ENCROACHMENT INTO SEVERAL OAK TREES AND REMOVE ONE OAK TREE FOR DEVELOPMENT AND 11 DEAD OAK TREES, AND TO MERGE TWO LEGAL PARCELS,

LOCATED AT 6511 CHESEBRO ROAD; AND MAKING FINDINGS OF CONSISTENCY WITH THE FINAL EIR FOR THE PALO COMADO RANCH PROJECT. Vice Chair Sharon seconded. The motion carried 4-0, by the following roll call vote:

AYES: Chair Reinhardt, Vice Chair Sharon, and Commissioners Platzer and Stein.

NOES: None.

ABSTAIN: None.

ABSENT: Commissioner Roth.

COMMISSION, STAFF COMMENTS

Chair Reinhardt expressed appreciation to all participants for reconvening after the technical difficulties and for remaining through the conclusion of the meeting.

ADJOURNMENT

At 8:13 p.m., Chair Reinhardt announced the next Regular Meeting of the Planning Commission was scheduled for Thursday, April 2, 2026, at 6:00 p.m., in the Council Chambers of the Civic Center, and adjourned the meeting.

Kimberly M. Rodrigues, MMC,
City Clerk/Recording Secretary

CITY OF AGOURA HILLS

REPORT TO PLANNING COMMISSION

DATE: **APRIL 16, 2026**

TO: **HONORABLE CHAIR AND MEMBERS OF THE PLANNING COMMISSION**

FROM: **ROBBY NESOVIC, COMMUNITY DEVELOPMENT DIRECTOR**

SUBJECT: **CONDUCT A PUBLIC HEARING TO CONSIDER ADOPTION OF A RESOLUTION RECOMMENDING THE CITY COUNCIL ADOPT A RESOLUTION APPROVING A GENERAL PLAN AMENDMENT TO REVISE THE TABLE OF CONTENTS AND THE SAFETY ELEMENT (CHAPTER 5, COMMUNITY SAFETY) WITH THE UPDATED MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN, THE ADOPTED EVACUATION PLAN, AND THE UPDATED EVACUATION ANALYSIS (CASE NO. GPA-2024-0007) AND MAKE FINDINGS OF EXEMPTION UNDER THE CALIFORNIA ENVIRONMENTAL QUALITY ACT**

APPLICANT City of Agoura Hills

CASE NO: GPA-2024-0007

LOCATION: Citywide

ENVIRONMENTAL DETERMINATION: Exempt

RECOMMENDATION: Staff recommends the Planning Commission adopt a Planning Commission Resolution recommending that the City Council of the City of Agoura Hills adopt a resolution approving a general plan amendment to revise the table of contents and the Safety Element (Chapter 5, Community Safety) with the updated Multi-Jurisdictional Hazard Mitigation Plan, the adopted evacuation plan, and the updated evacuation analysis (Case No. GPA-2024-007) and make findings of exemption under the California Environmental Quality Act.

PROJECT BACKGROUND AND DESCRIPTION

The City of Agoura Hills (City) is part of the Las Virgenes-Malibu Council of Governments (COG). The COG is a Joint Powers Authority representing Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village, and nearby unincorporated areas of Los Angeles County District 3. The COG unites these cities to address regional concerns, maximize resources, and advocate for shared interests.

The COG prepared a Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) dated June 13, 2024, which provides a framework and guidance for dealing with disasters within the COG region. The MJHMP was subsequently adopted by each of the COG cities, including the City of Agoura Hills on August 28, 2024, as required by the Federal Emergency Management Agency (FEMA). The adoption of a local hazard mitigation plan that has been approved by FEMA allows the COG cities to receive FEMA mitigation project grants, and it is a FEMA requirement that the local hazard mitigation plan be updated every five years to be eligible for those funds.

Assembly Bill 747, approved in 2019, added a new section to the California Government Code (§65302.15). Assembly Bill 1409, approved in 2021, further amended Government Code §65302.15 to require that, in pertinent part, "Upon the next revision of a local hazard mitigation plan…the safety element adopted pursuant to subdivision (g) of Section 65302 shall be reviewed and updated as necessary to identify evacuation routes and their capacity, safety, and viability and evacuation locations under a range of emergency scenarios."

Prior to the adoption of the amended MJHMP on August 28, 2024, staff reviewed the City's Safety Element and determined that pursuant to Government Code §65302.15, an evacuation analysis was warranted. Staff provided the project scope and requested a proposal to conduct an evacuation analysis (Evacuation Analysis) to our contracted traffic engineering firm, Kimley-Horn and Associates, Inc. (Kimley-Horn). On September 10, 2024, the City accepted Kimley-Horn's proposal to conduct an Evacuation Analysis that captures all applicable state requirements. Immediately following the approval of Kimley-Horn's proposal, the City began work on the Evacuation Analysis and related updates to the Safety Element, which is collectively "the Project".

On March 27, 2025, the Project was reviewed by the Land Use & Economic Development Subcommittee (LUEDC) during a public meeting to provide staff with feedback. Kimley-Horn and City staff revised the Evacuation Analysis to address comments from the LUEDC, and the Project was brought before the Planning Commission at the regularly scheduled meeting on May 1, 2025. The Evacuation Analysis presented during this meeting assessed two "worst case" wildfire scenarios occurring in the early morning with a short-notice evacuation, with one fire originating north of the City and the other originating from the south. Staff and Kimley-Horn determined these to be the worst-case scenarios from a roadway capacity perspective because the population of the City would be at its highest since nearly all residents would be at home and evacuating simultaneously.

During the meeting on May 1, 2025, staff received feedback from the public and the Planning Commission. In general, the actionable feedback can be categorized as follows:

1. Consider incorporating an emergency scenario involving the evacuation of residences, large business, and schools during midday on a non-holiday weekday while children are in school;
2. Address public safety communication strategies both during emergencies and during evacuation planning efforts that include cooperation between the City, school districts and neighboring jurisdictions;
3. Re-evaluate the number of cars per household evacuating from Old Agoura due to the need for some households to evacuate large animals.

Following the Planning Commission meeting on May 1, 2025, and based on the feedback received from the Planning Commission, staff issued an additional task order to Kimley-Horn to include two additional wildfire evacuation scenarios and a qualitative analysis for additional disaster types that may require evacuation, including storm, tsunami, and earthquake events. The revised Evacuation Analysis is attached to this report and incorporates an additional scenario while children are in school and adds an increased Passenger Car Equivalent (PCE) factor to Old Agoura. The amended evacuation analysis and related Safety Element update were also distributed to the California Board of Forestry and Fire Protection (BOF), the California Department of Forestry and Fire Protection (CAL FIRE), Los Angeles County Fire Department (LACFD), local Fire Department Station 89, Ventura County Office of Emergency Services, and the California Geological Survey.

On March 10, 2026, the BOF, specifically the Resource Protection Subcommittee, met during a public meeting to review and provide feedback on the Project. The Resource Protection Committee found that both the Safety Element update and the Evacuation Analysis meet all statutory requirements (see attached Resource Protection Committee Formal Review Letter).

STAFF ANALYSIS

To ensure compliance with Government Code §65302.15, the Evacuation Analysis identifies evacuation routes and analyzes their capacity, safety, and viability and evacuation locations under a range of emergency scenarios.

Section 3 of the Evacuation Analysis discusses methodology and assumptions used while preparing the technical report. Based on the FEMA National Risk Index (see Appendix A of the Evacuation Analysis), wildfires were found to be the most significant risk to the City of Agoura Hills. The Evacuation Analysis is therefore focused on an analysis of wildfire hazards among a range of evacuation scenarios.

Based on CAL FIRE data, the Agoura Hills Community Wildfire Risk Assessment, and Woolsey After Action Report, it was determined that most fires originate northeast of the City and spread to the southwest. This is why three out of four scenarios in the Evacuation Analysis originate northeast of the City. Scenario 4 was added to the Evacuation Analysis following the Planning Commission meeting on May 1, 2025, and to provide a comprehensive analysis, one scenario of fire originating to the south was also analyzed. In summary, the following four scenarios were analyzed:

- **Scenario 1:** Wildfire originating northeast of Agoura Hills at night prompting an immediate All-at-Once mandatory evacuation.
- **Scenario 2:** Wildfire originating south of Agoura Hills at night prompting an immediate All-at-Once mandatory evacuation.
- **Scenario 3:** Wildfire originating northeast of Agoura Hills at night with a phased voluntary and mandatory evacuation.
- **Scenario 4:** Wildfire originating northeast of Agoura Hills during the daytime while schools are in session with a phased voluntary and mandatory evacuation.

For all of the above scenarios, the emergency is assumed to be a large scale “worst-case” scenario with weather conditions most likely to trigger a wildfire. All scenarios would take place on a weekday, when more people are in the City compared to a weekend.

The existing Evacuation Plan splits the City into nine sectors and uses those sectors to identify the routes that people can use to evacuate from each area. The Evacuation Analysis evaluates the same nine sectors in the Evacuation Plan and identifies likely evacuation routes and evacuation locations. The analysis places the final segment of all evacuation routes along the US-101 freeway, which is administered by Caltrans. Therefore, the US-101 is defined as the ultimate “Evacuation Gateway”, which would be the route used by evacuees to reach their final evacuation location. Based on the existing roadway network and historical evacuation data from the Woolsey Fire, it is known that people would also evacuate to other gateways outside the City. To obtain conservative data for the roadway capacity analysis, the study assumes all routes evacuate to gateways within the City (US-101).

Roadway capacity is defined as the maximum hourly rate by which vehicles can reasonably traverse a point or section of roadway during a given time based on expected conditions. Baseline roadway capacity is 1,900 vehicles per hour per lane, therefore, the capacity for each of the City's roadways under normal conditions can be calculated by multiplying the number of lanes by 1,900 vehicles per hour. For the purposes of the analysis, a capacity reduction factor was applied for each scenario as choke points are likely to occur along evacuation routes. For the nighttime scenarios, a capacity reduction factor of 0.9 was applied to the capacity per lane, or 1,710 vehicles per hour per lane. For the daytime scenario, a conservative capacity reduction factor of 0.7 was applied to account for the fact that there are additional non-evacuating vehicles on the roadway during the daytime. Therefore, the daytime capacity was reduced to 1,330 vehicles per hour per lane.

Table 1 - Hourly Roadway Capacity

# of Lanes (per direction)	Capacity per Lane (vphpl)	Reduction Factor	Total Capacity (# of outbound vehicles)
Nighttime Capacity (Scenarios 1, 2, and 3)			
3	1,900	0.9	5,130
2	1,900	0.9	3,420
1	1,900	0.9	1,710
Daytime Capacity (Scenario 4)			
3	1,900	0.7	3,990
2	1,900	0.7	2,660
1	1,900	0.7	1,330

**vphpl = Vehicles per Hour per Lane*

An important indicator in determining capacity for evacuating vehicles is the volume to capacity (V/C) ratio. When the volume exceeds the capacity, the ratio would exceed 1.0. This indicates there are more people seeking to use a road than there is available capacity within a given hour. A roadway V/C ratio that exceeds 1.0 indicates a segment of evacuation that would likely take over one hour.

Section 4 of the Evacuation Analysis evaluates each scenario and compares the volume of population evacuating to the capacity of the roadway segments along each evacuation route. To ensure that volume and capacity estimates are as conservative as possible and based on a worst-case scenario, the following data points are included in the model in the Evacuation Analysis:

- An additional volume factor was applied to Kanan Road south of the US-101 to account for the additional vehicles traveling into the City from Malibu in addition to City residents. An additional background traffic volume of 900 vehicles per hour was added to the daytime evacuation scenario and a background traffic volume of 100 vehicles per hour was added to the nighttime evacuation scenario. This data was based on recent traffic counts.
- The existing Evacuation Plan identifies that Sector 3 would evacuate northbound along Kanan Road through Oak Park. However, the Evacuation Analysis assumes that all Sector 3 residents would evacuate southbound along Kanan to the Kanan Road evacuation gateway to establish a worst-case scenario demand of available roadway capacity during a city-wide evacuation.
- The existing Evacuation Plan identifies that Sector 8 would evacuate to Liberty Canyon Road but the Evacuation Analysis analyzes a portion of Sector 8 residents evacuating to the Palo Comado evacuation gateway.
- The model estimates a full buildout of the City's General Plan and Housing Element.
- Hotel rooms are assumed at 100% occupancy with 1 car per hotel room.
- A vehicle ownership rate of two vehicles per household was multiplied by the number of existing and future dwelling units to determine the number of vehicles evacuating each sector.
- In Sector 4, which includes Old Agoura, a Passenger Car Equivalent (PCE) factor of 2.5 is applied to account for the fact that many residents would evacuate with larger vehicles, including using trailers to evacuate

animals. The PCE factor is applied to 10% of the evacuating vehicles based on a conservative estimate that 1 in 5 households in Old Agoura will evacuate with one larger vehicle, such as a trailer.

- During nighttime scenarios, 100% of residents are presumed to be at home.
- The Evacuation Analysis predicts evacuation traffic volumes from Oak Park and Santa Monica Mountains residents.
- Sanitized Replica origin-destination cellular phone data was obtained to estimate the population of non-residents in Agoura Hills, which includes those here for employment or recreation purposes, with one car assumed per person.
- The daytime scenario (Scenario 4) assumes voluntary evacuation beginning at 10 AM and continuing until 12 PM and mandatory evacuation beginning at 12 PM and continuing until all evacuations are complete by 2 PM. The evacuation scenario occurs while all children are in school (Oak Park and Agoura Hills) and all businesses are open.
- Scenario 4 assumes that children will be picked up by parents at a rate of 1 parent for every 2 children, with trips to and from the school.
- The percentage of households evacuated during the voluntary evacuation period is based on actual data from the Woolsey Fire.

As shown in Section 4 of the Evacuation Analysis, even under the worst-case conditions, the majority of evacuation routes in the City have a V/C ratio of under 1.0, meaning that the roadway capacity is more than sufficient to accommodate the anticipated demand. The following roadway segments were shown to have a V/C ratio over 1.0.

Table 2 - Roadway Segments with V/C Over 1.0

Roadway Segments With V/C Over 1.0	
Segment	**Scenarios with V/C over 1.0**
Reyes Adobe Rd. N of US-101 On-Ramps, Southbound	Scenario 1 V/C Ratio: 1.48 Scenario 2 V/C Ratio: 1.48 Scenario 4 Voluntary Phase V/C Ratio: 1.03
Reyes Adobe Rd. N of Canwood St., Southbound	Scenario 1 V/C Ratio: 1.15 Scenario 2 V/C Ratio: 1.15
Kanan Rd. N of US-101 On-Ramps, Southbound	Scenario 1 V/C Ratio: 2.07 Scenario 2 V/C Ratio: 1.03 Scenario 3 Mandatory Phase V/C Ratio: 1.07 Scenario 4 Voluntary Phase V/C Ratio: 1.41
Kanan Rd. N of Hillrise, Southbound	Scenario 1 V/C Ratio: 2.84 Scenario 2 V/C Ratio: 1.28 Scenario 3 Voluntary Phase V/C Ratio: 1.37 Scenario 3 Mandatory Phase V/C Ratio: 1.47 Scenario 4 Voluntary Phase V/C Ratio: 1.84 Scenario 4 Mandatory Phase V/C Ratio: 1.09
Kanan Rd. N of Thousand Oaks Blvd., Southbound	Scenario 1 V/C Ratio: 2.19 Scenario 3 Voluntary Phase V/C Ratio: 1.04 Scenario 3 Mandatory Phase V/C Ratio: 1.15 Scenario 4 Voluntary Phase V/C Ratio: 1.32
Kanan Rd. N of City Limits, Southbound	Scenario 1 V/C Ratio: 1.56

In addition to the capacity analysis, State Government Code § 65302.15 requires that local agencies evaluate the safety and viability of evacuation routes. Using the California Governor's Office of Planning and Research (OPR) Evacuation Planning Technical Advisory (Technical Advisory), the Evacuation Analysis determined whether each evacuation route was both "safe" and "viable" in each of the four scenarios.

Per the Technical Advisory, an evacuation route is determined to be "safe" if it does not face an increased risk of becoming inaccessible or unsafe due to hazardous conditions, such as structural failure, route inundation, falling debris, and limited visibility. All evacuation routes were determined to be safe in all scenarios because they have continuous paved surfaces, generally contain roadway shoulders, and lack any physical barriers such as gates, which could impact evacuation. Potential impacts to roadways including bridge structural failure, route inundation, and falling debris have not historically impacted evacuation routes during wildfire events within the City.

To assess whether each evacuation route is viable, the Technical Advisory states that local agencies should determine whether current transportation infrastructure and services can reasonably enable populations to leave an area at risk and/or reach temporary areas of refuge under a range of emergency scenarios. The Evacuation Analysis determined that all evacuation routes are viable, as they reasonably enable populations to leave areas of risk and reach evacuation locations through the US-101 gateway. Furthermore, by identifying roadway segments with V/C ratios above 1.0, the Evacuation Analysis allows the City to focus current and future evacuation planning efforts on increasing the capacity of those segments or reducing the volume of vehicles that travel through those segments.

POSSIBLE IMPLEMENTATION MEASURES FOR QUICKER EVACUATION

Section 5 of the Evacuation Analysis contains possible implementation measures that could be used to increase the capacity of the segments with a V/C ratio above 1.0 and allow residents to evacuate more quickly. One potential strategy would be to implement counterflow operations and use the bicycle lane to accommodate additional vehicles on certain southbound segments of Kanan Road and Reyes Adobe Road. Counterflow operations are when the direction of a lane is switched to provide additional roadway capacity for the direction of evacuation and away from the wildfire. For the roadway segments noted in Table 2 above, one northbound lane could be converted to a southbound lane, increasing capacity. To successfully implement counterflow operations, the City would coordinate with incident command, traffic control officers and other emergency officials and agencies that could deploy traffic control devices, signage, and cones to quickly designate counterflow lanes. Tables 8 and 9 on Page 43 of the Evacuation Analysis contain a capacity analysis for segments with a V/C ratio over 1.0 if temporary capacity enhancements are implemented, including counterflow and using the bike lane on Kanan Road. With these temporary capacity enhancements, only three segments of southbound Kanan Road would have a V/C ratio over 1.0 during Scenario 1, and only one segment of Kanan Road would have a V/C ratio over 1.0 during the voluntary phase of Scenario 4.

It is important to note that the capacity analysis in Tables 8 and 9 (counterflow analysis) still models a worst-case scenario where the populations of Sector 3 and Oak Park all utilize southbound Kanan Road with two vehicles per household. It does not account for additional measures that will be taken by the City, emergency personnel, and evacuating individuals to avoid portions of Kanan Road where possible, which would reduce the actual volume of vehicles utilizing more burdened roadway segments.

Additional implementation measures that could effectively reduce the volume of vehicles on certain roadway segments as needed during mandatory evacuation periods include the following:

- Provide early notification through established communication systems when high hazard events are forecasted to promote public preparedness, thereby increasing the number of vehicles that evacuate during voluntary evacuation periods;
- Facilitate early voluntary evacuation prior to mandatory or all-at-once evacuation to decrease demand on roadways;
- Continue to implement the City's public education campaign to ensure that everyone knows their evacuation zone and potential evacuation routes;
- Plan to station emergency personnel at key intersections, such as the intersection of Kanan Road and Thousand Oaks Boulevard and others, to redirect vehicles towards roadways with more capacity (based on

the nature of the emergency), and to more efficiently direct traffic towards the US-101 gateway;
- Help to promote and facilitate early evacuation of Old Agoura, particularly owners with horses or livestock.

Lastly, the General Plan Safety Element and the General Plan Table of Contents has been updated to accommodate the Evacuation Analysis, the updated MJHMP, recent updates to the City's Fire Hazard Severity Zones, and compliance with State Government Code § 65302.15. The proposed changes are attached to this report in legislative format, with updated text in red.

EMERGENCY EVACUATION PROTOCOL AND INCIDENT COMMAND

When evaluating any evacuation planning document, it is important to fully understand the City's role during an evacuation. The Los Angeles County Sheriff's Office or the Los Angeles County Fire Department (LACFD) are the agencies with the authority to order an evacuation and conduct emergency efforts directly related to an incident. The decision is made by the established Incident Commander for the emergency in consultation with all relevant law enforcement agencies.

All components of emergency response, including the establishment of a local Emergency Operations Center (EOC), is managed in accordance with the National Incident Management System (NIMS), which is a standardized approach to emergency management developed by the United States Department of Homeland Security. Furthermore, California law gives the authority to law enforcement to restrict access to any area where a menace to public health or safety exists. It is not the role of a local EOC to put up traffic control or restrict access to specific areas. This means that the ultimate decision on whether to implement certain traffic control measures, including counterflow, is at the discretion of Incident Command, not the local EOC.

During an emergency, the City Manager has the authority to activate the City's EOC. The City's EOC does not manage the emergency itself. Instead, it supports the incident by coordinating resources, interagency communication, and communication with the public. Below are some broad examples of the role of the City's EOC.

- Resource coordination: Facilitating transportation, shelter, and logistics support.
- Information management: Collecting and sharing situational awareness with City leadership and the public.
- Policy decisions: Declaring local emergencies, issuing citywide directives, and supporting continuity of government.
- Interagency liaison: Coordination with county, state, and federal partners.
- Supporting on-scene operations: Ensuring Incident Command has what it needs (equipment, personnel, facilities).

OUTREACH AND COORDINATION

Following the Planning Commission meeting on May 1, 2025, the City allocated additional budget resources to the Project and completed the updated Evacuation Analysis in December of 2025. On December 26, 2025, the City distributed the updated Evacuation Analysis and the updated Safety Element to the LACFD, the local Fire Department Station (Station 89), the Board of Forestry and Fire Protection (BOF), CAL FIRE, and the California Geological Survey (California Department of Conservation).

CAL FIRE is the administrative arm of the BOF. Soon after the distribution of the Project documents, City staff began working with CAL FIRE to address their comments, which were mostly minor grammatical notes on the Safety Element. On January 14, 2026, Fire Captain Joe Kennedy from CAL FIRE provided the City with an informal assessment that explains in detail how the City's updated Safety Element and Evacuation Analysis meet all statutory requirements.

Following the completion of CAL FIRE's informal review on January 14, 2026, the Project was placed on the agenda for formal review by the BOF's Natural Resources Committee on March 10th. At the meeting, the BOF's Natural Resources Committee noted how thorough the City's Safety Element update and Evacuation Analysis were. Furthermore, the Committee remarked that the City's Safety Element update and the Evacuation Analysis, were "one of the best they have ever reviewed" and found that the Project meets all statutory requirements.

Since the evacuation plan would impact neighboring communities in Ventura County and to encourage interagency coordination, City staff also notified the Ventura County Office of Emergency Services (VCOES) of the BOF hearing and the Planning Commission meeting, and forwarded all project materials to them for review and comment. City staff has spoken with VCOES staff regarding the Project but has not received any formal comment regarding the Evacuation Plan or Safety Element. The VCOES did provide a recommendation regarding the City's Community Wildfire Protection Plan (CWPP), which is not the subject of this report.

RELATED EVACUATION PLANNING EFFORTS

The catalyst for this Project was the adoption of the MJHMP on August 24, 2024, and the requirement that local agencies update their Safety Element to identify evacuation routes and their capacity, safety, and viability and evacuation locations under a range of emergency scenarios. For that reason, the Evacuation Analysis associated with this Project is primarily focused on providing a targeted analysis that satisfies all statutory requirements, but it will also provide long-term value for the City when conducting other related evacuation planning efforts. Below is a list of other evacuation planning documents that have already been completed or are currently under way, and how they relate to this Project.

- City Evacuation Plan Created in 2020 and updated in 2022
    - Developed through a collaborative multi-agency process
    - Clarifies roles and responsibilities of participating agencies
    - Identifies evacuation and traffic management strategies
    - Establishes communication protocols
    - Used for the Project to predict evacuation routes, with limited exceptions
- City Emergency Operations Plan Adopted 2023
    - Addresses the City of Agoura Hills planned response to extraordinary emergency situations associated with natural disasters, technological incidents, and national security emergencies
    - Focuses specifically on operations and operational concepts established under the California Standardized Emergency Management System (SEMS) and the National Incident Management System (NIMS)
    - Helps to understand the City's role in evacuation response
- MJHMP adopted by the City in August of 2024
    - Established by all participating cities in the Las Virgenes Malibu Council of Governments to provide for a more thorough, regional hazard mitigation plan
    - Allows for collaboration and more effective use of resources
    - Meets FEMA requirements and allows participating members to apply for mitigation grants
    - The goals of the plan are to protect life, property, and the environment, increase public awareness, facilitate regional partnership and implementation, and establish emergency management processes
    - Used to develop the Evacuation Plan and is adopted by reference in the Safety Element
    - MJHMP required to be updated every 5 years to remain eligible for grants
- Community Wildfire Risk Assessment (CWRA) completed in September 2025
    - Provides the technical analysis used to understand potential wildfire hazards, risks and vulnerabilities across Agoura Hills
    - Serves as the basis for government agencies, community organizations, residents and other stakeholders to develop targeted mitigation activities, programs and policies to help increase resiliency to wildfire threats in the future

    - Engaged many stakeholders in the process of developing the CWRA, including the LACFD District 7, LACFD Forestry Division, Los Angeles County Sheriff's Department, Mountain Recreation & Conservation Authority (MRCA), Agoura Hills Fire Safe Council, Southern California Edison, Santa Monica Mountains Conservancy, Agoura Hills Fire Safe Council, California State Parks Service, and the National Park Service
    - The CWRA was completed while the Project was in progress, and it helped to augment the Evacuation Analysis
- Community Wildfire Protection Plan (CWPP) - In process
    - Using the insight from the CWRA, provides a clear, community-informed roadmap to reduce wildfire risk and strengthen the City's long-term resilience
    - Outlines practical strategies to help the City, partner agencies, homeowners' associations, and residents prepare for, mitigate against, respond to, and recover from wildfire events
    - Engages the same stakeholders as described in the CWRA
    - Will use the Evacuation Analysis to refine mitigation strategies

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) REVIEW

The Project will not result in a direct or reasonably foreseeable indirect physical change in the environment, as its contents are limited to identifying evacuation routes, analyzing their capacity, safety, and viability, and providing recommendations, as described above. The recommendations and activities in the Evacuation Analysis are limited to specific signal timing plans, counterflow operations, and alternate evacuation routes, none of which involve physical improvements. Therefore, the Project is exempt from the application of CEQA pursuant to the following regulations:

- State CEQA Guidelines §15262: Feasibility and Planning Studies because the Evacuation Analysis involves only a feasibility study which may lead to possible future actions, which the City has not approved, adopted, or funded.
- State CEQA Guidelines §15269: Emergency Projects because the Evacuation Analysis' recommendations involve specific actions necessary to prevent or mitigate an emergency.
- State CEQA Guidelines §15301: Existing Facilities [Class 1], because the Evacuation Analysis' recommendations involve the operation of existing public facilities involving no expansion of existing or former use.
- State CEQA Guidelines §15061(b)(3): The Safety Element textual updates will not result in a direct or reasonably foreseeable indirect physical change in the environment, as the amendment is limited to textual changes that do not involve any physical improvements. Therefore, it can be seen with certainty that there is no possibility that the Amendment to the General Plan Safety Element would have a significant effect on the environment. For these reasons, these activities are exempt from the application of CEQA under the common sense exemption (State CEQA Guidelines §15061(b)(3)).

For the reasons noted above, the Project is exempt from CEQA.

FINDINGS

The City's General Plan is subject to update or amendment if studies, public interest, and development policies and/or practices indicate such amendments to be in the best interests of the public health, safety and general welfare. The City of Agoura Hills initiated a General Plan Amendment (Case No. GPA-2024-0007) to update the Table of Contents and Chapter 5 Community Safety (Safety Element) to ensure consistency with State law, including but not limited to Government Code Section 65302.15. The Project improves the City's emergency preparedness and is internally consistent with all General Plan goals and policies.

FISCAL IMPACT

Funds have been allocated in the City's Fiscal Year 2025-26 Budget to pay for all consultant costs associated with the project. The Planning Commission's recommendation will not have any impact on the City's 2025-26 Budget.

RECOMMENDATION

Staff recommends the Planning Commission adopt a Planning Commission Resolution recommending that the City Council of the City of Agoura Hills adopt a resolution approving a general plan amendment to revise the table of contents and the Safety Element (Chapter 5, Community Safety) with the updated Multi-Jurisdictional Hazard Mitigation Plan, the adopted evacuation plan, and the updated evacuation analysis (Case No. GPA-2024-007) and make findings of exemption under the California Environmental Quality Act.

Attachments

Draft Planning Commission Resolution.pdf
Draft City Council Resolution.pdf
Agoura Hills Draft Evacuation Analysis.pdf
Safety Element Text Amendment Redline.pdf
General Plan Introduction Text Amendment Redline.pdf
Board of Forestry and Fire Protection Formal Review Letter.pdf
2024 LVMCOG Multi-Jurisdictional Hazard Mitigation Plan.pdf
Agoura Hills Resolution 24-2080 Adopting LVMCOG MJHMP.pdf

RESOLUTION NO. 26-XXXX

A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF AGOURA HILLS RECOMMENDING THAT THE CITY COUNCIL OF THE CITY OF AGOURA HILLS ADOPT A RESOLUTION APPROVING A GENERAL PLAN AMENDMENT TO AMEND THE SAFETY ELEMENT (CHAPTER 5, COMMUNITY SAFETY) TO INCLUDE AN UPDATED EVACUATION ANALYSIS, EVACUATION PLAN, AND THE UPDATED 2024 MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN, AND REVISE THE TABLE OF CONTENTS ACCORDINGLY, AND MAKE OTHER MINOR TEXTUAL REVISIONS TO THE SAFETY ELEMENT (CASE NO. GPA-2024-0007), AND MAKE FINDINGS OF EXEMPTION UNDER THE CALIFORNIA ENVIRONMENTAL QUALITY ACT

THE PLANNING COMMISSION OF THE CITY OF AGOURA HILLS HEREBY FINDS, RESOLVES, AND ORDERS AS FOLLOWS:

Section I. On May 12, 1993, the City Council of the City of Agoura Hills adopted the City of Agoura Hills General Plan as the guide for physical development in the City. A general plan is the general, long-range policy guide adopted by local agencies to enable coordinated, adjusted, and harmonious development pursuant to state law (Government Code Section 65300 *et seq.*).

Section II. On March 24, 2010, the City Council of the City of Agoura Hills adopted the City of Agoura Hills General Plan 2035 approving General Plan Amendment Case No. 10-GPA-001 and certified a Final Program Environmental Impact Report (FEIR) that assessed the potential environmental impacts from implementation of the City of Agoura Hills General Plan 2035 and related General Plan Amendment.

Section III. Pursuant to Government Code Section 65356(a), the legislative body shall adopt or amend a General Plan by resolution, which resolution shall be adopted by the affirmative vote of not less than a majority of the total membership of the legislative body.

Section IV. The City's General Plan is subject to update or amendment if study, public interest, and development policies and/or practices indicate such amendments to be in the best interests of the public health, safety and general welfare. The City of Agoura Hills initiated a General Plan Amendment (Case No. GPA-2024-0007) to update the Table of Contents and Chapter 5 Community Safety (Safety Element) to ensure consistency with State law, including but not limited to Government Code Section 65302.15.

Section V. The City of Agoura Hills has initiated a legislative action to adopt a Resolution approving General Plan Amendment Case Number GPA-2024-0007, which amends the General Plan as follows:

DRAFT

1. Update the text and exhibits within the Safety Element as depicted in Exhibit A of the attached Draft City Council Resolution, summarized as follows:

    a. Amend the text of the Safety Element to incorporate by reference the 2024 Las Virgenes-Malibu Council of Governments Multi-Jurisdictional Hazard Mitigation Plan and update related text;
    b. Amend the text of the Safety Element to remove or revise outdated text;
    c. Add text to note additional statutory requirements, particularly regarding Government Code § 65302.15;
    d. Replace Exhibit S-4 with the most current Fire Hazard Severity Zone map and update related text;
    e. Add the Evacuation Analysis and Evacuation Plan as Appendices to the General Plan; and
    f. Add text incorporating by reference the Evacuation Analysis and Evacuation Plan.
2. Update the Table of Contents of the General Plan to add Appendix B (Evacuation Analysis) and Appendix C (Evacuation Plan) to the list of appendices.

Section VI. The Planning Commission of the City of Agoura Hills considered the Project at a public hearing held on April 2, 2026, at 6:00 p.m. The public hearing was held in-person in the City Council Chambers. Members of the public were given the opportunity to present statements and provide materials to the Planning Commission both in-person and electronically. Notice of the time, date, means of participation in, and purpose of the aforesaid hearing was duly given and published as required by state law.

Section VII. Evidence, both written and oral, including the staff report and supporting documentation, was presented to and considered by the Planning Commission at the aforementioned public hearing.

Section VIII. The Project is consistent with and furthers the General Plan's goals and policies by increasing the City's evacuation preparedness and complying with state law.

Section IX. CEQA. The Project will not result in a direct or reasonably foreseeable indirect physical change in the environment, as its contents are limited to identifying evacuation routes, analyzing their capacity, safety, and viability, and providing recommendations, as described above. The recommendations and activities in the Evacuation Analysis are limited to specific signal timing plans, counterflow operations, and alternate evacuation routes, none of which involve physical improvements. Therefore, the Project is exempt from the application of CEQA pursuant to the following regulations:

1. State CEQA Guidelines §15262: Feasibility and Planning Studies because the Evacuation Analysis involves only a feasibility study which may lead to possible future actions, which the City has not approved, adopted, or funded.
2. State CEQA Guidelines §15269: Emergency Projects because the Evacuation Analysis' recommendations involve specific actions necessary to prevent or mitigate an emergency.
3. State CEQA Guidelines §15301: Existing Facilities [Class 1], because the Evacuation Analysis' recommendations involve the operation of existing public facilities involving no expansion of existing or former use.

4. State CEQA Guidelines §15061(b)(3): The Safety Element textual updates will not result in a direct or reasonably foreseeable indirect physical change in the environment, as the amendment is limited to textual changes that do not involve any physical improvements. Therefore, it can be seen with certainty that there is no possibility that the Amendment to the General Plan Safety Element would have a significant effect on the environment. For these reasons, these activities are exempt from the application of CEQA under the common sense exemption (State CEQA Guidelines §15061(b)(3)).

For the reasons noted above, the Project is exempt from CEQA.

Section X. Based on the aforementioned findings, the Planning Commission hereby recommends that the City Council adopt a resolution approving a general plan amendment to revise the table of contents and the Safety Element (Chapter 5, Community Safety) with the updated Multi-Jurisdicational Hazard Mitigation Plan, the adopted evacuation plan, and the updated evacuation analysis (Case No. GPA-2024-007) and make findings of exemption under the California Environmental Quality Act.

Section XI. The Secretary of the Planning Commission shall certify to the passage, approval, and adoption of this resolution, and shall cause this resolution and its certification to be entered in the Book of Resolutions of the Planning Commission of the City.

PASSED, APPROVED, and ADOPTED this ___th day of _____, 2026, by the following vote to wit:

AYES: ( )
NOES: ( )
ABSTAIN: ( )
ABSENT: ( )

_____
Jessica Reinhardt, Chair

_____
Robby Nesovic, Secretary

DRAFT

EXHIBIT “A”

DRAFT Resolution of the City Council of the City of Agoura Hills Approving the General Plan Amendment (Case Number GPA- 2024-0007) and Making Findings of Exemption Under the California Environmental Quality Act

DRAFT

RESOLUTION NO. 26-XXXX

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AGOURA HILLS APPROVING A GENERAL PLAN AMENDMENT TO AMEND THE SAFETY ELEMENT (CHAPTER 5, COMMUNITY SAFETY) TO INCLUDE AN UPDATED EVACUATION ANALYSIS, EVACUATION PLAN, AND THE UPDATED 2024 MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN, AND REVISE THE TABLE OF CONTENTS ACCORDINGLY, AND MAKE OTHER MINOR TEXTUAL REVISIONS TO THE SAFETY ELEMENT (CASE NO. GPA-2024-0007), AND MAKE FINDINGS OF EXEMPTION UNDER THE CALIFORNIA ENVIRONMENTAL QUALITY ACT

THE CITY COUNCIL OF THE CITY OF AGOURA HILLS HEREBY FINDS, RESOLVES, AND ORDERS AS FOLLOWS:

Section I. On May 12, 1993, the City Council of the City of Agoura Hills adopted the City of Agoura Hills General Plan as the guide for physical development in the City. A general plan is the general, long-range policy guide adopted by local agencies to enable coordinated, adjusted, and harmonious development pursuant to state law (Government Code Section 65300 *et seq.*).

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Section III. Pursuant to Government Code Section 65356(a), the legislative body shall adopt or amend a General Plan by resolution, which resolution shall be adopted by the affirmative vote of not less than a majority of the total membership of the legislative body.

Section IV. The City's General Plan is subject to update or amendment if study, public interest, and development policies and/or practices indicate such amendments to be in the best interests of the public health, safety and general welfare. The City of Agoura Hills initiated a General Plan Amendment (Case No. GPA-2024-0007) to update the Table of Contents and Chapter 5 Community Safety (Safety Element) to ensure consistency with State law, including but not limited to Government Code Section 65302.15.

Section V. The City of Agoura Hills has initiated a legislative action to adopt a Resolution approving General Plan Amendment Case Number GPA-2024-0007, which amends the General Plan as follows:

1. Update the text and exhibits within the Safety Element as depicted in Exhibit A of the attached Draft City Council Resolution, summarized as follows:

a. Amend the text of the Safety Element to incorporate by reference the 2024 Las Virgenes-Malibu Council of Governments Multi-Jurisdictional Hazard Mitigation Plan and update related text;
b. Amend the text of the Safety Element to remove or revise outdated text;
c. Add text to note additional statutory requirements, particularly regarding Government Code § 65302.15;
d. Replace Exhibit S-4 with the most current Fire Hazard Severity Zone map and update related text;
e. Add the Evacuation Analysis and Evacuation Plan as Appendices to the General Plan; and
f. Add text incorporating by reference the Evacuation Analysis and Evacuation Plan.

2. Update the Table of Contents of the General Plan to add Appendix B (Evacuation Analysis) and Appendix C (Evacuation Plan) to the list of appendices.

Section VI. The Planning Commission of the City of Agoura Hills considered the Project at a regularly scheduled public hearing held on April 16, 2026, at 6:00 p.m. The public hearing was held in-person in the City Council Chambers. Members of the public were given the opportunity to present statements and provide materials to the Planning Commission both in-person and electronically. Notice of the time, date, means of participation in, and purpose of the aforesaid hearing was duly given and published as required by state law. After closing the public hearing, the Planning Commission considered all supporting documentation including the staff report and written and oral comments and recommended the Agoura Hills City Council approve the Project.

Section VII. The City Council of the City of Agoura Hills considered the Project at a regularly scheduled public hearing held on _____, 2026, at 6:00 p.m. The public hearing was held in-person in the City Council Chambers. The members of the public were given the opportunity to present statements and provide materials to the Planning Commission both in-person and electronically. Notice of the time, date, means of participation in, and purpose of the aforesaid hearing was duly given and published as required by state law.

Section VIII. Evidence, both written and oral, including the staff report and supporting documentation, was presented to and considered by the City Council at the aforementioned public hearing.

Section IX. The Project is consistent with and furthers the General Plan's goals and policies by increasing the City's evacuation preparedness and complying with state law.

Section X. CEQA. The Project will not result in a direct or reasonably foreseeable indirect physical change in the environment, as its contents are limited to identifying evacuation routes, analyzing their capacity, safety, and viability, and providing recommendations, as described above. The recommendations and activities in the Evacuation Analysis are limited to specific signal timing plans, counterflow operations, and alternate evacuation routes, none of which involve physical improvements. Therefore, the Project is exempt from the application of CEQA pursuant to the following regulations:

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Evacuation Analysis involves only a feasibility study which may lead to possible future actions, which the City has not approved, adopted, or funded.

2. State CEQA Guidelines §15269: Emergency Projects because the Evacuation Analysis' recommendations involve specific actions necessary to prevent or mitigate an emergency.
3. State CEQA Guidelines §15301: Existing Facilities [Class 1], because the Evacuation Analysis' recommendations involve the operation of existing public facilities involving no expansion of existing or former use.
4. State CEQA Guidelines §15061(b)(3): The Safety Element textual updates will not result in a direct or reasonably foreseeable indirect physical change in the environment, as the amendment is limited to textual changes that do not involve any physical improvements. Therefore, it can be seen with certainty that there is no possibility that the Amendment to the General Plan Safety Element would have a significant effect on the environment. For these reasons, these activities are exempt from the application of CEQA under the common sense exemption (State CEQA Guidelines §15061(b)(3)).

For the reasons noted above, the Project is exempt from CEQA.

Section XI. Based on the aforementioned findings, the City Council of the City of Agoura Hills hereby adopts a Resolution of the City Council of the City of Agoura Hills approving a general plan amendment to revise the table of contents and the Safety Element (Chapter 5, Community Safety) with the updated Multi-Jurisdicational Hazard Mitigation Plan, the adopted evacuation plan, and the updated evacuation analysis (Case No. GPA-2024-007) and make findings of exemption under the California Environmental Quality Act.

Section XII. The City Clerk shall certify to the passage, approval, and adoption of this resolution, and shall cause this resolution and its certification to be entered in the Book of Resolutions of the City Council of the City.

DRAFT

PASSED, APPROVED, and ADOPTED this ___ day of ___, 2026, by the following vote to wit:

AYES: ( )
NOES: ( )
ABSTAIN: ( )
ABSENT: ( )

_____
Jeremy Wolf, Mayor

_____
Kimberly M. Rodrigues, City Clerk

APPROVED AS TO FORM:

_____
Candice K. Lee, City Attorney

DRAFT

EXHIBIT “A”

EVACUATION ANALYSIS

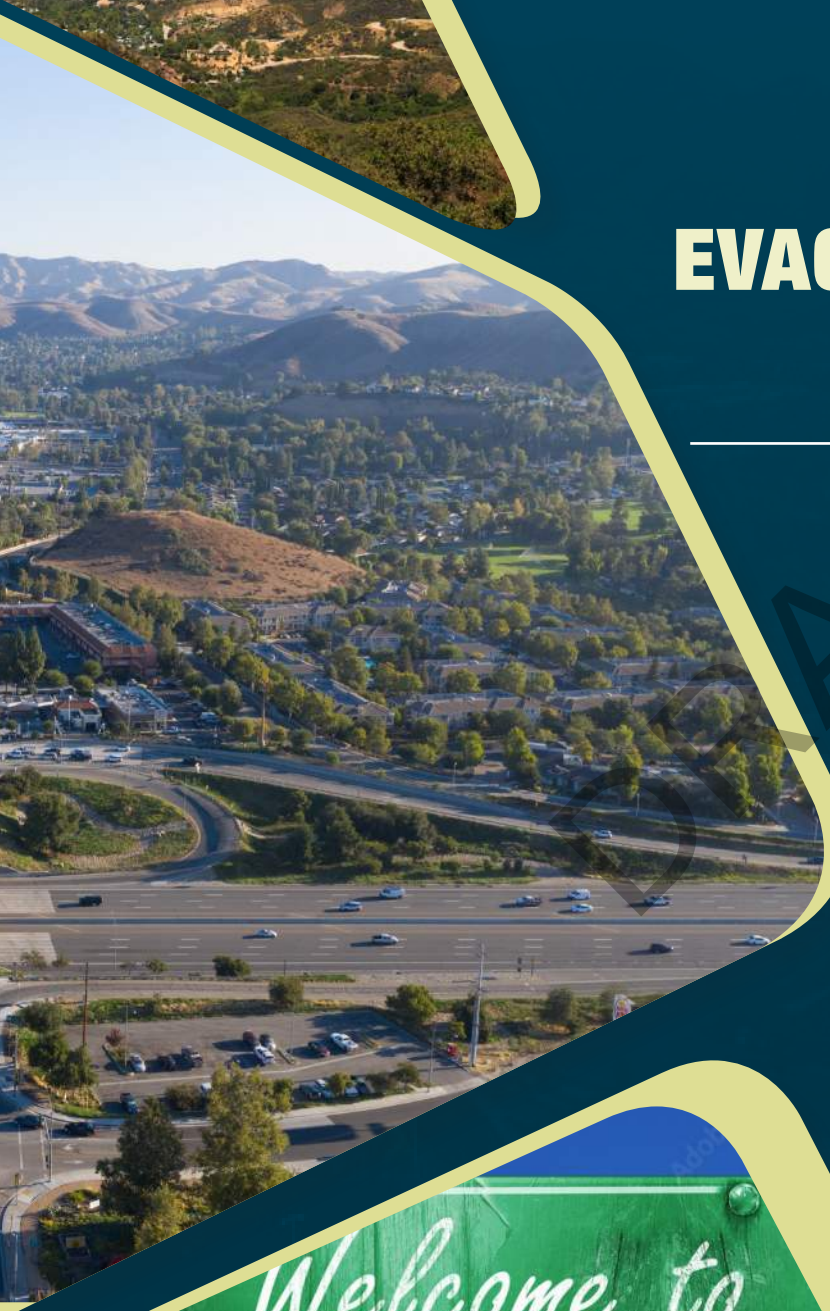
DRAFT

EXHIBIT “B”

GENERAL PLAN TEXT AMENDMENTS

DRAFT

Kimley»Horn
Expect More. Experience Better.



EVACUATION ANALYSIS

DECEMBER 2025

PREPARED FOR: CITY OF AGOURA HILLS

DRAFT

CITY OF AGOURA HILLS

AGOURA HILLS, CALIFORNIA

DRAFT

Draft Final Report for EVACUATION ANALYSIS

December 2025

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1. INTRODUCTION

The City of Agoura Hills is updating the Safety Element of the City of Agoura Hills' General Plan. Recent State legislation, including Assembly Bill 747 (AB 747) and Assembly Bill 1409 (AB 1409) created new requirements for local agencies to adhere to in their Safety Element or Local Hazard Mitigation Plan. The requirements are further discussed below.

California Government Code (GC) Section 65302 describes the purpose of a safety element to protect communities from unreasonable risks associated with natural events such as floods, fires, and geologic hazards. The Safety Element is required to address evacuation planning under applicable climate and non-climate stressors that could lead to an emergency scenario. This Evacuation Analysis provides an analysis of multiple evacuation scenarios to comply with the recent state legislation.

As mentioned, recent legislation requires the City to update its Safety Element as follows:

- AB 747, approved in 2019, added GC 65302.15 and requires that upon the next revision of a local hazard mitigation plan on or after January 1, 2022, the safety element shall be updated to identify evacuation routes and their capacity, safety, and viability under a range of evacuation scenarios.[1]
- AB 1409, approved in 2021, amended GC Section 65302.15 and requires that the safety element be updated to identify evacuation locations.[2]

As part of the Safety Element update, the City of Agoura Hills (City) conducted an Evacuation Analysis to identify and assess multiple evacuation routes that were likely to be utilized in the event of a natural hazard, which may take the form of a climate stressor (e.g. wildfire, flooding, drought, extreme heat, etc.) or non-climate stressor (e.g. earthquake, tsunami, etc.).

This analysis includes a range of emergency scenarios, including four wildfire scenarios, three with the hazard area to the northeast, and one with the hazard area to the south. Two of the scenarios analyzed a "worst-case" scenario, which is defined as a natural wildfire event with a short-notice mandatory evacuation for all individuals at once. Two of the scenarios analyzed a phased evacuation in which a voluntary evacuation warning is issued followed by a mandatory evacuation order for all individuals in the city. The analyzed scenarios are as follows:

- Scenario 1: All-at-Once nighttime wildfire originating northeast of Agoura Hills
- Scenario 2: All-at-Once nighttime wildfire originating south of Agoura Hills
- Scenario 3: Phased nighttime wildfire originating northeast of Agoura Hills
- Scenario 4: Phased daytime wildfire originating northeast of Agoura Hills

The emergency scenarios are described in Section 3.1, the evacuation locations are described in Section 3.2, and the evacuation routes are described in Section 3.3. The methodology for assessing the capacity, safety, and viability of evacuation routes is described in Section 3.3 and the analysis is described in Section 4. Implementation measures are provided as a conclusion of the report in Section 5, which offer methods to reduce roadway and evacuation route congestion, and evacuation strategies that consider vulnerable population groups.

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[1] Assembly Bill 747 - https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201920200AB747
[2] Assembly Bill 1409 - https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=202120220AB1409

2. PURPOSE AND NEED

Recent legislation including AB 747 and AB 1409 created and amended California Government Code sections related to evacuation analysis, including GC section 65302.15. A summary of the requirements to be reflected in the City's Safety Element is shown below.

2.1. Purpose: Compliance with California Government Code Sections

The project's Purpose is to comply with California Government Code Section 65302.15 as described below:

California Government Code Section 65302.15

California GC 65302.15 requires the following:

a) Upon the next revision of a local hazard mitigation plan, adopted in accordance with the federal Disaster Mitigation Act of 2000 (Public Law 106-390), on or after January 1, 2022, or, if a local jurisdiction has not adopted a local hazard mitigation plan, beginning on or before January 1, 2022, the safety element adopted pursuant to subdivision (g) of Section 65302 shall be reviewed and updated as necessary to **identify evacuation routes and their capacity, safety, and viability and evacuation locations under a range of emergency scenarios**. A county or city that has adopted a local hazard mitigation plan, emergency operations plan, or other document that fulfills commensurate goals and objectives may use that information in the safety element to comply with this section and, in that event, shall summarize and incorporate into the safety element that other plan or document.

b) After the initial revision of the safety element pursuant to subdivision (a), the planning agency shall review and, if necessary, revise the safety element upon each revision of the housing element or local hazard mitigation plan, but not less than once every eight years, to identify new information relating to flood and fire hazards and climate adaptation and resiliency strategies applicable to the city or county that was not available during the previous revision of the safety element.

(Amended by Stats. 2021, Ch. 481, Sec. 1. (AB 1409) Effective January 1, 2022.)

Satisfying the criteria within California GC Section 65302.15 will also meet standards set in AB 747 and AB 1409.

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2.2. Need: Evacuation Analysis

In order to comply with GC 65302.15, an evacuation analysis was conducted. This report was prepared to comply with GC 65302.15, addressing the requirements in AB 747 and AB 1409.

This analysis includes a range of emergency scenarios, including two wildfire scenarios, one during daytime when workers are in the City and children are at school, and one during nighttime, when all residents are at home.

During an emergency evacuation, residents, workers, and school children may evacuate to identified evacuation locations based on the emergency event. The City of Agoura Hills, in coordination with other official emergency personnel such as the Los Angeles County Fire Department and Sheriff's Department, may direct evacuees to identified locations outside of the hazard area. For example, if a natural hazard were to occur in the northern portion of the City, evacuees may be directed to evacuation locations in the south of the City. Whereas if a natural hazard occurred in the southern portion of the City, evacuees may be directed to evacuation locations in the north of the City. Evacuation locations may consist of nearby churches, school buildings, City administrative facilities, community centers, parks, or hotels.

Other evacuation locations may include homes of friends and family members, as well as locations designated by evacuation personnel in nearby communities. To model a worst-case scenario evacuation event, this analysis assumes that all individuals will be evacuating the City and will utilize designated evacuation gateways, which are defined as on-ramps to the US-101 freeway, to reach an evacuation location outside of Agoura Hills.

The capacity, safety, and viability of evacuation routes are analyzed in Section 4. The evacuation routes were found to be safe and viable based on the available capacity of the roadway segments compared to the demand. For evacuation routes where the evacuation demand exceeds the available capacity, the City will implement additional implementation measures during evacuations, as described in Section 5.1.

3. EVACUATION ANALYSIS – METHODOLOGY AND ASSUMPTIONS

This study identifies evacuation routes and their capacity, safety, and viability and evacuation locations under a range of emergency scenarios, per the requirements in GC 65302.15.

This study was conducted based on the guidance in the CAL OPR *Evacuation Planning Technical Advisory* (Technical Advisory). The Technical Advisory offers recommendations related to planning frameworks that California cities and communities may utilize during Safety Element updates. Due to the varied nature of each California community and city, the Technical Advisory provides general recommendations on evacuation planning, identification of evacuation routes and how to analyze their capacity, safety, and viability, and example implementation programs. This analysis referenced the Technical Advisory to establish a framework for methodology, assumptions, and recommendations.

In order to comply with GC 65302.15 requirements, this evacuation analysis identifies the appropriate emergency scenarios, evacuation locations, and evacuation routes. The elements are described in the following sections:

- Section 3.1: Emergency Scenarios
- Section 3.2: Evacuation Locations
- Section 3.3: Evacuation Routes and their Capacity, Safety, and Viability

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3.1. Emergency Scenarios

This analysis evaluates a range of emergency scenarios as required by GC 65302.15. Emergency scenarios vary depending on the potential hazard.

3.1.1. Potential Hazards

The Safety Element of the General Plan requires cities to address a variety of hazards including fires, floods, seismic risks, landslides, climate change impacts, and dam failure. The Technical Advisory notes that in order to determine the appropriate hazards to analyze, cities should review historical events as well as projected hazards.

The Federal Emergency Management Agency (FEMA) provides an online dataset, the National Risk Index, to illustrate the community risk against 18 natural hazards. The National Risk Index establishes a baseline for risk based on unique community risk indicators and historical data. As determined by the risk index rating and national percentiles, wildfires were found to be the most significant risk to the City of Agoura Hills. The FEMA Risk Index is shown in **Appendix A**.

The California Department of Forestry and Fire Protection publishes recommended Local Responsibility Areas and respective fire hazard severity zones within them. CAL FIRE classifies several zones within the

City of Agoura Hills as a Very High Fire Hazard Severity Zone, as shown in red on **Figure 1.** This analysis is therefore focused on an analysis of fire hazards among a range of evacuation scenarios.

In addition to wildfires, other types of disasters such as earthquakes and storms, have historically impacted the City of Agoura Hills and may impact the City in the future. This study includes an assessment of additional evacuation types including storm, tsunami, and earthquake events. A qualitative analysis for these hazards is included in Section 4.5.

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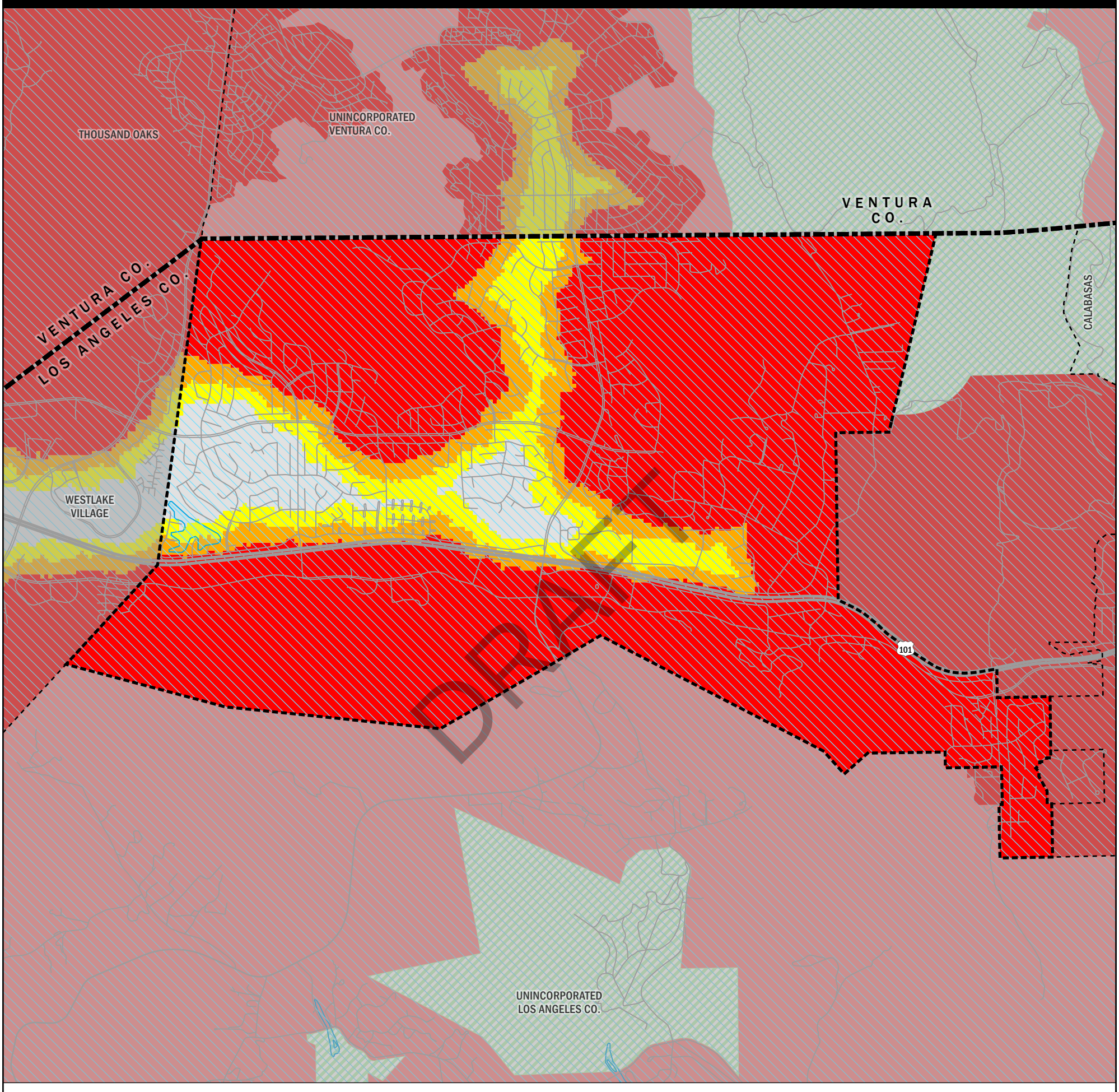
Figure 1: CAL FIRE Hazard Severity Zones

CITY OF AGOURA HILLS – LOS ANGELES COUNTY

Local Responsibility Area Fire Hazard Severity Zones

As Identified by the State Fire Marshal

March 24, 2025



Fire Hazard Severity Zones (FHSZ) in Local Responsibility Area (LRA), as Identified by the State Fire Marshal

Very High High Moderate

Fire Hazard Severity Zones in State Responsibility Area (SRA), Effective April 1, 2024

Very High

Mi 0 1

Km 0 1 2

Projection: NAD 83 California Teale Albers
Scale: 1:32,000 at 11" x 17"

Incorporated City Waterbody

Unzoned LRA Federal Responsibility Area (FRA)

Government Code section 51178 requires the State Fire Marshal to identify areas in the state as moderate, high, and very high fire hazard severity zones based on consistent statewide criteria and based on the severity of fire hazard that is expected to prevail in those areas. Moderate, high, and very high fire hazard severity zones shall be based on fuel loading, slope, fire weather, and other relevant factors including areas where winds have been identified by the Office of the State Fire Marshal as a major cause of wildfire spread.

The State of California and the Department of Forestry and Fire Protection make no representations or warranties regarding the accuracy of data or maps. Neither the State nor the Department shall be liable under any circumstances for any direct, special, incidental, or consequential damages with respect to any claim by any user or third party on account of, or arising from, the use of data or maps.

Gavin Newsom, Governor, State of California

Wade Crowfoot, Secretary for Natural Resources, CA Natural Resources Agency

Joe Tyler, Director/Fire Chief, CA Department of Forestry and Fire Protection

Daniel Berlant, State Fire Marshal, CA Department of Forestry and Fire Protection

Data Sources:

CAL FIRE Fire Hazard Severity Zones (FHSZSRA23_3, FHSZLRA_25_1)

CAL FIRE State Responsibility Areas (SRA25_1)

City and County boundaries as of 10/22/24 (CA Board of Equalization)

3.1.2. Potential Emergency Scenarios

California GC Section 65302.15 requires cities to conduct evacuation analyses for a range of emergency scenarios. The Technical Advisory notes that evacuations will be impacted by a range of factors, including the scale of the emergency, future development scenarios, time of the event (day or night), day of the week (weekday or weekend), time of year, weather conditions, time available to warn populations, population behavior and needs, and whether or not evacuation strategies are implemented.

This evacuation analysis includes an assessment of four emergency scenarios based on the following variables:

- Hazard source location and spread
- Time of day (day or night)
- Time available to warn populations

For all scenarios, the emergency scenario is assumed to be a large scale "worst-case" scenario with weather conditions most likely to trigger a wildfire. All scenarios would take place on a weekday, when more people are in the city compared to a weekend. The analysis included in Sections 4.1 to 4.4 assumes evacuation strategies are not implemented. The analysis included in Section 5 assumes that additional evacuation strategies are implemented.

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Hazard Source Location and Spread

In order to determine the appropriate emergency scenarios to analyze, historical wildfire data was analyzed to determine trends regarding the origin and spread of wildfire. Data on historical fire locations was collected from CAL FIRE, the Los Angeles County's After Action Review of the Woolsey Fire Incident (Woolsey Fire After Action Report), and the City of Agoura Hills Community Wildfire Risk Assessment (CWRA).

CAL FIRE provides historical fire perimeters that represent previous occurrences of local wildfires. **Figure 2** displays the areas of the city that have burned in previous wildfires, where each layer represents an individual wildfire that has occurred between 1950-Present. The Woolsey Fire After Action Report was produced by Los Angeles County to detail the timeline of emergency responses to the Woolsey Fire and provide recommendations for future emergencies. The CWRA conducted for the City documented historical wildfires and included statistical analyses of the spread of fires. The CWRA provides for a more informed process to analyze realistic wildfire scenarios that may impact the City.

Based on the CAL Fire data, CWRA and Woolsey After Action Report, it was determined that most fires originate northeast of the city and spread to the southwest. However, in order to provide a comprehensive analysis, an analysis of fire originating to the south was also included. The following fire origin locations were analyzed:

- Wildfire originating northeast of Agoura Hills (Scenarios 1, 3, and 4)
- Wildfire originating south of Agoura Hills (Scenario 2)

Time of Day (Day or Night)

This analysis includes an evaluation of a wildfire occurring during the nighttime, when all residents are at home, and an evaluation of a wildfire occurring during the daytime, when fewer residents are at home, but workers are in the city and school children are at school.

- Nighttime emergency (Scenarios 1, 2, and 3)
- Daytime emergency (Scenario 4)

Time Available to Warn Populations

During most emergency scenarios, there are several hours available to warn populations to evacuate. Typically, voluntary evacuation warnings are issued to some areas of the city, potentially followed by mandatory evacuation orders. However, worst-case scenarios would require an all-at-once mandatory evacuation order to all areas of the City. Therefore, this analysis includes the following two scenarios:

- All-at-once mandatory evacuation order (Scenarios 1 and 2)
- Phased evacuation (Scenarios 3 and 4)

In summary, the following four (4) scenarios were analyzed:

- **Scenario 1**: Wildfire originating northeast of Agoura Hills at night prompting an immediate All-at-Once mandatory evacuation
- **Scenario 2**: Wildfire originating south of Agoura Hills at night prompting an immediate All-at-Once mandatory evacuation
- **Scenario 3**: Wildfire originating northeast of Agoura Hills at night with a phased voluntary and mandatory evacuation
- **Scenario 4**: Wildfire originating northeast of Agoura Hills during the daytime with a phased voluntary and mandatory evacuation

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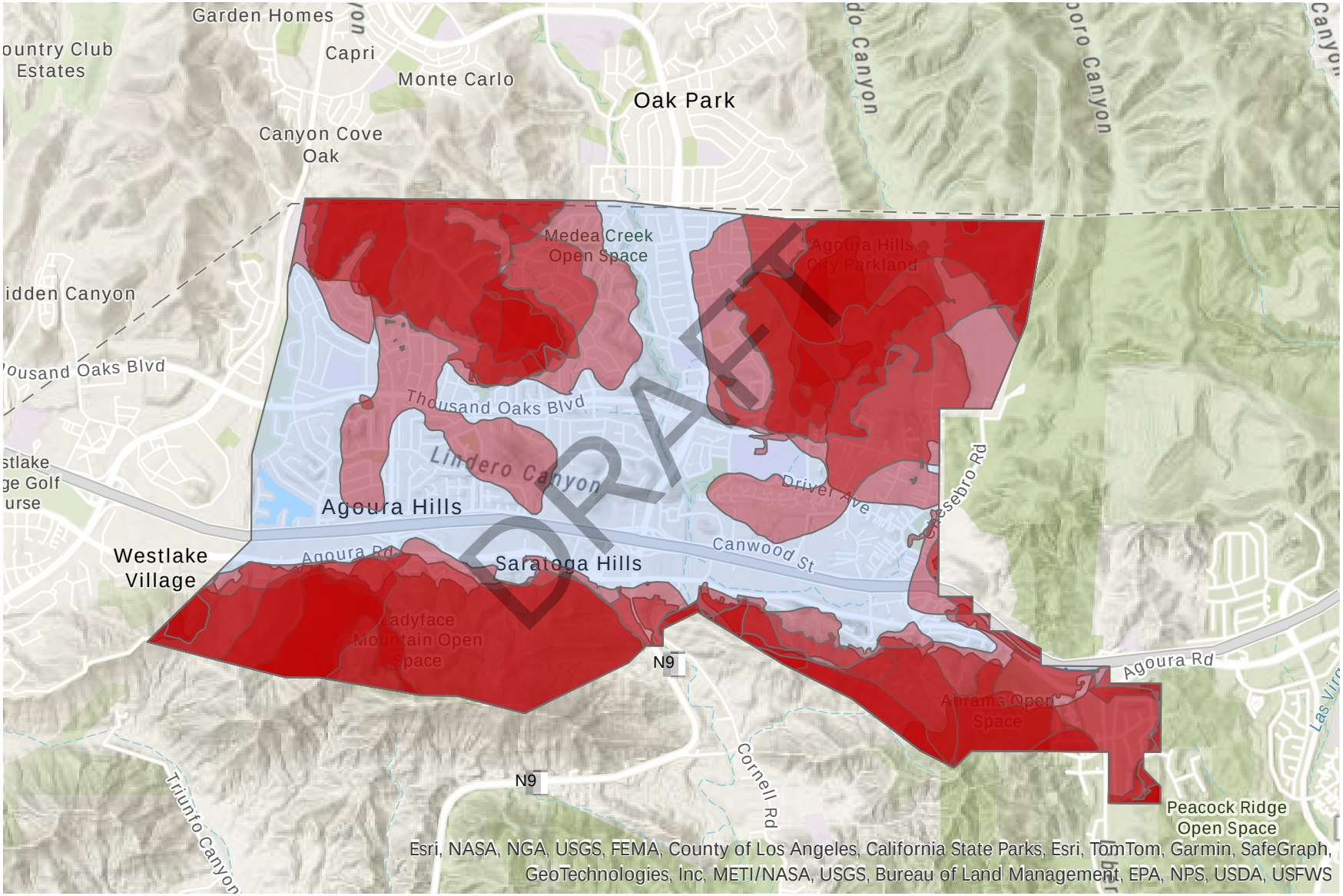
Figure 2: Agoura Hills Historical Fires



3.2. Evacuation Locations

GC 65302.15 requires cities to identify evacuation locations under a range of emergency scenarios. The Technical Advisory indicates that evacuation locations can be temporary areas of refuge, evacuation centers, and evacuation endpoints.

During an emergency scenario, residents evacuate to a variety of evacuation locations, including local churches, school buildings, City administrative facilities, community centers, parks, and hotels. Additional evacuation locations could include nearby homes of friends and family members, or temporary evacuation centers designated by emergency personnel.

This Evacuation Analysis analyzes worst-case scenarios where the entire city would need to evacuate. Therefore, evacuation locations are analyzed to be outside the City of Agoura Hills and accessed by the US-101 freeway which runs in an east-west direction through the City. Therefore, the on-ramps to US-101 are defined as evacuation gateways to evacuation locations outside of the City of Agoura Hills.

During certain disasters, and under appropriate evacuation scenarios, public facilities and buildings in the City may be used as temporary shelters when evacuation is not feasible or recommended. For example, students at school and employees at non-residential locations may be directed to shelter-in-place during daytime emergencies. For the purpose of this analysis, all evaluated scenarios assume that all individuals will evacuate the City with no shelter-in-place alternative.

3.3. Evacuation Routes and their Capacity, Safety, and Viability

GC 65302.15 requires cities to identify evacuation routes that can be used by people to evacuate to evacuation locations. Additionally, cities must analyze the capacity, safety, and viability of the routes. This section includes the following:

- Section 3.3.1: Evacuation Routes
- Section 3.3.2: Methodology for Capacity Analysis
- Section 3.3.4: Methodology for Safety Analysis
- Section 3.3.5: Methodology for Viability Analysis
- Section 3.3.6: Modeling Assumptions

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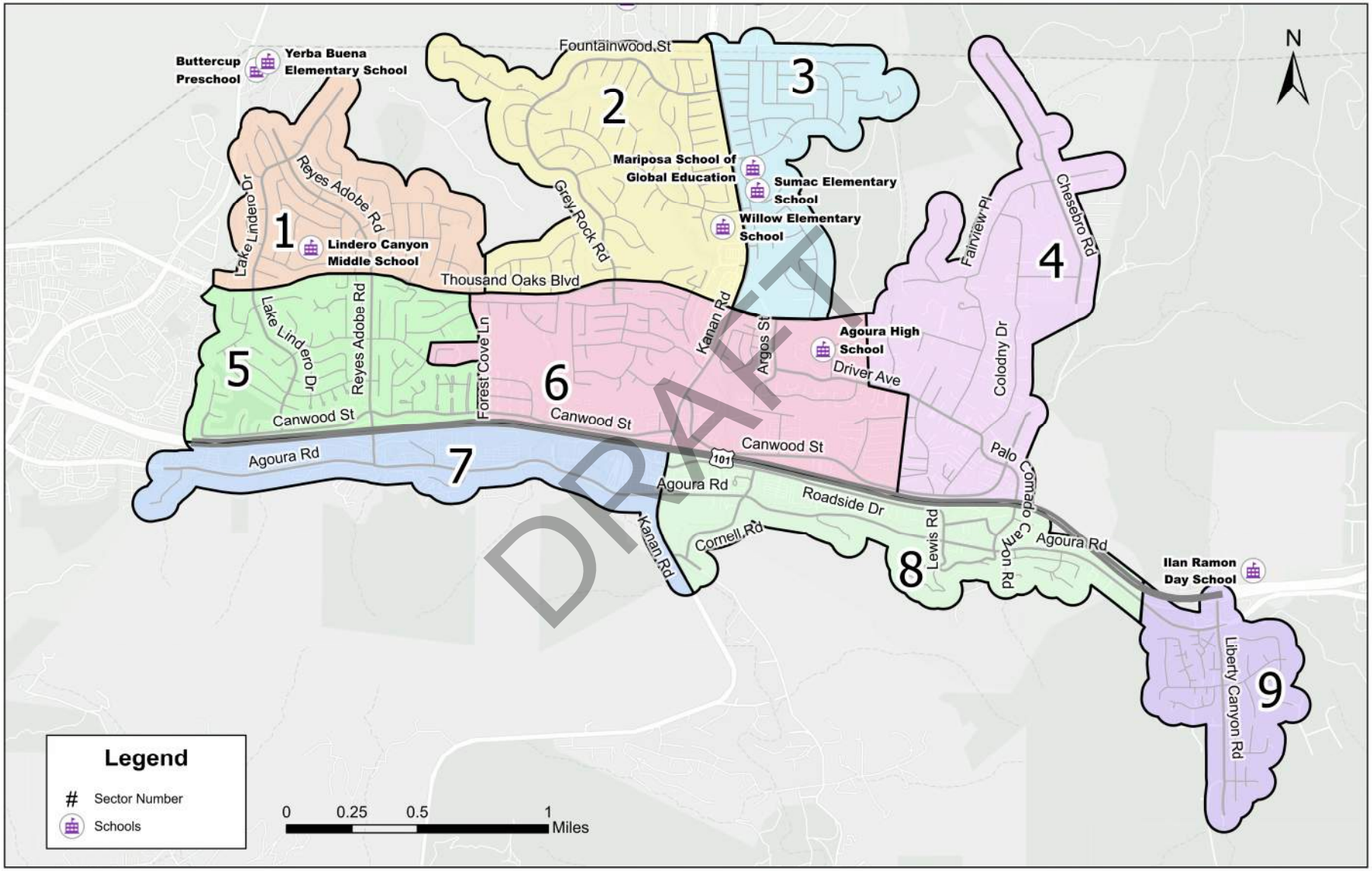
3.3.1. Evacuation Routes

The City of Agoura Hills Evacuation Plan (2020) identifies the routes that people can use to evacuate from various sectors and zones within the City. The Evacuation Plan is included in **Appendix B**. The Evacuation Plan split the City into seven zones and nine sectors. For consistency with the Evacuation Plan, this Evacuation Analysis analyzes the City within the same nine sectors. **Figure 3** shows the nine (9) evacuation sectors.

Evacuation routes were analyzed between the sectors, which include residential, employment, school, and other land uses, and the evacuation locations. For all evacuation routes, the final segment of the evacuation route to evacuation locations is along the US-101 freeway, which is administered by Caltrans. This study is limited to analyzing the evacuation routes within the City's right-of-way, so Evacuation Gateways are defined as the on-ramps to US-101 which people can use to access the evacuation locations.

Although the majority of people would evacuate along the designated evacuation route for their sector as described in the Evacuation Plan, a review of alternate evacuation routes was conducted based on proximity between sectors and evacuation gateways and historical evacuation travel routes.

Figure 3: Agoura Hills Evacuation Analysis Sectors



Each sector was assigned to one or multiple evacuation routes based on evacuation routes identified in the Evacuation Plan, proximity to the nearest Evacuation Gateway, and historical routes from the Woolsey Fire. The gateways, evacuation routes, and sectors assigned to each gateway are shown in **Table 1**.

Table 1: Evacuation Gateways and Evacuation Routes for Each Sector

Evacuation Gateway		Sectors Evacuated to Gateway and Evacuation Route(s)
1	US-101 On-Ramps at Reyes Adobe Road (Northbound and Southbound)	Sector 1: Reyes Adobe Rd via Lake Lindero Dr, Thousand Oaks Blvd, and local streets Sector 2 (*partial*): Reyes Adobe Rd via Thousand Oaks Blvd and local streets Sector 5: Reyes Adobe Rd via Lake Lindero Dr, Canwood St, and local streets Sector 6 (*partial*): Reyes Adobe Rd via Thousand Oaks Blvd and local streets Sector 7: Reyes Adobe Rd via Agoura Rd
2	US-101 On-Ramps at Kanan Road (two northbound ramps and two southbound ramps)	Sector 2 (*partial*): Kanan Rd via Thousand Oaks Blvd, Fountainwood St, Grey Rock Rd, and local streets Sector 3: Kanan Rd and local streets Oak Park: Kanan Rd Santa Monica Mountains: Kanan Rd from the south Sector 4 (partial): Kanan Rd via Thousand Oaks Blvd or Canwood St and local streets Sector 6 (*partial*): Kanan Rd via Thousand Oaks Blvd, Canwood St, and local streets
3	US-101 On-Ramps at Palo Comado Canyon Road/Chesebro Road (Northbound and Southbound)	Sector 4 (*partial*): Palo Comado Canyon Rd via Colodny Dr, Chesebro Rd, Driver Ave, Canwood St, and local streets Sector 6 (*partial*): Palo Comado Canyon Rd via Driver Ave, Canwood St, and local streets Sector 8 (*partial*): Dorothy Dr and Chesebro Dr via Agoura Rd, Lewis Rd, Roadside Dr, and local streets
4	US-101 On-Ramps at Liberty Canyon Road (Northbound and Southbound)	Sector 8 (*partial*): Liberty Canyon Rd via Agoura Rd and local streets Sector 9: Liberty Canyon Rd and local streets

[1] Based on the existing roadway network and historical data from the Woolsey Fire evacuation, it is known that people would also evacuate to other gateways outside the City. This analysis assumes all evacuate to gateways within the City.

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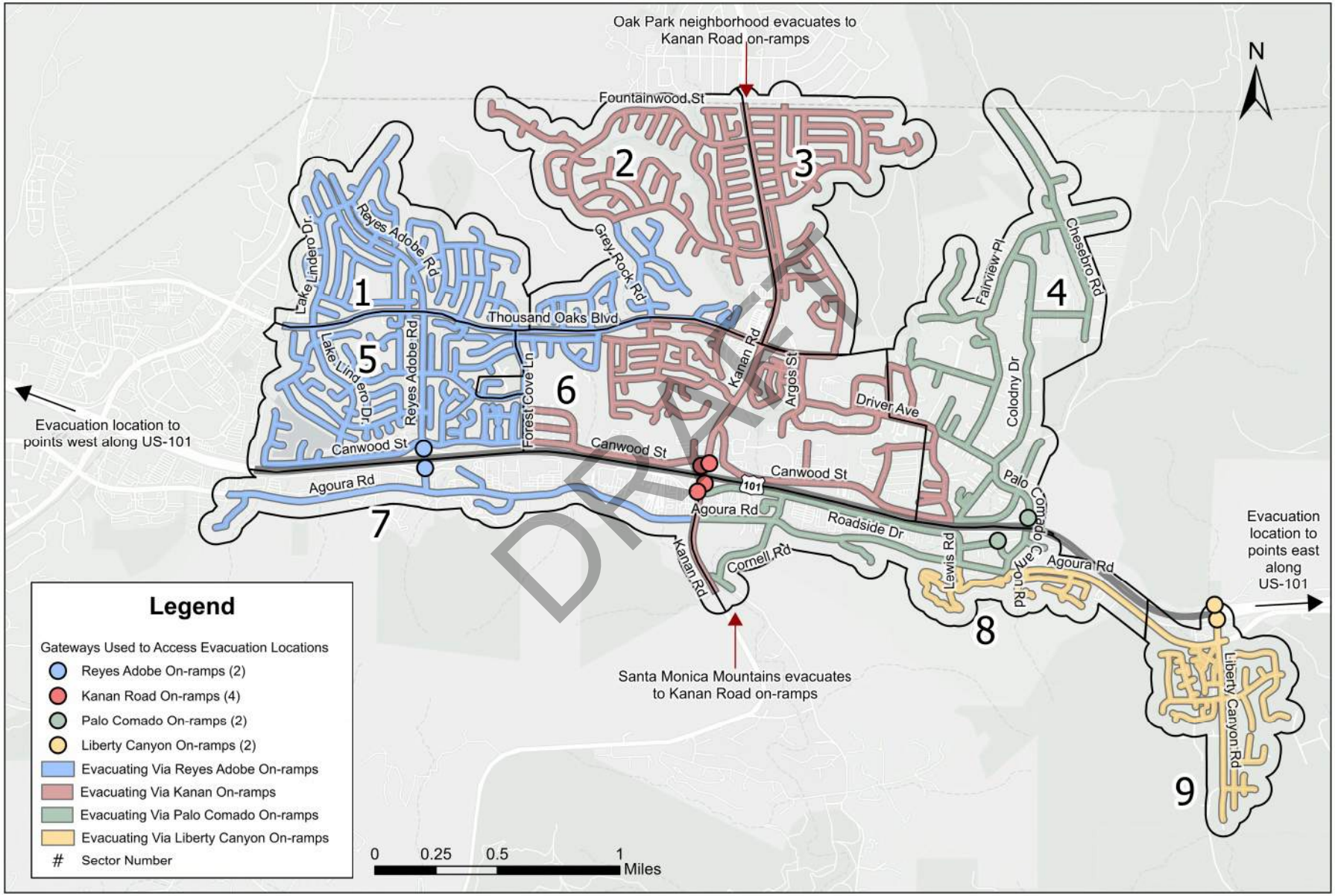
As shown in **Table 1**, evacuation routes used in this analysis are generally consistent with the routes identified in the Evacuation Plan. A few modifications to the routes were made to provide a conservative analysis to provide worst-case scenario evacuation modeling:

- The Evacuation Plan identifies that Sector 3 would evacuate northbound along Kanan Rd through Oak Park. By doing so, the volume to capacity demand analysis along Kanan Rd is not fully determined as Sector 3 vehicles are directed northbound and out of the City during an evacuation. This Evacuation Analysis analyzes all Sector 3 residents evacuating southbound along Kanan to the Kanan Road evacuation gateway to establish a worst-case scenario demand of available roadway capacity during a City-wide evacuation.
- The Evacuation Plan identifies that Sector 8 would evacuate to Liberty Canyon Road but this Evacuation Analysis analyzes a portion of Sector 8 residents evacuating to the Palo Comado evacuation gateway. This model adjustment analyzes the demonstrated demand of vehicles volumes present north of and south of each gateway.

The evacuation sectors and their associated evacuation gateways are shown in **Figure 4**.

Figure 4: Evacuation Sectors and Analyzed Evacuation Gateway



3.3.2. Evacuation Route Capacity Analysis

GC 65302.15 requires cities to identify the capacity of evacuation routes.

Roadway capacity is defined as the maximum hourly rate in which vehicles can reasonably traverse a point or section of roadway during a given time during present roadway conditions, traffic, and control operation. The baseline roadway capacity is 1,900 vehicles per hour per lane. The capacity for each of the cities roadways under normal conditions can be calculated by multiplying the number of lanes by 1,900 vehicles per hour.

During an evacuation, roadway capacity is restricted compared to normal conditions. During congested periods, there are few gaps in traffic that allow dissipation and substantial queuing occurs. As volumes surpass segment capacity, traffic conditions become significantly congested and choke points are likely to occur along evacuation routes. A nighttime capacity reduction factor of 0.9 is applied to the capacity per lane as modeled evacuees generally represent residents at home. Thus, the capacity of roadways is evaluated using a nighttime capacity of 1,710 vehicles per hour per lane. A daytime capacity reduction factor of 0.7 was applied to account for the fact that there are additional non-evacuating vehicles on the roadway during the daytime. Therefore, the daytime capacity is reduced to 1,330 vehicles per hour per lane. The capacity during nighttime and daytime scenarios are shown in **Table 2**.

Table 2: Hourly Roadway Capacity

# of Lanes (per direction)	Capacity per Lane (vphpl)	Reduction Factor	Total Capacity (# of outbound vehicles)
Nighttime Capacity (Scenarios 1, 2, and 3)			
3	1,900	0.9	5,130
2	1,900	0.9	3,420
1	1,900	0.9	1,710
Daytime Capacity (Scenario 4)			
3	1,900	0.7	3,990
2	1,900	0.7	2,660
1	1,900	0.7	1,330

vphpl = Vehicles per Hour per Lane

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As shown in **Table 2**, the evacuation capacity for city roadways range from 1,710 (nighttime) or 1,330 (daytime) vehicles per lane per hour on roads with one lane per direction, such as Driver Avenue and Canwood Street, to 5,130 (nighttime) or 3,990 (daytime) vehicles per hour per lane on roads with three lanes per direction, such as Kanan Road north of US-101 Northbound Ramps, where there are three lanes in the southbound direction. A roadway capacity map is shown in **Figure 5**.

One of the crucial indicators in determining whether roadways provide sufficient capacity for evacuating vehicles is the volume to capacity (V/C) ratio. This ratio indicates whether there are too many vehicles on the roads compared to what the roads can handle comfortably.

- Volume: This refers to the actual number of vehicles evacuating.
- Capacity: Capacity represents the maximum number of vehicles that the roadway infrastructure can handle in a given time period, typically one hour.
- Ratio: When the volume exceeds the capacity, the ratio exceeds 1.0. This indicates there are more people seeking to use a road than there is available capacity within a given hour. A roadway V/C ratio that exceeds 1.0 indicates a segment evacuation of just over one hour.

For each evacuation scenario analyzed in Section 4, the volume of population evacuating is compared with the capacity of the roadway segments along the evacuation route. This determines the volume-to-capacity route along each roadway segment along each route.

The capacity analysis analyzes roadways using their existing capacity in the direction of travel toward the evacuation. Counterflow operation, where switching the direction of lanes that typically serve the opposite direction, may be used on certain roadways during an evacuation to increase roadway capacity and are described in Section 5.1.

An additional volume factor is applied to Kanan Road south of US-101 to account for the additional vehicles that travel along that roadway segment on a typical day during both nighttime and daytime periods. Kanan Road is used by people traveling to and from Malibu in addition to City residents. To account for the typical traffic volumes on the roadway during the evacuation time frames, a background traffic volume of 900 vehicles per hour is added for the daytime evacuation scenario and a background traffic volume of 100 vehicles per hour is added for the nighttime evacuation scenario. The background traffic volumes are based on recent traffic counts along Kanan Road.

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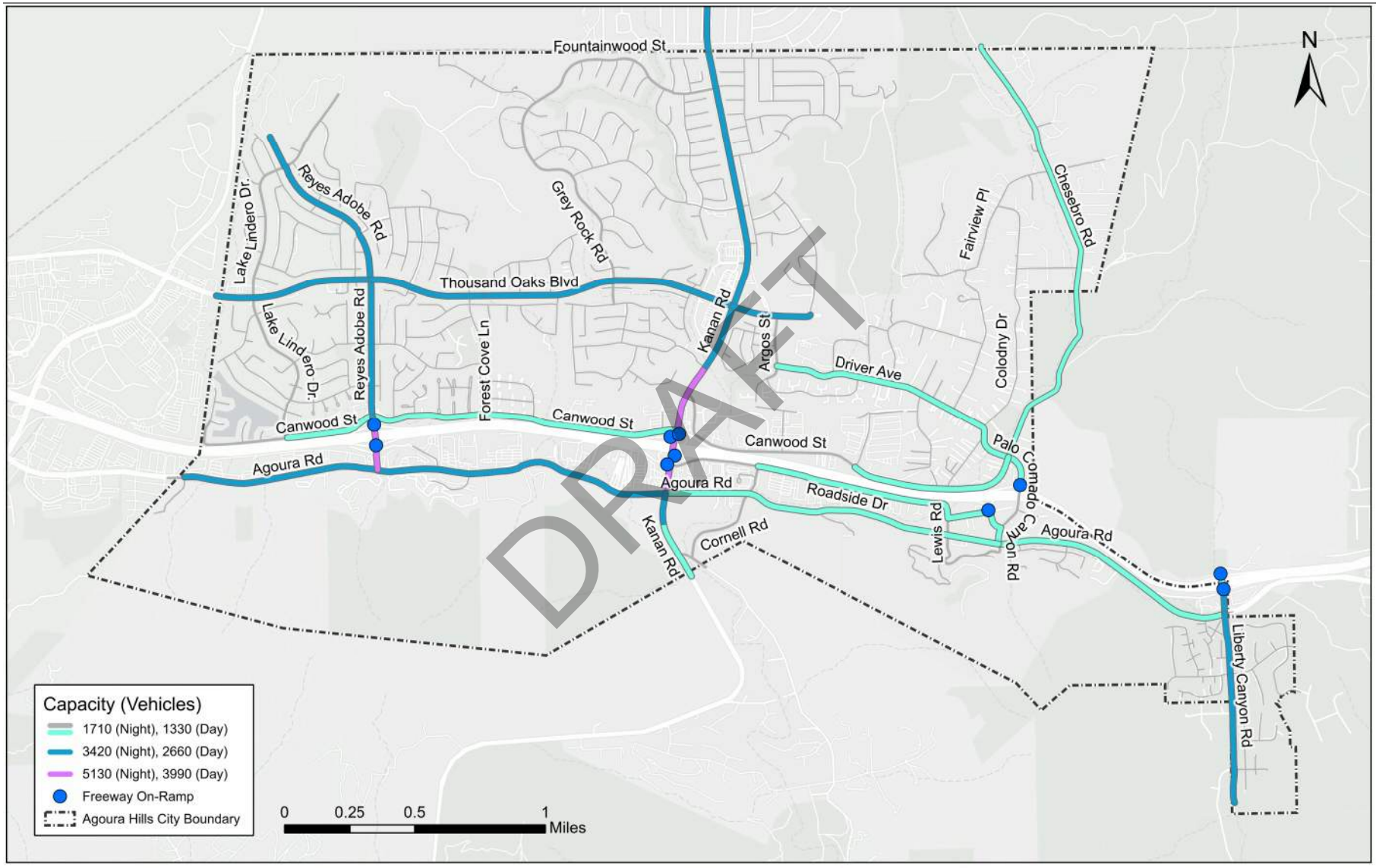
Figure 5: City of Agoura Hills Roadway Capacity



3.3.3. Evacuation Route Safety Analysis

GC 65302.15 requires cities to identify the safety of evacuation routes. The Technical Advisory provides guidance on how to identify the safety of evacuation routes. The Technical Advisory notes that "structural failure, route inundation, falling debris, and limited visibility are potential safety risks associated with a variety of hazards" and that roadways should be analyzed to determine whether certain routes are more susceptible to hazards than others.

3.3.4. Evacuation Route Viability Analysis

GC 65302.15 requires cities to identify the viability of evacuation routes. The Technical Advisory indicates that viability of evacuation routes can be assessed by determining whether transportation infrastructure can enable populations to evacuation an area. Route viability can be influenced by scenario type, population behavior, evacuation locations, and route capacity and safety. For this analysis, evacuation routes are determined to be viable if the evacuation routes have sufficient capacity and are safe.

3.3.5. Evacuation Analysis Modeling Assumptions

As each natural hazard is different, the nature of each evacuation will vary. This study makes assumptions to allow for an analysis of the four evacuation scenarios impacting all residents of the City and nearby communities. Establishing variables, ranging from human behaviors to the suddenness of events, the following assumptions were made for refinement of the modeling.

This assessment uses evacuation modeling to determine the ability of the City of Agoura Hills' transportation network to allow sufficient emergency evacuation capacity during a wildfire. Evacuation modeling is a systematic approach used to simulate and plan the movement of people from areas at risk to places of safety. It involves the use of computer-based models and real-world data to predict how individuals and vehicles will respond and move during an evacuation.

Key Components of Evacuation Modeling:

- Geographical Data: Data about the area under threat, including road networks, population density, and hazard zones. This information assists in understanding the physical layout of the region.
- Behavioral Data: Data about how people typically behave during evacuations. This includes factors like the time it takes for individuals to decide to leave, how they choose their evacuation routes, and their preferred modes of transportation.
- Transportation Infrastructure: Understanding the capacity of the roadways, bridges, and public transportation systems is critical.

As described in Section 3.1, this Evacuation Analysis analyzes evacuation scenarios that occur during the nighttime and during the daytime.

Evacuation Population Development (All Scenarios)

Traffic volumes for the four evacuation scenarios were generated based on a multi-step process: Projected vehicle volumes included an analysis of housing data, workplace data, and school data to determine number of residents, hotel occupants, workers, and school children evacuating.

This analysis assumes that the evacuation would consist of every household, hotel room, workplace, and school within the City. Household and vehicle ownership data was pulled from the 2022 5-Year American Community Survey (ACS) for the City of Agoura Hills to estimate the number of vehicles that would be used by residents to evacuate the City.

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The evacuation analysis includes the following additional assumptions:

- The analysis evaluates existing conditions plus a full buildout of the City's General Plan and Housing Element.
- A vehicle ownership rate of two (2) vehicles per household was multiplied by the number of existing and future dwelling units to determine the number of vehicles in each sector.
- Hotel rooms assumed 100% occupancy of total rooms with one (1) car per hotel room.
- In Sector 4, which includes Old Agoura, a Passenger Car Equivalent (PCE) factor of 2.5 is applied to account for the fact that many residents would evacuate with larger vehicles, including using trailers to evacuate animals. The PCE factor is applied to 10% of the evacuating vehicles.

Nighttime Population Development (Scenarios 1, 2, and 3)

During an emergency scenario that occurs at nighttime, the majority of the population within the City would be residents. For each scenario, all persons are assumed to be at home or in a hotel room. ACS data reports a vehicle ownership rate of two vehicles per household in the City; the model therefore calculates the nighttime evacuation scenarios with two vehicles leaving each household and one vehicle leaving each hotel room. During the nighttime evacuation, no vehicles originate from school sites or places of employment.

In addition to individuals within the City of Agoura Hills, evacuation traffic volumes from Oak Park to the north and the community in the Santa Monica Mountains to the south were accounted for as applicable. The total number of evacuating vehicles for each scenario is as follows:

- Scenario 1 Nighttime Vehicles: 23,329 vehicles including 17,992 vehicles originating in the City and 5,337 vehicles originating in Oak Park.
- Scenario 2 Nighttime Vehicles: 18,696 vehicles including 17,992 vehicles originating in the City and 704 vehicles originating in the Santa Monica Mountains.
- Scenario 3 Nighttime Vehicles: 24,033 vehicles including 17,992 vehicles originating in the City, 5,337 vehicles originating in Oak Park, and 704 vehicles originating in the Santa Monica Mountains. Due to the phased voluntary and mandatory phase, this model evaluates a conservative analysis assuming that residents from all three communities (Agoura Hills, Oak Park, and Santa Monica Mountains) would evacuate.

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Daytime Population Development (Scenario 4)

During an emergency scenario that occurs during the daytime, fewer residents would be at home, but workers would be in the city and school children would be at school. Calculations for a weekday daytime evacuation at 10:00 AM assume that children are at school, individuals are at their place of employment (residential or non-residential setting), and the remainder of residents are at home.

To estimate the daytime population, each household was assumed to have one (1) vehicle departing from the household location, based on Replica Fall 2024 data showing that approximately 50% of the population leaves the City between 5:00 AM and 10:00 AM each weekday. The 50% vehicle reduction was also applied to hotels in the City, which is estimated to have one (1) car evacuating for every two (2) rooms in the hotel during the daytime assuming that half of hotel guests are engaging in employment or recreational activities during the day. The vehicles originating from households and hotels were added to the vehicles calculated to be at workplaces and leaving from schools.

The estimated population that travel into Agoura Hills from outside jurisdictions for daytime employment purposes is determined by Replica origin-destination data. Replica collects cell phone data from a variety of user groups and provides typical commuting times, primary travel mode, trip purpose, and other commuting patterns. The workplace population per sector was estimated using proportions derived from Replica Fall 2024 *'Work and Home location'* populations provided at the census block group level. One (1) car was assumed for each worker.

The Replica data set is also utilized to approximate the number of public transit commuters that are present within the City of Agoura Hills during a daytime evacuation notice. For the purpose of this study, public transit commuters are assumed to utilize emergency transit services or become passengers in evacuating vehicles. Therefore, additional passenger vehicles representing public transit riders are not applied to the analysis due to their personal vehicles not entering the City.

To calculate vehicles evacuating from school sites, one (1) car for every two (2) enrolled students is assumed to leave from each school in Agoura Hills and Oak Park during an evacuation scenario. Total school enrollment numbers by school were sourced from the California Department of Education's school profiles. Approximately 75% of vehicles departing from schools were assumed to originate from a location within the City of Agoura Hills, such as an at-home adult traveling from their residence to school to pick up a child; these 75% of vehicles were therefore removed proportionally from the residential population across the City's nine (9) sectors to ensure they were calculated as evacuating from the sector containing the school location. The remaining 25% of school-departing vehicles were assumed to originate from a location outside the city, adding new vehicles to the model.

For all evacuation scenarios, it is assumed that all individuals and households in the City of Agoura Hills would evacuate. The total number of evacuating vehicles is as follows:

- Daytime vehicles: 20,195 vehicles including 15,975 vehicles originating in the City, 3,868 vehicles originating in Oak Park, and 352 vehicles originating in the Santa Monica Mountains.

Voluntary vs. Mandatory Assumptions (Scenarios 3 and 4)

This analysis includes analysis of an all-at-once evacuation scenario (Scenarios 1 and 2) and phased evacuation scenarios (Scenarios 3 and 4). During most disasters, a phased evacuation is implemented, where voluntary evacuation warnings are issued first to a portion of a community, followed by mandatory evacuation orders as the hazard approaches the community.

To determine voluntary and mandatory evacuation time periods, evacuation behavior from the Woolsey Fire was analyzed based on the Woolsey Fire After Action Report. This document was produced by Los Angeles County to detail the timeline of emergency responses to the Woolsey Fire and provide recommendations for future emergencies. According to the review, voluntary evacuation warnings and mandatory evacuation orders were issued at the following times:

- Voluntary evacuation orders for the City and surrounding areas at 3:30 PM on Thursday, November 8, 2018
- Mandatory evacuation orders for sectors north of the US-101 freeway at 7:09 PM
- Mandatory evacuation orders for sectors south of the US-101 freeway by 1:35 AM on Friday, November 9, 2018

To determine actual evacuation behavior and the number of trips originating in each evacuation sector during the voluntary and mandatory evacuation periods, a sector activity analysis was performed using

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Streetlight Insight. Mandatory evacuation periods used for analysis were kept to the same number of hours as the voluntary evacuation to compare levels of traffic activity across equal timespans. The results of this analysis are summarized in **Table 3** and were used to calculate the percentage of trips from each evacuation sector that occurred during the voluntary evacuation and after the mandatory evacuation order was issued. The Woolsey Fire voluntary and mandatory evacuation data is included in **Appendix C**.

Table 3: Voluntary and Mandatory Evacuation Trips per Evacuation Sector

Evacuation Sector	Voluntary Evacuation[1]		Mandatory Evacuation	
	Time	% of Trips	Time	% of Trips
Sector 1	3PM – 7 PM	41%	7 PM – 11 PM	59%
Sector 2	3PM – 7 PM	55%	7 PM – 11 PM	45%
Sector 3	3PM – 7 PM	51%	7 PM – 11 PM	49%
Sector 4.1	3PM – 7 PM	39%	7 PM – 11 PM	61%
Sector 4.2	3PM – 7 PM	25%	7 PM – 11 PM	75%
Sector 5	3PM – 7 PM	59%	7 PM – 11 PM	41%
Sector 6	3PM – 7 PM	53%	7 PM – 11 PM	47%
Sector 7	3PM – 1 AM	70%	1 AM – 11 AM	30%
Sector 8	3PM – 1 AM	68%	1 AM – 11 AM	32%
Sector 9	3PM – 1 AM	61%	1 AM – 11 AM	39%
Oak Park	3PM – 7 PM	45%	7 PM – 11 PM	55%
Santa Monica Mountains	3PM – 1 AM	47%	1 AM – 11 AM	53%

[1] Voluntary and mandatory evacuation rates based on Woolsey Fire evacuation behavior

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As shown in **Table 3**, rates of residents that evacuated during the voluntary period ranged from 25% in Sector 4.2 to 70% in Sector 7.

For this analysis, the rates of voluntary evacuation were applied to both Scenario 3 (nighttime wildfire) and Scenario 4 (daytime wildfire). Additionally, during the daytime, it was assumed that all school evacuations would take place during the voluntary phase.

Evacuation Timeframes (All Scenarios)

For Scenario 1 and 2, the evacuation analysis was conducted assuming an all-at-once mandatory evacuation order. For Scenarios 3 and 4, the evacuation analysis was conducted assuming a phased evacuation. Description of the evacuation timeframes for each scenario is provided below:

Scenario 1 and 2 (All-at-Once Mandatory Evacuation)

Scenario 1 and 2 analyze an all-at-once mandatory evacuation. For these scenarios, the evacuation notice is a short notice, issued abruptly at 5:00 AM, an off-peak period when all residents are at home and evacuation demand traffic would be at its highest. As a result, this scenario only evaluated trips originating from residential areas, assuming that customers and workers would not be present at commercial, retail, or office land uses during this time. The off-peak is defined as hours outside of the morning and afternoon peak periods that occurs 6:00 AM-9:00 AM and 4:00 PM-7:00 PM.

Given the short notice for an evacuation, it is assumed that all evacuee traffic will enter the transportation network at the same time. To model a worst-case scenario, all residents will be mandated to leave, eliminating the potential for voluntary evacuation. For the purpose of this analysis, traffic is directed from homes along designated evacuation routes toward Safe Gateways.

Scenario 3 and 4 (Phased Evacuation)

Scenario 3 and 4 analyze a phased evacuation with a voluntary and mandatory phase. For both scenarios, the evacuation notices are issued in phases based on the location of the hazard by City of Agoura Hills in coordination with respective agencies including Los Angeles County Fire Department and Sheriff's Department. The City of Agoura Hills would be evacuated by sector with an initial voluntary evacuation phase followed by a mandatory evacuation phase.

Scenario 3: Nighttime wildfire originating northeast of Agoura Hills – Phased Evacuation

For the nighttime wildfire event, the wildfire is estimated to begin at 3 AM with an initial voluntary evacuation phase between 4 AM and 6 AM. The voluntary phase would be followed by a mandatory evacuation phase from 6 AM to 8 AM.

Scenario 4: Daytime wildfire originating northeast of Agoura Hills – Phased Evacuation

For the daytime wildfire event, the wildfire is estimated to begin at 8 AM with an initial voluntary evacuation phase between 10 AM and 12 PM. During the voluntary phase, schools would evacuate. This analysis assumes that children will be picked up by parents at a rate of 1 parent for every 2 children. The voluntary phase would be followed by a mandatory evacuation phase from 12 PM to 2 PM.

For the nighttime evacuation (Scenarios 1, 2, and 3), notices would be issued during an off-peak period to capture analysis in which evacuation demand traffic would be at its highest. The off-peak is defined as hours outside of the morning and afternoon peak periods that occurs 6:00 AM-9:00 AM and 4:00 PM-7:00 PM.

Emergency Scenario Volume Development

The population within each zone based on the assumptions previously described are shown on **Figure 6** for the nighttime and daytime emergency scenarios.

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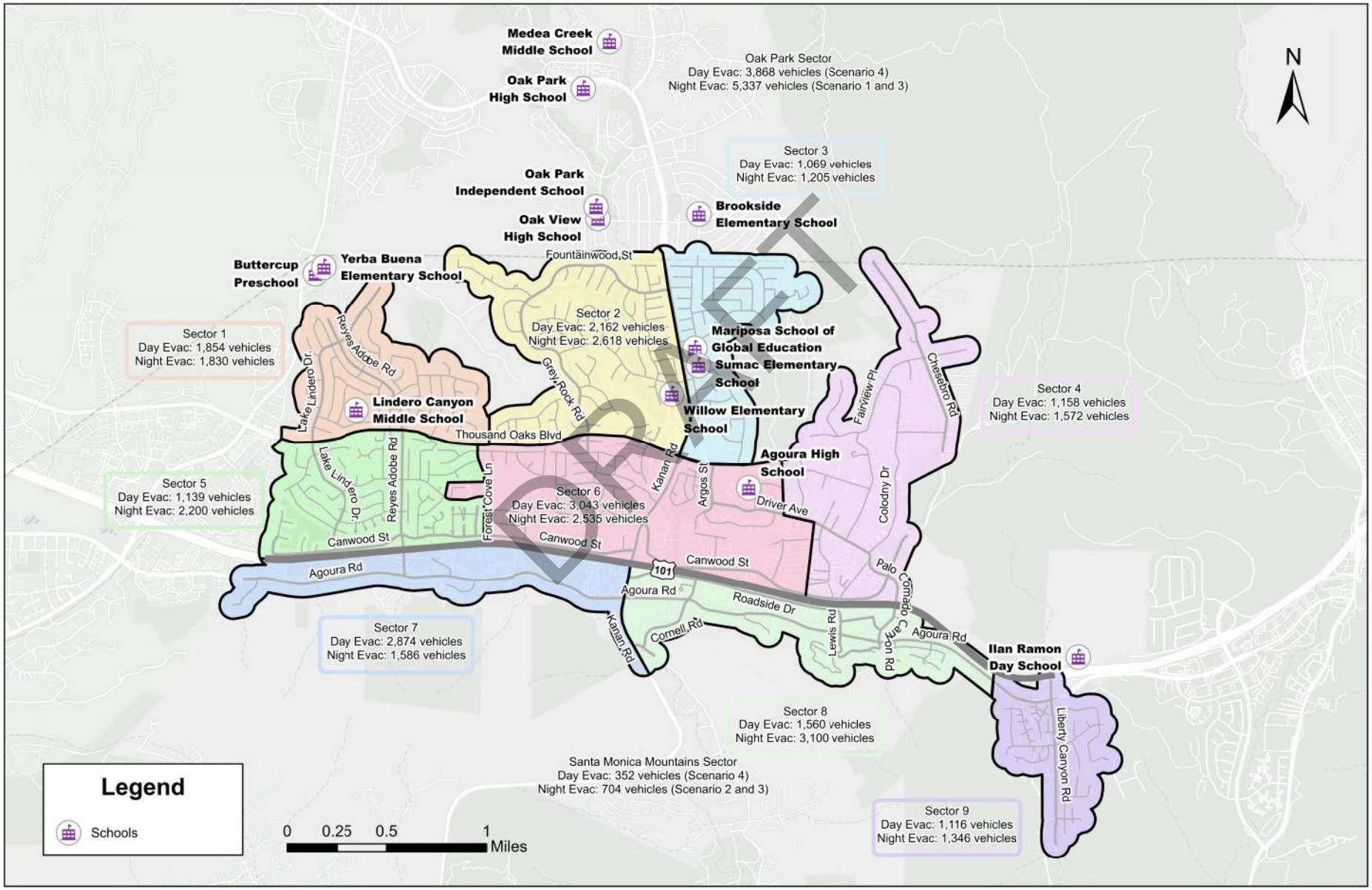
Figure 6: Number of Vehicles Evacuating by Sector



4. CITYWIDE EVACUATION MODELING ANALYSIS

The evacuation analysis was conducted for the four evacuation scenarios, as introduced in Section 3. The analysis includes an assessment of the capacity, safety, and viability of evacuation routes for each of the four emergency scenarios, per the requirements in GC 65302.15.

4.1. Evacuation Analysis for Scenario 1

The evacuation analysis was conducted for Scenario 1, the scenario where an immediate mandatory evacuation order is issued in the middle of the night, and the wildfire originates to the northeast of the City. As noted in Section 3..3.5, this scenario includes evacuation of all people in the City as well as people in Oak Park.

Capacity Analysis

The capacity of evacuation routes during Scenario 1 was analyzed by comparing the projected evacuation demand with the available hourly capacity on each road segment along each evacuation route. As shown in **Table 4**, for 24 of the 30 street segments, the evacuation volume is less than the respective segment capacity and the V/C ratio is less than 1. This demonstrates the evacuation routes have sufficient capacity for evacuating populations.

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Table 4: Agoura Hills Evacuation Capacity – Scenario 1

Segment				Capacity	Volume	V/C
Evacuation Gateway #1: Reyes Adobe Road On-Ramps						
Reyes Adobe Rd	N. of	US-101 On-Ramps	SB	3,420	5,061	**1.48**
Reyes Adobe Rd	N. of	Canwood St	SB	3,420	3,927	**1.15**
Reyes Adobe Rd	N. of	Thousand Oaks Blvd	SB	3,420	1,098	0.32
Thousand Oaks Blvd	W. of	Reyes Adobe Rd	EB	3,420	366	0.11
Thousand Oaks Blvd	E. of	Reyes Adobe Rd	WB	3,420	1,363	0.40
Canwood St	E. of	Reyes Adobe Rd	WB	1,710	584	0.34
Canwood St	W. of	Reyes Adobe Rd	EB	1,710	550	0.32
Reyes Adobe Rd	N. of	Agoura Rd	NB	5,130	1,586	0.31
Agoura Road	W. of	Reyes Adobe Rd	EB	3,420	793	0.23
Agoura Road	E. of	Reyes Adobe Rd	WB	3,420	793	0.23
Evacuation Gateway #2: Kanan Road On-Ramps						
Kanan Rd	N. of	US-101 On-Ramps	SB	5,130	10,629	**2.07**
Kanan Rd	N. of	Hillrise	SB	3,420	9,712	**2.84**
Kanan Rd	N. of	Thousand Oaks Blvd	SB	3,420	7,490	**2.19**
Kanan Rd	N. of	City Limits	SB	3,420	5,337	**1.56**
Thousand Oaks Blvd	W. of	Kanan Rd	EB	3,420	1,039	0.30
Thousand Oaks Blvd	E. of	Kanan Rd	WB	3,420	1,183	0.35
Kanan Rd	N. of	Agoura Rd	NB	5,130	100	0.02
Kanan Rd (2 lanes)	S. of	Agoura Rd	NB	3,420	100	0.03
Kanan Rd (1 lane)	S. of	Agoura Rd	NB	1,710	100	0.06

Segment				Capacity	Volume	V/C
Evacuation Gateway #3: Palo Comado On-Ramps						
Palo Comado Rd	N. of	US-101 NB On-Ramp	SB	1,710	1,607	0.94
Chesebro Rd	N. of	Driver Ave/ Palo Comado Rd	SB	1,710	236	0.14
Driver Ave	W. of	Chesebro Rd	EB	1,710	882	0.52
Canwood St/ Chesebro Rd	S. of	Driver Ave/Palo Comado Rd	NB	1,710	489	0.29
Chesebro Rd	N. of	Agoura Road	NB	1,710	1,023	0.60
Agoura Rd	W. of	Chesebro Rd	EB	1,710	1,023	0.60
Dorothy Dr	W. of	Chesebro Rd/US-101 SB Ramps	EB	1,710	1,023	0.60
Evacuation Gateway #4: Liberty Canyon On-Ramps						
Liberty Canyon Rd	N. of	US-101 SB Ramps	NB	1,710	1,023	0.60
Liberty Canyon Rd	N. of	Agoura Rd	NB	3,420	2,369	0.69
Liberty Canyon Rd	S. of	Agoura Rd	NB	3,420	1,346	0.39
Agoura Road	W. of	Liberty Canyon Rd	EB	1,710	1,023	0.60

Bold text indicates that V/C exceeds 1.0

There are six street segments where the demand volume exceeds the hourly capacity, including two segments on Reyes Adobe Road and four segments on Kanan Road. For these six segments, the City will implement measures, as described in Section 5.1, to reduce the V/C ratio and improve evacuation conditions to provide additional capacity during evacuation.

The volume to capacity ratio is also reflected in **Figure 7** for each segment.

Safety Analysis

All evacuation routes used in Scenario 1 are safe for evacuation because they have continuous paved surfaces, generally contain roadway shoulders, and lack any physical barriers (such as gates), which could impact evacuation. Potential impacts to roadways including bridge structural failure, route inundation, and falling debris have not historically impacted the evacuation routes during wildfires and are not anticipated to impact the evacuation routes for Scenario 1. The evacuation routes are considered safe for Scenario 1.

During a wildfire event, hazard concerns can include heat and smoke impacts that could limit visibility for evacuees. However, reduced visibility is feasible anywhere in a wildfire scenario and would not specifically impact evacuation routes. The City of Agoura Hills operates and maintains City-owned infrastructure and will continue to monitor the conditions of roadways and other facilities that could impact evacuation. The City may also conduct additional field surveys, engage with residents, and implement other strategies to identify potential hazards or concerns that could be remediated prior to an evacuation event.

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Viability Analysis

All evacuation routes are viable for an all-at-once nighttime evacuation with a wildfire originating in the northeast based on the available capacity and the distance between sectors and evacuation gateways. Based on existing conditions of local roadways within the City of Agoura Hills, current infrastructure can enable individuals to reach evacuation locations outside of the City through the described gateways. For the six segments where volume exceeds capacity, the City will implement measures, as described in Section 5.1, to reduce the V/C ratio and improve evacuation conditions to improve evacuation route viability during evacuation.

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Figure 7: Evacuation Route Capacity (Scenario 1)

4.2. Evacuation Analysis for Scenario 2

The evacuation analysis was conducted for Scenario 2, the scenario where an immediate mandatory evacuation order is issued in the middle of the night, and the wildfire originates to the south of the City. As noted in Section 3.3.5, this scenario includes evacuation of all people in the City as well as people in the Santa Monica Mountains community.

Capacity Analysis

The capacity of evacuation routes during Scenario 2 was analyzed by comparing the projected evacuation demand with the available hourly capacity on each road segment along each evacuation route. As shown in **Table 5**, for 26 of the 30 street segments, the evacuation volume is less than the respective segment capacity and the V/C ratio is less than 1. This demonstrates the evacuation routes have sufficient capacity for evacuating populations.

Table 5: Agoura Hills Evacuation Capacity – Scenario 2

Segment				Capacity	Volume	V/C
Evacuation Gateway #1: Reyes Adobe Road On-Ramps						
Reyes Adobe Rd	N. of	US-101 On-Ramps	SB	3,420	5,061	**1.48**
Reyes Adobe Rd	N. of	Canwood St	SB	3,420	3,927	**1.15**
Reyes Adobe Rd	N. of	Thousand Oaks Blvd	SB	3,420	1,098	0.32
Thousand Oaks Blvd	W. of	Reyes Adobe Rd	EB	3,420	366	0.11
Thousand Oaks Blvd	E. of	Reyes Adobe Rd	WB	3,420	1,363	0.40
Canwood St	E. of	Reyes Adobe Rd	WB	1,710	584	0.34
Canwood St	W. of	Reyes Adobe Rd	EB	1,710	550	0.32
Reyes Adobe Rd	N. of	Agoura Rd	NB	5,130	1,586	0.31
Agoura Road	W. of	Reyes Adobe Rd	EB	3,420	793	0.23
Agoura Road	E. of	Reyes Adobe Rd	WB	3,420	793	0.23
Evacuation Gateway #2: Kanan Road On-Ramps						
Kanan Rd	N. of	US-101 On-Ramps	SB	5,130	5,292	**1.03**
Kanan Rd	N. of	Hillrise	SB	3,420	4,375	**1.28**
Kanan Rd	N. of	Thousand Oaks Blvd	SB	3,420	2,153	0.63
Thousand Oaks Blvd	W. of	Kanan Rd	EB	3,420	1,039	0.30
Thousand Oaks Blvd	E. of	Kanan Rd	WB	3,420	1,183	0.35
Kanan Rd	N. of	Agoura Rd	NB	5,130	804	0.16
Kanan Rd (2 lanes)	S. of	Agoura Rd	NB	3,420	804	0.24
Kanan Rd (1 lane)	S. of	Agoura Rd	NB	1,710	804	0.47
Evacuation Gateway #3: Palo Comado On-Ramps						
Palo Comado Rd	N. of	US-101 NB On-Ramp	SB	1,710	1,607	0.94
Chesebro Rd	N. of	Driver Ave/ Palo Comado Rd	SB	1,710	236	0.14
Driver Ave	W. of	Chesebro Rd	EB	1,710	882	0.52
Canwood St/ Chesebro Rd	S. of	Driver Ave/Palo Comado Rd	NB	1,710	489	0.29

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Segment				Capacity	Volume	V/C
Chesebro Rd	N. of	Agoura Road	NB	1,710	1,023	0.60
Agoura Rd	W. of	Chesebro Rd	EB	1,710	1,023	0.60
Dorothy Dr	W. of	Chesebro Rd/US-101 SB Ramps	EB	1,710	1,023	0.60
Evacuation Gateway #4: Liberty Canyon On-Ramps						
Liberty Canyon Rd	N. of	US-101 SB Ramps	NB	1,710	1,023	0.60
Liberty Canyon Rd	N. of	Agoura Rd	NB	3,420	2,369	0.69
Liberty Canyon Rd	S. of	Agoura Rd	NB	3,420	1,346	0.39
Agoura Road	W. of	Liberty Canyon Rd	EB	1,710	1,023	0.60

Bold text indicates that V/C exceeds 1.0

There are four street segments where the demand volume exceeds the hourly capacity, including two segments on Reyes Adobe Road and two segments on Kanan Road. For these three segments, the City will implement measures, as described in Section 5.1, to reduce the V/C ratio and improve evacuation conditions to enable safe and viable evacuation.

The volume to capacity ratio is also reflected in **Figure 8** for each segment.

Safety Analysis

All evacuation routes used in Scenario 2 are safe for evacuation because they have continuous paved surfaces, generally contain roadway shoulders, and lack any physical barriers (such as gates), which could impact evacuation. Potential impacts to roadways including bridge structural failure, route inundation, and falling debris have not historically impacted the evacuation routes during wildfires and are not anticipated to impact the evacuation routes for Scenario 2. The evacuation routes are considered safe for Scenario 2.

During a wildfire event, hazard concerns can include heat and smoke impacts that could limit visibility for evacuees. However, reduced visibility is feasible anywhere in a wildfire scenario and would not specifically impact evacuation routes. The City of Agoura Hills operates and maintains City-owned infrastructure and will continue to monitor the conditions of roadways and other facilities that could impact evacuation. The City may also conduct additional field surveys, engage with residents, and implement other strategies to identify potential hazards or concerns that could be remediated prior to an evacuation event.

Viability Analysis

All evacuation routes are viable for an all-at-once nighttime evacuation with a wildfire originating in the south based on the available capacity and the distance between sectors and evacuation gateways. Based on existing conditions of local roadways within the City of Agoura Hills, current infrastructure can enable individuals to reach evacuation locations outside of the City through the described gateways. For the four segments where volume exceeds capacity, the City will implement measures, as described in Section 5.1, to reduce the V/C ratio and improve evacuation conditions to improve evacuation route viability during evacuation.

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Figure 8: Evacuation Route Capacity (Scenario 2)

4.3. Evacuation Analysis for Scenario 3

The evacuation analysis was conducted for Scenario 3, the scenario where a phased evacuation order is issued in the middle of the night, and the wildfire originates to the northeast of the City. As noted in Section 3.3.5, this scenario includes evacuation of all people in the City as well as people in Oak Park and the Santa Monica Mountains community.

Capacity Analysis

The capacity of evacuation routes during Scenario 3 was analyzed by comparing the projected evacuation demand with the available hourly capacity on each road segment along each evacuation route. As shown in **Table 6**, there is sufficient available roadway capacity to evacuate to each evacuation gateway during a phased evacuation along most of the roadway segments in the City. The evacuation volume is less than the respective segment capacity and the V/C ratio is less than 1.0. This demonstrates the evacuation routes have sufficient capacity for evacuating populations.

Table 6: Agoura Hills Evacuation Capacity – Scenario 3

Segment				Capacity	Voluntary Phase		Mandatory Phase	
					Volume	V/C	Volume	V/C
Evacuation Gateway #1: Reyes Adobe Road On-Ramps								
Reyes Adobe Rd	N. of	US 101 On-Ramps	SB	3,420	2,605	0.76	2,456	0.72
Reyes Adobe Rd	N. of	Canwood St	SB	3,420	1,951	0.57	1,976	0.58
Reyes Adobe Rd	N. of	Thousand Oaks Blvd	SB	3,420	450	0.13	648	0.19
Thousand Oaks Blvd	W. of	Reyes Adobe Rd	EB	3,420	150	0.04	216	0.06
Thousand Oaks Blvd	E. of	Reyes Adobe Rd	WB	3,420	702	0.21	661	0.19
Canwood St	E. of	Reyes Adobe Rd	WB	1,710	329	0.19	254	0.15
Canwood St	W. of	Reyes Adobe Rd	EB	1,710	325	0.19	226	0.13
Reyes Adobe Rd	N. of	Agoura Rd	NB	5,130	1,110	0.22	476	0.09
Agoura Road	W. of	Reyes Adobe Rd	EB	3,420	555	0.16	238	0.07
Agoura Road	E. of	Reyes Adobe Rd	WB	3,420	555	0.16	238	0.07
Evacuation Gateway #2: Kanan Road On-Ramps								
Kanan Rd	N. of	US 101 On-Ramps	SB	5,130	5,075	0.99	5,504	**1.07**
Kanan Rd	N. of	Hillrise	SB	3,420	4,672	**1.37**	5,040	**1.47**
Kanan Rd	N. of	Thousand Oaks Blvd	SB	3,420	3,552	**1.04**	3,938	**1.15**
Kanan Rd	N. of	City Limits	SB	3,420	2,402	0.70	2,935	0.86
Thousand Oaks Blvd	W. of	Kanan Rd	EB	3,420	566	0.17	473	0.14
Thousand Oaks Blvd	E. of	Kanan Rd	WB	3,420	554	0.16	629	0.18
Kanan Rd	N. of	Agoura Rd	NB	5,130	431	0.08	473	0.09
Kanan Rd (2 lanes)	S. of	Agoura Rd	NB	3,420	431	0.13	473	0.14
Kanan Rd (1 lane)	S. of	Agoura Rd	NB	1,710	431	0.25	473	0.28
Evacuation Gateway #3: Palo Comado On-Ramps								
Palo Comado Rd	N. of	US 101 NB On-Ramp	SB	1,710	621	0.36	987	0.58
Chesebro Rd	N. of	Driver Ave/Palo Comado Rd	SB	1,710	75	0.04	160	0.09
Driver Ave	W. of	Chesebro Rd	EB	1,710	336	0.20	547	0.32
Canwood St/ Chesebro Rd	S. of	Driver Ave/Palo Comado Rd	NB	1,710	210	0.12	279	0.16
Chesebro Rd	N. of	Agoura Road	NB	1,710	696	0.41	327	0.19

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Segment				Capacity	Voluntary Phase		Mandatory Phase	
					Volume	V/C	Volume	V/C
Agoura Rd	W. of	Chesebro Rd	EB	1,710	696	0.41	327	0.19
Dorothy Dr	W. of	Chesebro Rd/US-101 SB Ramps	EB	1,710	696	0.41	327	0.19
Evacuation Gateway #4: Liberty Canyon On-Ramps								
Liberty Canyon Rd	N. of	US-101 SB Ramps	NB	1,710	696	0.41	327	0.19
Liberty Canyon Rd	N. of	Agoura Rd	NB	3,420	1,517	0.44	852	0.25
Liberty Canyon Rd	S. of	Agoura Rd	NB	3,420	821	0.24	525	0.15
Agoura Road	W. of	Liberty Canyon Rd	EB	1,710	696	0.41	327	0.19

Bold text indicates that V/C exceeds 1.0

Along the evacuation routes between sectors and Gateways #1 at Reyes Adobe Road, #3 at Palo Comado Canyon Road, and Chesebro Road, and #4 at Liberty Canyon Road, the V/C ratio along all roadway segments is below 1.0, indicating there is sufficient available capacity.

Along the evacuation routes between sectors and Gateway #2 at Kanan Road, two segments of Kanan Road have a V/C ratio exceeding 1.0 during the voluntary evacuation phase, and three segments have a V/C ratio exceeding 1.0 during the mandatory evacuation phase, indicating that the projected volume of evacuating vehicles exceeds the available roadway capacity during a one-hour period. For these three segments, the City will implement measures, as described in Section 5.1, to reduce the V/C ratio and improve evacuation conditions to enable viable evacuation.

The volume to capacity ratio is also reflected in **Figures 9** and **10** for each segment.

Safety Analysis

All evacuation routes used in Scenario 3 are safe for evacuation because they have continuous paved surfaces, generally contain roadway shoulders, and lack any physical barriers (such as gates), which could impact evacuation. Potential impacts to roadways including bridge structural failure, route inundation, and falling debris have not historically impacted the evacuation routes during wildfires and are not anticipated to impact the evacuation routes for Scenario 3. The evacuation routes are considered safe for Scenario 3.

During a wildfire event, hazard concerns can include heat and smoke impacts that could limit visibility for evacuees. However, reduced visibility is feasible anywhere in a wildfire scenario and would not specifically impact evacuation routes. The City of Agoura Hills operates and maintains City-owned infrastructure and will continue to monitor the conditions of roadways and other facilities that could impact evacuation. The City may also conduct additional field surveys, engage with residents, and implement other strategies to identify potential hazards or concerns that could be remediated prior to an evacuation event.

Viability Analysis

All evacuation routes are viable for a phased nighttime evacuation with a wildfire originating in the northeast based on the available capacity and the distance between sectors and evacuation gateways. Based on existing conditions of local roadways within the City of Agoura Hills, current infrastructure can enable individuals to reach evacuation locations outside of the City through the described gateways. All evacuation routes are viable for evacuation based on the available capacity and the distance between sectors and evacuation gateways. For the three segments where volume exceeds capacity, the City will implement

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measures, as described in Section 5.1, to reduce the V/C ratio and improve evacuation conditions to improve evacuation route viability during evacuation.

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Figure 9: Evacuation Route Capacity (Scenario 3 Voluntary Phase)

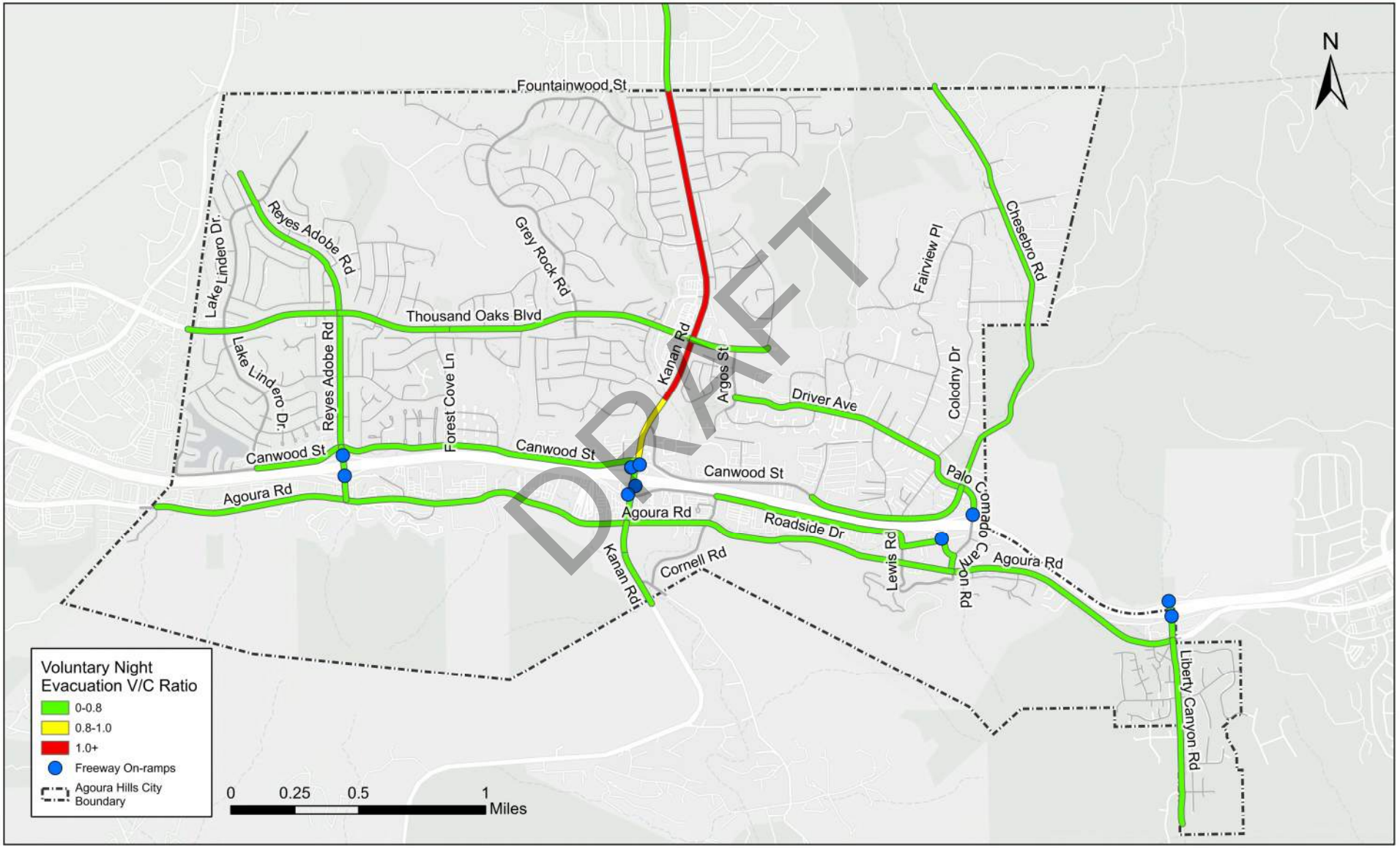

Figure 10: Evacuation Route Capacity (Scenario 3 Mandatory Phase)

4.4. Evacuation Analysis for Scenario 4

The evacuation analysis was conducted for Scenario 4, the scenario where a phased evacuation order is issued during the daytime, and the wildfire originates to the northeast of the City. As noted in Section 3..3.5, this scenario includes evacuation of all people in the City as well as people in Oak Park and the Santa Monica Mountains community.

Capacity Analysis

The capacity of evacuation routes during Scenario 4 was analyzed by comparing the projected evacuation demand with the available hourly capacity on each road segment along each evacuation route. As shown in **Table 7**, there is sufficient available roadway capacity to evacuate to each gateway during a phased evacuation along most of the roadway segments in the City. The evacuation volume is less than the respective segment capacity and the V/C ratio is less than 1.0. This demonstrates the evacuation routes have sufficient capacity for evacuating populations.

Table 7: Agoura Hills Evacuation Capacity – Scenario 4

Segment				Capacity	Voluntary Phase		Mandatory Phase	
					Volume	V/C	Volume	V/C
Evacuation Gateway #1: Reyes Adobe Road On-Ramps								
Reyes Adobe Rd	N. of	US-101 On-Ramps	SB	2,660	2,739	**1.03**	1,294	0.49
Reyes Adobe Rd	N. of	Canwood St	SB	2,660	2,249	0.85	1,025	0.39
Reyes Adobe Rd	N. of	Thousand Oaks Blvd	SB	2,660	809	0.30	304	0.11
Thousand Oaks Blvd	W. of	Reyes Adobe Rd	EB	2,660	270	0.10	101	0.04
Thousand Oaks Blvd	E. of	Reyes Adobe Rd	WB	2,660	835	0.31	386	0.15
Canwood St	E. of	Reyes Adobe Rd	WB	1,330	322	0.24	153	0.11
Canwood St	W. of	Reyes Adobe Rd	EB	1,330	168	0.13	117	0.09
Reyes Adobe Rd	N. of	Agoura Rd	NB	3,990	2,012	0.50	862	0.22
Agoura Road	W. of	Reyes Adobe Rd	EB	2,660	1,006	0.38	431	0.16
Agoura Road	E. of	Reyes Adobe Rd	WB	2,660	1,006	0.38	431	0.16
Evacuation Gateway #2: Kanan Road On-Ramps								
Kanan Rd	N. of	US-101 On-Ramps	SB	3,990	5,607	**1.41**	3,233	0.81
Kanan Rd	N. of	Hillrise	SB	2,660	4,906	**1.84**	2,905	**1.09**
Kanan Rd	N. of	Thousand Oaks Blvd	SB	2,660	3,517	**1.32**	2,180	0.82
Kanan Rd	N. of	City Limits	SB	2,660	2,276	0.86	1,592	0.60
Thousand Oaks Blvd	W. of	Kanan Rd	EB	2,660	637	0.24	316	0.12
Thousand Oaks Blvd	E. of	Kanan Rd	WB	2,660	752	0.28	409	0.15
Kanan Rd	N. of	Agoura Rd	NB	3,990	1,065	0.27	1,087	0.27
Kanan Rd (2 lanes)	S. of	Agoura Rd	NB	2,660	1,065	0.40	1,087	0.41
Kanan Rd (1 lane)	S. of	Agoura Rd	NB	1,330	1,065	0.80	1,087	0.82
Evacuation Gateway #3: Palo Comado On-Ramps								
Palo Comado Rd	N. of	US-101 NB On-Ramp	SB	1,330	702	0.53	717	0.54
Chesebro Rd	N. of	Driver Ave/ Palo Comado Rd	SB	1,330	56	0.04	118	0.09
Driver Ave	W. of	Chesebro Rd	EB	1,330	370	0.28	398	0.30
Canwood St/ Chesebro Rd	S. of	Driver Ave/Palo Comado Rd	NB	1,330	277	0.21	201	0.15
Chesebro Rd	N. of	Agoura Road	NB	1,330	350	0.26	165	0.12
Agoura Rd	W. of	Chesebro Rd	EB	1,330	350	0.26	165	0.12
Dorothy Dr	W. of	Chesebro Rd/US-101 SB Ramps	EB	1,330	350	0.26	165	0.12
Evacuation Gateway #4: Liberty Canyon On-Ramps								
Liberty Canyon Rd	N. of	US-101 SB Ramps	NB	1,330	350	0.26	165	0.12

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Segment				Capacity	Voluntary Phase		Mandatory Phase	
					Volume	V/C	Volume	V/C
Liberty Canyon Rd	N. of	Agoura Rd	NB	2,660	1,031	0.39	600	0.23
Liberty Canyon Rd	S. of	Agoura Rd	NB	2,660	681	0.26	435	0.16
Agoura Road	W. of	Liberty Canyon Rd	EB	1,330	350	0.26	165	0.12

Bold text indicates that V/C exceeds 1.0

Along the evacuation routes between sectors and Gateways #3 at Palo Comado Canyon Road and Chesebro Road and #4 at Liberty Canyon Road, the V/C ratio along all roadway segments is below 1.0, indicating there is sufficient available capacity.

Along the evacuation routes between sectors and Gateway #1 at Reyes Adobe Road, one segment of Reyes Adobe Road has a V/C ratio exceeding 1.0 during the voluntary evacuation phase. Along the evacuation routes between sectors and Gateway #2 at Kanan Road, three segments of Kanan Road have a V/C ratio exceeding 1.0 during the voluntary evacuation phase and one segment has a V/C ratio exceeding 1.0 during the mandatory evacuation phase. The analysis indicates that the projected volume of evacuating vehicles exceeds the available roadway capacity during a one-hour period along these four segments.

For these four segments, the City will implement measures, as described in Section 5.1, to reduce the V/C ratio and improve evacuation conditions to enable viable evacuation.

The volume to capacity ratio is also reflected in **Figures 11** and **12** for each segment.

Safety Analysis

All evacuation routes used in Scenario 4 are safe for evacuation because they have continuous paved surfaces, generally contain roadway shoulders, and lack any physical barriers (such as gates), which could impact evacuation. Potential impacts to roadways including bridge structural failure, route inundation, and falling debris have not historically impacted the evacuation routes during wildfires and are not anticipated to impact the evacuation routes for Scenario 4. The evacuation routes are considered safe for Scenario 4.

During a wildfire event, hazard concerns can include heat and smoke impacts that could limit visibility for evacuees. However, reduced visibility is feasible anywhere in a wildfire scenario and would not specifically impact evacuation routes. The City of Agoura Hills operates and maintains City-owned infrastructure and will continue to monitor the conditions of roadways and other facilities that could impact evacuation. The City may also conduct additional field surveys, engage with residents, and implement other strategies to identify potential hazards or concerns that could be remediated prior to an evacuation event.

Viability Analysis

All evacuation routes are viable for a phased daytime evacuation with a wildfire originating in the northeast based on the available capacity and the distance between sectors and evacuation gateways. Based on existing conditions of local roadways within the City of Agoura Hills, current infrastructure can enable individuals to reach evacuation locations outside of the City through the described gateways. For the four segments where volume exceeds capacity, the City will implement measures, as described in Section 5.1, to reduce the V/C ratio and improve evacuation conditions to improve evacuation route viability during evacuation.

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Figure 11: Evacuation Route Capacity (Scenario 4 Voluntary Phase)

Figure 12: Evacuation Route Capacity (Scenario 4 Mandatory Phase)

4.5. Evacuation Analysis for Storm, Tsunami, and Earthquake Scenarios

For compliance with GC Section 65302(g), the City's Safety Element must provide community protection from seismic and other geological hazards. This analysis conducted a qualitative study of natural hazards including a storm, tsunami, and earthquake event.

4.5.1. Storm

A storm event may vary in its spread, intensity, total rainfall, and seasonal impacts. Therefore, each storm event should be addressed on a case-by-case basis by appointed officials to determine if evacuation is deemed necessary. During rainfall, the California Governor's Office of Emergency Services (OES) advises against unnecessary travel, whether walking, driving, or swimming. If deemed necessary, the City of Agoura Hills and other local officials may implement road closures should any route be determined unviable for evacuation. Regular monitoring of potential storm events should be conducted to allow early evacuation prior to impact when possible. The City should implement and oversee regular maintenance that may reduce flooding risks during a storm. Examples of flood control may include routine tree trimming, maintenance of drainage facilities, and strategizing debris control aids. The City should further ensure power source alternatives are available if city-wide power supplies are disrupted during the storm. Early and voluntary evacuation may serve as a beneficial tool for severe storms where travel during the event is limited due to roadway conditions and public safety considerations. The City should disseminate information through established methods of communication to the public as appropriate during each storm event.

4.5.2. Tsunami

The California Geological Survey's Department of Conservation does not consider the City of Agoura Hills to be located in the tsunami hazard area. Ready.gov advises the evacuation immediately following any signs of a tsunami or instruction from designated officials[3]. However, if the tsunami occurs as a result of an earthquake, it is advised for individuals to protect themselves from the earthquake first by seeking cover. For areas that are outside of the tsunami hazard zone that receive a tsunami warning, Ready.gov recommends individuals to remain in place unless local authorities direct otherwise given the uniqueness of each tsunami event.

4.5.3. Earthquake

Based on the FEMA National Risk Index, the census tracts within the City of Agoura Hills range from a 'relatively moderate' to 'very high' earthquake risk. The California Department of Public Health (CDPH) does not advise the evacuation of buildings during an active earthquake event due to risk of injury. After shaking from the earthquake has subsided, evacuation may take place based on the judgement of appointed authorities. This may be as a result of utility damage, extent of structural damage to buildings, or exposure to dangerous materials such as medicines and flammable liquids. In the case of an earthquake, the City of Agoura Hills should monitor seismic activity and disperse regular communication to the public through established methods and channels. Each earthquake event is unique in magnitude, depth, and impact. Therefore, appointed officials should determine if evacuation is necessary during each event.

4.5.4. Evacuation Analysis Results

As discussed above, storm, tsunami, and earthquake events have not historically and are not anticipated to require citywide evacuations. However, there may be evacuations required for a portion of the city. The

[3] Tsunamis | Ready.gov - https://www.ready.gov/tsunamis

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nature of evacuations for these three types of hazards are smaller-scale evacuations than for the wildfire scenarios analyzed in this report. Therefore, the evacuation routes can be found to have sufficient capacity and be safe and viable for evacuations.

The occurrence and impact of a natural event can be sudden and unpredictable. As a result, an evacuation could follow either an all-at-once or phased approach. When applicable, voluntary evacuation should be facilitated prior to the occurrence of the natural event. Determinations should be aligned with Federal, State, and local guidance as appropriate.

Capacity Analysis

The evacuation route capacity during a storm, tsunami, or earthquake event, will depend on which areas of the city need to evacuate. Given that the evacuation areas for these three types of hazards is less than for the wildfire scenarios analyzed in Sections 4.1 to 4.4, there would be more evacuation route capacity available than the other scenarios analyzed.

Safety Analysis

The safety of evacuation routes may vary depending on the intensity of the storm, tsunami, and earthquake hazards. Event variables include, but are not limited to, point of origin, intensity, and spread.

Storms: Hazard-specific risks could include reduced visibility and route inundation.

Tsunamis: Hazard-specific risks could include reduced visibility, route inundation, structural failure, and falling debris.

Earthquakes: Hazard-specific risks could include poor route surface conditions (such as cracks or potholes), falling debris, and structural failure.

Each sector has multiple evacuation routes available to access evacuation gateways. If one street segment along an evacuation route is damaged during a hazard, alternate routes may be used by populations to evacuate.

Viability Analysis

All evacuation routes are viable for evacuation based on the available capacity and distance between sectors and evacuation gateways.

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5. IMPLEMENTATION MEASURES

As shown in Sections 4.1 to 4.4, there are a few segments of Reyes Adobe Road and Kanan Road where the V/C ratio exceeds the threshold of 1.0. The ratio is exceeded along Reyes Adobe Road in Scenario 1 and 2 and in Scenario 4 during the voluntary evacuation phase. The ratio is exceeded along Kanan Road in all four scenarios. In evacuation scenarios, the City will implement strategies to minimize the strain on street segments and prioritize the resident's ability to reach respective gateways.

The strategies may include temporary roadway capacity enhancements and policy and program implementations.

5.1. Temporary Roadway Capacity Enhancements

Traffic flow on roadways in the City may be temporarily modified to provide additional capacity during an evacuation. Capacity enhancements can be accomplished by allowing use of roadway shoulders and bike lanes by evacuating vehicles, or by establishing counterflow operations. Counterflow operations are when the direction of a lane is switched to provide additional roadway capacity for the direction of evacuation. For example, Kanan Road is generally a 4-lane road with 2 lanes in each direction. During an evacuation, counterflow operation could be implemented to convert one of the northbound lanes to southbound, increasing the capacity of the roadway for evacuating vehicles away from the fire or natural event requiring evacuation. If counterflow operation is implemented, emergency vehicles such as ambulances, fire trucks, and city personnel, are recognized as exceptions and may travel toward the hazard area as necessary using the remaining available northbound lane.

To successfully use counterflow lanes during an evacuation, traffic control devices will be placed on the roadway extremely quickly and the public would need to be aware of the use of counterflow driving.

An overview of the City's approach to temporary roadway capacity implementation during evacuations is as follows:

1. City of Agoura Hills will prepare a plan for implementing temporary roadway capacity enhancements, such as counterflow lanes, during a natural hazard event.
2. City of Agoura Hills will educate and train traffic control officers on usage of temporary roadway capacity enhancements during an evacuation. .
3. City of Agoura Hills will educate residents on existing and updates to the Agoura Hills evacuation plan, including protocol and usage of temporary roadway capacity enhancements.

During evacuations that will use counterflow lanes, the City will quickly install traffic control devices such as signage and cones to designate counterflow lanes. Traffic control officers will be present to direct vehicles at intersections with high traffic volumes. The City may conduct practice evacuations, in which flyers and educational materials will be sent out to educate the public on the evacuation routes potential counterflow plan. Having traffic control officers to guide traffic through these intersections will reduce bottlenecks in the network and provide clarity for vehicles using counterflow lanes to travel through the intersections.

Additionally, the number of vehicles present on a roadway at a given time may be reduced through early communication and early evacuation. The City of Agoura Hills in coordination with other emergency officials will inform residents of expected natural events that could necessitate evacuation. As appropriate, the City will announce and encourage early evacuation of individuals within the City, which would reduce the number of vehicles evacuating during a mandatory or all-at-once phase. Therefore, early communication and early

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evacuation is an effective measure to assist roadways that have a V/C ratio that exceeds the threshold of 1.0.

Evacuation Analysis

To assess the impact of temporary roadway capacity enhancements, an evacuation analysis was conducted for all scenarios with the temporary roadway enhancements in place. A summary of the volume-to-capacity ratios are shown in **Table 8 and Table 9**.

The volume-to-capacity for each evacuation scenario where temporary roadway capacity enhancements are in place are shown on **Figure 13**.

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Table 8: Nighttime Evacuation Route Volume to Capacity Ratios with Temporary Roadway Capacity Enhancements

Segment				Without Temporary Capacity Enhancements[1]					Temporary Capacity Enhancements	With Temporary Capacity Enhancements				
				Nighttime Capacity	Volume to Capacity					Nighttime Capacity	Volume to Capacity			
					Scenario 1	Scenario 2	Scenario 3 (Voluntary)	Scenario 3 (Mandatory)			Scenario 1	Scenario 2	Scenario 3 (Voluntary)	Scenario 3 (Mandatory)
Gateway #1: Reyes Adobe Road														
Reyes Adobe Rd	N. of	US-101 On-Ramps	SB	3,420	**1.48**	**1.48**	-	-	Counterflow	5,130	0.99	0.99	-	-
Reyes Adobe Rd	N. of	Canwood St	SB	3,420	**1.15**	**1.15**	-	-	Counterflow	5,130	0.77	0.77	-	-
Gateway #2: Kanan Road														
Kanan Rd	N. of	US-101 On-Ramps	SB	5,130	**2.07**	**1.03**	-	**1.07**	Counterflow	6,840	**1.55**	0.77	-	0.80
Kanan Rd	N. of	Hillrise	SB	3,420	**2.84**	**1.28**	**1.37**	**1.47**	Counterflow and increasing capacity on southbound side by using bike lane	6,840	**1.42**	0.64	0.68	0.74
Kanan Rd	N. of	Thousand Oaks Blvd	SB	3,420	**2.19**	-	**1.04**	**1.15**	Counterflow and increasing capacity on southbound side by using bike lane[2]	6,840	**1.09**	-	0.52	0.58
Kanan Rd	N. of	City Limits	SB	3,420	**1.56**	-	-	-	Counterflow and increasing capacity on southbound side by using bike lane	6,840	0.78	-	-	-

Bold text indicates that V/C exceeds 1.0

[1] V/C ratios shown for segments that exceed 1.0

[2] Counterflow operations on Kanan Rd north of Thousand Oaks Blvd would require restricting the on-street parking on the northbound side of the street. Parking could be restricted on "red flag" days.

Table 9: Daytime Evacuation Route Volume to Capacity Ratios with Temporary Roadway Capacity Enhancements

Segment				Without Temporary Capacity Enhancements			Temporary Capacity Enhancements	With Temporary Capacity Enhancements		
				Daytime Capacity	Volume to Capacity			Daytime Capacity	Volume to Capacity	
					Scenario 4 (Voluntary)	Scenario 4 (Mandatory)			Scenario 4 (Voluntary)	Scenario 4 (Mandatory)
Gateway #1: Reyes Adobe Road										
Reyes Adobe Rd	N. of	US-101 On-Ramps	SB	2,660	**1.03**	-	Counterflow	3,990	0.69	-
Gateway #2: Kanan Road										
Kanan Rd	N. of	US-101 On-Ramps	SB	3,990	**1.41**	-	Counterflow	5,320	**1.05**	-
Kanan Rd	N. of	Hillrise	SB	2,660	**1.84**	**1.09**	Counterflow and increasing capacity on southbound side by using bike lane	5,320	0.92	0.55
Kanan Rd	N. of	Thousand Oaks Blvd	SB	2,660	**1.32**	-	Counterflow and increasing capacity on southbound side by using bike lane[1]	5,320	0.66	-

Bold text indicates that V/C exceeds 1.0

[1] V/C ratios shown for segments that exceed 1.0

[2] Counterflow operations on Kanan Rd north of Thousand Oaks Blvd would require restricting the on-street parking on the northbound side of the street. Parking could be restricted on "red flag" days.

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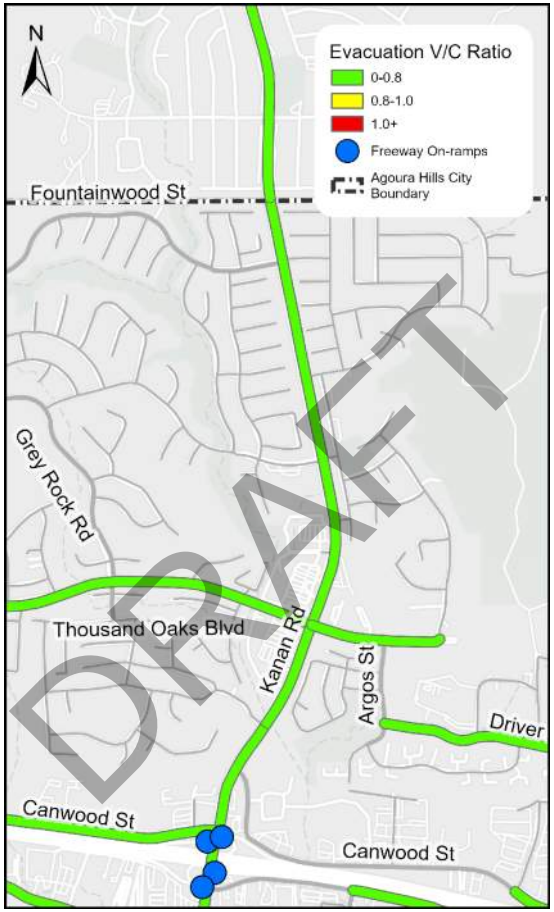
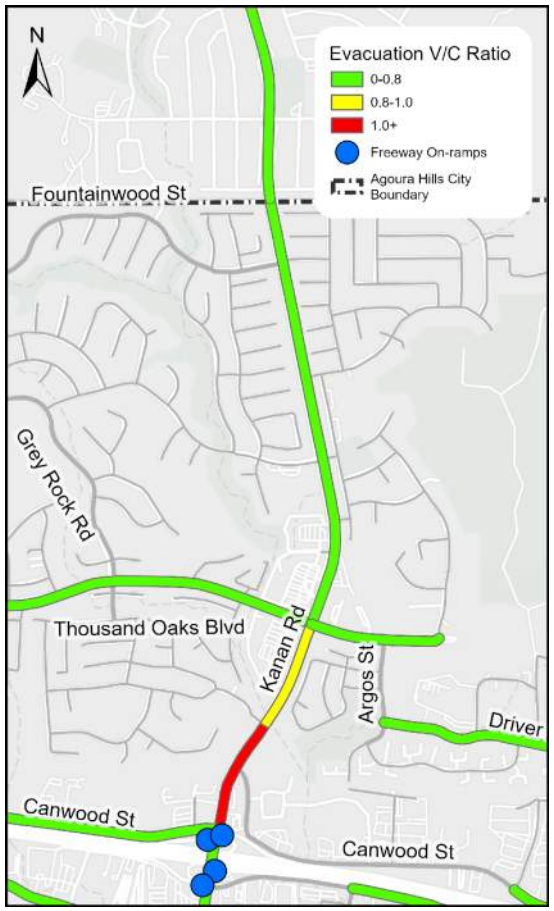
Figure 13a: Evacuation Route Capacity with Temporary Roadway Capacity Enhancements

Scenario 1 - Kanan Road V/C with Temporary Roadway Capacity Enhancements



Scenario 2, 3, 4 - Kanan Road V/C with Temporary Roadway Capacity Enhancements during Mandatory Phase



Scenario 4 - Kanan Road V/C with Temporary Roadway Capacity Enhancements during Voluntary Phase

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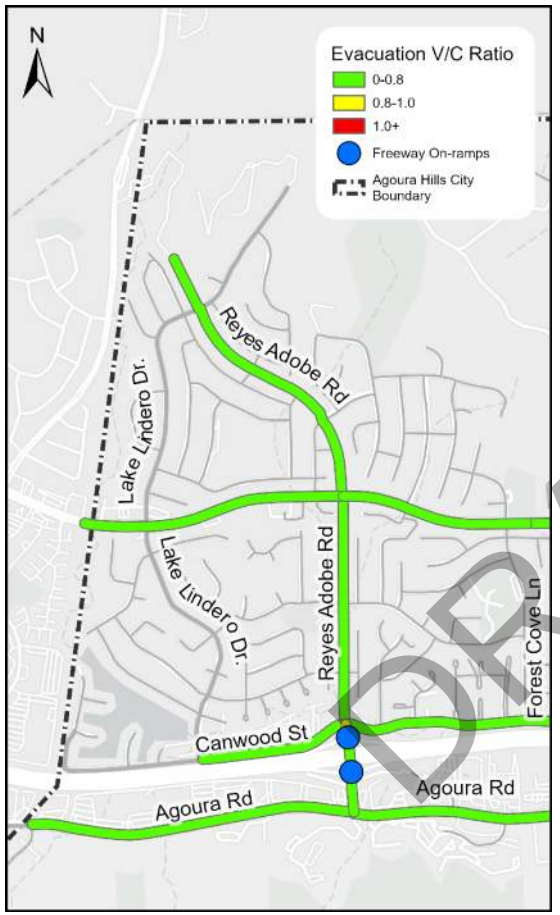
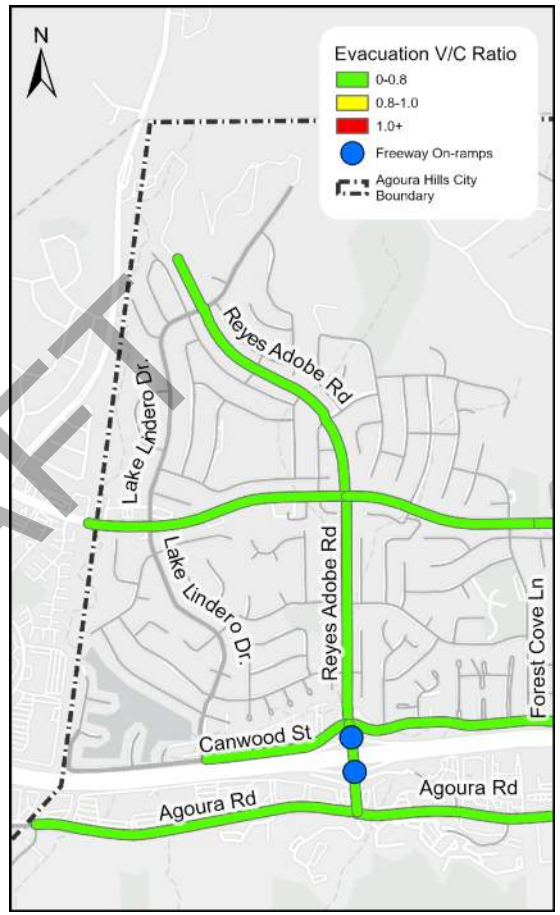
Figure 13b: Evacuation Route Capacity with Temporary Roadway Capacity Enhancements



Scenario 1 and 2 - Reyes Adobe Road V/C with Temporary Roadway Capacity Enhancements



Scenario 3 and 4 - Reyes Adobe Road V/C with Temporary Roadway Capacity Enhancements

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As shown in **Table 8 and Table 9**, implementation of temporary roadway capacity enhancements would reduce the V/C ratio to less than 1.0 along all segments of Reyes Adobe Road during all analyzed evacuation scenarios. Additionally, the temporary capacity enhancements would reduce the V/C ratio to less than 1.0 along all segments of Kanan Road during Scenario 2 and Scenario 3.

In Scenario 1, without the temporary capacity enhancements, the segments of Kanan Rd between US-101 NB On-ramps and Thousand Oaks Blvd exceed a 2.0 V/C ratio. With the implementation of temporary capacity enhancements, the V/C ratio for these segments is below a 1.50 V/C ratio. For the segment of Kanan Rd north of City limits, the ratio is decreased below the 1.0 V/C threshold.

In Scenario 2 and 3, the V/C ratio is reduced for both segments along Reyes Adobe in addition to Kanan Rd between US-101 on-ramps and Hillrise with the temporary capacity enhancements.

In Scenario 4, with the implementation of temporary capacity enhancements, the V/C ratio for the segment of Kanan Rd north of US-101 NB On-ramps would decrease to 1.03. The segments of Kanan Rd between Hillrise and Thousand Oaks Blvd would decrease below the 1.0 V/C threshold.

For segments with a V/C ratio that exceed 1.0 with the temporary roadway enhancements, the analysis indicates that evacuation would take just a little over one hour. To improve evacuation times, the City of Agoura Hills will initiate early communication and early evacuation to reduce the number of vehicles utilizing Kanan Rd during voluntary or mandatory evacuation phases. Further, the City will implement the following measures identified in Section 5.2, as applicable, including vehicles originating from neighborhoods north of Thousand Oaks Boulevard to utilize Thousand Oaks Boulevard westbound to access the US-101 on-ramps at Reyes Adobe Road.

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5.2. Additional Implementation Measures

In addition to temporary roadway capacity enhancements the City, in coordination with appropriate officials including the Los Angeles Fire Department and Sheriff's Department, will employ the following implementation measures on an as needed basis depending on emergency conditions. These measures can assist in reducing roadway V/C and evacuating individuals within the City. Identified additional implementation measures include, but are not limited to:

- Provide early notification through established communication systems when high hazard events are forecasted to promote public preparedness.
- Facilitate early voluntary evacuation prior to mandatory evacuation phases or all-at-once evacuation to decrease demand on roadways.
- Station emergency personnel at the intersection of Kanan Road and Thousand Oaks Boulevard. To decrease demand on Kanan Road, redirect vehicles originating from neighborhoods north of Thousand Oaks Boulevard to utilize Thousand Oaks Boulevard westbound to access the US-101 on-ramps at Reyes Adobe Road.
- Station emergency personnel at the intersection of US-101 and Reyes Adobe Road. If the US-101 on-ramps at Reyes Adobe Road experience excessive queuing:
    - Redirect vehicles originating south of US-101 to travel eastbound along Agoura Road to utilize the on-ramps at Chesebro Road/Palo Comado Canyon Road
    - Redirect vehicles originating north of US-101 to travel westbound along Thousand Oaks Boulevard to Lindero Canyon Road or points west. Close coordination with authorities and emergency responders in Westlake Village and Ventura County must be taken to ensure such decisions would not negatively impact any emergency evacuation procedures ongoing in those jurisdictions.

- If left-turning vehicles accessing US-101 on-ramps at Reyes Adobe Road or at Kanan Road cause excessive queueing, close the bridges to left-turning vehicles and force vehicles to access only the nearside on-ramps.
- A portion of residents in the City of Agoura Hills, notably in Old Agoura located in Sector 4, own animals including horses and livestock. Residents in Old Agoura should evacuate during voluntary evacuation phases as the transport of the animals will require the use of special trailers. The early evacuation of these residents and their animals will reduce the occurrence of over-sized vehicles along routes as remaining sectors are evacuating.

5.3. Policy and Program Implementations

The City of Agoura Hills may implement policies and programs on an as-needed basis that increase the City's preparedness and mitigate potential risks during emergency events. Examples of supporting policies include the following:

- Explore decision-support tools that provide real-time insight into evacuation conditions to help manage roadway utilization, such as "Code Red" or Genasys "Know Your Zone".
- Identify and procure communication tools that can be leveraged for information sharing should certain communication systems fail.
- Improve information sharing strategies to populations that are hard-to-reach, such as those without internet and/or cell phone access.
- Provide early notification to encourage community preparedness when high hazard conditions are forecasted.
- Develop a program with Caltrans and Los Angeles County to retrofit or replace aging infrastructure, including bridges, tunnels, or culverts, to mitigate the risk of structural failure and inundation along evacuation routes.
- Engage local and regional organizations to conduct community-facing exercises to enhance disaster preparedness.
- Ensure planning and coordination with entities such as:
    - Federal and State Partners – State Board of Forestry and Fire Protection, California Governor's Office of Emergency Services, Department of Conservation's California Geological Survey
    - Regional and Local Partners – Regional planning agencies, California Highway Patrol Field Divisions, Caltrans, volunteer response organizations, school districts, fire department, community-based organizations

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APPENDICES

Appendix A – Federal Emergency Management Agency (FEMA) National Risk Index Report

Appendix B – City of Agoura Hill Evacuation Plan

Appendix C – Woolsey Fire Voluntary and Mandatory Evacuation Data

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APPENDIX A – FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) NATIONAL RISK INDEX REPORT

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National Risk Index

November 12, 2024

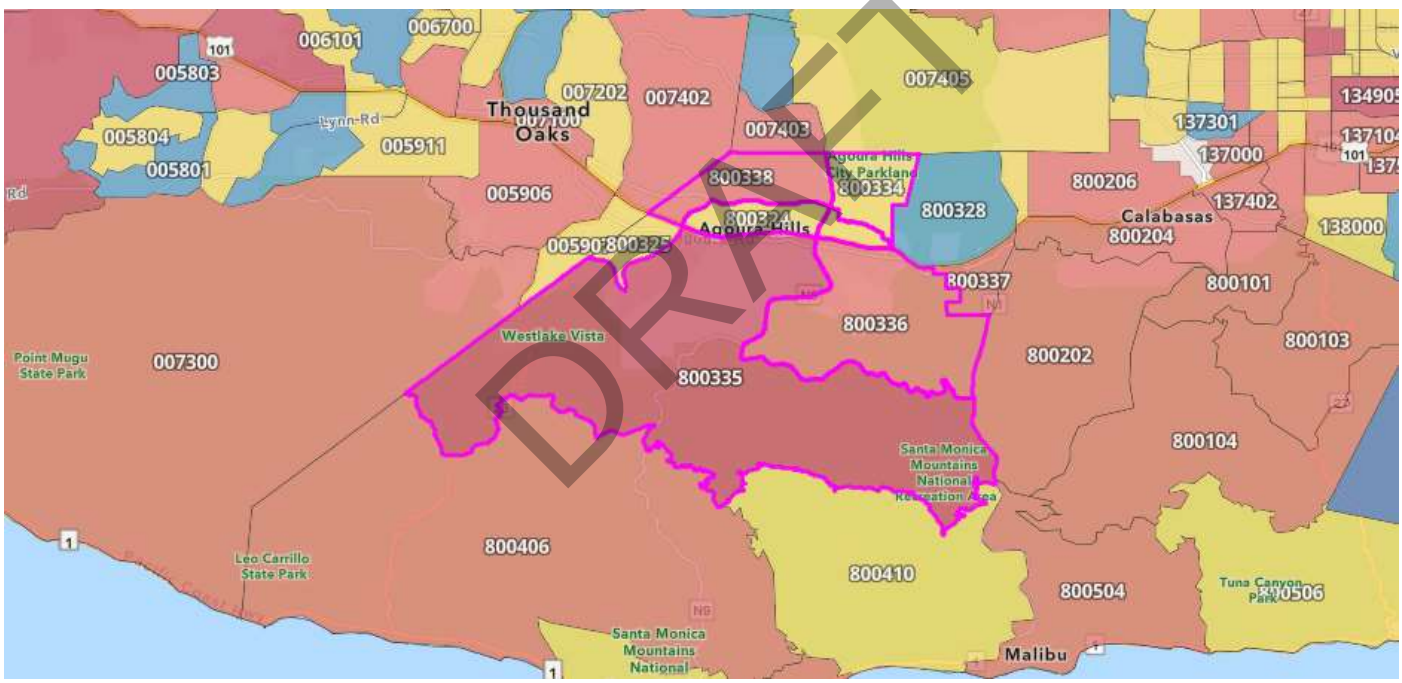
Risk Comparison Report

Use this report to determine how risk factors in selected communities compare to each other. Click a community name in any table below to open an individual risk profile report for that community and review its risk factors in more detail.

While reviewing this report, keep in mind that low risk is driven by lower loss due to natural hazards, lower social vulnerability, and higher community resilience.

For more information about the National Risk Index, its data, and how to interpret the information it provides, please review the **About the National Risk Index** and **How to Take Action** sections at the end of this report. Or, visit the National Risk Index website at **hazards.fema.gov/nri/learn-more** to access supporting documentation and links.

Risk Index



Risk Index Legend

Very High | Relatively High | Relatively Moderate | Relatively Low | Very Low

No Rating | Not Applicable | Insufficient Data

Rank	Community	State	Risk Index Rating	Risk Index Score	National Percentile
1	Census tract 06037800335	CA	Very High	97.93	0 100
2	Census tract 06037800336	CA	Relatively High	89.43	0 100
3	Census tract 06037800338	CA	Relatively High	87.37	0 100

Rank	Community	State	Risk Index Rating	Risk Index Score	National Percentile
4	Census tract 06037800324	CA	Relatively Moderate	85.22	0 100
5	Census tract 06037800334	CA	Relatively Moderate	79.64	0 100
6	Census tract 06037800333	CA	Relatively Moderate	66.63	0 100

Rank	Community	State	EAL Value	Social Vulnerability	Community Resilience	CRF	Risk Value	Risk Index Score
1	Census tract 06037800335	CA	$5,137,554	Relatively Low	Very Low	1.06	$5,433,927	97.93
2	Census tract 06037800336	CA	$2,883,584	Very Low	Very Low	0.79	$2,280,080	89.43
3	Census tract 06037800338	CA	$2,854,206	Very Low	Very Low	0.71	$2,025,168	87.37
4	Census tract 06037800324	CA	$2,144,796	Very Low	Very Low	0.84	$1,803,015	85.22
5	Census tract 06037800334	CA	$1,363,335	Relatively Low	Very Low	1.03	$1,404,202	79.64
6	Census tract 06037800333	CA	$837,140	Relatively Low	Very Low	1.04	$872,193	66.63

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Hazard Type Risk Index

Hazard type Risk Index scores are calculated using data for only a single hazard type, and reflect a community's relative risk for only that hazard type.

Avalanche

Rank	Community	State	Risk Index Rating	Risk Index Score	National Percentile
	Census tract 06037800324	CA	Not Applicable		
	Census tract 06037800333	CA	Not Applicable		
	Census tract 06037800334	CA	Not Applicable		
	Census tract 06037800335	CA	Not Applicable		
	Census tract 06037800336	CA	Not Applicable		
	Census tract 06037800338	CA	Not Applicable		

Rank	Community	State	EAL Value	Social Vulnerability	Community Resilience	CRF	Risk Value	Risk Index Score
	Census tract 06037800324	CA	N/A	Very Low	Very Low	0.84	N/A	N/A
	Census tract 06037800333	CA	N/A	Relatively Low	Very Low	1.04	N/A	N/A
	Census tract 06037800334	CA	N/A	Relatively Low	Very Low	1.03	N/A	N/A
	Census tract 06037800335	CA	N/A	Relatively Low	Very Low	1.06	N/A	N/A
	Census tract 06037800336	CA	N/A	Very Low	Very Low	0.79	N/A	N/A
	Census tract 06037800338	CA	N/A	Very Low	Very Low	0.71	N/A	N/A

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Coastal Flooding

Rank	Community	State	Risk Index Rating	Risk Index Score	National Percentile
	Census tract 06037800324	CA	No Rating	0	0 100
	Census tract 06037800333	CA	No Rating	0	0 100
	Census tract 06037800334	CA	No Rating	0	0 100
	Census tract 06037800335	CA	No Rating	0	0 100
	Census tract 06037800336	CA	No Rating	0	0 100
	Census tract 06037800338	CA	No Rating	0	0 100

Rank	Community	State	EAL Value	Social Vulnerability	Community Resilience	CRF	Risk Value	Risk Index Score
	Census tract 06037800324	CA	$0	Very Low	Very Low	0.84	$0	0
	Census tract 06037800333	CA	$0	Relatively Low	Very Low	1.04	$0	0
	Census tract 06037800334	CA	$0	Relatively Low	Very Low	1.03	$0	0
	Census tract 06037800335	CA	$0	Relatively Low	Very Low	1.06	$0	0
	Census tract 06037800336	CA	$0	Very Low	Very Low	0.79	$0	0
	Census tract 06037800338	CA	$0	Very Low	Very Low	0.71	$0	0

Cold Wave

Rank	Community	State	Risk Index Rating	Risk Index Score	National Percentile
	Census tract 06037800324	CA	No Rating	0	0 100
	Census tract 06037800333	CA	No Rating	0	0 100
	Census tract 06037800334	CA	No Rating	0	0 100
	Census tract 06037800335	CA	No Rating	0	0 100
	Census tract 06037800336	CA	No Rating	0	0 100
	Census tract 06037800338	CA	No Rating	0	0 100

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Rank	Community	State	EAL Value	Social Vulnerability	Community Resilience	CRF	Risk Value	Risk Index Score
	Census tract 06037800324	CA	$0	Very Low	Very Low	0.84	$0	0
	Census tract 06037800333	CA	$0	Relatively Low	Very Low	1.04	$0	0
	Census tract 06037800334	CA	$0	Relatively Low	Very Low	1.03	$0	0
	Census tract 06037800335	CA	$0	Relatively Low	Very Low	1.06	$0	0
	Census tract 06037800336	CA	$0	Very Low	Very Low	0.79	$0	0
	Census tract 06037800338	CA	$0	Very Low	Very Low	0.71	$0	0

Drought

Rank	Community	State	Risk Index Rating	Risk Index Score	National Percentile
1	Census tract 06037800324	CA	Very Low	74.03	0 100
	Census tract 06037800333	CA	No Rating	0	0 100
	Census tract 06037800334	CA	No Rating	0	0 100

Rank	Community	State	Risk Index Rating	Risk Index Score	National Percentile
	Census tract 06037800335	CA	No Rating	0	0 100
	Census tract 06037800336	CA	No Rating	0	0 100
	Census tract 06037800338	CA	No Rating	0	0 100

Rank	Community	State	EAL Value	Social Vulnerability	Community Resilience	CRF	Risk Value	Risk Index Score
1	Census tract 06037800324	CA	$49	Very Low	Very Low	0.84	$41	74.03
	Census tract 06037800333	CA	$0	Relatively Low	Very Low	1.04	$0	0
	Census tract 06037800334	CA	$0	Relatively Low	Very Low	1.03	$0	0
	Census tract 06037800335	CA	$0	Relatively Low	Very Low	1.06	$0	0
	Census tract 06037800336	CA	$0	Very Low	Very Low	0.79	$0	0
	Census tract 06037800338	CA	$0	Very Low	Very Low	0.71	$0	0

Earthquake

Rank	Community	State	Risk Index Rating	Risk Index Score	National Percentile
1	Census tract 06037800335	CA	Very High	97.89	0 100
2	Census tract 06037800338	CA	Relatively High	96.02	0 100
3	Census tract 06037800324	CA	Relatively High	95.43	0 100
4	Census tract 06037800336	CA	Relatively High	91.49	0 100
5	Census tract 06037800334	CA	Relatively High	90.77	0 100
6	Census tract 06037800333	CA	Relatively Moderate	89.46	0 100

Rank	Community	State	EAL Value	Social Vulnerability	Community Resilience	CRF	Risk Value	Risk Index Score
1	Census tract 06037800335	CA	$2,745,397	Relatively Low	Very Low	1.06	$2,903,772	97.89
2	Census tract 06037800338	CA	$2,768,197	Very Low	Very Low	0.71	$1,964,142	96.02
3	Census tract 06037800324	CA	$2,117,616	Very Low	Very Low	0.84	$1,780,166	95.43
4	Census tract 06037800336	CA	$1,307,782	Very Low	Very Low	0.79	$1,034,077	91.49
5	Census tract 06037800334	CA	$911,419	Relatively Low	Very Low	1.03	$938,739	90.77
6	Census tract 06037800333	CA	$749,914	Relatively Low	Very Low	1.04	$781,314	89.46

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Hail

Rank	Community	State	Risk Index Rating	Risk Index Score	National Percentile
1	Census tract 06037800335	CA	Very Low	8.86	0 100
2	Census tract 06037800324	CA	Very Low	6.94	0 100
3	Census tract 06037800338	CA	Very Low	6.12	0 100
4	Census tract 06037800334	CA	Very Low	4.02	0 100
5	Census tract 06037800336	CA	Very Low	2.91	0 100
6	Census tract 06037800333	CA	Very Low	2.51	0 100

Rank	Community	State	EAL Value	Social Vulnerability	Community Resilience	CRF	Risk Value	Risk Index Score
1	Census tract 06037800335	CA	$44	Relatively Low	Very Low	1.06	$47	8.86
2	Census tract 06037800324	CA	$44	Very Low	Very Low	0.84	$37	6.94
3	Census tract 06037800338	CA	$47	Very Low	Very Low	0.71	$33	6.12
4	Census tract 06037800334	CA	$23	Relatively Low	Very Low	1.03	$24	4.02
5	Census tract 06037800336	CA	$24	Very Low	Very Low	0.79	$19	2.91
6	Census tract 06037800333	CA	$16	Relatively Low	Very Low	1.04	$17	2.51

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Heat Wave

Rank	Community	State	Risk Index Rating	Risk Index Score	National Percentile
1	Census tract 06037800324	CA	Relatively Low	39.22	0 100
2	Census tract 06037800335	CA	Relatively Low	38.57	0 100
3	Census tract 06037800338	CA	Relatively Low	34.92	0 100
4	Census tract 06037800334	CA	Relatively Low	33.6	0 100
5	Census tract 06037800333	CA	Relatively Low	29.85	0 100
6	Census tract 06037800336	CA	Relatively Low	27.65	0 100

Rank	Community	State	EAL Value	Social Vulnerability	Community Resilience	CRF	Risk Value	Risk Index Score
1	Census tract 06037800324	CA	$5,684	Very Low	Very Low	0.84	$4,779	39.22
2	Census tract 06037800335	CA	$4,330	Relatively Low	Very Low	1.06	$4,580	38.57

Rank	Community	State	EAL Value	Social Vulnerability	Community Resilience	CRF	Risk Value	Risk Index Score
3	Census tract 06037800338	CA	$5,038	Very Low	Very Low	0.71	$3,575	34.92
4	Census tract 06037800334	CA	$3,144	Relatively Low	Very Low	1.03	$3,239	33.6
5	Census tract 06037800333	CA	$2,296	Relatively Low	Very Low	1.04	$2,392	29.85
6	Census tract 06037800336	CA	$2,462	Very Low	Very Low	0.79	$1,947	27.65

Hurricane

Rank	Community	State	Risk Index Rating	Risk Index Score	National Percentile
	Census tract 06037800324	CA	Not Applicable		
	Census tract 06037800333	CA	Not Applicable		
	Census tract 06037800334	CA	Not Applicable		
	Census tract 06037800335	CA	Not Applicable		
	Census tract 06037800336	CA	Not Applicable		
	Census tract 06037800338	CA	Not Applicable		

Rank	Community	State	EAL Value	Social Vulnerability	Community Resilience	CRF	Risk Value	Risk Index Score
	Census tract 06037800324	CA	N/A	Very Low	Very Low	0.84	N/A	N/A
	Census tract 06037800333	CA	N/A	Relatively Low	Very Low	1.04	N/A	N/A
	Census tract 06037800334	CA	N/A	Relatively Low	Very Low	1.03	N/A	N/A
	Census tract 06037800335	CA	N/A	Relatively Low	Very Low	1.06	N/A	N/A
	Census tract 06037800336	CA	N/A	Very Low	Very Low	0.79	N/A	N/A
	Census tract 06037800338	CA	N/A	Very Low	Very Low	0.71	N/A	N/A

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Ice Storm

Rank	Community	State	Risk Index Rating	Risk Index Score	National Percentile
	Census tract 06037800324	CA	Not Applicable		
	Census tract 06037800333	CA	Not Applicable		
	Census tract 06037800334	CA	Not Applicable		
	Census tract 06037800335	CA	Not Applicable		
	Census tract 06037800336	CA	Not Applicable		

Rank	Community	State	Risk Index Rating	Risk Index Score	National Percentile
	Census tract 06037800338	CA	Not Applicable		

Rank	Community	State	EAL Value	Social Vulnerability	Community Resilience	CRF	Risk Value	Risk Index Score
	Census tract 06037800324	CA	N/A	Very Low	Very Low	0.84	N/A	N/A
	Census tract 06037800333	CA	N/A	Relatively Low	Very Low	1.04	N/A	N/A
	Census tract 06037800334	CA	N/A	Relatively Low	Very Low	1.03	N/A	N/A
	Census tract 06037800335	CA	N/A	Relatively Low	Very Low	1.06	N/A	N/A
	Census tract 06037800336	CA	N/A	Very Low	Very Low	0.79	N/A	N/A
	Census tract 06037800338	CA	N/A	Very Low	Very Low	0.71	N/A	N/A

Landslide

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Rank	Community	State	Risk Index Rating	Risk Index Score	National Percentile
1	Census tract 06037800335	CA	Relatively High	97.8	0 100
2	Census tract 06037800324	CA	Relatively Low	59.57	0 100
3	Census tract 06037800338	CA	Relatively Low	57.32	0 100
4	Census tract 06037800333	CA	Relatively Low	50.22	0 100
5	Census tract 06037800334	CA	Relatively Low	47.65	0 100
6	Census tract 06037800336	CA	Relatively Low	46.31	0 100

Rank	Community	State	EAL Value	Social Vulnerability	Community Resilience	CRF	Risk Value	Risk Index Score
1	Census tract 06037800335	CA	$15,059	Relatively Low	Very Low	1.06	$15,928	97.8
2	Census tract 06037800324	CA	$830	Very Low	Very Low	0.84	$698	59.57
3	Census tract 06037800338	CA	$823	Very Low	Very Low	0.71	$584	57.32
4	Census tract 06037800333	CA	$267	Relatively Low	Very Low	1.04	$279	50.22
5	Census tract 06037800334	CA	$183	Relatively Low	Very Low	1.03	$188	47.65
6	Census tract 06037800336	CA	$185	Very Low	Very Low	0.79	$146	46.31

Lightning

Rank	Community	State	Risk Index Rating	Risk Index Score	National Percentile
1	Census tract 06037800335	CA	Very Low	5.8	0 100
2	Census tract 06037800338	CA	Very Low	3.84	0 100
3	Census tract 06037800334	CA	Very Low	3.34	0 100
4	Census tract 06037800324	CA	Very Low	2.44	0 100
5	Census tract 06037800336	CA	Very Low	1.78	0 100
6	Census tract 06037800333	CA	Very Low	1.54	0 100

Rank	Community	State	EAL Value	Social Vulnerability	Community Resilience	CRF	Risk Value	Risk Index Score
1	Census tract 06037800335	CA	$263	Relatively Low	Very Low	1.06	$278	5.8
2	Census tract 06037800338	CA	$249	Very Low	Very Low	0.71	$177	3.84
3	Census tract 06037800334	CA	$149	Relatively Low	Very Low	1.03	$153	3.34
4	Census tract 06037800324	CA	$128	Very Low	Very Low	0.84	$108	2.44
5	Census tract 06037800336	CA	$94	Very Low	Very Low	0.79	$74	1.78
6	Census tract 06037800333	CA	$61	Relatively Low	Very Low	1.04	$64	1.54

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Riverine Flooding

Rank	Community	State	Risk Index Rating	Risk Index Score	National Percentile
1	Census tract 06037800335	CA	Relatively Low	50.85	0 100
2	Census tract 06037800334	CA	Relatively Low	37.19	0 100
3	Census tract 06037800336	CA	Relatively Low	36.79	0 100
4	Census tract 06037800324	CA	Very Low	35.2	0 100
5	Census tract 06037800333	CA	Very Low	34.83	0 100
6	Census tract 06037800338	CA	Very Low	33.37	0 100

Rank	Community	State	EAL Value	Social Vulnerability	Community Resilience	CRF	Risk Value	Risk Index Score
1	Census tract 06037800335	CA	$7,447	Relatively Low	Very Low	1.06	$7,877	50.85
2	Census tract 06037800334	CA	$1,938	Relatively Low	Very Low	1.03	$1,996	37.19

Rank	Community	State	EAL Value	Social Vulnerability	Community Resilience	CRF	Risk Value	Risk Index Score
3	Census tract 06037800336	CA	$2,378	Very Low	Very Low	0.79	$1,881	36.79
4	Census tract 06037800324	CA	$1,733	Very Low	Very Low	0.84	$1,457	35.2
5	Census tract 06037800333	CA	$1,314	Relatively Low	Very Low	1.04	$1,369	34.83
6	Census tract 06037800338	CA	$1,464	Very Low	Very Low	0.71	$1,039	33.37

Strong Wind

Rank	Community	State	Risk Index Rating	Risk Index Score	National Percentile
1	Census tract 06037800324	CA	Very Low	6.45	0 100
2	Census tract 06037800335	CA	Very Low	6.29	0 100
3	Census tract 06037800338	CA	Very Low	5.25	0 100
4	Census tract 06037800334	CA	Very Low	4.91	0 100
5	Census tract 06037800333	CA	Very Low	4.02	0 100
6	Census tract 06037800336	CA	Very Low	3.46	0 100

Rank	Community	State	EAL Value	Social Vulnerability	Community Resilience	CRF	Risk Value	Risk Index Score
1	Census tract 06037800324	CA	$195	Very Low	Very Low	0.84	$164	6.45
2	Census tract 06037800335	CA	$150	Relatively Low	Very Low	1.06	$158	6.29
3	Census tract 06037800338	CA	$173	Very Low	Very Low	0.71	$123	5.25
4	Census tract 06037800334	CA	$108	Relatively Low	Very Low	1.03	$111	4.91
5	Census tract 06037800333	CA	$79	Relatively Low	Very Low	1.04	$82	4.02
6	Census tract 06037800336	CA	$85	Very Low	Very Low	0.79	$67	3.46

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Tornado

Rank	Community	State	Risk Index Rating	Risk Index Score	National Percentile
1	Census tract 06037800335	CA	Very Low	27.99	0 100
2	Census tract 06037800338	CA	Very Low	22.16	0 100
3	Census tract 06037800324	CA	Very Low	21.35	0 100
4	Census tract 06037800334	CA	Very Low	13.75	0 100
5	Census tract 06037800336	CA	Very Low	13.6	0 100

Rank	Community	State	Risk Index Rating	Risk Index Score	National Percentile
6	Census tract 06037800333	CA	Very Low	8.77	0 100

Rank	Community	State	EAL Value	Social Vulnerability	Community Resilience	CRF	Risk Value	Risk Index Score
1	Census tract 06037800335	CA	$13,481	Relatively Low	Very Low	1.06	$14,258	27.99
2	Census tract 06037800338	CA	$13,470	Very Low	Very Low	0.71	$9,557	22.16
3	Census tract 06037800324	CA	$10,843	Very Low	Very Low	0.84	$9,115	21.35
4	Census tract 06037800334	CA	$5,526	Relatively Low	Very Low	1.03	$5,691	13.75
5	Census tract 06037800336	CA	$7,131	Very Low	Very Low	0.79	$5,639	13.6
6	Census tract 06037800333	CA	$3,608	Relatively Low	Very Low	1.04	$3,759	8.77

Tsunami

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Rank	Community	State	Risk Index Rating	Risk Index Score	National Percentile
	Census tract 06037800324	CA	No Rating	0	0 100
	Census tract 06037800333	CA	No Rating	0	0 100
	Census tract 06037800334	CA	No Rating	0	0 100
	Census tract 06037800335	CA	No Rating	0	0 100
	Census tract 06037800336	CA	No Rating	0	0 100
	Census tract 06037800338	CA	No Rating	0	0 100

Rank	Community	State	EAL Value	Social Vulnerability	Community Resilience	CRF	Risk Value	Risk Index Score
	Census tract 06037800324	CA	$0	Very Low	Very Low	0.84	$0	0
	Census tract 06037800333	CA	$0	Relatively Low	Very Low	1.04	$0	0
	Census tract 06037800334	CA	$0	Relatively Low	Very Low	1.03	$0	0
	Census tract 06037800335	CA	$0	Relatively Low	Very Low	1.06	$0	0
	Census tract 06037800336	CA	$0	Very Low	Very Low	0.79	$0	0
	Census tract 06037800338	CA	$0	Very Low	Very Low	0.71	$0	0

Volcanic Activity

Rank	Community	State	Risk Index Rating	Risk Index Score	National Percentile
	Census tract 06037800324	CA	Not Applicable		
	Census tract 06037800333	CA	Not Applicable		
	Census tract 06037800334	CA	Not Applicable		
	Census tract 06037800335	CA	Not Applicable		
	Census tract 06037800336	CA	Not Applicable		
	Census tract 06037800338	CA	Not Applicable		

Rank	Community	State	EAL Value	Social Vulnerability	Community Resilience	CRF	Risk Value	Risk Index Score
	Census tract 06037800324	CA	N/A	Very Low	Very Low	0.84	N/A	N/A
	Census tract 06037800333	CA	N/A	Relatively Low	Very Low	1.04	N/A	N/A
	Census tract 06037800334	CA	N/A	Relatively Low	Very Low	1.03	N/A	N/A
	Census tract 06037800335	CA	N/A	Relatively Low	Very Low	1.06	N/A	N/A
	Census tract 06037800336	CA	N/A	Very Low	Very Low	0.79	N/A	N/A
	Census tract 06037800338	CA	N/A	Very Low	Very Low	0.71	N/A	N/A

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Wildfire

Rank	Community	State	Risk Index Rating	Risk Index Score	National Percentile
1	Census tract 06037800335	CA	Very High	99.69	0 100
2	Census tract 06037800336	CA	Very High	99.29	0 100
3	Census tract 06037800334	CA	Relatively High	97.95	0 100
4	Census tract 06037800333	CA	Relatively Moderate	93.17	0 100
5	Census tract 06037800338	CA	Relatively Moderate	90.81	0 100
6	Census tract 06037800324	CA	Relatively Low	81.8	0 100

Rank	Community	State	EAL Value	Social Vulnerability	Community Resilience	CRF	Risk Value	Risk Index Score
1	Census tract 06037800335	CA	$2,351,384	Relatively Low	Very Low	1.06	$2,487,029	99.69
2	Census tract 06037800336	CA	$1,563,442	Very Low	Very Low	0.79	$1,236,230	99.29

Rank	Community	State	EAL Value	Social Vulnerability	Community Resilience	CRF	Risk Value	Risk Index Score
3	Census tract 06037800334	CA	$440,846	Relatively Low	Very Low	1.03	$454,061	97.95
4	Census tract 06037800333	CA	$79,584	Relatively Low	Very Low	1.04	$82,917	93.17
5	Census tract 06037800338	CA	$64,743	Very Low	Very Low	0.71	$45,938	90.81
6	Census tract 06037800324	CA	$7,675	Very Low	Very Low	0.84	$6,452	81.8

Winter Weather

Rank	Community	State	Risk Index Rating	Risk Index Score	National Percentile
	Census tract 06037800324	CA	No Rating	0	0 100
	Census tract 06037800333	CA	No Rating	0	0 100
	Census tract 06037800334	CA	No Rating	0	0 100
	Census tract 06037800335	CA	No Rating	0	0 100
	Census tract 06037800336	CA	No Rating	0	0 100
	Census tract 06037800338	CA	No Rating	0	0 100

Rank	Community	State	EAL Value	Social Vulnerability	Community Resilience	CRF	Risk Value	Risk Index Score
	Census tract 06037800324	CA	$0	Very Low	Very Low	0.84	$0	0
	Census tract 06037800333	CA	$0	Relatively Low	Very Low	1.04	$0	0
	Census tract 06037800334	CA	$0	Relatively Low	Very Low	1.03	$0	0
	Census tract 06037800335	CA	$0	Relatively Low	Very Low	1.06	$0	0
	Census tract 06037800336	CA	$0	Very Low	Very Low	0.79	$0	0
	Census tract 06037800338	CA	$0	Very Low	Very Low	0.71	$0	0

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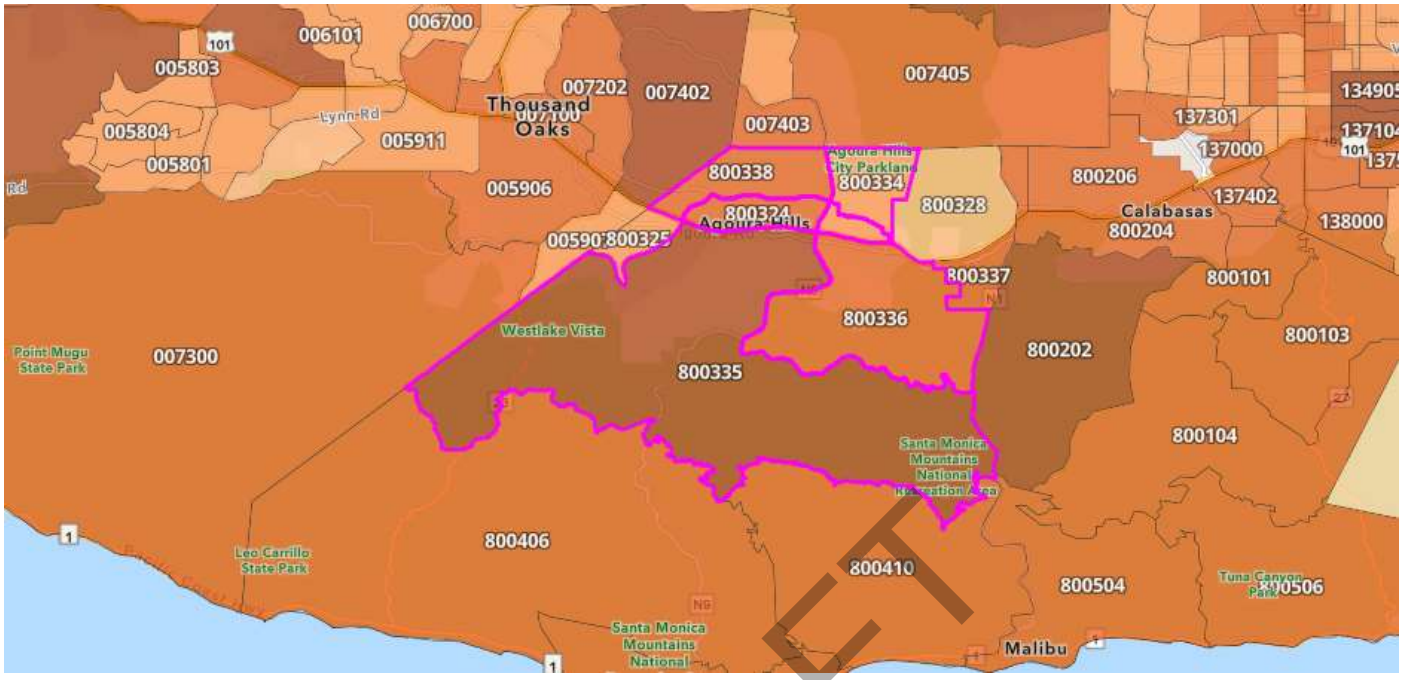
Expected Annual Loss

Expected Annual Loss measures the expected loss each year due to natural hazards.



Expected Annual Loss Legend

Very High | Relatively High | Relatively Moderate | Relatively Low | Very Low

No Expected Annual Losses | Not Applicable | Insufficient Data

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Rank	Community	State	EAL Value	Score
1	Census tract 06037800335	CA	$5,137,554	98.43
2	Census tract 06037800336	CA	$2,883,584	94.58
3	Census tract 06037800338	CA	$2,854,206	94.48
4	Census tract 06037800324	CA	$2,144,796	90.84
5	Census tract 06037800334	CA	$1,363,335	82.48
6	Census tract 06037800333	CA	$837,140	69.2

Expected Annual Loss for Hazard Types

Expected Annual Loss scores for hazard types are calculated using data for only a single hazard type, and reflect a community's relative expected annual loss for only that hazard type.

Avalanche

Rank	Community	State	EAL Value	Score
	Census tract 06037800324	CA	N/A	--
	Census tract 06037800333	CA	N/A	--
	Census tract 06037800334	CA	N/A	--
	Census tract 06037800335	CA	N/A	--
	Census tract 06037800336	CA	N/A	--
	Census tract 06037800338	CA	N/A	--

Coastal Flooding

Rank	Community	State	EAL Value	Score
	Census tract 06037800324	CA	$0	0.0
	Census tract 06037800333	CA	$0	0.0
	Census tract 06037800334	CA	$0	0.0
	Census tract 06037800335	CA	$0	0.0
	Census tract 06037800336	CA	$0	0.0
	Census tract 06037800338	CA	$0	0.0

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Cold Wave

Rank	Community	State	EAL Value	Score
	Census tract 06037800324	CA	$0	0.0
	Census tract 06037800333	CA	$0	0.0
	Census tract 06037800334	CA	$0	0.0
	Census tract 06037800335	CA	$0	0.0
	Census tract 06037800336	CA	$0	0.0
	Census tract 06037800338	CA	$0	0.0

Drought

Rank	Community	State	EAL Value	Score
1	Census tract 06037800324	CA	$49	74.8
	Census tract 06037800333	CA	$0	0.0
	Census tract 06037800334	CA	$0	0.0
	Census tract 06037800335	CA	$0	0.0
	Census tract 06037800336	CA	$0	0.0
	Census tract 06037800338	CA	$0	0.0

Earthquake

Rank	Community	State	EAL Value	Score
1	Census tract 06037800338	CA	$2,768,197	98.6
2	Census tract 06037800335	CA	$2,745,397	98.6
3	Census tract 06037800324	CA	$2,117,616	97.6
4	Census tract 06037800336	CA	$1,307,782	94.7
5	Census tract 06037800334	CA	$911,419	91.8
6	Census tract 06037800333	CA	$749,914	90.1

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Hail

Rank	Community	State	EAL Value	Score
1	Census tract 06037800338	CA	$47	10.5
2	Census tract 06037800335	CA	$44	10.0
3	Census tract 06037800324	CA	$44	10.0
4	Census tract 06037800336	CA	$24	5.1
5	Census tract 06037800334	CA	$23	4.9
6	Census tract 06037800333	CA	$16	2.7

Heat Wave

Rank	Community	State	EAL Value	Score
1	Census tract 06037800324	CA	$5,684	43.9
2	Census tract 06037800338	CA	$5,038	42.0

Rank	Community	State	EAL Value	Score
3	Census tract 06037800335	CA	$4,330	39.8
4	Census tract 06037800334	CA	$3,144	35.0
5	Census tract 06037800336	CA	$2,462	31.8
6	Census tract 06037800333	CA	$2,296	30.9

Hurricane

Rank	Community	State	EAL Value	Score
	Census tract 06037800324	CA	N/A	--
	Census tract 06037800333	CA	N/A	--
	Census tract 06037800334	CA	N/A	--
	Census tract 06037800335	CA	N/A	--
	Census tract 06037800336	CA	N/A	--
	Census tract 06037800338	CA	N/A	--

Ice Storm

Rank	Community	State	EAL Value	Score
	Census tract 06037800324	CA	N/A	--
	Census tract 06037800333	CA	N/A	--
	Census tract 06037800334	CA	N/A	--
	Census tract 06037800335	CA	N/A	--
	Census tract 06037800336	CA	N/A	--
	Census tract 06037800338	CA	N/A	--

Landslide

Rank	Community	State	EAL Value	Score
1	Census tract 06037800335	CA	$15,059	98.1
2	Census tract 06037800324	CA	$830	62.5
3	Census tract 06037800338	CA	$823	62.4
4	Census tract 06037800333	CA	$267	50.4
5	Census tract 06037800336	CA	$185	47.9

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Rank	Community	State	EAL Value	Score
6	Census tract 06037800334	CA	$183	47.9

Lightning

Rank	Community	State	EAL Value	Score
1	Census tract 06037800335	CA	$263	6.7
2	Census tract 06037800338	CA	$249	6.3
3	Census tract 06037800334	CA	$149	3.6
4	Census tract 06037800324	CA	$128	3.1
5	Census tract 06037800336	CA	$94	2.3
6	Census tract 06037800333	CA	$61	1.6

Riverine Flooding

Rank	Community	State	EAL Value	Score
1	Census tract 06037800335	CA	$7,447	51.0
2	Census tract 06037800336	CA	$2,378	39.1
3	Census tract 06037800334	CA	$1,938	37.6
4	Census tract 06037800324	CA	$1,733	36.8
5	Census tract 06037800338	CA	$1,464	35.7
6	Census tract 06037800333	CA	$1,314	35.1

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Strong Wind

Rank	Community	State	EAL Value	Score
1	Census tract 06037800324	CA	$195	9.3
2	Census tract 06037800338	CA	$173	8.5
3	Census tract 06037800335	CA	$150	7.7
4	Census tract 06037800334	CA	$108	6.3
5	Census tract 06037800336	CA	$85	5.5
6	Census tract 06037800333	CA	$79	5.2

Tornado

Rank	Community	State	EAL Value	Score
1	Census tract 06037800335	CA	$13,481	29.3
2	Census tract 06037800338	CA	$13,470	29.3
3	Census tract 06037800324	CA	$10,843	26.9
4	Census tract 06037800336	CA	$7,131	20.9
5	Census tract 06037800334	CA	$5,526	16.8
6	Census tract 06037800333	CA	$3,608	10.6

Tsunami

Rank	Community	State	EAL Value	Score
	Census tract 06037800324	CA	$0	0.0
	Census tract 06037800333	CA	$0	0.0
	Census tract 06037800334	CA	$0	0.0
	Census tract 06037800335	CA	$0	0.0
	Census tract 06037800336	CA	$0	0.0
	Census tract 06037800338	CA	$0	0.0

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Volcanic Activity

Rank	Community	State	EAL Value	Score
	Census tract 06037800324	CA	N/A	--
	Census tract 06037800333	CA	N/A	--
	Census tract 06037800334	CA	N/A	--
	Census tract 06037800335	CA	N/A	--
	Census tract 06037800336	CA	N/A	--
	Census tract 06037800338	CA	N/A	--

Wildfire

Rank	Community	State	EAL Value	Score
1	Census tract 06037800335	CA	$2,351,384	99.7
2	Census tract 06037800336	CA	$1,563,442	99.5

Rank	Community	State	EAL Value	Score
3	Census tract 06037800334	CA	$440,846	98.1
4	Census tract 06037800333	CA	$79,584	93.4
5	Census tract 06037800338	CA	$64,743	92.6
6	Census tract 06037800324	CA	$7,675	83.1

Winter Weather

Rank	Community	State	EAL Value	Score
	Census tract 06037800324	CA	$0	0.0
	Census tract 06037800333	CA	$0	0.0
	Census tract 06037800334	CA	$0	0.0
	Census tract 06037800335	CA	$0	0.0
	Census tract 06037800336	CA	$0	0.0
	Census tract 06037800338	CA	$0	0.0

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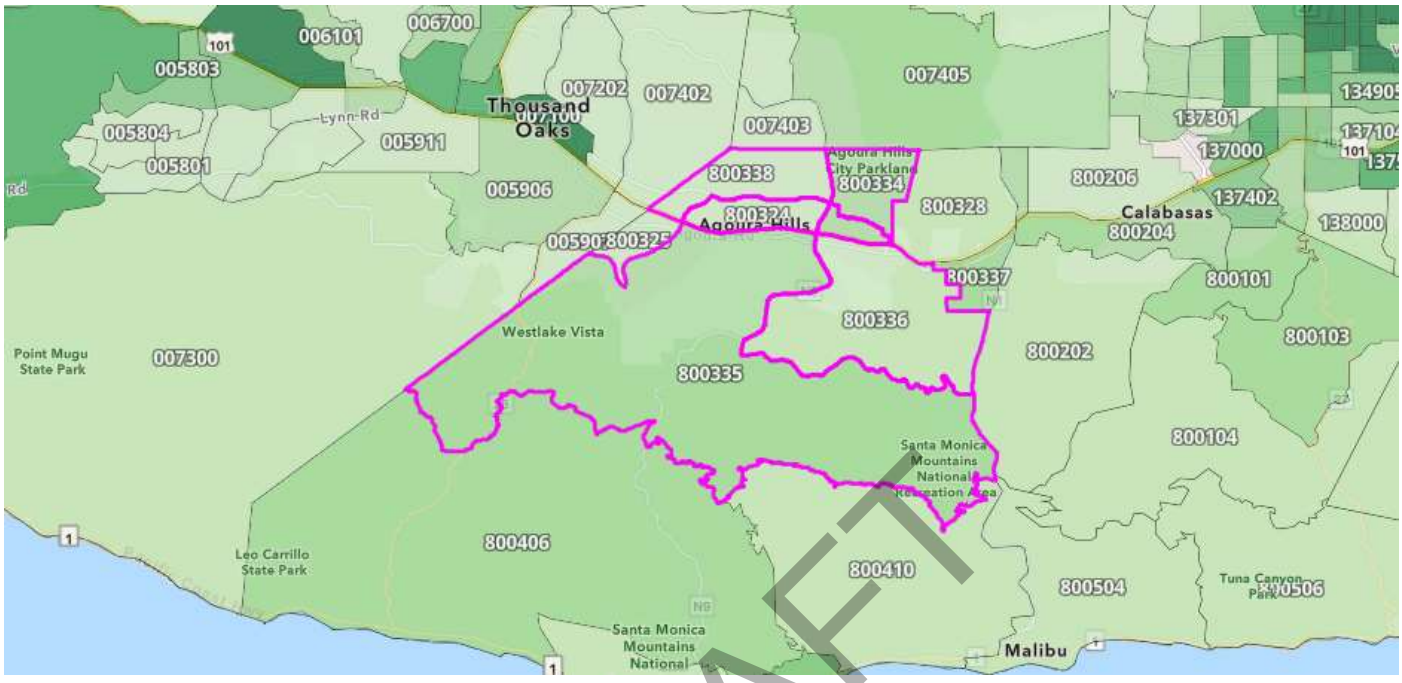
Social Vulnerability

Social Vulnerability measures the susceptibility of social groups to the adverse impacts of natural hazards, including disproportionate death, injury, loss, or disruption of livelihood.



Social Vulnerability Legend

Very High | Relatively High | Relatively Moderate | Relatively Low | Very Low | Data Unavailable

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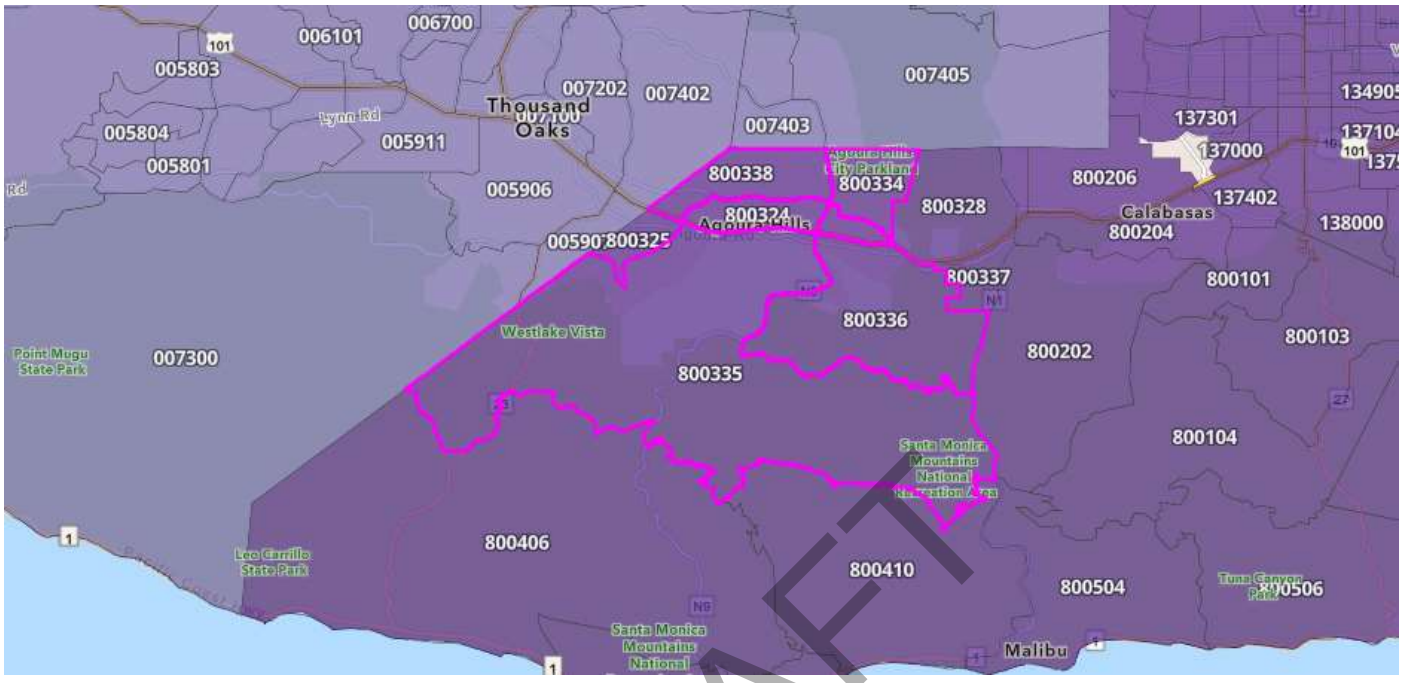
Rank	Community	State	Rating	Score
1	Census tract 06037800335	CA	Relatively Low	38.5
2	Census tract 06037800333	CA	Relatively Low	36.6
3	Census tract 06037800334	CA	Relatively Low	35.1
4	Census tract 06037800324	CA	Very Low	14.4
5	Census tract 06037800336	CA	Very Low	10.5
6	Census tract 06037800338	CA	Very Low	5.4

Community Resilience

Community Resilience measures a County's ability to prepare for anticipated natural hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions.



Community Resilience Legend

Very High | Relatively High | Relatively Moderate | Relatively Low | Very Low | Data Unavailable

DRAFT

Rank	Community	State	Rating	Score
1	Census tract 06037800324	CA	Very Low	15.4
1	Census tract 06037800333	CA	Very Low	15.4
1	Census tract 06037800334	CA	Very Low	15.4
1	Census tract 06037800335	CA	Very Low	15.4
1	Census tract 06037800336	CA	Very Low	15.4
1	Census tract 06037800338	CA	Very Low	15.4

About the National Risk Index

The National Risk Index is a dataset and online tool to help illustrate the United States communities most at risk for 18 natural hazards: Avalanche, Coastal Flooding, Cold Wave, Drought, Earthquake, Hail, Heat Wave, Hurricane, Ice Storm, Landslide, Lightning, Riverine Flooding, Strong Wind, Tornado, Tsunami, Volcanic Activity, Wildfire, and Winter Weather.

The National Risk Index leverages available source data for Expected Annual Loss due to these 18 hazard types, Social Vulnerability, and Community Resilience to develop a baseline relative risk measurement for each United States county and Census tract. These measurements are calculated using average past conditions, but they cannot be used to predict future outcomes for a community. The National Risk Index is intended to fill gaps in available data and analyses to better inform federal, state, local, tribal, and territorial decision makers as they develop risk reduction strategies.

Explore the National Risk Index Map at **hazards.fema.gov/nri/map**.

Visit the National Risk Index website at **hazards.fema.gov/nri/learn-more** to access supporting documentation and links.

Calculating the Risk Index

Risk Index scores are calculated using an equation that combines scores for Expected Annual Loss due to natural hazards, Social Vulnerability and Community Resilience:

$$\text{Risk Index} = \text{Expected Annual Loss} \times \text{Social Vulnerability} \div \text{Community Resilience}$$

Risk Index scores are presented as a composite score for all 18 hazard types, as well as individual scores for each hazard type.

For more information, visit **hazards.fema.gov/nri/determining-risk**.

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Calculating Expected Annual Loss

Expected Annual Loss scores are calculated using an equation that combines values for exposure, annualized frequency, and historic loss ratios for 18 hazard types:

$$\text{Expected Annual Loss} = \text{Exposure} \times \text{Annualized Frequency} \times \text{Historic Loss Ratio}$$

Expected Annual Loss scores are presented as a composite score for all 18 hazard types, as well as individual scores for each hazard type.

For more information, visit **hazards.fema.gov/nri/expected-annual-loss**.

Calculating Social Vulnerability

Social Vulnerability is measured using the Social Vulnerability Index (SVI) published by the Centers for Disease Control and Prevention (CDC).

For more information, visit **hazards.fema.gov/nri/social-vulnerability**.

Calculating Community Resilience

Community Resilience is measured at the County level using the Baseline Resilience Indicators for Communities (HVRI BRIC) published by the University of South Carolina's Hazards and Vulnerability Research Institute (HVRI).

For more information, visit **hazards.fema.gov/nri/community-resilience**.

How to Take Action

There are many ways to reduce natural hazard risk through mitigation. Communities with high National Risk Index scores can take action to reduce risk by decreasing Expected Annual Loss due to natural hazards, decreasing Social Vulnerability, and increasing Community Resilience.

For information about how to take action and reduce your risk, visit **hazards.fema.gov/nri/take-action**.

Disclaimer

The National Risk Index (the Risk Index or the Index) and its associated data are meant for planning purposes only. This tool was created for broad nationwide comparisons and is not a substitute for localized risk assessment analysis. Nationwide datasets used as inputs for the National Risk Index are, in many cases, not as accurate as available local data. Users with access to local data for each National Risk Index risk factor should consider substituting the Risk Index data with local data to recalculate a more accurate risk index. If you decide to download the National Risk Index data and substitute it with local data, you assume responsibility for the accuracy of the data and any resulting data index. Please visit the **Contact Us** page if you would like to discuss this process further.

The methodology used by the National Risk Index has been reviewed by subject matter experts in the fields of natural hazard risk research, risk analysis, mitigation planning, and emergency management. The processing methods used to create the National Risk Index have produced results similar to those from other natural hazard risk analyses conducted on a smaller scale. The breadth and combination of geographic information systems (GIS) and data processing techniques leveraged by the National Risk Index enable it to incorporate multiple hazard types and risk factors, manage its nationwide scope, and capture what might have been missed using other methods.

The National Risk Index does not consider the intricate economic and physical interdependencies that exist across geographic regions. Keep in mind that hazard impacts in surrounding counties or Census tracts can cause indirect losses in your community regardless of your community's risk profile.

Nationwide data available for some risk factors are rudimentary at this time. The National Risk Index will be continuously updated as new data become available and improved methodologies are identified.

The National Risk Index Contact Us page is available at **hazards.fema.gov/nri/contact-us**.

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APPENDIX B – CITY OF AGOURA HILLS EVACUATION PLAN

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CITY OF AGOURA HILLS

Evacuation Plan

September 2020

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INTRODUCTION

The City of Agoura Hills is susceptible to a variety of hazards that could require a mass evacuation of part, or all the City, including fire, flooding and potential landslide. The 2018 Woolsey Fire, which caused significant damage and required the full evacuation of the City, demonstrated the need for a comprehensive and coordinated plan.

This mass evacuation plan was developed through a collaborative multi-agency process. In September/October 2020, discussed and staff met with representatives from Los Angeles County Fire, Sheriff's, and representative from County Office of Emergency Services to develop a plan that would be incorporated into the region wide evacuation plan. The region wide evacuation plan is being developed by the County of Los Angeles. This will serve as a guide to assist the various agencies during evacuations.

Goal:

To ensure a safe and effective evacuation of the community during life-threatening emergencies.

Objectives:

- Clarify roles and responsibilities of participating agencies
- Identify evacuation and traffic management strategies
- Establish communication protocols

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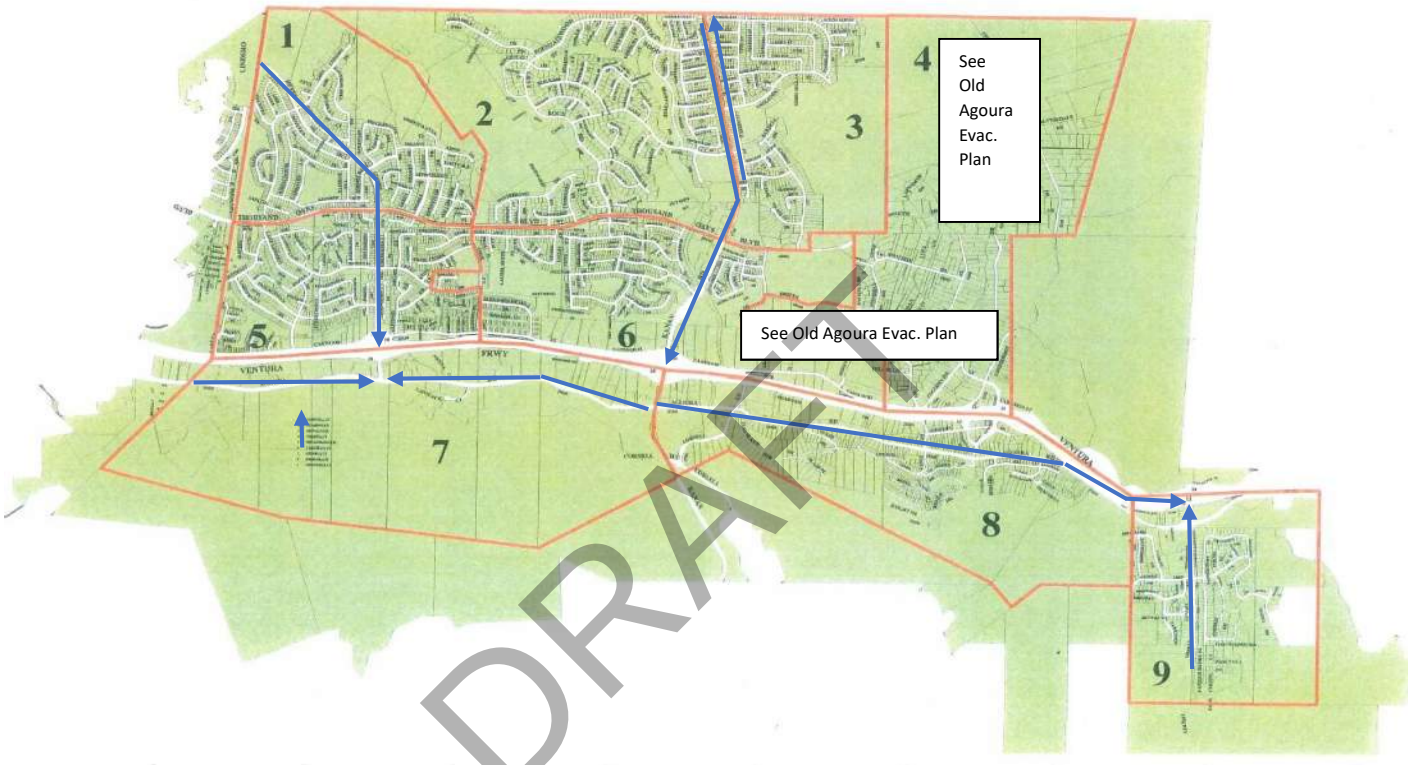
EVACUATION ZONES

To maximize the efficiency of any evacuation and to minimize congestion, the City of Agoura Hills has developed and divided the City into seven (7) evacuation zones. These zones provide clearly defined evacuation areas that can be activated quickly. They can also be used to implement phased evacuations.



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ZONE 1 (Sectors 1 & 5)
Use Reyes Adobe Rd to egress either eastbound or westbound on US 101

ZONE 2 (Sector 2 & 6)
Use Kanan Rd. southbound to US 101

ZONE3 (Sector 3)
Use Kanan Rd. northbound to Lindero Canyon Rd.

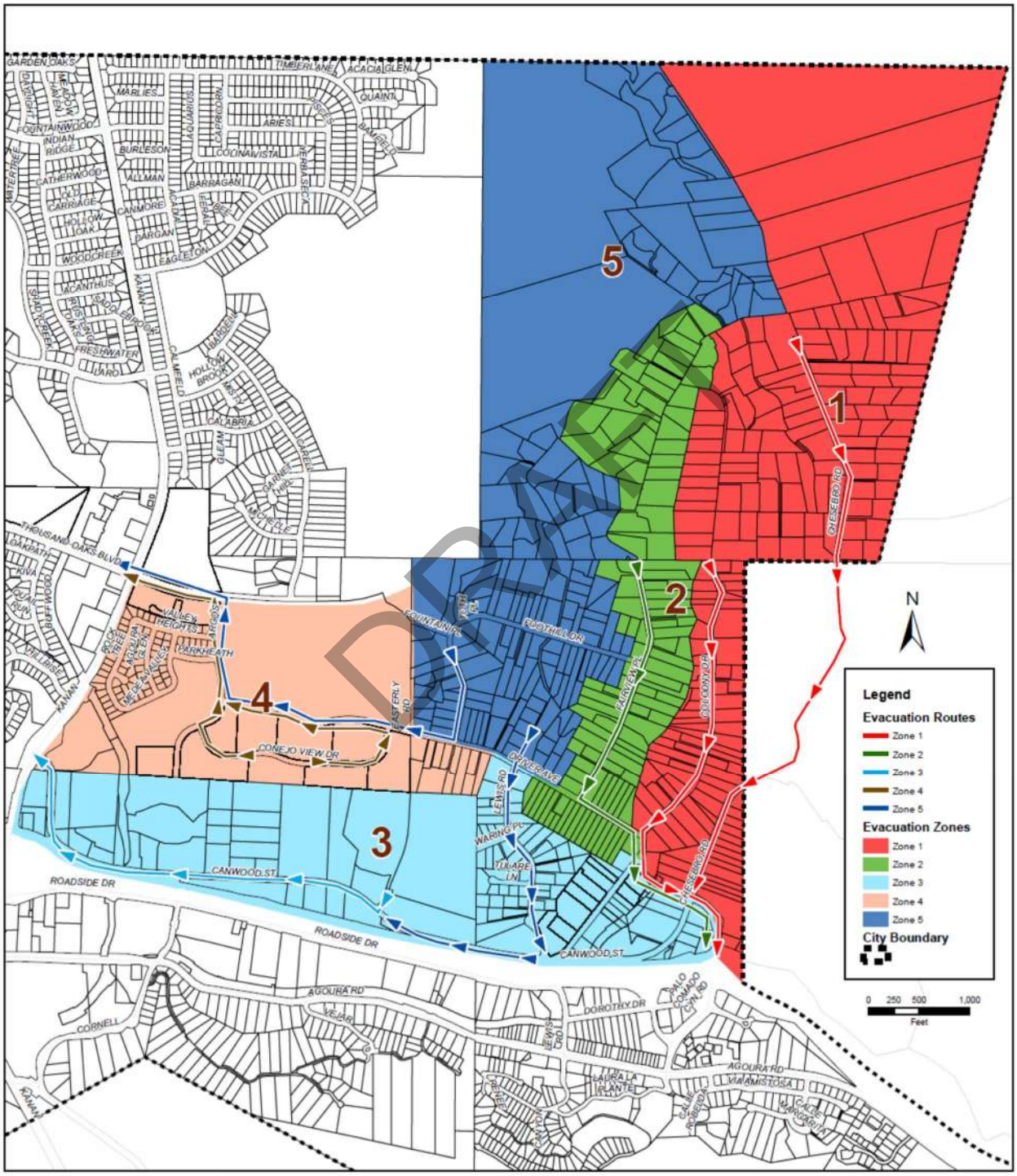
ZONE 4 (Sector 4 & Sector 6 East - See Old Agoura Evacuation Plan; Page 5)

ZONE 5 (Sector 7)
Use Reyes Adobe Rd to egress either eastbound or westbound on US 101
Alternate: Agoura Rd (eastbound bound or westbound)

ZONE 6 (Sector 8)
Use Agoura Road, eastbound to Liberty Canyon, to US 101 south

ZONE 7 (Sector 9)
Use Liberty Canyon northbound to US 101.

CITY OF AGOURA HILLS
EMERGENCY TRAFFIC CONTROL PLAN
FOR THE "OLD AGOURA" AREA



INITIAL ACTIONS AND NOTIFICATIONS

Initial actions will depend on what type of action the Los Angeles County Sheriff's Department (LASD) Incident Commander (IC) receives from the Los Angeles County Fire Department. The three standardized evacuation terms include the following:

Evacuation Warning:	Potential threat to life and/or property. Those who require additional time to evacuate and those with pets and livestock should at that time.
Evacuation Order:	Immediate threat to life. This is a lawful order to leave now. The area is lawfully closed to public access.
Shelter in Place:	Go indoors. Shut and lock doors and windows. Prepare to self-sustain until further notice and/or contacted by emergency personnel for additional direction.

LASD Personnel Deployment

The LASD IC will immediately request LASD Response Teams from the Department Operation Center (DOC) and deploy personnel based on the evacuation strategy that is being implemented.

Ingress Traffic Control

Upon notification of an evacuation, LASD will request Caltrans, CHP, to close some, or all, of the following routes INTO the City of Agoura Hills to immediately reduce traffic congestion inside the affected evacuation areas:

1) Kanan Road

Response Organization Notifications

The LASD IC shall notify the following entities for implementation of this evacuation plan.

City of Agoura Hills City Manager	88-597-7308
City of Agoura Hills	818-597-7343 (Public Works)
Cal Trans	323-259-2353
CHP	818-888-0980
LASD - LHS	818-878-1808
Ventura County Sheriff's Department	805-654-2311

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Community Notifications

The City of Agoura Hills will issue emergency alerts immediately upon notification of an evacuation, and will use all appropriate notification platforms including the City's disaster and emergency alert systems, and Social Media.

Affected residents will be notified of the following:

1) Which evacuation route(s) will be used
2) Shelter locations (outside of evacuation area, if available at time of notification)
3) Large animal shelters (outside of evacuation area)

EVACUATION ROUTES

These are the seven main evacuation routes to be utilized:

1) Kanan Rd (southbound to US 101)
2) Kanan Rd (Northbound for Sector 3)
3) Reyes Adobe Road (sound bound to US 101)
4) Reyes Adobe Road (north bound to US 101)
5) Agoura Road
6) Chesebro Rd
7) Liberty Canyon

Additional feeder routes include: Colodny Dr., Driver Ave., Fairview Dr.

Due to roadway conditions and existing populations, every effort shall be made to avoid routing additional evacuation traffic onto Kanan Road other than what is specified in the plan, as the City of Malibu has identified Kanan Rd as a possible egress evacuation route. Other route options should be exhausted first.

The LASD IC will determine which evacuation route shall be utilized, based on the following:

1) Incident location
2) Incident conditions (weather, wind, road conditions)
3) Which Zone(s) need to be evacuated

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LOGISTICS AND RESPONSIBLE AGENCY MATRIX

The matrix below indicates the equipment needed and agency responsible for implementing each logistics item:

Logistics	AGENCY					NOTES
	LASD	LACFD	City	Caltrans	CHP	
Deploy portable barricades	X		X			
Notify Contractors to be on standby			X			
Deploy Safety Equipment	X					
Engage and activate switch on signal controller - Longer green cycle	X			X		
Implement traffic control devices at intersections	X					

INTERAGENCY COMMUNICATION

Preplanning Phase
When increased fire risk weather is forecasted, LAFD will notify the City of Agoura Hills via email information about the fire weather forecast and planned augmented staffing. In addition, LAFD will conduct an 11:00 am Conference Call to review critical information with impacted cities.

Initial Phase of an Incident
Initial notification of an emergency Incident in Agoura Hills will be made to the City Manager by phone call or text by either the Incident Commander or the Community Services Liaison. For widespread incidents that affect multiple cities, a group text will be sent advising of the incident.

During the Incident
Further details of the incident will be sent via the Incident Commander or Community Services Liaison via text or by personal cell contact. All information will have been vetted by the Incident Commander and held to be factual and credible until otherwise indicated.

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COMMUNICATION TO THE PUBLIC

Communication from the City of Agoura Hills

Upon official notification of an evacuation by LAFD or LASD, the City will begin issuing messages using all available and appropriate communication tools. The City will only post-incident information that has been approved by the agency that has jurisdiction over the incident. However, the City will post emergency and incident information that is directly under the City's purview. Updated information will be sent as it is received.

Neighborhoods that are under a mandatory evacuation order will receive targeted messages using the City's Mass Notification System. This system can send a message to a specific area that is drawn on a map and includes landlines, cell phones and e-mails. If warranted, this system is also capable of sending a Wireless Emergency Alert to a broader area.

Messages regarding the evacuation will also be sent out through the City's other communication channels including:

- CodeRed
- Website
- Social media – Twitter, Facebook and Instagram
- Nextdoor
- AHTV slides
- Message sent to AM Radio Broadcast for dissemination by the news source

Communication from the Los Angeles County Fire and Sheriff

Once the Incident Public Information Officer arrives, further details will be disseminated by that Public Information Officer. A Media Release will be constructed by the PIO, vetted and approved by the Incident Commander, and then distributed to City representatives to be shared with the public. In addition, LAFD will distribute information to the public via Social Media Platforms, including Twitter, Instagram, and other local media outlets.

Hourly updates will be provided on the LA County Division VII and Lost Hills Sheriff's Facebook and Twitter page for any incident that affects cities within the Santa Monica Area. This information will come from the Official PIO account and vetted through the Incident Command.

REGIONAL COORDINATION

During an emergency of any level, the City will be in contact and coordination with the Los Angeles County Sheriff's and Fire Departments, County Public Works, Caltrans, utilities, or any other partner agency that is responding or relevant to the incident.

During a regional emergency declared by the county, state, or federal government, the City will coordinate with the County Office of Emergency Management to ensure unified messaging about incident. In order to ensure unified messaging, the City will only post-incident emergency information that has been approved by the agency that has jurisdiction over the incident. The City may still post-emergency and incident information that is directly under the City's purview.

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VULNERABLE POPULATIONS EMERGENCY COMMUNICATIONS

Non-English-Speaking Population

Spanish is the second most common language spoken in Agoura Hills. Therefore, the City will issue emergency alerts, evacuation notifications and other emergency information in English and Spanish.

Access and Functional Needs (AFN) Population

The City will make every reasonable attempt to locate and assist people with access and functional needs during an emergency. The City will coordinate with Community Emergency Response Team (CERT) Team members, volunteers with Meals on Wheels, Sheriff's Volunteers on Patrol (VOPs) and other community-based organizations, non-profits and faith groups to conduct wellness checks.

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APPENDIX D – WOOLSEY FIRE VOLUNTARY AND MANDATORY EVACUATION DATA

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Zone 1

Routes utilized during Woolsey Fire

Trips Recorded from Zone 1 during Woolsey Fire

Voluntary Period	Mandatory Period
41%	59%

Zone 2

Routes utilized during Woolsey Fire

Trips Recorded from Zone 2 during Woolsey Fire

Voluntary Period	Mandatory Period
55%	45%

Zone 3

Routes utilized during Woolsey Fire

Trips Recorded from Zone 3 during Woolsey Fire

Voluntary Period	Mandatory Period
51%	49%

Zone 4.1

Routes utilized during Woolsey Fire

Routes utilized during Woolsey Fire

Trips Recorded from Zone 4.1 during Woolsey Fire

Voluntary Period	Mandatory Period
39%	61%

Zone 4.2

Routes utilized during Woolsey Fire

Routes utilized during Woolsey Fire

Trips Recorded from Zone 4.2 during Woolsey Fire

Voluntary Period	Mandatory Period
25%	75%

Zone 4.3 (non-residential)

Routes utilized during Woolsey Fire

Zone 5

Routes utilized during Woolsey Fire

Trips Recorded from Zone 5 during Woolsey Fire

Voluntary Period	Mandatory Period
59%	41%

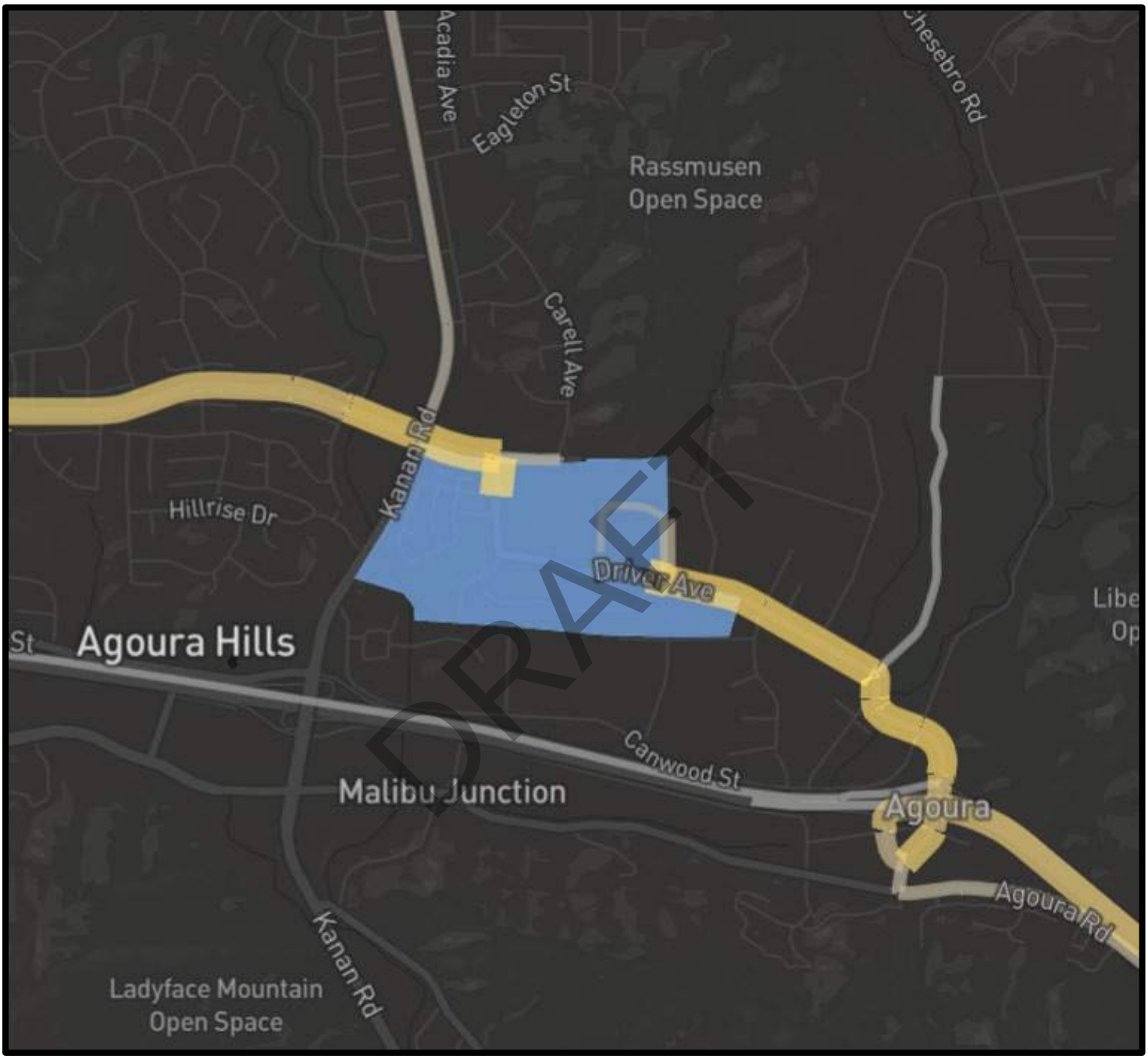
Zone 6

Routes utilized during Woolsey Fire

Trips Recorded from Zone 6 during Woolsey Fire

Voluntary Period	Mandatory Period
53%	47%

Zone 6 (analyzed separately only on Streetlight)



Routes utilized during Woolsey Fire

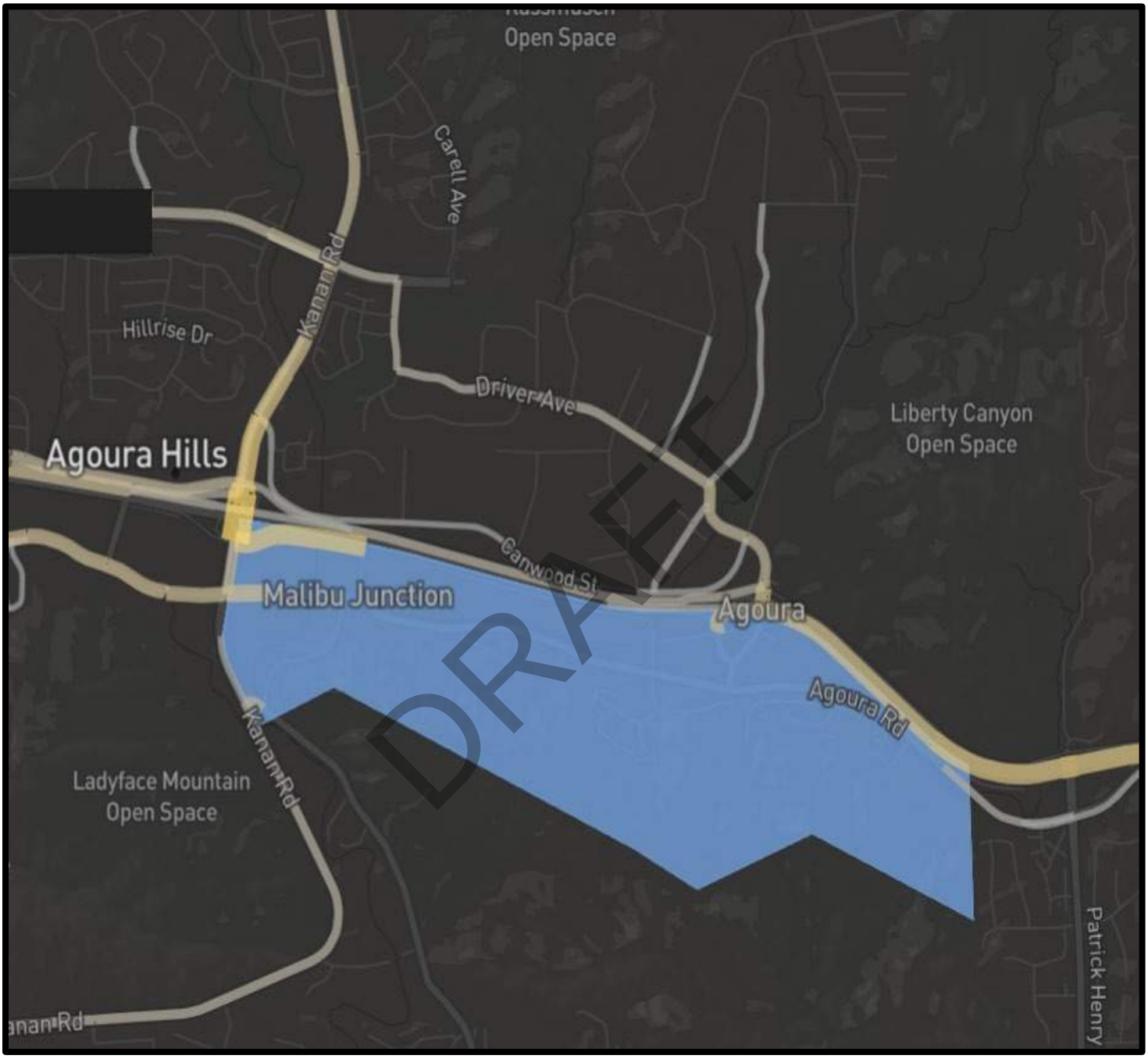
Zone 7

Routes utilized during Woolsey Fire

Trips Recorded from Zone 7 during Woolsey Fire

Voluntary Period	Mandatory Period
70%	30%

Zone 8



Routes utilized during Woolsey Fire

Trips Recorded from Zone 8 during Woolsey Fire

Voluntary Period	Mandatory Period
68%	32%

Zone 9

Routes utilized during Woolsey Fire

Trips Recorded from Zone 9 during Woolsey Fire

Voluntary Period	Mandatory Period
61%	39%

Oak Park

Routes utilized during Woolsey Fire

Trips Recorded from Oak Park during Woolsey Fire

Voluntary Period	Mandatory Period
45%	55%

Santa Monica Mountains

Routes utilized during Woolsey Fire

Trips Recorded from SMM during Woolsey Fire

Voluntary Period	Mandatory Period
47%	53%

Chapter 5 COMMUNITY SAFETY

The urban and natural environments of Agoura Hills contain a number of hazards that require special consideration and treatment in the land use planning process to protect the public's safety. These hazards include flooding, unstable earth conditions, wildland and urban fires, crime, and hazardous materials. Protection from the risks of natural and man-made hazards, crime, and disease are essential in establishing a sense of well-being for residents and important considerations in attracting new businesses to the City that will provide quality jobs. Goals and policies in this chapter strive to reduce hazards, including the effects of climate change, mitigate noise impacts, provide for emergency response strategies, and coordinate emergency response agencies.

The Las Virgenes-Malibu Council of Government's (COG) Multi-Jurisdictional Hazard Mitigation Plan (~~2018~~2024) was prepared by the Las Virgenes-Malibu COG to meet the Disaster Mitigation Act of 2000. The ~~2018~~2024 version updated the ~~original 2005~~2018 Multi-Jurisdiction Hazard Mitigation Plan. The City of Agoura Hills is one of five cities in the COG, along with the cities of Malibu, Westlake Village, Calabasas and Hidden Hills. The mission of the Multi-Jurisdictional Hazard Mitigation Plan is to promote sound public policy and programs in the City of Agoura Hills and other COG member cities to protect the public, critical facilities, infrastructure, private and public properties, and the environment from natural and human generated hazards. The Hazard Mitigation Plan contains risk assessments and hazard mitigation goals and strategies. It addresses areas of earthquake, wildfire, climate change, energy disruption, landslide and debris flows, windstorm, and flood/severe winter storm, among other topics. The Las Virgenes-Malibu Council of Government's Multi-Jurisdictional Hazard Mitigation Plan is incorporated herein by reference. The hazard and risk reduction strategies contained in the Hazard Mitigation Plan are complementary to the goals and policies of the General Plan.

A. Flood Hazards (S)

The Las Virgenes-Malibu area, including the City of Agoura Hills, is situated near the western portion of the Santa Monica Mountains and has experienced flooding in the past from major winter storm events, although there has been no significant historic flooding. Flooding poses a threat to life and safety and can cause severe damage to public and private property. Due to the natural mountainous terrain as well as changes in the landscape (due to development) and natural disasters such as wildfire, flooding can be a factor in the area.

Flood control and storm water facilities

In Agoura Hills, potential flood hazards may result from overflow of natural watercourses and man-made drainage systems due to excessive and unusual storm runoff. Agoura Hills does not have a significant flooding problem, as the City's flood control facilities and storm drainage system generally have sufficient capacity to adequately protect developed areas from excessive storm runoff. However, heavy rains can result in flooding on City roadways, such as along Thousand Oaks Boulevard near Lake Lindero Drive. Figure S-1 (Hazards) displays

Federal Emergency Management Agency (FEMA)-recognized zones subject to flooding and other hazards within the community.

The Los Angeles County Department of Public Works (LACDPW) presently owns and maintains three major flood control facilities in Agoura Hills. These facilities are the Lindero Canyon Channel, the Chesebro Canyon Channel, and parts of Medea Creek. Two major drainage channels not maintained by the LACDPW are the Palo Comado Canyon and Liberty Canyon. With the exception of the Palo Comado Canyon, these drainages are unchannelized or are maintained as semi-natural and are located in open space corridors.

- The Lindero Canyon Channel provides flood protection for the west drainage flow from Lindero Canyon. This canyon extends into Ventura County, well beyond the City of Agoura Hills northerly boundary.
- The Chesebro Canyon Channel provides controlled drainage for the east drainage area of the City. Chesebro Canyon Channel intercepts the flows from Chesebro Canyon, and Palo Comado Canyon. Both canyons extend into Ventura County, beyond the City of Agoura Hills northern boundary line.
- Medea Creek is partially improved between Agoura Road and north to the Ventura County line. Medea Creek provides flood control protection for the central drainage area of the City. Medea Creek intercepts flow from Medea Creek Canyon, extending into Ventura County.

The following goals and policies provide the City with guidance in reducing present and future flood hazards.

Goal S-1

Protection from Flood Hazards. Minimize risk to residents, workers, and visitors from flood hazards.

Policies

S 1.1 **Coordination of Drainage Improvements.** Locate and improve deficiencies in the storm drain system to prevent local flooding problems in the City. (Imp U 21)

S-1.2 **New Development.** Require new development to upgrade storm drains to handle the increased runoff generated from the development sites, in accordance with adopted City standards, which include but are not limited to Los Angeles County Public Works Design Manuals. (Imp U 20, U 22)

S-1.3 **Facility Use or Storage of Hazardous Materials.** Require that all facilities storing, using, or otherwise involved with substantial quantities of on-site hazardous materials within flood zones comply with applicable standards of elevation, anchoring, and flood proofing, and that hazardous materials be stored in watertight containers. *(Imp S-1)*

S-1.4 **SEMS Plan.** Ensure that the City's Standardized Emergency Management System (SEMS) Plan is evaluated annually and revised as required, that the current mitigation strategies addressing flood hazards are implemented, and that effective public outreach and education are included. *(Imp S-2)*

S-1.5 **Preservation of Flood Plains.** Preservation of flood plains as open space shall be considered, as feasible, as an alternative to channelization. *(Imp S-3)*

S-1.6 **Floodplain Requirements.** Regulate development within floodplains in accordance with the County, state and federal requirements, and maintain the City's eligibility under the National Flood Insurance Program. *(Imp S-1)*

S-1.7 **Flood Mitigation Design.** Require that new development incorporates sufficient measures to mitigate flood hazards, including the design of on-site drainage systems linking with citywide storm drainage, grading of the site so that runoff does not impact adjacent properties or structures on the site, and elevation of any structures above any flooding elevation. *(Imp U-19, U-20, U-21, U-22, S-1)*

S-1.8 **Natural Infrastructure.** Incorporate and/or restore naturally occurring landscape features and ecosystem processes in development projects to mitigate flood danger, purify and store water, and reduce urban storm water runoff to the extent feasible. Consider such natural infrastructure as riparian buffers, wetlands, urban forestry, and permeable pavers. (*Imp S-14)*

S-1.9 **Development in Flood Zones.** Limit new development in Flood Zones A and AE, in accordance with the Federal Emergency Management Agency (FEMA) and City Building Code requirements, and assess properties for flooding vulnerabilities in these zones. (*Imp S-1, S-15)*

S-1.10 **Public Outreach and Education.** Provide public outreach, education and engagement by communicating flood warning and severe weather event information and appropriate responses to the public, such as areas to avoid. (*Imp, S-16, S-23)*

S-1.11 **Flooding Emergency Evacuation Plan.** Develop an emergency evacuation plan for flooding and develop an emergency evacuation notification system. (*Imp S-16, S-20)*

S-1.12 **Roadway and Transportation Facilities.** Identify roadway and transportation facility improvements needed within the City to address flooding, and coordinate with relevant transportation agencies to implement the improvements. (*Imp S-15, S-18)*

S-1.13 **Siting of Critical Facilities and Infrastructure**. Encourage the location and development of new essential public facilities outside of flood hazard zones to the extent feasible. *(Imp S-17)*

S-1.14 **Coordination with Flood Protection Agencies.** Maintain a cooperative working relationship with the County of Los Angeles Flood Control District and other public agencies to ensure the structural and operational integrity of essential public facilities during flooding. *(Imp S-18)*

CITY of AGOURA HILLS
General Plan Update

HAZARDS

Legend

Entire City is in a Very High Fire Hazard Severity Zone

- Special Flood Hazard Area 1% Annual Chance Flood (Zone A - No base flood elevations determined)
- Slopes > 10% Note: See Policy S-2.2
- City Limits
- County Boundary
- Streams

VENTURA COUNTY

Santa Monica Mountains National Recreation Area

LOS ANGELES COUNTY

Westlake Village

Lindero Canyon Road

Kanan Road

Ventura Freeway

Agoura Village Specific Plan

Lady Face Mountain Specific Plan

Source: City of Agoura Hills Fire Hazard, 2009; FEMA Q3; USGS Seamless Data Distribution System, 2009

D21377_Agoura_Hills\Public Safety Management.mxd

Miles

0 0.125 0.25 0.5 0.75

PBS&J

Figure S-1

B. Geological and Seismic Hazards (S)

Slope Stability Hazards

Slope stability is a major environmental concern in the developed hillside areas of the City. Several areas are prone to such stability problems as landslides, mudslides, slumping, and rockfalls. Development occurring within close proximity to these geologic conditions may endanger the public's safety. Landslides have occurred in the mountainous portions of Agoura Hills. (Figure S 1).

Shallow slope failures, such as mudslides and slumping, have occurred in the City, especially where graded cut and fill slopes have been poorly constructed or not properly maintained. Mudslides have the potential to occur with great suddenness and destructive force, thereby constituting a significant threat to life and property in hillside areas. Soil slumping is a slower process that can also potentially cause extensive structural damage, although it is not as life threatening as the other soil stability hazards. Rockfalls are generally associated with seismic groundshaking and are a potential hazard for developments located at the base of steep slopes that have fractured rock outcroppings. Rockfall hazard is greatest during strong earthquakes.

Expansive Soil Hazard

Soils that expand when exposed to water are considered expansive soils. Another important concern is the shrink/swell behavior and erodibility of soils in the City. Ungraded native soils in the lowland portions of the City exhibit the highest potential for shrinkage and swelling, and would have to be removed or extensively modified before development could occur.

Soil Erosion Hazard

Soil erosion typically results from concentrated runoff on unprotected slopes or along unlined stream channels. Soil erosion has largely been reduced throughout most of the City due to soil coverage by various land uses and the construction of flood control facilities. However, the undeveloped hillside and mountainous areas of the City could experience substantial erosion from runoff if the vegetation cover is destroyed by brushfire or removed by grading operations.

Seismic Hazards

Agoura Hills', significant seismic hazard is caused by potential groundshaking on the Simi–Santa Rosa Fault, Oak Ridge Fault, and San Cayetano Fault. The Simi– Santa Rosa Fault is approximately 7 miles from Agoura Hills and the Oak Ridge Fault and San Cayetano Fault are located 17 miles and 18 miles from the City respectively.

The Alquist-Priolo Special Studies Zone Act requires the State Geologist to delineate "special studies zones" along known active faults in California. Cities and counties affected by the zones must regulate certain development "projects" within the zones. No Alquist-Priolo Special Studies Zones have been identified within the City of Agoura Hills.

Landslides

Although landslides can result from improper grading practices, no major structural damage apparently has occurred in the City as a result of deep-seated-bedrock instability triggered by grading practices. Superficial slides, however, have occurred locally on graded cut-and-fill slopes in a few tract developments. One such problem area has been in Liberty Canyon, south of the Ventura Freeway. The majority of shallow-slope failures occur on the moderate-to-steep, soil-covered natural slopes. Figure S 2 (Landslide Areas) displays areas subject to landslides within the community.

Subsidence

The phenomenon of widespread land sinking, or subsidence, is generally related to the over pumping of groundwater or petroleum reserves from deep underground reservoirs. Subsidence is not related to any surface activity. No recognized subsidence has been identified in the City.

Because of the generally limited groundwater resources contained in the relatively shallow alluvial basin, and because of the low probability of significant future oil production, the likelihood of significant subsidence occurring in the City is considered very minimal.

Local Seepage Problems

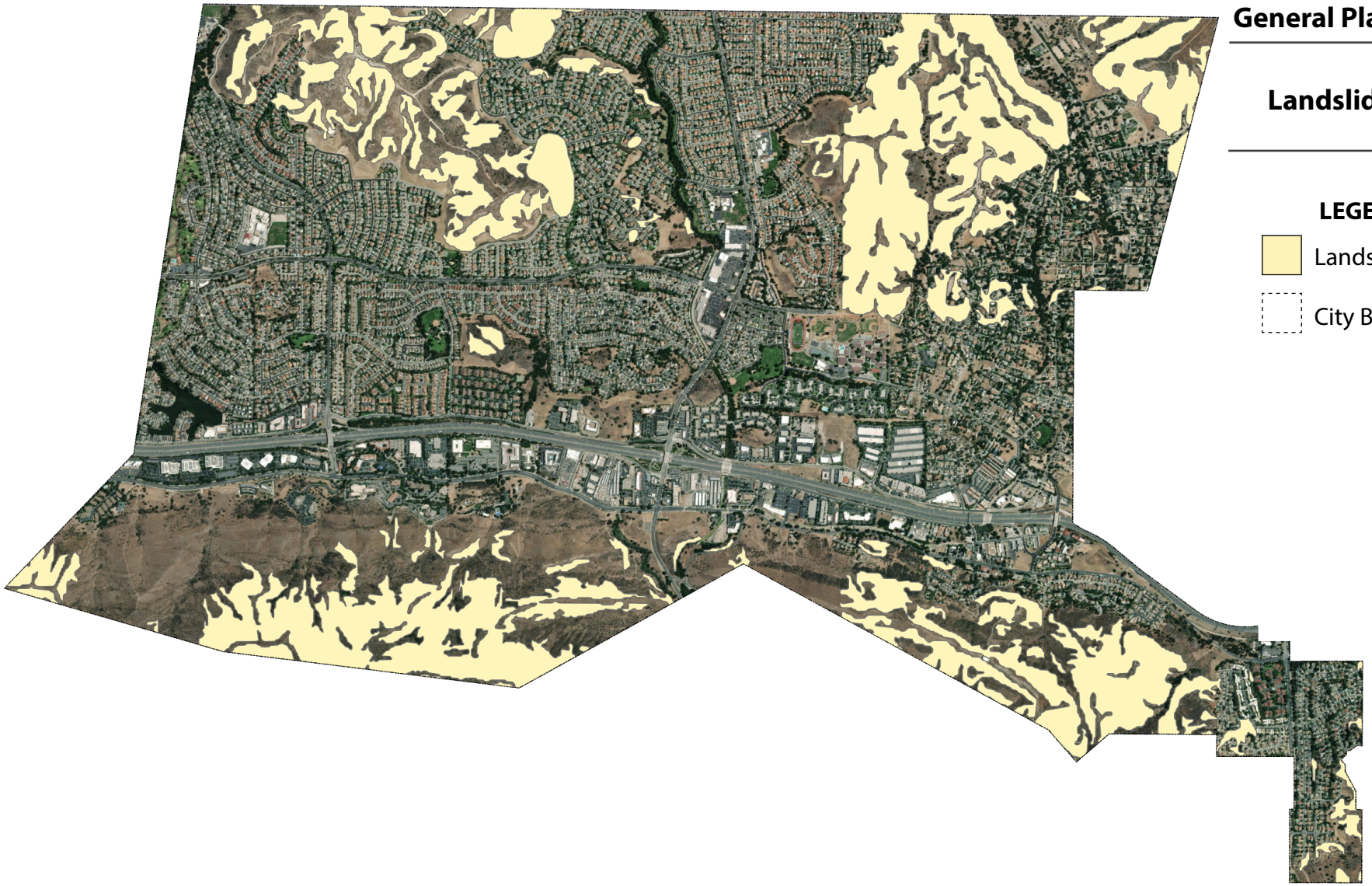
Surfacing groundwater causing boggy ground, or heavy rains giving rise to ephemeral springs, may occur locally because of the natural or artificial barriers to subsurface water flow. Such areas are generally known from historic records. New grading activities, however, may encounter other springs or seepage areas. In most instances, surfacing water is a nuisance problem rather than a hazard to building sites or slope stability. Nevertheless, the need for mitigation measures during development should be anticipated in potentially affected areas.

Soil Percolation

The soil and bedrock formations throughout the entire area have generally very poor (slow) percolation rates because of their generally fine-grained or indurated (cemented) nature. The most significant development constraint or hazard resulting from poor soil percolation would be limitations on the feasibility of on-site sewage disposal systems, and the potential for creating slope stability problems.

CITY of AGOURA HILLS
General Plan Update

Landslide Areas



LEGEND

- Landslide Zones
- City Boundary

Source: California Department of Conservation and Geological Survey (CGS) GIS Information Warehouse.

1 inch = 885 feet

Figure S-2

Liquefaction

Buildings above liquefiable soils may settle or tip due to a loss of bearing capacity of the soil. Liquefaction occurs when soil drains in loose, saturated silty, sandy, or gravel soils attempt to rearrange themselves in a denser configuration when subjected to strong earthquake ground motions. The resulting increase in pressure of the water in the voids of the soil temporarily transforms the soil into a fluid, causing the soil to lose much of its strength. As the pore-water pressure builds, ground water and liquefied soil may find their way to the surface, creating sand boils on the ground surface. Several types of damaging ground failures can occur due to liquefaction including lateral spreading, ground settlement and sink holes.

Lateral spreading occurs when the subsurface soil liquefies. Gravity and inertial forces from the earthquake cause the mass to move downslope. Lateral spreading can occur on very shallow slopes (nearly flat ground) and they can cause ground displacements ranging from inches to tens of feet. This type of movement can damage utilities and structures supported by shallow or deep foundations. Portions of Agoura Hills are in liquefaction zones. See Figure S-3 (Liquefaction Zones) that presents areas in the community susceptible to liquefaction.

The following goal and policies provide the City with guidance in reducing and/or avoiding geological and seismic hazards by requiring enforcement of safety standards, state-of-the-art site design and construction methods, and mitigation to minimize the impacts of new development.

Goal S-2

Protection from Geologic Hazards. Minimized adverse effects to residents, public and private property, and essential services caused by seismic and geologic hazards.

Policies

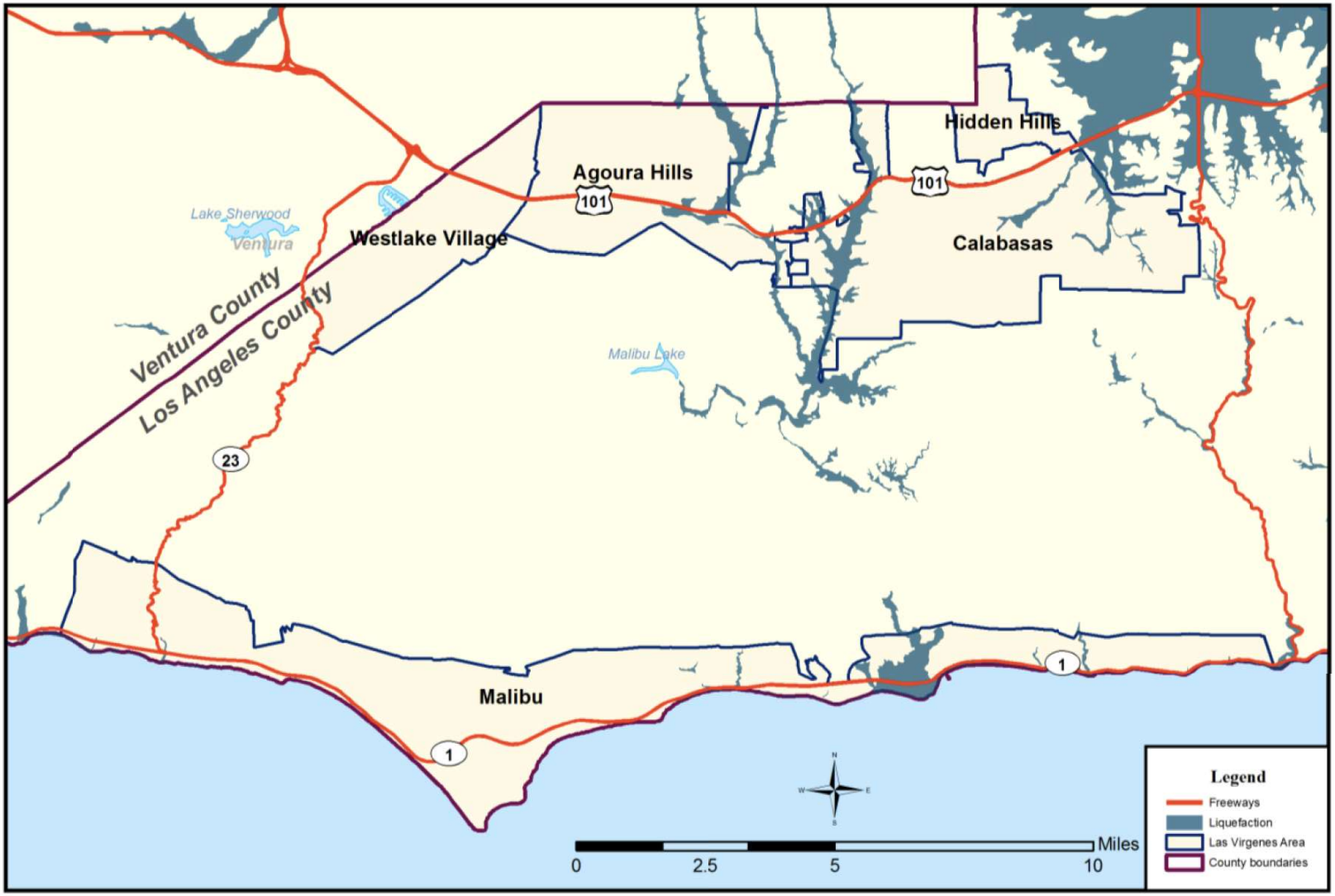
S 2.1 **Review Safety Standards.** Regularly review and enforce all seismic and geologic safety standards, including the City's Building Code, and require the use of best management practices (BMPs) in site design and building construction methods. *(Imp S-4)*

S-2.2 **Geotechnical Investigations.** Require geotechnical investigations to determine the potential for ground rupture, groundshaking, landslides, and liquefaction due to seismic events, as well as expansive soils and subsidence problems on sites, including steep slopes, except where the Building Official determines such hazards are not present. *(Imp S-4)*

S-2.3 **Retrofit Critical Facilities.** Encourage the upgrade, retrofitting, and/or relocation of all existing critical facilities (e.g., schools, police stations, fire stations, and medical facilities) and other important public facilities that do not meet current building code standards and are within areas susceptible to seismic or geologic hazards. *(Imp S-5)*

S-2.4 **Funding Programs.** Pursue federal and state programs to provide additional protection against seismic activity. *(Imp S-6)*

Liquefaction Zones



Source: Las Virgenes-Malibu Council of Governments 2018 Multi-Jurisdictional Hazard Mitigation Plan.

C. Wildland and Urban Fire Hazards (S)

The City of Agoura Hills is susceptible to both urban and wildland fire hazards. For thousands of years, wildland fires have been a natural part of the ecosystem in Southern California. However, wildfires present a substantial hazard to life and property in Agoura Hills and other nearby communities in the Las Virgenes-Malibu region where hillsides and mountainous areas interface with urban areas. Natural vegetation that covers the undeveloped hillsides that surround the community contributes to scenic beauty but may also provide fuel to support a large wildfire. Wildfire hazards can be magnified by various factors, including fuel load, weather conditions, topography, and property characteristics.

The hillside areas in Agoura Hills are susceptible to wildfires

Fire Hazard Zones

The State of California maps Fire Hazard Severity Zones (FHSZ) throughout the state. A FHSZ is a mapped area that designates zones (based on factors such as fuel, slope, and fire weather) with varying degrees of fire hazard (i.e., moderate, high, and very high). The FHSZ maps evaluate wildfire hazards, which are physical conditions that create a likelihood that an area will burn over a 30- to 50-year period. The Zones also include FHSZ for State Responsibility Area lands and separate ~~Very High Fire Hazard Severity Zones for~~ Local Responsibility Area lands. Moderate, high, and very high FHSZs are found in areas where the state has financial responsibility for fire protection and prevention (SRA). ~~Only very high FHSZs are found in Local Responsibility Areas (LRAs).~~

California Government Code Section 51179 requires the City to adopt an ordinance designating Moderate, High, and Very High Fire Hazard Severity Zones in the City. Following the adoption of the State Fire Hazard Severity Zones by the State Fire Marshal in 2025, the City adopted Ordinance No. 25-479, which updated the City's Moderate, High, and Very High Fire Hazard Zones. Figure S-4 (~~Very High~~ Fire Hazard Severity Zones) ~~presents areas in the community that are located within the Very High Fire Hazard Severity Zone (VHFSHZ)~~ visually depicts the fire hazard severity zones within the City as identified by the State Fire Marshal. The majority of the City is located in the Very High Fire Hazard Severity Zone (VHFHSZ). The entire portion of the City south of U.S. Highway 101 is in the VHFHSZ. Some of the lands in the zone are in designated open space preserved areas, where development is not allowed. Other lands in the zone are either currently developed or are vacant and zoned for development, including commercial, light industrial and residential uses. Figure LU-2 (Land Use Diagram) in Chapter 2, Community Conservation and Development, shows the planned land use designations of land throughout the City, which can be compared to Figure S-4.

The City is in a Local Responsibility Area, where the County of Los Angeles Fire Department provides fire prevention and protection services.

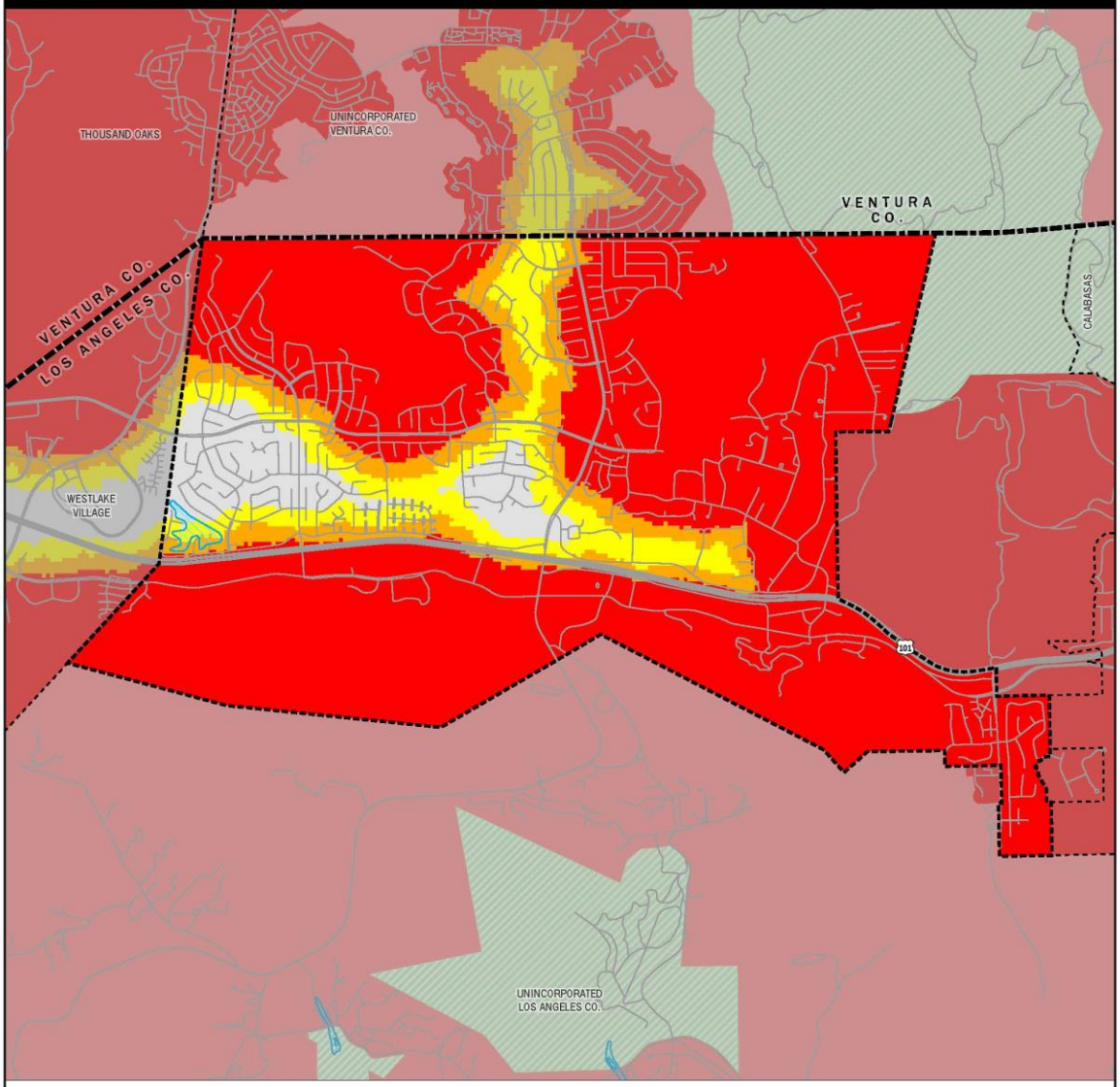
FIRE HAZARD SEVERITY ZONES

CITY OF AGOURA HILLS – LOS ANGELES COUNTY

Local Responsibility Area Fire Hazard Severity Zones

As Identified by the State Fire Marshal

March 24, 2025



Fire Hazard Severity Zones (FHSZ) in Local Responsibility Area (LRA), as Identified by the State Fire Marshal

Very High | High | Moderate

Fire Hazard Severity Zones in State Responsibility Area (SRA), Effective April 1, 2024

Very High

Mi 0 1
Km 0 1 2

Projection: NAD 83 California Teale Albers
Scale: 1:32,000 at 11" x 17"

Incorporated City | Waterbody
Unzoned LRA | Federal Responsibility Area (FRA)

Government Code section 51178 requires the State Fire Marshal to identify areas in the state as moderate, high, and very high fire hazard severity zones based on consistent statewide criteria and based on the severity of fire hazard that is expected to prevail in those areas. Moderate, high, and very high fire hazard severity zones shall be based on fuel loading, slope, fire weather, and other relevant factors including areas where winds have been identified by the Office of the State Fire Marshal as a major cause of wildfire spread.

The State of California and the Department of Forestry and Fire Protection make no representations or warranties regarding the accuracy of data or maps. Neither the State nor the Department shall be liable under any circumstances for any direct, special, incidental, or consequential damages with respect to any claim by any user or third party on account of, or arising from, the use of data or maps.

Gavin Newsom, Governor, State of California
Wade Crowfoot, Secretary for Natural Resources, CA Natural Resources Agency
Joe Tyler, Director/Fire Chief, CA Department of Forestry and Fire Protection
Daniel Berlant, State Fire Marshal, CA Department of Forestry and Fire Protection

Data Sources:
CAL FIRE Fire Hazard Severity Zones (FHSZSRA23_3, FHSZLRA_25_1)
CAL FIRE State Responsibility Areas (SRA25_1)
City and County boundaries as of 10/22/24 (CA Board of Equalization)

Source: CAL FIRE Fire Hazard Severity Zones

Historical Record of Significant Fires

The Las Virgenes-Malibu COG Region has a long history of wildland fires. In fact, over the past 110 years, nearly the entire Las Virgenes-Malibu Region has been impacted by fire. Major fires since ~~2003~~2005 in the Las Virgenes-Malibu Region are provided in Table S-1 (History of Fire Events in the Las Virgenes-Malibu Region). While not all fires in the local Santa Monica Mountains are listed, other fires have occurred nearby but outside the COG area, including the Palisades Fire of 2021 in Topanga Canyon and Pacific Palisades.

Table S-1 History of Fire Events in the Las Virgenes Malibu Region

Fire Name	Year	Estimated Acreage	Structure Loss
Woolsey Fire	2018	96,949	1,643
Lost Fire	2008	167	00
Corral Fire)	2007	4,901	53
Malibu Canyon Fire	2007	4,565	22
Sherwood Fire	2006	168	0
Topanga Fire	2005	24,175	323
~~Pacific Fire~~	~~2003~~	~~806~~	~~0~~

Source: ~~2017~~2024 Multi-Jurisdictional Hazard Mitigation Plan, Las Virgenes-Malibu Council of Governments, Table ~~130~~134.

Urban fires are also a risk for the community; these can result from a number of causes, including arson, carelessness, home or industrial accidents, or from ignorance of proper safety procedures. Fire protection services in the City are provided by the Los Angeles County Fire Department.

Emergency Evacuation

The Los Angeles County General Plan Safety Element identifies Kanan Road as a designated Highway Disaster Route and U.S. 101 Freeway as a Freeway Disaster Route. Disaster Routes are not Evacuation Routes. An emergency may warrant a road to be used as both a disaster route (e.g., access for emergency response vehicles) and an evacuation route.

The ~~Draft Safety Element of the~~ Los Angeles County General Plan ~~Update~~ Safety Element indicates that ~~Kanan~~ Cornell Road is an ~~"possible evacuation route"~~ Evacuation Route (~~Draft~~ Evacuation Routes Map Figure 12.9, Los Angeles County Department of Regional Planning, August 2021). ~~The map note states, "This map shows possible evacuation routes: public, paved through roads. However, a viable evacuation route is situational, context-specific, and subject to change. During an emergency, emergency responders will determine which of these routes to use."~~

In 2019, two separate bills (AB 747 and SB 99) were signed into law that added new requirements for disclosing residential development without at least two points of ingress and egress and addressing the

presence and adequacy of evacuation routes in the General Plan Safety Element. SB 99 (2019) amended Government Code § 65302(g)(5) to require that, upon the next revision of the housing element on or after January 1, 2020, the Safety Element must be updated to ~~include information~~ identify~~ing~~ residential developments in hazard areas that do not have at least two emergency evacuation routes (i.e., points of ingress and egress). Figure S-5 (Streets Lacking Two Emergency Evacuation Routes) depicts those areas in the City that do not have at least two emergency evacuation routes. In these instances, there is only one route from which to evacuate, due to the street system and natural barriers, including topography. Most of the streets are in the Old Agoura area in the northeast portion of the City. Though lacking adequate two-way evacuation routes, the City has prepared an emergency traffic control plan for the Old Agoura neighborhood. Three streets lacking adequate two emergency evacuation routes are in the Indian Hills area of the City, situated south of the U.S. 101 Freeway. All the streets in this area of the City would use Agoura Road for emergency evacuation. There is one street in the Liberty Canyon area of the City that lacks adequate two emergency evacuation routes ~~and all~~. All streets in this area would evacuate to Agoura Road and the U.S. 101 Freeway.

Per Government Code § 65302.15 (AB 747), as amended by AB 1409 in 2021, upon the next revision of a local hazard mitigation plan adopted in accordance with the federal Disaster Mitigation Act of 2000 (Public Law 106-390), on or after January 1, 2022, the safety element adopted pursuant to Government Code § 65302(g) must be reviewed and updated as necessary to identify evacuation routes and their capacity, safety, and viability and evacuation locations under a range of emergency scenarios. A county or city that has adopted a local hazard mitigation plan, emergency operations plan, or other document that fulfills commensurate goals and objectives may use that information in the safety element to comply with this requirement and, in that event, shall summarize and incorporate into the safety element that other plan or document.

To comply with Government Code § 65302.15 requirements, the City has prepared an Evacuation Analysis that identifies evacuation routes and their capacity, safety, and viability, and evacuation locations under a range of emergency scenarios. The Evacuation Analysis is attached to the General Plan as Appendix B and incorporated herein by reference. Emergency evacuation zones are identified in the City's Evacuation Plan (2022), which is attached to the General Plan as Appendix C and incorporated herein by reference.

~~The City is currently preparing an evacuation plan for the entire City. The County of Los Angeles is also currently preparing an evacuation plan for areas within its jurisdictional boundaries.~~

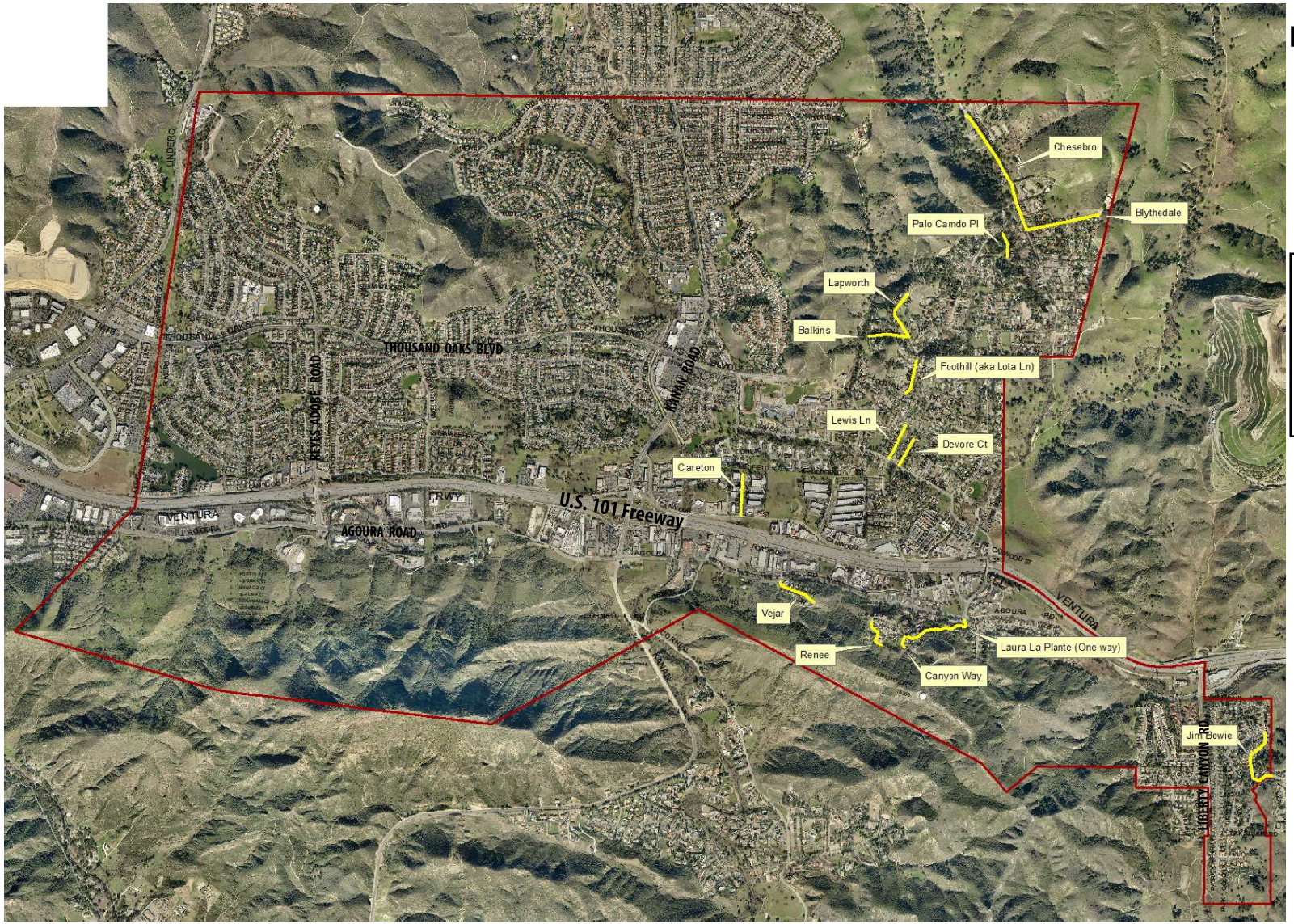
Fuel Modification

Fuel Modification consists of vegetation treatments near structures to create defensible space for effective fire protection. The County of Los Angeles Fire Department, Fuel Modification Unit, is responsible for approving landscape plans as part of new development in the City of Agoura Hills to ensure fuel modification measures are met. The Fuel Modification Unit staff reviews the structure location and type of construction, topography, slope, vegetation type and overall site setting.

The County of Los Angeles Fire Department, Brush Clearance Unit, along with the County Department of Agricultural Commissioner/Weights and Measures, Weed Hazard and Pest Abatement Bureau requires the annual clearance of brush by owners of improved and unimproved properties in proximity to structures. The Brush Clearance Unit enforces the Fire Codes as they relate to brush clearance on parcels and coordinates inspection and compliance efforts.

CITY of AGOURA HILLS
General Plan Update

Streets Lacking Two Emergency Evacuation Routes



LEGEND

- Streets Lacking Two Emergency Evacuation
- City of Agoura Hills

Source: City of Agoura Hills, 2021.

Figure S-5

The following goals and policies address the risks of fire hazards in the community. Related goals and policies addressing fire and emergency services and water supplies and conservation that serve the City are included in Chapter 3 (Infrastructure and Community Services).

Goal S-3

Protection from Fire Hazards. Minimize risks to persons and property in Agoura Hills from urban and wildland fires.

Policies

S 3.1 **Coordination with the Los Angeles County Fire Department.** Cooperate with the Los Angeles County Fire Department in evaluating re-development after significant fires and in periodically evaluating services and service criteria to ensure that the City continues to receive adequate fire protection and prevention services, and in preparation of the County evacuation plan. (Imp CS 26)

S 3.2 **Wildfire Mitigation.** Coordinate with the Los Angeles County Fire Department on appropriate wildland fire mitigation. (Imp CS 26)

S 3.3 **New Development.** Continue to ensure that all new development meets current state, county, and City fire safe building code requirements, as appropriate, such as the California Fire Code and California Building Code, including development in the Very High Fire Hazard Severity Zone. (Imp CS 26, CS-30)

S 3.4 **Fire Protection Systems.** Require all new commercial and multiple-unit residential developments to install fire protection systems, as required by the state and City buildings and fire codes, and encourage the use of automatic sprinkler systems in existing structures. (Imp CS 30)

S 3.5 **Funding.** Ensure that new developments pay a pro-rata share for increased fire protection as necessitated by that particular development. (Imp S 7, CS-26)

S 3.6 **Fire Inspection.** Work with the County Fire Department to ensure an ongoing fire inspection program to reduce fire hazards associated with critical facilities, public assembly facilities, industrial buildings, and nonresidential buildings. (Imp CS 26)

S 3.7 **SEMS Plan.** Incorporate and periodically review fire prevention and protection procedures in the City's Standardized Emergency Management Systems (SEMS) Plan. (Imp S 2)

S 3.8 **Fire Department Review.** Continue review by the Los Angeles County Fire Department of proposed structures and developments within the community, as applicable, to assure adequacy of structural fire protection, access for fire fighting, water supply, and vegetation management. (Imp CS 26, CS-30, S-8)

S-3.9 **Disaster Communication**. Improve disaster coordination and communication with other public agencies. *(Imp S-19, CS-26, CS-27)*

S-3.10 **Emergency Evacuation**. Plan for emergency evacuation, including identifying standards for evacuation, and maintain adequate departure paths especially in areas that do not have at least two emergency evacuation routes (i.e., points of ingress and egress). *(Imp S-20)*

S-3.11 **Emergency Access**. Ensure new development has adequate emergency access through sufficient road widths according to the Los Angeles County Fire Department standards, which are currently 26 feet wide for single-story structures and 28 feet wide for multi-story structures, as well as adequate, visible street address signage to identify buildings. *(Imp CS-30)*

S-3.12 **Fuel Load.** Work to minimize fuel loads, or the amount of material that can be burned, within the wildland/urban interface within the City to the extent feasible, in coordination with the County Fire Department and other relevant agencies. *(Imp S-22)*

S-3.13 **Public Education.** Limit risk of wildfire through public education and planning, including working with community groups, including at risk populations, and other agencies to present information and training about evacuation, wildfire prevention and awareness, and defensible space. *(Imp S-23)*

S-3.14 **Siting of Critical Facilities and Infrastructure**. Encourage the location and development of new essential public services, such as health care facilities, emergency shelters, fire stations, and infrastructure outside of the Very High Fire Hazard Severity Zone, to the extent feasible. *(Imp S-17)*

S-3.15 **Local Hazard Mitigation Plan**. Implement measures of the Las Virgenes-Malibu Council of Governments Multi-Jurisdictional Hazard Mitigation Plan relevant to the City, and work to ensure the Hazard Mitigation Plan is periodically updated. *(Imp S-21)*

S-3.16 **Building Code**. Continue to update the City's Building Code as necessary by incorporating structural hardening measures, such as fire rated roofing and fire resistant construction materials, and other measures to protect structures in a fire. *(Imp S-24)*

S-3.17 **Communication Systems**. Continue to evaluate and update communications systems in the City to provide early warning and notification about wildfire threats. *(Imp S-16)*

S-3.18 **Maintain Availability of Fire Hazard Maps.** Maintain collection of maps relating to fire hazards to help educate and assist builders and homeowners in mitigating against wildfire. *Imp S-21, S-25)*

S-3.19 **Home Hardening**. Promote the use of home hardening techniques that increase a structure's resistance to heat, flames, and embers through education and training. *(Imp S-23)*

S-3.20 **Water Supply and Fire Flow**. Work cooperatively with the Las Virgenes Municipal Water District and the Los Angeles County Fire Department, as appropriate, to ensure adequate water supply and facilities, including fire flow, for fire-fighting to serve all areas and populations of the City. *(Imp U-5, CS-26)*

S-3.21 **Site Specific Fire Protection**. Require applicants for new and re - development projects in the Very High Fire Hazard Severity Zone (VHFHSZ) to prepare a project-specific fire protection plan as part of initial application submittal. The fire protection plan shall at a minimum identify site ingress/egress, evacuation routes, emergency vehicle access, visible home addressing and signage, and fuel modification zones. *(Imp S-26)*

S-3.22 **Existing Non-Conforming Development.** Work with owners of developed property that does not meet current fire safety standards for access, water supply and fire flow, signage and

vegetation clearance in the VHFHSZ, and provide guidance on how to meet the standards. *(Imp S-30, S-23, CS-26)*

Goal S-3.a

Limiting Fire Hazards. Limiting fire hazard through brush and weed abatement, and encouraging landscape planting appropriate to fire prone areas.

Policies

S-3.a.1 **Fuel Modification.** Ensure that roads and new development comply with the vegetation clearance and fuel modification requirements of the Los Angeles County Fire Department while protecting natural resources and habitat to the extent feasible, and encourage design that minimizes the need for fuel modification on public parklands. *(Imp S-8, CS-30)*

S-3.a.2 **Vegetation Management.** Coordinate with the County of Los Angeles Fire Department in implementing the County's Vegetation Management Program, which develops strategies responding to fire hazards by analyzing wilderness fire history, considering different methods of reducing and removing fuels, and evaluating the environmental effects of such practices. *(Imp S-21, CS-26).*

S-3.a.3 **Fire Appropriate Planting**. Provide information to the public on plant and tree species, including native species, that are fire adapted or fire resistant. *(Imp S-23)*

D. Crime Prevention and Protection (S)

Part of the quality of life sought in Agoura Hills is a feeling of security and safety from criminal activity. To keep the City a safe place, it is essential that the Los Angeles County Sheriff's Department maintain adequate law enforcement operations in Agoura Hills. The following goal and policies serve to enhance public safety in the City through maintenance of adequate law enforcement services.

Goal S-4

Protection from Crime. Persons and property in Agoura Hills protected from criminal activities.

Police services in the City are provided by the Los Angeles County Sheriff's Department

Policies

S-4.1 Support Los Angeles County Sheriff's Department. Support the Los Angeles County Sheriff's Department in periodically evaluating services and service criteria to ensure that the City continues to receive adequate law enforcement services. *(Imp CS-26)*

S-4.2 Agency Cooperation. Continue to cooperate with the California Highway Patrol and other nearby law enforcement agencies, such as the Ventura County Sheriff's Department, to provide backup police assistance in emergency situations. *(Imp CS-26)*

S-4.3 Public Education. Encourage citizen participation in public safety programs, such as Neighborhood Watch, and facilitate educational programs dealing with personal safety awareness. *(Imp CS-30, CS-31)*

S-4.4 Crime Prevention through Environmental Design (CPTED). Use defensible space concepts (site and building lighting, visual observation of open spaces, secured areas, etc.) in the design of all new development. *(Imp CS-32)*

S-4.5 Development Review. Provide for law enforcement review of applicable projects as part of the review process. *(Imp S-9)*

S-4.6 Evacuation Planning. Coordinate evacuation planning among the Los Angeles County Fire and Sheriff's departments, the California Highway Patrol, the City of Agoura Hills Community Emergency Response Team (CERT), and law enforcement agencies in other local jurisdictions. *(Imp S-2)*

E. Hazardous Materials (S)

The ongoing generation, use, and transportation of hazardous materials can constitute a threat to the safety of the community.

The transport of hazardous materials on the Ventura Freeway is an important safety issue in the City. The numerous residential, commercial, and industrial developments lying within the freeway corridor face a potential risk of exposure to hazardous materials if a freeway accident involving a vehicle transporting hazardous materials were to occur.

Another important safety issue involves underground facilities, such as storage tanks and natural gas pipelines. Motor vehicle fuels and other toxic substances escaping from these tanks have the potential to seriously contaminate soils and local groundwater.

Agoura Hills is underlain by a network of natural gas pipelines, the largest of which is a 15-inch transmission line traversing the northwestern corner of the City. Natural gas is distributed under high pressure, thereby increasing its explosive potential. Natural gas leaks and explosions can occur as a result of either strong earthquakes or accidental rupture of gas lines during excavation operations at construction sites. Hazardous materials are present throughout the City, but are widely varied in terms of both quantity and type. Such uses as light industry, dry cleaners, and automotive service shops routinely utilize solvents and other toxic substances, and also generate hazardous wastes, which must be properly disposed in compliance with strict federal and state regulations. Households also utilize and store materials that could be considered hazardous, although usually not of the same type and quantity as commercial and industrial uses.

Goal S-5

Protection from Hazardous Materials. Residents, visitors, property, and the natural environment in Agoura Hills are protected to the maximum extent feasible by the use, storage, or transport of hazardous materials.

Policies

S-5.1 **Inter-jurisdictional Coordination.** Continue to coordinate with and support the Los Angeles County Sheriff's Department and Fire Department in carrying out inspections, emergency response, and enforcement of hazardous materials and waste compliance procedures for Agoura Hills. *(Imp S-2)*

S-5.2 **Hazardous Waste Collection.** Conduct frequent and convenient household hazardous waste round-ups. *(Imp U-36)*

S-5.3 **Educate Residents/Businesses.** Educate residents and businesses regarding methods to reduce or eliminate the use of hazardous materials, including the disposal of household hazardous materials, including medications, batteries, e-waste, etc., and the use of safer nontoxic equivalents. *(Imp U-36, NR-14, U-34)*

S-5.4 **Hazardous Materials Regulation.** Work with relevant agencies regarding enforcement of applicable laws requiring all users, producers, and transporters of hazardous materials and

wastes to clearly identify the materials that they store, use, produce, or transport, and to notify the appropriate county, state, and federal agencies in the event of a violation. *(Imp S-10)*

S-5.5 **Known Areas of Contamination.** Require proponents of projects in known areas of contamination from oil operations or other uses to perform comprehensive soil and groundwater contamination assessments, and undertake remedial procedures, as appropriate, prior to grading and development. *(Imp S-11)*

S-5.6 **Siting of Sensitive Uses.** Protect sensitive uses, such as schools, medical facilities and hospitals, daycare facilities, eldercare facilities, and residential, from significant impacts from uses that generate, use, or store hazardous materials. *(Imp S-12, S-13)*

F. Emergency Preparedness (S)

The Las Virgenes–Malibu Council of Governments Multi-jurisdictional Hazard Mitigation Plan (~~2018~~2024) includes resources and information to assist cities, residents, public and private sector organizations, and others interested in participating in planning for hazards. The Hazard Mitigation Plan provides a list of activities and agencies that may assist the City in reducing risk and preventing loss from future hazard events. The strategies address earthquakes, wildfires, climate change, energy disruption, landslide and debris flow, windstorm, flood and severe winter storm, terrorism, and mass violence.

Goal S-6

Preparation for Natural or Manmade Disasters. Effective emergency response to natural or human-induced disasters that minimize the loss of life and damage to property, and also reduce disruptions in the delivery of vital public and private services during and following a disaster.

Policies

S-6.1 **The SEMS Plan.** Maintain and implement the Standardized Emergency Management System (SEMS) Plan to address disasters, such as earthquakes, flooding, hazardous material spills, epidemics, fires, extreme weather, accidents, and terrorism. *(Imp S-2)*

S-6.2 **Post-Disaster Response.** Plan for the continued function of critical facilities following a major disaster to help prevent major problems during post-disaster response, such as evacuations, rescues, large numbers of injuries, and major cleanup operations. *(Imp CS-2, CS-27, CS-28)*

S-6.3 **Emergency and Disaster Preparedness Exercises.** Coordinate with Los Angeles County and other jurisdictions to conduct emergency and disaster-preparedness exercises to periodically test operational and emergency plans. *(Imp CS-27, S-2)*

S-6.4 **Mutual Aid Agreements.** Continue to participate in mutual-aid agreements to ensure adequate resources, facilities, and other support for emergency response. *(Imp CS-26)*

S-6.5 **Education Programs.** Sponsor and support educational programs regarding emergency response, disaster preparedness protocols and procedures, and disaster risk reduction for City residents and volunteers, and provide ongoing training for City staff. *(Imp CS-27, CS-28)*

G. Windstorms (S)

Severe windstorms pose a significant risk to life and property by creating conditions that disrupt essential systems such as public utilities, telecommunications, and transportation routes. High winds have the potential to cause damage to local homes and businesses from falling trees and debris. In addition, windstorms increase the risk of wildfire as the moisture content decreases in brush and vegetation on hillsides, especially in urban interface areas.

Windstorm Hazard Identification

Given the location and topography of the area, severe windstorms are a possibility. While the historic occurrence of these events on the Agoura Hills area has been infrequent, these events pose a potential threat to life, property, utility delivery systems, infrastructure, and transportation when they occur. Furthermore, if a severe windstorm results in a prolonged utility disruption, it may be necessary to utilize private and public resources to aid in the care and sheltering of displaced residents. High winds can also increase the threat by wildfires. In addition, the economic impact of providing shelter, conducting repairs, and disruption to local businesses can result in economic losses to the entire City. Finally, a severe windstorm can cause the loss of historic trees in the area and require the services of certified arborists.

The risk of trees falling is one of the more significant hazards resulting from high wind events. The leafy canopy and structural elements of a tree crown present a drag type barrier to winds. Trees naturally minimize wind drag through the re-orientation of leaves and through the independent motion of limbs and branches, thus reducing the transfer of uniform sway motion forces to the trunk. The susceptibility of trees to wind-throw can be influenced by the general structure of the trees, the location of the trees in reference to wind patterns and the level and frequency of pruning maintenance.

The Agoura Hills area is subject to Santa Ana Winds that can impact fire conditions. Winds can serve as a catalyst in the canyons to spread fire at a rapid rate. Prolonged winds during the warmest months of the year can decrease vegetation moisture levels and increase the ignition potential in dry underbrush. When urban/wildland interface fires occur, Santa Ana wind conditions can drive flames and increase the spread speed and severity of the fire.

During high wind periods, there is also a threat of downed power lines causing wildfires. In response, SCE began a public notice campaign to reiterate its policy that utility power may be shut-off during high fire risk periods when extreme weather threatens the power lines.

Windstorm Mitigation Strategies

In order to mitigate the impact of windstorms, the City of Agoura Hills tracks approximately 4,500 trees that it maintains according to standards regarding public safety. Codes on tree pruning were recently reviewed and updated and new codes regarding tree maintenance were implemented. The City has established a professional tree maintenance contract with an arborist to maintain

all City owned trees. The contract ensures that detailed tree maintenance logs and inventories are kept, resulting in improved care, which can help reduce the City's liability. Under this contract, every City owned tree is assessed on a regular basis. Additionally, the City offers free hazardous oak tree pruning and removal permits for emergency situations.

The following goal and policies address the risks of windstorm hazards in the community.

Goal S-7

Windstorm Preparation. Reduce the potential impact of windstorms that can cause injury, loss of life, structural and infrastructure damage through education, awareness, and preparation.

Policies

S-7.1 **Develop Public Awareness Campaign.** Provide public education materials to City residents pertaining to the protection of life and property before, during and after a windstorm. *(Imp S-23)*

S-7.2 **Landscape and Local Awareness to Fire Code.** Create local City awareness of the types of trees and other vegetation most appropriate for planting in regard to the Fire Code Sections relevant to utility operations in order to avoid utility and vegetation conflicts. *(Imp S-23)*

S-7.3 **Backup Power Facilities.** Encourage property owners and critical facilities to purchase and test backup power facilities for use during a power failure, and to create an equipment/testing log to ensure back power equipment is in working service. *(Imp S-23)*

H. Climate Change (S)

Climate change is a term used to describe large-scale shifts in historically observed patterns in earth's climate system. Although the climate has historically responded to natural drivers, recent climate change has been unequivocally linked to increasing concentrations of greenhouse gases (GHGs) in the earth's atmosphere.

According to "California's Fourth Climate Change Assessment" developed by the State of California, continued climate change will have a severe impact on California. Increased temperatures, drought, wildfires, and sea level rise are several of the main concerns related to climate change in the Southwest.

According to the Environmental Protection Agency (EPA), continued emissions of greenhouse gases (GHGs) will lead to further climate changes. Future changes are expected to include a warmer atmosphere, a warmer and more acidic ocean, higher sea levels, and larger changes in precipitation patterns. The extent of future climate change depends on what is done now to reduce greenhouse gas emissions. The more emitted, the larger future changes will be (Environmental Protection Center, 2015). A more detailed climate vulnerability assessment of the City is included in the City's Climate Action and Adaptation Plan (CAAP) (see discussion further below).

The City of Agoura Hills has implemented several strategies to mitigate the impact of climate change and encourage environmental sustainability. For example, the City participates in the California Statewide Community Development Authority (CSCDA) Open Property Assessed Clean Energy (PACE) Program. The Program finances renewable energy sources, energy and water efficiency improvements, and seismic strengthening improvements for residential and commercial properties.

In addition, the City's Solid Waste Management Program works to reduce waste and encourage recycling. Key efforts include:

- Residential Recycling
- Commercial Recycling
- Electronic Waste Collection
- Organic Recycling
- Construction and Demolition Debris Recycling
- Household Hazardous Waste and E-Waste Disposal
- Illegal Dumping Reporting
- Sharps Disposal

In 2017, the City of Agoura Hills joined the County of Los Angeles and other agencies to participate in the "Clean Power Alliance" (CPA) a locally controlled electricity provider in Southern California. The goal of the CPA is to supply greener power to homes and businesses.

Finally, the California Governor's Office of Land Use and Climate Innovation (LCI) ~~Planning and Research (OPR)~~ prepares a list of plans and initiatives adopted by California Jurisdictions to address climate change. As of 2016 (3/16/16), the City of Agoura Hills was credited as having been in the process of implementing climate change provisions into its General Plan Policy and General Plan Implementation Measures.

The City has prepared a draft Climate Action and Adaptation Plan (CAAP). The purpose of the CAAP is to reduce greenhouse gas (GHG) emissions and enhance the City's resilience towards vulnerabilities and risks

posed by climate change. The CAAP provides a GHG emissions inventory, forecast and targets, the latter of which will meet state goals for reducing GHG emissions. It also contains GHG reduction measures and an assessment of climate vulnerability and adaption. The final CAAP is expected to be completed mid-2022.

The following goals and policies are to reduce GHGs through energy efficiency, water conservation, alternative transportation, solid waste reduction and clean energy, consistent with the CAAP. These are in addition to the following related goals and policies in other chapters and sections of the General Plan: Mobility Goals M-6 through M-10 to encourage alternative transportation methods and reduce reliance on vehicles and their related policies, including in particular Policy M-6.7 (Vehicle Miles Travelled); Solid Waste Goal U-4 (Solid Waste) and its policies to reduce solid waste generation (U-4.2, U-4.4, U-4.5, U-4.7, U-4.8, and U-4.9); Goal U-5 (Energy Conservation) and its policies for energy efficiency and reduced energy use (U-5.3, U-5.4, U-5.6, and U-5.7); Goal LU-1 (Water Supply System) and its policies to conserve water (U-1.4) and use reclaimed water (U-1.6); and Goal LU-5 (City Sustained and Renewed) with its policies for heat island effect and green building standards (LU-5.1, LU-5.2, LU-5.3 and LU-5.4).

Goal S-17

Energy Efficiency. Increase Energy Efficiency in Existing and New Development.

Policies

S-17.1 **Energy Efficiency Outreach.** Provide energy efficiency education to the public, including promoting energy efficient programs and certified buildings, and promoting financing programs for retrofits and upgrades. *(Imp S-27)*

S-17.2 **Energy Evaluations and Audits.** Encourage residence and business energy evaluations and audits available from utility companies. *(Imp S-27)*

S-17.3 **Electrification of Development.** Encourage and explore incentives for new multi-family residential developments and commercial developments to achieve complete electrification. *(Imp S-27, Imp S-28)*

Goal S-18

Water Efficiency. Increase Energy Efficiency through Provision of Water.

Policy

S-18.1 **Water Efficiency in Landscape.** Consider the application of the City's mandatory Model Water Efficiency Landscape Ordinance (MWELO) to a broader range of landscape projects. *(Imp S-29)*

Goal S-19

Urban Heat Island Effect. Decrease Energy Demand through Reducing the Urban Heat Island Effect.

Policies

S-19.1 **Tree Planting.** Promote tree planting in the community by providing education on the environmental benefits of trees and best management practices to maintain healthy trees. *(Imp S-27)*

S-19.2 **Cool Roofs.** Encourage, and consider requiring, light reflecting roofs on new multi-family residential and commercial buildings to absorb less heat, thereby reducing local air temperature. *(Imp S-27, S-30)*

Goal S-20

Solid Waste Generation Reduction. Decrease Greenhouse Gas Emissions through Reducing Solid Waste Generation.

Policy

S-20.1 **Organic Waste.** Provide organic waste collection services to all residents and businesses, in addition to waste hauling and recycling collection, to reduce organic waste disposal. *(Imp S-31)*

Goal S-21

Vehicle Miles Travelled Reduction. Decrease Greenhouse Gas Emissions through a Reduction in Vehicles Miles Travelled (VMT).

Policies

S-21.1 **Bicycle Use.** Develop a Citywide network that ensures access to safe bicycle facilities, and connects to regional bicycle facilities. *(Imp S-32)*

S-21.2 **Electric Vehicles.** Encourage, and consider requiring, installation of electric vehicle chargers in commercial development and multi-family residential development parking facilities. *(Imp S-27, S-33)*

Goal S-22

Clean Energy. Decrease Greenhouse Gas Emissions through Increased Clean Energy Use.

Policy

S-21.1 **Decrease Greenhouse Gas Emissions through Increased Clean Energy Use.** Encourage the availability of clean power to residents and businesses in the City, with the goal of total renewable energy use. *(Imp S-34)*

An additional Climate Change goal and associated policies are provided in Chapter 4, Natural Resources of this General Plan. The goal and policies are also provided below for reference:

Goal NR-10

Greenhouse Gas Reduction. Reduce emissions from all activities within the City boundaries to help mitigate the impact of climate change.

Policies

NR-10.1 **Climate Change.** Comply with all state requirements regarding climate change and greenhouse gas reduction and review the progress toward meeting the emission reductions targets. *(Imp NR-25)*

NR-10.2 **Regional Coordination.** Ensure that that any plans prepared by the City, including the General Plan, are aligned with, and support any regional plans to help achieve reductions in greenhouse gas emissions. *(Imp NR-26)*

NR-10.3 **Outreach and Education.** Partner with local agencies and organizations to coordinate outreach and education regarding the effects of greenhouse gas emissions and climate change. *(Imp NR-27)*

The following goals and policies address climate adaptation and resiliency, and seek to reduce vulnerability and increase the community's resilience to climate change.

Goal S-23

Adaptation to the Impacts of Wildfire. Address the effects of climate change associated with extended droughts that increase the frequency and intensity of wildfires.

Policies

Policies implementing this goal are found in Section C. Wildland and Urban Fire Hazards, Goal S-3, Protection from Fire Hazards. The policies are also provided below for reference.

S-3.9 **Disaster Communication**. Improve disaster coordination and communication among public agencies. *(Imp S-19, CS-26, CS-27)*

S-3.10 **Emergency Evacuation Plan**. Prepare a citywide emergency evacuation plan and to maintain adequate departure paths especially in areas that don't have at least two emergency evacuation routes (i.e., points of ingress and egress). *(Imp S-20)*

S-3.11 **Emergency Access**. Ensure new development has adequate emergency access through sufficient road widths according to the Los Angeles County Fire Department standards, which are currently 26 feet wide for single-story structures and 28 feet wide for multi-story structures, as well as adequate, visible street address signage to identify buildings. *(Imp CS-30)*

S-3.12 **Fire Management Plan.** Develop a fire management plan that maps fuel load buffer zones within the wildland/urban interface, and includes actions to reduce fuel loads, in coordination with the County Fire Department. *(Imp S-22)*

Goal S-24

Adaptation to the Impacts of Extreme Heat. Address the effects of climate change associated with extreme heat days.

Policies

S-24.1 **Community Cooling Centers.** Identify and promote facilities throughout the City to provide adequate cooling for the population during extreme heat days. *(Imp S-16, S-23)*

S-24.2 **Outreach and Education.** Provide public outreach, education, and engagement regarding the risks of extreme heat and preventative measures. *(Imp S-16, S-23)*

S-24.3 **Maintain Adequate Transportation.** Maintain roadways, bridges and other transportation facilities during extreme heat events. *(Imp S-35)*

Goal S-25

Adaptation to the Impacts of Flooding. Address the effects of climate change related to increased storm water runoff from the combination of severe drought and increases in rain.

Policies implementing this goal are found in section A. Flood Hazards, Goal S-1, Protection from Flood Hazards.

Appendix A General Plan Policies Addressing Global Climate Change lists goals and policies elsewhere in the General Plan that address climate change, in addition to those listed in this section.

I. Noise (S)

Noise from motor vehicles is one of the main sources of noise in the community

The urban environment contains a variety of noise sources that can affect the way people live and work. Some types of noise are only short-term irritants, like the pounding of a jackhammer or the whirring rattle of a lawnmower. These noise sources generally can be controlled through City noise regulations, such as a noise ordinance. However, other noises, such as freeway noise, may be permanent fixtures in the community, posing long-term health hazards to community residents. The City of Agoura Hills is bisected by the Ventura Freeway and several arterial roadways. The Ventura Freeway (US-101) is the most significant noise source within the City due to the high volume of traffic using this roadway on a daily basis. Other areas of noise in the community are along heavily trafficked roads, such as Kanan Road, Thousand Oaks Boulevard, and Agoura Road.

Sound is created when objects vibrate and produce pressure variations that move rapidly outward into the surrounding air. The main characteristics of these air pressure waves are amplitude, which we experience as a sound's "loudness," and frequency, which we experience as a sound's "pitch." The standard unit of sound amplitude is the decibel (dB), which is a measure of the physical magnitude of the pressure variations relative to the human threshold of perception. The human ear's sensitivity to sound amplitude is frequency-dependent, and thus a modification is usually made to the decibel to account for this; A-weighted decibels (dBA) incorporate human sensitivity to a sound's frequency as well as its amplitude.

Noise environments and consequences of human activities are usually well represented by median noise levels during the day, during the night, or over a 24-hour period, called the community noise equivalent level (CNEL). Environmental noise levels are generally considered low when the CNEL is below 55 dBA, moderate in the 55 to 70 dBA range, and high above 70 dBA.

Community Noise Contours

Existing roadway noise contours are shown in Figure N 1 (Noise Contours—Existing). Noise contours represent lines of equal noise exposure, just as the contour lines on a topographic map are lines of equal elevation.

The US 101 and arterial roads, such as such as Kanan Road, Thousand Oaks Boulevard and Agoura Road, show the greatest level of noise exposure in the community. Existing residential uses in close proximity to these roadway segments could be exposed to high noise levels on a regular basis. However, as new residential projects are proposed near major roadways or other potential noise sources, future noise levels are evaluated and noise mitigation strategies are required as appropriate to meet City noise standards. Future noise conditions for roadways are presented for the time period ending in 2035 and were derived from projected traffic levels for that year. (Figure N 2 [Noise Contours—Future]).

New nonresidential uses proposed in proximity to existing residential uses and other sensitive receptors may also create potential noise issues. Project-specific noise studies help identify the level of impact and appropriate mitigation measures.

As shown in Figure N 2, there are limited areas of the City where noise levels are expected to increase, and these are associated with increases in traffic volumes. These areas are located along Agoura Road and the Ventura Freeway. The majority of this is associated with the increase in regional traffic along the Ventura Freeway, rather than the projected land development activity associated with the General Plan.

Building interior noise levels can be reduced by protecting the receiver with acoustical structures, enclosure, or construction techniques. Windows and doors are the most important paths for sound to enter a structure. Use of sound insulating doors and double paned windows can provide substantial reductions of interior noise levels. Because these features have little effect in reducing noise when they are left open, installation of air conditioning units for adequate ventilation may be required.

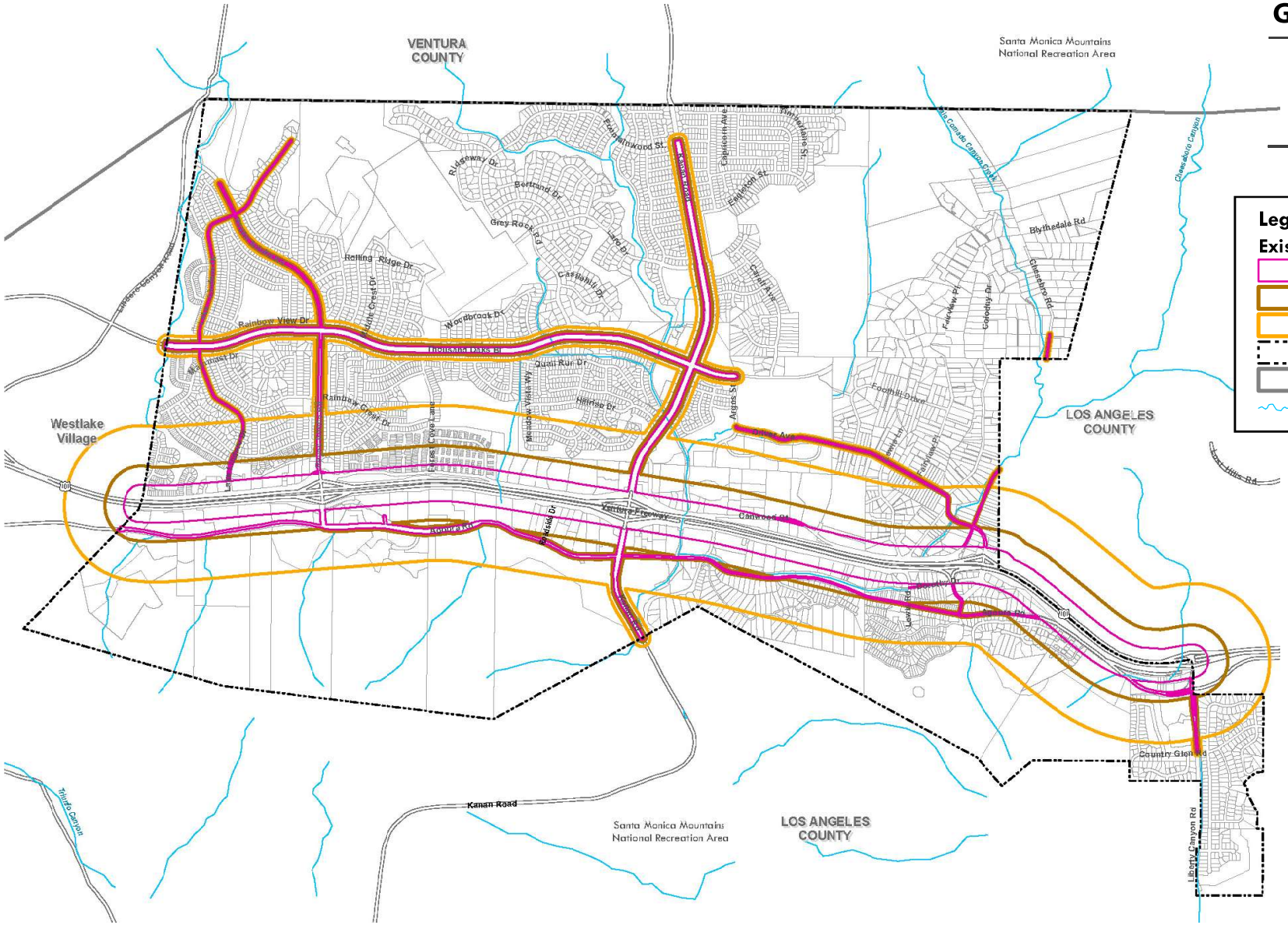
Noise exposure criteria should be incorporated into land use planning to reduce future noise and land use incompatibilities. This is achieved by specifying acceptable noise exposure ranges for various land uses throughout the City. These criteria are designed to integrate noise considerations into land use planning to prevent noise/land use conflicts. Table N 1 (Noise/Land Use Compatibility Matrix) presents criteria used to assess the compatibility of proposed land uses with the noise environment.

In addition to the noise/land use compatibility matrix, the City's interior and exterior noise standards are identified in Table N 2 (Interior and Exterior Noise Standards). The City's Municipal Code also contains noise standards and regulations for residential development and limits unnecessary, excessive, and annoying noise in the City.

Policies in this section protect residents, businesses, and visitors from noise hazards by establishing exterior and interior noise standards.

CITY of AGOURA HILLS
General Plan Update

Noise Contours-Existing



Legend

Existing Roadway Noise Contours

- 70 CNEL
- 65 CNEL
- 60 CNEL
- City Limits
- County Boundary
- Streams

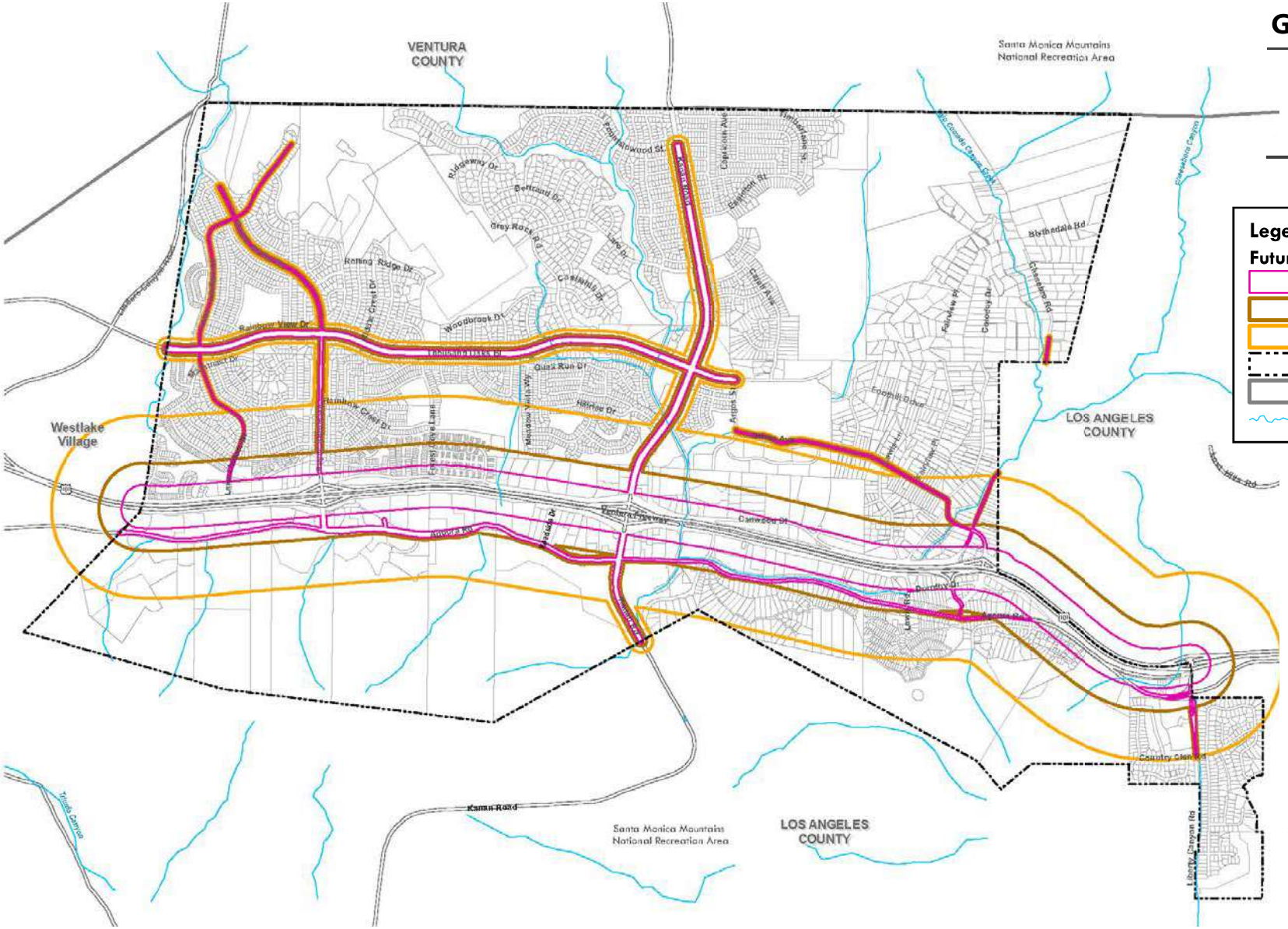
Miles: 0, 0.125, 0.25, 0.5, 0.75

Source: Fehr & Peers, June 2009
D21377_Agoura_Hills\noise.mxd

Figure N-1

CITY of AGOURA HILLS
General Plan Update

Noise Contours-Future



Legend

Future Roadway Noise Contours

- 70 CNEL
- 65 CNEL
- 60 CNEL
- City Limits
- County Boundary
- Streams

Source: Fehr & Peers, June 2009
D21377_Agoura_Hills\noise.mxd

Figure N-2

Table N-1 Noise/Land Use Compatibility Matrix

Land Use Categories		Community Noise Equivalent Level (CNEL)						
Categories	Uses	<55	60	65	70	75	80>	
Residential	Single Family, Duplex, Multiple Family	A	A	B	B	C	D	D
Residential	Mobile Homes	A	A	B	C	C	D	D
Commercial Regional, District	Hotel, Motel, Transient Lodging	A	A	B	B	C	C	D
Commercial Regional, Village District, Special	Commercial Retail, Bank, Restaurant, Movie Theater	A	A	A	A	B	B	C
Commercial Industrial Institutional	Office Building, Research and Development, Professional Offices, City Office Building	A	A	A	B	B	C	D
Commercial Recreation **Institutional** Civic Center	Amphitheater, Concert Hall Auditorium, Meeting Hall	B	B	C	C	D	D	D
Commercial Recreation	Children's Amusement Park, Miniature Golf Course, Go-cart Track; Equestrian Center, Sports Club	A	A	A	B	B	D	D
Commercial General, Special **Industrial, Institutional**	Automobile, Service Station, Auto Dealership, Manufacturing, Warehousing, Wholesale, Utilities	A	A	A	A	B	B	B
Institutional General	Hospital, Church, Library, Schools' Classroom	A	A	B	C	C	D	D
Open Space	Parks	A	A	A	B	C	D	D
Open Space	Golf Course, Cemeteries, Nature Centers, Wildlife Habitat	A	A	A	A	B	C	C

SOURCE: Mestre Greve Associates, 1992 General Plan

Zone A: Clearly Compatible — Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.

Zone B: Normally Compatible — New construction or development should be undertaken only after detailed analysis of the noise reduction requirements are made and needed noise insulation features in the design are determined. Conventional construction, with closed windows and fresh air supply systems or air conditioning, will normally suffice.

Zone C: Normally Incompatible — New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of noise reduction requirements must be made and needed noise insulation features included in the design.

Zone D: Clearly Incompatible — New construction or development should generally not be undertaken.

Table N-2 Interior and Exterior Noise Standards

Land Use Categories		CNEL	
Categories	Uses	Interior [a]	Exterior [b]
Residential	Single Family, Duplex, Multiple Family	45 [c]	55
	Mobile Home	45	55
Commercial	Hotel, Motel, Transient Lodging	45	—
	Commercial Retail, Bank, Restaurant	55	—
	Office Building, Research and Development, Professional Offices, City Office Building	50	—
	Amphitheater, Concert Hall, Auditorium, Meeting Hall	45	—
	Gymnasium (Multipurpose)		
	Sports Club, Movie Theatres	50	—
	Manufacturing, Warehousing, Wholesale, Utilities	55	—
Industrial		65	—
Institutional	Hospital, Schools' classroom	45	55
	Church, Library	45	55
Open Space	Parks	—	65

a. Includes bathrooms, toilets, closets, corridors
b. Limited to the following:
   - Private yard of single family
   - Multi-family private patio or balcony which is served by a means of exit from inside the dwelling
   - Balconies 6 feet deep or less are exempt
   - Mobile home park
   - Park's picnic area
   - School's playground
c. Noise level requirement with closed windows. Mechanical ventilating system or other means of natural ventilation shall be provided as of Chapter 12, Section 1205 of UBC.

Noise and Land Use Compatibility

Goal N-1

Land Use Conflicts. Minimized land use conflicts between various noise sources and other human activities.

Policies

N-1.1 **Noise Standards.** Require noise mitigation for all development where the projected noise levels exceed those shown in Table N-2, to the extent feasible. *(Imp N-1)*

N-1.2 **Compatibility of Noise-Generating Uses with Sensitive Receptors.** Require buildings and sites to be designed such that surrounding noise sensitive uses are adequately buffered from noise generating uses. *(Imp N-2)*

N-1.3 **Mixed-Use Development Standards.** Require, whenever physically possible, new mixed-use developments to locate noise sources away from the residential portion of the development, and apply physical construction standards to reduce noise between uses. *(Imp N-2)*

N-1.4 **Noise Mitigation Measures.** Ensure that all new development provides adequate sound insulation or other protection from existing and anticipated noise sources. *(Imp N-3)*

N-1.5 **Sensitive Receptors.** Incorporate ambient noise level considerations into land use decisions involving schools, hospitals, and similar noise-sensitive uses. *(Imp N-4)*

N-1.6 **Noise Standards.** Enforce standards that specify acceptable noise limits for various land uses throughout the City. Table N-1 (Noise/Land Use Compatibility Matrix) shows criteria used to assess the compatibility of proposed land uses with the noise environment. These criteria are the bases of specific Noise Standards. These standards, presented in Table N-2 (Interior and Exterior Noise Standards), define City policy related to land uses and acceptable noise levels. *(Imp N-5)*

Mobile Noise Sources

Goal N-2

Motor Vehicles. Minimized motor vehicle traffic noise impacts on sensitive noise receptors.

Policies

N-2.1 **State Motor Vehicle Noise Standards.** Encourage the enforcement of state motor vehicle noise standards for cars, trucks, and motorcycles through coordination with the California Highway Patrol and the Los Angeles County Sheriff's Department. *(Imp N-9)*

N-2.2 **Roadway Mitigation Measures.** Ensure the employment of noise mitigation measures in the design of roadway improvement projects consistent with funding capability. Support efforts by the California Department of Transportation and others to provide for acoustical protection of existing noise-sensitive land uses affected by these projects. *(Imp N-6)*

N-2.3 **Noise Mitigation Along Major Arterials.** Require sound-attenuating devices, such as walls and berms, or construction best management practices, in the design of residential and other noise-sensitive land uses that are adjacent to the Ventura Freeway and major arterials. *(Imp N-7)*

N-2.4 **New Development.** New development along the freeway corridor and major thoroughfares will be required to prepare noise studies, as deemed necessary by the Planning Department. *(Imp N-1)*

Non-Transportation-Related Noise

Goal N-3

Non-Transportation-Related Noise. Minimized non-transportation-related noise impacts on sensitive noise receptors.

Policies

N-3.1 **Protection from Stationary Noise Sources.** Continue to enforce interior and exterior noise standards to ensure that sensitive noise receptors are not exposed to excessive noise levels from stationary noise sources, such as machinery, equipment, fans, and air conditioning equipment. *(Imp N-1, N-3, N-4, N-5, N-8)*

N-3.2 **Regulation of Sound-Amplifying Equipment.** Continue to regulate the use of sound-amplifying equipment. *(Imp N-8)*

N-3.3 **Enforcement of Hours of Construction and Maintenance Activity.** Continue to enforce restrictions on hours of construction activity so as to minimize the impacts of noise and vibration from the use of trucks, heavy drilling equipment, and other heavy machinery, including property maintenance equipment, to adjacent uses, particularly in residential areas. *(Imp N-8)*

Chapter 1 INTRODUCTION

A. Planning Context

History

The area of what is now Agoura Hills was first settled by the Chumash Indians. By the time of contact with Spanish settlers, the Chumash occupied an area that extended along the California coast from San Luis Obispo County into Los Angeles County, and east to the fringes of the San Joaquin Valley, as well as the Channel Islands. Present day Agoura Hills was occupied by the Ventureno branch of the Chumash, who were a Hokan speaking people. The Chumash were a hunter and gatherer group with a complex culture that included ownership of resources and property, a market economy, an extensive trading network, craft specialists, and large permanent population centers, or villages.

The permanent arrival of the Spanish in the late 1700s heralded the Spanish Colonial period in California, and El Camino Real traversed the area of what is now Agoura Hills. Spanish settlers established large ranches on property received from the King of Spain, where they grazed cows and sheep. Even into the early 20th century, ranching was the area's dominant industry.

Reyes Adobe Historical Site

Under Spanish governance, a land grant was issued to Miguel Ortega for the over 17,000 acre Rancho Las Virgenes, a portion of which is now Agoura Hills. Upon Ortega's death, the grant was abandoned. Rancho Las Virgenes was later given to Jose Maria Dominguez as a Mexican land grant in 1834. Maria Antonia Machado del Reyes purchased the rancho from Dominguez, her uncle, in 1845. Maria Machado's husband, Jose Jacinto Reyes, was the son of Juan Francisco Reyes who served on the famous Juan Gaspar de Portola expedition. Maria and Jose Reyes' son, Jose Paulino, built the adobe home in approximately 1850, which was one of the first homes in the area. The Reyes' ownership continued into the next century, and from 1916 to 1983, the property transferred to owners who shared a common interest in preserving the landmark adobe home. The Reyes' adobe is now the Reyes Adobe Historical Site, situated along Reyes Adobe Road, which has preserved the artifacts and history of the families that have occupied the Reyes Adobe over time, as well as serving as a cultural landmark representing the California rancho period and its architecture.

By 1900, the area was being used as a popular stage stop for travelers along El Camino Real because of its natural spring at the foothills of Ladyface Mountain, the area's main defining feature. In the 1920s, Paramount Studios purchased a portion of the Rancho Las Virgenes, just south of what is now the City, with moviemakers using the backdrop of the Santa Monica Mountains for their films, and the community became known as "Picture City." However, in the late 1920s,

a group of residents asked to have a permanent post office established in the area, and the name "Agoura" was given. "Agoura" was derived from the last name of Pierre Agoure, a Basque rancher who had settled in the area in the 1870s as a sheepherder.

Growth in population was slow in the community, due partly to a lack of water. However, in the late 1950s, the Las Virgenes Municipal Water District was established, and reliable water sources made the Agoura area more attractive for families and businesses. Further growth occurred as a result of the local highway becoming the Ventura Freeway at about this same time. During the late 1960s and the 1970s, expansion continued as large housing tracts and shopping areas, as well as schools, developed. The first housing tracts were in the Hillrise, Liberty Canyon, and Lake Lindero communities.

In 1982, residents voted in favor of Cityhood, and on December 8, 1982 Agoura Hills became the 83rd city in Los Angeles County. This was followed by a building moratorium by the new City Council until a new general plan and municipal code were in place. In 1987, the City adopted its first Municipal Code. The first General Plan was adopted by the City in 1985, and was the City's first effort at creating a community distinct from the governance of Los Angeles County. In 1993, a comprehensive update to the General Plan was approved. The 1993 General Plan focused on managing growth in the still substantial undeveloped areas, and included several large transportation improvements, particularly at the Ventura Freeway interchanges. It also focused on shaping the design and identity of the City through calling out specific planning areas and districts, and the beginnings of resource conservation efforts were reflected in the 1993 General Plan.

Planning Context

This document is the first update of Agoura Hills' General Plan in more than seventeen years and is the result of many hours of research and technical studies, the collective efforts of the elected and appointed decision-makers, individuals, and agencies who cumulatively guide and shape land use development and community conservation, and the engagement of numerous individuals throughout the community who have articulated their hopes and expectations for the City's future.

The majority of Agoura Hills consists of stable, attractive neighborhoods and places that the community desires to protect and enhance, and for which goals and policies of the updated General Plan are intended to foster. The small-town, suburban feel of the community, the natural beauty of its hillsides and open spaces, the quality schools and public services, and the perceived safety of the City create a quality of life that attracts many residents to move to Agoura Hills. These aspects of the City are what residents value most, and are what they are most interested in preserving.

This updated General Plan includes a comprehensive update of Land Use and Mobility goals and policies based on technical assessment and evaluation of land use and traffic data, and a substantive review and update of all other policies based on current information provided by City staff. The updated goals and policies in the entirety of the General Plan have been crafted to assure that they reflect the community's vision for its future.

There have been modest increases in the size of the City's population since the last General Plan update in 1993, and the community's concerns regarding protection of the natural environment remain high as well as its desires for sustainable growth and development in Agoura Hills. Sustainability is the capability to equitably meet the vital human needs of the present without compromising the ability of future generations to meet their own needs. As expressed in the community survey conducted in 2006 for the General Plan update, one of the City's top resources was identified as its natural hillsides and open space setting.

A commitment to the conservation of natural resources ensures the ongoing availability of finite resources, such as a safe water supply, clean air, scenic vistas, and energy resources. This assurance contributes substantially to the physical and psychological health and well-being of the community and strengthens the vitality of the local and regional economic base.

Located in the foothills of the Santa Monica Mountains on the western edge of Los Angeles County in the Conejo Valley, the City of Agoura Hills is characterized by rolling hills and a blend of semi-rural and suburban development. The City, which encompasses nearly 7 square miles, straddles the Ventura Freeway and is situated approximately 36 miles west of downtown Los Angeles as shown in Figure 1 (Regional Location). The City is known for its distinct neighborhoods, beautiful natural setting, and extensive recreational resources.

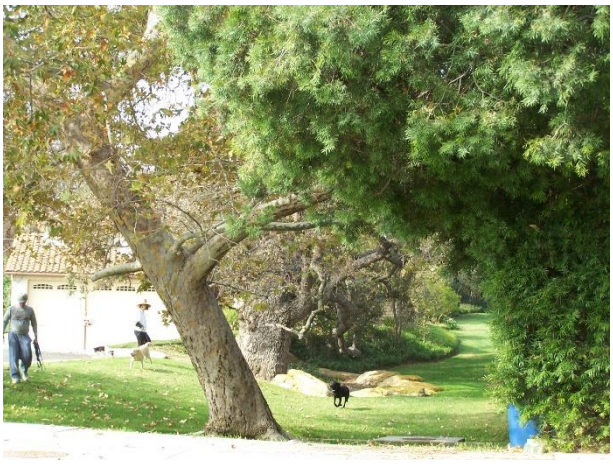
Basic land use patterns are well established in the City, with residential neighborhoods fully developed and limited opportunities for infill development remaining. Agoura Hills' neighborhoods are viewed as one of the community's most desirable features, and preservation of these neighborhoods remains a priority of the General Plan. Two specific plans that cover large areas of the community south of Agoura Road have been adopted, including Ladyface Mountain Specific Plan and the Agoura Village Specific Plan. Development of these Specific Plans and infill and reuse of other vacant or underutilized properties along Agoura Road represent the majority of potential new development and redevelopment in the community over the next 25 years as the General Plan is implemented.

The updated General Plan has been prepared to provide a meaningful guide for the future and fulfills statutory requirements. It is comprehensive—providing a framework for the City's physical, economic, and social development while sustaining natural environmental resources. It is long range—looking ahead to 2035, while at the same time presenting policies to guide day-to-day decisions.

B. Framework for Planning—Vision Statement

The General Plan's goals, policies, and implementation programs define a roadmap to sustain and nurture the qualities and character that contribute to Agoura Hills' identity as a special community in a unique natural environment. Underlying these objectives is the vision below, which is reflected in goals throughout the General Plan, and which represents the community's aspirations for its future.

> *Agoura Hills is a special place surrounded by the Santa Monica Mountains where oak trees and rolling hills abound. Here we seek to preserve our City's best qualities while striving to create a better community. The future Agoura Hills is an attractive City of growing sophistication that chooses to retain its small town look and feel. The City remains a safe place, where people live, work, play, and move about in an economically viable and environmentally sustainable community. Sensitive growth and economic development are means of perpetuating our quality of life. These are balanced with resource conservation, as the City's semi-rural ranching past, rich history and unique neighborhoods are respected, and open spaces and surrounding hillsides are preserved. Agoura Hills is a place where its citizens have opportunities to engage in their community through recreation, social and civic activities, schools, and neighborhood organizations.*

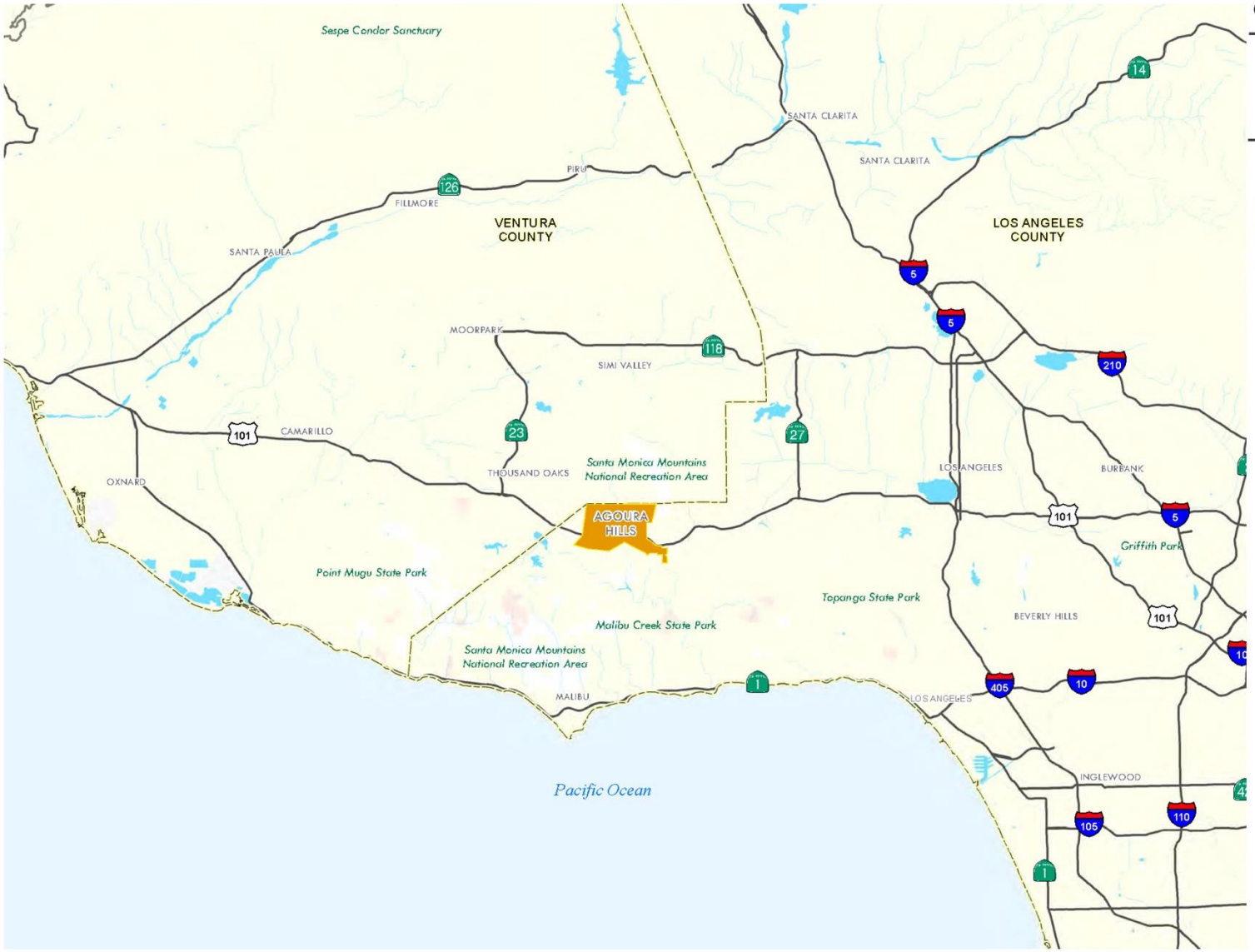


C. Purpose

The updated Agoura Hills General Plan has been prepared in compliance with the requirements of California Government Code Section 65300 et seq. The Plan is a policy document and much of its content is established by statutory requirements relating to background data, analysis, maps, and exhibits. The legal adequacy of the General Plan is critical, since many City actions and programs are required to be consistent with the Plan

CITY of AGOURA HILLS
General Plan Update

Regional Location



Legend

- City of Agoura Hills
- County Boundary
- Lake or Reservoir
- River or Stream
- Interstate or Highway

Source: ESRI, 2006.

Figure 1

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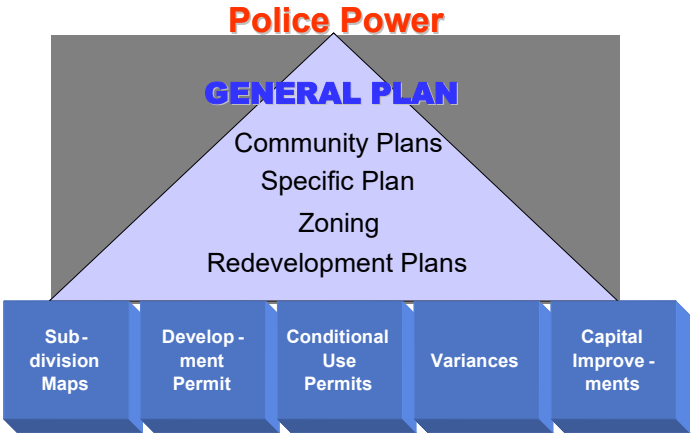
State law requires each city and county to prepare and adopt a comprehensive long-range general plan for its physical development (California Government Code Section 65300). A comprehensive general plan provides a consistent framework for land use decision-making. The general plan and its maps, diagrams, and development policies form the basis for the City's zoning, subdivision, and public works actions. Under California law, no specific plan, area plan, community plan, zoning, subdivision map, or public works project may be approved unless the City finds that it is consistent with the adopted general plan. The State General Plan Guidelines recommend that general plans be updated every five to ten years to ensure that they remain relevant. This is important not only to reflect local physical and demographic changes, but also broader changes in culture and technology.



The General Plan serves as the "constitution" for all policies and regulations pertaining to Agoura Hills' physical development

The general plan must address the seven topics (referred to as "elements") of land use, circulation, housing, open-space, conservation, safety, and noise (California Government Code Section 65302), to the extent that the topics are locally relevant. It may also include other topics of local interest, as chosen by the local jurisdiction (California Government Code Section 65303). Legislative changes integrated two elements presented in the previous Agoura Hills General Plan, Scenic Highways and Safety, into the Circulation and Safety Elements respectively.

A local jurisdiction may adopt a general plan in the format that best fits its unique circumstances (California Government Code Section 65300.5). In doing so, the jurisdiction must ensure that the general plan and its component parts comprise an integrated, internally consistent, and compatible statement of development policies. The City of Agoura Hills has chosen to adopt a general plan that consolidates the mandatory elements and re-organizes the content by common topic. Important themes are woven throughout the Plan rather than structured as independent topics, such as community livability, sustainability, and global warming. Correspondence between the Agoura Hills General Plan and the legally required general plan topics is shown in the following matrix:

Table 1 General Plan Topics

Agoura Hills General Plan Chapters	Legally Required General Plan Topics							Optional Elements
	Land Use	Circulation	Housing	Conservation	Open Space	Noise	Safety	
Community Development								
Land Use	●							
Economic Development								●
Historic and Cultural Resources								●
Infrastructure & Community Services								
Mobility		●						
Infrastructure and Utilities		●		●				
Police and Fire								●
Public Services								●
Parks and Recreation					●			
Education								●
Natural Resources								
Biological Resources				●	●			
Water Resources				●				
Water Quality				●				
Visual Resources		●		●	●			
Energy Conservation								●
Global Warming								●
Community Safety								
Wildland and Urban Fire Hazards							●	
Flood Hazards					●		●	
Geologic and Seismic Hazards					●		●	
Hazardous Materials							●	
Crime Prevention & Protection							●	
Emergency Preparedness							●	
Noise							●	
Climate Change							●	
Housing (Under Separate Cover)			●					
Implementation Programs	●	●	●	●	●	●	●	●

D. Process

The update of the Agoura Hills General Plan involved a process that included a number of elected and appointed officials, residents, and public agencies; the compilation, review, and analysis of substantial amounts of technical data, the preparation of documents that summarized this information; and the input and feedback from community residents and stakeholders in the following steps. A General Plan Advisory Committee (GPAC) was appointed by the City Council to assure ongoing community involvement in the update process. The GPAC met throughout the process to provide feedback to City staff and the consultants, and was instrumental in the development of the updated General Plan. The ten-member GPAC was comprised of two City Council members, two Planning Commissioners, and five "at large" resident representatives from various areas of the City.

The overall update process can be summarized in the following key steps:

- Resident Survey Regarding General Plan Topics
- Stakeholder Interviews
- Background Data Collection
- Conservation and Transition Area Identification
- Traffic and Fiscal Impact Analyses
- Goals, Policies, and Implementation Programs
- Draft General Plan
- Environmental Impact Report

These steps are described below.

1. A **Resident Survey** was the start of the General Plan update process in the summer of 2005 when a survey of the community was conducted to define the issues and topics to be addressed in the updated General Plan. To ensure that the General Plan revision for the City of Agoura Hills reflects the values, priorities, and concerns of all residents—not just those who actively participate in meetings—the City developed and distributed a General Plan survey to all households in the City and commissioned an independent firm to review, analyze, and summarize the data and ensure that the study demographics reflect those of the resident population as a

whole. The survey findings represent statistically reliable measures of residents' opinions on a number of key issues to be addressed in the Plan. Respondents were invited to participate by mail-in responses or online via the City's website from the summer of 2005 through December 2005. The survey included resident responses in the areas of land use, circulation, housing, open space, design, and governmental services.

2. **Stakeholder Interviews** were conducted in March 2006 when 17 Agoura Hills residents, business owners, and representatives of special interests groups participated in interviews facilitated by the City's General Plan consultant. The interviews were conducted as part of the visioning process for the City's update of the Land Use and Circulation Elements for the General Plan and were conducted as a series of six small-group sessions that included individuals representing the following community groups:

   - Schools
   - Open Space/Environmental
   - Religious/Cultural/Sports
   - Homeowners' Associations
   - Business Representatives
   - Residents

   The interviews were designed to help determine residents' opinions in the following areas to inform the preparation of the updated General Plan:

   - What gives Agoura Hills its character
   - What should the community look like in 10 to 20 years
   - What should change; how it should change
   - What should stay the same
   - What is valued but not found within the community at this time

3. **Background Data** regarding the existing conditions, trends, and projected future conditions for the City's land use resources, and economic/market conditions were compiled and analyzed. These data served three purposes:

   - As the basis for the articulation of planning issues to be addressed by Plan policy, incorporating all studies required by state law
   - As measures to test the impacts of alternative growth and development scenarios
   - As input for the statutory "Existing Setting" section of the General Plan Environmental Impact Report (EIR)

   As the database contains extensive written narrative, tables, and numerous maps, it is physically incorporated into a separate volume that legally is a component of the General Plan and EIR. A brief overview of pertinent baseline and projected conditions is presented in the relevant sections of the General Plan.

4. Areas of **Conservation and Transition** were identified by the GPAC as a means to maintain and enhance the character and quality of life in existing neighborhoods and areas that would not be subject to change, and to focus growth and change in the community to areas that were in need of revitalization to accomplish economic, fiscal or community service objectives consistent with residents vision for long-term growth. Twelve community subareas and districts were identified as areas of transition, and the updated General Plan includes goals that express specific intentions for use, design, character, and implementation that uniquely apply to and differentiate each area. Other goals and policies were identified to preserve and enhance the substantial natural environment, open space resources, and diverse residential neighborhoods which contribute to the high quality of life of enjoyed by Agoura Hills residents.
5. A preliminary **Land Use and Development Plan** was identified by GPAC in consideration of review and assessment of the areas of conservation and transition and the background research and analyses. The transition areas principally focused on opportunities for re-use and improvement of commercial and business park districts and implementation of planned development in several mixed-use districts in the community. The land use plan was evaluated for its **comparative traffic and fiscal impacts**. The latter estimated the costs of public services to support the land uses and expected revenues. Cumulative effects on the fiscal balance of the City were assessed.
6. **General Plan goals, policies, and implementation programs** were updated based on the review of existing policies for their consistency with the selected land use plan; reflection of current issues and community needs; understandability; effectiveness in previous applications; practicality and feasibility; embodiment of state-of-the-art planning practices consistency with current legislation and court decisions; and reflection of community values and City Council policy decisions.
8. The **Draft Updated General Plan** was published incorporating an overview of background data, goals, policies, and implementation programs for each Plan element/topic. The Draft General Plan was made available for public review and comment in writing or oral testimony at Planning Commission and City Council hearings.
9. A **Draft EIR** was prepared in accordance with the substantive and procedural requirements of the California Environmental Quality Act (CEQA). From the date of publication, the DEIR is circulated for a 45-day period for public review and comment. Responses to all comments are prepared and incorporated into the Final EIR, which is reviewed and certified by the City Council.
10. The Planning Commission and City Council will conduct **public hearings** on the Draft General Plan and EIR. In consideration of the public input, the Commission will make recommendations to the City Council regarding the Plan's content and certification of the Final EIR. The City Council will consider the Commission's input and conduct additional public hearings. Based on these, the Council makes its final recommendations and adopts the General Plan with changes, if necessary, and certifies the Final EIR.

11. The **adopted Agoura Hills General Plan** will be published and the goals, policies, and programs contained herein implemented.

E. How to Use the General Plan

The City of Agoura Hills General Plan is intended for use by all members of the community.

If you are an Agoura Hills resident, the General Plan indicates the general types of uses that are permitted around your home, the long-range plans and changes that may affect your neighborhood, and the policies the City will use to evaluate development applications that might affect you and your neighbors.

The Plan indicates how the City of Agoura Hills will attract businesses providing goods and services to meet your daily needs, while contributing revenue to help fund police, fire, recreation, street maintenance, and other services that sustain the quality and livability of your neighborhood. It defines how the City will attract new jobs, providing opportunities for you to work near where you live.

The Plan also informs you regarding how the City plans to improve mobility infrastructure, continue to provide adequate parks, schools, police, fire, and other public services, protect valued open spaces and environmental resources, and protect you from the risks of excessive noise, earthquakes, fires, and other natural hazards. Cumulatively, the Plan identifies the actions the City will take to ensure that the City and your neighborhood retain its economic value and remain a great place to live.

If you are an Agoura Hills business, the Plan outlines the measures the City will take to encourage your future success. Expectations of the City's business districts are spelled out, while policies ensure that business operations will be compatible with other businesses and nearby residential areas.

If you are interested in developing land within the City or moving your residence or business to the City, the Plan will introduce you to the community. To familiarize yourself with the General Plan, the Land Use and Economic Development goals and policies are useful starting points. However, it is important to review maps and policies throughout this document and the Agoura Hills Municipal Code to get a complete perspective on how and where development may take place.

The General Plan is also a tool to help City staff, the Planning Commission, and the City Council make land use and public investment decisions. It provides the framework for the City's Zoning Ordinance. It identifies the economic development, mobility and infrastructure improvements, community services, and environmental programs needed to sustain Agoura Hills' quality of life. Future development decisions must be consistent with the Plan. Finally, the Plan

is intended to help other public agencies, from Caltrans to the local school district, as they contemplate future actions in Agoura Hills.

While the Plan's narrative text and maps frame the key proposals, the essence of the Plan lies in its goals, policies, and implementation measures. These are declarative statements that set forth the City's approach to various issues. Goals, policies, and implementation measures are described as follows:

- **Goals** describe ideal future conditions for a particular topic, such as traffic congestion or sustainability. Goals tend to be very general and broad.
- **Policies** provide guidance to assist the City as it makes decisions relating to each goal. Some policies include guidelines or standards against which decisions can be evaluated.
- **Implementation Measures** identify the specific steps to be taken by the City to implement the policies. They may include revisions of current codes and ordinances, guidelines, plans and capital improvements, programs, financing, and other measures that should be assigned to different City departments after the General Plan is adopted.

The diagram on the following page is intended to serve as a "reader's guide" to the goals and policies of the General Plan.

A simple numbering system is used to facilitate use of the General Plan. This enables the reader to distinguish each topic's goals, policies, and implementation programs. Each Plan topic is assigned a letter(s). For example, Land Use is "LU," Mobility is "M," and so on. Goals are assigned a second order number, i.e., the first goal for Land Use is numbered as "LU-1" and the second is "LU-2." Policies are assigned a third order number, with the first policy relating to the first Land Use goal being numbered as "LU-1.1" and the first policy relating to the second goal numbered as "LU-2.1."

All General Plan policies are followed by a set of numbers in parentheses. These numbers reference applicable measures that will be undertaken by the City to implement the policy. There are ten implementation categories, which are generally organized by the topics covered in the General Plan. Each category contains multiple implementation measures that include programs, projects, or other activities that are assigned a second number. The first program listed in category "2," for example, is numbered "2.1," while the second measure is numbered "2.2."

PHOTOGRAPHS AND DIAGRAMS
Graphical illustration of an example of the intent of the goals and policies.

SECTION HEADER
The header identifies the chapter (if on an even-numbered page) or topic (if on an odd-numbered page).

CHAPTER 2: COMMUNITY CONSERVATION AND DEVELOPMENT

BUSINESS PARK DISTRICT/WEST OF REYES ADOBE ROAD

Existing business park development

Infill retail and restaurant uses

Goal LU-25

Business Park with Supporting Uses. An economically viable and well-designed business park offering high quality jobs and incorporating a diversity of uses to minimize the need for employees to travel off site.

Policies

LU-25.1 **Supporting Uses.** Encourage the development of limited ancillary uses that support existing businesses and their employees, such as restaurants, personal services, and financial institutions, to lessen the need to travel off-site for these during the work day.

LU-25.2 **Cohesive Site Development.** Require that new buildings, pedestrian walkways, and open spaces be located and designed to promote connectivity with, and to complement the quality and character of existing development, while achieving a cohesive and integrated project.

PLANNED DEVELOPMENT DISTRICT/LADYFACE MOUNTAIN SPECIFIC PLAN (WEST END)

Goal LU-26

Business Park and Natural Open Spaces. An economically viable business park that is scaled and designed to reflect its natural setting at the base of Ladyface Mountain, while providing high-quality jobs and incorporating a diversity of uses that minimize the need for employees to travel off site.

Policies

LU-26.1 **Supporting Uses.** Allow and encourage the development of limited ancillary uses that support existing businesses and their employees, such as restaurants, personal services, and financial institutions, to lessen the need to travel off-site for these during the work day.

LU-26.2 **Site Development.** Require that buildings be located and designed to reflect the area's hillside topography and natural landscapes, with building footprints conforming to topographic contours, setbacks of upper stories to conform to slope, and orientation to preserve view corridors.

LU-26.3 **Development Clustering and Location.** Require that buildings be clustered to minimize grading and modifications of the natural

2-38

City of Agoura Hills General Plan

GOAL NUMBERING
Each goal number starts with the element acronym and is followed by the number of the goal (e.g., NR 1 = Natural Resources Element, first goal).

GOAL TITLE
Each goal contains a leading title in bold for a quick reference to the goal text.

GOALS
Each goal has one or more policies associated with the goal.

POLICY TITLE
Each policy contains a leading title in bold for a quick reference to the policy text.

POLICIES
Each policy is associated with a specific goal.

IMPLEMENTATION PROGRAM TAG
Each policy is followed by a set of numbers in italics/parentheses that identifies the tool or action the City will use to implement the policy. These measures are detailed in Chapter 6.

PAGE NUMBER
Shows the chapter and page number (e.g., 4-2 = Chapter 4, page 2).

POLICY NUMBERING
Continuing from the goal numbering, the policy number is shown as the last number, supporting the goal it follows (e.g., Policy NR 1.2 = second policy under the Natural Resources Element, first goal.

F. General Plan Organization

The General Plan is organized into seven chapters. The first chapter presents information about the Plan's legislative requirements, applications, organization, process for preparation, and overarching themes that guide all goals, policies, and programs. The following four chapters comprise the Plan's "elements." Each presents an overview of its scope, summary of conditions and planning issues, goals, and policies. The sixth chapter describes the broad actions that implement the Plan's policies, and a glossary of terms is presented in the final chapter.

An overview of the Plan's chapters is provided below.

1. **Introduction** describes the General Plan process and introduces the reader to the document.
2. **Community Conservation & Development** presents goals and policies pertaining to how existing development is to be maintained and enhanced and new development is to occur. Its components address:
    a. Land Use (LU) defines where lands are to be conserved and where growth will be targeted, and specifies the types, densities, and design characteristics of uses to be permitted with a map depicting their distribution.
    b. Economic Development (ED) specifies strategies for business retention and attraction.
    c. Historic and Cultural Resources (HR) defines processes for the preservation of the City's historic and cultural buildings and sites.
    d. Housing (H). Though the Housing Element is an integral part of this General Plan, it is separately bound due to the separate schedule for its update required by state law.
3. **Infrastructure and Community Services** presents goals and policies for the provision of infrastructure and services that support residents and businesses.
    a. Mobility (M) provides for the movement of people and goods, including autos, transit, bicycles, and other modes. It addresses key issues such as trip reduction, parking, traffic safety, and neighborhood traffic calming.
    b. Infrastructure and Utilities (U) addresses the provision of public infrastructure, including water, sewer, storm drainage, solid waste, electricity, natural gas, and telecommunications.
    c. Community Services (CS) addresses the provision of services to meet the needs of residents including recreation and park facilities, recreation programs, trails, police and fire, education, and libraries.
4. **Natural Resources** (NR) provides for the management of open space and conservation of the City's biological resources, mineral resources, water resources, visual resources, air quality and energy conservation.

5. **Community Safety** (S) prescribes strategies for the protection of the public health and safety of residents, businesses, and visitors to the City, addressing wildland and urban fire hazards, flood hazards, geologic and seismic hazards, crime prevention and protection, hazardous materials, disaster preparedness, and climate change. Policies to mitigate potential impacts of noise are presented in the Noise (N) section.
6. **Implementation Program** describes the measures to be taken by the City to carry out the goals and policies defined by the General Plan.
7. **Glossary** defines the terminology used in the General Plan.

G. Related Documents

In addition to goals, policies, and implementation measures presented in this document, the General Plan includes an Appendix that ~~summarizes the General Plan policies addressing climate change~~ contains the following supporting documents:

Appendix A: Summary of General Plan Policies Addressing Climate Change.

Appendix B: Evacuation Analysis

Appendix C: Evacuation Plan

All supporting background data, analyses, and technical reports are available upon request from the City or are posted on the City's website.

An environmental impact report (EIR) has been prepared for the General Plan in accordance with the substantive and procedural requirements of the California Environmental Quality Act (CEQA). The EIR is a separate document that describes environmental conditions in the City, assesses the possible effects of the General Plan, identifies actions that will be undertaken to reduce these impacts, and evaluates the comparative impacts of alternatives to the General Plan. Most of the EIR's mitigation measures have been incorporated as policy into the General Plan and, consequently, the Plan is generally considered to be "self-mitigating."

The document is considered a "program level" EIR, meaning that it examines the general nature of impacts at a citywide scale. The findings of the EIR help determine the appropriate level of environmental review that should be performed when subsequent projects consistent with the Plan are proposed. Although the EIR will be certified by the City Council, it is not adopted as a policy document.

H. Implementing and Amending the Plan

After the General Plan is adopted, it will be implemented through a variety of ordinances, programs, and activities. These measures are described in Chapter Seven and referenced by applicable policies for each topic "Element." It will be especially important to review local land use regulations and procedures to ensure that they are consistent with the General Plan. The zoning map must be consistent with the General Plan Land Use Plan and the Zoning Code must be consistent with the land use classification system and the stipulated density/intensity and design and development policies.

The General Plan is intended to be a dynamic document and must be periodically updated to respond to changing community needs. An annual review of the Plan is required to ensure that it remains relevant. Moreover, any of the Plan's mandatory elements may be amended up to four times a year. Requests for amendments may be submitted by individuals or initiated by the City itself. The most common type of amendment is to change the land use designation for a particular property. Policy and text amendments also may occur. Any proposed amendment will be reviewed to ensure that the change is in the public interest and would not be detrimental to the public health, safety, and welfare. Environmental review is typically required for General Plan amendments.

I. Climate Change

The issue of global climate change has received greater attention from governments around the world in recent years. Global climate change refers to the change in the average weather of the earth that may be measured by changes in wind patterns, storms, precipitation, and temperature.

Human activities associated primarily with the use of carbon-based fossil fuels have led to changes in the composition of the atmosphere. The combustion of carbon-based fossil fuels creates greenhouse gas (GHG) emissions, such as carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), which has caused the earth's atmosphere to absorb more heat from the sun. The concentration of green house gases in the atmosphere has significantly increased as a result of combustion of fossil fuels primarily associated with automobile use and energy production. Scientists have already observed some of the negative effects of climate change, and expect more changes in the future. Governments, organizations, and private citizens all over the world are looking for ways to reduce greenhouse gas emissions to create a better future.

In 2006, the California State Legislature took a proactive role in addressing the challenges of climate change with the adoption of the California *Global Warming Solutions Act of 2006*, Assembly Bill 32 (AB 32). AB 32 focuses on reducing GHG

emissions in California. AB 32 requires the California Air Resources Board (CARB), the state agency charged with regulating statewide air quality, to adopt rules and regulations that would achieve GHG emissions equivalent to statewide levels in 1990 by 2020.

A key theme of the City of Agoura Hills' General Plan is sustainability. The General Plan, inherently through its goals and policies, takes steps to address the challenging issue of climate change by reducing GHG emissions, improving energy efficiency, reducing the urban heat island effect, recycling, and managing water use. The General Plan will reduce GHG emissions primarily through land use patterns that support public transit, increased opportunities for pedestrians, bicycle, and transit-use, and through requirements for "green building" practices and alternative energy systems. Policies also address adaptation to climate change, such as increasing flood protection.

The sources, impacts of, and solutions to climate changes are complex. Climate change and GHG emissions reduction are addressed in the Safety Element and throughout policies and programs of the General Plan. Appendix A, General Plan Policies Addressing Climate Change, includes a table that summarizes, by topic area, Agoura Hills General Plan policies that address climate change, in addition to those in the Climate Change section of the Safety Element.

J. Public Involvement

The General Plan planning process involved a broad spectrum of the community during key phases in development of the document as well as ongoing public input through the active engagement of the General Plan Advisory Committee. The public and stakeholders were provided the opportunity for involvement throughout the planning process from the initial identification of the issues and topics to be addressed in the General Plan update, to input on a land use framework for the conservation and transition areas of the City.

In an effort to continually involve interested parties in the planning process to obtain valuable feedback, other methods of public outreach over the course of the project included the following:

- Appointment of GPAC for ongoing involvement in preparation of the Draft General Plan (December 2004/ongoing)
- General Plan Resident Survey (Summer 2005 through December 2005) Stakeholder Interviews (March 2006)
- "Big Ideas" Community Meeting (December 2006)
- Maintaining a mailing list used for notification of community meetings, Planning Commission and City Council meetings regarding the General Plan (ongoing)
- Periodic status updates on the General Plan posted on the City website (ongoing)

- A public scoping meeting to receive public input regarding topics and issue to analyze in the EIR process (May 2009)
- Publication of a "General Plan Update Fact Sheet" for posting on the City's website and notification of availability to the General Plan mailing list (July 2009)
- A public information meeting to provide feedback on key items of the Draft General Plan (July 2009)
- Planning Commission and City Council Study Sessions on the Draft General Plan (Fall 2009)
- Planning Commission and City Council public hearings to adopt the Draft General Plan and certify the EIR (Winter 2010)

General Plan Safety Element Assessment

Board of Forestry and Fire Protection

Agoura Hills 2026

RPC 2 (b)(i)

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Open Space and Conservation Elements 9
Circulation Element 9

Purpose and Background

Upon the next revision of the housing element on or after January 1, 2014, the safety element is required to be reviewed and updated as necessary to address the risk of fire for land classified as state responsibility areas and land classified as very high fire hazard severity zones. (Gov. Code, § 65302, subd. (g)(3).)

The safety element is required to include:

- Fire hazard severity zone maps available from the Department of Forestry and Fire Protection.
- Any historical data on wildfires available from local agencies or a reference to where the data can be found.
- Information about wildfire hazard areas that may be available from the United States Geological Survey.
- The general location and distribution of existing and planned uses of land in very high fire hazard severity zones (VHFHSZs) and in state responsibility areas (SRAs), including structures, roads, utilities, and essential public facilities. The location and distribution of planned uses of land shall not require defensible space compliance measures required by state law or local ordinance to occur on publicly owned lands or open space designations of homeowner associations.
- The local, state, and federal agencies with responsibility for fire protection, including special districts and local offices of emergency services. (Gov. Code, § 65302, subd. (g)(3)(A).)

Based on that information, the safety element shall include goals, policies, and objectives that protect the community from the unreasonable risk of wildfire. (Gov. Code, § 65302, subd. (g)(3)(B).) To carry out those goals, policies, and objectives, feasible implementation measures shall be included in the safety element, which include but are not limited to:

- Avoiding or minimizing the wildfire hazards associated with new uses of land.
- Locating, when feasible, new essential public facilities outside of high fire risk areas, including, but not limited to, hospitals and health care facilities, emergency shelters, emergency command centers, and emergency communications facilities, or identifying construction methods or other methods to minimize damage if these facilities are located in the SRA or VHFHSZ.
- Designing adequate infrastructure if a new development is located in the SRA or VHFHSZ, including safe access for emergency response vehicles, visible street signs, and water supplies for structural fire suppression.
- Working cooperatively with public agencies with responsibility for fire protection. (Gov. Code, § 65302, subd. (g)(3)(C).)

The safety element shall also attach or reference any fire safety plans or other documents adopted by the city or county that fulfill the goals and objectives or contains the information required above. (Gov. Code, § 65302, subd. (g)(3)(D).) This might include Local Hazard Mitigation Plans, Unit Fire Plans, Community Wildfire Protection Plans, or other plans.

There are several reference documents developed by state agencies to assist local jurisdictions in updating their safety elements to include wildfire safety. The Fire Hazard Planning, General Plan Technical Advice Series from the Governor's Office of Planning and Research (OPR), referenced in Government Code section 65302, subdivision (g)(3) and available at

1400 Tenth Street
Sacramento, CA 95814
Phone: (916) 322-2318

The Technical Advice Series is also available from the OPR website (**Technical Advice Series link**).*

The Technical Advice Series provides policy guidance, information resources, and fire hazard planning examples from around California that shall be considered by local jurisdictions when reviewing the safety element of its general plan.

The Board of Forestry and Fire Protection (Board) utilizes this Safety Element Assessment in the Board's review of safety elements under Government Code section 65302.5. At least 90 days prior to the adoption or amendment of their safety element, counties that contain SRAs and cities or counties that contain VHFHSZs shall submit their safety element to the Board. (Gov. Code, § 65302.5, subd. (b).) The Board shall review the safety element and respond to the city or county with its findings regarding the uses of land and policies in SRAs or VHFHSZs that will protect life, property, and natural resources from

* https://www.opr.ca.gov/docs/Final_6.26.15.pdf

unreasonable risks associated with wildfires, and the methods and strategies for wildfire risk reduction and prevention within SRAs or VHFHSZs. (Gov. Code, § 65302.5, subd. (b)(3).)
The CAL FIRE Land Use Planning team provides expert fire protection assistance to local jurisdictions statewide. Fire captains are available to work with cities and counties to revise their safety elements and enhance their strategic fire protection planning.

Methodology for Review and Recommendations

Utilizing staff from the CAL FIRE Land Use Planning team, the Board has established a standardized method to review the safety element of general plans. The methodology includes

1) reviewing the safety element for the requirements in Government Code section 65302, subdivision (g)(3)(A),
2) examining the safety element for goals, policies, objectives, and implementation measures that mitigate the wildfire risk in the planning area (Gov. Code, § 65302, subd. (g)(3)(B) & (C)), and
3) making recommendations for methods and strategies that would reduce the risk of wildfires (Gov. Code, § 65302.5, subd. (b)(3)(B)).

The safety element will be evaluated against the attached Assessment, which contains questions to determine if a safety element meets the fire safety planning requirements outlined in Government Code, section 65302. The reviewer will answer whether or not a submitted safety element addresses the required information, and will recommend changes to the safety element that will reduce the wildfire risk in the planning area. These recommended changes may come from the list of sample goals, policies, objectives, and implementation measures that is included in this document after the Assessment, or may be based on the reviewer's knowledge of the jurisdiction in question and their specific wildfire risk. By answering the questions in the Assessment, the reviewer will determine if the jurisdiction's safety element has adequately addressed and mitigated their wildfire risk. If it hasn't, any specific recommendations from the reviewer will assist the jurisdiction in revising the safety element so that it does.
Once completed, the Assessment should provide clear guidance to a city or county regarding any areas of deficiency in the safety element as well as specific goals, policies, objectives, and implementation measures the Board recommends adopting in order to mitigate or reduce the wildfire threat in the planning area.

General Plan Safety Element Assessment

Jurisdiction: Agoura Hills	Notes: Formal Review	CAL FIRE Unit: LAC/BDU	Date Received: 01/15/2026
County: Los Angeles	LUPP Reviewer: J. Kennedy	UNIT CONTACT:	Date Reviewed: 01/20/2026

BACKGROUND INFORMATION SUMMARY

The safety element must contain specific background information about fire hazards in each jurisdiction.
Instructions for this table: Indicate whether the safety element includes the specified information. If YES, indicate in the comments where that information can be found; if NO, provide recommendations to the jurisdiction regarding how best to include that information in their revised safety element.

Required Information	Yes or No	Comments and Recommendations
Are Fire Hazard Severity Zones Identified? *CAL FIRE or Locally Adopted Maps*	YES	**SE pg. 5-10.** *Fire Hazard Zones.* **SE pg. 5-11 Figure S-4.**
Is historical data on wildfires or a reference to where the data can be found, and information about wildfire hazard areas that may be available from the United States Geological Survey, included?	YES	**SE pg. 5-12.** *Historical Record of Significant Fires.*
Has the general location and distribution of existing and planned uses of land in very high fire hazard severity zones (VHFHSZs) and in state responsibility areas (SRAs), including structures, roads, utilities, and essential public facilities, been identified?	YES	**SE pg. 5-10.** **LU pg. 2-9**. **Figure LU-2.** *Open Space Framework.*
Have local, state, and federal agencies with responsibility for fire protection, including special districts and local offices of emergency services, been identified?	YES	**SE pg. 5-10.**
Are other fire protection plans, such as Community Wildfire Protection Plans, Local Hazard Mitigation Plans, CAL FIRE Unit or Contract County Fire Plans, referenced or incorporated into the Safety Element?	YES	**SE pg. 5-1**
Are residential developments in hazard areas that do not have at least two emergency evacuation routes identified?	YES	**SE pg. 5-13.** **SE pg. 5-14 Figure S-5.** *Streets Lacking Two Emergency Evacuation Routes.*
Have evacuation routes and their capacity, safety, and viability under a range of emergency scenarios been identified?	YES	**SE pg. 5-13.**

Is there any other information in the Safety Element regarding fire hazards in SRAs or VHFHSZs?

GOALS, POLICIES, OBJECTIVES, AND FEASIBLE IMPLEMENTATION MEASURES

The safety element must contain a set of goals, policies, and objectives based on the above information to protect the community from unreasonable risk of wildfire and implementation measures to accomplish those stated goals, policies, and objectives.

Instructions for this table: Critically examine the submitted safety element and determine if it is adequate to address the jurisdiction's unique fire hazard. Answer YES or NO appropriately for each question below. If the recommendation is irrelevant or unrelated to the jurisdiction's fire hazard, answer N/A. For NO, provide information in the Comments/Recommendations section to help the jurisdiction incorporate that change into their safety element revision. This information may utilize example recommendations from Sample Safety Element Recommendations and Fire Hazard Planning in Other Elements of the General Plan below, may indicate how high of a priority this recommendation is for a jurisdiction, or may include other jurisdiction-specific information or recommendations.

Section 1 Avoiding or minimizing the wildfire hazards associated with new uses of land

Questions	Yes or No	Comments and Recommendations
Does local ordinance require development standards that meet or exceed title 14, CCR, division 1.5, chapter 7, subchapter 2, articles 1-5 (commencing with section 1270) (**SRA Fire Safe Regulations**) and title 14, CCR, division 1.5, chapter 7, subchapter 3, article 3 (commencing with section 1299.01) (**Fire Hazard Reduction Around Buildings and Structures Regulations**) for SRAs and/or VHFHSZs?	YES	**SE pg. 5-15 Policy S-3.3 New Development.** **SE pg. 5-15 Policy S-3.8 Fire Department Review.** **SE pg. 5-16 Policy S-3.11 Emergency Access**.
Are there goals and policies to avoid or minimize new residential development in VHFHSZs?	YES	**SE pg. 5-15 Policy S-3.3 New Development.** **SE pg. 5-16 Policy S-3.21 Site Specific Fire Protection**.
Has fire safe design been incorporated into future development requirements?	YES	**SE pg. 5-15 Policy 3.3 New Development.** **SE pg. 5-16 Policy 3.15 Building Code**. **SE pg. 5-16 Policy 3.19 Home Hardening**.
Are new essential public facilities located outside high fire risk areas, such as VHFHSZs, when feasible?	YES	**SE pg. 5-16 Policy S-3.14 Siting of Critical Facilities and Infrastructure**.
Are there plans or actions identified to mitigate existing non-conforming development to contemporary fire safe standards, in terms of road standards and vegetative hazard?	YES	**SE pg. 5-16 Policy S-3.22 Existing Non-Conforming Development.**
Does the plan include policies to evaluate re-development after a large fire?	YES	**SE pg. 5-15 Policy S-3.1 Coordination with the Los Angeles County Fire Department.**
Is fuel modification around homes and subdivisions required for new development in SRAs or VHFHSZs?	YES	**SE pg. 5-17 Policy S-3.a.1 Fuel Modification.**
Are fire protection plans required for new development in VHFHSZs?	YES	**SE pg. S5-16 Policy-3.21 Site Specific Fire Protection**.

Questions	Yes or No	Comments and Recommendations
Does the plan address long term maintenance of fire hazard reduction projects, including community fire breaks and private road and public road clearance?	YES	**SE pg. 5-17 Policy S-3.a.2. Vegetation Management.**
Is there adequate access (ingress, egress) to new development in VHFHSZs?	YES	**SE pg. 5-15 Policy S-3.3 New Development.** **SE pg. 5-16 Policy S-3.11 Emergency Access**.
Are minimum standards for evacuation of residential areas in VHFHSZs defined?	YES	**SE pg. 5-13.** **SE pg. 5-15 Policy S-3.10 Emergency Evacuation***)* **SE pg. 5-16 Policy S-3.11 Emergency Access**.
If areas exist with inadequate access/evacuation routes, are they identified? Are mitigation measures or improvement plans identified?	YES	**SE pg. 5-13.**
Are there policies or programs promoting public outreach about defensible space or evacuation routes? Are there specific plans to reach at-risk populations?	YES	**SE pg. 5-16 Policy S-3.13 Public Education.**
Does the plan identify future water supply for fire suppression needs?	YES	**SE pg. 5-16 Policy S-3.20 Water Supply and Fire Flow**.
Does new development have adequate fire protection?	YES	**SE pg. 5-15 Policy S-3.1 Coordination with the Los Angeles County Fire Department.** **SE pg. 5-15 Policy S 3.5 Funding.**

Section 2 Develop adequate infrastructure if a new development is located in SRAs or VHFHSZs.

Does the plan identify adequate infrastructure for new development related to:	Yes or No	Comments and Recommendations
Water supply and fire flow?	YES	**SE pg. 5-16 Policy S-3.20 Water Supply and Fire Flow**.
Location of anticipated water supply?	YES	**SE pg. 5-16 Policy S-3.20 Water Supply and Fire Flow**.
Maintenance and long-term integrity of water supplies?	YES	**SE pg. 5-16 Policy S-3.20 Water Supply and Fire Flow**.
Evacuation and emergency vehicle access?	YES	**SE pg. 5-16 Policy S-3.11 Emergency Access**
Fuel modification and defensible space?	YES	**SE pg. 5-17 Policy S-3. a.1 Fuel Modification.** **SE pg. 5-17 Policy S-3. a.2. Vegetation Management.**

Does the plan identify adequate infrastructure for new development related to:	Yes or No	Comments and Recommendations
Vegetation clearance maintenance on public and private roads?	YES	**SE pg. 5-13. Fuel Modification**
Visible home and street addressing and signage?	YES	**SE pg. 5-16 Policy S-3.11 Emergency Access**.
Community fire breaks? Is there a discussion of how those fire breaks will be maintained?	YES	**SE pg. 5-13. Fuel Modification**

Section 3 Working cooperatively with public agencies responsible for fire protection.

Question	Yes or No	Comments and Recommendations
Is there a map or description of existing emergency service facilities and areas lacking service, specifically noting any areas in SRAs or VHFHSZs?	YES	**SE pg. 5-1** **MJHMP pgs. 3-18 – 3-25**
Does the plan include an assessment and projection of future emergency service needs?	YES	**SE pg. 5-15 Policy S-3.1 Coordination with the Los Angeles County Fire Department.** **SE pg. 5-15 Policy S 3.5 Funding.**
Are goals or standards for emergency services training described?	YES	**SE pg. 5-15 Policy S-3.1 Coordination with the Los Angeles County Fire Department.**
Does the plan outline inter-agency preparedness coordination and mutual aid multi-agency agreements?	YES	**SE pg. 5-21 Policy S-6.4 Mutual Aid Agreements**

Sample Safety Element Recommendations

These are examples of specific policies, objectives, or implementation measures that may be used to meet the intent of Government Code sections 65302, subdivision (g)(3) and 65302.5, subdivision (b). Safety element reviewers may make recommendations that are not included here.

A. MAPS, PLANS AND HISTORICAL INFORMATION

1. Include or reference CAL FIRE Fire Hazard Severity Zone maps or locally adopted wildfire hazard zones.
2. Include or reference the location of historical information on wildfires in the planning area.
3. Include a map or description of the location of existing and planned land uses in SRAs and VHFHSZs, particularly habitable structures, roads, utilities, and essential public facilities.
4. Identify or reference a fire plan that is relevant to the geographic scope of the general plan, including the Unit/Contract County Fire Plan, Local Hazard Mitigation Plan, and any applicable Community Wildfire Protection Plans.
5. Align the goals, policies, objectives, and implementation measures for fire hazard mitigation in the safety element with those in existing fire plans, or make plans to update fire plans to match the safety element.
6. Create a fire plan for the planning area.

B. LAND USE

1. Develop fire safe development codes to use as standards for fire protection for new development in SRAs or VHFHSZs that meet or exceed the statewide minimums in the SRA Fire Safe Regulations.
2. Adopt and have certified by the Board of Forestry and Fire Protection local ordinances which meet or exceed the minimum statewide standards in the SRA Fire Safe Regulations.
3. Identify existing development that do not meet or exceed the SRA Fire Safe Regulations or certified local ordinances.
4. Develop mitigation measures for existing development that does not meet or exceed the SRA Fire Safe Regulations or certified local ordinances or identify a policy to do so.

C. FUEL MODIFICATION

1. Develop a policy to communicate vegetation clearance requirements to seasonal, absent, or vacation rental owners.
2. Identify a policy for the ongoing maintenance of vegetation clearance on public and private roads.
3. Include fuel breaks in the layout/siting of subdivisions.
4. Identify a policy for the ongoing maintenance of existing or proposed fuel breaks.
5. Identify and/or map existing development that does not conform to current state and/or locally adopted fire safety standards for access, water supply and fire flow, signing, and vegetation clearance in SRAs or VHFHSZs.
6. Identify plans and actions for existing non-conforming development to be improved or mitigated to meet current state and/or locally adopted fire safety standards for access, water supply and fire flow, signing, and vegetation clearance.

D. ACCESS

1. Develop a policy that approval of parcel maps and tentative maps in SRAs or VHFHSZs is conditional based on meeting the SRA Fire Safe Regulations and the Fire Hazard Reduction Around Buildings and Structures Regulations, particularly those regarding road standards for ingress, egress, and fire equipment access. (See Gov. Code, § 66474.02.)
2. Develop a policy that development will be prioritized in areas with an adequate road network and associated infrastructure.
3. Identify multi-family housing, group homes, or other community housing in SRAs or VHFHSZs and develop a policy to create evacuation or shelter in place plans.
4. Include a policy to develop pre-plans for fire risk areas that address civilian evacuation and to effectively communicate those plans.
5. Identify road networks in SRAs or VHFHSZs that do not meet title 14, CCR, division 1.5, chapter 7, subchapter 2, articles 2 and 3 (commencing with section 1273.00) or certified local ordinance and develop a policy to examine possible mitigations.

E. FIRE PROTECTION

1. Develop a policy that development will be prioritized in areas with adequate water supply infrastructure.
2. Plan for the ongoing maintenance and long-term integrity of planned and existing water supply infrastructure.
3. Map existing emergency service facilities and note any areas lacking service, especially in SRAs or VHFHSZs.
4. Project future emergency service needs for the planned land uses.
5. Include information about emergency service trainings or standards and plans to meet or maintain them.
6. Include information about inter-agency preparedness coordination or mutual aid agreements.

Fire Hazard Planning in Other Elements of the General Plan

When updating the General Plan, here are some ways to incorporate fire hazard planning into other elements. Wildfire safety is best accomplished by holistic, strategic fire planning that takes advantage of opportunities to align priorities and implementation measures within and across plans.

LAND USE ELEMENT

Goals and policies include mitigation of fire hazard for future development or limit development in very high fire hazard severity zones.
Disclose wildland urban-interface hazards, including fire hazard severity zones, and/or other vulnerable areas as determined by CAL FIRE or local fire agency.
Design and locate new development to provide adequate infrastructure for the safe ingress of emergency response vehicles and simultaneously allow citizen egress during emergencies.
Describe or map any Firewise Communities or other fire safe communities as determined by the National Fire Protection Association, Fire Safe Council, or other organization.

HOUSING ELEMENT

Incorporation of current fire safe building codes.
Identify and mitigate substandard fire safe housing and neighborhoods relative to fire hazard severity zones.
Consider diverse occupancies and their effects on wildfire protection (group housing, seasonal populations, transit-dependent, etc).

OPEN SPACE AND CONSERVATION ELEMENTS

Identify critical natural resource values relative to fire hazard severity zones.
Include resource management activities to enhance protection of open space and natural resource values.
Integrate open space into fire safety planning and effectiveness.
Mitigation for unique pest, disease and other forest health issues leading to hazardous situations.

CIRCULATION ELEMENT

Provide adequate access to very high fire hazard severity zones.
Develop standards for evacuation of residential areas in very high fire hazard severity zones.
Incorporate a policy that provides for a fuel reduction maintenance program along roadways.

Las Virgenes-Malibu Council of Governments
Multi-Jurisdictional Hazard Mitigation Plan
2024

Las Virgenes-Malibu Council of Governments

Version 1.1
06/13/2024

MLC & Associates

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PART I: OVERVIEW AND MITIGATION STRATEGY ACTION PLAN

SECTION 1. INTRODUCTION

ACKNOWLEDGEMENTS

The Multi-Jurisdictional Hazard Mitigation Plan was an extensive effort that involved the efforts of multiple individuals representing all five cities within the Las Virgenes-Malibu Council of Governments. Participants in the process included:

Las Virgenes-Malibu Council of Governments Governing Board

Terry Dipple, Executive Director	Las Virgenes-Malibu Council of Governments
Eniko Gold, Mayor & Councilmember	City of Hidden Hills
Alicia Weintraub, President & Mayor	City of Calabasas
Penny Sylvester, Mayor Pro Tem & Councilmember	City of Agoura Hills
Paul Grisanti, Councilmember	City of Malibu
Kelly Honig, Mayor Pro Tem & Councilmember	City of Westlake Village

Planning Group

As part of stakeholder participation in the plan, the Planning Group below were involved in the MJHMP update process via Planning Meetings and Public Meetings. Each Planning Group further included the appropriate resources from each city as part of the planning process as necessary. Additional departments include Public Safety, Emergency Management, Emergency Services, Building and Safety, Community Services, Public Works, Information Technology, etc.

Terry Dipple, Executive Director	Las Virgenes-Malibu Council of Governments
Louis Celaya, Deputy City Manager John Treichler, Administrative Analyst	City of Agoura Hills
Michael Dyer, Director of Public Safety and Emergency Preparedness Debbie Larson, Public Safety Coordinator	City of Calabasas
Kerry Kallman, City Manager Michael Woodard, Emergency Services Coordinator	City of Hidden Hills
Susan Duenas, Public Safety Director	City of Malibu
Caleb Mott, Administrative Analyst	City of Westlake Village

Additional Stakeholders

The Risk Assessment Survey and Community Disaster Preparedness and Risk Survey were additionally distributed to the stakeholders below (via city website, newsletters, social media posts, etc.) to determine the relative risks associated with the major hazards identified in the LVMCOG region. The information was used to prioritize the threats to the region.

City	Department / Organization	
Agoura Hills	• Agoura Hills Chamber of Commerce • Community Development • Community Services	• Emergency Management • Public Safety • Public Works
Calabasas	• Calabasas Chamber of Commerce • Community Development • Community Services • Emergency Preparedness	• Information Technology • Public Safety • Public Works
Hidden Hills	• Building and Safety • Community Association • Emergency Management	• Engineering • Public Works
Malibu	• California Coastal Commission • Community Services • Emergency Preparedness • Environmental Sustainability • Housing Navigator	• Malibu Chamber of Commerce • Outreach Team • Planning • Pepperdine University • Public Works
Westlake Village	• Administrative Services • Building and Safety • Community Development • Community Services • DRT Team • Emergency Preparedness	• Engineering • Public Works • St. Joseph Center • The People Concern • Westlake Village Chamber of Commerce
Regional	• LA County Fire • LA County Planning • LA County Public Works • Las Virgenes Municipal Water District	• Metropolitan Water District • Southern California Edison (SCE) • SoCalGas (SCG)

City Outreach to Socially Vulnerable Populations

Agoura Hills Community Services Department: In Agoura Hills, the Community Services department aims to improve the quality of life for the community through diverse recreational opportunities and community involvement. The department works in conjunction with other non-profit organizations but is one of the primary sources for outreach to vulnerable populations.

Calabasas Community Development Department: In Calabasas, the community development department is responsible for the administration of the City's development process including residential, commercial, and industrial uses. Vulnerable populations indicated were sourced through the community development department and community services. Additionally, the City of Calabasas has partnered with the County of Los Angeles and other regional non-profit providers to offer a multi-disciplinary and collaborative response to homelessness. This allows the City to provide a wide variety of services to support community members who are unhoused.

Hidden Hills Community Association: The Association is comprised of a seven-member Board of Directors, all of whom are volunteers and homeowners; various committees; and on-site management staff. The association, as well as other non-profit organization, collaborate with identified vulnerable populations in terms of outreach and engagement.

Malibu Community Services Department: The Community Services Department provides programs and facilities to meet the recreation and leisure needs of the community. Additionally, the department assists in efforts to engage with the socially vulnerable. Additionally, the City currently provides funding for an Outreach Team and a Housing Navigator who work with landlords and shelter facilities throughout Los Angeles County to help people experiencing homelessness get off the streets and into housing.

Westlake Village Administrative Services Department: The Administrative Services Department is responsible for overseeing the operations, programs and planning of administrative services including finance, budget, information technology, economic development, human resources, organizational performance, and risk management. The department assisted in public outreach efforts to vulnerable populations. Additionally, the City of Westlake Village works with non-profit organizations such as The People Concern to provide comprehensive, coordinated services to homeless individuals throughout Los Angeles County and St. Joseph Center to offer outreach & Engagement, Housing, Mental Health, and Education & Vocational programs to working poor families, as well as homeless men, women, and children of all ages.

EXECUTIVE SUMMARY

The Las Virgenes-Malibu Council of Governments (LVMCOG) was established by its members under a Joint Powers Agreement to provide a vehicle for members to engage in regional and cooperative planning and coordination of government services and responsibilities. The LVMCOG also provides a regional organization for the review of federal, state and regional projects and studies which involve the use of federal, state and regional funds.

The LVMCOG is located in the northwest area of Los Angeles County and is comprised of five cities: Agoura Hills, Calabasas, Hidden Hills, Malibu, and Westlake Village. The total five city population as of the 2022 was 61,721, a 9.4% decrease from 2017).

Location	2022 Estimated Population	% of Los Angeles County
Agoura Hills	19,464	0.20%
Calabasas	22,491	0.23%
Hidden Hills	1,702	0.02%
Malibu	10,370	0.11%
Westlake Village	7,694	0.08%
LVMCOG	**61,721**	**0.63%**
Los Angeles County	9,721,138	100.00%

Table 1: LVMCOG Estimated Population by City
SOURCE: U.S. Census Bureau

Map 1: Area Map
Source: NOAA

Multi-Jurisdictional Plan

The cities within the LVMCOG experience similar hazards and have combined their efforts in order to produce a more thorough Hazard Mitigation Plan. Combining efforts, identifying common threats, and establishing regional mitigation strategies was a collaborative task that allowed mutual participation and more effective use of resources. The LVMCOG also provides a point of coordination and collaboration between its member cities as well as other cities and public agencies.

This Multi-Jurisdictional Hazard Mitigation Plan meets the requirements of the Disaster Mitigation Act of 2000. By preparing this plan, the Las Virgenes-Malibu Council of Governments is eligible for federal mitigation funding after disasters and to apply for mitigation grants before disasters strike.

Map 2: LVMCOG Cities

Los Angeles County Operational Area and Disaster Management Areas

The Los Angeles County Office of Emergency Management (OEM) was established by Chapter 2.68 of the County Code with responsibility for organizing and directing the preparedness efforts of the Emergency Management Organization of Los Angeles County. OEM responsibilities include: Planning and Coordination, Operations, Training, Technical Operations, and Public Education.

The Los Angeles County Operational Area is divided into 8 groupings (A through H):

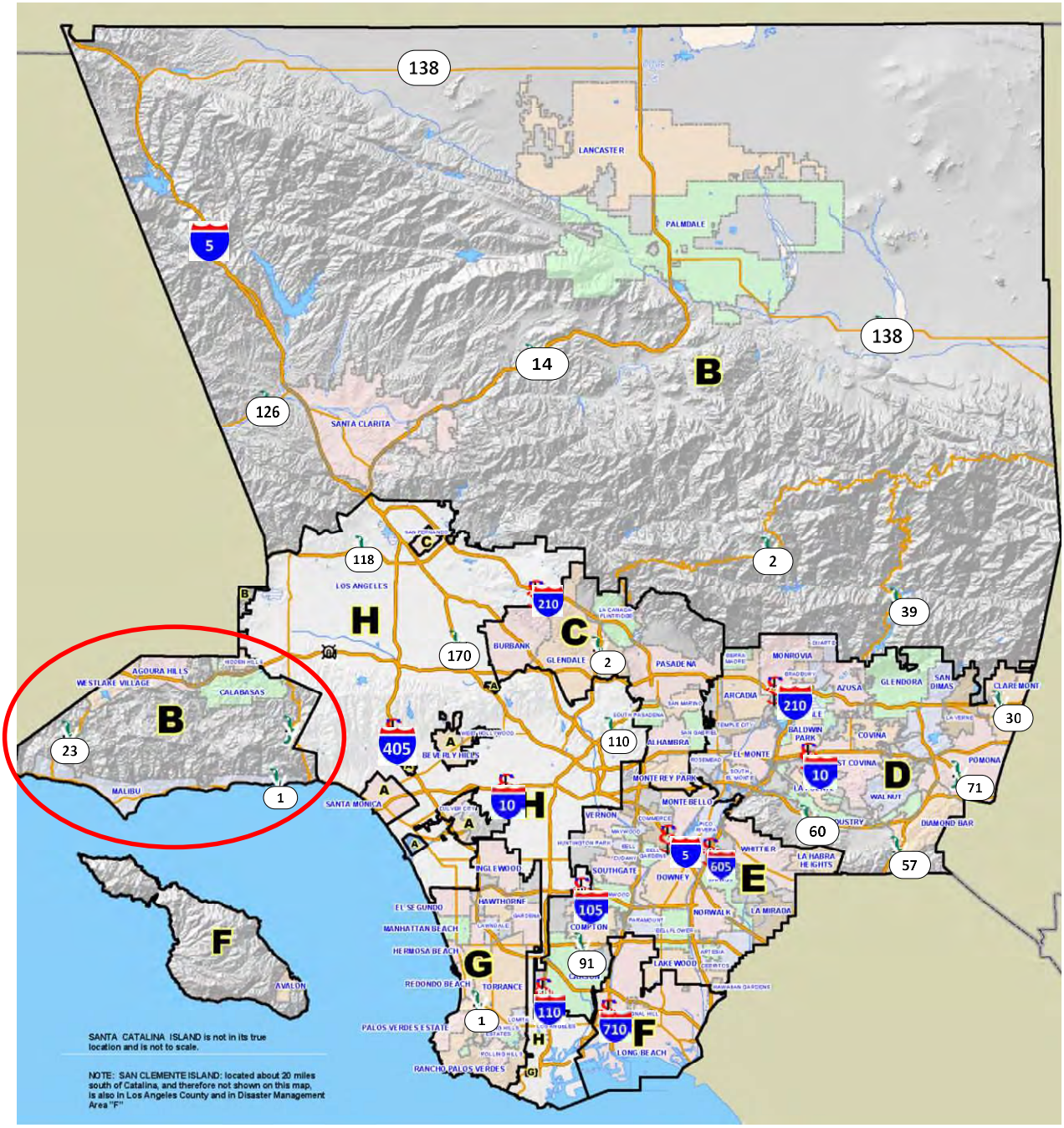
Area A	**Area D**	**Area E**	**Area F**
Beverly Hills	Arcadia	Artesia	Avalon
Culver City	Azusa	Bell	Long Beach
Santa Monica	Baldwin Park	Bell Gardens	Signal Hill
West Hollywood	Bradbury	Bellflower	
City Of Industry Carson	Claremont	Cerritos	**Area G**
	Covina	City Of Commerce	El Segundo
Area B	Diamond Bar	Compton	Gardena
Agoura Hills*	Duarte	Cudahy	Hawthorne
Calabasas*	El Monte	Downey	Hermosa Beach
Hidden Hills*	Glendora	Hawaiian Gardens	Inglewood
Lancaster	Irwindale	Huntington Park	Lawndale
Malibu*	La Puente	La Habra Heights	Lomita
Palmdale	La Verne	La Mirada	Manhattan Beach
Santa Clarita	Monrovia	Lakewood	Palos Verdes Estates
Westlake Village*	Pomona	Lynwood	Rancho Palos Verdes
	Rosemead	Maywood	Redondo Beach
Area C	San Dimas	Montebello	Rolling Hills
Alhambra	Sierra Madre	Norwalk	Rolling Hills Estates
Burbank	South El Monte	Paramount	Torrance
Glendale	Temple City	Pico Rivera	
La Canada Flintridge	Walnut	Santa Fe Springs	**Area H**
Monterey Park	West Covina	South Gate	Los Angeles
Pasadena		Vernon	
San Fernando		Whittier	
San Gabriel			
San Marino			
South Pasadena			

*LVMCOG Members highlighted in in **blue**

The Joint Powers Agreement provides for inter-agency cooperation in major natural or man-made disasters. This group meets monthly basis and is responsible for:

- Creating and updating emergency, terrorism, recovery volunteer, debris management and hazard mitigation plans
- Training for emergency and disaster preparedness for cities, residents and businesses
- Technology for communications
- Homeland Security Grants Program (management)

The five cities within the LVMCOG are an integral part of Los Angeles County Disaster Management Area B, which is comprised of the five LVMCOG cities plus Lancaster, Palmdale, and Santa Clarita. As members of Area B, the LVMCOG cities are able to incorporate County hazard mitigation and emergency response activities and programs into their local strategies. Examples include the Los Angeles County Fire Department's wildfire prevention efforts, **Community Emergency Response Team (CERT)** programs, and the **Alert LA County** emergency notification system**.**



Map 3: Los Angeles County Disaster Management Areas and LVMCOG Cities (circled)

Hazard Mitigation Plan Organization

This Hazard Mitigation Plan contains background information on the purpose and methodology used to develop the mitigation plan, a profile of the Las Virgenes-Malibu Region, sections on the identified hazards that threaten the Region as well as the associated risks, a five-year mitigation strategy action plan matrix, and supporting information contained in the Appendices. Additional section details are provided in the following sections.

Mitigation Strategy Five-Year Action Plan

The Las Virgenes-Malibu Council of Governments Multi-Jurisdictional Hazard Mitigation Action Plan includes resources and information to assist residents, public and private sector organizations, and others interested in participating in planning for hazards. The Mitigation Strategy Action Plan provides a list of activities designed to assist the LVMCOG to reduce risk and prevent losses from future hazard events. The strategies address multi-hazard issues, as well as hazard specific activities for earthquakes, wildfires, power outages, climate change/drought, flooding, landslides/mudslides, pandemics windstorms, and terrorism/mass casualty incidents.

Plan Participants

The development of the Las Virgenes-Malibu Council of Governments Multi-Jurisdictional Hazard Mitigation Plan has been a collaborative city and community effort. The planning process was facilitated by a variety of Region-wide departments along with a consulting agency, MLC & Associates. The Las Virgenes-Malibu Council of Governments Governing Board and Planning Group provided vital guidance in developing and updating the plan. Since five cities are represented, at least one representative from each city was a member of the Planning Group.

The public was invited to participate in the development and update of the plan. In addition, ongoing disaster preparedness and mitigation information is routinely provided through public notices, city websites, newsletters, cable television, and the local newspapers.

The Planning Group was chosen to provide needed feedback, guidance and approval. In addition, the Planning Group provided key information, supporting documentation, and updated the hazard ratings for the identified local area hazards. The hazard rating identified hazards according to probability, magnitude/severity, warning time and duration. The survey is provided in Annex C: Disaster Preparedness Risk Survey.

Part II of the plan contains hazard specific information. Each of the sections provides information on the background and history of the hazard, as well as the associated economic and social impacts.

Plan Mission

The Mission of the Las Virgenes-Malibu Council of Governments Multi-Jurisdictional Hazard Mitigation Plan is to promote sound public policy and programs designed to protect the public, critical facilities, infrastructure, private and public property, and the environment from natural and human generated hazards. This will be achieved by developing, implementing, and maintaining this plan to guide the Region towards creating and maintaining a safer more sustainable community.

Plan Goals

The Plan Goals describe the overall direction that the LVMCOG's' agencies, organizations, and citizens can take to minimize the impacts of hazards. The Plan Goals help to guide the direction of future activities aimed at reducing risk and preventing loss from hazards. The Plan Goals are the foundation for the broad direction of the Mission Statement and the specific recommendations that are outlined in the strategies. These goals are divided into 4 major categories:

To Protect Life, Property, Environment

- Implement activities that assist in protecting lives by making homes, businesses, infrastructure, critical facilities, and other property to be more resistant to hazards with attention to addressing the needs of the socially vulnerable community based on:
  - Socioeconomic Status
  - Household Composition and Disability
  - Minority Status & Language
  - Housing & Transportation
- Reduce losses and repetitive damages for chronic hazard events while promoting insurance coverage for catastrophic hazards.
- Encourage preventative measures for existing and new development in areas vulnerable to hazards.

Public Awareness

- Develop and implement education and outreach programs to increase public awareness of the risks associated with hazards.
- Develop and implement education and outreach programs to increase public awareness of the mitigation measures associated with hazards.
- Provide information on tools, partnership opportunities, and funding resources to assist in implementing mitigation activities.

Partnerships and Implementation

- Strengthen communication and coordinate participation among and within public agencies, citizens, non-profit organizations, business, and industry to gain a vested interest in implementation.
- Encourage leadership within public and private sector organizations to prioritize and implement local, county, and Regional hazard mitigation activities.
- Assist in the development of the Safety Element of the General Plan

Emergency Management

- Establish policy to ensure mitigation projects for critical facilities, services, and infrastructure.
- Update current ordinances, make recommendations for Region guidelines, codes, and permitting process and establish new ordinances that support mitigation.
- Strengthen emergency operations by increasing collaboration and coordination among departments, public agencies, non-profit organizations, business, and industry.
- Coordinate and integrate hazard mitigation activities, where appropriate, with emergency operations plans and procedures.

Strategy Organization

The data collection, research and the public participation process resulted in the development of the hazard mitigation strategies listed. The strategies outline activities in which each of the various cities and citizens can be engaged to reduce risk. They reflect future action to be taken in order to reduce the loss of property and life. Section 4 Hazard Mitigation Goals and Strategies provides brief descriptions of the projects and strategies developed.

Plan Implementation, Monitoring, and Evaluation

Section 5 Plan Maintenance and Monitoring details the formal process that describes how the Las Virgenes-Malibu Council of Governments Multi-Jurisdictional Hazard Mitigation Plan is maintained. The plan maintenance process included a schedule for monitoring and evaluating the plan and producing a plan revision every five years. In addition, this section also describes how the LVMCOG integrated public participation in the plan maintenance and update process.

Finally, the Plan Implementation, Monitoring, and Evaluation section includes an explanation of how the Las Virgenes-Malibu Council of Governments incorporated the mitigation strategies outlined into existing planning mechanisms such as each city's individual General Plans, Capital Improvement Plans, Building & Safety Codes and other programs, and/or plans within the cities.

Plan Adoption

In 2005, each member city of the Las Virgenes-Malibu Council of Governments adopted the original Multi-Jurisdictional Hazard Mitigation Plan. Subsequently, from 2010 to 2018 and this 2023 HMP were updated, reviewed, and adopted. These governing bodies have the authority to promote sound public policy regarding hazards.

The Executive Director of the Las Virgenes-Malibu COG was responsible for submitting the updated plan to the State Hazard Mitigation Officer at the Governor's Office of Emergency Services (Cal OES). Cal OES then submitted the updated plan to the Federal Emergency Management Agency (FEMA) for review. This review addressed the federal criteria outlined in *Title 44 CFR Emergency Management and Assistance: Part 201 – Mitigation Planning*. Upon acceptance by FEMA, Las Virgenes-Malibu Council of Governments will maintain its eligibility for Hazard Mitigation Grant Program funds.

Coordinating Body

The Planning Group was responsible for coordinating implementation of plan strategies and undertaking the formal review process. The Planning Group was also responsible for the tactical and operational tasks required to implement the Hazard Mitigation Plan.

The Planning Group routinely monitors progress with the Hazard Mitigation Plan via quarterly Area B meetings and conducts annual project reviews. Further, the Planning Group obtains updates from their respective internal city departments (e.g., Planning, Building and Safety, Finance, etc.) on the progress of their mitigation strategy projects as changes occur and/or projects are completed.

Coordination with Existing Programs

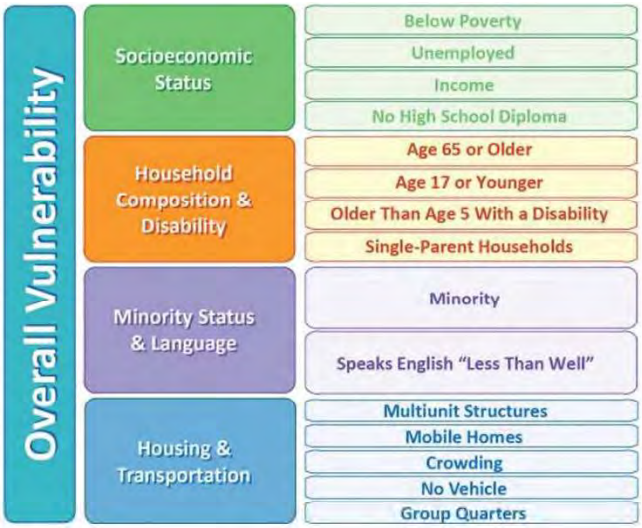
Each city within the Las Virgenes-Malibu Council of Governments address statewide planning goals and legislative requirements through their General Plans, Capital Improvement Plans, and Building & Safety Codes. This Multi-Jurisdictional Hazard Mitigation Plan provides a series of recommendations that are closely related to the goals and objectives of these existing planning programs. Each city may implement the recommended mitigation strategies through existing programs and procedures.

Considering the Needs of the Socially Vulnerable

Social vulnerability is the susceptibility of social groups to the adverse impacts of natural hazards, including disproportionate death, injury, loss, or disruption of livelihood. As a consequence, enhancing the risk component of the National Risk Index, a Social Vulnerability score and rating represent the relative level of a community's social vulnerability compared to all other communities at the same level.

A community's Social Vulnerability score measures its national rank or percentile. A higher Social Vulnerability score results in a higher Risk Index score. The overall risk score for Los Angeles County is "High".

The cities within the Las Virgenes-Malibu COG considered the needs of the socially vulnerable when developing this Multi-Jurisdictional Hazard Mitigation Plan.



Source: National Library of Medicine
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7179070/

Figure 1: Social Vulnerability Categories

Consequences of the Hazard on the Socially Vulnerable

Each city within the LVMCOG gathered information and evaluated the consequences of a major earthquake on the socially vulnerable in their communities by assessing their local populations in terms of socioeconomic status, household composition and disability, minority status and language, and housing and transportation. Each city within the LVMCOG continually assess the needs of their socially vulnerable populations. The vulnerable includes those with lower economic status, households with special needs (very young, elderly, disabled, and single parents), minorities including those with language barriers, the housing challenged as well as multi-unit, group housing, and mobile home residents, and people with special transportation needs. See Section I Introduction - Considering the Needs of the Social Vulnerable for additional details.

Major concerns included:

- Who are the socially vulnerable in each city? What are the demographics?
- What needs of the socially vulnerable can be met through hazard mitigation?
- What programs and/or financial assistance is needed and available?
- How can the cities more effectively communicate to socially vulnerable residents and others in the area specific targeted assessment and outreach efforts included:

Agoura Hills

The City of Agoura Hills conducted a public outreach meeting which took place on Zoom on 11/1/2023. Further, outreach targeting input on the socially vulnerable was solicited from local community groups and homeowner associations via public announcements, newsletters, and the Community Disaster Preparedness and Risk Survey, which was distributed across all cities. The Agoura Hills Community Services Department targeted elderly residents and those speaking languages other than English. The Public Specific input included concerns involving local transportation routes especially in terms of the evacuation of the elderly and disabled.

Agoura Hills continues to assess and evaluate the vulnerable populations within their city to incorporate their needs into the hazard mitigation plan. For example, younger and elderly residents may have special requirements for medical care, feeding, electrical power, and transportation. Those speaking languages other than English will require translation services. Lower income and homeless populations may require housing assistance and other services such as food and medical attention. The Agoura Hills Community Profile provides details local area demographics.

Calabasas

The City of Calabasas conducted a public outreach meeting which took place on Zoom on 11/7/2023. Outreach to the local community groups included input received via public meetings, the Community Disaster Preparedness and Risk Survey which was distributed across all cities, and open forums. Residents on fixed income, transitory workers, homeless, and elderly or disabled residents were targeted, routed through Calabasas Community Development and Community Services Departments. For example, the input received included concerns related to the financial burden of a disaster on the socially vulnerable.

The City of Calabasas monitors the needs of its residents including the socially vulnerable. Key areas of concern include older residents that may be on fixed incomes as well as the very young whose families may be impacted by a disaster. Further, transitory workers and those that do not speak English may require additional city resources. Therefore, the city continues to consider and incorporate the needs of the socially vulnerable into its mitigation efforts and response plans.

Hidden Hills

The City of Hidden Hills conducted a public outreach meeting which took place on Zoom on 11/9/2023. The Local residents were asked for their input via newsletters, announcements and social media. Outreach to the vulnerable community included public meetings and the Community Disaster Preparedness and Risk Survey, which was distributed across all cities. Due to the nature of the community, the major area of vulnerability and the target of this outreach included the older population, potential households with disabilities, and those with limited transportation capabilities, in coordination with Hidden Hills Community Association. The City Manager's office

and departments evaluated the impact of a disaster on these vulnerable populations and included their findings in the hazard identification process and mitigation project efforts.

Hidden Hills continues to evaluate its socially vulnerable residents who may require additional assistance to prepare for, mitigate, and respond to disasters. For example, some elderly and disabled residents are dependent on local resources including transportation assistance, electrical services to maintain home medical equipment, housekeeping and long term care,. As a consequence, the city has considered the needs of the socially vulnerable into its mitigation and planning efforts.

Malibu

The City of Malibu conducted a public outreach meeting which took place on Zoom on 10/26/2023. The targeted socially vulnerable population included transitory visitors, elderly population, and lower income residents (including homeless individuals), with assistance from the City of Malibu Community Services, Planning and Public Works Departments. Targeted efforts to obtain input from the socially vulnerable included feedback from local community groups and the socially vulnerable via the Community Disaster Preparedness and Risk Survey, which was distributed across all cities, and the public meeting. Concerns included evacuation routes and financial costs if a disaster occurs with a focus on the particular needs of the socially vulnerable.

Malibu has evaluated its local vulnerable population - including transitory visitors and the homeless who may require temporary shelter, food, and water during an emergency. Additionally, Malibu has considered the needs of its older residents who may also have lower incomes and will require assistance, including homeless individuals. Likewise as the demographics in the areas change, there may be an increase in the number of people that do not speak English as their primary language. As a consequence Malibu continues to incorporate the needs of the socially vulnerable into its mitigation and response plans. The Malibu Community Profile section provides details on local area demographics.

Westlake Village

The City of Westlake Village conducted a public outreach meeting which took place in a hybrid setting at the City Hall and on Zoom on 10/19/2023. The City Manager's Office as a member of the HMP Planning Group obtained input on the impact of a disaster on the socially vulnerable, including elderly, disabled, and residents speaking a language other than English. Additionally, the city's Administrative Services and Planning Departments assisted in public outreach efforts to the vulnerable community via the Community Disaster Preparedness and Risk Survey, local homeowner associations, and public meeting. Specific input included a concern regarding older populations and providing services during an emergency.

Westlake Village has considered the needs of the socially vulnerable into its mitigation planning and response efforts. Vulnerable populations within the city include the elderly, disabled, and younger residents. Additionally, as the demographics of the area change, an increase in the number of minority populations and those that do not speak English well has caused Westlake Village to continually adjust its plans. Further, the housing needs of lower income and fixed income residents are considered as well as those that live in mobile homes or near the reservoir.

Economic Analysis of Mitigation Projects

Determining the economic feasibility of mitigating hazards can provide decision makers with an understanding of the potential benefits and costs of an activity, as well as provide a basis upon which to compare alternative projects. The Federal Emergency Management Agency's approach to identify costs and benefits associated with hazard mitigation strategies or projects falls into two general categories: benefit-cost analysis and cost-effectiveness analysis.

Conducting a benefit-cost analysis for a mitigation activity can assist communities in determining whether a project is worth undertaking now in order to avoid disaster-related damages later. A cost-effectiveness analysis evaluates how best to spend a given amount of money to achieve a specific goal. For the purposes of this HMP, an estimate of the benefit/cost ratio was used to evaluate the relative feasibility of the mitigation projects and strategies outlined in Section 4 Hazard Mitigation Goals and Strategies.

Formal Review Process

As part of this update, the LVMCOG HMP was evaluated to determine the effectiveness of existing mitigation programs and projects as well as consider changes in land development or other changes that may have affected mitigation priorities. The Executive Director of the Las Virgenes-Malibu COG was responsible for contacting Hazard Mitigation LVMCOG Governing Board members and organizing progress reviews. Committee members were then responsible for monitoring and evaluating the progress of the mitigation strategies in the plan.

Continued Public Involvement

The Las Virgenes-Malibu Council of Governments is dedicated to involving the public directly in the continual review and updating of the Multi-Jurisdictional Hazard Mitigation Plan. Copies of the plan were made available via each city's web site. The existence and location of these copies were publicized on the city websites, social media, and through information bulletins.

PLAN DESCRIPTION

Multi-Jurisdictional Hazard Mitigation Plan

The Las Virgenes-Malibu Council of Governments (LVMCOG) is comprised of the cities of Agoura Hills, Calabasas, Hidden Hills, Malibu and Westlake Village. The LVMCOG was voluntarily established by its members under a Joint Powers Agreement to provide a vehicle for members to engage in regional and cooperative planning and coordination of government services and responsibilities. The LVMCOG also provides a local area organization for the coordination of regional projects and studies funded by federal, state, and local governments. While disasters cannot be fully prevented, their effects can be reduced through a well-organized public education and awareness effort, preparedness, mitigation, and coordinated response. In 2005, the LVMCOG chose to develop the original Multi-Jurisdictional Hazard Mitigation Plan (HMP) in order to coordinate efforts and resources. This update to the HMP is part of the ongoing renewal process.

Why Develop a Mitigation Plan?

The Robert T. Stafford Disaster Relief and Emergency Assistance Act provides the basis for federal assistance to state and local governments impacted by a disaster and outlines the requirements for mitigation planning. Hazard Mitigation is considered the first step in preparing for emergencies (rather than placing a reliance on recovery after an event). The Federal Emergency Management Agency (FEMA) requires state and local governments to update their hazard mitigation plans every 5 years. The consequences of not having an approved Local Hazard Mitigation Plan can be significant. Without it, cities are ineligible for FEMA mitigation programs including the Hazard Mitigation Grant Program and Flood Mitigation Assistance Program. More importantly, an ongoing mitigation effort is required in order for cities to obtain public assistance funding for repetitive losses (e.g., damaged facilities) following a disaster.

The Disaster Mitigation Act of 2000 (DMA 2000), Section 322 (a-d) requires that local governments maintain mitigation plans that describe the process for identifying hazards, risks and vulnerabilities, identifies and prioritizes mitigation actions, encourages the development of local mitigation, and provides technical support for those efforts as a condition of receiving federal disaster mitigation funds. This Hazard Mitigation Plan serves to meet these requirements.

Furthermore, on Oct. 5, 2018 the Disaster Recovery Reform Act of 2018 was passed into law as part of the Federal Aviation Administration Reauthorization Act of 2018. These reforms acknowledge the shared responsibility for disaster response and recovery, aim to reduce the complexity of FEMA, and build the nation's capacity for the next catastrophic event. The law contains 56 distinct provisions that require FEMA policy or regulation changes for full implementation, as they amend the Robert T. Stafford Disaster Relief and Emergency Assistance Act.

Provision Number	Description
1204-1209	Authorizes FEMA to provide hazard mitigation grant funding in areas that receive Fire Management Assistance Grants as a result of wildfire.
1210(a)-1219	Authorizes the President to waive certain duplication of benefits if waiver is in the public interest and will not result in waste, fraud, or abuse.
1220-1229	Requires FEMA to study the inter-agency expedited environmental and historical review process and provide a report to Congress.

Provision Number	Description
1230-1239	Requires FEMA to provide technical assistance "to a common interest community that provides essential services of a governmental nature" on how they may be eligible for Public Assistance in certain circumstances.
1240-1246	Requires FEMA to provide a regular report to Congress on the times and estimated amounts in which self-insurance amounts were insufficient to address flood damages.

This Multi-Jurisdictional Hazard Mitigation Plan assists the LVMCOG in reducing risk from hazards by identifying resources, information, and strategies for risk reduction, while helping to guide and coordinate mitigation activities throughout the Las Virgenes-Malibu Region. Mitigation strategies for reducing the potential losses identified in the risk assessment are outlined and are based on existing authorities, policies, programs, resources, and the ability to expand on and improve these existing tools. In summary, the information and mitigation strategies within the Hazard Mitigation Plan:

- Establish a basis for coordination and collaboration between departments and the public in the Las Virgenes-Malibu Council of Governments Region
- Identify and prioritize future mitigation projects
- Assist in meeting the requirements of federal assistance programs

Whom Does the Mitigation Plan Affect?

This Multi-Jurisdictional Hazard Mitigation Plan affects the entire Region and provides a framework for pre-emptive planning for hazards. The resources and background information in the plan are applicable area-wide, and the goals and recommendations lay the groundwork for mitigation plans and partnerships for neighboring communities.

How is the Plan Used?

Each section of the Hazard Mitigation Plan provides information and resources to assist in understanding the region and the hazard-related issues facing citizens, businesses, and the environment. The sections of the HMP combine to create a document that guides the mission to reduce risk and prevent loss from future hazard events.

Plan Update Process

The update of this plan was a collaborative effort. The process was facilitated across multiple departments along with a consulting agency, MLC & Associates. The Planning Group was composed of representatives from each city within the Las Virgenes-Malibu Council of Governments in order to facilitate the plan update process, provide feedback, and review the plan.

Various departments within the cities assisted in updating the plan. Information resources included but were not limited to: General Plans, Master Plans, SEMS Plans, reports and studies, hazard maps, and public process documentation. Participating departments included:

- Building & Safety
- City Manager
- Community Development
- Emergency Preparedness
- Planning
- Public Works
- Recreation & Parks
- LA County Fire Department
- LA County Sheriff's Department

The workflow below depicts the basic process of updating the plan. The HMP update process timeline started with a project kick-off meeting on June 1, 2023 and ended on November 30, 2023.

Additionally, the LVMCOG governing board and planning group will begin a similar update process discussed in this section 3 years into the current plan. The incumbent Las Virgenes-Malibu Council of Governments Executive Director will oversee the plan update process.

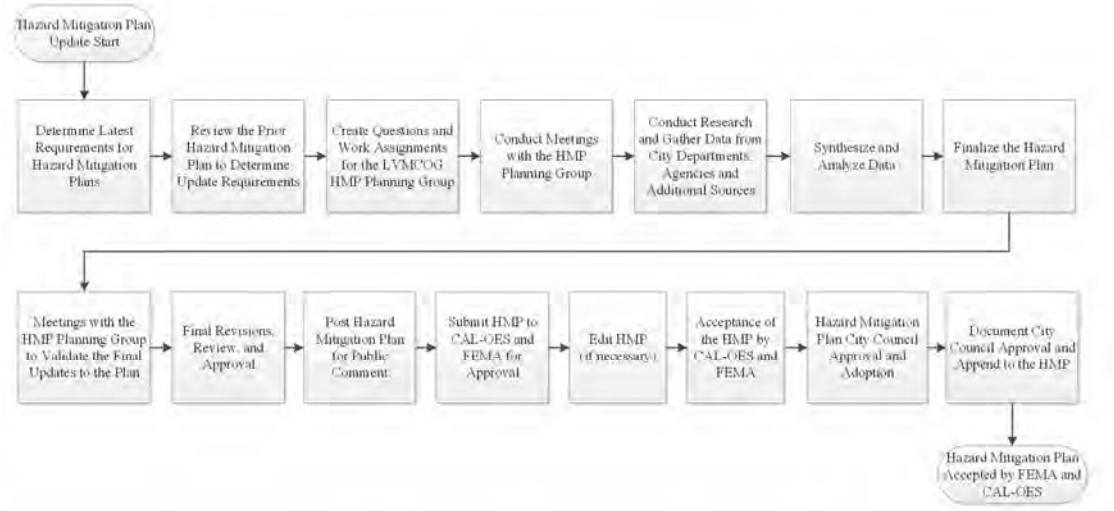


Figure 2: HMP Update Process Workflow

Plan Integration

Internal Input

The Planning Group was composed of representatives from cities within the Las Virgenes-Malibu Council of Governments and was established in order to facilitate the update to the plan, provide feedback, guidance, and approval.

The Planning Group, city staff and various other stakeholders were involved in updating the plan. This process involved meetings, discussion and individual reviews and input. The planning process included:

- Planning sessions with LVMCOG representatives
- Interviews with city Emergency Management and Disaster Preparedness personnel
- Reviews of historical disaster events in the local area
- Changes in current and future development that have increased or decreased each community's vulnerability
- A review of activities related to hazard mitigation from existing programs and city's General Plans, Capital Improvement Projects, and Development Projects

External Input

Existing mitigation plans, programs and activities from neighboring communities and from around the country were reviewed as well as current FEMA hazard mitigation planning standards and the State of California Hazard Mitigation Plan Guidance document. In addition, geographic area and hazard specific data were generated to develop scenario-based hazard maps. These resources were valuable in updating the LVMCOG Hazard Mitigation Plan (see **Annex A Resources** for source information).

Information from the sources noted above was evaluated and (when applicable) incorporated into the plan. In addition, the information gathered served as a basis for the strategy sessions that were conducted to document ongoing and future mitigation activities.

OVERALL CHANGES IN PRIORITY

Agoura Hills

For Agoura Hills, the priority of overall mitigation actions for specific hazards has remained unchanged since the 2018 Multi-Jurisdictional Hazard Mitigation Plan (MJHMP). This is because there has been no emergence of new hazards or risks that were not previously present in the city. Although Pandemic was included as a potential hazard in the updated plan, it does not alter the priority of overall mitigation actions identified by the city.

Calabasas

For Calabasas, the priority of overall mitigation actions for specific hazards has remained unchanged since the 2018 Multi-Jurisdictional Hazard Mitigation Plan (MJHMP). This is because there has been no emergence of new hazards or risks that were not previously present in the city. Although Pandemic was included as a potential hazard in the updated plan, it does not alter the priority of overall mitigation actions identified by the city.

Hidden Hills

For Hidden Hills, the priority of overall mitigation actions for specific hazards has remained unchanged since the 2018 Multi-Jurisdictional Hazard Mitigation Plan (MJHMP). This is because there has been no emergence of new hazards or risks that were not previously present in the city. Although Pandemic was included as a potential hazard in the updated plan, it does not alter the priority of overall mitigation actions identified by the city.

Malibu

For Malibu, the priority of overall mitigation actions for specific hazards has remained unchanged since the 2018 Multi-Jurisdictional Hazard Mitigation Plan (MJHMP). This is because there has been no emergence of new hazards or risks that were not previously present in the city. Although Pandemic was included as a potential hazard in the updated plan, it does not alter the priority of overall mitigation actions identified by the city.

Westlake Village

For Westlake Village, the priority of overall mitigation actions for specific hazards has remained unchanged since the 2018 Multi-Jurisdictional Hazard Mitigation Plan (MJHMP). This is because there has been no emergence of new hazards or risks that were not previously present in the city. Although Pandemic was included as a potential hazard in the updated plan, it does not alter the priority of overall mitigation actions identified by the city.

REQUIREMENTS FOR MITIGATION PLANS

Federal and State Requirements

The following Federal requirements must be met for approval of a Hazard Mitigation Plan:

- Open public involvement, with public meetings that introduce the process and project requirements
- The public must be afforded opportunities for involvement in: identifying and assessing risk, drafting a plan, and public involvement in approval stages of the plan
- Community cooperation, with opportunity for other local government agencies, the business community, educational institutions, and non-profits to participate in the process
- Incorporation of local documents, including General Plans, Zoning Ordinances, Building Codes, and other pertinent city and regional documents

The following components must be part of the planning process:

- Complete documentation of the planning process
- A detailed risk assessment on hazard exposures in the community
- A comprehensive mitigation strategy, which describes the goals & objectives, including proposed strategies, programs & actions to avoid long-term vulnerabilities
- A plan maintenance process, which describes the method and schedule of monitoring, evaluating and updating the plan and integration of the All Hazard Mitigation Plan into other planning mechanisms
- Plan Review by Cal OES and FEMA
- Formal adoption by each City Council

Public and Community Process

Public participation is a key component of strategic planning processes. Citizen participation offers stakeholders in the community the opportunity for inclusion of their interests and concerns into the process. The Federal Emergency Management Agency requires public input during the development of local hazard mitigation plans.

During the HMP development and update process, the public was invited to participate. Information was provided on city websites, newsletters, cable television stations, and the local newspapers. Examples are provided in **Annex E Planning and Public Involvement**. Furthermore, the public and community are continually encouraged to participate in the disaster preparation, mitigation planning, and HMP update process via ongoing public awareness campaigns, workshops, CERT programs, surveys, and other community forums (see Section 4 Hazard Mitigation Goals and Strategies and **Section 5 Plan Maintenance and Monitoring** for additional details).

HAZARD MITIGATION PLAN ORGANIZATION

The Hazard Mitigation Plan is organized as follows:

PART I: OVERVIEW AND MITIGATION STRATEGY ACTION PLAN

Section 1: Introduction
The Introduction provides an overview of the Hazard Mitigation Plan Mission, Goals, and Strategies. In addition, this section outlines the process used to develop the goals and strategies that cut across the nine hazards addressed in the Hazard Mitigation Plan. Finally, this section describes the background and purpose of developing the Hazard Mitigation Plan and the planning process.

Section 2: Community Profile
The Community Profile section presents the history, geography, demographics, and socio-economics of Las Virgenes-Malibu Region. It serves as a tool to provide a historical perspective of hazards in the area, potential impacts, and identifies at risk populations.

Section 3: Risk Assessment
The Risk Assessment section provides information on hazard identification, vulnerability, and risk associated with hazards in Las Virgenes-Malibu Region.

Section 4: Multi-Hazard Goals and Strategies
The Multi-Hazard Goals and Strategies section describes the mitigation strategies developed for the HMP. The strategies address multi-hazard issues, as well as hazard-specific activities that can be implemented to reduce risk and prevent loss from future events.

Section 5: Plan Maintenance and Monitoring
The Plan Maintenance section provides information on plan implementation, monitoring and evaluation.

PART II: HAZARD SPECIFIC INFORMATION

Part II provides hazard specific Information on the nine hazards addressed in the HMP. Continuing hazards occur on an ongoing and/or seasonal basis and may be predicted through historic evidence and scientific methods. Each of the hazard-specific sections includes information on the history, hazard causes and characteristics, hazard assessment, mitigation goals and strategies. Continuing hazards addressed in the plan include:

Section 6: Earthquake
Section 7: Wildfire
Section 8: Climate Change
Section 9: Energy Disruption
Section 10: Landslide, Debris Flow, and Mudslide
Section 11: Windstorm
Section 12: Flood
Section 13: Tsunami
Section 14: Severe Winter Storm
Section 15: Pandemic
Section 16: Terrorism and Mass Violence

PART III: ANNEXES

The Annexes includes references to the information used to gather data and conduct analytical research to assemble the Las Virgenes-Malibu COG Hazard Mitigation Plan. The Resources section also includes a description of the tools used to develop the plan as well as documentation of the meetings, discussions and events that were involved in the planning process.

Annex A: Resources

This section provides a list of resources for Regional, County, State, and Federal agencies and organizations that may be referenced directly and indirectly within the Las Virgenes-Malibu COG Hazard Mitigation Plan.

Annex B: Meeting Agendas and Attendees

This section provides key meeting agendas related to mitigation planning and the 2018 Multi-Jurisdictional Hazard Mitigation Plan update.

Annex C: Community Disaster Preparedness and Risk Survey

This section includes the survey by which community members rated their preparedness for disasters and risk ratings of the identified hazards.

Annex D: Planning Group Hazard Rating Survey

This survey was provided to the Planning Group to rate the Las Virgenes-Malibu COG Region hazards.

Annex E: Planning and Public Involvement

This section provides a description of public involvement activities including meetings and other public outreach efforts related to the Hazards Mitigation Plan update.

Annex F: Flood Insurance Rate Maps

This section provides Flood Insurance Rate Maps (FIRM) for selected areas within the LVMCOG area. These maps depict areas subject to flooding and are used for planning purposes.

Annex G: Malibu Flood Mitigation Plan

This section includes the Hazard Mitigation Plan prepared for the City of Malibu in May of 2001 (and still in use) by David Evens and Associates.

Annex H: Plan Approval Documentation

This section provides a copy of Plan Approval documents related to the Las Virgenes- Malibu COG Hazard Mitigation Plan.

SECTION 2. COMMUNITY PROFILE

INTRODUCTION

Hazards impact the region's citizens, property, environment, and economy. In addition to the potential loss of life and property, residents and businesses are subject to the financial and emotional costs of recovering from disasters.

Identifying population groups and the risks posed by hazards provides the basis for implementing strategies to reduce potential impacts; thereby protecting the lives and property of citizens and communities. The result is the development and implementation of strategies, coordination of resources, and increased public awareness that will reduce risk and prevent loss from future hazard events.

This section of the Hazard Mitigation Plan provides an overview of the Las Virgenes-Malibu Council of Governments (LVMCOG) region as well as the individual cities that comprise the LVMCOG. City specific profiles contained within this section provide brief summaries of the vulnerable populations, structures, and economic base of each community.

POPULATION

According to 2022 Census data, the population of the five cities in the Las Virgenes-Malibu Council of Governments region totaled 61,721. Within the region, Calabasas represents the largest population closely followed by Agoura Hills. Over the past 5 years, Los Angeles County has seen a decline (-4.4%) in population. Consequently, within the LVMCOG region, there has been a decrease (-9.4%) in population through the period from 2017 to 2022. The population levels of individual cities within the area also declined since 2017. Due to terrain restrictions, designated parks and reserves, and local planning/zoning requirements, local populations are centered along the Ventura 101 Freeway and Pacific Coast Highway (see Population Density Map on the following page).

Las Virgenes-Malibu Population Data				
Location	**2022 Estimated Population**	**% of Los Angeles County**	**2017 Population**	**% Change from 2017 to 2022**
Agoura Hills	19,464	0.20%	20,692	-5.9%
Calabasas	22,491	0.23%	24,202	-7.1%
Hidden Hills	1,702	0.02%	1,921	-11.4%
Malibu	10,370	0.11%	12,877	-19.5%
Westlake Village	7,694	0.08%	8,440	-8.8%
LVMCOG	**61,721**	**0.63%**	**68,132**	**-9.4%**
Los Angeles County	9,721,138	100.00%	10,163,507	-4.4%

Table 2: Las Virgenes-Malibu 2022 Estimated Population Data

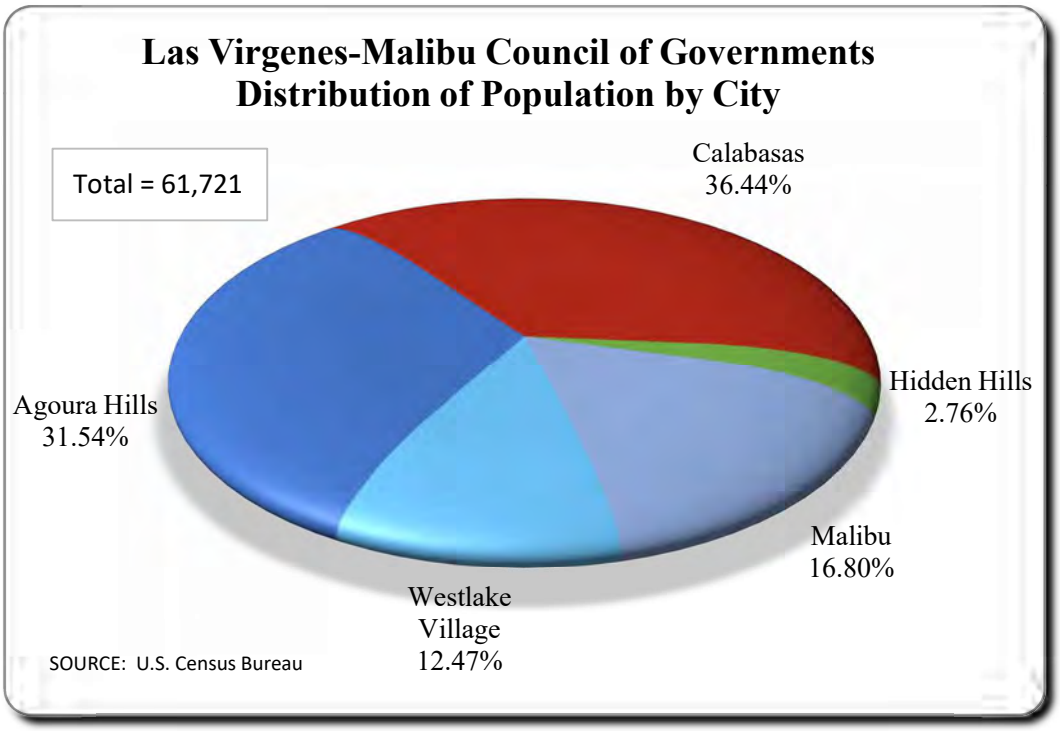
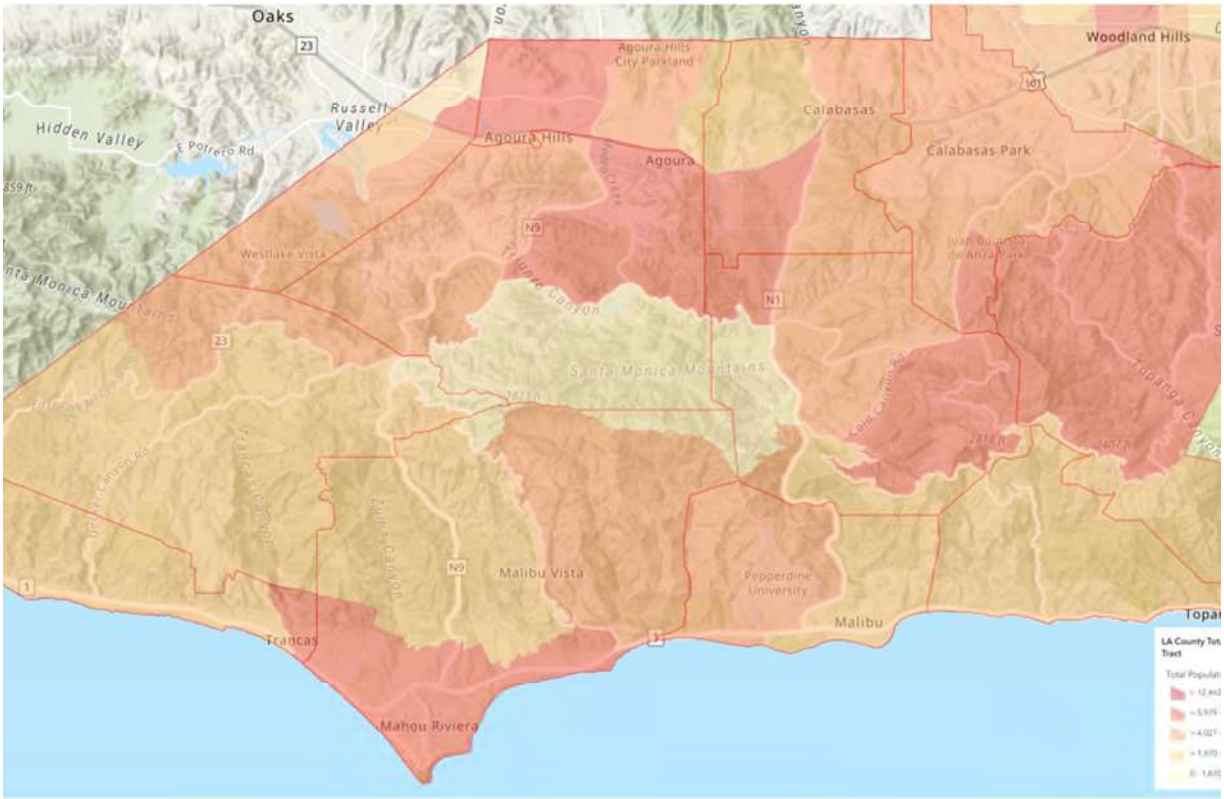


Figure 3: LVMCOG Population Distribution by City



Map 4: Population Density

GEOGRAPHY AND THE ENVIRONMENT

The Las Virgenes-Malibu region is comprised of approximately 129.62 square miles (Source: Los Angeles Almanac). The area is partially urbanized and includes populated areas and business centers (particularly along major transportation routes). Nevertheless, large portions of the area are undeveloped wild land. In addition, the region is home to the Santa Monica National Recreation Area (154,095 acres) and Malibu Creek State Park which is comprised of: Liberty Canyon (730 acres), Udell Gorge (300 acres), and Kaslow Preserve (1,920 acres).

The geography includes mountainous terrain as well as small rivers and seasonal waterways (depending on rainfall). The climate is Mediterranean characterized by warm to hot, dry summers and mild to cool, wet winters. Summer temperatures in the cities of Agoura Hills, Calabasas, Hidden Hills and Westlake Village can reach into the high 90's. Malibu lies along the Pacific coast and is bordered to its north by the Santa Monica Mountains. As a result, average temperatures in Malibu are approximately 10 degrees cooler in the summer than the other cities within the LVMCOG (see **CLIMATE** section for additional details).

Map 5: Las Virgenes-Malibu Council of Governments Region Map

The region's transportation system consists of a grid of local streets, arterials, and other lesser thoroughfares. Regional access to Agoura Hills, Calabasas, Hidden Hills, and Westlake Village area is provided primarily through the Ventura Freeway (US Highway 101). Access to Malibu is primarily via Pacific Coast Highway (California State Route 1 aka Highway 1) and through local roads that provide connector routes to the inland cities of the LVMCOG. Connector routes include Las Virgenes Road/Malibu Canyon Road, Topanga Canyon Boulevard (SR 27), Decker Canyon Road (SR 23), Mulholland Highway, Latigo Canyon Road, and Kanan Dume Road. These roads traverse the mountains and designated wilderness areas such as Malibu Creek State Park, Topanga State Park, and the Santa Monica Mountains National Recreation Area.

CLIMATE

Temperature

The Las Virgenes-Malibu region is characterized by warm to hot dry summers and mild to cool wet winters typical of a Mediterranean climate.

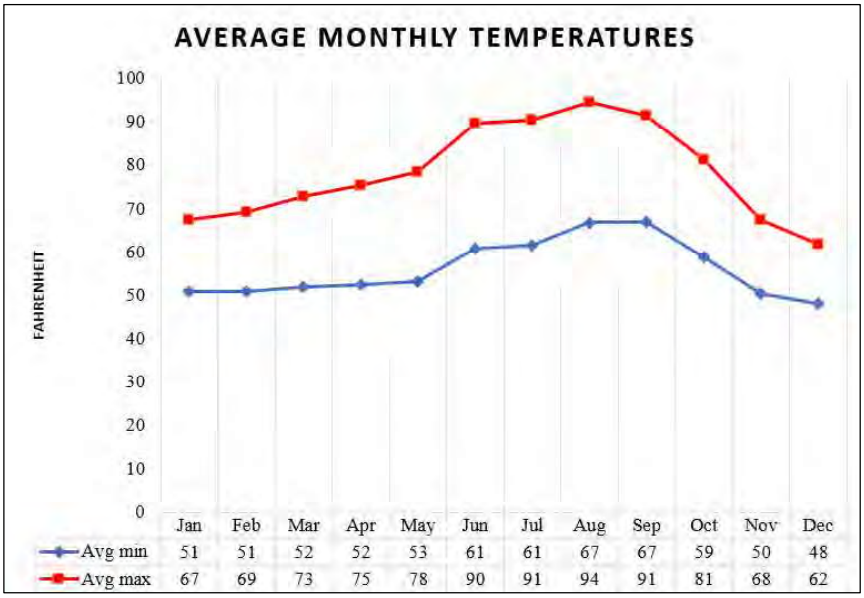


Figure 4: Average Temperature by Month (2022)

The average high in the summer is typically in the low to mid 90's. Average lows in the winter months range from the high 40's to low 50 degrees Fahrenheit.

August tends to be the hottest month and December tends to be the coldest month. However, it should be noted that temperatures can vary over a wide range.

For example, Santa Ana winds typically occur in late fall and early winter. The Santa Ana winds are characterized by strong dry offshore winds originating from the Great Basin and Upper Mojave Desert.

Wind temperatures can range from extremely hot to cold. Damage can occur directly from the high wind speeds generated or from the secondary effects of very low humidity – which increases the threat of wildfires.

Figure 5: Santa Ana Winds (Feb 2002)

SOURCE: NASA/JPL-Caltech)

Rainfall

Rainfall in the LVMCOG region averaged nearly 6 inches in 2022. However, the term "average rainfall" is misleading because over the recorded history of rainfall in the region, rainfall amounts have ranged from no rain at all in some years to well over normal averages in very wet years. Furthermore, actual rainfall in Southern California tends to fall in large amounts during sporadic and often heavy storms rather than in consistent amounts throughout the year.

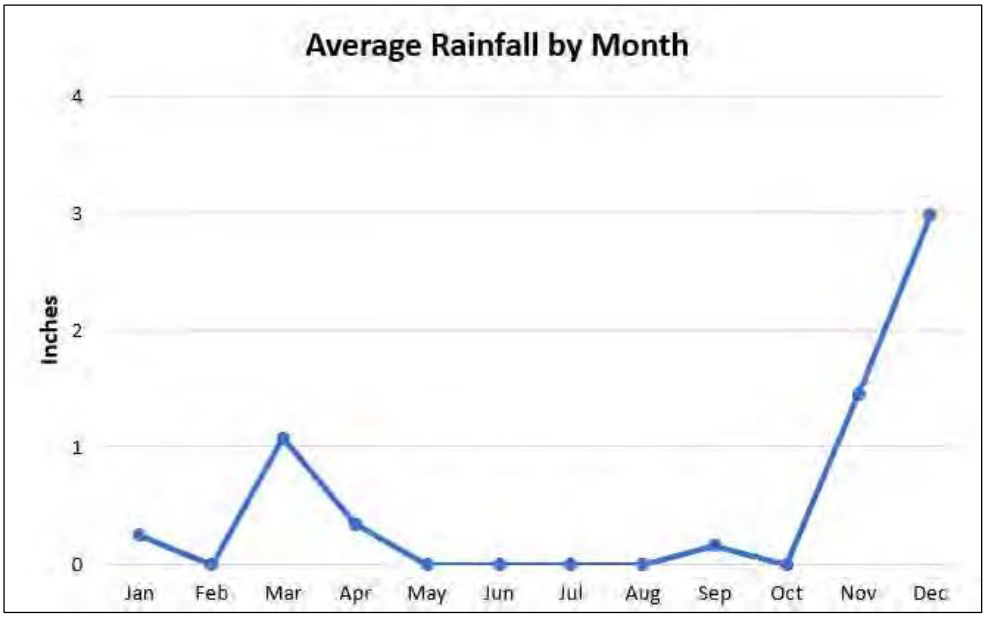


Figure 6: Average Rainfall by Month (2022)

El Niño and La Niña

Periodically, Southern California and the LVMCOG region are subject to the effects of El Niño or La Niña conditions:

- El Niño is characterized by unusually warm ocean temperatures in the Equatorial Pacific resulting in increased rainfall in the southern tier of the U.S. El Niño conditions can result in flooding, mudslides, and traffic disruptions in the LVMCOG region.
- La Niña is characterized by unusually cold ocean temperatures in the Equatorial Pacific resulting in decreased rainfall in the southern tier of the U.S. La Niña conditions can result in drought and increased danger from wildfires.

LAW ENFORCEMENT AND FIRE RESOURCES

The Las Virgenes-Malibu COG region is part of Los Angeles County. The five cities contract for essential services such as law enforcement with the Los Angeles County Sheriff and fire resources through the Consolidated Fire Protection District of Los Angeles County.

Los Angeles County Sheriff's Department

The cities within the Las Virgenes-Malibu COG individually contract their law enforcement services with the Los Angeles County Sheriff's Department. The Malibu/Lost Hills Station provides immediate access and is located at 27050 Agoura Road, Calabasas, CA 91301. This station serves the western portion of Los Angeles County, which is a blend of semi-urban, residential, and rural areas, encompassing both mountain and beach topographies.

The cities served by the Malibu/Lost Hills Station include Agoura Hills, Calabasas, Hidden Hills, Malibu, and Westlake Village as well as the unincorporated communities[1] of Chatsworth Lake Manor, Malibu Lake, Topanga, and West Hills. The station's jurisdiction is sectioned into 27 areas.

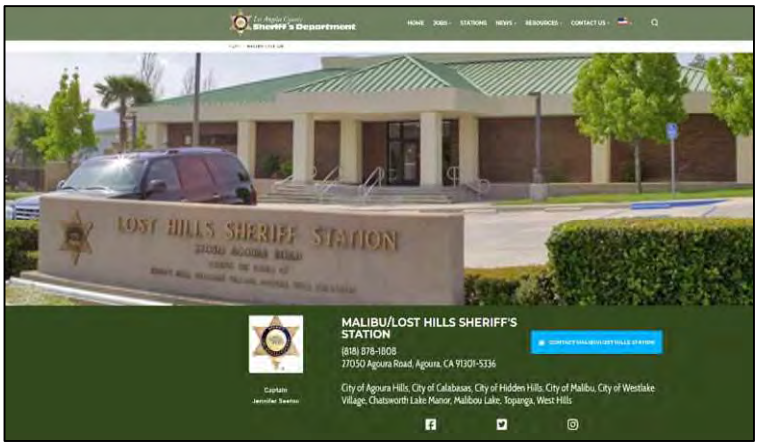


Figure 7: Malibu/Lost Hills Sheriff Web Page

LASD personnel that serve the Malibu region are stationed at the Malibu Substation located at 23555 Civic Center Way, Malibu, CA 90265. While the substation is equipped with an EOC, in most emergency situations, emergency operations will operate out of the Lost Hills Station.

Map 6: LASD Malibu/Lost Hills Station Location

[1] Information obtained from the Los Angeles County Sheriff's Department

The Malibu/Lost Hills Station has comprehensive Fire, Flood and Earthquake Operation Plans. The plans identify evacuation shelters, secondary evacuation shelters, command post sites, multi-purpose staging areas, and alternate traffics routes. In addition, the Malibu/Lost Hills Station has implemented a process for prioritizing critical facilities assessments. This process ranks locations in the following order:

1. "A" priorities must be checked immediately
2. "B" priorities must be checked immediately if children are present, otherwise as time permits
3. "C" priorities must be checked as time permits

Critical facilities identified by the Malibu/Lost Hills Station are noted in **Section 3**.

Los Angeles County Fire Department

Agoura Hills, Calabasas, Hidden Hills, Malibu and Westlake Village are served by the Los Angeles County Fire Department. The Las Virgenes-Malibu COG is located in Division VII – Central Region of the Los Angeles County Fire Department's Regional Plan Divisions. Battalions 1 and 5 of the Los Angeles County Fire Department are assigned to directly serve the Las Virgenes-Malibu region. Battalion 5 is the main division since its stations are located within the region itself. The Local LA County Fire Department Division Headquarters are located at 3970 Carbon Canyon Rd., Malibu 90265.

BATTALION 5	
Fire Station #65	4206 N Cornell Rd, Agoura, 91301
Fire Station #67	25801 Piuma Rd, Calabasas, 91302
Fire Station #68	24130 Calabasas Rd, Calabasas, 91302
Fire Station #69	401 S Topanga Cyn Blvd, Topanga, 90290
Fire Station #70 - Headquarters	3970 Carbon Cyn Rd, Malibu, 90265
Fire Station #71	28722 W Pacific Coast Hwy, Malibu, 90265
Fire Station #72	1832 Decker Canyon Rd, Malibu, 90265
Fire Station #88	23720 W Malibu Rd, Malibu, 90265
Fire Station #89	29575 Canwood St., Agoura Hills, 91301
Fire Station #99	32550 Pacific Coast Hwy, Malibu, 90265
Fire Station #125	5215 Las Virgenes Rd, Calabasas, 91302
Fire Station #144	31981 Foxfield Dr, Westlake Village, 91361

Table 3: LVMCOG Los Angeles County Fire Stations

Fire Station #89

The Los Angeles County Fire Department's first fire station in Agoura Hills, Fire Station 89, opened in June of 2006. This fire station was a joint venture between the County of Los Angeles and the City of Agoura Hills and is an example of interagency efforts working for better emergency management.

Fire Station 89 is located on a 3-acre lot at 29575 Canwood Street, a quarter mile west of Kanan Road. The state of the art 12,000 sq. ft. building houses one engine company, a paramedic squad, Battalion Chief's office, training facilities and dormitory quarters for 10 fire and emergency personnel. The cost of this new fire station was approximately $4 million and was paid for through developer fees. The new fire station improves coverage and response times for not only Agoura Hills, but also the entire Las Virgenes-Malibu Region.

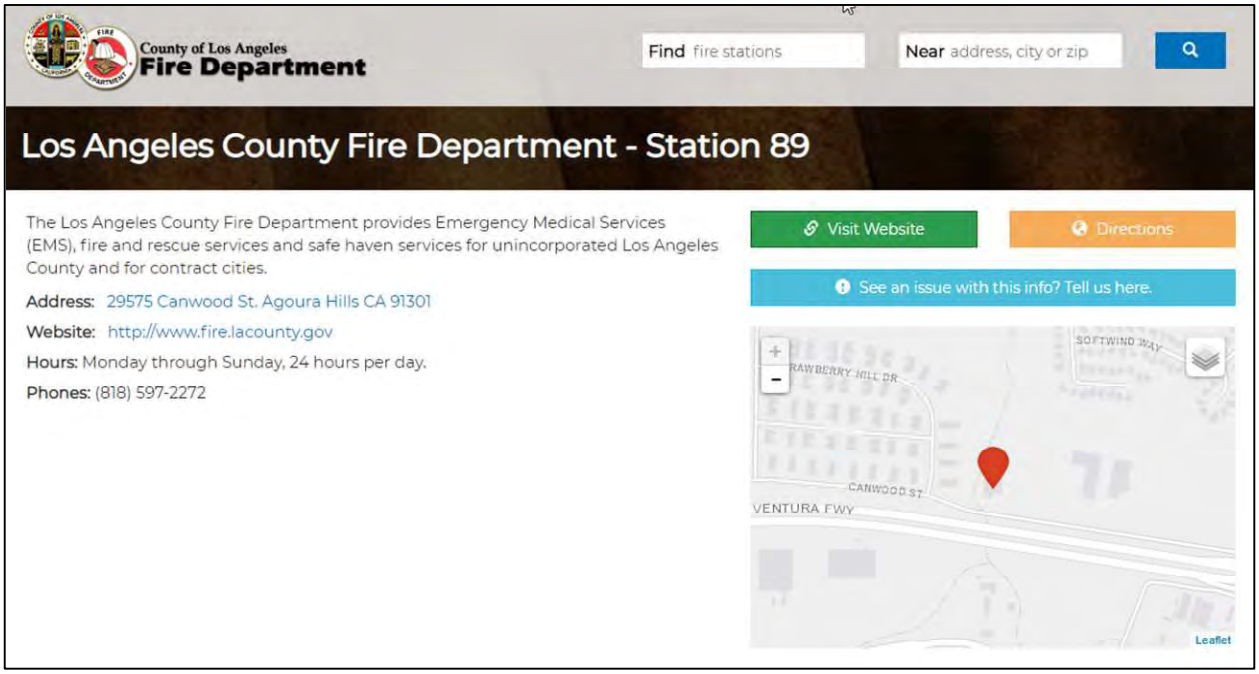


Figure 8: Los Angeles County Fire Station #89 Web Page

MULTI-REGIONAL COLLABORATION

Calabasas Community Center

The cities in the Las Virgenes-Malibu COG often combine resources and work together to create more productive communities. One such example was the joint venture of the cities of Calabasas and Agoura Hills to build the Calabasas Community Center. This is a state-of-the-art recreational facility that offers a variety of recreational, social, cultural, and educational programs and activities to meet the needs of the surrounding communities. This endeavor is a prime example of how communities can come together in order to offer residents a more livable community. Furthermore, in the event of an emergency, facilities such as the Calabasas Community Center are valuable resources that can be used to support the local population.

Note: As of October 2023, this facility is temporarily closed for remodeling and is expected to re-open early 2024. The facility will re-open with all new fitness programs, enrichment classes, facility rentals, special events, and additional facility improvements / renovations.

Figure 9: Calabasas Community Center Web Page

Community Emergency Response Training

The cities in the Las Virgenes-Malibu COG make available Community Emergency Response Training (CERT) programs to their residents as well as residents of neighboring communities. This CERT effort facilitates the concept of joint cooperation to create safer communities.

Alert LA County

The cities in the Las Virgenes-Malibu COG participate in the Los Angeles County Office of Emergency Management (OEM) Alert LA County program. Alert LA County is a free mass notification system for Los Angeles County residents and businesses. The Sheriff's Department uses Alert LA County to contact local residents and businesses if there is an emergency or disaster in a community. The system sends shelter-in-place instructions, evacuation, and other emergency messages. It has accessibility features for people with disabilities and others with access and functional needs as well as preferred language for notifications.

Figure 10: Alert LA County Program

OARRS

The cities in the Las Virgenes-Malibu COG participate in the Los Angeles County Office of Emergency Management (OEM) Operational Area Response and Recovery System (OARRS) which is designed to provide:

- Remote system access in the Operational Area;
- Interface with the State of California's Response Information Management System;
- Interface with the County's Enterprise Geographic Information System;
- Facilitation of emergency response activities, multi-jurisdictional and multidisciplinary response and recovery coordination, and information flow;
- Support for multi-disciplinary and multi-jurisdiction plans and exercises;
- System of communication and information management that links County departments, cities, schools, and special districts;
- Custom reporting; and
- Secure emergency information and data sharing.

DETAILS BY CITY

The remainder of this section provides detailed descriptions of each of the five cities within the Las Virgenes-Malibu Council of Governments. The information included outlines each city and provides a basic history, location, climate and topographical information, demographics, social makeup, employment figures, major employers, and housing data. An understanding of each of these categories is important for addressing the needs of the local community.

Cities are displayed in alphabetical order.

- Agoura Hills
- Calabasas
- Hidden Hills
- Malibu
- Westlake Village

AGOURA HILLS

Agoura Hills is located in the foothills of the Santa Monica Mountains on the western edge of Los Angeles County in the Conejo Valley. Agoura Hills encompasses 7.79 square miles and straddles the Ventura Freeway approximately 36 miles west of downtown Los Angeles. In the 1950's the availability of a reliable water supply caused the area to transform from a semi-rural ranching community to greater residential and commercial development.

Today, Agoura Hills is characterized by rolling hills and a blend of semi-rural and suburban development. The total population of Agoura Hills is comprised of approximately 20,362 people (2021 U.S. American Community Survey 5-Year Estimate).

Figure 11: City of Agoura Hills Aerial View

Source: Google Maps

Agoura Hills is located in the eastern Conejo Valley between the Simi Hills to the north and the Santa Monica Mountains to the south. The City ranges in altitude from 936 feet to 2,036 feet above sea level.

General Coordinates	
Latitude	34°8'42''North
Longitude	118°46'40''West

Source: 2016 SCAG City Boundary Data

Map 7: City of Agoura Hills Location Map

Brief History

The area around what is today the City of Agoura Hills was a popular resting place along the Camino Real, the original road connecting the Spanish missions from San Diego to San Francisco. Ranching was the area's dominant industry from the arrival of the Spanish in the late 18th century until the early 20th century.

In the 1920's Paramount Studios purchased a portion of the Rancho Las Virgenes, just south of what is now the City of Agoura Hills and established a film studio. In the late 1920's a group of residents asked to have a permanent post office established in the area, and the name "Agoura" was given.

Figure 12: Reyes Adobe

Growth and development was slow due in part to a lack of a significant water source. In the late 1950's, the Las Virgenes Municipal Water District was established, and reliable water sources made the Agoura area more attractive for families and businesses. Concurrently with the availability of water, further growth occurred when the local highway became part of the Ventura Freeway.

During the late 1960's and the 1970's, expansion continued as large housing tracts and shopping areas, as well as schools, developed. In 1982, residents voted in favor of cityhood, and on December 8, 1982 Agoura Hills became the 83rd city in Los Angeles County.

Figure 13: City of Agoura Hills Local Area Views

Climate /Topography

The climate in Agoura Hills is characterized by mild winters with average temperatures in 2022 ranging from the high 40's to the high 60's, and warm summers with average temperatures ranging from the low 60's to the mid 90's. Rainfall in 2022 was approximately 6 inches, with the greatest portion of precipitation occurring in the winter months.

Category	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average Temperature (°F)	59.6	60.3	62.6	64.4	66.7	76.4	77.1	81.6	79.8	70.7	59.4	55
Min Average Temperature (°F)	52.6	52.3	52.8	52.9	53.5	61.3	62	67.7	67.6	59.4	51.9	49.1
Max Average Temperature (°F)	66.5	68.2	72.5	75.8	79.8	91.5	92.1	95.5	92	82	67	61
Average Rainfall (inches)	0.25	0	1.07	0.34	0	0	0	0	0.16	0	1.45	2.98

Source: Weather.gov (NOAA)

Table 4: City of Agoura Hills Average Monthly Temperatures and Rainfall (2022)

Economic Activity

Economic activity is one indicator of the potential losses that may be incurred in the event of a disaster. The following tables list the principal employers, property tax payers, and taxable sales in Agoura Hills.

Agoura Hills Principal Employers

Company	Industry	Employees	Percent of Total City Employment
Las Virgenes Unified School District*	Government	524	4.72%
National Veterinary Associates, Inc	Veterinary	347	3.13%
Westlake Financial Services	Banking	320	2.88%
Private National Mortgage Acceptance	Banking	309	2.78%
Teradyne Inc	Manufacturing	210	1.89%
Motor Vehicle Software Corp	Technology	170	1.53%
Joni and Friends	Non-Profit	163	1.47%
Curinos LLC	Information	150	1.35%
Cydcor LLC	Administrative	141	1.27%
Wood Ranch	Restaurant	133	1.20%
Top 10 Total		**2,467**	**22.23%**
Total City of Agoura Hills Employment		**11,100**	**100.00%**

Source: Comprehensive Annual Financial Report for the City of Agoura Hills, Fiscal Year Ended June 2022
**Employee count is based on Agoura Hills school sites only*

Table 5: City of Agoura Hills Principal Employers

Agoura Hills Principal Property Tax Payers

Company	Taxable Assessed Value	Percent of Total City Assessed Value
Tishman Speyer Archstone Smith	$133,134,314	2.31%
Lexington Agoura Hills LLC	59,038,283	1.02%
Kids from the Valley V LLC	55,636,335	0.96%
Khanna Enterprises LP	47,308,329	0.82%
FW CA Twin Oaks Shopping Center	34,106,081	0.59%
ARHC MAGHCA01 LLC	33,509,582	0.58%
Whizin Market Square LLC	32,581,045	0.56%
Hankey Investment Company LP	29,972,457	0.52%
Best Agoura Design Center LLC	26,056,527	0.45%
Apple Seven Hospitality	25,609,729	0.44%
Top 10 Total	**$476,952,682**	**8.26%**
Total Property Tax Assessed Value	**$5,774,285,394**	**100%**

Source: Comprehensive Annual Financial Report for the City of Agoura Hills, Fiscal Year Ended June 2022

Table 6: City of Agoura Hills Principal Property Tax Payers

Agoura Hills Taxable Sales (2021)

Category	Taxable Sales (in thousands)	Percent of Total
Autos and Transportation	$364	8.80%
Building and Construction	252	6.09%
Business and Industry	586	14.16%
Food and Drugs	277	6.69%
Fuel and Service Stations	842	20.35%
General Consumer Goods*	1,034	24.99%
Restaurants and Hotels	783	18.92%
Total	**$4,138**	**100.00%**

Source: Comprehensive Annual Financial Report for the City of Agoura Hills, Fiscal Year Ended June 2022
**General Consumer Goods includes other taxable sales*

Table 7: City of Agoura Hills Taxable Sales

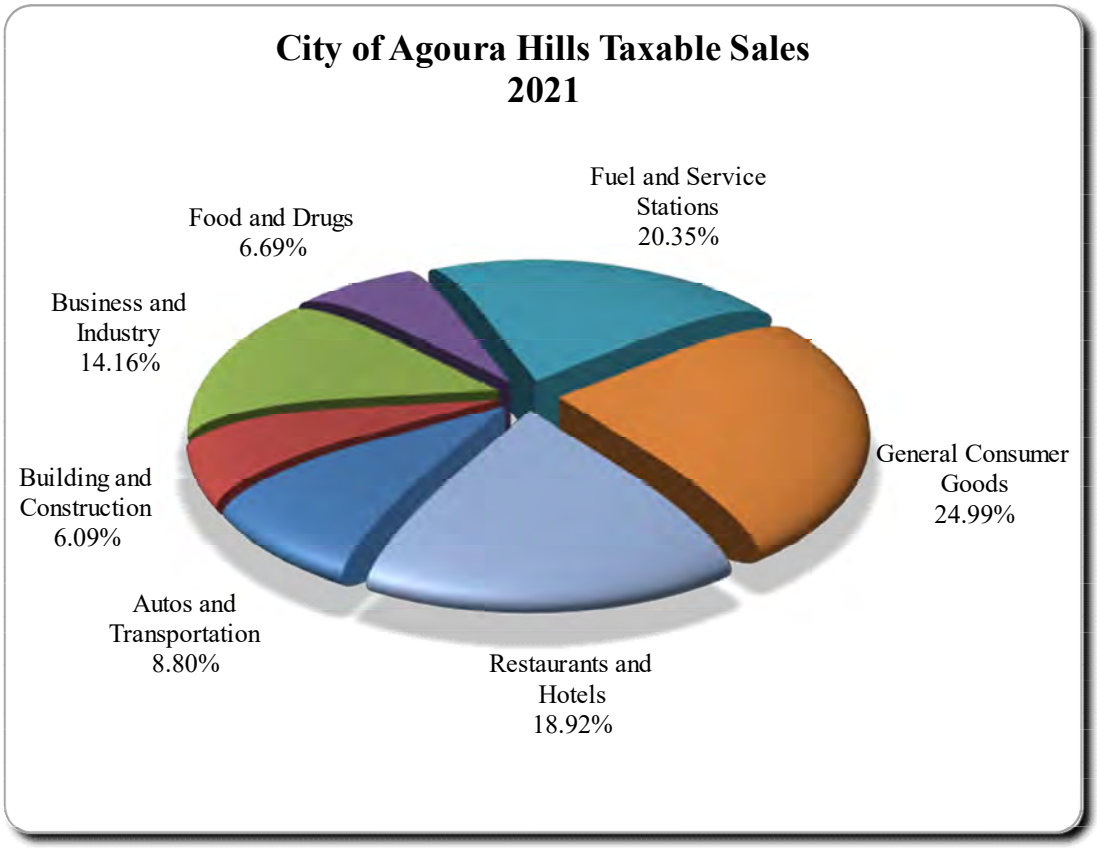


Figure 14: City of Agoura Hills Taxable Sales Percentage by Category

Agoura Hills Economy

The table below provides a breakdown of revenue channels for the City of Agoura Hills in 2017. These categories include Accommodation and Food Services, Health Care and Social Assistance, Transportation and Warehousing, and Retail Sales. The total revenues accrued by the city amounted to approximately $621.02 Million, which included Total Retail Sales per capita of $17,625.

Category	Value (in thousands)	Percent
Total Accommodation and Food Services Sales	$87,807	14.14%
Total Health Care and Social Assistance Receipts/Revenue	$163,460	26.32%
Total Transportation and Warehousing Receipts/Revenue	$8,934	1.44%
Total Retail Sales	$360,799	58.10%
Total	**$621,000**	**100.00%**

Source U.S. Census Bureau 2017 Economic Census of the U.S.

Table 8: City of Agoura Hills Economy

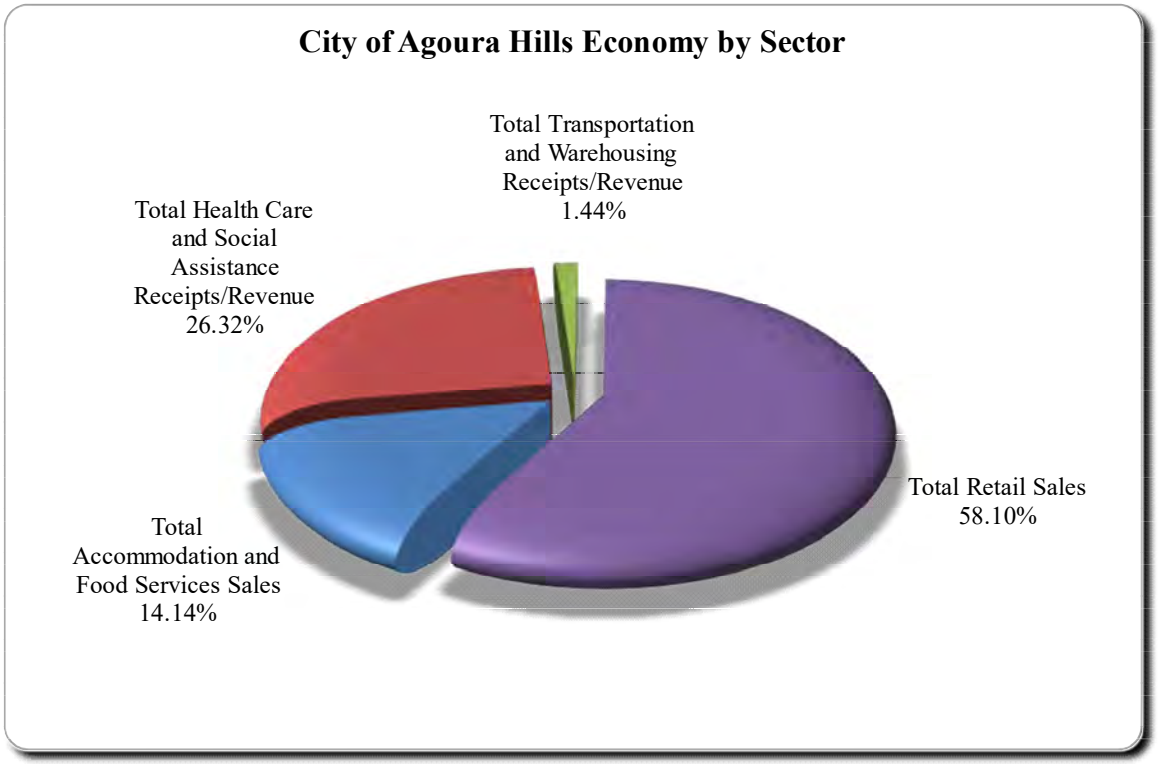


Figure 15: City of Agoura Hills Economy by Sector

Population and Demographics

The following tables summarize the population and demographic groups at risk from a disaster in Agoura Hills.

Sex and Age Distribution

Demographic Estimates - 2021		
Sex and Age	**Estimate**	**Percent**
Total Population	**20,362**	**100.0%**
Male	10,327	51.0%
Female	10,035	49.0%
Under 5 years	618	3.00%
5 to 9 years	1,038	5.10%
10 to 14 years	1,745	8.60%
15 to 19 years	1,516	7.40%
20 to 24 years	1,131	5.60%
25 to 29 years	639	3.10%
30 to 34 years	1,136	5.60%
35 to 39 years	1,128	5.50%
40 to 44 years	1,341	6.60%
45 to 49 years	1,352	6.60%
50 to 54 years	1,743	8.60%
55 to 59 years	2,011	9.90%
60 to 64 years	1,800	8.80%
65 to 69 years	973	4.80%
70 to 74 years	1,057	5.20%
75 to 79 years	431	2.10%
80 to 84 years	200	1.00%
85 years and over	503	2.50%
Median age (years)	44.8	

Source: US Census Bureau American Community Survey 2021 5-Year Estimate

Table 9: City of Agoura Hills Sex and Age Demographics

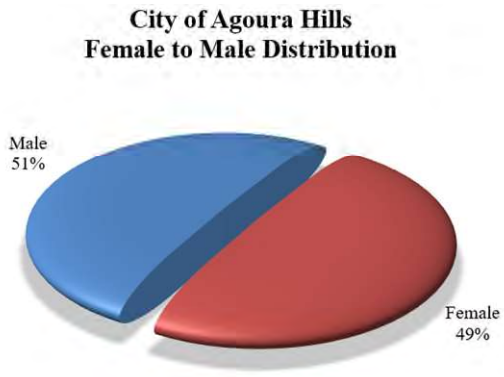


Figure 16: City of Agoura Hills Female to Male Distribution

The average age of residents in Agoura Hills is 44.8 with males (51.0%) slightly outnumbering females (49.0%). Mitigation planning must consider the unique needs of population groups, for example those under 15 years of age and those over 65 years of age.

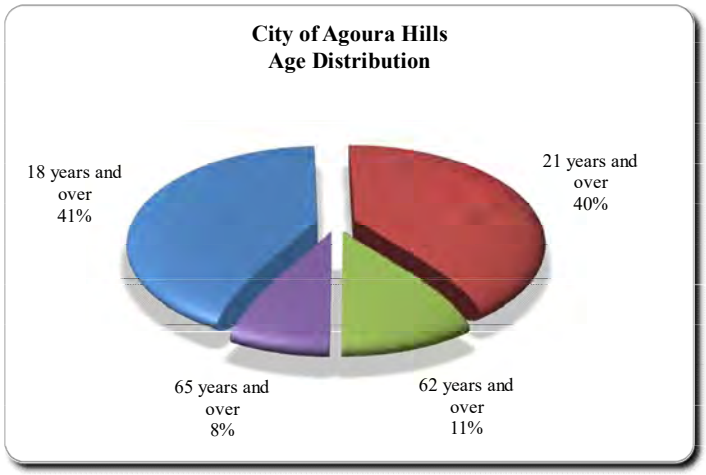


Figure 17: City of Agoura Hills Age Distribution

Race and Language Composition

Race

One aspect of mitigation planning is the need to address the cultural and language (communications) needs of local populations. This includes the ability to distribute information and provide notification in the event of a regional emergency. For Agoura Hills, an estimated 18.6% of the population speaks languages other than English (including English and another language or non-English only) with 1.39% speaking English "less than well or not at all". These language and communication challenges may pose additional difficulties for socially vulnerable groups during a disaster.

Race	2021 Estimated Population	Percent of Total
Total Population	**20,362**	**100.00%**
White alone[(a)]	14,742	72.40%
Black or African American alone[(a)]	307	1.50%
American Indian and Alaska Native alone[(a)]	0	0.00%
Asian alone[(a)]	1,362	6.70%
Native Hawaiian and Other Pacific Islander alone[(a)]	32	0.20%
Hispanic or Latino[(b)]	2,944	14.50%
Two or More Races	764	3.80%
Some Other Race alone	211	1.00%

Source: US Census Bureau American Community Survey 2021 5-Year Estimate
(a) Includes persons reporting only one race
(b) Hispanics may be of any race, so also are included in applicable race categories

Table 10: City of Agoura Hills Race Composition

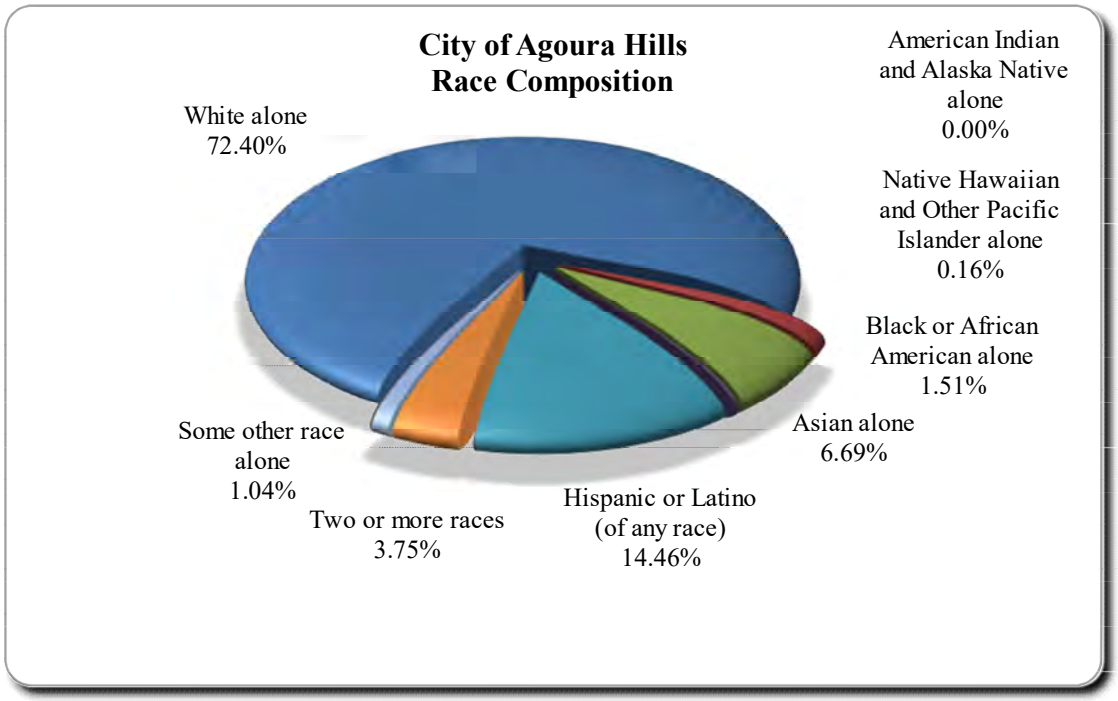


Figure 18: City of Agoura Hills Race Composition

Language Spoken at Home

Language	2021 Estimated Population	Percent of Total
Speaks only English	15,949	80.80%
Language other than English spoken at home, percent of persons age 5 years+, 2017-2021	3,795	19.20%
Speak a Language Other than English	**2021 Estimated Population**	**Percent of Total**
Spanish	**922**	**4.7%**
5 to 17 years old	48	0.2%
18 to 64 years old	704	3.6%
65 years old and over	170	0.9%
Other Indo-European languages	**1,379**	**7.0%**
5 to 17 years old	197	1.0%
18 to 64 years old	1,006	5.1%
65 years old and over	176	0.9%
Asian and Pacific Island languages	**768**	**3.9%**
5 to 17 years old	94	0.5%
18 to 64 years old	547	2.8%
65 years old and over	127	0.6%
Other languages	**726**	**3.7%**
5 to 17 years old	132	0.7%
18 to 64 years old	566	2.9%
65 years old and over	28	0.1%

Source: US Census Bureau American Community Survey 2021 5-Year Estimates

Table 11: City of Agoura Hills Languages Spoken at Home

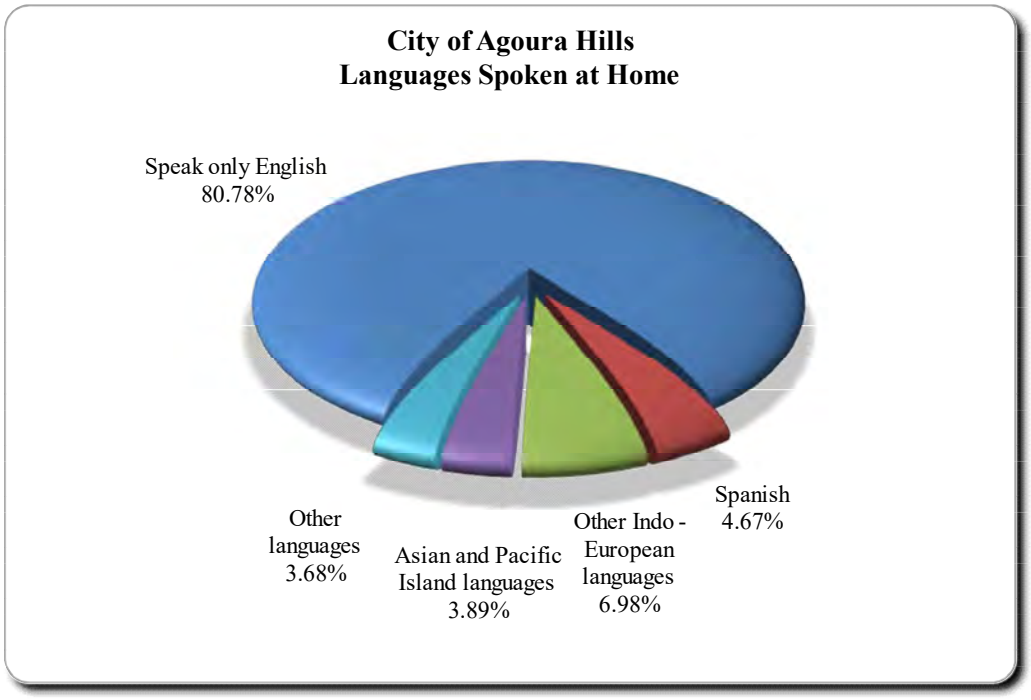


Figure 19: City of Agoura Hills Language Spoken at Home

Income Distribution

Household income is a factor for mitigation planning since population groups in lower income ranges are less able to cope with the impact of disasters.

Furthermore, the availability of household funds can have a direct impact on the level of individual and family hazard mitigation activities and emergency preparedness.

In Agoura Hills, while the mean household income is $194,167, there are a limited number of households with incomes less than $25,000, near the 2023 U.S. poverty level of $24,860 for a family of three as defined by the *2023 HHS Poverty Guidelines,* by the U.S. Department of Health & Human Services.*

Income and Benefits (in 2021 Inflation-Adjusted Dollars)		
	Estimate	**Percent**
Total Households	**7,314**	**100.00%**
Less than $10,000	197	2.70%
$10,000 to $14,999	37	0.50%
$15,000 to $24,999	205	2.80%
$25,000 to $34,999	205	2.80%
$35,000 to $49,999	453	6.20%
$50,000 to $74,999	592	8.10%
$75,000 to $99,999	731	10.00%
$100,000 to $149,999	1463	20.00%
$150,000 to $199,999	797	10.90%
$200,000 or more	2633	36.00%
Median household income	**$141,099**	**(X)**
Mean household income	**$194,167**	**(X)**

Source: US Census Bureau American Community Survey 2021 5-Year Estimates

Table 12: City of Agoura Hills Income and Benefits (2021 Inflation Adjusted Dollars)

* Note: The households with minimal incomes may also be attributable to retirees and others that have other sources of funds not reportable as income.

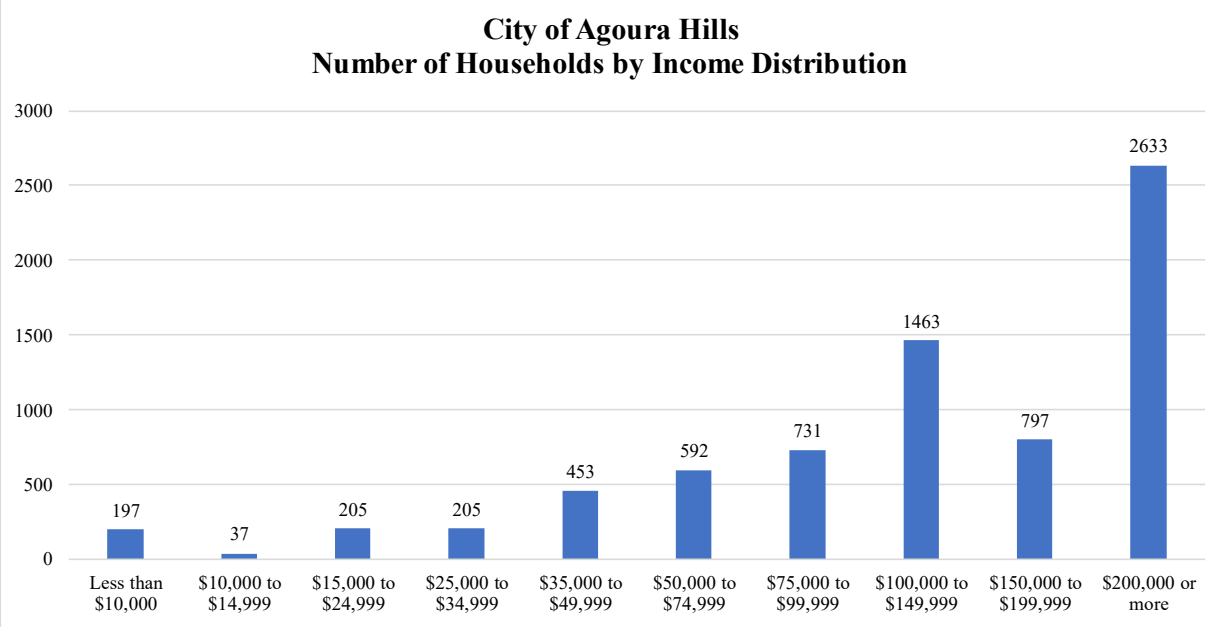


Figure 20: City of Agoura Hills Income Distribution

Land Use

Basic land use patterns are well established in the City of Agoura Hills. Residential neighborhoods are fully developed and there are limited opportunities for infill development remaining. Agoura Hills also contains a number of commercial zones. The city's main shopping areas are listed below:

- Agoura City Mall
- Agoura Hills Commercial Center
- Agoura Hills Town Center
- Agoura Meadows Shopping Center
- Kanan Plaza
- Reyes Adobe Plaza
- Roadside Plaza
- Twin Oaks Shopping Center
- Whizin Market Square+

Regional access to Agoura Hills is provided by U.S. Highway 101, which runs east/west through the center of Agoura Hills dividing the town in half. Local access within the City is provided primarily by Kanan Road and Reyes Adobe Road in the north/south directions; Agoura Road and Thousand Oaks Boulevard in the east/west directions. City owned streets run 64 miles.

Housing Characteristics

The following housing statistics provide a summary of the numbers and types of housing units that are at risk if a disaster were to occur in Agoura Hills. Housing data includes: Housing Occupancy, Changes from 2017 to 2021, Number of Structures Built by Year, Home Values, and Home Value Distribution. In Agoura Hills there has been a significant increase in the number of 1 unit-detached, as well as larger units (10 to 19 units) since 2017.

Housing Occupancy	2021 Estimate	Percent
Total Housing Units	**7,799**	**100.0%**
Occupied housing units	7,314	93.78%
Vacant housing units	485	6.22%

Source: US Census Bureau American Community Survey 2021 5-Year Estimates

Table 13: City of Agoura Hills Housing Occupancy

Units In Structure	2021		2017		Change	
	Estimated Number	Percent of Units	Estimated Number	Percent of Units	Difference 2021-2017	Percent Change
Total Housing Units	**7,799**	**100%**	**7,674**	**100%**	**125**	**1.63%**
1-unit, detached	5,377	68.94%	5,123	66.30%	254	4.96%
1-unit, attached	1,092	14.00%	1,383	17.80%	-291	-21.04%
2 units	50	0.64%	0	0.00%	50	100.0%
3 or 4 units	309	3.96%	241	2.30%	68	28.22%
5 to 9 units	136	1.74%	243	3.70%	-107	-44.03%
10 to 19 units	455	5.83%	253	4.20%	202	79.84%
20 or more units	369	4.73%	431	5.70%	-62	-14.39%
Mobile home	11	0.14%	0	0.00%	11	100.0%
Boat, RV, van, etc.	0	0.00%	0	0.00%	0	-

Source: US Census Bureau American Community Survey 2021 5-Year Estimates

Table 14: City of Agoura Hills Units in Structure Change from 2017 to 2021

In terms of risk and disaster mitigation, older structures that have not been retrofitted or otherwise improved may be more susceptible to damage or destruction due to age and the fact that older building codes were less stringent than those required for newer structures. As a result, the inventory of older structures is a consideration when developing mitigation plans.

In Agoura Hills, 93.50% of structures (7,292) were built prior to 2000 and 45.81% (3,573) before 1980.

Year Structure Built	Estimate	Percent
Total housing units	**7,799**	**100.0%**
Built 2020 or later	0	0.00%
Built 2010 to 2019	180	2.30%
Built 2000 to 2009	327	4.20%
Built 1990 to 1999	517	6.60%
Built 1980 to 1989	3,202	41.10%
Built 1970 to 1979	2,572	33.00%
Built 1960 to 1969	812	10.40%
Built 1950 to 1959	104	1.30%
Built 1940 to 1949	39	0.50%
Built 1939 or earlier	46	0.60%

Source: US Census Bureau American Community Survey 2021 5-Year Estimates

Table 15: Year Structures Built in the City of Agoura Hills

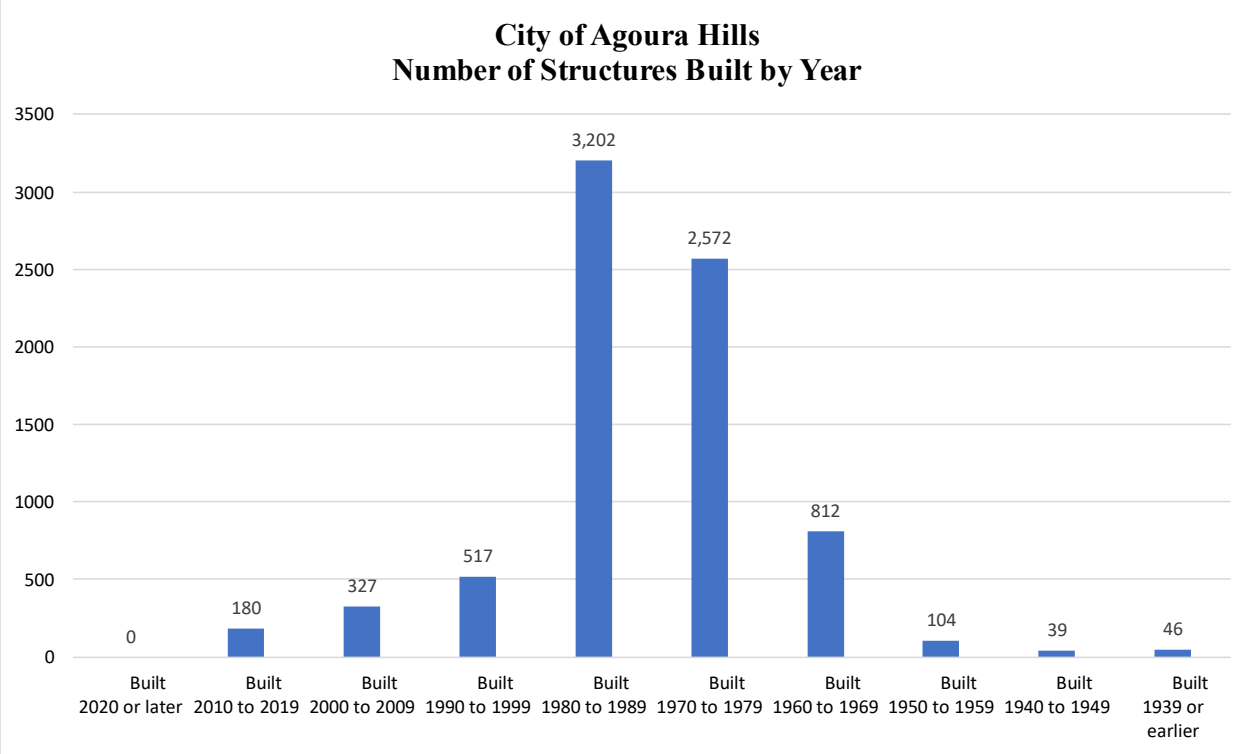


Figure 21: City of Agoura Hills Number of Structures Built by Year

Home values are an important consideration when evaluating the potential dollar loss due to disasters. These values can also be used to assess the cost/benefit of mitigation activities and planning. In Agoura Hills, the majority of Owner Occupied Units are valued over $500,000. Consequently, the potential dollar losses from a disaster can rapidly escalate – illustrating the need for mitigation planning.

Owner-Occupied Units by Value		
	Estimate	**Percent**
Owner-Occupied Units	**5,861**	**100.00%**
Less than $50,000	82	1.40%
$50,000 to $99,999	41	0.70%
$100,000 to $149,999	43	0.70%
$150,000 to $199,999	11	0.20%
$200,000 to $299,999	90	1.50%
$300,000 to $499,999	430	7.30%
$500,000 to $999,999	3,336	56.90%
$1,000,000 or more	1,828	31.20%
Median (dollars)	**$857,700**	**(X)**

Source: US Census Bureau American Community Survey 2021 5-Year Estimates

Table 16: City of Agoura Hills Home Value Distribution

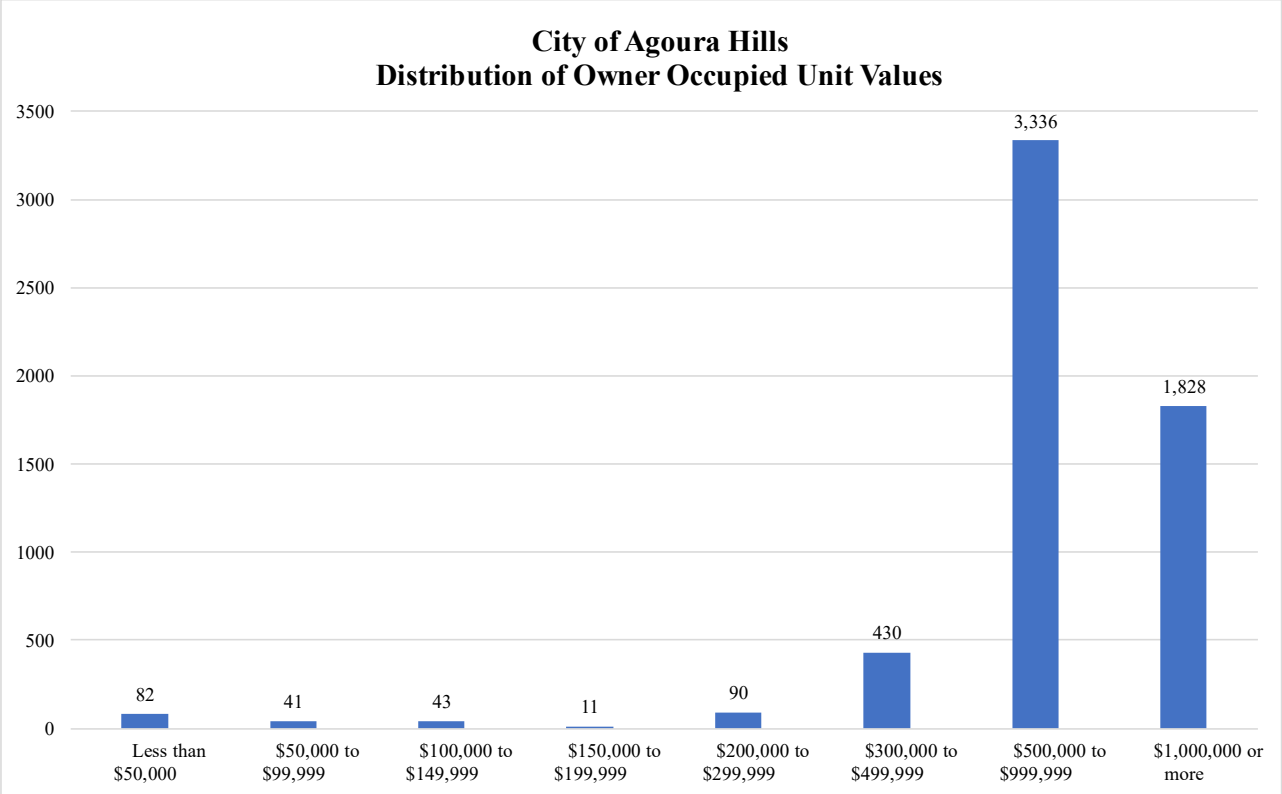


Figure 22: City of Agoura Hills Distribution of Owner Occupied Unit Values

Homeowners Associations

Homeowners associations in Agoura Hills meet on a regular basis to discuss community issues, including hazard mitigation. Homeowners associations mail out information on a periodic basis and are very involved in the community.

The following is a list of the Home Owner Associations in the City of Agoura Hills:

City of Agoura Hills Home Owner Associations	
Agoura Hills Country Estates	Liberty Canyon Townhomes
Agoura Country Townhomes	Meadow Ridge Townhomes
Annandale I Townhomes	Morrison Ranch
Annandale II Townhomes	Oak Hills
Chateau Creek	Oak Valley
Chateau Park	Oakview Garden
Fountainwood	Oakview Ranch
Griffin Parkside	Old Agoura
Hillrise Open Space	Peacock Ridge
Indian Hills	Rondell Condominiums
Lake Lindero Community	Stonecrest
Lake Lindero Country Club	Town and Country
Lake Lindero Townhomes	Village of Oak Creek
Lakeview Villas	Westlake Villas
Liberty Canyon	

Table 17: City of Agoura Hills Home Owner Associations

Emergency Preparedness

Critical Facilities and Capabilities

The City of Agoura Hills has identified multiple critical facilities including:

- City Hall
- Emergency Operations Center (EOC)
- Recreation & Event Center
- City Yard

Two of these facilities have functional emergency power generators. In addition, City Hall is stocked with emergency food for 32 staff and 25 volunteers for 3 days.

Emergency Operations Center

The Emergency Operations Center (EOC) is a fully-equipped site in the civic center. City staff are trained to operate the EOC in a disaster or other emergency situation. Activation of the EOC can be ordered by the City Manager, the Sheriff's Department, or the Fire Department.

Mobile Operations Center

The City has purchased equipment to enable EOC operations away from the civic center, should the regular EOC not be operational.

Monitoring Capabilities

The City of Agoura Hills maintains cameras installed at major intersections that can be used for road assessments and for monitoring ongoing hazardous situations. Additionally, the City has purchased a drone that can be used for structural hazard assessments.

Mass Notification

The City of Agoura Hills utilizes ALERT AH (CodeRed) mass notification service to notify residents and businesses via voicemail, text, email, and social media within minutes of an emergency.

Beacon Box

The City of Agoura hills has strategically placed fire-resistant Beacon Boxes around the city which display critical information for public safety personnel such as water resources, road networks, egress areas, safe refuge areas, and high burn risk areas. The locations within Agoura Hills and the respective box numbers include:

1. Liberty Canyon
2. Amistosa
3. Old Agoura Park
4. Foothill Dr.
5. Sumac Park
6. Willow Elementary
7. Grey Rock Rd.
8. Reyes Adobe Rd.
9. Reyes Adobe Park
10. City Hall

Disaster Preparedness Groups

The following groups are active in providing emergency preparedness, mitigation, and response services within Agoura Hills:

Emergency Response Team

The City of Agoura Hills has implemented a Volunteer Emergency Response Team. The City currently has 33 volunteers on its roster and will continue to grow its volunteer base over the next five years. The City solicits volunteers regularly through their city newsletter, the Agoura Hills Leaflet. As part of their preparation to assist the city staff and community in time of emergency, new members attend the CERT training program.

City of Agoura Hills Law Enforcement Committee

While the City does not have a Public Safety Committee, the City's Law Enforcement Committee acts in this similar capacity meeting with staff and representatives from Law Enforcement and Los Angeles County Fire representative to discuss safety issues as they present themselves. The Law Enforcement Committee consists of two members of the City Council, who work with the City Manager and a staff liaison. The Law Enforcement Committee meets primarily as needed, but at least annually.

General Plan

The City Council of Agoura Hills approved a new General Plan on March 24, 2010, which details a strategy for the City's development until the year 2035. Included in this plan are provisions for flood hazards, geological and seismic hazards, wildland and urban fire hazards and emergency preparedness in general.

As part of the general plan, the City of Agoura Hills implemented the following principles that adhere to particular facets of disaster preparedness:

1. Protect Agoura Hills' residents, workers, and visitors from flood hazards.

2. Protect all personal and property in Agoura Hills from non-seismic geological hazards.

3. Protect all persons and property in Agoura Hills from urban and wildland fires.

4. Protect all persons and property in Agoura Hills from criminal activities.

5. Ensure that life and property in Agoura Hills are not endangered by the use, storage, or transport of hazardous materials.

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CALABASAS

Calabasas is located in the southwestern portion of the San Fernando Valley in Los Angeles County. Calabasas is situated along the heavily traveled Ventura Freeway (Highway 101) approximately 25 miles from downtown Los Angeles. A portion of the Calabasas northern boundary is shared with Ventura County.

The City of Calabasas encompasses approximately 13.3 square miles or 8,512 acres of land. The population of Calabasas is estimated at 23,410 people (2021 U.S. American Community Survey 5-Year Estimate).

Figure 23: City of Calabasas Aerial View

Source: Google Maps

General Coordinates	
Latitude	34°9’28’’North
Longitude	118°38’15’’West

Map 8: City of Calabasas Location Map

Source: 2016 SCAG City Boundary Data

Brief History

In the early 19th century Spanish settlers established farms and ranches in the rural area that is now the city of Calabasas. In the late 19th century large ranches gave way to smaller family farms. Residential and commercial development of the area was restricted by water availability until 1958 when the Las Virgenes Municipal Water District established a substantial and reliable water source. Prior to incorporation, Calabasas was an unincorporated community governed by the County of Los Angeles. The City of Calabasas was incorporated in 1991.

Climate/Topography

The climate in the City of Calabasas can be characterized as mild in the winters, and warm and dry in the summers. The average temperature in 2022 ranged from the high 50's to the low 100's in the summer and from the low 40's to the mid 70's in the winter. Precipitation in 2022 was approximately 6 inches, with the greatest portion of precipitation occurring during the winter.

Category	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average Temperature (°F)	57.6	59	62.6	65	67.4	77.1	78.3	81.6	80	70.5	56.7	53.3
Minimum Temperature (°F)	42.5	43.6	46.6	49.8	51.4	58.8	60	62.9	63.8	55	41.2	41.1
Maximum Temperature (°F)	72.7	74.6	78.5	80.2	83.4	95.4	96.6	100.3	96.3	86.1	72.1	65.5
Average Rainfall (inches)	0.25	0	1.07	0.34	0	0	0	0	0.16	0	1.45	2.98

Source: Weather.gov (NOAA)

Table 18: City of Calabasas Average Monthly Temperatures and Rainfall (2022)

The terrain can be categorized as rugged or mountainous with a few level areas. Calabasas is located in the foothills of the Santa Monica Mountains, and ranges in elevation from 500 to 2,500 feet above sea level, with an average elevation of 796 feet. The scenic character of Calabasas is a result of its mountainous terrain and most undeveloped areas in Calabasas will likely remain that way due to topographical constraints and zoning limitations.

Economic Activity

Economic activity is one indicator of the potential losses that may be incurred in the event of a disaster. The following tables list the principal employers, property tax payers, and taxable sales in Calabasas.

Calabasas Principal Employers

Company	Industry	Employees	Percent of Total City Employment
Las Virgenes School District[2]	Education	917	7.77%
The Cheesecake Factory, Inc[4]	Restaurant	782	6.63%
*Harbor Freight Tools[5]	Retail	723	6.13%
Viewpoint Education Foundation	Education	319	2.70%
Keysight Technologies (formerly IXIA)	Technology	189	1.60%
Xperi (formerly DTS Inc)	Technology	159	1.35%
BrightView Landscape	Business Services	150	1.27%
*Alcatel-Lucent Enterprise[7]	Technology	139	1.18%
AmaWaterways Company	Travel	134	1.14%
Bob Smith BMW & Mini[6]	Auto Retail	123	1.04%
Top 10 Total		**3,635**	**30.81%**
Total City of Calabasas Employment[3]		**11,800**	**100.00%**

Source: 2020- 2021 Comprehensive Annual Financial Report for the City of Calabasas, Fiscal Year Ended June 2022
**In 2023 Alcatel and Harbor Freight were no longer within the Calabasas City limits. Alcatel was replaced by Res Med and Harbor Fright was replaced by Naked Wardrobe*

Table 19: City of Calabasas Principal Employers

Calabasas Principal Property Tax Payers

Company	Taxable Assessed Value	Percent of Total City Assessed Value
ASN Calabasas I LLC	$ 175,057,874	1.88%
Aimco Malibu Canyon LLC	112,527,044	1.21%
RREF II Calabasas Park Center LLC	80,616,105	0.86%
Commons At Calabasas LLC	76,718,143	0.82%
Cheesecake Factory INC	65,171,746	0.70%
BVK Courtyard Commons LLC	56,882,492	0.61%
CT Calabasas LLC	53,126,541	0.57%
WCVAF Investment I LLC	43,035,319	0.46%
GVC Holding LP	39,282,796	0.42%
D EGIDIO Brothers III LLC	33,284,515	0.36%
Top 10 Total	**$735,702,575**	**7.88%**
Total Property Tax Assessed Value	**$9,330,847,223**	**100%**

Source: 2020- 2021 Comprehensive Annual Financial Report for the City of Calabasas, Fiscal Year Ended June 2022

Table 20: City of Calabasas Principal Tax Payers

Notes:

2. The Las Virgenes School District number represents all employees within the district, classified, certificated and management
3. Total City Labor Force provided by EDD Labor Force Data
4. Number of employees only in Calabasas: Bakery and Corporate
5. Includes Camarillo satellite office that reports to Calabasas HQ
6. Two locations in Calabasas, BMW and Mini Cooper
7. Previous year number applied

City of Calabasas Taxable Sales (2022)

Category	Taxable Sales	Percent of Total
Transportation	$3,364,668	48.50%
Business to Business	869,184	12.53%
Food Products*	1,209,028	17.43%
General Retail	1,456,995	21.00%
Miscellaneous	5,655	0.08%
Construction	32,543	0.47%
Total	**6,938,073**	**100.00%**

Source: 2021- 2022 Comprehensive Annual Financial Report for the City of Calabasas, Fiscal Year Ended June 2022
City Direct Sales Tax Rate: 1%
**General grocery items are not taxable; the sales tax applies only to prepared food items and nonfood items*
Table 21: City of Calabasas Principal Taxable Sales

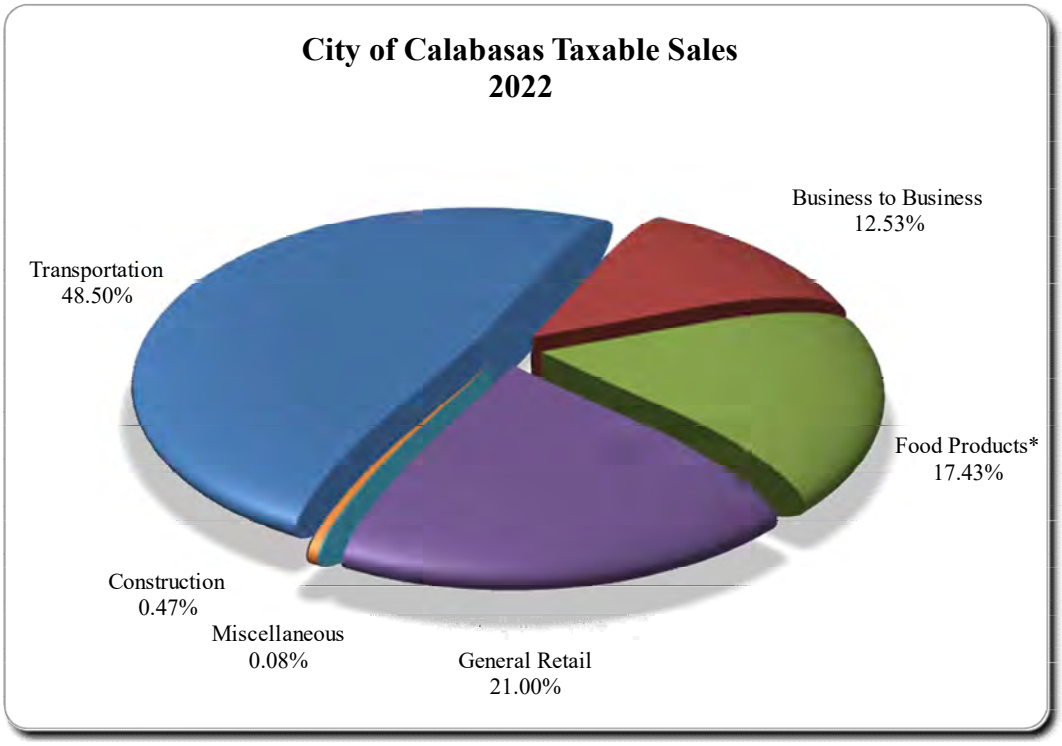

Figure 24: City of Calabasas Taxable Sales Percentage by Category

City of Calabasas Transient Occupancy Revenue and Tax (2023)

In 2023, the City of Calabasas recognized approximately $2.6 Million in Transient Occupancy Tax (TOT) revenues, highlighting the additional losses that may be incurred in the event of a natural disaster. For example, if hotels and other short-term lodging facilities were down for a significant amount of time, this could result in a significant loss of revenue e.g., for each day of disruption, the loss would equate to a decrease in TOT revenue to the city of over $7,123.

Source: 2022 - 2023 City of Calabasas (Estimate)

Calabasas Economy

The table below provides a breakdown of revenue channels for the City of Calabasas in 2017. These categories include Accommodation and Food Services, Health Care and Social Assistance, Transportation and Warehousing, and Retail Sales. The total revenues accrued by the city amounted to approximately $1.01 Billion, which included Total Retail Sales per capita of $31,951.

Category	Value (in thousands)	Percent
Total Accommodation and Food Services Sales	$98,790	9.77%
Total Health Care and Social Assistance Receipts/Revenue	$108,871	10.76%
Total Transportation and Warehousing Receipts/Revenue	$37,573	3.72%
Total Retail Sales	$766,114	75.75%
Total	**$1,011,348**	**100.00%**

Source U.S. Census Bureau 2017 Economic Census of the U.S.

Table 22: City of Calabasas Economy

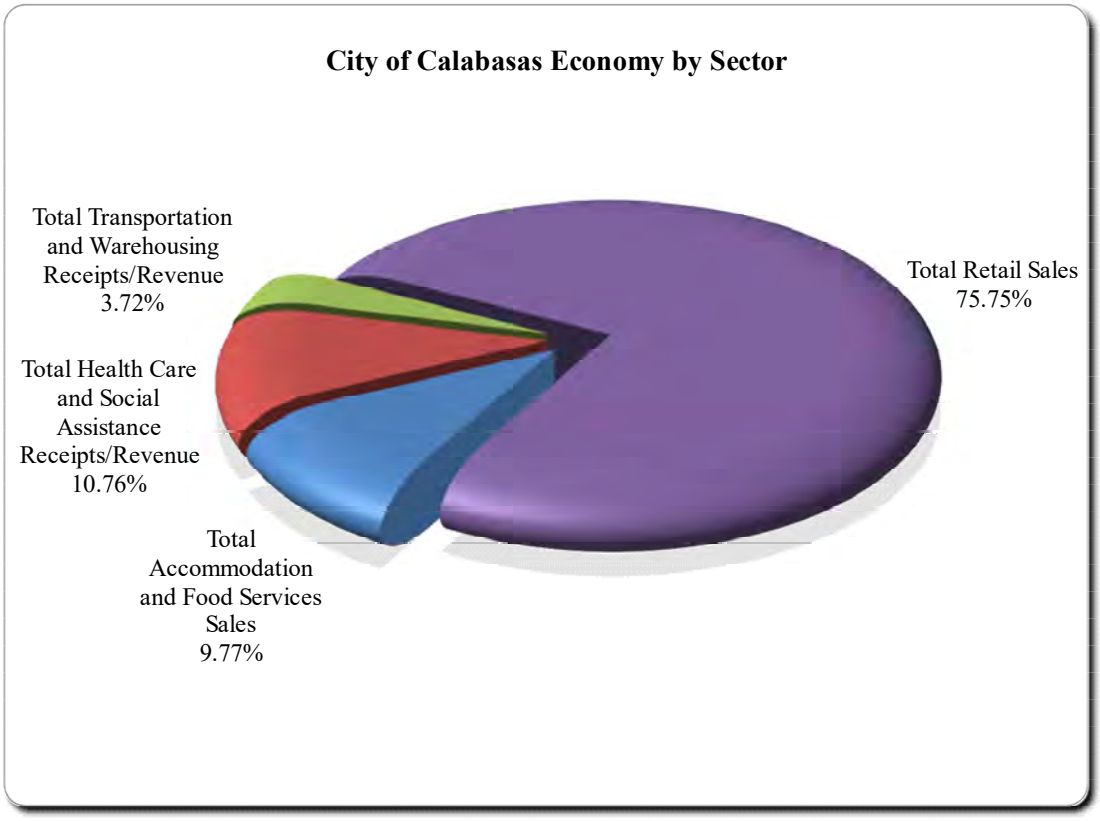

Figure 25: City of Calabasas Economy by Sector

Population and Demographics

The following tables summarize the population and demographic groups at risk from a disaster in Calabasas.

Sex and Age Distribution

Demographic Estimates - 2021		
Sex and Age	**Estimate**	**Percent**
Total Population	**23,410**	**100%**
Male	11,499	49.1%
Female	11,911	50.9%
Under 5 years	1130	4.80%
5 to 9 years	1405	6.00%
10 to 14 years	1812	7.70%
15 to 19 years	1369	5.80%
20 to 24 years	1604	6.90%
25 to 29 years	1112	4.80%
30 to 34 years	1095	4.70%
35 to 39 years	1528	6.50%
40 to 44 years	1329	5.70%
45 to 49 years	1458	6.20%
50 to 54 years	2023	8.60%
55 to 59 years	1882	8.00%
60 to 64 years	1790	7.60%
65 to 69 years	1234	5.30%
70 to 74 years	1210	5.20%
75 to 79 years	434	1.90%
80 to 84 years	493	2.10%
85 years and over	502	2.10%
Median age (years)	41.8	

Source U.S. Census Bureau 2021 American Community Survey 5-Year Estimate

Table 23: City of Calabasas Sex and Age Demographics

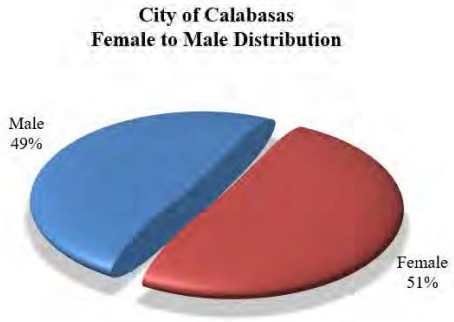

Figure 26: City of Calabasas Female to Male Distribution

In 2021, the estimated median age of residents in Calabasas was 41.8 with females (50.9%) outnumbering males (49.1%). Mitigation planning must consider the unique needs of population groups, for example those under 15 years of age and those over 65 years of age.

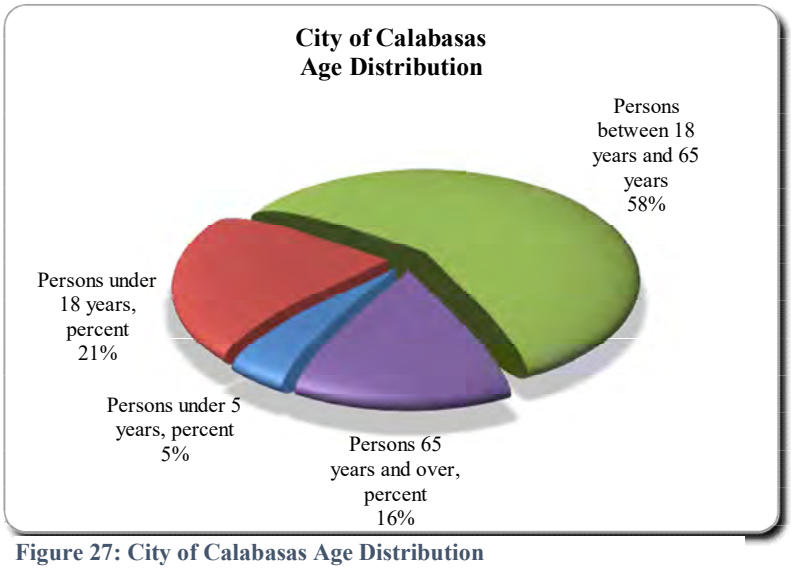

Figure 27: City of Calabasas Age Distribution

Race and Language Composition

One aspect of mitigation planning is the need to address the cultural and language (communications) needs of local populations. This includes the ability to distribute information and provide notification in the event of a regional emergency. For Calabasas, an estimated 29.8% of the population speaks languages other than English (including English and another language or non-English only) with 2.27% speaking English "less than well or not at all". These language and communication challenges may pose additional difficulties for socially vulnerable groups during a disaster.

Race

Race	2021 Estimated Population	Percent of Total
Total Population	**23,410**	100%
White alone[(a)]	16,798	71.76%
Black or African American alone[(a)]	558	2.38%
American Indian and Alaska Native alone[(a)]	118	0.50%
Asian alone[(a)]	2,264	9.67%
Native Hawaiian and Other Pacific Islander alone[(a)]	0	0.00%
Hispanic or Latino[(b)]	2,218	9.47%
Two or More Races	1,387	5.92%
Some Other Race[(a)]	67	0.29%

Source: US Census Bureau American Community Survey 2021 5-Year Estimates
(a) Includes persons reporting only one race
(b) Hispanics may be of any race, so also are included in applicable race categories

Table 24: City of Calabasas Race Composition

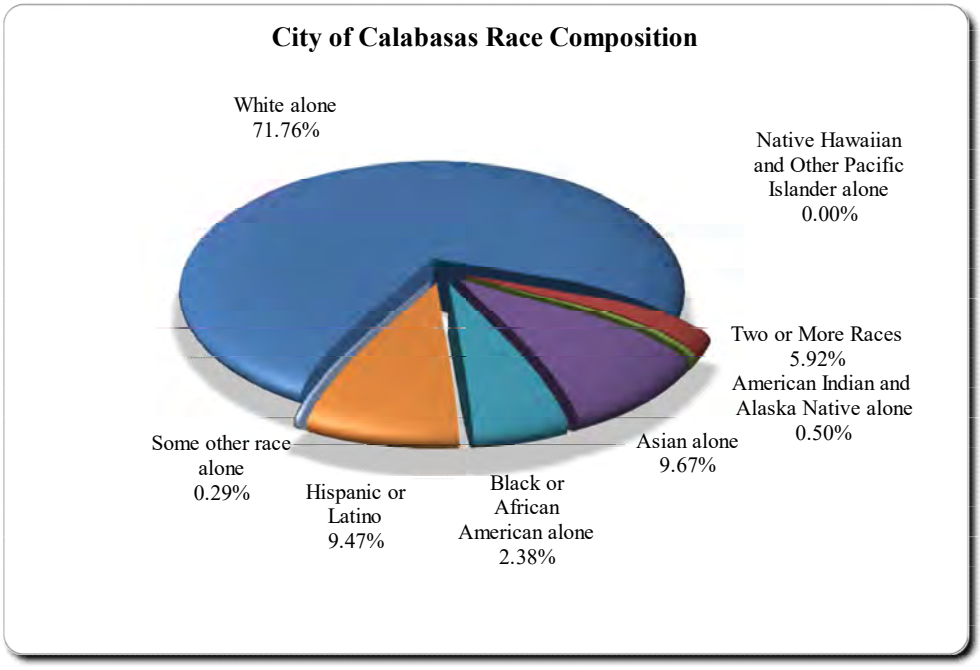

Figure 28: City of Calabasas Race Distribution

Language Spoken at Home

Language	2021 Estimated Population	Percent of Total
Speaks only English	15,294	68.60%
Language other than English spoken at home, percent of persons age 5 years+, 2017-2021	6,986	31.40%
Speak a Language Other than English	**2021 Estimated Population**	**Percent of Total**
Spanish	**1,000**	**4.50%**
5 to 17 years old	91	0.40%
18 to 64 years old	791	3.60%
65 years old and over	118	0.50%
Other Indo-European languages	**3,864**	**17.30%**
5 to 17 years old	544	2.40%
18 to 64 years old	2,539	11.40%
65 years old and over	781	3.50%
Asian and Pacific Island languages	**1,266**	**5.70%**
5 to 17 years old	177	0.80%
18 to 64 years old	864	3.90%
65 years old and over	225	1.00%
Other languages	**856**	**3.80%**
5 to 17 years old	52	0.20%
18 to 64 years old	624	2.80%
65 years old and over	180	0.80%

Source: US Census Bureau American Community Survey 2021 5-Year Estimates

Table 25: City of Calabasas Languages Spoken at Home

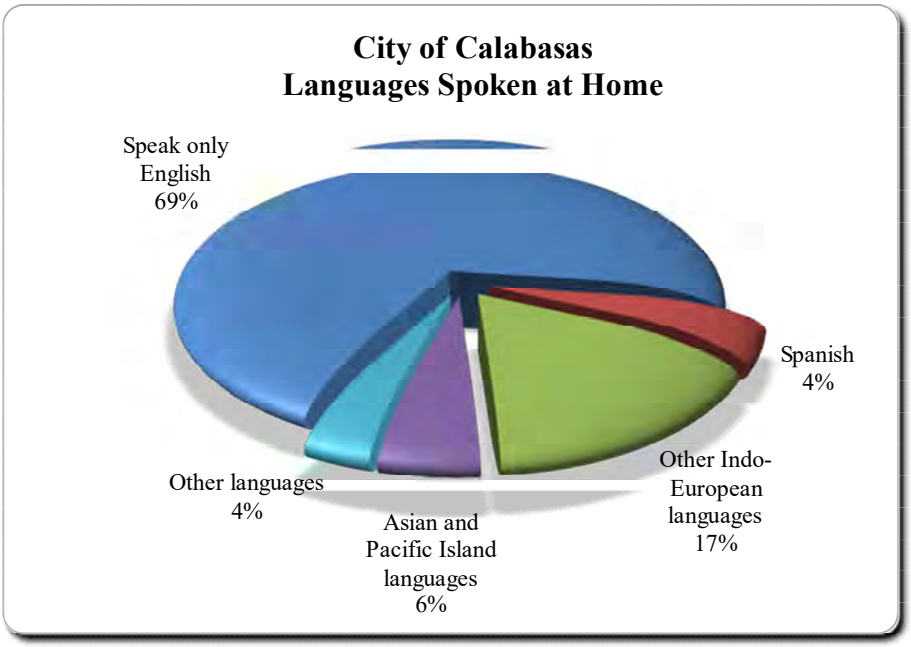

Figure 29: City of Calabasas Language Spoken at Home

Income Distribution

Household income is a factor for mitigation planning since population groups in lower income ranges are less able to cope with the impact of disasters.

Furthermore, the availability of household funds can have a direct impact on the level of individual and family hazard mitigation activities and emergency preparedness.

In Calabasas, while the mean household income is $224,208, there are a limited number of households with incomes less than $25,000, near the 2023 U.S. poverty level of $24,860 for a family of three as defined by the *2023 HHS Poverty Guidelines,* by the U.S. Department of Health & Human Services.*

Income and Benefits (in 2021 Inflation-Adjusted Dollars)		
	Estimate	**Percent**
Total Households	**8,936**	**100.0%**
Less than $10,000	590	6.60%
$10,000 to $14,999	134	1.50%
$15,000 to $24,999	420	4.70%
$25,000 to $34,999	304	3.40%
$35,000 to $49,999	483	5.40%
$50,000 to $74,999	938	10.50%
$75,000 to $99,999	652	7.30%
$100,000 to $149,999	1,367	15.30%
$150,000 to $199,999	965	10.80%
$200,000 or more	3,083	34.50%
Median household income	**$132,838**	**(X)**
Mean household income	**$224,208**	**(X)**

Source: U.S. Census Bureau 2021 American Community Survey 5-Year Estimates

Table 26: City of Calabasas Income and Benefits (2021 Inflation Adjusted Dollars)

* Note: The households with minimal incomes may also be attributable to retirees and others that have other sources of funds not reportable as income.

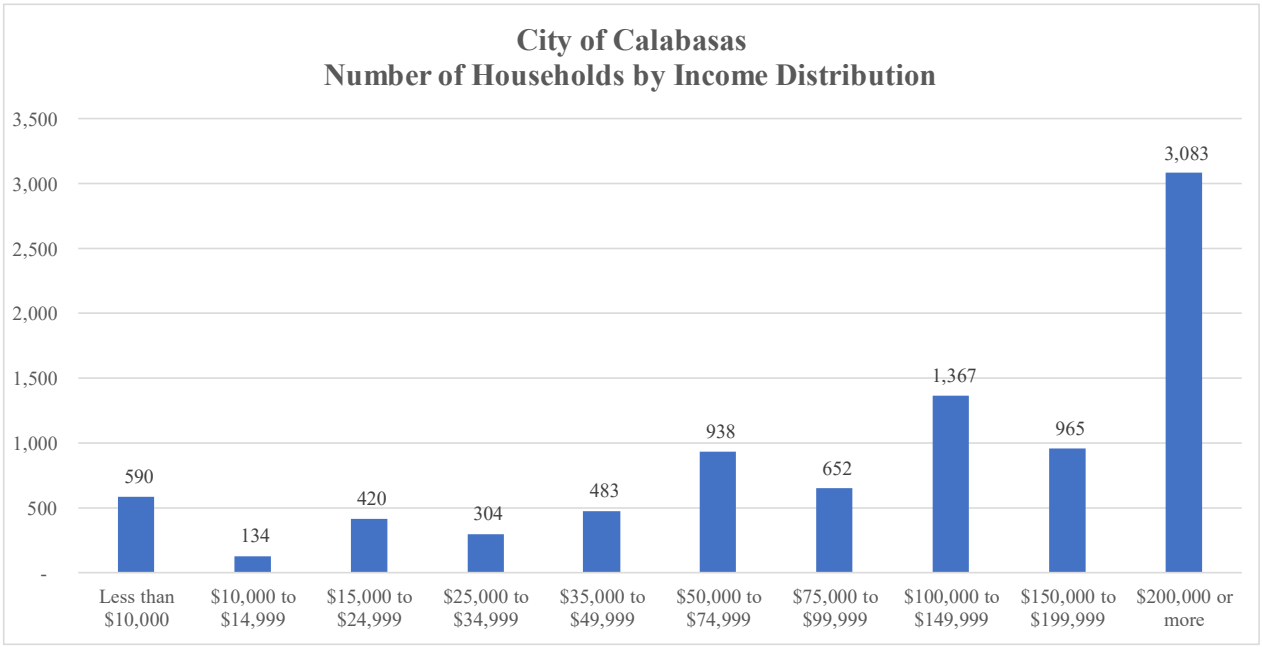

Figure 30: City of Calabasas Income Distribution

Land Use

Due to environmental constraints and steep hillsides, most undeveloped land within the Calabasas City limits will remain undeveloped and most developable areas are already built out. The non-developed areas of Calabasas are mainly in open space or hillside/mountainous zones.

The City of Calabasas is mainly residential but also hosts several commercial business parks and shopping centers including:

- Calabasas Canyon Center
- Calabasas Tech Center
- Creekside Village
- Courtyard at the Commons
- Gelsons Shopping Center
- Las Virgenes Village Shopping Center
- Old Town Calabasas
- Parkway Calabasas Shopping Center
- The Commons at Calabasas
- The Summit at Calabasas

Housing Characteristics

The following housing statistics provide a summary of the numbers and types of housing units that are at risk if a disaster were to occur in Calabasas. Housing data includes: Housing Occupancy, Units in Structure Change from 2017 to 2021, Number of Structures Built by Year, Home Values, and Home Value Distribution. In Calabasas, there has been a slight increase in the number of housing units since 2017 – particularly in 5 to 9 units and 10 to 19 units.

Housing Occupancy	2021 Estimate	Percent
Total Housing Units	**9,401**	**100.0%**
Occupied housing units	8,936	95.01%
Vacant housing units	465	4.90%

Source: U.S. Census Bureau 2021 American Community Survey 5-Year Estimates
Table 27: City of Calabasas Housing Occupancy

Unit Type	2021 Units	Percent
Single-Family (SF) Detached	6,223	67%
SF Attached	663	7%
Total Single-Family	**6,886**	**75%**
2 to 4 Units	500	5%
5 or more units	1,613	17%
Total Multi-Family	**2,113**	**23%**
Mobile Homes & Other[1]	**231**	**2%**
Total	**9,230**	**100%**

Source: California Department of Finance, 2020, Population and Housing Estimates
Table 28: City of Calabasas Units in Structure

Notes:

1. The City's one mobile home park contains 210 units, indicating the Census counted 20 additional units in the "other" category which could be reflective of second units or guesthouses if they are occupied as someone's current place of residence.

In terms of risk and disaster mitigation, older structures that have not been retrofitted or otherwise improved may be more susceptible to damage or destruction due to age and the fact that older building codes were less stringent than those required for newer structures. As a result, the inventory of older structures is a consideration when developing mitigation plans. In Calabasas, 90.1% of structures (8,471) were built prior to 2000 and 36.4% (3,423) before 1980.

Year Structure Built	Estimate	Percent
Total housing units	**9,401**	**100.0%**
Built 2020 or later	24	0.30%
Built 2010 to 2019	399	4.20%
Built 2000 to 2009	507	5.40%
Built 1990 to 1999	1,377	14.60%
Built 1980 to 1989	3,671	39.00%
Built 1970 to 1979	1,936	20.60%
Built 1960 to 1969	1,197	12.70%
Built 1950 to 1959	229	2.40%
Built 1940 to 1949	6	0.10%
Built 1939 or earlier	55	0.60%

Source: U.S. Census Bureau 2021 American Community Survey

Table 29: Year Structures Built in the City of Calabasas

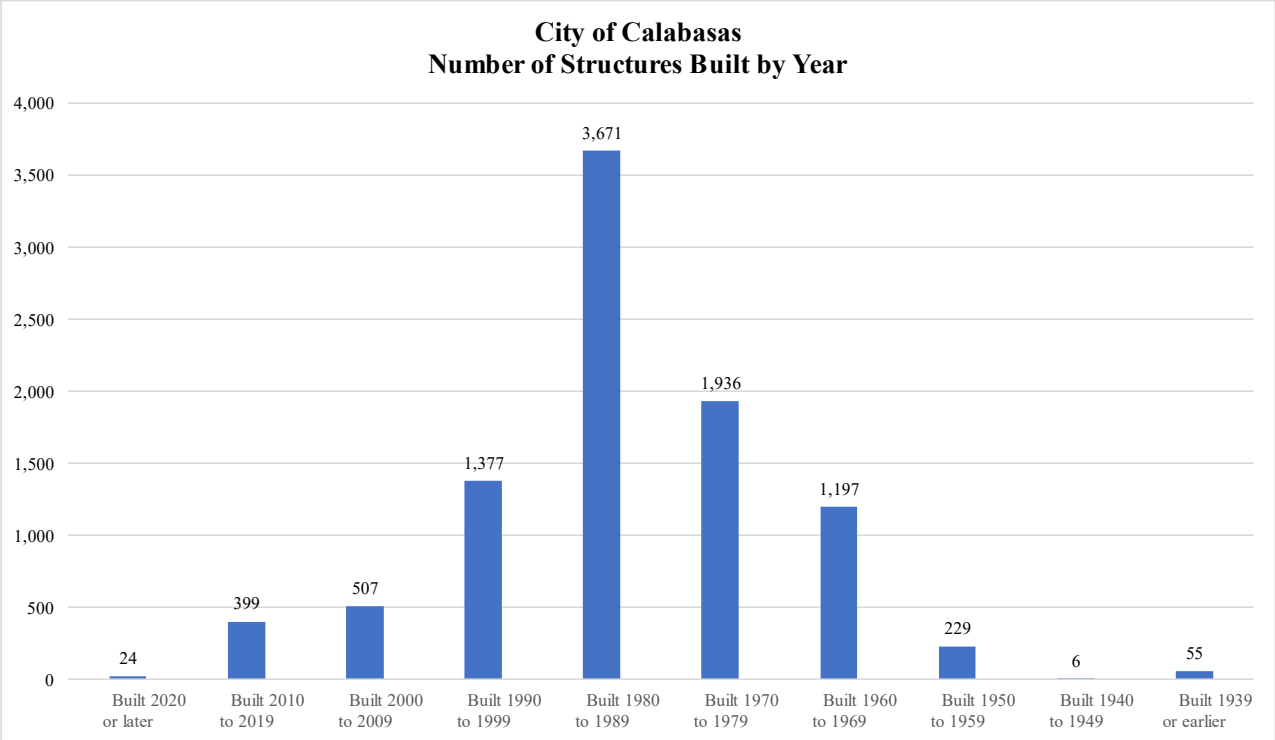

Figure 31: City of Calabasas Number of Structures Built by Year

Home values are an important consideration when evaluating the potential dollar loss due to disasters. These values can also be used to assess the cost/benefit of mitigation activities and planning. In Calabasas, the majority of Owner Occupied Units are valued over $500,000. Consequently, the potential dollar losses from a disaster can rapidly escalate – illustrating the need for mitigation planning related to owner-occupied units.

Owner-Occupied Units by Value		
	Estimate	**Percent**
Owner-occupied units	6,010	100%
Less than $50,000	155	2.60%
$50,000 to $99,999	12	0.20%
$100,000 to $149,999	9	0.10%
$150,000 to $199,999	50	0.80%
$200,000 to $299,999	22	0.40%
$300,000 to $499,999	455	7.60%
$500,000 to $999,999	1,705	28.40%
$1,000,000 or more	3,602	59.90%
Median (dollars)	**$1,141,600**	-

Source: U.S. Census Bureau 2021 American Community Survey

Table 30: City of Calabasas Home Value Distribution

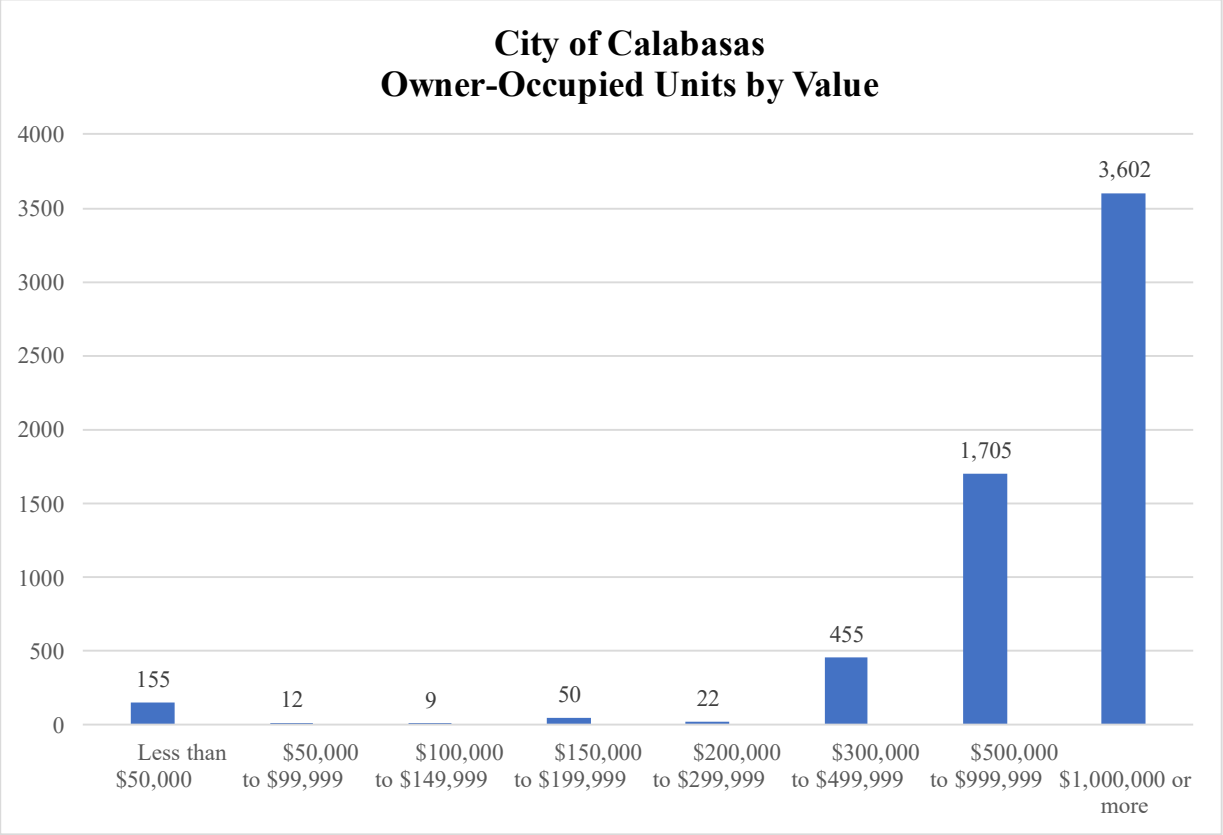

Figure 32: City of Calabasas Distribution of Owner Occupied Unit Values

Emergency Preparedness

The following groups are active in providing emergency preparedness, mitigation, and response services within Calabasas.

Emergency Operations Center

The City of Calabasas' Emergency Operations Center (EOC) is organized using the federally mandated Incident Command System (ICS). The City of Calabasas has an EOC which coordinates its emergency activities with the Lost Hills Sheriff's Station and L.A. County Fire Department. Additionally, the "Operation Area Response and Recovery System" (OARRS) is an Emergency Management Information System that is under the L.A. County Office of Emergency Management. The City of Calabasas also has an internal cable television network which is used during emergency/disaster situations to relay information to the public on conditions within the City including transit issues, fire hazards, flood, shelter locations, school issues, and Animal Care and Control. The primary EOC is located at the Calabasas City Hall, and the alternate location is at the Calabasas Senior Center.

Public Safety Commission

The City of Calabasas has a variety of commissions that offer residents opportunities to participate in city issues including the Public Safety Commission. When requested by the city council, the commission will advise the city council on matters related to public safety, crime and fire prevention, emergency preparedness and response, service contracts with public safety agencies and related matters. In its advisory role, the commission will make recommendations to the city council regarding budgets for public safety services and perform such other functions as the city council may direct.

Emergency Preparedness in Calabasas – a Fire Safe Council (EPIC-FSC)

The City of Calabasas has a nonprofit organization called EPIC-FSC dedicated to aiding local residents in mitigating risks, surviving emergencies, and recovering from natural disasters, which was established by a collective of Calabasas citizens in response to the devastating Woolsey Fire in 2018. In partnership with CalFire and the Santa Monica Mountains Resource Conservation District, the program offers property assessments, home fortification, and handheld radio training via the website (https://epic-fsc.com/), as well as an emergency app for crucial information and communication.

Finalsite Connect (formerly Blackboard Connect)

The City of Calabasas maintains a ***Finalsite Connect***™ program as its city-to-resident communications service. The ***Finalsite Connect***™ administrators can send periodic and personalized voice messages to residents within minutes. The ***Finalsite Connect***™ service complements the City's emergency preparedness procedures and is used to inform residents of pressing and important issues such as emergencies and community surveys.

AM Radio Station

The City of Calabasas has an emergency radio station (1630 AM) which broadcasts critical information in the event of an emergency through vehicle radio or AM Radio sources (crank radio).

CERP (Calabasas Emergency Radio Program)

The City of Calabasas has an amateur radio station "CalHam" comprised of community members who are CERP and CERT (Community Emergency Response Team) trained, and FCC licensed that test the system on a weekly basis. During an emergency, neighborhood information/status reports are forwarded to the City's Emergency Operations Center through CERP and EPIC members. In the event of an emergency, the city also utilizes additional communication methods such as Finalsite Connect™, Instagram, Threads, YouTube, Nextdoor, "X" (formerly Twitter), and Facebook.

City of Calabasas Homeowners Associations

Calabasas has an extensive list of Homeowners Associations that meet to discuss various community issues and are very involved in the community. The following is a list of the Homeowners Associations along with Neighborhoods and Residential Communities in the City of Calabasas.

City of Calabasas Homeowners Associations / Neighborhoods and Residential Communities	
Alizia Canyon HOA	Malibu Creek Condos HOA
Avanti Maintenance Corp.	Mira Monte HOA
Bellagio HOA	Mont Calabasas
Braewood Calabasas HOA	Mountain Park HOA
Calabasas Colony HOA	Mulholland Heights HOA
Calabasas Country Estates	Mulholland Heights North HOA
Calabasas Highlands	Mulwood Townhomes
Calabasas Hills Community Association	Oak Creek Estates
Calabasas Park HOA (Classic Calabasas)	Oakcreek Property Owners Association
Calabasas Park Estates	Oak Park Calabasas HOA
Calabasas Ridge HOA	Old Topanga, Inc. HOA
Calabasas View HOA	Palatino HOA
Calabasas Village Mobile Estates	Park Moderne
Canyon Creek Apartments	Park Sorrento HOA
Clairidge HOA	Parksouth Calabasas Estates HOA
Cold Creek Thousand Peaks	Paxton
The Colony at Calabasas (Shea Homes)	Saint Andrews Lane Homeowners Group
Community Assoc. of Saratoga Hills	Saratoga Ranch HOA
Country Creek Lane	Serenata HOA
Creekside Calabasas Park HOA	Steeplechase HOA
Dry Canyon Cold Creek	Stonecreek HOA
El Encanto HOA	Tanterra Condominiums
The Estates of the Oaks of Calabasas	The Oaks of Calabasas
Greater Mulwood Homeowners Association	Tiffany Creekside HOA
Horizons at Calabasas	Vista Pointe Owners Association
Las Villas Calabasas HOA	Westridge Calabasas Park HOA
Las Virgenes Hills Homes	Woodland Terrace HOA
Las Virgenes Park HOA	
Las Virgenes Village Townhomes	
Malibu Canyon Apartments	
Malibu Canyon Community Association	
Malibu Canyon Villas	
Malibu Creek Apartments	

Source: City of Calabasas

Table 31: City of Calabasas Homeowners Associations

HIDDEN HILLS

Hidden Hills is a small, affluent, gated community located along the Ventura Freeway (U.S. Highway 101) in the westernmost portion of the San Fernando Valley in Los Angeles County. The land area is 1.65 square miles with a population of 2,182 people (2021 U.S. American Community Survey 5-Year Estimate) and a median home value greater than $1,000,000. Hidden Hills is a master planned community designed and developed by A.E. Hanson in the 1950's.

Figure 33: City of Hidden Hills Aerial View

Source: Google Maps

General Coordinates	
Latitude	34° 10’ 3” North
Longitude	118° 39’ 39” West

Source: 2017 SCAG City Boundary Data

Map 9: City of Hidden Hills Location Map

Brief History

The area that is today the city of Hidden Hills was initially farm and ranchland. In 1950 developer A.E. Hanson purchased 1000 acres from local landowners, divided the property and began selling homes and home sites. In 1961 facing the prospect of becoming annexed by the city of Los Angeles and having Burbank Boulevard extended through the community, the residents of Hidden Hills elected to incorporate becoming the 73rd city incorporated in Los Angeles County. The community has continued to develop in a controlled fashion following strict development codes governed by the Hidden Hills Community Association.

Four full-time employees and one part-time Emergency Services Coordinator staff the office of City Hall and provide all necessary services and information to residents, visitors and contractors. Residents of Hidden Hills elect a five-member City Council on a non-partisan basis to serve four year overlapping terms. The Mayor is selected by the City Council, from one of its members, for a one-year term and serves as the official representative of the City.

Figure 34: City of Hidden Hills Entrance Gate

Climate/Topography

Winters are mild and slightly rainy while summers are warm and dry. The average temperature in 2022 ranged from the low 60's to the mid 90's in the summer and from the high 40's to the high 60's in the winter. The rainfall in Hidden Hills during 2022 was approximately 6 inches, occurring mainly during the winter months.

Category	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average Temperature (°F)	59.6	60.3	62.6	64.4	66.7	76.4	77.1	81.6	79.8	70.7	59.4	55
Minimum Temperature (°F)	52.6	52.3	52.8	52.9	53.5	61.3	62	67.7	67.6	59.4	51.9	49.1
Maximum Temperature (°F)	66.5	68.2	72.5	75.8	79.8	91.5	92.1	95.5	92	82	67	61
Average Rainfall (inches)	0.25	0	1.07	0.34	0	0	0	0	0.16	0	1.45	2.98

Source: Weather.gov (NOAA)

Table 32: City of Hidden Hills Average Monthly Temperatures and Rainfall (2022)

To the northwest, Hidden Hills abuts the foothills of the Simi Hills mountain range and the 3,000 acre Upper Las Virgenes Canyon Open Space Preserve. To the south the community is bordered by U.S. Highway 101.

Economic Activity

The City of Hidden Hills is a completely residential community with the exception of a small restricted commercial zone with one real estate office.

Hidden Hills Economy

Category	Value (in thousands)	Percent
Total Accommodation and Food Services Sales	N/A	N/A
Total Health Care and Social Assistance Receipts/Revenue	N/A	N/A
Total Manufacturer's Shipments	N/A	N/A
Total Merchant Wholesaler Sales	N/A	N/A
Total Retail Sales	N/A	N/A
Total	**N/A**	**N/A**

Source U.S. Census Bureau 2017 Economic Census of the U.S.

Table 33: City of Hidden Hills Economy

As a result, the impact of a disaster would have limited economic impact in terms of businesses; however, there could be a large impact to the local population and residential structures (see Population Demographics and Land Use sections below).

Population and Demographics

The following tables summarize the population and demographic groups at risk from a disaster in Hidden Hills.

Sex and Age Distribution

Demographic Estimates - 2021		
Sex and Age	**Estimate**	**Percent**
Total Population	**2,182**	**100.0%**
Male	964	44%
Female	1,218	56%
Under 5 years	55	2.50%
5 to 9 years	300	13.70%
10 to 14 years	170	7.80%
15 to 19 years	170	7.80%
20 to 24 years	50	2.30%
25 to 29 years	32	1.50%
30 to 34 years	39	1.80%
35 to 39 years	61	2.80%
40 to 44 years	181	8.30%
45 to 49 years	211	9.70%
50 to 54 years	183	8.40%
55 to 59 years	186	8.50%
60 to 64 years	218	10.00%
65 to 69 years	137	6.30%
70 to 74 years	96	4.40%
75 to 79 years	34	1.60%
80 to 84 years	28	1.30%
85 years and over	31	1.40%
Median age (years)	46.3	

Source: US Census Bureau American Community Survey 2021 5-Year Estimate

Table 34: City of Hidden Hills Sex and Age Demographics

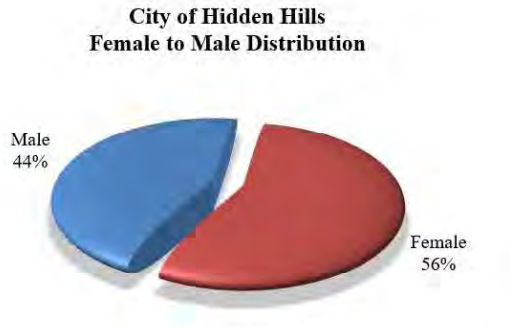

Figure 35: City of Hidden Hills Female to Male Distribution

The median age of residents in Hidden Hills is 46.3 with females (55.8%) outnumbering males (44.2%). Mitigation planning must consider the unique needs of population groups, for example those under 15 years of age and those over 65 years of age.

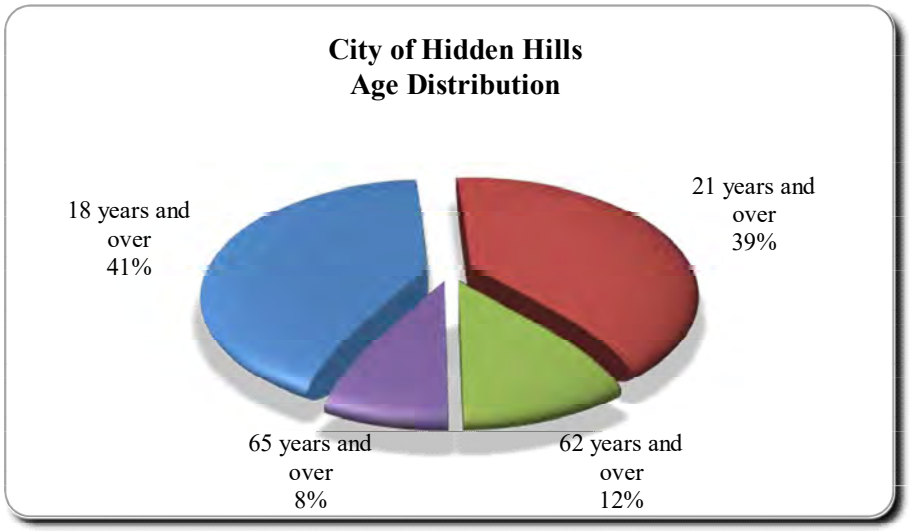

Figure 36: City of Hidden Hills Age Distribution

Race and Language Composition

Race

One aspect of mitigation planning is the need to address the cultural and language (communications) needs of local populations. This includes the ability to distribute information and provide notification in the event of a regional emergency. For Hidden Hills, an estimated 10.1% of the population speaks languages other than English (including English and another language or non-English only) with 0.23% speaking English "less than well or not at all". These language and communication challenges may pose additional difficulties for socially vulnerable groups during a disaster.

Race	2021 Estimated Population	Percent of Total
Total Population	**2,182**	**100.0%**
White alone	1932	88.54%
Black or African American alone	21	0.96%
Hispanic or Latino (of any race)	161	7.38%
American Indian and Alaska Native alone	0	0.00%
Asian alone	38	1.74%
Native Hawaiian and Other Pacific Islander alone	0	0.00%
Some other race alone	3	0.14%
Two or more races	27	1.24%

Source: US Census Bureau American Community Survey 2021 5-Year Estimate

Table 35: City of Hidden Hills Race Composition

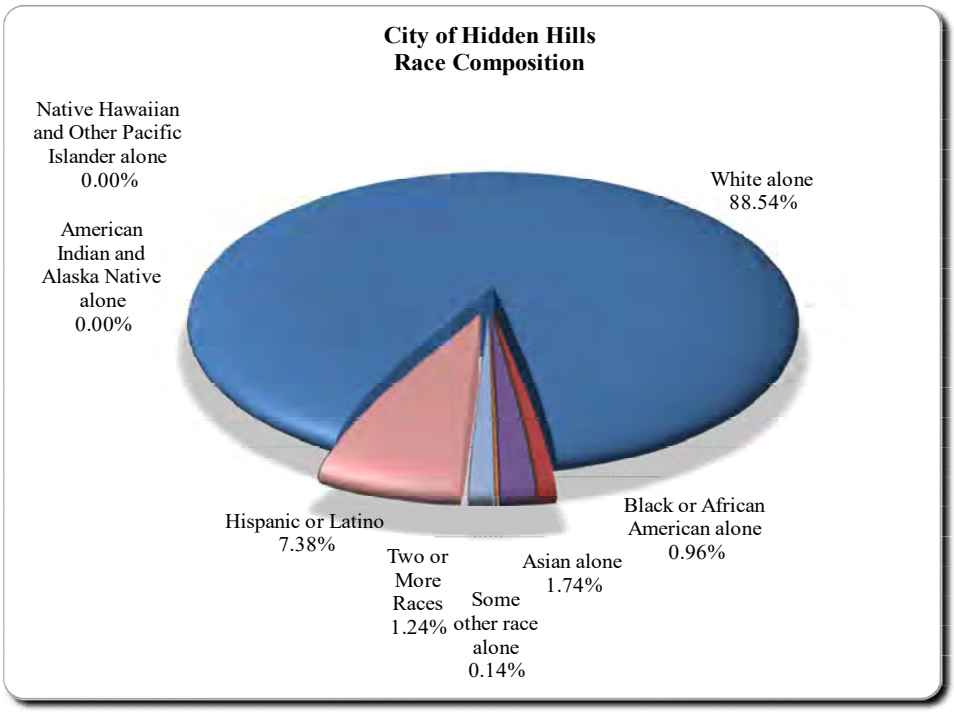

Figure 37: City of Hidden Hills Race Composition

Languages Spoken at Home

Language	2021 Estimated Population	Percent of Total
Speaks only English	1,907	89.70%
Language other than English spoken at home, percent of persons age 5 years+, 2017-2021	220	10.30%
Speak a Language Other than English	**2021 Estimated Population**	**Percent of Total**
Spanish	**90**	**4.20%**
5 to 17 years old	0	0.00%
18 to 64 years old	71	3.30%
65 years old and over	19	0.90%
Other Indo-European languages	**81**	**3.80%**
5 to 17 years old	20	0.90%
18 to 64 years old	52	2.40%
65 years old and over	9	0.40%
Asian and Pacific Island languages	**13**	**0.60%**
5 to 17 years old	4	0.20%
18 to 64 years old	6	0.30%
65 years old and over	3	0.10%
Other languages	**36**	**1.70%**
5 to 17 years old	18	0.80%
18 to 64 years old	16	0.80%
65 years old and over	2	0.10%

Source: US Census Bureau American Community Survey 2021 5-Year Estimate

Table 36: City of Hidden Hills Languages Spoken at Home

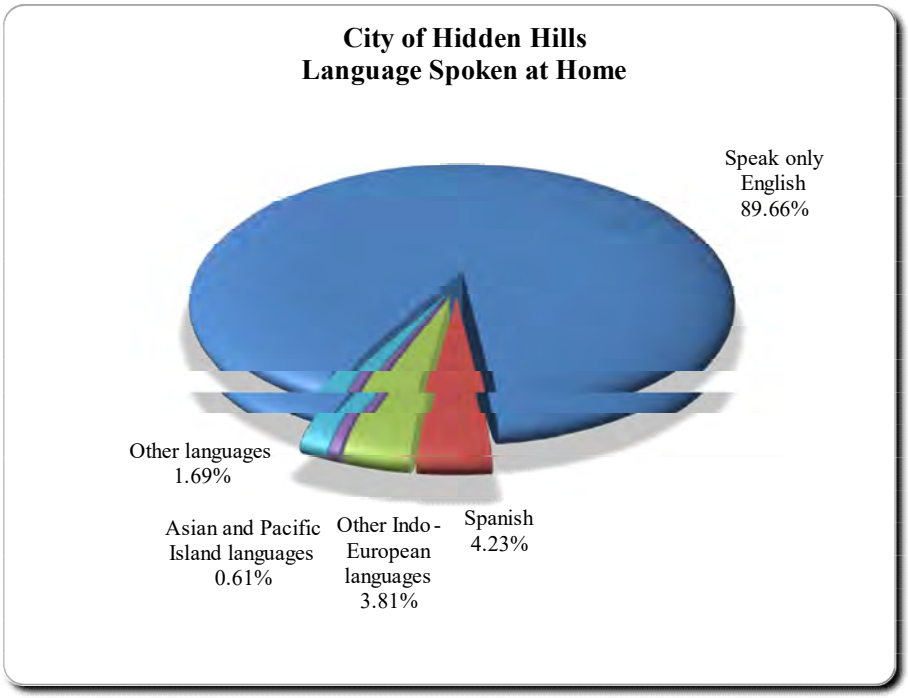

Figure 38: City of Hidden Hills Languages Spoken at Home

Income Distribution

Household income is a factor for mitigation planning since population groups in lower income ranges are less able to cope with the impact of disasters.

Furthermore, the availability of household funds can have a direct impact on the level of individual and family hazard mitigation activities and emergency preparedness.

In Hidden Hills, while the mean household income is $399,340 there are a limited number of households with incomes less than $25,000, near the 2023 U.S. poverty level of $24,860 for a family of three as defined by the *2023 HHS Poverty Guidelines,* by the U.S. Department of Health & Human Services.*

Income and Benefits (in 2021 Inflation-Adjusted Dollars)		
	Estimate	**Percent**
Total Households	**667**	**100.00%**
Less than $10,000	19	2.80%
$10,000 to $14,999	0	0.00%
$15,000 to $24,999	24	3.60%
$25,000 to $34,999	11	1.60%
$35,000 to $49,999	10	1.50%
$50,000 to $74,999	27	4.00%
$75,000 to $99,999	14	2.10%
$100,000 to $149,999	37	5.50%
$150,000 to $199,999	64	9.60%
$200,000 or more	461	69.10%
Median household income	**$250,000+**	**(X)**
Mean household income	**$399,340**	**(X)**

Source: US Census Bureau American Community Survey 2021 5-Year Estimate

Table 37: City of Hidden Hills Income and Benefits (2021 Inflation Adjusted Dollars)

* Note: The households with minimal incomes may also be attributable to retirees and others that have other sources of funds not reportable as income.

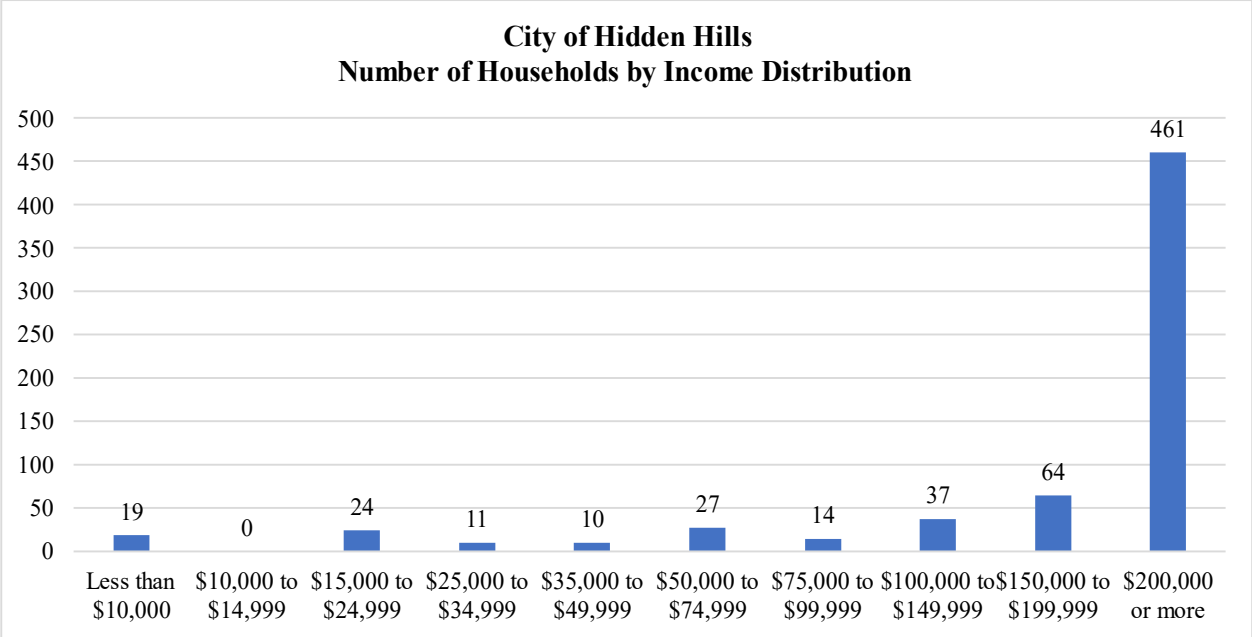

Figure 39: City of Hidden Hills Income Distribution

Land Use

Hidden Hills is a fully developed master planned residential community with a land area of 1.65 square miles. There is a small restricted commercial zone with a real estate office. Any further development or home modifications must be approved by the Hidden Hills Community Association Architectural Committee. There are 692 housing units, three guard houses, six miles of roads, 25 miles of bridle trails, three community riding arenas, four tennis courts, a competition-size pool, recreation center, and a 99-seat performing arts/movie theater.

Figure 40: City of Hidden Hills City Offices

Housing Characteristics

The following housing statistics provide a summary of the numbers and types of housing units that are at risk if a disaster were to occur in Hidden Hills. Housing data includes: Housing Occupancy, Housing Unit Change from 2017 to 2021, Number of Structures Built by Year, Home Values, and Home Value Distribution. In Hidden Hills, there was an increase in the number of single housing units since 2017.

Housing Occupancy	2021 Estimate	Percent
Total Housing Units	692	100.00%
Occupied housing units	667	96.40%
Vacant housing units	25	3.60%

Source: US Census Bureau American Community Survey 2021 5-Year Estimate

Table 38: City of Hidden Hills Housing Occupancy

Units In Structure	2021		2017		Change	
	Estimated Number	Percent of Units	Estimated Number	Percent of Units	Difference 2021-2017	Percent Change
Total Housing Units	**692**	**100.00%**	**594**	**100.00%**	**98**	**16.50%**
1-unit, detached	689	99.60%	591	99.50%	98	16.58%
1-unit, attached	3	0.40%	3	0.50%	0	-
2 units	0	0.00%	0	0.00%	0	-
3 or 4 units	0	0.00%	0	0.00%	0	-
5 to 9 units	0	0.00%	0	0.00%	0	-
10 to 19 units	0	0.00%	0	0.00%	0	-
20 or more units	0	0.00%	0	0.00%	0	-
Mobile home	0	0.00%	0	0.00%	0	-
Boat, RV, van, etc.	0	0.00%	0	0.00%	0	-

Source: US Census Bureau American Community Survey 2021 5-Year Estimate

Table 39: City of Hidden Hills Units in Structure Change from 2017 to 2021

In terms of risk and disaster mitigation, older structures that have not been retrofitted or otherwise improved may be more susceptible to damage or destruction due to age and the fact that older building codes were less stringent than those required for newer structures. As a result, the inventory of older structures is a consideration when developing mitigation plans. In Hidden Hills, 87.6% of structures (606) were built prior to 2000 and 62.9% (435) before 1980.

Year Structure Built	Estimate	Percent
Total housing units	**692**	**100.0%**
Built 2020 or later	0	0.00%
Built 2010 to 2019	20	2.90%
Built 2000 to 2009	66	9.50%
Built 1990 to 1999	77	11.10%
Built 1980 to 1989	94	13.60%
Built 1970 to 1979	71	10.30%
Built 1960 to 1969	166	24.00%
Built 1950 to 1959	183	26.40%
Built 1940 to 1949	10	1.40%
Built 1939 or earlier	5	0.70%

Source: US Census Bureau American Community Survey 2021 5-Year Estimate

Table 40: Year Structures Built in the City of Hidden Hills

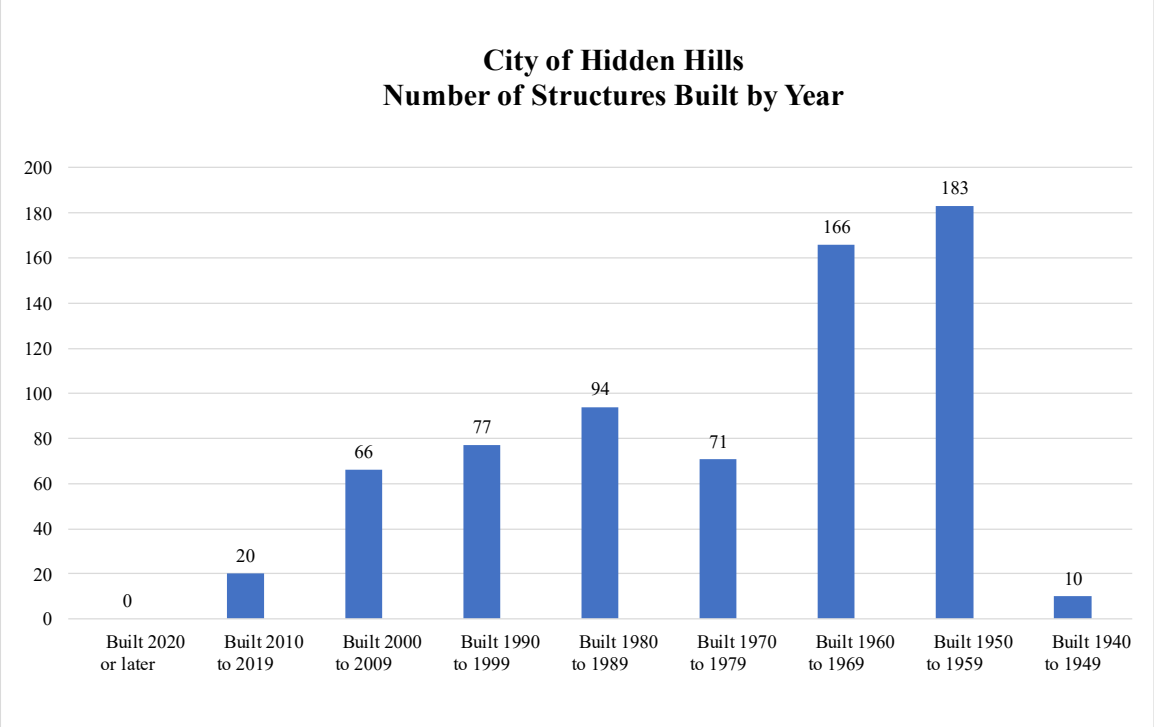

Figure 41: City of Hidden Hills Number of Structures Built by Year

Home values are an important consideration when evaluating the potential dollar loss due to disasters. These values can also be used to assess the cost/benefit of mitigation activities and planning. In Hidden Hills, almost all Owner Occupied Units are currently valued over $1,000,000. Consequently, the potential dollar losses from a disaster can rapidly escalate – illustrating the need for mitigation planning.

Owner-Occupied Units by Value		
	Estimate	**Percent**
Owner-Occupied Units	**603**	**100.0%**
Less than $50,000	6	1.00%
$50,000 to $99,999	0	0.00%
$100,000 to $149,999	0	0.00%
$150,000 to $199,999	0	0.00%
$200,000 to $299,999	0	0.00%
$300,000 to $499,999	0	0.00%
$500,000 to $999,999	12	2.00%
$1,000,000 or more	585	97.00%
Median (dollars)	**$2,000,000+**	**(X)**

Source: US Census Bureau American Community Survey 2021 5-Year Estimates

Table 41: City of Hidden Hills Home Value Distribution

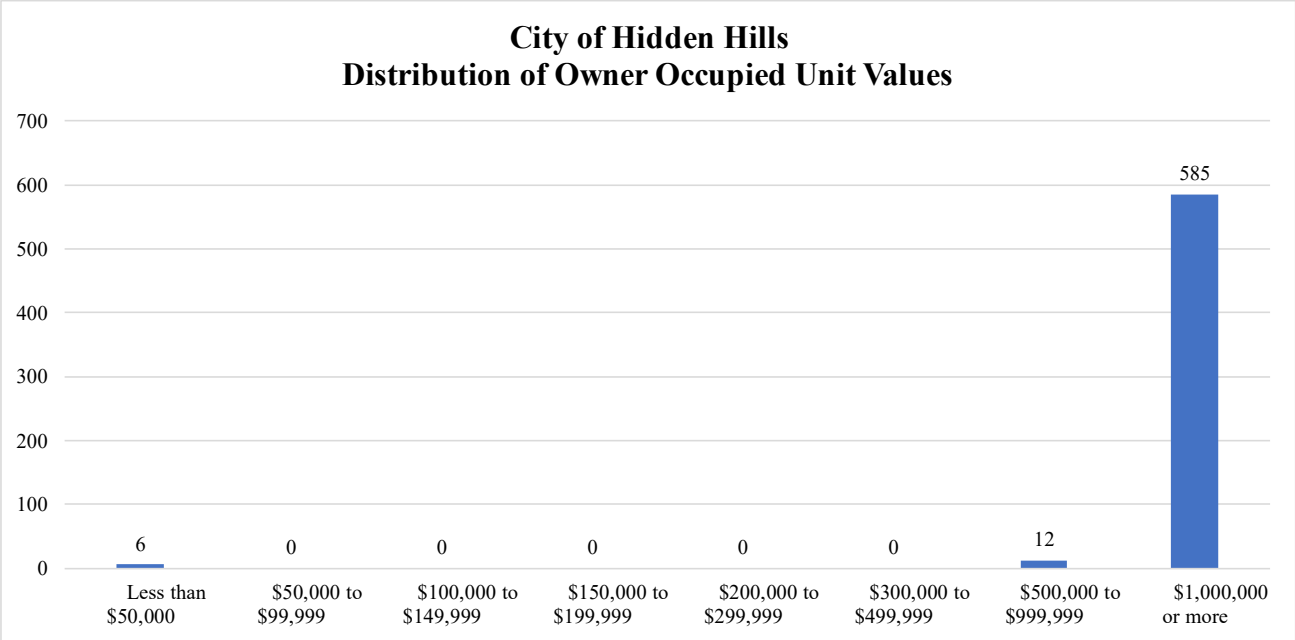

Figure 42: City of Hidden Hills Owner Occupied Unit Values

Emergency Preparedness

The City of Hidden Hills is a general law municipality operating on a contract basis for law enforcement, building and safety, planning and engineering, as well as legal counsel. The City's fire and emergency medical services are provided through the Consolidated Fire Protection District of Los Angeles County.

Emergency Operations Center

The City of Hidden Hills has a fully equipped Emergency Operations Center (EOC) located at City Hall in the City Council Chambers. The primary Casualty Collection Point is located at Round Meadow Elementary School.

Office of Emergency Services

The Hidden Hills Office of Emergency Services (OES) is responsible for the development of the City's Emergency Operations Plan, which provides for the effective mobilization of all the City's resources, both public and private, to meet any condition constituting a local emergency, state of emergency or state of war emergency.

OES consists of all officers and employees of the City, Public Safety Commissioners, volunteer forces enrolled to aid during an emergency, and all groups, organizations and persons who may, by agreement or operations of law, including persons impressed into service, be charged with duties incident to the protection of life and property in the City during an emergency.

OES provides a liaison to Round Meadow Elementary School. This liaison is a member of the school's Disaster Preparedness Committee.

Hidden Hills Community Association (HHCA) - Equestrian Services Committee

This Committee is responsible for coordinating the evacuation of horses and other livestock in the community during emergency or disaster situations.

Community Emergency Response Team (CERT)

The Community Emergency Response Team is a group of volunteers who have been certified as emergency response personnel. Volunteers receive training under a nationally recognized program for emergency and disaster response. CERT members have also received additional training to aid in preliminary damage assessment. To facilitate coordination of emergency response efforts, the City has been divided into seven (7) geographic regions.

Emergency Medical Response

An Emergency Medical Response trailer is equipped to aid in providing services to 350 - 400 victims. Storage is also provided for medical supplies and search and rescue equipment.

Emergency Response Equipment

The City has purchased multiple tools and equipment to assist in an emergency, including an emergency response/communications vehicle that contains various tools and PPE's. The vehicle is also outfitted with communications equipment capable of connecting to the City radio system, LASD, LACFD, and the MRCA. The vehicle also contains a 400-gallon water reserve and pump for assistance during a wildfire.

The City has also purchased an off-road quad vehicle that can provide assistance on City trails and/or access to homes that could be unreachable due to a road hazard. Additionally, a 75-gallon water/foam pump can be installed along with two pool pumps that can be strategically deployed during a wildfire as an alternate means to assist Firefighters.

Communication Systems

The City has an assigned Federal Communications Commission, Public Safety Pool Radio frequency and maintains a repeater, several base stations positioned throughout the City, and handheld radios distributed for use throughout the city, as well as at the EOC. In addition, the City has several licensed HAM operators. The City can maintain contact with Round Meadow Elementary School and the Hidden Hills Community Association in emergencies. Lastly, the City has installed a back-up internet line and has purchased two satellite phones.

The City of Hidden Hills implemented the Finalsite Connect® service allowing authorized civic leaders to create and rapidly disseminate emergency messages to every telephone number stored in the notification database. In addition, the City is authorized to issue emergency messages via cell phones through IPAWS Wide Area Alerts.

Cable TV Channel 3 is used as a community notification and bulletin board. Throughout the year the station is used to show videos related to emergency and disaster preparedness. Additionally, in the event of an emergency, emergency messaging can be broadcast on Channel 3.

Hidden Hills uses an E-mail notification system that immediately provides important information to residents who have voluntarily joined the program. This system is also used to circulate public service announcements, such as reminding seniors to check alternate electrical power sources in the event of an electric shutdown.

Finally, the City of Hidden Hills circulates a monthly newsletter. The newsletter provides general bulletins as well as emergency preparedness recommendations and information.

MALIBU

The City of Malibu is located along the Pacific Ocean northwest of the City of Los Angeles. Malibu is generally bounded on the north by the Santa Monica Mountains, on the east by Topanga Canyon, on the west by Ventura County and on the south by the Pacific Ocean. Malibu was incorporated on March 28, 1991. The City has 21 miles of coastline along the Pacific Ocean and has a population of 10,915 (2021 U.S. American Community Survey 5-Year Estimate).

The City of Malibu is a dynamic, internationally recognized community in Northern Los Angeles County that offers a high quality of life for its residents. Celebrated for its natural beauty and unique coastal resources, the City is also renowned for its leadership in environmental stewardship, excellent schools and political activism. Malibu has seven miles of public beaches, canyons and watershed along its 21 miles of coastline and provides numerous opportunities for recreation and outdoor activities.

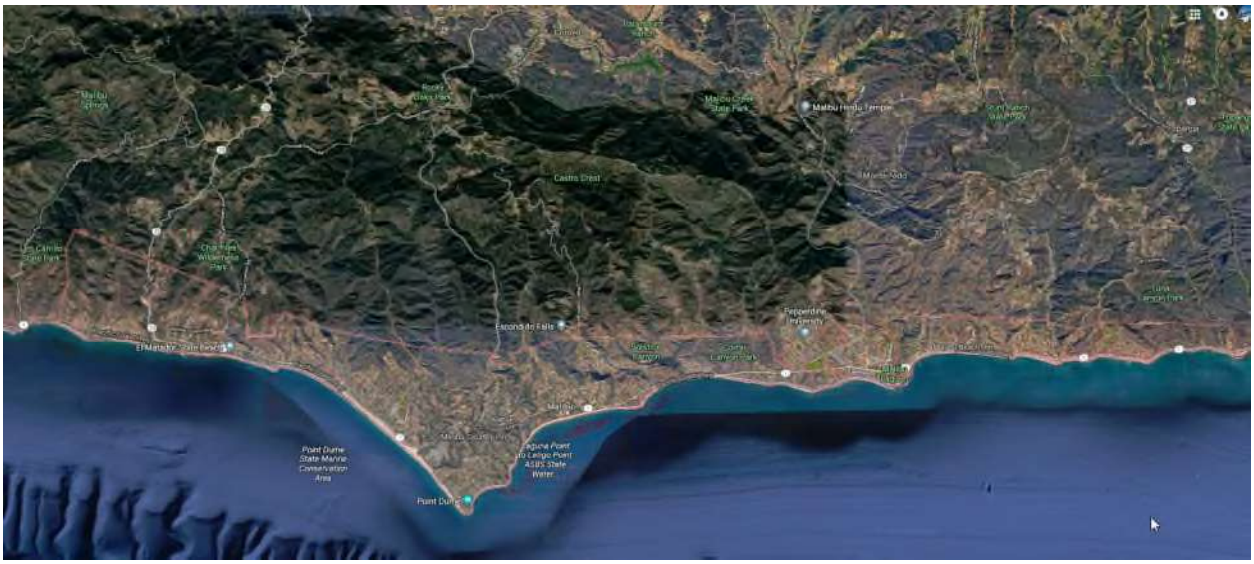

Figure 43: City of Malibu Aerial View

Source: Google Maps

General Coordinates	
Latitude	34° 2’ 16” North
Longitude	118° 41’ 34” West

Source: 2016 SCAG City Boundary Data
Map 10: Malibu Location Map

Brief History

The Malibu area was settled in the 1890s by the Rindge Family, which owned the Rancho Topanga Malibu Sequit, a large ranch. Its remote location between the ocean and the mountains led to its small-town, rural residential community development pattern. Malibu has remained a primarily residential community. Commercial areas are limited to small neighborhood-serving and visitor-serving uses interspersed throughout the City, but located primarily in the Las Flores, Civic Center, Point Dume and Trancas areas.

Figure 44: Malibu Coastline

Climate/Topography

Malibu has a unique climate due to its location, which is wedged between the Santa Monica Mountains and the Pacific Ocean. Average 2022 temperatures ranged from the low 50's to the mid 60's during the winter months and from the low 60's to mid 80s in the summer months. The rainfall for the area was approximately 6 inches in 2022, with the winter months characterized as wetter than summer months.

Category	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average Temperature (°F)	59.4	60.1	60.9	61.1	61.4	70.4	70.4	76.7	76.6	67.1	59.3	55.1
Minimum Temperature (°F)	53.6	53.7	54	53.5	53.8	61.7	61.1	67.9	68.6	60.5	54.1	50.9
Maximum Temperature (°F)	65.1	66.4	67.7	68.7	69	79.1	79.6	85.6	84.5	73.7	64.5	60
Average Rainfall (inches)	0.25	0	1.07	0.34	0	0	0	0	0.16	0	1.45	2.98

Source: Weather.gov (NOAA)

Table 42: City of Malibu Average Monthly Temperatures and Rainfall (2022)

The geography of Malibu includes a wide variety of terrain changes including mesas, canyons and rugged cliffs facing sandy beaches. The landscape ranges from lush greenery with exotic plants to natural habitats consisting of endemic chaparral, scrub grasses, riparian woodlands, and wetlands. Malibu lies on the fringe of the Santa Monica Mountains, which is an extensive chaparral wilderness area. The City has three large deep gorges and canyons with extensive vegetation growth due to its many streams and creeks.

Economic Activity

Malibu is a residential community that is also a popular tourist destination. The City has 21 miles of coastline and its beaches are a main attraction. There are also parks owned and operated by the City, National Park Service, State of California, and the Santa Monica Mountains Conservancy / Mountains Recreation Conservation Authority in the Santa Monica Mountains.

Economic activity is one indicator of the potential losses that may be incurred in the event of a disaster. In addition to tourism and recreation, there are numerous retail locations along Pacific Coast Highway including the Malibu Civic Center area. Other service industries in Malibu include real estate, financial, health and beauty, medical, and construction.

Malibu Principal Employer Categories and Number of Employees

Category (by NAICS code)	Number of Establishments	Number of Employees	Percent of Total City Employment
Wholesale Trade	17	71	1.10%
Retail Trade	97	860	13.27%
Information	55	190	2.93%
Finance and Insurance	41	187	2.88%
Real Estate and Rental and Leasing	106	298	4.60%
Professional, Scientific, and Technical Services	120	831	12.82%
Administrative and Support and Waste Management and Remediation Services	41	235	3.62%
Educational Services	10	204	3.15%
Health Care and Social Assistance	73	1,156	17.83%
Arts, Entertainment, and Recreation	96	234	3.61%
Accommodation and Food Services	71	2,056	31.71%
Other Services (Except Public Administration)	49	161	2.48%
Total	**776**	**6,483**	**100.00%**

Source: 2017 Economic Census of the U.S. for the City of Malibu

Table 43: City of Malibu Employer Categories and Number of Employees

The following tables list the principal property tax payers in Malibu and the City's Revenues for the 2022 Fiscal Year. Each of these statistics provide an overall snapshot of economic activity.

Malibu Principal Property Tax Payers

Company	Taxable Assessed Value (thousands)	Percent of Total City Assessed Value
HRL Laboratories LLC	$138,881	0.71%
Jamestown Premier Malibu Village LP	135,901	0.69%
27600 PCH LLC	128,815	0.66%
Carbonview Limited LLC	128,208	0.66%
Malibu Realty LLC	118,428	0.61%
22310 PCH LLC	115,630	0.59%
22108 PCH LLC	91,137	0.47%
Malibu 2018 PCH LP	89,350	0.46%
27768 PCH LLC	85,881	0.44%
Goldman Sachs Trust	84,755	0.43%
Top 10 Total	**$1,116,986**	**5.71%**

Source: 2021- 2022 Comprehensive Annual Financial Report for the City of Malibu, Fiscal Year Ended June 2022

Table 44: City of Malibu Principal Property Tax Payers

Malibu Tax Revenues

Category	Revenues	Percent of Total
Property Taxes	$16,054,850	39%
Other Taxes	20,028,925	48%
Other Revenues	5,528,268	13%
Total 2022 Revenue	**$55,197,775**	**100.00%**

Source: 2021 - 2022 Comprehensive Annual Financial Report for the City of Malibu, Fiscal Year Ended June 2022

Table 45: City of Malibu Revenues

Malibu Economy

The table below provides a breakdown of revenue channels for the City of Malibu in 2017. These categories include Accommodation and Food Services, Health Care and Social Assistance, Transportation and Warehousing, and Retail Sales. The total revenues accrued by the city amounted to approximately $578.5 Million, which included Total Retail Sales per capita of $15,575.

Category	Value (in thousands)	Percent
Total Accommodation and Food Services Sales	$192,108	33.21%
Total Health Care and Social Assistance Receipts/Revenue	$188,002	32.50%
Total Transportation and Warehousing Receipts/Revenue	N/A	N/A
Total Retail Sales	$198,333	34.29%
Total	**$578,443**	**100.00%**

Source U.S. Census Bureau 2017 Economic Census of the U.S.

Table 46: City of Malibu Economy

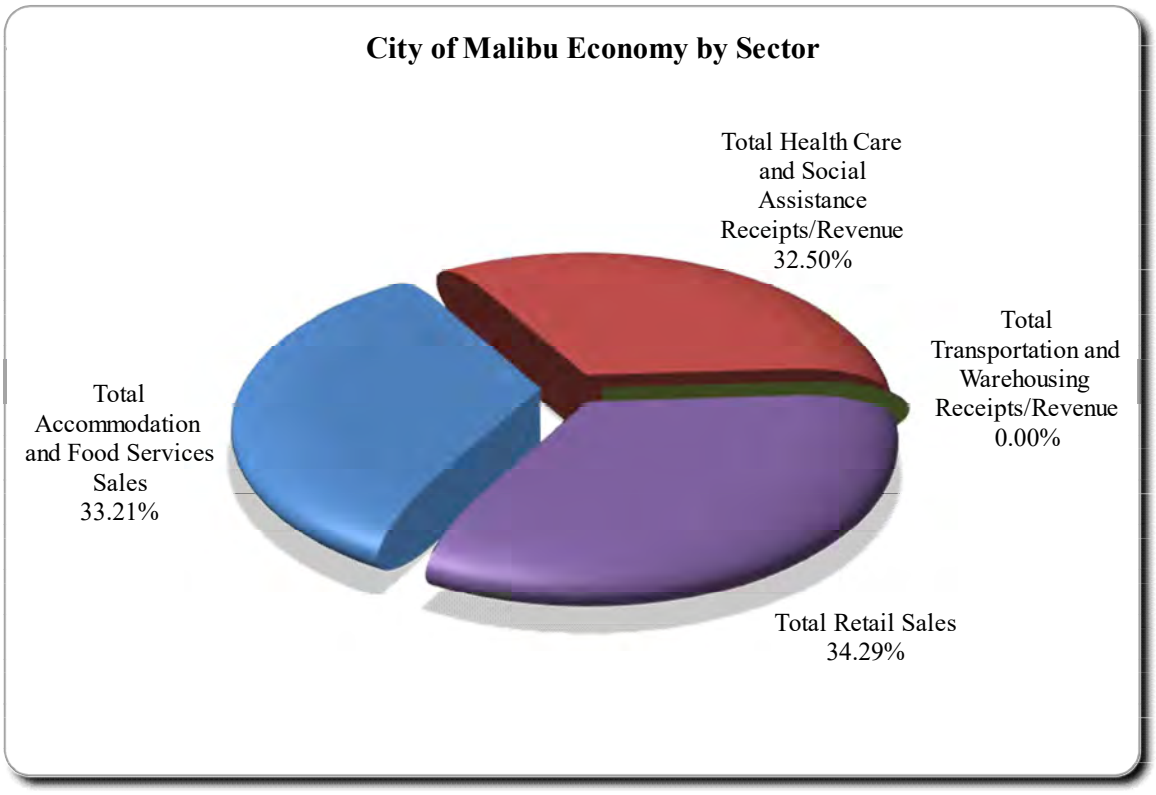

Figure 45: City of Malibu Economy by Sector

Population Demographics

The following tables summarize the population and demographic groups at risk from natural disasters and other catastrophic events in Malibu.

Sex and Age Distribution

Demographic Estimates - 2021		
Sex and Age	**Estimate**	**Percent**
Total Population	**10,915**	**100%**
Male	5,457	50%
Female	5,458	50%
Under 5 years	278	2.50%
5 to 9 years	470	4.30%
10 to 14 years	754	6.90%
15 to 19 years	749	6.90%
20 to 24 years	341	3.10%
25 to 29 years	400	3.70%
30 to 34 years	641	5.90%
35 to 39 years	504	4.60%
40 to 44 years	594	5.40%
45 to 49 years	812	7.40%
50 to 54 years	533	4.90%
55 to 59 years	820	7.50%
60 to 64 years	870	8.00%
65 to 69 years	1088	10.00%
70 to 74 years	908	8.30%
75 to 79 years	523	4.80%
80 to 84 years	334	3.10%
85 years and over	296	2.70%
Median age (years)	49.6	

Source U.S. Census Bureau 2021 American Community Survey 5-Year Estimate

Table 47: City of Malibu Sex and Age Demographics

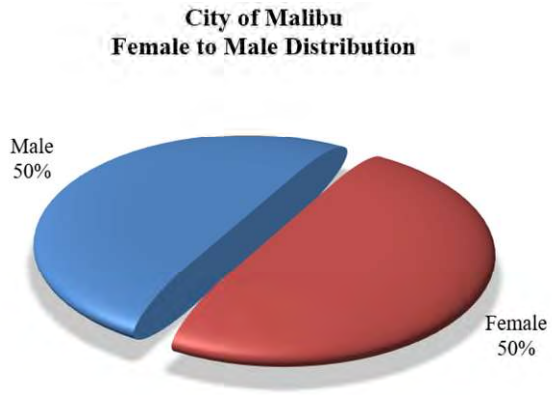

Figure 46: City of Malibu Female to Male Distribution

The average age of residents in Malibu is 49.6 years with females (50.0%) roughly similar to males (50.0%). Mitigation planning must consider the unique needs of population groups, for example those under 15 years of age and those over 65 years of age.

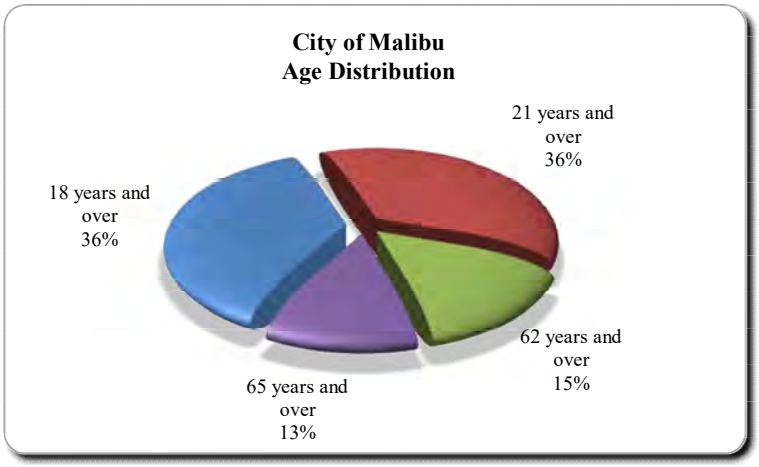

Figure 47: City of Malibu Age Distribution

Race and Language Composition

Race

One aspect of mitigation planning is the need to address the cultural and language (communications) needs of local populations. This includes the ability to distribute information and provide notification in the event of a regional emergency. For Malibu, an estimated 18.1% of the population speaks languages other than English (including English and another language or non-English only) with nearly 0.69% speaking English "less than well or not at all". These language and communication challenges may pose additional difficulties for socially vulnerable groups during a disaster.

Race	2021 Estimated Population	Percent of Total
Total Population	**10,915**	**100.00%**
White alone	7,952	72.85%
Black or African American alone	70	0.64%
Hispanic or Latino (of any race)	1522	13.94%
American Indian and Alaska Native alone	0	0.00%
Asian alone	415	3.80%
Native Hawaiian and Other Pacific Islander alone	27	0.25%
Some other race alone	226	2.07%
Two or more races	703	6.44%

Source U.S. Census Bureau 2021 American Community Survey 5-Year Estimate
Table 48: City of Malibu Race Composition

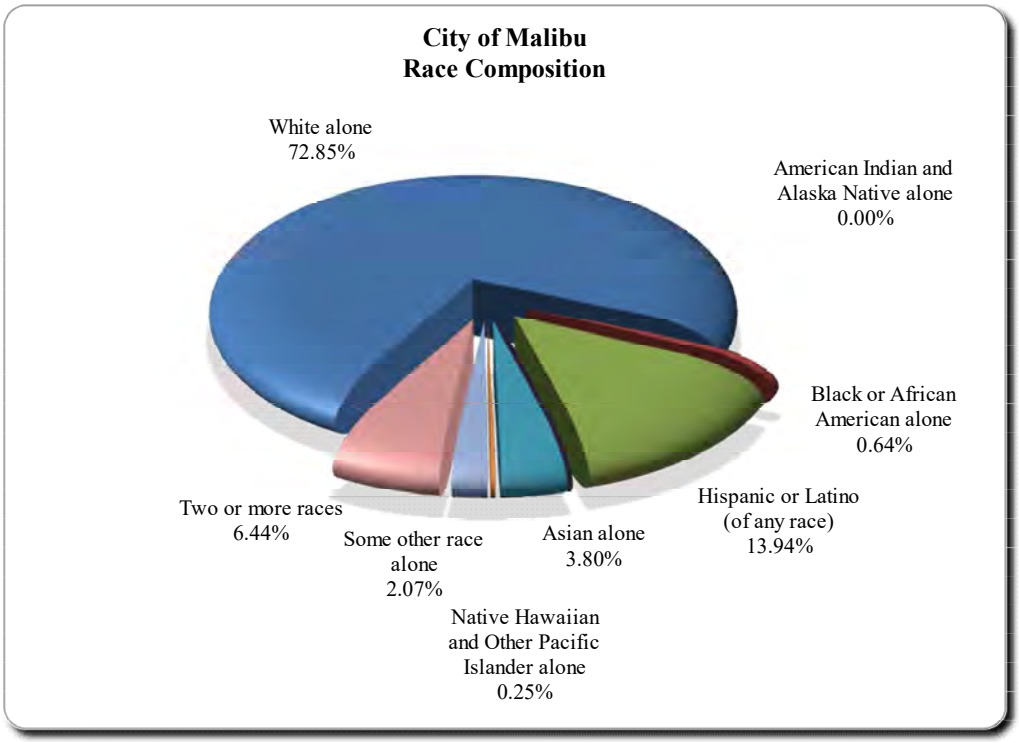

Figure 48: City of Malibu Race Composition

Languages Spoken at Home

Language	2021 Estimated Population	Percent of Total
Speaks only English	8,666	81.50%
Language other than English spoken at home, percent of persons age 5 years+, 2017-2021	1,971	18.50%
Speak a Language Other than English	**2021 Estimated Population**	**Percent of Total**
Spanish	839	7.90%
5 to 17 years old	44	0.40%
18 to 64 years old	673	6.30%
65 years old and over	122	1.10%
Other Indo-European languages	772	7.30%
5 to 17 years old	62	0.60%
18 to 64 years old	426	4.00%
65 years old and over	284	2.70%
Asian and Pacific Island languages	344	3.20%
5 to 17 years old	50	0.50%
18 to 64 years old	239	2.20%
65 years old and over	55	0.50%
Other languages	16	0.20%
5 to 17 years old	0	0.00%
18 to 64 years old	0	0.00%
65 years old and over	16	0.20%

Source U.S. Census Bureau 2021 American Community Survey 5-Year Estimate

Table 49: City of Malibu Languages Spoken at Home

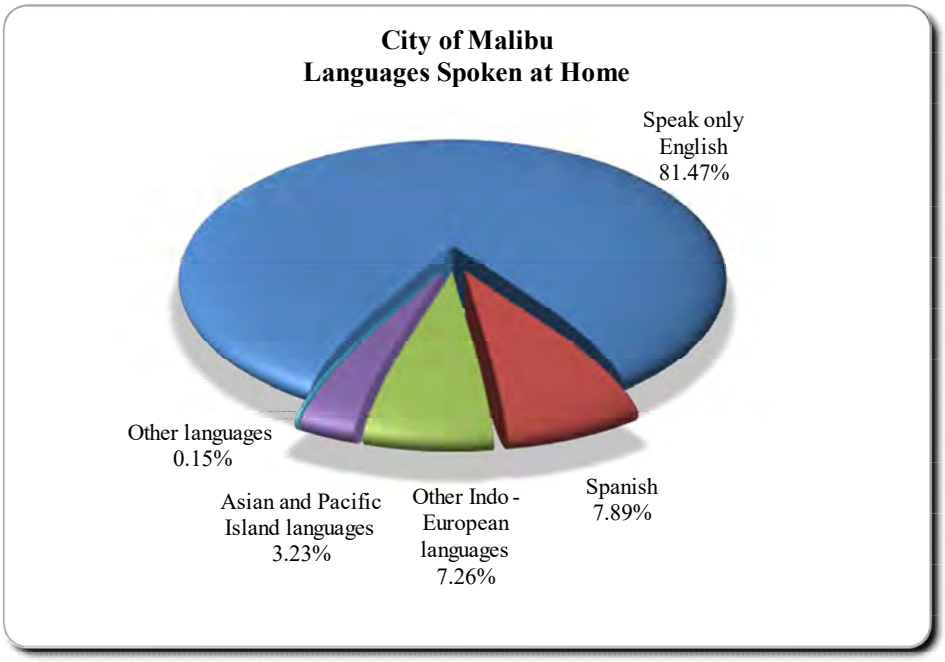

Figure 49: City of Malibu Languages Spoken at Home

Income Distribution

Household income is a factor for mitigation planning since population groups in lower income ranges are less able to cope with the impact of disasters.

Furthermore, the availability of household funds can have a direct impact on the level of individual and family hazard mitigation activities and emergency preparedness.

While the mean household income in Malibu is over $290,715 there are a limited number of households with incomes less than $25,000, near the 2023 U.S. poverty level of $24,860 for a family of three as defined by the *2023 HHS Poverty Guidelines,* by the U.S. Department of Health & Human Services.*

Income and Benefits (in 2021 Inflation-Adjusted Dollars)		
	Estimate	**Percent**
Total Households	**4,442**	**100.00%**
Less than $10,000	333	7.50%
$10,000 to $14,999	31	0.70%
$15,000 to $24,999	191	4.30%
$25,000 to $34,999	160	3.60%
$35,000 to $49,999	84	1.90%
$50,000 to $74,999	262	5.90%
$75,000 to $99,999	213	4.80%
$100,000 to $149,999	515	11.60%
$150,000 to $199,999	737	16.60%
$200,000 or more	1919	43.20%
Median household income (dollars)	**$178,594**	**(X)**
Mean household income (dollars)	**$290,715**	**(X)**

Source U.S. Census Bureau 2021 American Community Survey 5-Year Estimate

Table 50: City of Malibu Income and Benefits (2021 Inflation Adjusted Dollars)

*Note: The households with minimal incomes may also be attributable to retirees and others that have other sources of funds not reportable as income.

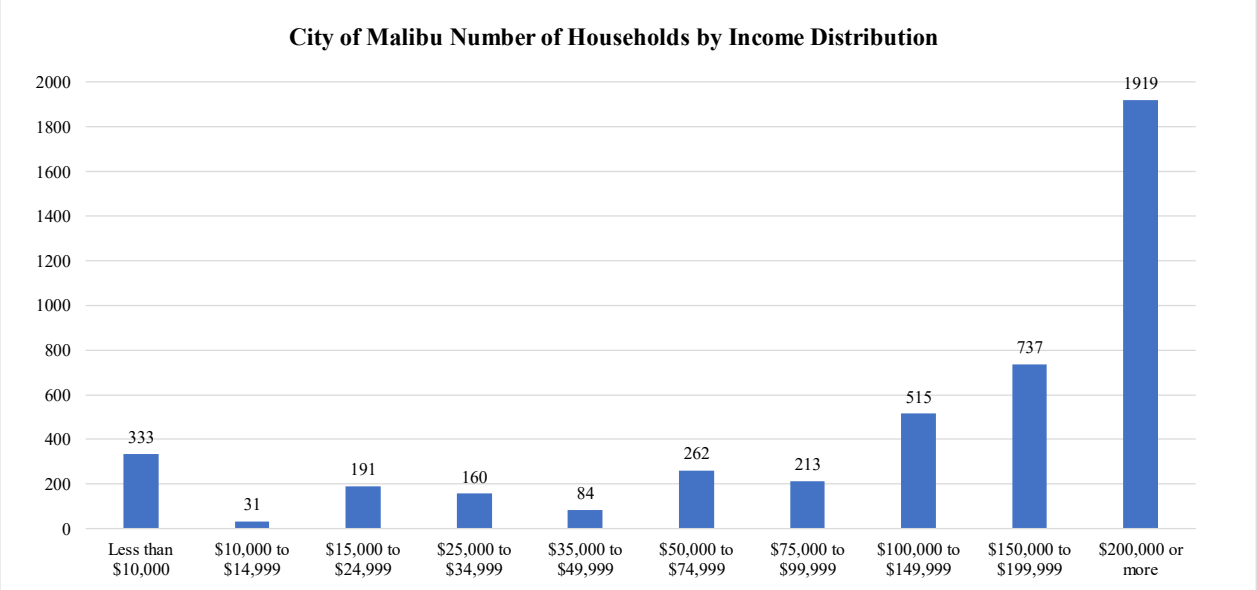

Figure 50: City of Malibu Income Distribution

Land Use

Malibu is a beachfront community with the majority of residents living along Pacific Coast Highway (PCH) or in small residential communities that gain primary access from PCH. Designated as State Route 1, PCH is the major four lane arterial roadway traversing the City from east to west. PCH is a major transportation corridor with thousands of daily commuters. Beach traffic substantially increases congestion along PCH during the summer months.

The Santa Monica Mountains serve as a natural boundary to the north. A number of residences are interspersed throughout the Santa Monica Mountains along canyons and hillsides within a mile or more inland. Furthermore, the City has experienced a great deal of 'in-fill' development, which has increased the population density, creating greater service loads on the existing infrastructure including roads, water supplies, sewer services and storm drains. In-fill development is defined as development of vacant or partially developed parcels which are surrounded by or in close proximity to areas that are substantially or fully developed.

Housing Characteristics

The following housing statistics provide a summary of the numbers and types of housing units that are at risk if a natural disaster or other catastrophic event were to occur in Malibu. Housing data includes: Housing Occupancy, Housing Unit Change from 2017 to 2021, Number of Structures Built by Year, Home Values, and Home Value Distribution. For Malibu, the number of multi-unit structures (20+ units) increased, while the number of smaller structures (1-unit, attached) and (3 or 4 units) has decreased since 2017.

Housing Occupancy	Estimate	Percent
Total Housing Units	**6,936**	**100.0%**
Occupied housing units	4,442	64.00%
Vacant housing units	2,494	36.00%

Source U.S. Census Bureau 2021 American Community Survey 5-Year Estimate
Table 51: City of Malibu Housing Occupancy

Units In Structure	2021		2017		Change	
	Estimated Number	Percent of Units	Estimated Number	Percent of Units	Difference 2021-2017	Percent Change
Total Housing Units	**6,936**	**100.0%**	**7,448**	**100.0%**	**-512**	**-6.87%**
1-unit, detached	4,516	65.10%	4,552	61.10%	-36	-0.79%
1-unit, attached	442	6.40%	664	8.90%	-222	-33.43%
2 units	116	1.70%	172	2.30%	-56	-32.56%
3 or 4 units	332	4.80%	534	7.20%	-202	-37.83%
5 to 9 units	148	2.10%	131	1.80%	17	12.98%
10 to 19 units	220	3.20%	279	3.70%	-59	-21.15%
20 or more units	413	6.00%	227	3.00%	186	81.94%
Mobile home	749	10.80%	889	11.90%	-140	-15.75%
Boat, RV, van, etc.	0	0.00%	0	0.00%	0	-

Source U.S. Census Bureau 2021 American Community Survey 5-Year Estimate
Table 52: City of Malibu Units in Structure Change from 2017 to 2021

In terms of risk and disaster mitigation, older structures that have not been retrofitted or otherwise improved may be more susceptible to damage or destruction due to age and the fact that older building codes were less stringent than those required for newer structures. As a result, the inventory of older structures is a consideration when developing mitigation plans.

In Malibu, 90.0% of structures (6,243) were built prior to 2000 and 67.30% (4,667) before 1980.

*After the 2018 Woolsey Fire, 150 single family homes were re-built with the first home completed in January 2020.

Year Structure Built	Estimate	Percent
Total housing units	**6,936**	**100.00%**
Built 2020 or later	13*	0.20%
Built 2010 to 2019	201	2.90%
Built 2000 to 2009	479	6.90%
Built 1990 to 1999	710	10.20%
Built 1980 to 1989	866	12.50%
Built 1970 to 1979	2,001	28.80%
Built 1960 to 1969	976	14.10%
Built 1950 to 1959	838	12.10%
Built 1940 to 1949	362	5.20%
Built 1939 or earlier	490	7.10%

Source U.S. Census Bureau 2021 American Community Survey 5-Year Estimate

Table 53: Year Structures Built in Malibu

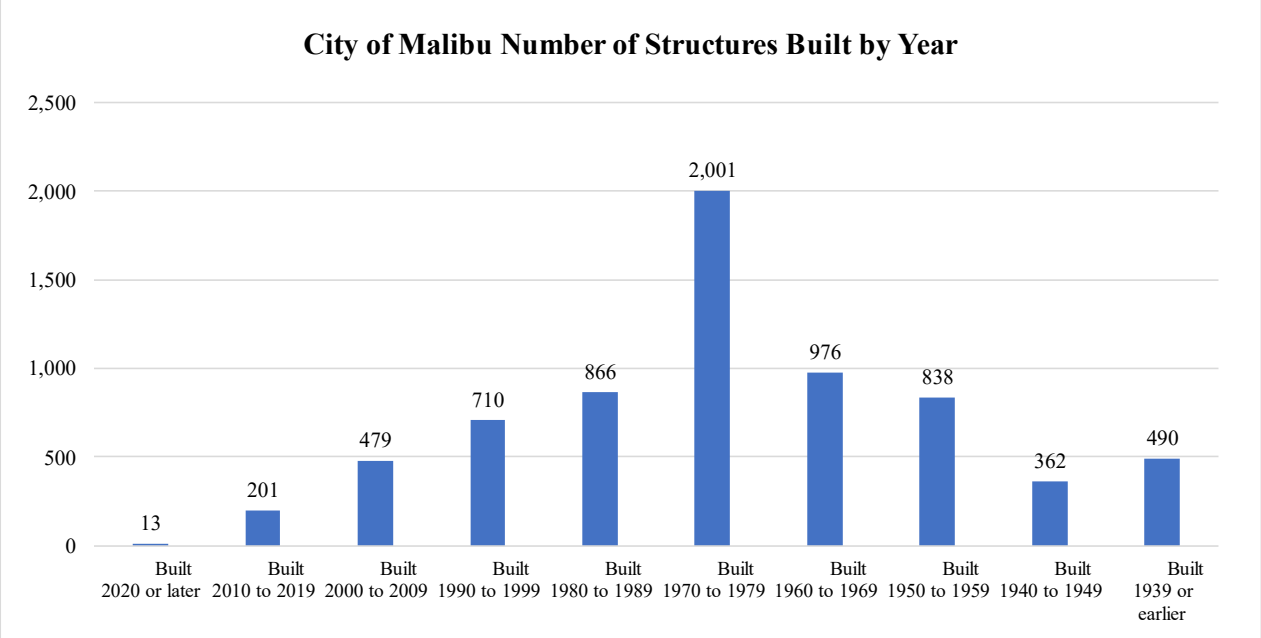

Figure 51: City of Malibu Number of Structures Built by Year

Home values are an important consideration when evaluating the potential dollar loss due to disasters. These values can also be used to assess the cost/benefit of mitigation activities and planning. In Malibu, the majority of Owner Occupied Units are valued over $1,000,000. Consequently, the potential dollar losses from a disaster can rapidly escalate – illustrating the need for mitigation planning.

Owner-Occupied Units by Value		
	Estimate	**Percent**
Owner-Occupied Units	**3,395**	**100.0%**
Less than $50,000	38	1.10%
$50,000 to $99,999	0	0.00%
$100,000 to $149,999	9	0.30%
$150,000 to $199,999	0	0.00%
$200,000 to $299,999	28	0.80%
$300,000 to $499,999	29	0.90%
$500,000 to $999,999	527	15.50%
$1,000,000 or more	2,764	81.40%
Median (dollars)	**$2,000,000+**	**(X)**

Source U.S. Census Bureau 2021 American Community Survey 5-Year Estimate

Table 54: City of Malibu Home Value Distribution

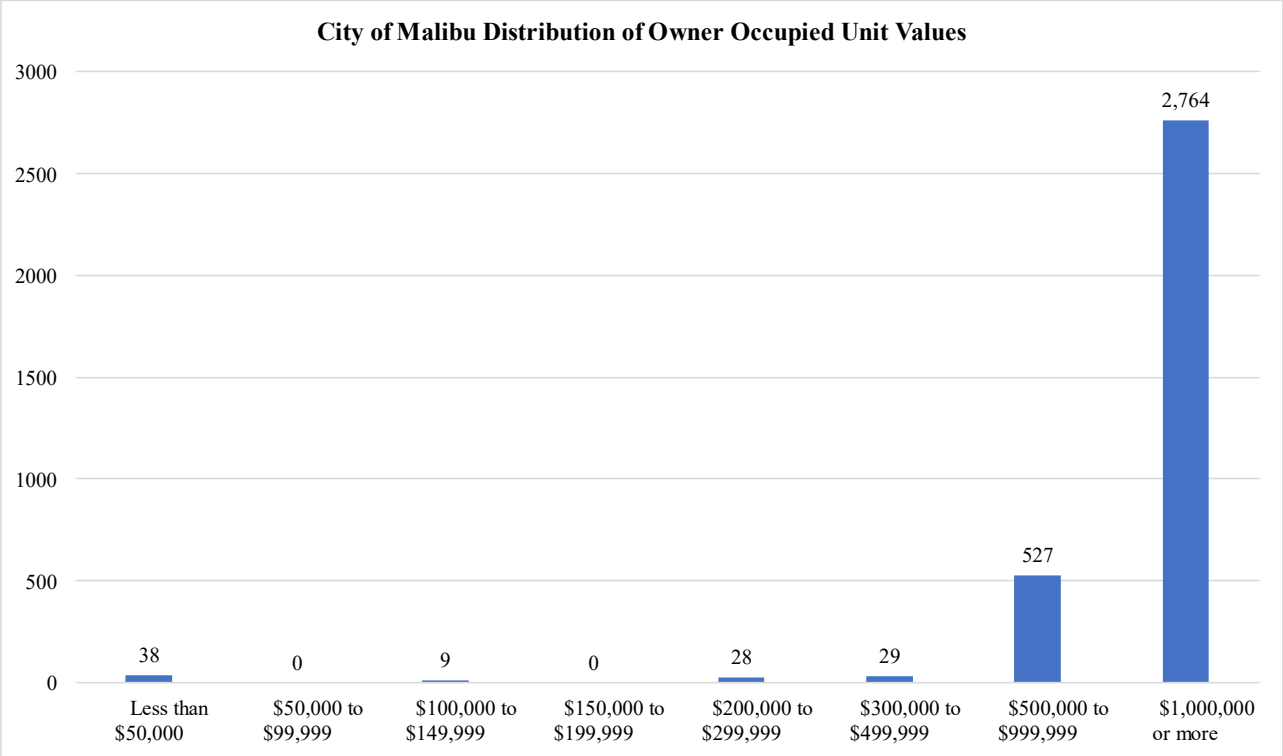

Figure 52: City of Malibu Distribution of Owner Occupied Unit Values

Emergency Preparedness

The potential impacts of natural hazards associated with Malibu's unique terrain makes its environment and population vulnerable to natural disasters. Earthquakes, landslides, winter storms, floods, storm surge, and sea level rise can take their toll on Malibu. However, the most dangerous and perennial of hazards is wildfire. Driven by the dry Santa Ana winds in the summer months, wind speeds can reach up to 70 mph. As a result, small spot fires can quickly explode into huge firestorms capable of consuming entire communities.

Emergency Preparedness Program

In response to numerous floods, fires, and storms that have occurred since incorporation, the City created a robust emergency preparedness program to train City personnel and the community in emergency preparedness and response procedures.

The City's emergency preparedness program includes quarterly training and exercises to familiarize staff with the functions of the Emergency Operations Center (EOC) and their individual roles under various potential disaster scenarios. The City also provides Community Emergency Response Team training, an annual Public Safety Expo and many other emergency preparedness public education events.

Malibu Search & Rescue Team

The Malibu Search & Rescue Team (SAR) was founded in 1977 and is an all-volunteer organization comprised of Los Angeles County Sheriff's Department Reserve Deputy Sheriffs and a select group of Civilian Volunteer Specialists and Incident Support Personnel. The Malibu SAR Team is a unit of the Los Angeles County Sheriff's Department and a member of the California region of the Mountain Rescue Association.

The Malibu SAR jurisdiction covers 187 square miles of the Santa Monica Mountains from the Los Angeles/Ventura County line to Pacific Palisades, the east face of the Santa Susana Mountains and the contract cities of Westlake Village, Agoura Hills, Malibu, Calabasas, and Hidden Hills.

The Malibu SAR will also travel anywhere in Los Angeles County to assist other LASD teams. Furthermore, the team will respond to other states or other country if requested to do so through the California Governor's Office of Emergency Services (Cal OES). The Los Angeles County Sheriff's Department provides the team with rescue vehicles and rescue operations are conducted under the guidance of the Los Angeles County Sheriff.

Beacon Box

The City of Malibu has strategically placed 47 fire-resistant Beacon Boxes around the city which display critical information for public safety personnel such as water resources, road networks, egress areas, safe refuge areas, and high burn risk areas.

Home Ignition Zone Assessments

Since 2019, the City has conducted over 300 home ignition zone assessments to assist residents with recommendations for hardening their homes against flying embers. The assessments are done according to the National Fire Protection Association's Assessing Structure Ignition Potential from Wildfire training that covers wildfire behavior, structure exposure, and the concepts of the Home Ignition Zone and Structure Ignition Potential. A survey of 322 participants of the program indicated that a majority had implemented most, all or more of the recommendations.

Hazard Tree Removal Program

The City has recently removed more than 500 hazard trees. These included trees that were dead or dying that posed a threat of falling and injuring individuals, damaging property, blocking exit routes or providing additional fuel in a fire.

Firewise Communities

As of 2023, there were two Firewise Communities in Malibu and one in the process of being certified. The Firewise USA® recognition program is administered by the National Fire Protection Association (NFPA) and provides a collaborative framework to help neighbors in a geographic area get organized, find direction, and take action to increase the ignition resistance of their homes and community and to reduce wildfire risks at the local level. In 2023, the City launched a program to assist more neighborhoods to become recognized as Firewise Communities.

Public Involvement Groups

The City has over 60 Home Owners Associations, some of which are very active in public services.

In addition, the City sponsors the Malibu Volunteer Patrol (MVP), a group of residents trained to assist law enforcement personnel. The volunteers work various assignments including patrolling the community, assisting with dissemination of information to the community and providing community services. The involvement of members of the community working alongside Sheriff's Department personnel improves the communication and understanding between the two groups.

The City participates in the Community Emergency Response Team Program (CERT). Under the CERT Program, volunteers are provided with a FEMA-approved 20-hour program. The City holds CERT trainings three times per year. Approximately 30 CERT graduates have taken additional training to become part of the Malibu CERT Team and are registered as Disaster Service Workers.

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WESTLAKE VILLAGE

Westlake Village is a master-planned community located on the western edge of Los Angeles County in the Conejo Valley. It borders the City of Thousand Oaks and Ventura County to the west and the Santa Monica Mountains to the south. It is 40 miles west of downtown Los Angeles along the US Highway 101 corridor. With a total land area of 5.4 square miles, the community supports a population of approximately 8,081 people (2021 U.S. American Community Survey 5-year Estimate). Westlake Village is comprised of a mixture of residential and commercial areas.

Figure 53: City of Westlake Village Aerial View

Source: Google Maps

General Coordinates	
Latitude	34° 8’ 31” North
Longitude	118° 49’ 10” West

Source: 2016 SCAG City Boundary Data

Map 11: Westlake Village Location Map

Brief History

The City of Westlake Village is located on a portion of the former Albertson Ranch, whose cattle-grazing operation on the land ended in the mid-1960's when construction of Westlake Village commenced. The ranch was a portion of the former El Conejo land grant, the original boundary lines that form the City's southern and eastern limits today. In 1966 the American Hawaiian Steamship Company developed Westlake Village as a master-planned community. Responsibilities subsequently passed to the Prudential Insurance Company.

The original community straddled the Los Angeles-Ventura County line. The Ventura portion was incorporated as part of the City of Thousand Oaks in 1968. However, the build-out of the two halves has proceeded in a coordinated and interlinked manner, relatively indifferent to the corporate limits which separate them.

The City of Westlake Village was incorporated on December 11, 1981, as the 82nd city in Los Angeles County. As a master-planned community, Westlake Village is characterized by its wide, tree-lined boulevards, its cohesive, yet identifiable neighborhoods with interconnected greenbelts, its lakeside parks and promenades, and its diverse office and commercial centers.

The City of Westlake Village is a general law municipality, operating on a contract basis in which many of the day-to-day services of local government are provided by public and private agencies. The residents of Westlake Village elect a five-member City Council to oversee City operations and guide future development of the community. Council members are elected to serve a four-year term. Each year the Council selects one of its members to serve as Mayor and Mayor Pro Tem.

Climate/Topography

The climate in Westlake Village is characterized by mild winters with average 2022 temperatures ranging from the high 40's to the high 60's, and warm summers with average temperatures ranging from the low 60's to the mid 90's. Rainfall is 2022 was approximately 6 inches with the greatest portion of precipitation occurring in the winter months. The City averages 900 feet above sea level, and is framed by the Simi Hills to the north and the Santa Monica Mountains to the south.

Category	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average Temperature (°F)	59.6	60.3	62.6	64.4	66.7	76.4	77.1	81.6	79.8	70.7	59.4	55
Minimum Temperature (°F)	52.6	52.3	52.8	52.9	53.5	61.3	62	67.7	67.6	59.4	51.9	49.1
Maximum Temperature (°F)	66.5	68.2	72.5	75.8	79.8	91.5	92.1	95.5	92	82	67	61
Average Rainfall (inches)	0.25	0	1.07	0.34	0	0	0	0	0.16	0	1.45	2.98

Source: Weather.gov (NOAA)

Table 55: City of Westlake Village Average Monthly Temperatures and Rainfall (2022)

Economic Activity

There are approximately 598 businesses within the Westlake Village City limits, with the largest industry being Professional Services (19%), followed by Healthcare (18%) and Financial Services (15%). The city is located along the "Technology Corridor" that runs along US Highway 101 from Calabasas to the Oxnard plain. In addition, there are multiple business parks and the city is home to several company headquarters.

Westlake Village Principal Employers

Company	Employees	Percent of Total City Employment
Bank of America Corporate	1,200	15.49%
Guitar Center HQ	615	7.94%
Four Seasons Hotel WLV	450	5.81%
Westlake Village Inn	389	5.02%
Warner Pacific Insurance	380	4.90%
Dole Food Company, Inc.	312	4.03%
Costco Wholesale	250	3.23%
Oaks Christian School	203	2.62%
Target	200	2.58%
Securitas Security Services, Inc.	175	2.26%
Top 10 Total	**4,174**	**53.87%**
Total City of Westlake Village Employment	**7,749**	**100.0%**

Source: Westlake Village Business Census Report 2023
Note: Data is based on full-time employees
Table 56: City of Westlake Village Principal Employers

Westlake Village Principal Property Tax Payers

Company	Taxable Assessed Value	Percent of Total City Assessed Value
Dole Food Company Inc	$96,843,192	2.44%
Drawbridge 31303 Agoura LP	69,714,840	1.76%
Russell Ranch Road II LLC	67,345,813	1.70%
Teachers Insurance and Annuity Associates	65,019,315	1.64%
Conrad N Hilton Foundation	52,919,265	1.33%
Westlake Properties Inc	45,881,459	1.16%
SVAP III North Ranch Gateway	36,069,847	0.91%
TREA 30700 Russell Ranch Road	35,056,804	0.88%
Westlake Wellbeing Properties LLC	31,691,081	0.80%
Westlake HHG Hotel Development LP	27,199,164	0.69%
Top 10 Total	**$527,740,780**	**13.29%**
Total Property Tax Assessed Value	**$3,969,705,005**	**100.0%**

Source: 2021- 2022 Comprehensive Annual Financial Report for the City of Westlake Village, Fiscal Year Ended June 2022
Table 57: City of Westlake Village Principal Property Tax Payers

Westlake Village Taxable Sales

Category	Taxable Sales	Percent of Total
Business to Business	512,674	11.73%
Construction	410,982	9.41%
Food Products	1,173,738	26.87%
General Retail	2,019,598	46.23%
Miscellaneous	31,854	0.73%
Transportation	220,119	5.04%
Total	**$4,368,965**	**100.00%**

Source: 2021- 2022 Comprehensive Annual Financial Report for the City of Westlake Village, Fiscal Year Ended June 2022

Table 58: City of Westlake Village Taxable Sales

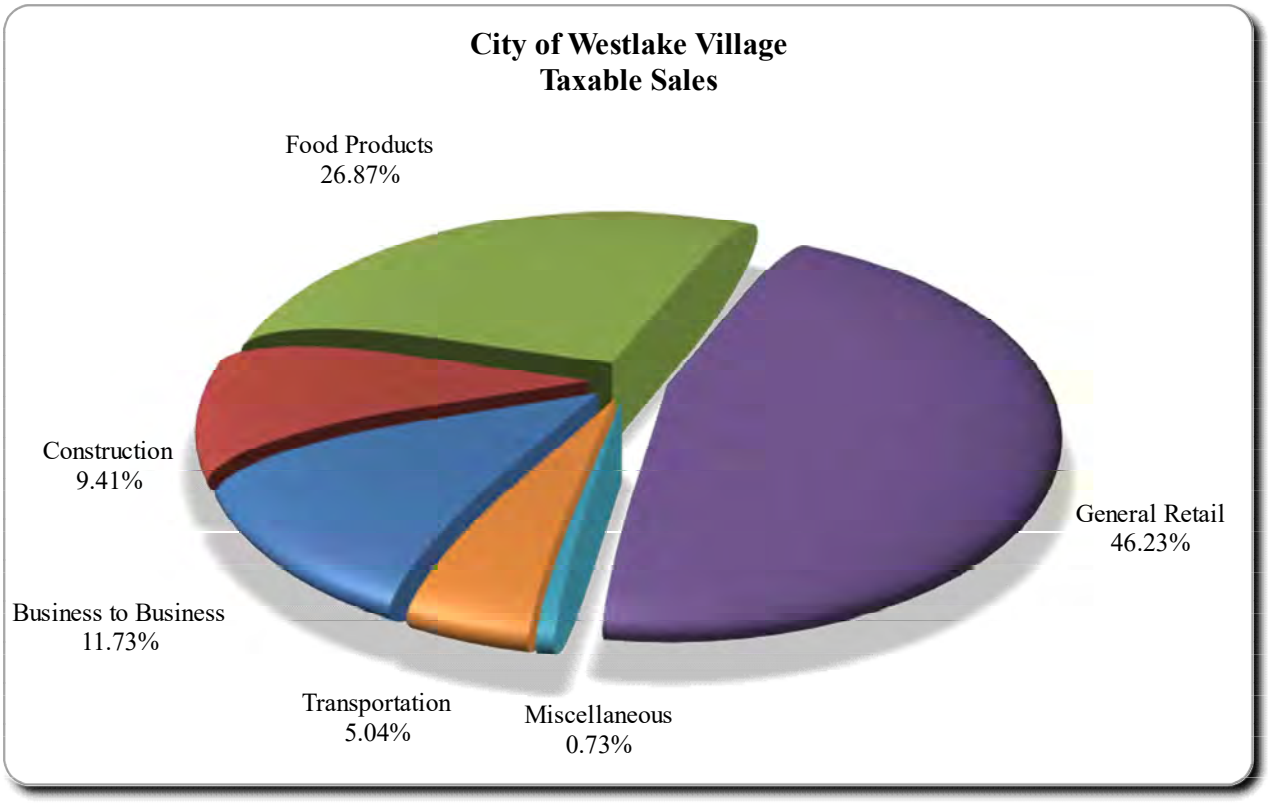

Figure 54: City of Westlake Village Taxable Sales Percentage by Category

Westlake Village Economy

The table below provides a breakdown of revenue channels for the City of Westlake Village in 2017. These categories include Accommodation and Food Services, Health Care and Social Assistance, Transportation and Warehousing, and Retail Sales. The total revenues accrued by the city amounted to approximately $576.35 Million, which included Total Retail Sales per capita of $41,342.

Category	Value (in thousands)	Percent
Total Accommodation and Food Services Sales	$130,840	22.70%
Total Health Care and Social Assistance Receipts/Revenue	$101,332	17.58%
Total Transportation and Warehousing Receipts/Revenue	NA	0.00%
Total Retail Sales	$344,134	59.71%
Total	**$576,306**	**100.00%**

Source U.S. Census Bureau 2017 Economic Census of the U.S.
Table 59: City of Westlake Village Economy

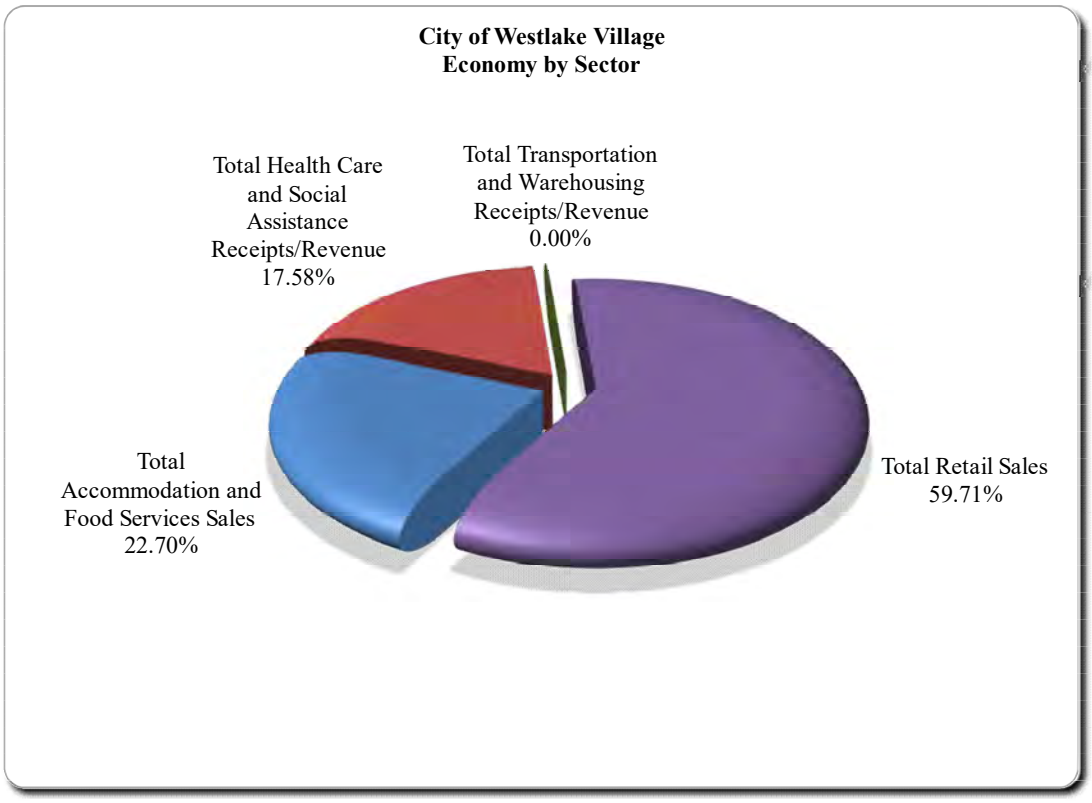

Figure 55: City of Westlake Village Economy by Sector

Population and Demographics

The following tables summarize the population and demographic groups at risk from a disaster in Westlake Village.

Sex and Age Distribution

Demographic Estimates - 2021		
Sex and Age	**Estimate**	**Percent**
Total Population	**8,081**	**100.0%**
Male	3,773	47%
Female	4,308	53%
Under 5 years	323	4.00%
5 to 9 years	424	5.20%
10 to 14 years	417	5.20%
15 to 19 years	452	5.60%
20 to 24 years	284	3.50%
25 to 29 years	233	2.90%
30 to 34 years	448	5.50%
35 to 39 years	496	6.10%
40 to 44 years	401	5.00%
45 to 49 years	607	7.50%
50 to 54 years	578	7.20%
55 to 59 years	452	5.60%
60 to 64 years	863	10.70%
65 to 69 years	658	8.10%
70 to 74 years	658	8.10%
75 to 79 years	347	4.30%
80 to 84 years	170	2.10%
85 years and over	270	3.30%
Median age (years)	49.4	

Source U.S. Census Bureau 2021 American Community Survey 5-Year Estimate

Table 60: City of Westlake Village Sex and Age Demographics

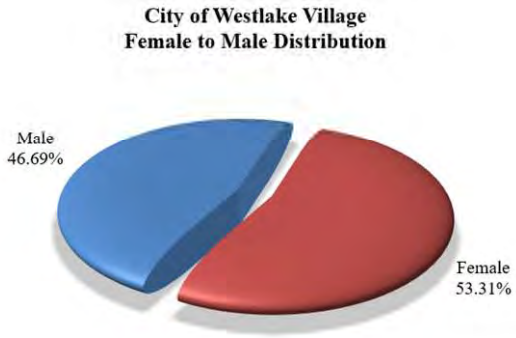

Figure 56: City of Westlake Village Female to Male Distribution

The average age of residents in Westlake Village is 49.4 with females (53.31%) outnumbering males (46.69%). Mitigation planning must consider the unique needs of population groups, for example those under 15 years of age and those over 65 years of age.

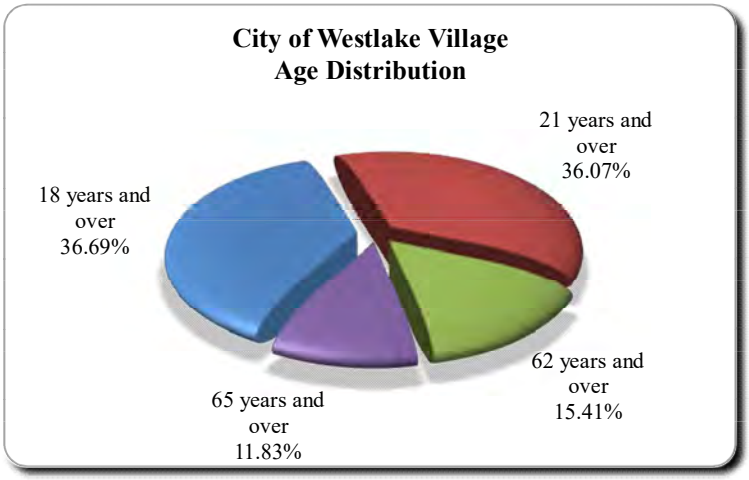

Figure 57: City of Westlake Village Age Distribution

Race and Language Composition

Race

One aspect of mitigation planning is the need to address the cultural and language (communications) needs of local populations. This includes the ability to distribute information and provide notification in the event of a regional emergency. For Westlake Village, an estimated 14.7% of the population speaks languages other than English (including English and another language or non-English only) with 1.1% speaking English "less than well or not at all". These language and communication challenges may pose additional difficulties for socially vulnerable groups during a disaster.

Race	2021 Estimated Population	Percent of Total
Total Population	**8,081**	**100.0%**
White alone	6,217	76.93%
Black or African American alone	51	0.63%
Hispanic or Latino (of any race)	785	9.71%
American Indian and Alaska Native alone	3	0.04%
Asian alone	515	6.37%
Native Hawaiian and Other Pacific Islander alone	0	0.00%
Some other race alone	0	0.00%
Two or more races	510	6.31%

Source U.S. Census Bureau 2021 American Community Survey 5-Year Estimate
Table 61: City of Westlake Village Race Composition

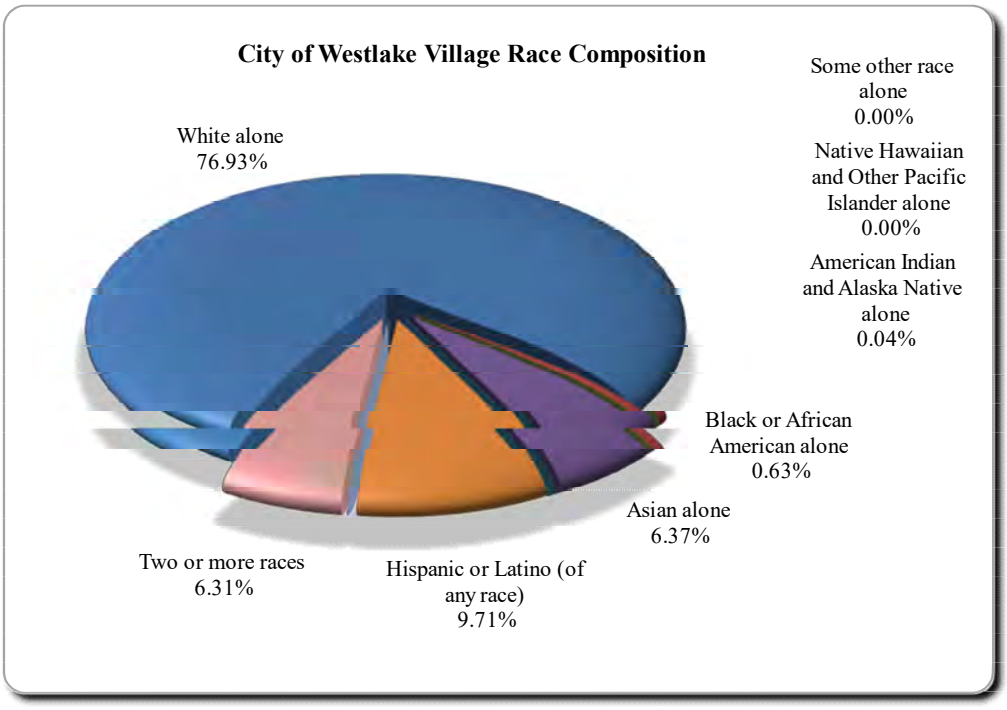

Figure 58: City of Westlake Village Race Distribution

Languages Spoken at Home

Language	2021 Estimated Population	Percent of Total
Speaks only English	6,568	84.70%
Language other than English spoken at home, percent of persons age 5 years+, 2017-2021	1,190	15.30%
Speak a Language Other than English	**2021 Estimated Population**	**Percent of Total**
Spanish	**412**	**5.30%**
5 to 17 years old	118	1.50%
18 to 64 years old	261	3.40%
65 years old and over	33	0.40%
Other Indo-European languages	**390**	**5.00%**
5 to 17 years old	6	0.10%
18 to 64 years old	299	3.90%
65 years old and over	85	1.10%
Asian and Pacific Island languages	**347**	**4.50%**
5 to 17 years old	98	1.30%
18 to 64 years old	178	2.30%
65 years old and over	71	0.90%
Other languages	**41**	**0.50%**
5 to 17 years old	**16**	**0.20%**
18 to 64 years old	**25**	**0.30%**
65 years old and over	**0**	**0.00%**

Source U.S. Census Bureau 2021 American Community Survey 5-Year Estimate

Table 62: City of Westlake Village Languages Spoken at Home

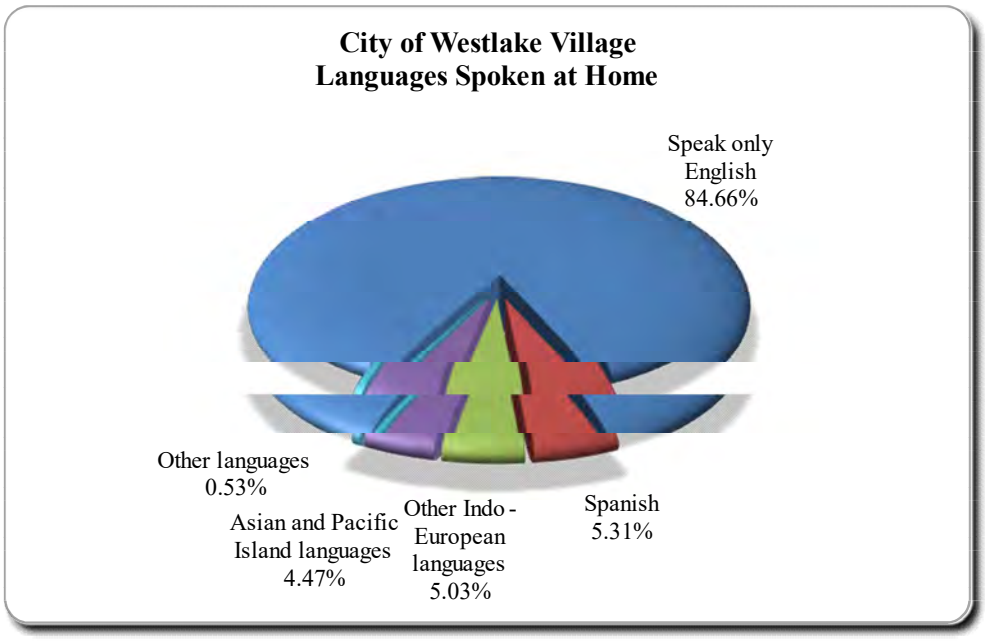

Figure 59: City of Westlake Village Languages Spoken at Home

Income Distribution

Household income is a factor for mitigation planning since population groups in lower income ranges are less able to cope with the impact of disasters.

Furthermore, the availability of household funds can have a direct impact on the level of individual and family hazard mitigation activities and emergency preparedness.

In Westlake Village, while the mean household income is $243,719 there are a limited number of households with incomes less than $25,000, near the 2023 U.S. poverty level of $24,860 for a family of three as defined by the *2023 HHS Poverty Guidelines,* by the U.S. Department of Health & Human Services.*

Income and Benefits (in 2021 Inflation-Adjusted Dollars)		
	Estimate	**Percent**
Total Households	**3,090**	**100.0%**
Less than $10,000	87	2.80%
$10,000 to $14,999	93	3.00%
$15,000 to $24,999	49	1.60%
$25,000 to $34,999	59	1.90%
$35,000 to $49,999	155	5.00%
$50,000 to $74,999	334	10.80%
$75,000 to $99,999	173	5.60%
$100,000 to $149,999	433	14.00%
$150,000 to $199,999	457	14.80%
$200,000 or more	1,251	40.50%
Median household income (dollars)	**166,316**	**(X)**
Mean household income (dollars)	**243,719**	**(X)**

Source U.S. Census Bureau 2021 American Community Survey 5-Year Estimate

Table 63: City of Westlake Village Income and Benefits (2021 Inflation Adjusted Dollars)

*Note: The households with minimal incomes may also be attributable to retirees and others that have other sources of funds not reportable as income.

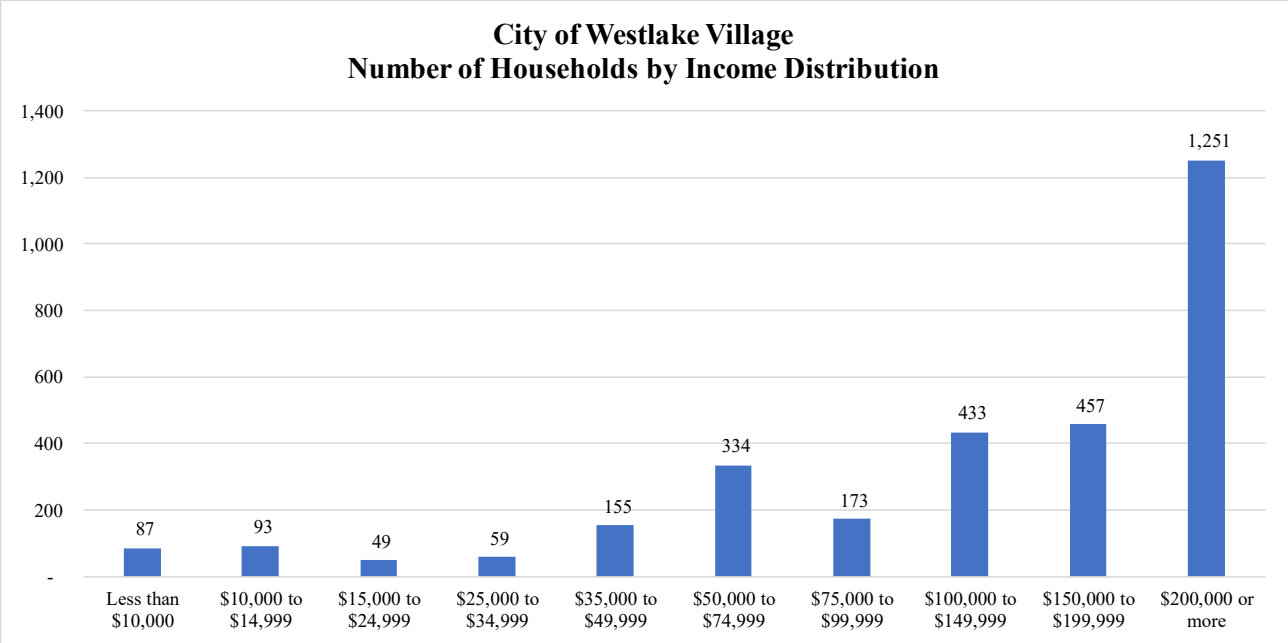

Figure 60: City of Westlake Village Income Distribution

Land Use

Westlake Village is a master-planned community which began development in 1966. The City is centered around a man-made lake which straddles the Los Angeles and Ventura County line. Westlake Village encompasses twenty individual neighborhoods, with active homeowners' associations to promote and maintain architectural standards. The City has an array of housing types including: townhomes, condominiums, mobile homes, single-family and lakefront residences, and view-oriented estates. In addition, within the Westlake Village city limits are approximately 850 commercial and light industrial businesses. There multiple business parks and the city hosts several company headquarters.

Housing Characteristics

The following housing statistics provide a summary of the numbers and types of housing units that are at risk if a disaster were to occur in Westlake Village. Housing data includes: Housing Occupancy, Units in Structure Change from 2017 to 2021, Number of Structures Built by Year, Home Values, and Home Value Distribution. In Westlake Village, there has been an overall decrease in structures since 2017, with the largest decrease in smaller (1-unit, detached) structures.

Housing Occupancy	Estimate	Percent
Total Housing Units	**3,273**	**100.00%**
Occupied housing units	3,090	94.40%
Vacant housing units	183	5.60%

Source U.S. Census Bureau 2017-2021 American Community Survey 5-Year Estimate
Table 64: City of Westlake Village Housing Occupancy

Units In Structure	2021		2017		Change	
	Estimated Number	Percent of Units	Number	Percent of Units	Difference 2021-2017	Percent Change
Total Housing Units	**3,273**	**100.00%**	**3,569**	**100.00%**	**-296**	**-8.29%**
1-unit, detached	2,243	68.50%	2,486	69.70%	-243	-9.77%
1-unit, attached	590	18.00%	714	20.00%	-124	-17.37%
2 units	0	0.00%	26	0.70%	-26	-100.00%
3 or 4 units	88	2.70%	58	1.60%	30	51.72%
5 to 9 units	120	3.70%	82	2.30%	38	46.34%
10 to 19 units	18	0.50%	34	1.00%	-16	-47.06%
20 or more units	20	0.60%	40	1.10%	-20	-50.00%
Mobile home	194	5.90%	129	3.60%	65	50.39%
Boat, RV, van, etc.	0	0.00%	0	0.00%	0	-

Source U.S. Census Bureau 2021 American Community Survey 5-Year Estimate
Table 65: City of Westlake Village Units in Structure Change from 2017 to 2021

In terms of risk and disaster mitigation, older structures that have not been retrofitted or otherwise improved may be more susceptible to damage or destruction due to age and the fact that older building codes were less stringent than those required for newer structures. As a result, the inventory of older structures is a consideration when developing mitigation plans.

In Westlake Village, 96.9% of structures (3,173) were built prior to 2000 and 64.2% (2,102) before 1980.

Year Structure Built	Estimate	Percent
Total housing units	**3,273**	**100.00%**
Built 2020 or later	0	0.00%
Built 2010 to 2019	9	0.30%
Built 2000 to 2009	91	2.80%
Built 1990 to 1999	409	12.50%
Built 1980 to 1989	662	20.20%
Built 1970 to 1979	926	28.30%
Built 1960 to 1969	1,125	34.40%
Built 1950 to 1959	46	1.40%
Built 1940 to 1949	0	0.00%
Built 1939 or earlier	5	0.20%

Source U.S. Census Bureau 2021 American Community Survey 5-Year Estimate

Table 66: Year Structures Built in Westlake Village

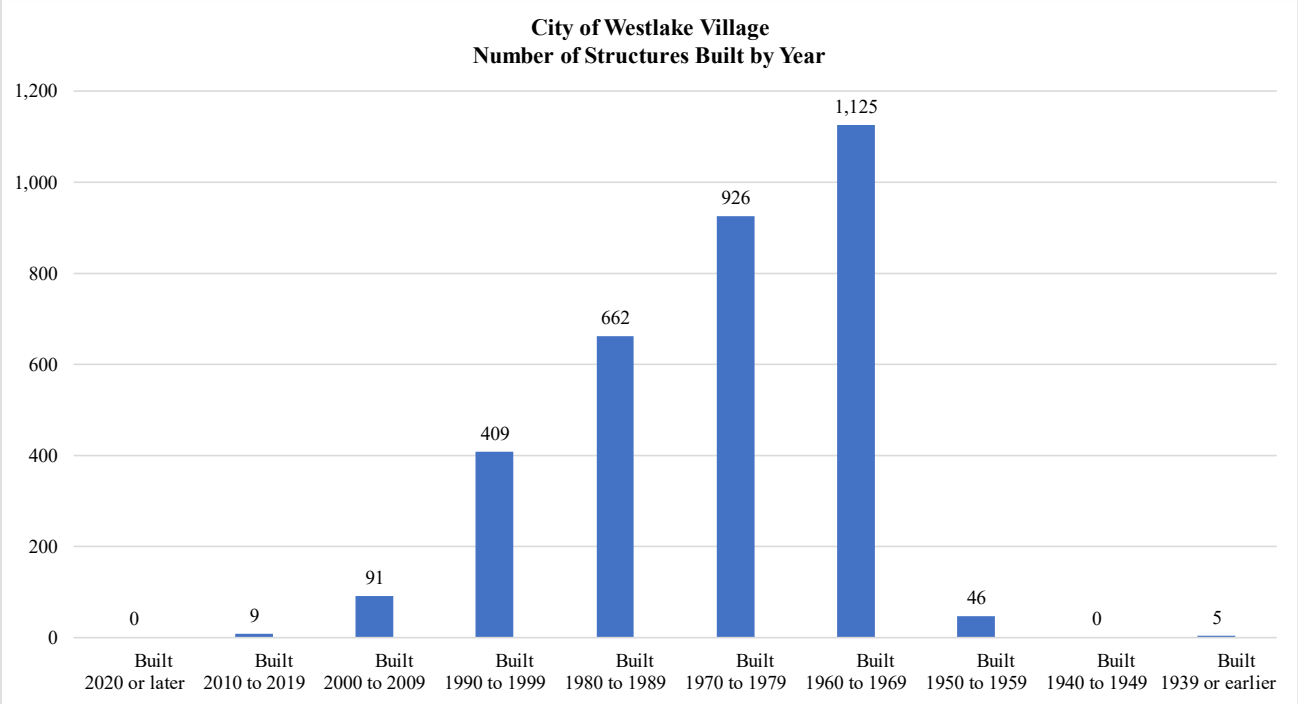

Figure 61: City of Westlake Village Number of Structures Built by Year

Home values are an important consideration when evaluating the potential dollar loss due to disasters. These values can also be used to assess the cost/benefit of mitigation activities and planning. In Westlake Village, the majority of Owner Occupied Units are valued over $500,000. Consequently, the potential dollar losses from a disaster can rapidly escalate – illustrating the need for mitigation planning.

Value		
	Estimate	**Percent**
Owner-Occupied Units	**2,492**	**100.0%**
Less than $50,000	0	0.00%
$50,000 to $99,999	0	0.00%
$100,000 to $149,999	9	0.40%
$150,000 to $199,999	8	0.30%
$200,000 to $299,999	16	0.60%
$300,000 to $499,999	255	10.20%
$500,000 to $999,999	905	36.30%
$1,000,000 or more	1,299	52.10%
Median (dollars)	**$1,029,100**	**(X)**

Source U.S. Census Bureau 2021 American Community Survey 5-Year Estimate

Table 67: Westlake Village Home Value Distribution

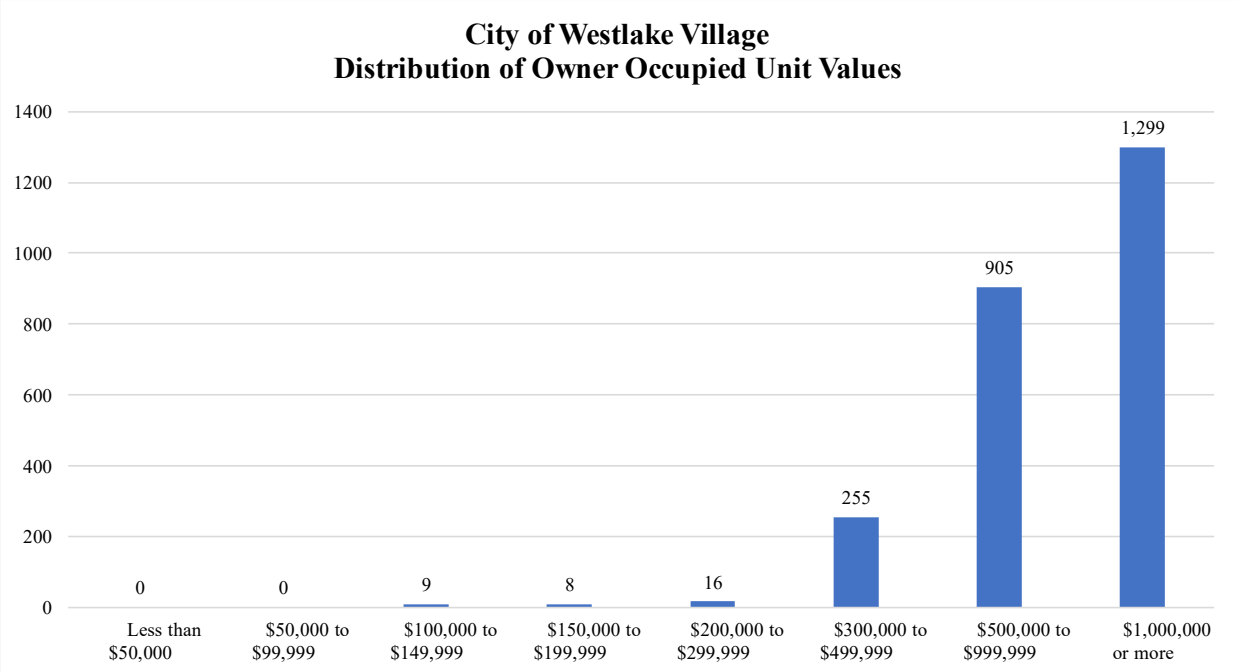

Figure 62: Westlake Village Distribution of Owner Occupied Unit Values

Emergency Preparedness

The City of Westlake Village contracts with the Los Angeles County Sheriff for local public safety services primarily through the Malibu/Lost Hills Sheriff Station. Fire protection is through the Los Angeles County Fire Protection District with Fire Station #144 providing suppression, rescue, and fire prevention services. Westlake Village also provides Emergency Preparedness information to the public via the Westlake Village website.

Standard Emergency Management System

The City of Westlake Village has adopted California's Standardized Emergency Management System (SEMS) for managing the response to a multi-agency and multi-jurisdiction emergency. SEMS also serves to facilitate communications and coordination among all levels of the response system and among all responding agencies.

Public Involvement Groups

Public input and participation plays an important role in Westlake Village's emergency preparedness efforts. Residents participate on advisory boards and committees (e.g., the Public Safety Advisory Board) as well as the Westlake Village Community Emergency Response Team.

Community Emergency Response Team (CERT)

Since 1994 the City of Westlake Village has maintained a volunteer disaster response team comprised of local residents. The Westlake Village CERT is activated in the event of a disaster and functions to aid local neighborhoods and assist emergency response personnel. An order for activation can come from the City Council, the City Manager, the Sheriff's Department or the Fire Department.

The Westlake Village CERT also provides community disaster preparedness education by conducting basic training classes for residents. Residents who attend the basic training are better prepared to protect themselves, their families, and their businesses in the event of a disaster. The intent is that for every person who attends this training there will be one less person who will need aid during a disaster.

Volunteers on Patrol

The City of Westlake Village enhances local law enforcement services through the City's Volunteers on Patrol Program. The program consists of a core group of volunteers who are sponsored by the City of Westlake Village and are trained by the Malibu/Lost Hills Sheriff's Station. Westlake Village provides a marked vehicle, uniforms, and specialized equipment. The program volunteers provide a variety of services including patrolling neighborhoods and shopping centers, performing patrol checks of businesses, checking on the homes of residents when they are on vacation, and responding to related civilian requests. In addition, the volunteer patrol members serve as a mobile Neighborhood Watch for the community.

Finalsite Connect

The City of Westlake Village implemented the Connect-CTY (Finalsite Inc.) service allowing authorized civic leaders to create and rapidly disseminate emergency messages to every telephone number stored in the notification database.

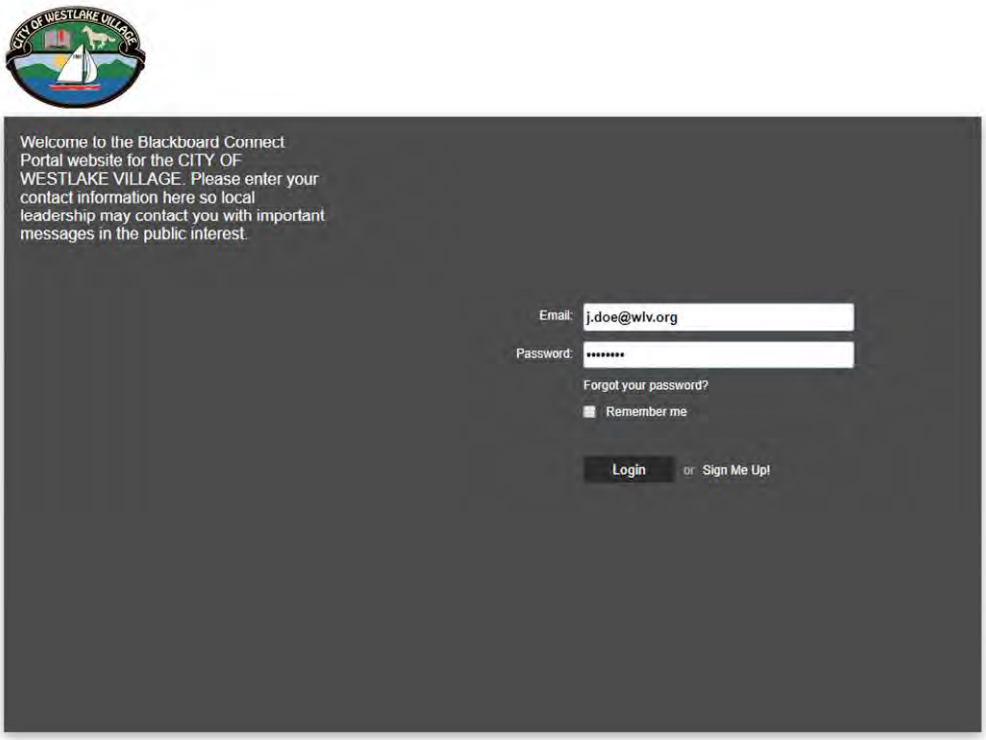

Figure 63: City of Westlake Village Finalsite Connect Sign-up Page

Notify Me

The City of Westlake Village uses an additional communication function via the city website known as "Notify Me" to communicate emergency alerts as well as other notifications to its residents.

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SECTION 3. RISK ASSESSMENT

The goal of mitigation is to reduce the future impacts of hazards. Hazards can result in injuries and the loss of life, cause property damage, disrupt the local economy, and force the expenditure of large amounts of public and private funds to assist with recovery. In order to focus efforts on the most likely and highest impact scenarios, mitigation must be based on a comprehensive Risk Assessment.

A Risk Assessment measures the potential loss from a hazard event by evaluating the vulnerability of buildings, infrastructure and people. It identifies the characteristics and potential consequences of hazards, how much of the community could be affected by a hazard, and the impact on community assets. Risk Assessments consist of:

- Hazard Identification and Risk Analysis
- Vulnerability Analysis / Loss Estimates

Note: This Risk Assessment presents loss estimates and provides a foundation for evaluating mitigation measures should a real hazard event occur. The loss estimates are intended to support the decision-making process for mitigation efforts.

It is important to note that the loss estimates calculated for this Risk Assessment used available data and methodologies and are approximate. These estimates should be used to understand the relative risk from hazards and potential losses and are not intended to be predictive of precise results.

Uncertainties are inherent in any loss estimation methodology arising in part from incomplete scientific knowledge concerning natural hazards and their effects on the built environment. Uncertainties also result from approximations and simplifications that are necessary in developing vulnerability estimates (e.g., risk of loss projections and relative likelihood of occurrence). These factors can result in a range of uncertainty in loss estimates produced by this analysis.

DISASTER HISTORY

Emergencies and disasters can cause damage to the Las Virgenes-Malibu Region and its residents, businesses, infrastructure and the environment. These disasters can cause fatalities or injuries and expense in terms of response and recovery dollars.

The cities that comprise the Las Virgenes-Malibu Council of Governments have experienced natural disasters in the past and continue to have the potential for future events. While the risk of disasters cannot be eliminated, the effects can be reduced through a well-organized public education and awareness effort, preparedness and mitigation. In addition, communities must be prepared to provide efficient and effective response and recovery. Furthermore, careful planning and collaboration among public agencies, private sector organizations, and citizens within the community can minimize the losses that result from disasters.

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To illustrate the potential hazards to the region, a review of historical events can provide indicators for future threats to the area. The table below provides a summary of FEMA declared disasters occurring in Los Angeles County from 2017 to October 2023.

Disaster Number	Declaration Type	FY Declared	Incident Type	Declaration Title	IH Program Declared	IA Program Declared	PA Program Declared	HM Program Declared	Incident Begin Date	Incident End Date
4699	DR	2023	Severe Storm	SEVERE WINTER STORMS, STRAIGHT-LINE WINDS, FLOODING, LANDSLIDES, AND MUDSLIDES	0	0	1	1	2023-02-21	2023-07-10
4683	DR	2023	Flood	SEVERE WINTER STORMS, FLOODING, LANDSLIDES, AND MUDSLIDES	0	0	1	1	2022-12-27	2023-01-31
3592	EM	2023	Flood	SEVERE WINTER STORMS, FLOODING, LANDSLIDES, AND MUDSLIDES	0	0	1	0	2023-03-09	2023-07-10
3591	EM	2023	Flood	SEVERE WINTER STORMS, FLOODING, AND MUDSLIDES	0	0	1	0	2023-01-08	2023-01-31
4569	DR	2021	Fire	WILDFIRES	1	0	1	1	2020-09-04	2020-11-17
5374	FM	2020	Fire	BOBCAT FIRE	0	0	1	1	2020-09-13	
5297	FM	2020	Fire	GETTY FIRE	0	0	1	1	2019-10-28	
5296	FM	2020	Fire	TICK FIRE	0	0	1	1	2019-10-24	
5293	FM	2020	Fire	SADDLERIDGE FIRE	0	0	1	1	2019-10-10	
4482	DR	2020	Biological	COVID-19 PANDEMIC	1	0	1	1	2020-01-20	2023-05-11
3428	EM	2020	Biological	COVID-19	0	0	1	0	2020-01-20	2023-05-11
5280	FM	2019	Fire	WOOLSEY FIRE	0	0	1	1	2018-11-08	
4407	DR	2019	Fire	WILDFIRES	1	0	1	1	2018-11-08	2018-11-25
3409	EM	2019	Fire	WILDFIRES	0	0	1	0	2018-11-08	2018-11-25
5227	FM	2018	Fire	SKIRBALL FIRE	0	0	1	1	2017-12-06	2017-12-15
5226	FM	2018	Fire	RYE FIRE	0	0	1	1	2017-12-05	2017-12-14
5225	FM	2018	Fire	CREEK FIRE	0	0	1	1	2017-12-05	2017-12-14
4353	DR	2018	Fire	WILDFIRES, FLOODING, MUDFLOWS, AND DEBRIS FLOWS	1	0	0	1	2017-12-04	2018-01-31
3396	EM	2018	Fire	WILDFIRES	0	0	1	0	2017-12-04	2017-12-29
5201	FM	2017	Fire	LA TUNA FIRE	0	0	1	1	2017-09-01	2017-09-10
4305	DR	2017	Flood	SEVERE WINTER STORMS, FLOODING, AND MUDSLIDES	0	0	1	1	2017-01-18	2017-01-23

Table 68: Los Angeles County Federal Declared Disasters from 1995-2010

Source: FEMA

FEMA Disaster Declaration Key

Disaster Number	Sequentially assigned number used to designate an event or incident declared as a disaster.
Disaster Type	Two-character code that defines if this is a major disaster, fire management or emergency declaration.
Incident Type	Type of incident such as fire or flood. For more information on incident types, please visit https://www.fema.gov/disasters/how-declared.
IH	Denotes whether the Individuals and Households program was declared for this disaster
IA	Denotes whether the Individual Assistance program was declared for this disaster.
PA	Denotes whether the Public Assistance program was declared for this disaster.
HM	Denotes whether the Hazard Mitigation program was declared for this disaster.
Incident Date	Date the incident itself ended
Disaster Closeout Date	Date all financial transactions for all programs are completed

FEDERAL REQUIREMENTS FOR RISK ASSESSMENTS

Federal regulations for hazard mitigation plans outlined in 44 CFR Part 201 include a requirement for conducting a Risk Assessment. This Risk Assessment requirement is intended to provide information that will help communities identify and prioritize mitigation activities that will reduce losses from the identified hazards. The hazards profiled in this mitigation plan, include: earthquakes, earth movement (including landslide), flooding, fires (including wildland and structural), windstorms and terrorism.

The Federal criteria for conducting Risk Assessments under 44 CFR Part 201 (Section 322 of the Stafford Act, 42 U.S.C. 5165) and information on how the Las Virgenes-Malibu Council of Governments Hazard Mitigation Plan meets those criteria are outlined below.

Section 322 Plan Requirement	How is this addressed?
Identifying Hazards	Each hazard section includes an inventory of selected available data sources that identify hazard areas. Maps identifying the locations of hazards in the Las Virgenes-Malibu Council of Governments Region are provided in this Risk Assessment and in each individual hazard section, i.e., Earthquake, Wildfire, Wind, Landslide, Flood, and Terrorism.
Profiling Hazard Events	Each hazard section includes documentation of the history and causes and characteristics of the hazard in the Region.
Assessing Vulnerability: Identifying Assets	The "hazard identification" and "risk assessment" provide a summary of the vulnerability assessment from each hazard and (where data is available) contain the types and numbers of existing buildings, infrastructure and critical facilities exposed to each hazard.
Assessing Vulnerability: Estimating Potential Losses	The calculations of the impact of the hazard (if data was available), the economic exposure, and physical losses, are discussed in this Risk Assessment and under each hazard of this Hazard Mitigation Plan. Vulnerability assessments were completed for the hazards addressed in the plan, and quantitative estimates were made (when data was available) for each hazard.
Assessing Vulnerability: Analyzing Development Trends	The Community Profile Section of this plan provides a description of the development trends in the Region, including the geography and environment, population and demographics, land use and development, housing and community development, employment, business-base, and transportation data.

HAZARD IDENTIFICATION AND RISK ANALYSIS

Hazard identification consists of (1) defining the study area in terms of scale and coverage; and (2) collecting and compiling a list of prevalent hazards in the study area to help narrow the focus of the analysis. The figure below depicts the study area (Las Virgenes-Malibu COG jurisdictions).

Map 12: LVMCOG Study Area

Hazard Identification Process

Incorporation of Existing Plans

The State of California Hazard Mitigation Plan, Los Angeles County All-Hazard Mitigation Plan, and Los Angeles County Operational Area (OA) Emergency Response Plan, Hazard Analysis and Mitigation section were reviewed to update and validate this HMP Risk Assessment, prioritized list of hazards, as well as inform potential strategies for mitigation. Specific information from these plans that assisted in the development of the HMP included:

State of California Hazard Mitigation Plan	Los Angeles County All-Hazard Mitigation Plan

• LHMP Identified Hazards and Risks
• Earthquakes and Geologic Hazards
• Flood Hazards
• Fire Hazards
• Other Hazards including:
  ○ Climate and Weather Influenced Hazards
  ○ Terrorism
  ○ Cyber Threats
• Annex 1 – Guide to California Hazard Mitigation Laws, Policies, and Institutions
	• Risk Assessment
	• Earthquake Hazard
	• Flood Hazard
	• Wildfire Hazard
	• Tsunami
	• Non-Significant Hazards
	• Mitigation Strategy Goals and Strategies

Other Documents	**Los Angeles County OA Emergency Response Plan, Hazard Analysis and Mitigation Section**
• California Fouth Climate Change Assessment • California Coastal Commition Statewide Sea Leve Rise Vulnerability Synthesis • NOAA Sea Level Rise Technical Report	• Hazard Analysis and Mitigation • Hazard Mitigation Goals • High, Moderate, and Low Risk Priority Hazards

Each of the plans, reports and documents listed above were reviewed and incorporated as appliable into this hazard mitigation plan. For example:

- The California Mitigation Plan was reviewed to validate the list of hazards to the cities within the LVMCOG. Additionally, information from specific sections of the CA Mitigation Plan including Earthquake and Geological Hazards, Flood Hazards, Fire Hazards, and Other Hazards were used to guide the Risk Assessment of this hazard mitigation plan and determine if any applicable mitigation strategies could be utilized. Additionally, Annex 1 was used to verify Section 1 Introduction in terms of the applicable laws, policies, and regulations specifying the need for mitigation programs by the LVMCOG.
- The Los Angeles County All Hazard Mitigation Plan was reviewed and used to confirm the Risk Assessment of this hazard mitigation plan as well as the details regarding specific hazards such as earthquake, flood, wildfire, tsunami, and other risks such as climate change, terrorism, and cyber threats. Additionally, the county plan was used to determine if any of its mitigation strategies could be utilized by any or all of the LVMCOG cities.
  - The Los Angeles County OA Emergency Response Plan was used to evaluate and incorporate key concepts of its hazard analysis into the Risk Assessment section of this hazard mitigation plan. Further, the mitigation section was reviewed to determine if any of the included mitigation efforts could be used by the LVCOG.
- Sea Level Rise reports were incorporated into the Tsunami and Climate Change sections to provide a foundation for assessing the vulnerability of the City of Malibu.

Additionally, other studies and reports were also used as a research basis for individual hazard sections. Specific source references are included in each hazard section.

Local Input and Surveys

In addition to the incorporation of existing plans, input on the types of hazards and relative risk was solicited from the Planning Group. Further, members of the community were asked for their feedback and participation in a Community Disaster Preparedness and Risk Survey that asked questions regarding the public's general preparedness for disasters as well as which hazards were most likely to impact the local area. The following sections describe the process and results obtained.

Planning Group Hazard Ratings

In order to obtain a more comprehensive rating of the hazards, LVMCOG MJHMP Planning Group participated in assesses the risk and vulnerability of hazards in the region. This method of tabulation considers the probability, magnitude/severity, the duration and warning time for each hazard and then produces a risk index. Hazard Rating Survey

Community and Public Participation

The cities of Agoura Hills, Calabasas, Hidden Hills, Malibu and Westlake Village posted the Community Disaster Preparedness and Risk Survey (see **Annex C**) on their city websites. The public was asked for their input on the major risks to their communities and ideas for mitigating the impact of disasters. Further, five separate Preparedness and Mitigation Planning Workshops were held for each city to obtain additional feedback on the public's disaster preparedness concerns and mitigation ideas (see **Annex E: Planning and Public Involvement**).

The public's feedback was then incorporated into the HMP planning process. Specifically, the results of the survey were used to validate the risk assessment and risk rankings. Overall, based on magnitude, impact and probability - the community participants felt that earthquake and fire were the most likely hazard events to affect the area (which coincided with the results from the Planning Group).

Hazard Risk Survey

The Planning Group completed a Hazard Risk Survey (see **Annex D**) to rank identified hazards according to probability, magnitude/severity, warning time, and duration using the values listed below and on the following pages.

Probability

Description	Value
Highly Likely: Frequent events with a well-documented history of occurrence OR an annual probability that is greater than 0.1.	4
Likely: Occasional occurrences with at least two or more documented historic events OR an annual probability that is between 0.1 an 0.01.	3
Possible: Rare occurrences with at least one documented or anecdotal historic event OR an annual probability between 0.01 and 0.001.	2
Unlikely: Extremely rare with no documented history of occurrence or events OR an annual probability less than 0.001.	1
Not Applicable	0

Magnitude/Severity

Description	Value
Catastrophic: Severe property damages (greater than 50% of critical and non-critical facilities and infrastructure). Injuries or illnesses result in permanent disability and multiple deaths. Shut down of critical facilities for more than 1 month.	4
Critical: Moderate property damages (greater than 25% and less than 50% of critical and non-critical facilities and infrastructure). Injuries or illnesses result in permanent disability and at least one death. Shut down of critical facilities for more than 1 week and less than 1 month.	3
Limited: Slight property damages (greater than 5% and less than 25% of critical and non-critical facilities and infrastructure). Injuries or illnesses do not result in permanent disability and there are no deaths. Moderate quality of life lost. Shut down of critical facilities for more than 1 day and less than 1 week.	2
Negligible: Negligible property damages (less than 5% of critical and non-critical facilities and infrastructure). Injuries or illnesses are treatable with first aid and there are no deaths. Negligible quality of life lost. Shut down of critical facilities for less than 24 hours.	1
Not Applicable	0

Warning Time

From the initial notification of a possible event to the actual occurrence of the event.

Description	Value
Less than 6 hours or no warning	4
6 to 12 hours	3
12 to 24 hours	2
More than 24 hours	1
Not Applicable	0

Duration

From the start of the event to the return to normal conditions.

Description	Value
More than 1 week	4
Greater than 24 hours, up to 1 week	3
Greater than 6 hours, up to 24 hours	2
Less than 6 hours	1
Not Applicable	0

Hazard Risk Survey Results

The following table summarizes the results using the following equation and weighting factors:[2]

Risk = 0.45 * Probability + 0.3 * Magnitude/Severity + 0.15 * Warning Time + 0.1 * Duration

Hazard	Probability	Magnitude or Severity	Warning Time	Duration	Risk
Wildfire	4.28	2.7	0.45	2	**9.43**
Major Earthquake (M6.0 and above)	3.83	1.5	3	0.95	**9.28**
Power Outage / Energy Disruption	2.55	4.5	0.5	0.65	**8.20**
Pandemic	2.70	1.65	0.83	2	**7.18**
Terrorism / Mass Casualty	4.50	1.4	3	0.95	**9.85**
Severe Windstorm	1.95	1.1	0.45	0.43	**3.93**
Climate Change	4.05	1.8	0.45	0.95	**7.25**
Tsunami	0.75	0.5	0.34	0.37	**1.95**
Tsunami (Malibu)	0.9	0.6	0.3	0.4	**2.20**
Landslide / Mudslide	1.35	1.1	3	0.95	**6.40**
Severe Winter Storm	1.95	1.8	0.45	0.37	**4.57**

Table 69: Hazard Rating Survey

[2] Formula published by the Arizona Division of Emergency Management (2008)

Identified Hazards

Based on the risk ratings for each hazard to the region, the Planning Group chose to incorporate the following hazards into the Hazard Mitigation Plan:

- Earthquake
- Wildfire
- Climate Change (including Drought and Extreme Heat)
- Energy Disruption / Power Outage
- Flood
- Tsunami (Malibu*)
- Landslide (including Debris Flows and Mudflows)
- Windstorm
- Severe Winter Storm
- Pandemic
- Terrorism and Mass Casualty Events

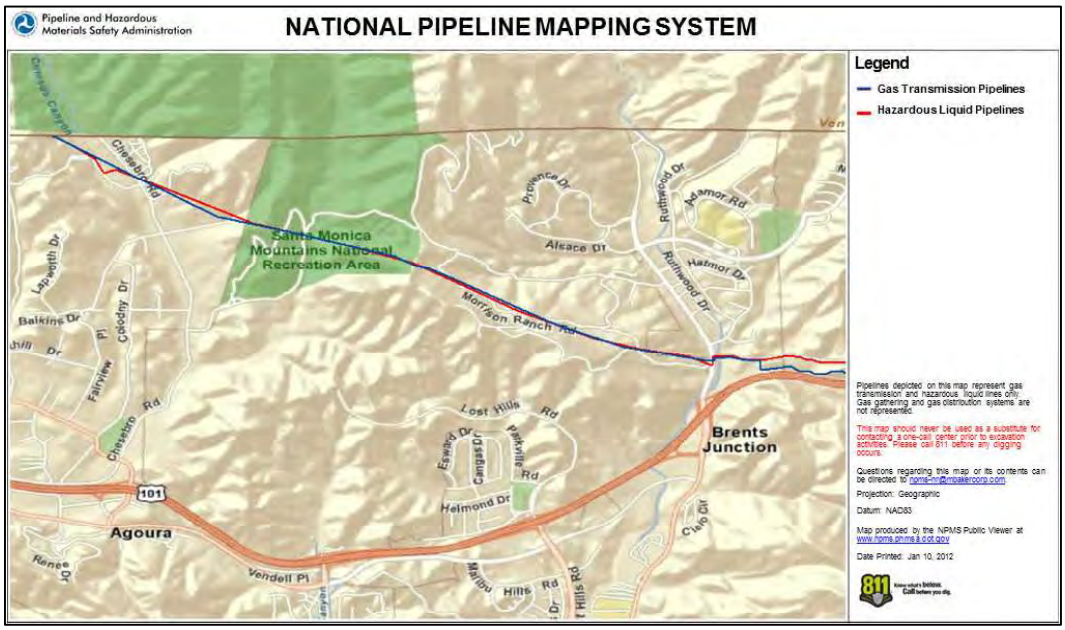
Each of these disasters can have widespread effects that include loss of life and property, disruption to critical infrastructure (utilities, communications, transportation, etc.), and economic impact to the area. Note: The only human generated disaster included in the plan for the Las Virgenes-Malibu Council of Governments is terrorism. Although this threat is viewed as unlikely, the lack of warning time raises the overall risk score.

*The overall risks of tsunami, storm surge, and sea-level rise are unique to the City of Malibu and not applicable to the other cities within the LVMCOG.

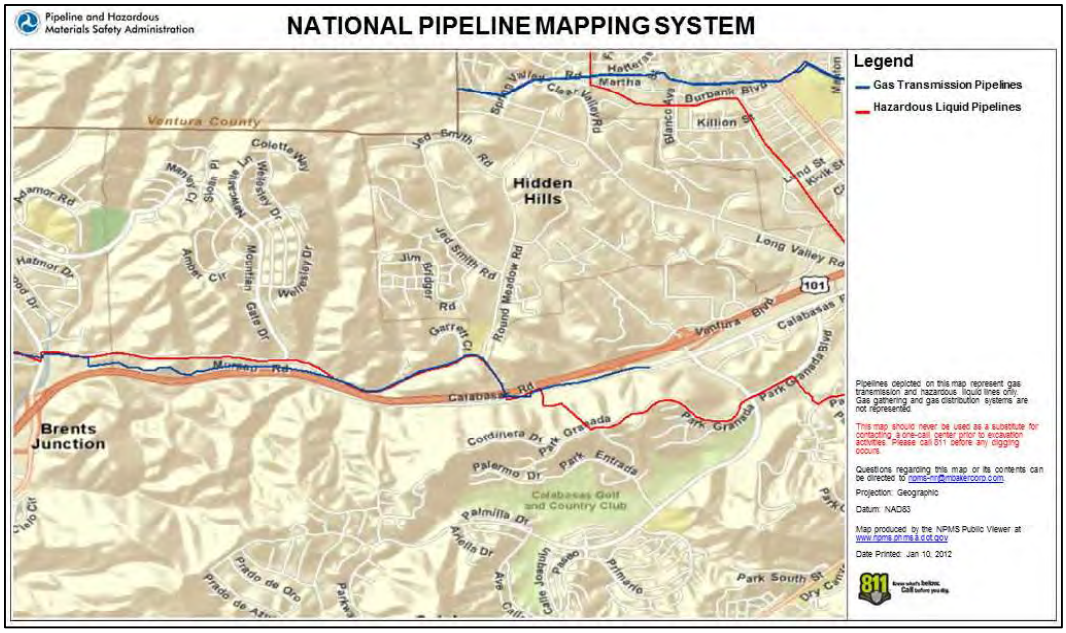
Human Generated and Technology Disasters

Pipeline Rupture / Explosion

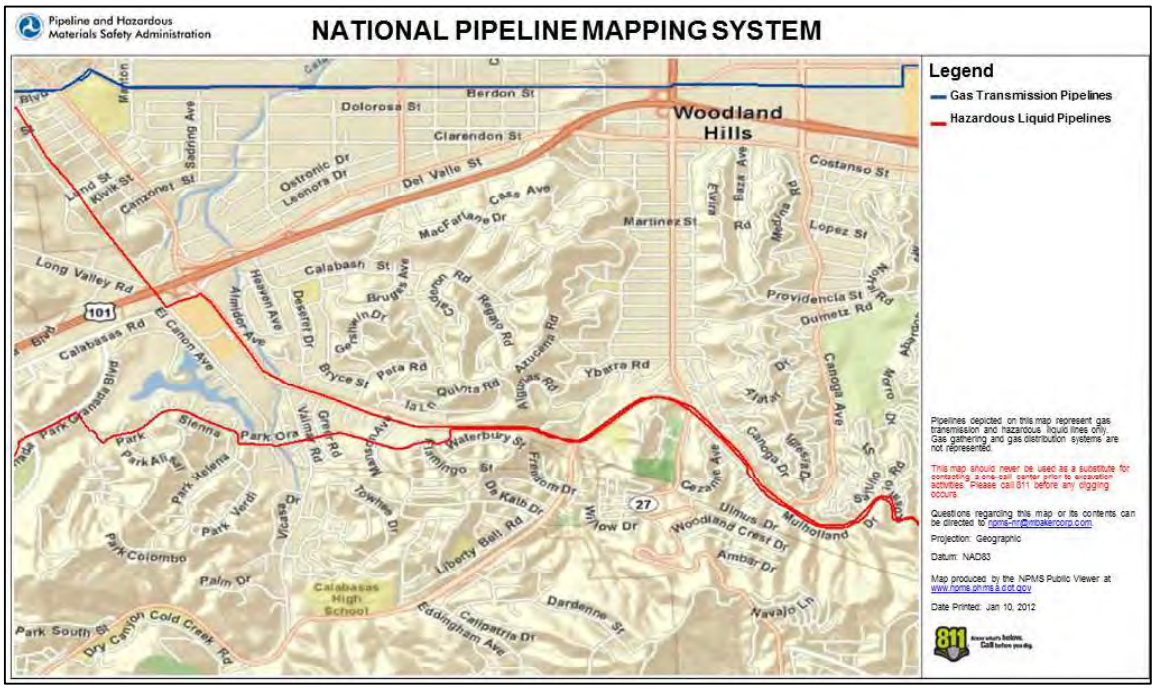
Natural gas transmission and hazardous liquid pipelines are present within the Las Virgenes-Malibu Region and there is a conceivable risk from rupture and/or explosion. Portions of Agoura Hills, Calabasas and Hidden Hills including areas of US 101 (Ventura Freeway), Ventura Boulevard, and surrounding neighborhoods have underground pipelines that pose a potential risk to discrete locations in the community.



Map 13: Pipelines - Agoura Hills



Map 14: Pipelines – West Calabasas and Hidden Hills



Map 15: Pipelines - East Calabasas

The San Bruno, California natural gas transmission pipeline rupture and fire on September 9, 2010 demonstrated the impact of this type of disaster to local populations. The pipeline operated by Pacific Gas and Electric Company ruptured releasing 47.6 million standard cubic feet of natural gas and produced a 72 foot-long by 26 foot-wide crater.

The explosion and resulting fire killed 8 people, left numerous injuries, destroyed 38 homes and damaged 70.[3] In addition, people in the surrounding neighborhood had to be evacuated until the danger subsided. While catastrophic in terms of lives and property loss, a pipeline rupture and/or explosion would be a localized event and not impact the Las Virgenes-Malibu Region as a whole. In terms of regional impact, the most widespread disruption would occur if there were significant damage to US 101. This would cause transportation issues for the entire area.

Figure 64: San Bruno Pipeline Explosion

Source: Cal-OES

[3] NTSB Pipeline Accident Report, Pacific Gas and Electric Company Natural Gas Transmission Pipeline Rupture and Fire, San Bruno, California, September 9, 2010 (NTSB Number: PAR-11-01, NTIS Number: PB2011-916501, Adopted: August 30, 2011).

Hazardous Material Accidents

The Las Virgenes-Malibu Region could be affected by hazardous materials incidents. The spills/releases of material can result from both stationary and mobile sources. The level of exposure from stationary sources is considered to be very low, due to the types of business and industry conducted within the Region (traffic from major highways and railways still pose a risk). Although there are sites in the general vicinity known to harbor hazardous materials, there is no record of a major hazardous material spill or incident in the cities within the Region. Because of this low historical frequency, the Planning Group did not address this disaster.

Cyber Attacks

The threat of a cyber-attack is persistent across the country and could occur at any time. In both 2022 and 2023, schools in the Los Angeles region experienced targeted cyber-attacks resulting in computer system shutdowns and compromise of student records. While the threat of a cyber-attack is not unique to the LVMCOG region, there is a risk that is consistent with the prevailing cybersecurity challenges faced nationwide.

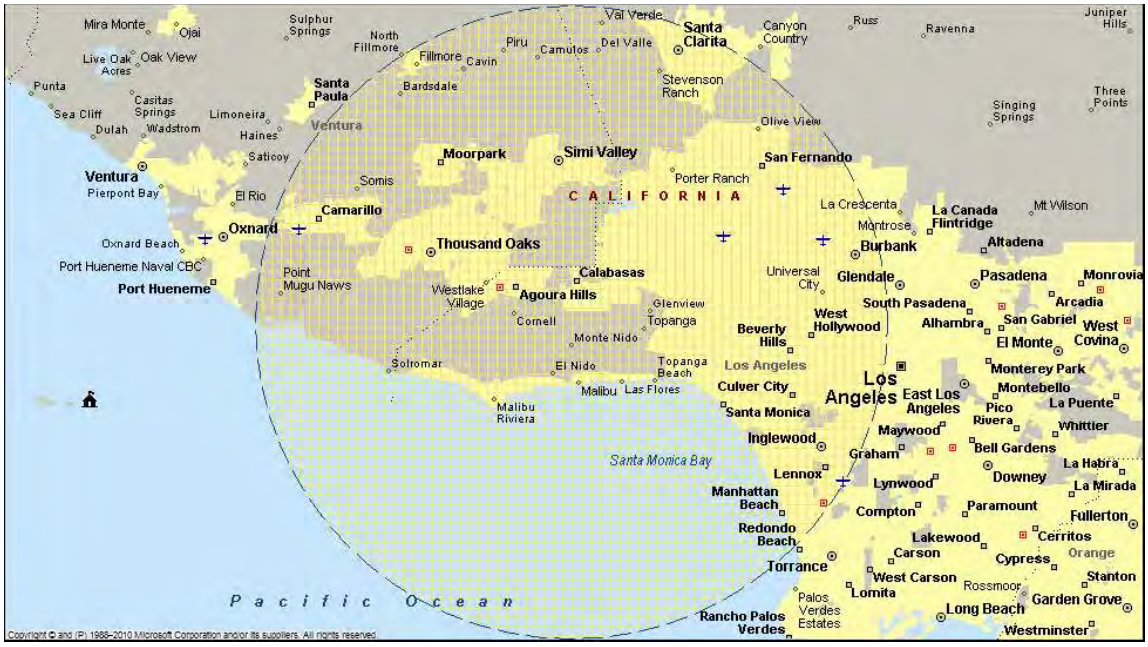
Aircraft Crash

The airports nearest to the Las Virgenes-Malibu Region which handle the greatest amount of air traffic that could cause a risk to the area are Los Angeles International Airport and Burbank Bob Hope Airport. There are also multiple general aviation airports, military airports, and heliports that support air traffic in the Los Angeles region.

The airports within 25 miles of the Las Virgenes-Malibu Region are:

- Los Angeles International Airport
- Santa Monica Municipal Airport
- Van Nuys Airport
- Whiteman Airport (including Los Angeles County Fire Department operations from Barton Heliport)
- Burbank (Bob Hope) Airport
- Camarillo Airport
- Hawthorne Municipal Airport

There is a small but existing risk of an aircraft crash in the Las Virgenes-Malibu Region. Nevertheless, if an aircraft were to crash, the impact would be limited to a localized area and would not disrupt the entire region.



Map 16: Airports within 25 miles

Civil Unrest/Riot

Los Angeles County experienced the Los Angeles Civil Unrest in 1992 and the Watts Riots in 1965. During these periods, the Las Virgenes-Malibu Region suffered no loss of life or property. Similarly, during 2011 "Occupy LA" and other civil protests were staged in Los Angeles County and across the U.S. While somewhat disruptive to the immediate vicinities and targeted sites, the Las Virgenes-Malibu Region was unaffected. As a result, the actual risk of a riot or major civil disturbance is considered minimal.

VULNERABILITY AND LOSS ESTIMATES

Assessing vulnerability is a three-step process. The first step is to identify existing structures and critical facilities that are located within the hazard area. Government critical facilities are of particular concern because these buildings provide essential products and services to the general public that are necessary to preserve the welfare and quality of life in the Region and fulfill important public safety, emergency response, and/or disaster recovery functions.

Once existing structures are identified, the next step is to include an estimate of losses for the identified asset. Estimating potential loss involves assessing the damage, injuries, and financial costs likely to be sustained in a geographic area over a given period of time. This level of analysis involves using mathematical models.

The two measurable components of risk analysis are magnitude of the harm that may result and the likelihood of the harm occurring. Describing vulnerability in terms of dollar losses provides the community and the state with a common framework in which to measure the effects of hazards on assets. The last step in assessing the Region's vulnerability to hazards is to analyze development trends in the Region.

The following loss exposures have been developed using assessed property values for the five cities within the Las Virgenes-Malibu COG as documented by the California Board of Equalization (Assessment Years 2022 to 2023). As indicated below, the total assessed value for the five cities is over $44 billion.

City Name	Total Exposure
Agoura Hills	$6,233,917,000
Calabasas	$9,915,137,000
Hidden Hills	$2,495,676,000
Malibu	$21,446,012,000
Westlake Village	$4,163,187,000
Total	**$44,253,929,000**

Table 70: Total Assessed Property Value by City

Assessed Property Values, by City https://boe.ca.gov/dataportal/dataset.htm?url=PropTaxAssessedValueStateCountyIncorp

Profiling Hazards

The profiling hazards process describes the causes and characteristics of each hazard, how the selected hazard has affected the Las Virgenes-Malibu Region in the past, and what part of the Las Virgenes-Malibu Region population, infrastructure, and environment has historically been vulnerable to each specific hazard. A careful examination of hazard event profiles within the study area provides a reference point for understanding the potential impacts from future events.

Reviewing historic data assists in evaluating hazard event profiles. Hazard profiles focus on answering the following questions: *What/Where/How Often/How Bad?* Summaries of the hazards included in this plan are provided below. Detailed profiles are provided in each of the individual hazard sections included in this plan:

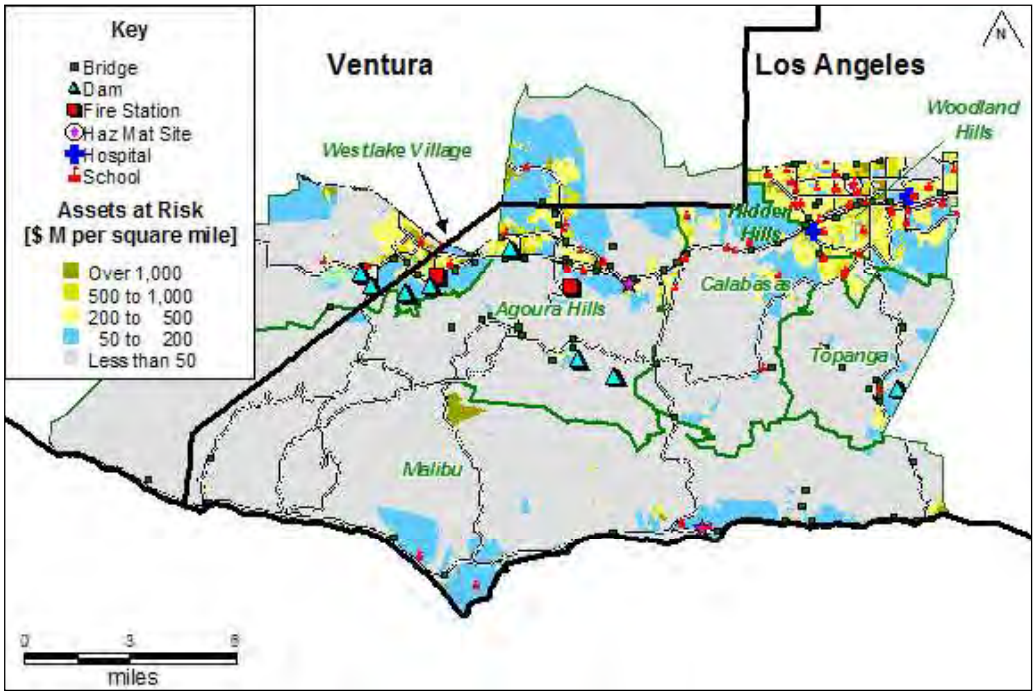
- Section 6 Earthquake
- Section 7 Wildfire
- Section 8 Climate Change
- Section 9 Energy Disruption
- Section 10 Landslide, Debris Flow, and Mudslide
- Section 11 Severe Wind
- Section 12 Flood, Tsunami, and Severe Winter Storm
- Section 13 Pandemic
- Section 14 Terrorism

Facilities and Infrastructure Overview

Critical and essential facilities are those facilities that are vital to the continued delivery of key government services or that may significantly impact the public's ability to recover from the emergency. The lists below and on the following pages illustrate the critical and essential facilities and public infrastructure within the Las Virgenes-Malibu Region. These facilities were deemed "critical" by the Planning Group.

City Name	Schools	Hospitals	Bridges	Dams
Agoura Hills (including Agoura)	10	0	17	3
Calabasas / Hidden Hills	11	0	7	0
Malibu	6	0	15	0
Westlake Village Area	6	1	9	4

Table 71: Estimated Number of Critical Facilities in the Area



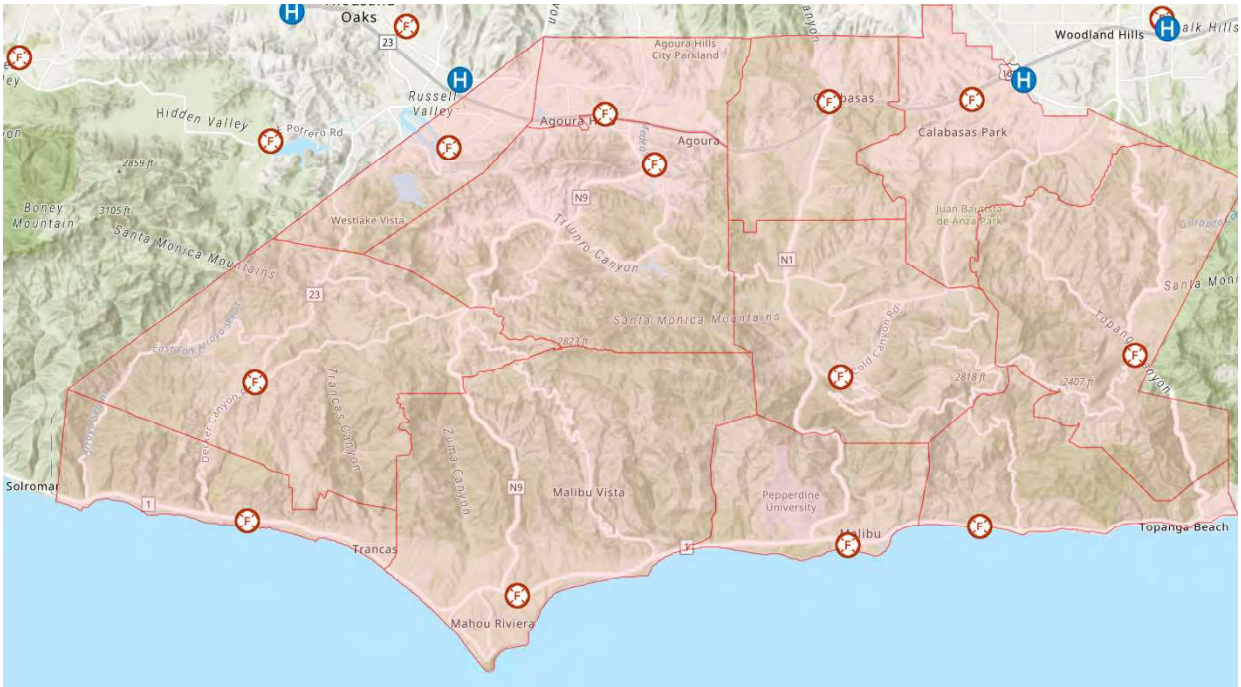
Map 17: Estimated Critical Facilities in the Area

Fire Stations

The following fire stations are located within the Las Virgenes-Malibu COG Region.

LOS ANGELES COUNTY FIRE DEPARTMENT BATTALION 5	
Fire Station #65	4206 N Cornell Rd, Agoura, 91301
Fire Station #67	25801 Piuma Rd, Calabasas, 91302
Fire Station #68	24130 Calabasas Rd, Calabasas, 91302
Fire Station #69	401 S Topanga Cyn Blvd, Topanga, 90290
Fire Station #70 - Headquarters	3970 Carbon Cyn Rd, Malibu, 90265
Fire Station #71	28722 W Pacific Coast Hwy, Malibu, 90265
Fire Station #72	1832 Decker Canyon Rd, Malibu, 90265
Fire Station #88	23720 W Malibu Rd, Malibu, 90265
Fire Station #89	29575 Canwood St., Agoura Hills, 91301
Fire Station #99	32550 Pacific Coast Hwy, Malibu, 90265
Fire Station #125	5215 N Las Virgenes Rd, Calabasas, 91302
Fire Station #144	31981 Foxfield Dr, Westlake Village, 91361

Table 72: Las Virgenes-Malibu COG Fire Stations



Map 18: Las Virgenes-Malibu COG Fire Stations

Los Angeles County Sheriff's Stations

The LVMCOG region's sheriff's station is located at 27050 Agoura Road, Agoura Hills, CA 91301. This station serves the western portion of Los Angeles County, which is a blend of residential, rural, mountain, beach and recreational areas. The cities served by this station include Agoura Hills, Calabasas, Hidden Hills, Malibu, and Westlake Village as well as the unincorporated communities of Chatsworth Lake Manor, Malibu Lake, Topanga, and West Hills.

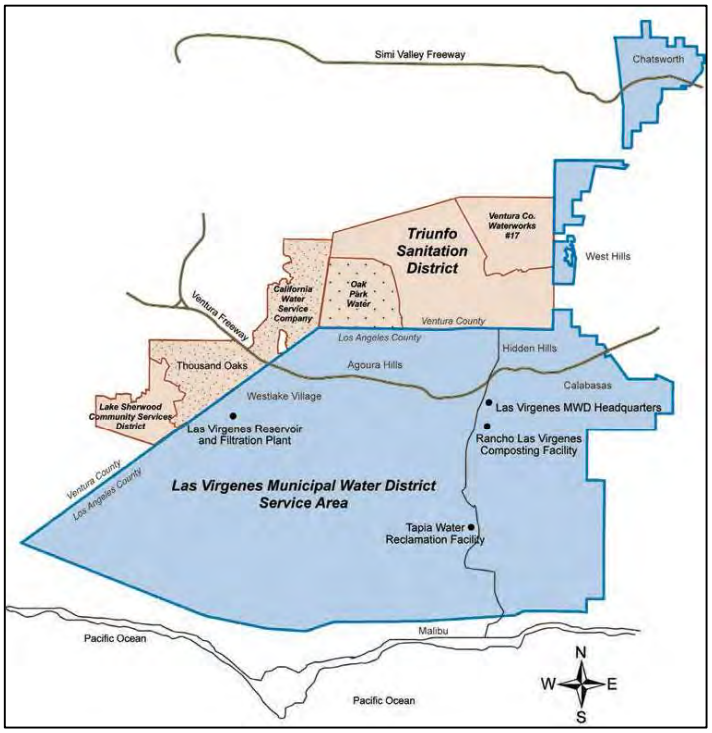
Las Virgenes Municipal Water District

The Las Virgenes Municipal Water District (LVMWD) serves the cities of Agoura Hills, Calabasas, Hidden Hills and Westlake Village (the City of Malibu is served by Los Angeles County Water District 29). They have 24 water tanks and 24 pumping stations, 10,000 acre-foot Las Virgenes Reservoir, and the Westlake Village Filtration Plat.

The Las Virgenes Reservoir dam is located at 2860 Three Springs Drive, Westlake Village. The water filtration plant is located at 32601 Torchwood Place, Westlake Village. Water is also purchased from the Metropolitan Water District of Southern California (MWD).

The LVMWD takes precautions to secure their facilities including fencing sites and securing facilities with alarms. Major facilities have security access gates locked 24/7 and a security company monitors and responds to alarms.

The district has operating and response procedures to ensure that any potential interruption of services will be as short as possible. Further, the district has completed a Vulnerability Assessment as required by federal law to assess and mitigate any potential security issues.



Map 19: Las Virgenes Municipal Water District Service Area

Summary of Critical Facilities and Infrastructure

The following locations have been identified by the individual cities within the Las Virgenes- Malibu COG as essential due to the impact of a disaster on the public (e.g., large public meeting places), economy, or key infrastructure. The Critical Infrastructure Sectors listed are based on Homeland Security Presidential Directive 7 (HSPD-7).

Critical Infrastructure Sectors	Description	Agoura Hills	Calabasas	Hidden Hills	Malibu	Westlake Village
Agriculture and Food	Farming, livestock, poultry, food distribution, etc.	Bennett's Best	N/A	N/A	N/A	California Family Farms Dole Foods

Critical Infrastructure Sectors	Description	Agoura Hills	Calabasas	Hidden Hills	Malibu	Westlake Village
Banking and Finance	Banks, thrifts, credit unions, insurers, securities brokers/dealers, investment companies, financial services, etc. Includes Bank / Financial headquarters, loan processing centers, credit card processing centers, data centers	Bank of America Chase Bank Citibank First Citizens Bank Private National Mortgage Acceptance U.S. Bank Wells Fargo Bank Westlake Financial Services	Bank of America Chase Bank Citibank Logix U.S. Bank Wells Fargo Bank	N/A	Bank of America Citibank First Bank First Citizens Bank Goldman Sachs Trust Kinecta Federal Credit Union University Credit Union U.S. Bank Wells Fargo Bank	Chase Bank Pacific Western Bank Warner Pacific Insurance

Critical Infrastructure Sectors	Description	Agoura Hills	Calabasas	Hidden Hills	Malibu	Westlake Village
Chemical Industry	Chemical manufacturers, pharmaceutical, consumer products, agricultural chemicals, etc.	N/A	N/A	N/A	N/A	N/A
Commercial Facilities	Public Assembly (e.g., arenas, stadiums, aquariums, zoos, museums, convention centers), Sports Leagues (e.g., professional sports leagues and federations) Gaming (e.g., casinos), Lodging (e.g., hotels, motels, conference centers), Outdoor Events (e.g., theme and amusement parks, fairs, campgrounds, parades), Entertainment and Media (e.g., motion picture studios, broadcast media), Real Estate (e.g., office/apartment buildings, condominiums, mixed-use facilities, self-storage) and, Retail (e.g., retail centers and districts, shopping malls)	Civic Center Recreation and Event Center Agoura Hills Commercial Center Agoura Hills Town Center Reyes Adobe Plaza Whizin Market Square Twin Oaks Shopping Center Shops at Oak Creek Sheraton Agoura Hills Hampton Inn & Suites Homewood Suites Regency 8 Theater	Bob Smith BMW & Mini Civic Center Creekside Village The Commons (retail, food, entertainment) Harbor Freight Tools Parkway Calabasas The Summit at Calabasas Auto Row Hilton Garden Inn The Anza A Hotel Edwards 6 Theater	Community Center (not city owned)	Civic Center Malibu Village Malibu Colony Plaza Malibu Country Mart Point Dume Plaza Shopping Center Trancas Country Market Zuma Beach Evacuation Area Malibu Playhouse Lisa Smith Wengler Center for the Arts	Civic Center County Line Shopping Center Shoppes at WLV Four Seasons Hotel Residence Inn The Landing Westlake Spectrum Westlake Village Inn Westlake Village Marketplace YMCA

Critical Infrastructure Sectors	Description	Agoura Hills	Calabasas	Hidden Hills	Malibu	Westlake Village
Communications	Terrestrial, satellite, and wireless transmission systems (major hubs, transmission/reception centers, etc.)	Spectrum Communications LVUSD & City Antennas City CERT Antenna (Kimberly Peak)	City CERT Antennas	N/A	N/A	Time Warner Building Agoura Road, Fiber Optics trunk Line parallel to 101 freeway and La Tienda
Critical Manufacturing	Primary metal manufacturing (iron and steel mills, ferro-alloys, aluminum, nonferrous metal production and processing), machinery manufacturing (engine, turbine, power transmission), electrical equipment (electrical equipment, appliance, and component manufacturing), transportation equipment manufacturing (motor vehicle, aerospace, railroad, etc.)	Motor Vehicle Software Corp.	Keysight Technologies HRL Labs Xperi	N/A	N/A	N/A
Dams	Dams, navigation locks, levees, hurricane barriers, mine tailings impoundments, or other similar water retention and/or control facilities	N/A	N/A	N/A	N/A	Las Virgenes Reservoir
Defense Industrial Base	Department of Defense (DoD), government, and the private sector worldwide industrial complex with the capabilities of performing research and development, design, production, delivery, and maintenance of military weapons systems, subsystems, components, or parts to meet military requirements	N/A	N/A	N/A	HRL Laboratories	N/A
Emergency Services	First-responder disciplines that include: emergency management, emergency medical services, fire, hazardous material, law enforcement, bomb squads, tactical operations/special weapons assault teams, and search and rescue	LA County Fire Station #89	LA County Fire Stations: #68 and #125 LA County Sheriff Lost Hills Station	Hidden Hills EOC	LA County Fire Station #70: Battalion HQ LA County Fire Stations: #71, #72, #88, #99	LA County Fire Station #144
Energy	Electricity, petroleum, natural gas	Natural Gas Pipelines Oil Pipelines Edison Substation	Natural Gas Pipelines Oil Pipelines	Oil Pipelines	N/A	N/A

Critical Infrastructure Sectors	Description	Agoura Hills	Calabasas	Hidden Hills	Malibu	Westlake Village
Government Facilities	General-use office buildings and special-use military installations, embassies, courthouses, national laboratories, and structures that may house critical equipment and systems, networks, and functions as well as cyber elements that contribute to the protection of sector assets (e.g., access control systems and closed-circuit television systems) and the protection of individuals who possess tactical, operational, or strategic knowledge or perform essential functions	Agoura Hills City Hall Agoura Hills Library	Calabasas City Hall Calabasas Library	Hidden Hills City Hall	Malibu City Hall	Westlake Village City Hall Westlake Village Library
Information Technology	Public and private sector information systems including the Internet	IBM Corporation Teradyne Inc.	Alcatel Internetworking IXIA Communications	N/A	N/A	N/A
National Monuments and Icons	Listed in the National Register of Historic Places, List of National Historic Landmarks, icons, or other recognized physical structures, objects, or geographic sites	Reyes Adobe Historical Site	Leonis Adobe Museum (in Los Angeles City limits / adjacent to Calabasas)	N/A	N/A	N/A
Nuclear Reactors, Materials, and Waste	Nuclear power plants; non-power nuclear reactors used for research, testing, and training; nuclear materials used in medical, industrial, and academic settings; nuclear fuel fabrication facilities; decommissioning reactors; and the transportation, storage, and disposal of nuclear material and waste	N/A	N/A	N/A	N/A	N/A
Postal & Shipping	High volume processing facilities, delivery units, collection locations, retail operations, transport vehicles, postal/delivery information and communications networks	U.S. Post Office	U.S. Post Office	N/A	U.S. Post Office	N/A
Healthcare and Public Health	Public and private hospitals and healthcare facilities	N/A	UCLA Health	N/A	N/A	N/A

Critical Infrastructure Sectors	Description	Agoura Hills	Calabasas	Hidden Hills	Malibu	Westlake Village
Transportation	Aviation, highways, maritime transportation, mass transit, pipeline systems, and rail	101 Freeway Pipelines (see Energy)	101 Freeway Natural Gas and Oil Pipelines (see Energy)	101 Freeway	Highway 1 PCH	101 Freeway
Water	Drinking water and waste water	Water Storage Tanks	Las Virgenes Malibu Water District HQ	N/A	Water Storage Tanks	Las Virgenes Reservoir
Other	Other locations not otherwise defined	Agoura High School Lindero Canyon Middle School Mariposa School of Global Education Sumac Elementary School Willow Elementary School Yerba Buena Elementary School Buttercup Preschool	Las Virgenes Unified School District HQ Calabasas High School A.C. Stelle Middle School A.E. Wright Middle School Las Virgenes Independent School Bay Laurel Elementary School Chaparral Elementary Lupin Hill Elementary Viewpoint Private School	Round Meadow Elementary	Malibu High School Malibu Middle School Malibu Elementary School John L. Webster Elementary School Pepperdine University Santa Monica College Our lady of Malibu Catholic School	Calvary Chapel Oaks Christian School Westlake Village Community Park White Oak Elementary

Table 73: Summary of Critical Facilities and Infrastructure

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Earthquake and Flood Loss Estimates

The **Hazards U.S. Multi-Hazard (HAZUS-MH)** tool is a nationally applicable standardized methodology. The Federal Emergency Management Agency (FEMA) developed HAZUS-MH under contract with the National Institute of Building Sciences (NIBS). HAZUS-MH uses state-of-the-art Geographic Information Systems (GIS) software to map and display hazard data and the results of damage and economic loss estimates for buildings and infrastructure. It also allows users to estimate the impacts of earthquakes, hurricane winds, and floods on populations. The following loss exposures have been developed using HAZUS-MH (from available base data).

NOTE: HAZUS-MH utilizes data at the census tracts/block level from diverse sources such as the U.S. Census. Due to the data compilation process, estimates based on city boundaries are difficult to generate. Consequently HAZUS-MH data groups some areas and city specific figures should be considered approximate. Also, for security reasons some data (such as pipeline and potable water locations) are not included. Furthermore, the following disclaimer applies to HAZUS-MH generated reports:

> ***Disclaimer:***
> *The estimates of social and economic impacts contained in this report were produced using HAZUS loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific earthquake. These results can be improved by using enhanced inventory, geotechnical, and observed ground motion data.*

HAZUS-MH Estimated Dollar Exposure

Dollar Exposure represents the value of residential, commercial, and industrial properties in the area. Note: the sums provided are not equal to the total value of the area since some groups such as agriculture, government, and education are omitted.

City Name	Total Exposure [$B]	Residential [$B]	Commercial [$B]	Industrial [$B]
Agoura Hills (including Agoura) Note: HAZUS-MH aggregates portions of Agoura Hills under Westlake Village	1.833	1.273	0.431	0.077
Calabasas/Hidden Hills	3.355	2.781	0.468	0.043
Malibu	3.453	2.271	1.070	0.044
Westlake Village (includes portions of Agoura Hills and Los Angeles County)	2.998	2.231	0.602	0.092
Totals	**11.639**	**8.555**	**2.571**	**0.257**

Table 74: Estimated $ Exposure

City Name	Total Depreciated Exposure [$B]	Depreciated Residential [$B]	Depreciated Commercial [$B]	Depreciated Industrial [$B]
Agoura Hills (including Agoura) Note: HAZUS-MH aggregates portions of Agoura Hills under Westlake Village	1.278	0.909	0.286	0.051
Calabasas/Hidden Hills	2.323	1.972	0.287	0.025
Malibu	2.207	1.493	0.653	0.025
Westlake Village (includes portions of Agoura Hills and Los Angeles County)	2.062	1.590	0.370	0.056
Totals	**7.870**	**5.964**	**1.595**	**0.157**

Table 75: Estimated Depreciated Exposure

HAZUS-MH Estimated Building Counts

Estimated Building Counts represent the number of residential, commercial, and industrial properties in the area. Note: the sums provided are not equal to the total number of the area since some groups such as agriculture, government, and education are omitted.

City Name	Total Number of Buildings	Residential Buildings	Commercial Buildings	Industrial Buildings
Agoura Hills (including Agoura) Note: HAZUS-MH aggregates portions of Agoura Hills under Westlake Village	4,751	4,193	397	108
Calabasas/Hidden Hills	10,816	9,989	577	153
Malibu	8,996	8,132	594	165
Westlake Village (includes portions of Agoura Hills and Los Angeles County)	9,548	8,700	614	154
Totals	**34,111**	**31,014**	**2,183**	**580**

Table 76: Estimated Building Count

HAZUS-MH Loss Scenarios

The following HAZUS-MH loss estimates were generated for two earthquake and two flood scenarios:

- Magnitude 7.0 Simi-Santa Rosa Fault Earthquake
- Magnitude 7.0 Malibu Coast Fault Earthquake
- 50-year Flood
- 100-year Food

In terms of earthquake, the Simi-Santa Rosa Fault and Malibu Coast Fault were selected based on their proximity to the study area and potential magnitude. For each earthquake scenario, a hypothetical epicenter was chosen to model the impact on the local area. Based on HAZUS-MH projections, maps of Peak Ground Acceleration and potential losses were generated. For reference purposes, the USGS developed an Instrumental Intensity Scale that provides relative values for selected PGA ranges.

Instrumental Intensity	Acceleration (g)	Perceived Shaking	Potential Damage
I	< 0.0017	Not Felt	None
II-III	0.0017 - 0.014	Weak	None
IV	0.014 - 0.039	Light	None
V	0.039 - 0.092	Moderate	Very light
VI	0.092 - 0.18	Strong	Light
VII	0.18 - 0.34	Very Strong	Moderate
VIII	0.34 - 0.65	Severe	Moderate to Heavy
IX	0.65 - 1.24	Violent	Heavy
X+	> 1.24	Extreme	Very Heavy

Table 77: USGS PGA Instrumental Intensity Scale

Flood estimates used 50-year and 100-year scenarios. A 100-year flood is defined as an event having a one percent chance of being equaled or exceeded in any given year. This is the regulatory standard "base flood". The base flood is used by the NFIP and all Federal agencies for the purposes of requiring the purchase of flood insurance and regulating new development. Base Flood Elevations (BFEs) are typically shown on Flood Insurance Rate Maps (FIRMs). A 50-year flood has a 2% chance of being equaled or exceeded in any given year.

Magnitude 7.0 Simi-Santa Rosa Fault Earthquake Scenario

HAZUS-MH was used to estimate the impact of a magnitude 7.0 earthquake on the Simi-Santa Rosa Fault (epicenter "red circle" at Latitude 34.2902 Longitude -118.741 and a depth of 1 Km with a rupture length of 35.48 Km). The map below depicts the estimated Peak Ground Acceleration for the area.

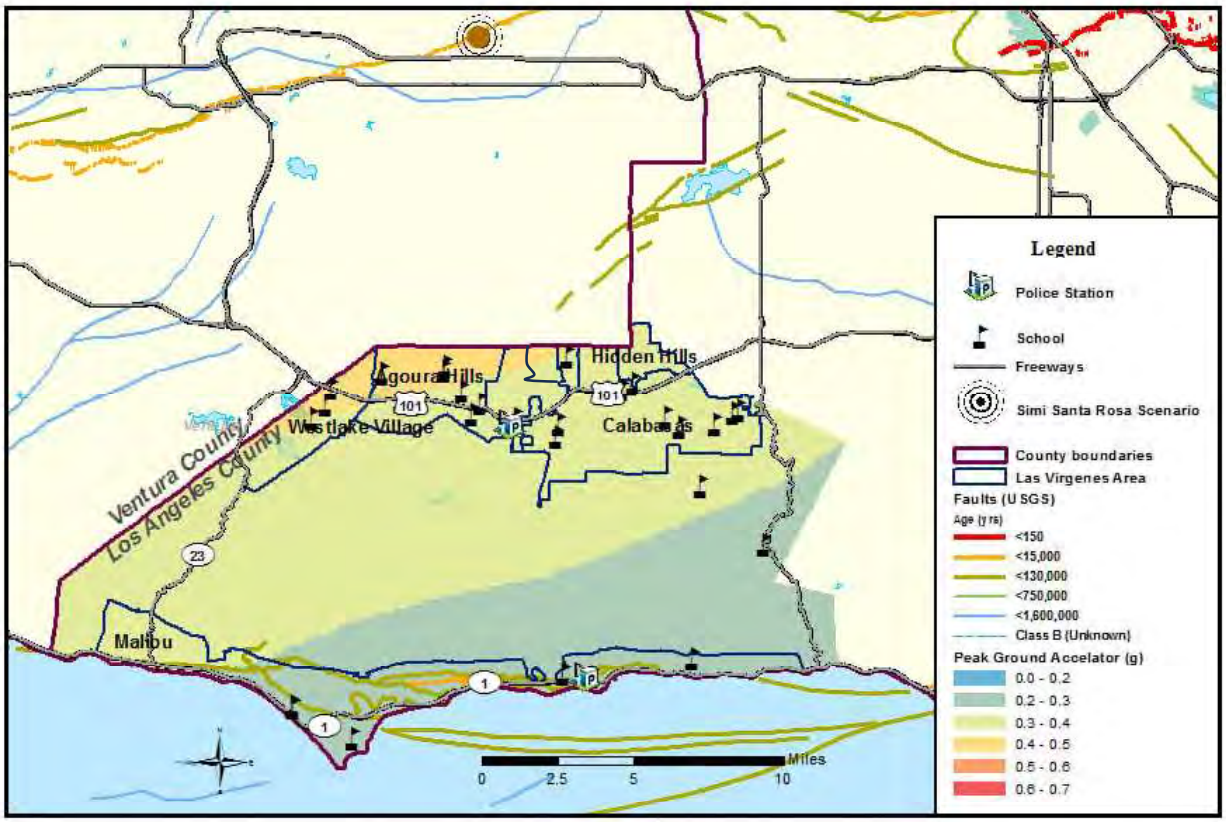


Figure 65: Simi-Santa Rosa M7.0 EQ Peak Ground Acceleration Estimate

Based on projected Peak Ground Acceleration, the greatest impact (and damage) will be in the Agoura Hills and Westlake Village areas (PGA 0.4 to 0.5). This corresponds to severe shaking and moderate to heavy damage. Though somewhat less intense, Calabasas and Hidden Hills (PGA 0.3 to 0.4) would also experience severe shaking and moderate to heavy damage while Malibu (PGA 0.2 to 0.3) would experience very strong shaking with moderate damage.

Additional projected impacts on the Las Virgenes-Malibu Council of Governments area are included in the following sections for:

- Casualties
- Shelter Requirements
- Fire
- Debris Generation
- Financial Impact to Infrastructure and Buildings
- Damage by Building and Facility Type
- Economic Loss

Casualties

HAZUS-MH estimates the number of people that will be injured and killed by the earthquake. The casualties are broken down into four (4) severity levels that describe the extent of the injuries. The levels are described as follows:

Severity Level 1	Injuries will require medical attention, but hospitalization is not needed.
Severity Level 2	Injuries will require hospitalization but are not considered life-threatening.
Severity Level 3	Injuries will require hospitalization and can become life threatening if not promptly treated.
Severity Level 4	Victims are killed by the earthquake.

Casualty estimates are provided for three (3) times of day: 2:00 AM, 2:00 PM and 5:00 PM. These times represent the periods of the day that different sectors of the community are at their peak occupancy loads. The 2:00 AM estimate considers that the residential occupancy load is at maximum, the 2:00 PM estimate considers that the educational, commercial and industrial sector loads are at maximum and 5:00 PM represents peak commute time. The table below provides a summary of the casualties estimated for this earthquake scenario.

Time	Sector	Level 1	Level 2	Level 3	Level 4
2 AM	Commercial	4	1	0	0
	Commuting	0	0	0	0
	Educational	0	0	0	0
	Hotels	1	0	0	0
	Industrial	5	1	0	0
	Other-Residential	28	6	1	1
	Single Family	47	5	0	0
	Total	**85**	**13**	**1**	**1**
2 PM	Commercial	190	48	7	14
	Commuting	0	0	0	0
	Educational	36	9	1	3
	Hotels	0	0	0	0
	Industrial	40	10	2	3
	Other-Residential	4	1	0	0
	Single Family	7	1	0	0
	Total	**277**	**69**	**10**	**20**
5 PM	Commercial	152	38	6	11
	Commuting	30	42	69	13
	Educational	5	1	0	0
	Hotels	0	0	0	0
	Industrial	25	6	1	2
	Other-Residential	10	2	0	0
	Single Family	18	2	0	0
	Total	**240**	**91**	**76**	**26**

Table 78: Simi-Santa Rosa Fault M7.0 EQ Casualty Estimates

Shelter Requirement

HAZUS-MH estimates the number of households that are expected to be displaced from their homes due to the earthquake and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 195 households to be displaced due to the earthquake. Of these, 104 people will seek temporary shelter in public shelters.

Fires

Fires often occur after an earthquake. Because of the number of fires and the lack of water to fight the fires, they can often burn out of control. HAZUS-MH uses a Monte Carlo simulation model to estimate the number of ignitions and the amount of burnt area. For this scenario, the model estimated that there would be little or no impact of fires to the area.

Debris Generation

HAZUS-MH estimates the amount of debris that will be generated by the earthquake. The model classifies debris into two general categories: a) Brick/Wood and b) Reinforced Concrete/Steel. This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 0.22 million tons of debris will be generated. Of the total amount, Brick/Wood comprises 31.00% of the total, with the remainder being Reinforced Concrete/Steel. If the debris tonnage is converted to an estimated number of truckloads, it will require 8,880 truckloads (@25 tons/truck) to remove the debris generated by the earthquake.

Financial Impact to Infrastructure and Buildings

The following estimates were generated using HAZUS-MH.

System	Component	# Locations/ # Segments	Replacement Value (millions of dollars)
Highway	Bridges	67	80.1
	Segments	28	901.1
	Tunnels	7	17.9
		Total	**999.1**

Table 79: Simi-Santa Rosa Fault M7.0 EQ Transportation System Lifeline Inventory Replacement Values

System	Component	# Locations / Segments	Replacement Value (millions of dollars)
Potable Water	Distribution Lines	Multiple	28.6
	Facilities	0	0.0
		Subtotal	28.6
Waste Water	Distribution Lines	Multiple	17.2
	Facilities	2	170.2
		Subtotal	187.3
Natural Gas	Distribution Lines	Multiple	11.5
	Facilities	0	0.0
		Subtotal	11.5
		Total	**454.7**

Table 80: Simi-Santa Rosa Fault M7.0 EQ Water Utility Lifeline Inventory Replacement Values

Note: Electric Power, Communication, and Oil System data was not available.

Occupancy Type	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	45	0.28	28	0.26	20	0.47	8	0.9	3	1.18
Commercial	794	4.96	502	4.64	490	11.48	210	24.51	68	27.38
Education	30	0.19	16	0.15	11	0.26	4	0.46	1	0.44
Government	14	0.09	7	0.07	7	0.16	3	0.37	1	0.44
Industrial	194	1.21	129	1.19	139	3.24	64	7.42	23	9.05
Other Residential	1,504	9.39	1,066	9.86	799	18.7	383	44.63	105	42.4
Religion	49	0.31	30	0.27	24	0.56	11	1.24	4	1.46
Single Family	13,388	83.57	9,037	83.56	2,782	65.12	175	20.47	44	17.65
Total	**16,018**		**10,815**		**4,272**		**858**		**249**	

Table 81: Simi-Santa Rosa Fault M7.0 EQ Expected Building Damage by Occupancy

Damage by Building and Facility Type

Building Type	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Wood	14,552	90.84	9827	90.86	3,039	71.15	200	23.32	56	22.43
Steel	213	1.33	143	1.32	198	4.64	99	11.55	33	13.19
Concrete	255	1.59	161	1.49	129	3.02	64	7.46	24	9.59
Precast	191	1.19	123	1.14	145	3.39	60	6.94	17	6.68
RM	508	3.17	196	1.82	198	4.62	85	9.97	18	7.34
URM	64	0.4	50	0.46	51	1.21	23	2.69	10	4.17
MH	237	1.48	315	2.91	511	11.97	326	38.06	91	36.6
Total	16,020		10,815		4,271		857		249	

Table 82: Simi-Santa Rosa Fault M7.0 EQ Expected Building Damage by Building Type

Notes:
RM Reinforced Masonry
URM Unreinforced Masonry
MH Manufactured Housing

Classification	Total	Number of Facilities		
		At Least Moderate Damage > 50%	Complete Damage > 50%	With Functionality > 50% on day 1
Schools	32	0	0	14

Table 83: Simi-Santa Rosa Fault M7.0 EQ Expected Damage to Essential Facilities - Schools

System	Component	Locations/ Segments	Number of Locations			
			With at Least Mod. Damage	With Complete Damage	With Functionality > 50%	
					After Day 1	After Day 7
Highway	Bridges	67	4	0	62	67
	Segments	28	0	0	28	28
	Tunnels	7	0	0	7	7

Table 84: Simi-Santa Rosa Fault M7.0 EQ Expected Damage to Transportation Systems

System	Total #	Number of Locations			
		With at Least Mod. Damage	With Complete Damage	With Functionality > 50%	
				After Day 1	After Day 7
Waste Water	2	2	0	0	2

Table 85: Simi-Santa Rosa Fault M7.0 EQ Expected Damage to Waste Water Utility Systems

System	Total Pipelines Length (kms)	Number of Leaks	Number of Breaks
Potable Water	1,322	324	81
Waste Water	793	163	41
Natural Gas	529	529	14

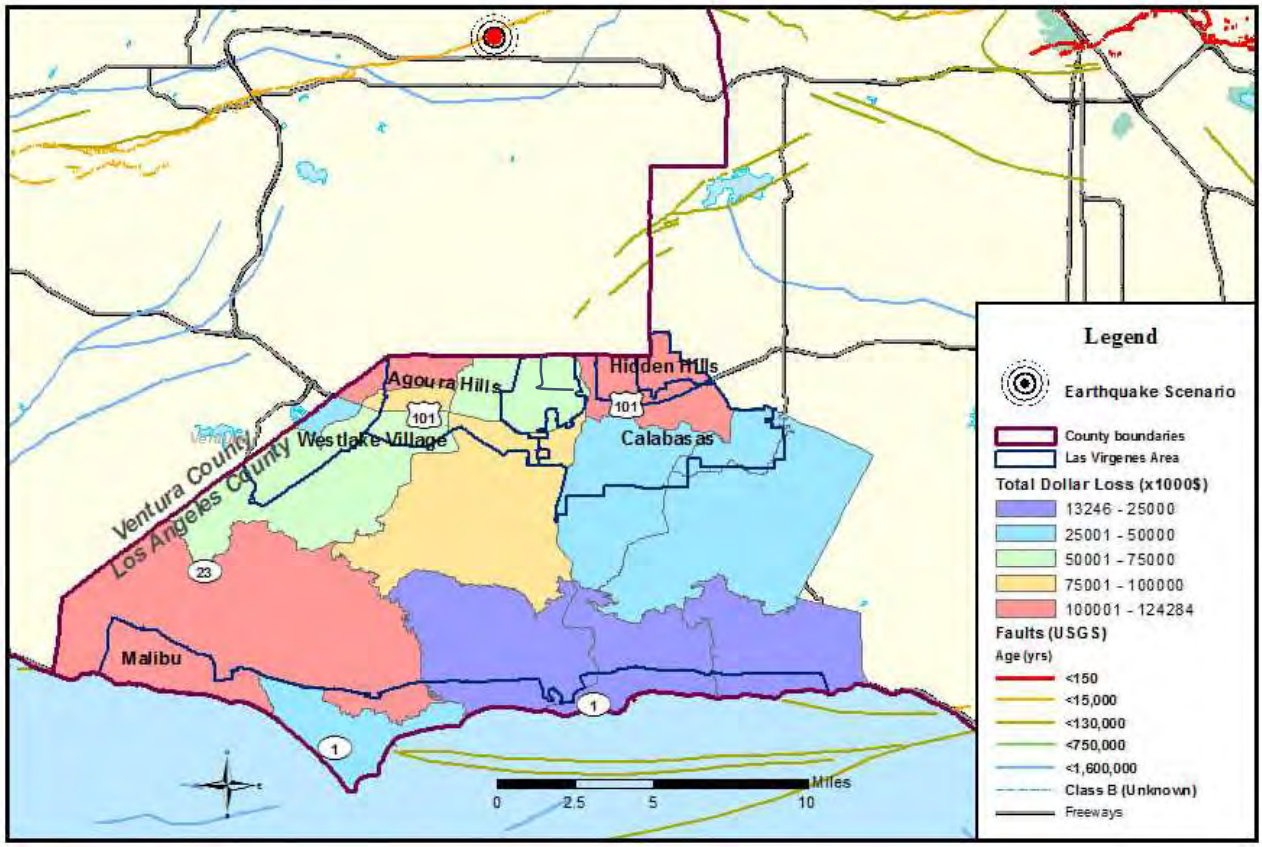
Table 86: Simi-Santa Rosa Fault M7.0 EQ Expected Utility System Pipeline Damage

System	Total # of Households	Number of Households without Service				
		At Day 1	At Day 3	At Day 7	At Day 30	At Day 90
Potable Water	29,844	4,665	7	0	0	0
Electric		4,171	2,248	753	119	7

Table 87: Simi-Santa Rosa Fault M7.0 EQ Expected Potable Water and Electric Power System Performance

Economic Loss

The total economic loss estimated for the earthquake is $1,284,000,000 which includes building and lifeline related losses based on the region's available inventory.



Map 20: Simi-Santa Rosa M7.0 EQ Total $ Loss Estimate

Losses are anticipated to be greatest in the northern areas of Agoura Hills, Hidden Hills, and Westlake Village as well as the western portion of Malibu. Additional details are provided in the following sections.

Building - Related Losses

Building losses are segmented into two categories: direct building losses and business interruption losses. Direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. Business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the earthquake. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the earthquake. The total estimated building-related losses are $1,215.64 million (19% of the estimated losses were related to the business interruption of the region). By far, the largest loss was sustained by the residential occupancies which made up over 45 % of the total loss.

The table below provides a summary of the losses associated with income and capital stock.

Category	Area	Single Family $M	Other Residential $M	Commercial $M	Industrial $M	Others $M	Total $M
Income Losses	Wage	0	0.97	36.67	0.83	1.19	39.67
	Capital-Related	0	0.42	40.82	0.49	0.31	42.04
	Rental	4.98	3.46	28.41	0.42	0.58	37.86
	Relocation	18.67	3.96	40.35	2.33	4.75	70.06
	Subtotal	**23.65**	**8.82**	**146.25**	**4.07**	**6.84**	**189.64**
Capital Stock	Losses						
	Structural	42.16	6.99	55.23	5.89	5.48	115.75
	Non-Structural	239.10	37.55	180.27	20.97	16.78	494.67
	Content	85.53	9.27	85.33	13.79	8.42	202.33
	Inventory	0.00	0.00	1.44	2.03	0.14	3.62
	Subtotal	**366.79**	**53.81**	**322.27**	**42.68**	**30.82**	816.37
	Total	**390.44**	**62.63**	**468.53**	**46.75**	**37.66**	**1006.00**

Table 88: Simi-Santa Rosa Fault M7.0 EQ Building-Related Economic Loss Estimates

Transportation and Utility Lifeline Losses

For the transportation and utility lifeline systems, HAZUS-MH computes the direct repair cost for each component only. There are no losses computed by HAZUS-MH for business interruption due to lifeline outages. The following table provides a detailed breakdown in the expected lifeline losses for selected categories.

System	Component	Inventory Value $M	Economic Loss $M	Loss Ratio (%)
Highway	Bridges	80.10	6.25	7.79
	Segments	901.08	0.00	0.00
	Tunnels	17.89	0.58	3.28
	Total	**999.07**	**6.83**	

Table 89: Simi-Santa Rosa Fault M7.0 EQ Transportation System Economic Losses

System	Component	Inventory Value $M	Economic Loss $M	Loss Ratio (%)
Potable Water	Distribution Lines	28.58	1.58	5.53
	Facilities	NA	-	-
	Subtotal	**28.58**	**1.58**	
Waste Water	Distribution Lines	17.21	0.79	4.59
	Facilities	170.15	20.94	12.31
	Subtotal	**187.36**	**21.73**	
Natural Gas	Distribution Lines	11.47	0.27	2.36
	Facilities	NA	-	-
	Subtotal	**11.47**	**0.27**	
	Total	**227.41**	**23.59**	

Table 90: Simi-Santa Rosa Fault M7.0 EQ Utility System Economic Losses

Note: Electric Power, Communication, and Oil System data was not available (NA).

15 Year Projected Impact

HAZUS-MH estimates the long-term economic impacts to the region for 15 years after the earthquake. The model quantifies this information in terms of income and employment changes within the region.

Year	Loss	Total	Percent
First Year	Employment Impact (# of people)	0	0.00%
	Income Impact ($M)	<7>	-0.61%
Second Year	Employment Impact (# of people)	0	0.00%
	Income Impact ($M)	<21>	-1.87%
Third Year	Employment Impact (# of people)	0	0.00%
	Income Impact ($M)	<27>	-2.41%
Fourth Year	Employment Impact (# of people)	0	0.00%
	Income Impact ($M)	<27>	-2.41%
Fifth Year	Employment Impact (# of people)	0	0.00%
	Income Impact ($M)	<27>	-2.41%
Years 6 to 15	Employment Impact (# of people)	0	0.00%
	Income Impact ($M)	<27>	-2.41%

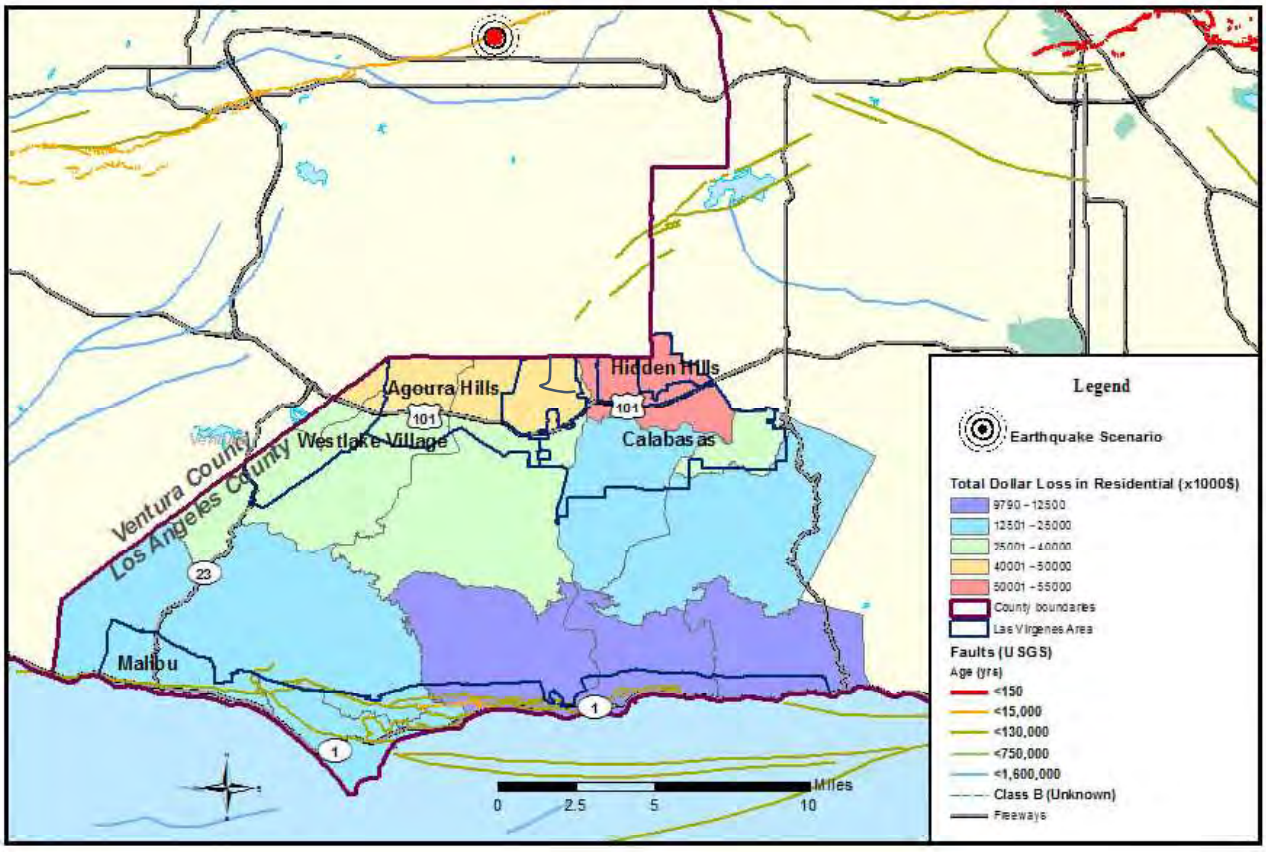
Table 91: Simi-Santa Rosa Fault M7.0 EQ Indirect Economic Impact

Estimated Losses by City

The following dollar loss estimates for residential, commercial, and industrial facilities were generated utilizing HAZUS-MH. Note: The total loss is not equal to the sum due to overlaps in structural and building losses.

City Name	Residential Total Loss [$M]	Residential Structural Loss [$M]	Residential Non-Structural Loss [$M]	Residential Building Loss [$M]	Residential Content Loss [$M]
Agoura Hills (including Agoura)	78.91	8.01	48.38	56.39	16.24
Calabasas/Hidden Hills	137.68	15.05	84.32	99.36	29.44
Malibu	76.74	8.55	47.52	56.07	15.48
Westlake Village	159.65	17.53	96.44	113.98	33.66
Totals	**452.98**	**49.14**	**276.66**	**325.80**	**94.82**

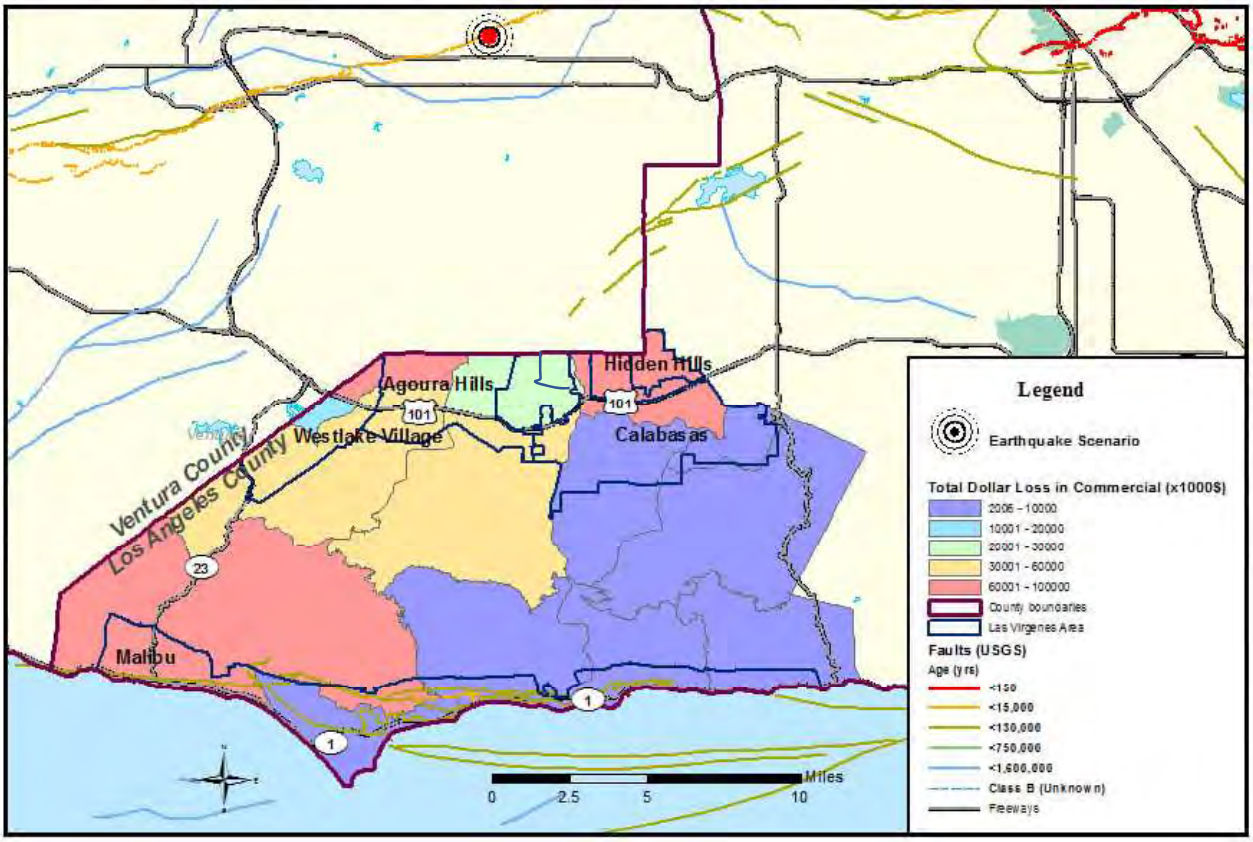
Table 92: Simi-Santa Rosa Fault M7.0 EQ Residential Loss $ Exposure



Map 21: Simi-Santa Rosa Fault M7.0 EQ Residential $ Loss Estimate

City Name	Commercial Total Loss [$M]	Commercial Structural Loss [$M]	Commercial Non-Structural Loss [$M]	Commercial Building Loss [$M]	Commercial Content Loss [$M]
Agoura Hills (including Agoura)	88.43	10.50	32.04	42.54	15.37
Calabasas/Hidden Hills	91.68	10.07	34.53	44.59	16.24
Malibu	131.62	15.37	53.90	69.27	25.44
Westlake Village	156.84	19.37	59.75	79.12	28.36
Totals	**468.57**	**55.31**	**180.22**	**235.53**	**85.40**

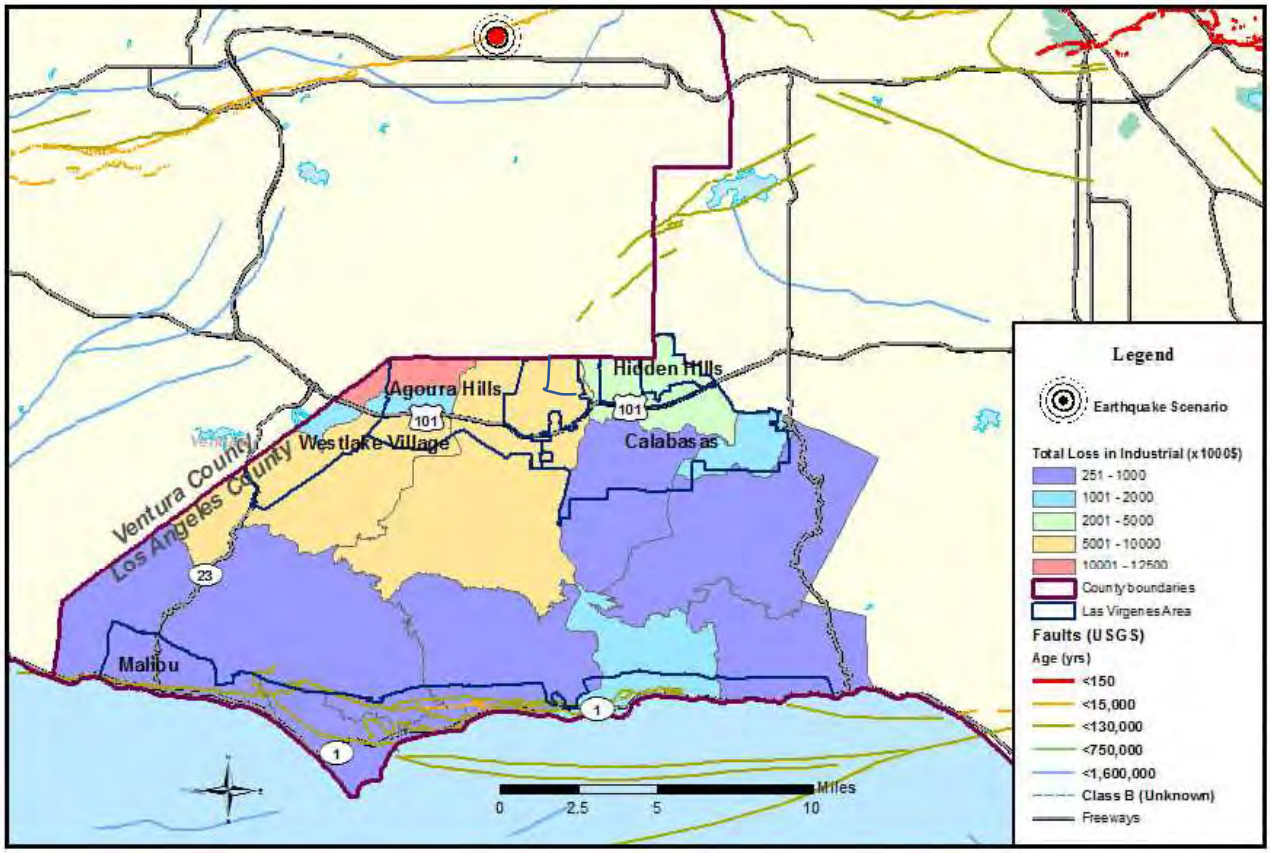
Table 93: Simi-Santa Rosa Fault M7.0 EQ Commercial $ Loss



Map 22: Simi-Santa Rosa Fault M7.0 EQ Commercial $ Loss Estimate

City Name	Industrial Total Loss [$M]	Industrial Structural Loss [$M]	Industrial Non-Structural Loss [$M]	Industrial Building Loss [$M]	Industrial Content Loss [$M]
Agoura Hills (including Agoura)	14.07	1.73	6.28	8.01	4.11
Calabasas/Hidden Hills	6.71	0.87	3.14	4.00	1.84
Malibu	4.00	0.54	1.73	2.27	1.19
Westlake Village	21.97	2.71	9.85	12.56	6.60
Totals	**46.76**	**5.84**	**21.00**	**26.84**	**13.75**

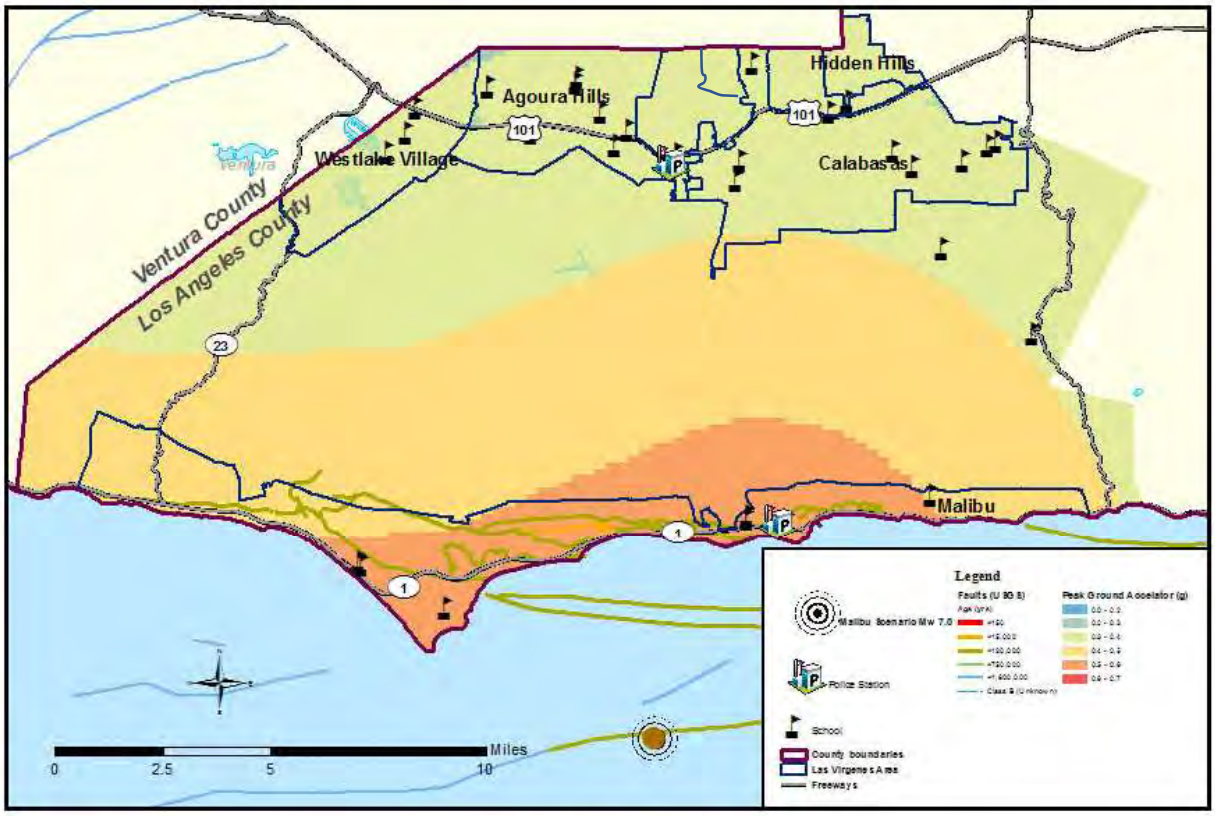
Table 94: Simi-Santa Rosa Fault M7.0 EQ Industrial Loss $ Exposure



Map 23: Simi-Santa Rosa Fault M7.0 EQ Industrial $ Loss Estimate

Magnitude 7.0 Malibu Coast Fault Earthquake Scenario

HAZUS-MH was used to estimate the impact of a magnitude 7.0 earthquake on the Malibu Coast Fault (epicenter "orange circle" at Latitude 33.9684 Longitude -118.729 and a depth of 1 Km). The map below provides a project of peak ground acceleration for the area.



Map 24: Malibu Coast M7.0 EQ Peak Ground Acceleration Estimate

Based on projected Peak Ground Acceleration, the greatest impact (and damage) will be along the coast in the central and eastern portions of Malibu (PGA 0.5 to 0.6). This corresponds to severe shaking and moderate to heavy damage. Though somewhat less intense, the northern sections of Malibu and the extreme southern tip of Calabasas (PGA 0.4 to 0.5) would also experience severe shaking and moderate to heavy damage. The cities of Agoura Hills, Hidden Hills, Westlake Village, and the majority of Calabasas, (PGA 0.3 to 0.4) would experience very strong shaking with moderate damage to severe shaking with moderate to heavy damage.

Additional projected impacts on the Las Virgenes-Malibu Council of Governments area are included in the following sections for:

- Casualties
- Shelter Requirements
- Fire
- Debris Generation
- Financial Impact to Infrastructure and Buildings
- Damage by Building and Facility Type
- Economic Loss

Casualties

HAZUS-MH estimates the number of people that will be injured and killed by the earthquake. The casualties are broken down into four (4) severity levels that describe the extent of the injuries. The levels are described as follows:

Severity Level 1	Injuries will require medical attention, but hospitalization is not needed.
Severity Level 2	Injuries will require hospitalization but are not considered life-threatening.
Severity Level 3	Injuries will require hospitalization and can become life threatening if not promptly treated.
Severity Level 4	Victims are killed by the earthquake.

Casualty estimates are provided for three (3) times of day: 2:00 AM, 2:00 PM and 5:00 PM. These times represent the periods of the day that different sectors of the community are at their peak occupancy loads. The 2:00 AM estimate considers that the residential occupancy load is at maximum, the 2:00 PM estimate considers that the educational, commercial and industrial sector loads are at maximum and 5:00 PM represents peak commute time. The table below provides a summary of the casualties estimated for this earthquake scenario.

Time	Sector	Level 1	Level 2	Level 3	Level 4
2 AM	Commercial	4	1	0	0
	Commuting	0	0	0	0
	Educational	0	0	0	0
	Hotels	2	1	0	0
	Industrial	6	1	0	0
	Other-Residential	62	14	1	2
	Single Family	56	7	0	1
	Total	**130**	**24**	**2**	**4**
2 PM	Commercial	235	62	10	19
	Commuting	0	1	1	0
	Educational	47	12	2	4
	Hotels	0	0	0	0
	Industrial	41	11	2	3
	Other-Residential	9	2	0	0
	Single Family	9	1	0	0
	Total	**341**	**89**	**14**	**26**
5 PM	Commercial	192	50	8	14
	Commuting	41	57	93	18
	Educational	8	2	0	1
	Hotels	1	0	0	0
	Industrial	26	7	1	2
	Other-Residential	23	5	1	1
	Single Family	21	3	0	0
	Total	**310**	**123**	**102**	**36**

Table 95: Malibu Coast Fault M7.0 EQ Casualty Estimates

Shelter Requirement

HAZUS-MH estimates the number of households that are expected to be displaced from their homes due to the earthquake and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 282 households to be displaced due to the earthquake. Of these, 151 people will seek temporary shelter in public shelters.

Fires

Fires often occur after an earthquake. Because of the number of fires and the lack of water to fight the fires, they can often burn out of control. HAZUS-MH uses a Monte Carlo simulation model to estimate the number of ignitions and the amount of burnt area. For this scenario, the model estimated that there would be little or no impact of fires to the area.

Debris Generation

HAZUS-MH estimates the amount of debris that will be generated by the earthquake. The model classifies debris into two general categories: a) Brick/Wood and b) Reinforced Concrete/Steel. This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 0.31 million tons of debris will be generated. Of the total amount, Brick/Wood comprises 31.00% of the total, with the remainder being Reinforced Concrete/Steel. If the debris tonnage is converted to an estimated number of truckloads, it will require 12,280 truckloads (@25 tons/truck) to remove the debris generated by the earthquake.

Financial Impact to Infrastructure and Buildings

The following estimates were generated using HAZUS-MH.

System	Component	# Locations/ # Segments	Replacement Value (millions of dollars)
Highway	Bridges	67	80.10
	Segments	28	901.10
	Tunnels	7	17.86
		Total	**999.06**

Table 96: Malibu Coast Fault M7.0 EQ Transportation System Lifeline Inventory Replacement Values

System	Component	# Locations / Segments	Replacement Value (millions of dollars)
Potable Water	Distribution Lines	NA	28.58
	Facilities	NA	-
		Subtotal	28.58
Waste Water	Distribution Lines	NA	17.21
	Facilities	2	170.15
		Total	**244.51**

Table 97: Malibu Coast Fault M7.0 EQ Water Utility Lifeline Inventory Replacement Values

Note: Natural Gas, Electric Power, Communication, and Oil System data was not available (NA).

Occupancy Type	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	34	0.25	29	0.25	24	0.48	11	0.85	5	0.9
Commercial	637	4.60	500	4.37	549	10.86	272	20.98	107	18.5
Education	24	0.17	17	0.15	13	0.26	5	0.42	2	0.3
Government	10	0.07	8	0.07	8	0.16	5	0.36	2	0.3
Industrial	150	1.08	126	1.10	154	3.05	82	6.33	35	6.1
Other Residential	1,004	7.25	982	8.58	855	16.92	660	50.85	356	61.7
Religion	40	0.29	30	0.26	27	0.54	14	1.06	6	0.9
Single Family	11,944	86.28	9,749	85.21	3,422	67.72	249	19.15	63	10.9
Total	**13,844**		**11,441**		**5,053**		**1,298**		**577**	

Table 98: Malibu Coast Fault M7.0 EQ Expected Building Damage by Occupancy

Damage by Building and Facility Type

Building Type	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Wood	12,866	92.94	10648	93.06	3,788	74.98	289	22.29	82	14.28
Steel	145	1.05	130	1.14	218	4.31	137	10.55	55	9.61
Concrete	195	1.40	164	1.44	150	2.96	85	6.56	39	6.78
Precast	147	1.06	120	1.05	161	3.19	78	6.03	27	4.75
RM	416	3.01	207	1.81	234	4.64	116	8.96	32	5.54
URM	45	0.32	46	0.40	57	1.13	31	2.41	20	3.55
MH	30	0.21	127	1.11	444	8.79	561	43.21	320	55.48
Total	**13,844**		**11,441**		**5,053**		**1,298**		**577**	

Table 99: Malibu Coast Fault M7.0 EQ Expected Building Damage by Building Type

RM Reinforced Masonry
URM Unreinforced Masonry
MH Manufactured Housing

Classification	Total	Number of Facilities		
		At Least Moderate Damage > 50%	Complete Damage > 50%	With Functionality > 50% on day 1
Schools	32	0	0	17

Table 100: Malibu Coast Fault M7.0 EQ Expected Damage to Essential Facilities - Schools

System	Component	Locations/ Segments	Number of Locations			
			With at Least Mod. Damage	With Complete Damage	With Functionality > 50%	
					After Day 1	After Day 7
Highway	Bridges	67	6	0	59	63
	Segments	28	0	0	28	28
	Tunnels	7	0	0	7	7

Table 101: Malibu Coast Fault M7.0 EQ Expected Damage to Transportation Systems

System	Total #	Number of Locations			
		With at Least Mod. Damage	With Complete Damage	With Functionality > 50%	
				After Day 1	After Day 7
Waste Water	2	2	0	0	1

Table 102: Malibu Coast Fault M7.0 EQ Expected Damage to Waste Water Utility Systems

System	Total Pipelines Length (kms)	Number of Leaks	Number of Breaks
Potable Water	1,322	562	141
Waste Water	793	282	71
Natural Gas	529	97	24

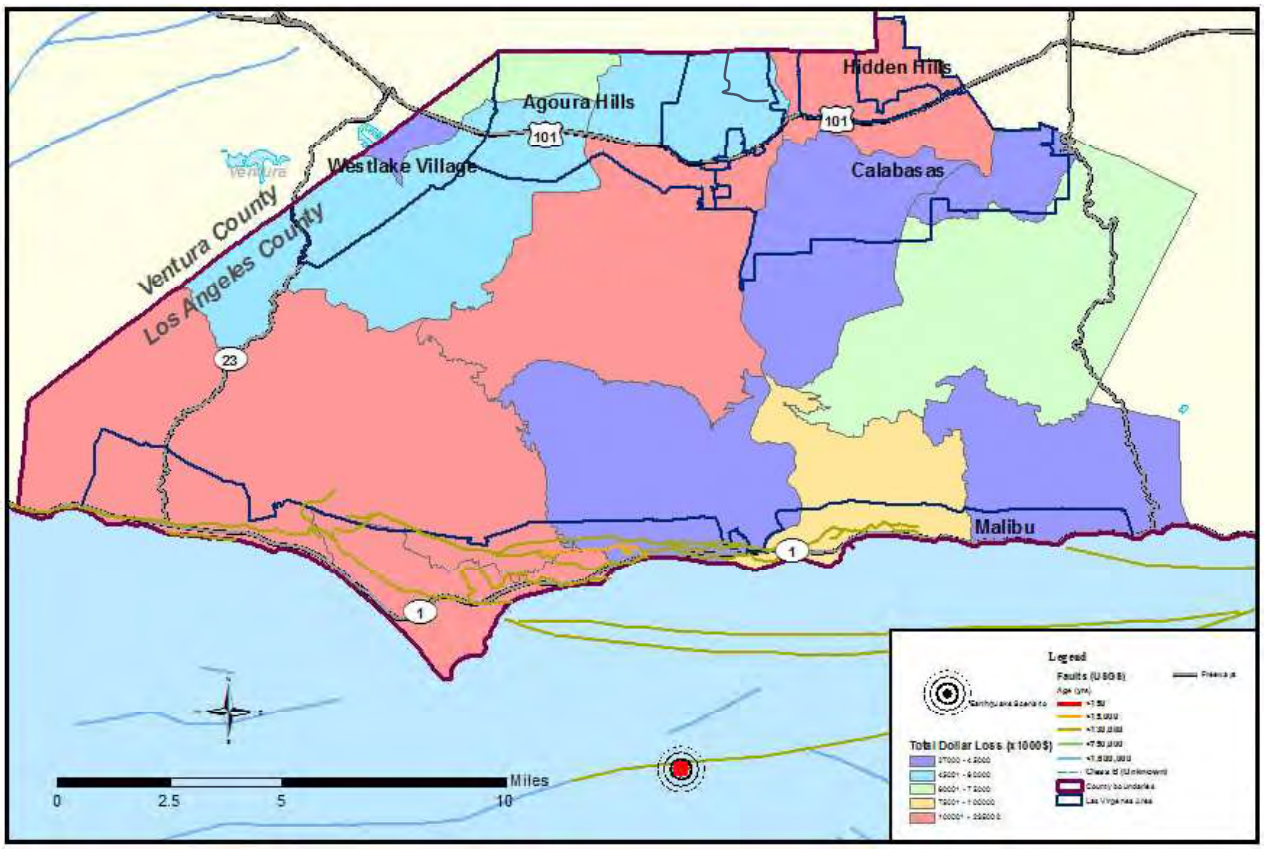
Table 103: Malibu Coast Fault M7.0 EQ Expected Utility System Pipeline Damage

System	Total # of Households	Number of Households without Service				
		At Day 1	At Day 3	At Day 7	At Day 30	At Day 90
Potable Water	29,844	13,044	6,109	0	0	0
Electric		5,778	3,417	1,318	240	8

Table 104: Malibu Coast Fault M7.0 EQ Expected Potable Water and Electric Power System Performance

Economic Loss

The total economic loss estimated for the earthquake is $1,284,000,000 which includes building and lifeline related losses based on the region's available inventory.



Map 25: Malibu Coast M7.0 EQ Total $ Loss Estimate

Losses are anticipated to be greatest in the western portion of Malibu as well as Hidden Hills and the southeastern area of Agoura Hills, and north and west portions of Calabasas. Additional details are provided in the following sections.

Building - Related Losses

Building losses are segmented into two categories: direct building losses and business interruption losses. Direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. Business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the earthquake. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the earthquake. The total estimated building-related losses are $1,215.64 million (19% of the estimated losses were related to the business interruption of the region). By far, the largest loss was sustained by the residential occupancies which made up over 45 % of the total loss.

The table below provides a summary of the losses associated with income and capital stock.

Category	Area	Single Family $M	Other Residential $M	Commercial $M	Industrial $M	Others $M	Total $M
Income Losses	Wage	0	1.67	45.87	0.95	1.66	50.15
	Capital-Related	0	0.73	55.42	0.56	0.40	57.11
	Rental	6.30	5.76	37.38	0.44	0.73	50.60
	Relocation	23.83	6.80	52.56	2.47	5.96	91.63
	Subtotal	**30.13**	**14.95**	**191.23**	**4.43**	**8.75**	**249.48**
Capital Stock	Losses						
	Structural	52.75	13.69	72.89	6.62	6.69	152.64
	Non-Structural	296.00	65.93	242.57	23.76	20.93	649.19
	Content	106.27	15.79	112.15	15.42	10.74	260.37
	Inventory	0.00	0.00	1.56	2.37	0.19	4.12
	Subtotal	**455.02**	**95.41**	**429.16**	**48.18**	**38.56**	1066.33
	Total	**485.15**	**110.36**	**620.39**	**52.60**	**47.30**	**1315.81**

Table 105: Malibu Coast Fault M7.0 EQ Building-Related Economic Loss Estimates

Transportation and Utility Lifeline Losses

For the transportation and utility lifeline systems, HAZUS-MH computes the direct repair cost for each component only. There are no losses computed by HAZUS-MH for business interruption due to lifeline outages. The following table provides a detailed breakdown in the expected lifeline losses for selected categories.

System	Component	Inventory Value $M	Economic Loss $M	Loss Ratio (%)
Highway	Bridges	80.10	7.71	9.62
	Segments	901.08	0.00	0.00
	Tunnels	17.89	0.95	5.32
	Total	**999.07**	**8.66**	

Table 106: Malibu Coast Fault M7.0 EQ Transportation System Economic Losses

System	Component	Inventory Value $M	Economic Loss $M	Loss Ratio (%)
Potable Water	Distribution Lines	28.6	2.7	10.4
	Facilities			
	Subtotal	**28.6**	**2.7**	**10.4**
Waste Water	Distribution Lines	17.2	1.4	8.7
	Facilities	170.2	60.8	38.7
	Subtotal	**187.4**	**62.1**	**47.3**
Natural Gas	Distribution Lines	11.5	0.5	4.5
	Facilities			
	Subtotal	**11.5**	**0.5**	**4.5**
	Total	**227.4**	**65.3**	**62.1**

Table 107: Malibu Coast Fault M7.0 EQ Utility System Economic Losses

Note: Electric Power, Communication, and Oil System data was not available (NA).

15 Year Projected Impact

HAZUS-MH estimates the long-term economic impacts to the region for 15 years after the earthquake. The model quantifies this information in terms of income and employment changes within the region.

Year	Loss	Total	Percent
First Year	Employment Impact (# of people)	0	0.00%
	Income Impact ($M)	<9>	-0.81%
Second Year	Employment Impact (# of people)	0	0.00%
	Income Impact ($M)	<27>	-2.46%
Third Year	Employment Impact (# of people)	0	0.00%
	Income Impact ($M)	<35>	-3.17%
Fourth Year	Employment Impact (# of people)	0	0.00%
	Income Impact ($M)	<35>	-3.17%
Fifth Year	Employment Impact (# of people)	0	0.00%
	Income Impact ($M)	<35>	-3.17%
Years 6 to 15	Employment Impact (# of people)	0	0.00%
	Income Impact ($M)	<35>	-3.17%

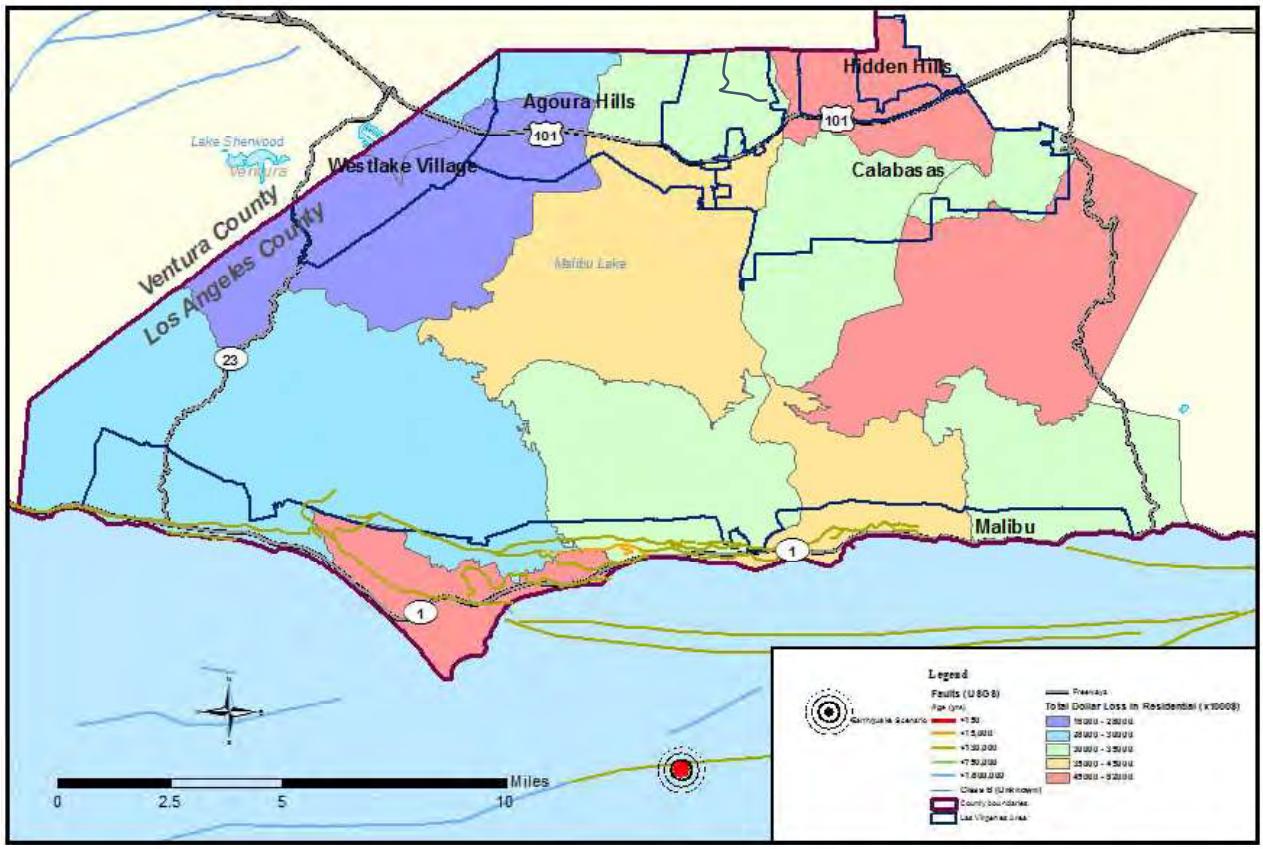
Table 108: Malibu Coast Fault M7.0 EQ Indirect Economic Impact

Estimated Losses by City

The following dollar loss estimates for residential, commercial, and industrial facilities were generated utilizing HAZUS-MH. Note: The total loss is not equal to the sum due to overlaps in structural and building losses.

City Name	Residential Total Loss [$M]	Residential Structural Loss [$M]	Residential Non-Structural Loss [$M]	Residential Building Loss [$M]	Residential Content Loss [$M]
Agoura Hills (including Agoura)	81.40	8.33	49.68	58.02	16.78
Calabasas/Hidden Hills	169.61	18.83	103.15	121.99	35.94
Malibu	235.96	27.49	142.99	170.48	46.54
Westlake Village	108.56	11.80	66.13	77.93	22.84
Totals	**595.54**	**66.46**	**361.95**	**428.41**	**122.09**

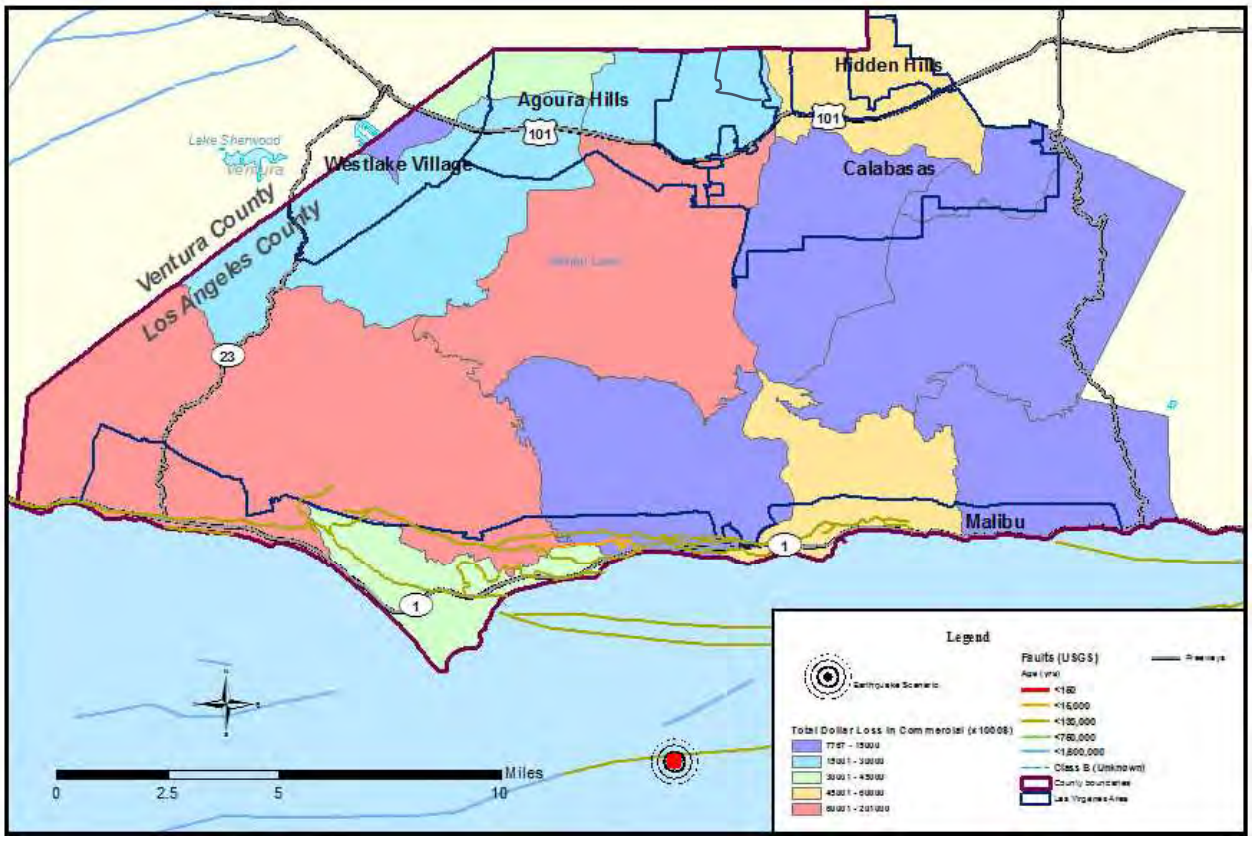
Table 109: Malibu Coast Fault M7.0 EQ Residential Loss $ Exposure



Map 26: Malibu Coast Fault M7.0 EQ Residential $ Loss Estimate

City Name	Commercial Total Loss [$M]	Commercial Structural Loss [$M]	Commercial Non-Structural Loss [$M]	Commercial Building Loss [$M]	Commercial Content Loss [$M]
Agoura Hills (including Agoura)	106.62	12.66	38.97	51.63	18.40
Calabasas/Hidden Hills	94.60	10.28	35.39	45.68	16.56
Malibu	321.69	38.10	131.73	169.83	59.42
Westlake Village	97.42	11.80	36.48	48.38	17.75
Totals	**620.32**	**72.85**	**242.57**	**315.52**	**112.14**

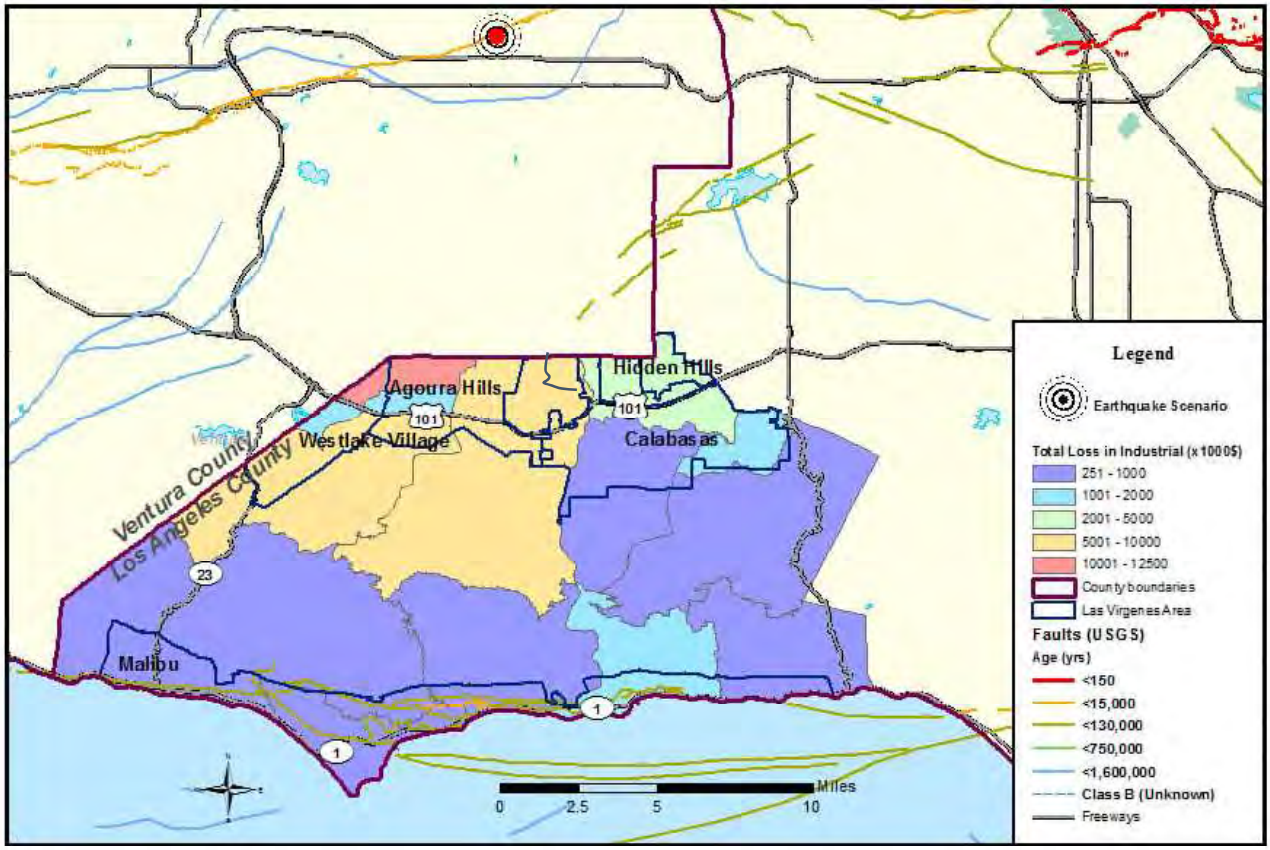
Table 110: Malibu Coast Fault M7.0 EQ Commercial $ Loss



Map 27: Malibu Coast Fault M7.0 EQ Commercial $ Loss Estimate

City Name	Industrial Total Loss [$M]	Industrial Structural Loss [$M]	Industrial Non-Structural Loss [$M]	Industrial Building Loss [$M]	Industrial Content Loss [$M]
Agoura Hills (including Agoura)	16.02	2.06	7.14	9.20	4.76
Calabasas/Hidden Hills	7.69	0.97	3.57	4.55	2.16
Malibu	20.24	1.95	7.04	8.98	4.44
Westlake Village	8.66	1.73	5.95	7.69	4.00
Totals	**52.60**	**6.71**	**23.70**	**30.42**	**15.37**

Table 111: Malibu Coast Fault M7.0 EQ Industrial Loss $ Exposure



Map 28: Malibu Coast Fault M7.0 EQ Industrial $ Loss Estimate

50-year Flood Scenario

It is estimated that a 50-year Flood (riverine flooding) will result in damage to residential, commercial, and industrial properties. The table below depicts the estimated number of structures impacted.

City Name	Building Count Residential	Building Count Commercial	Building Count Industrial
Agoura Hills	152	3	0
Calabasas /Hidden Hills	89	0	0
Malibu	90	0	0
Westlake Village	510	0	0
Totals	**841**	**3**	**0**

Table 112: 50-year Flood General Building Stock Damage Count

HAZUS-MH provides estimates of dollar losses to residential, commercial, and industrial facilities. Note: The total of building loss and content loss is not equal to total loss due to other costs such as inventory loss, relocation expense, and income loss. The tables below show the economic losses for the general building stock by census block (full replacement value and depreciated replacement value).

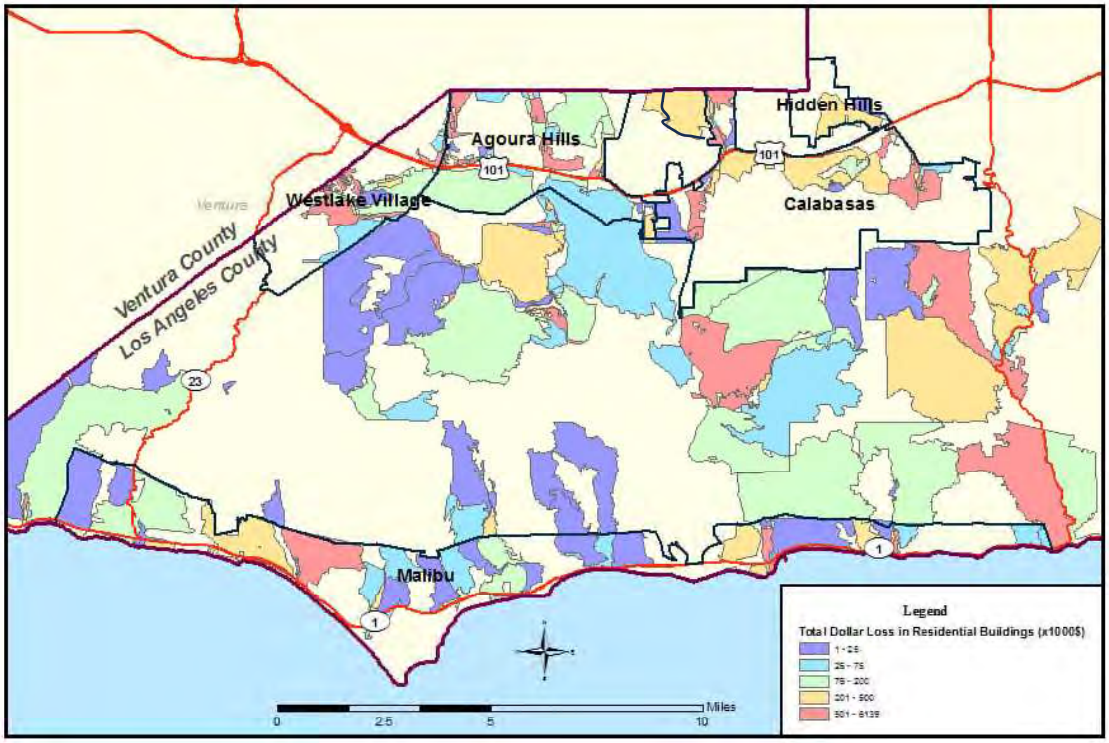
City Name	Residential Total Loss [$M]	Residential Building Loss [$M]	Residential Content Loss [$M]	Commercial Total Loss [$M]	Commercial Building Loss [$M]	Commercial Content Loss [$M]	Industrial Total Loss [$M]	Industrial Building Loss [$M]	Industrial Content Loss [$M]
Agoura Hills	31.39	19.27	12.12	29.98	8.55	20.89	2.81	0.76	1.84
Calabasas/ Hidden Hills	17.10	10.50	6.60	4.11	1.30	2.81	0.43	0.11	0.22
Malibu	17.53	10.82	6.82	8.01	2.81	5.20	1.95	0.65	1.19
Westlake Village	46.11	28.14	17.86	34.31	8.98	24.25	2.71	0.87	1.62
Totals	**112.14**	**68.73**	**43.40**	**76.42**	**21.65**	**53.15**	**7.90**	**2.38**	**4.87**

Table 113: 50-year Flood Direct Economic Loss for Full Replacement of Buildings and Contents

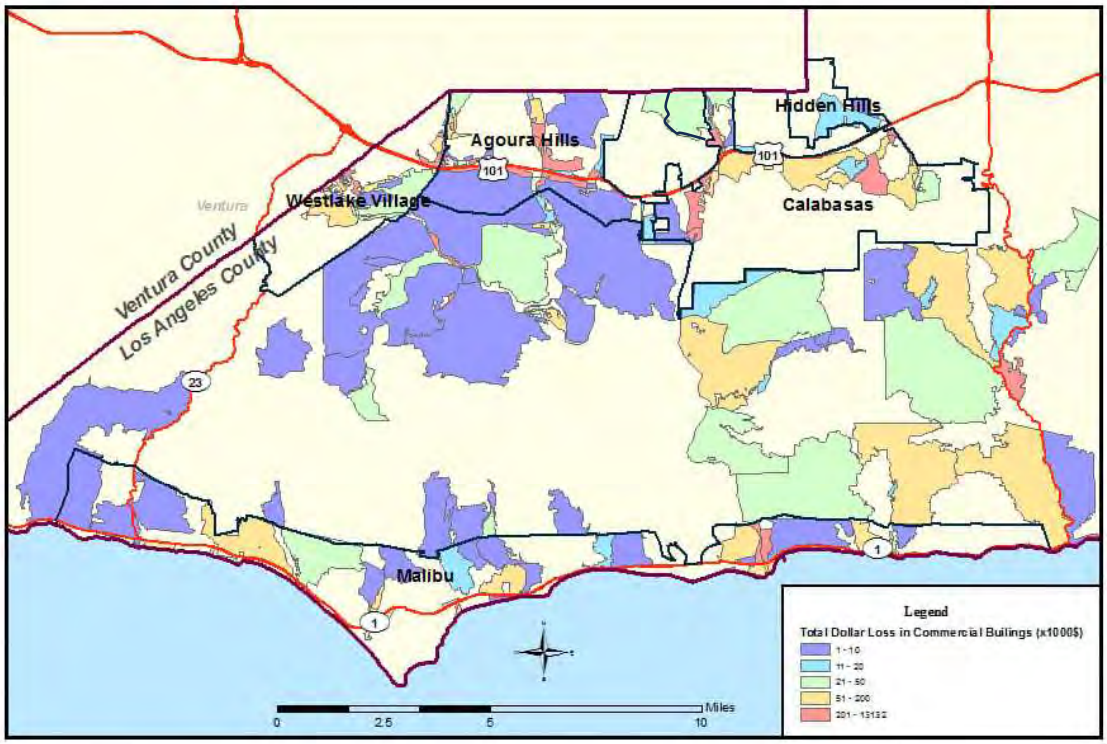
City Name	Residential Total Loss [$M]	Residential Building Loss [$M]	Residential Content Loss [$M]	Commercial Total Loss [$M]	Commercial Building Loss [$M]	Commercial Content Loss [$M]	Industrial Total Loss [$M]	Industrial Building Loss [$M]	Industrial Content Loss [$M]
Agoura Hills	22.41	13.75	8.66	18.62	5.41	13.21	1.62	0.43	1.19
Calabasas/ Hidden Hills	11.47	7.04	4.44	2.27	0.76	1.62	0.22	0.11	0.11
Malibu	11.58	7.14	4.44	4.44	1.52	2.92	1.08	0.32	0.76
Westlake Village	30.20	18.40	11.80	20.78	5.63	15.05	1.52	0.54	0.97
Totals	**75.66**	**46.33**	**29.33**	**46.11**	**13.31**	**32.80**	**4.44**	**1.41**	**3.03**

Table 114: 50-year Flood Direct Economic Loss for Depreciation Replacement Value of Bdgs and Contents

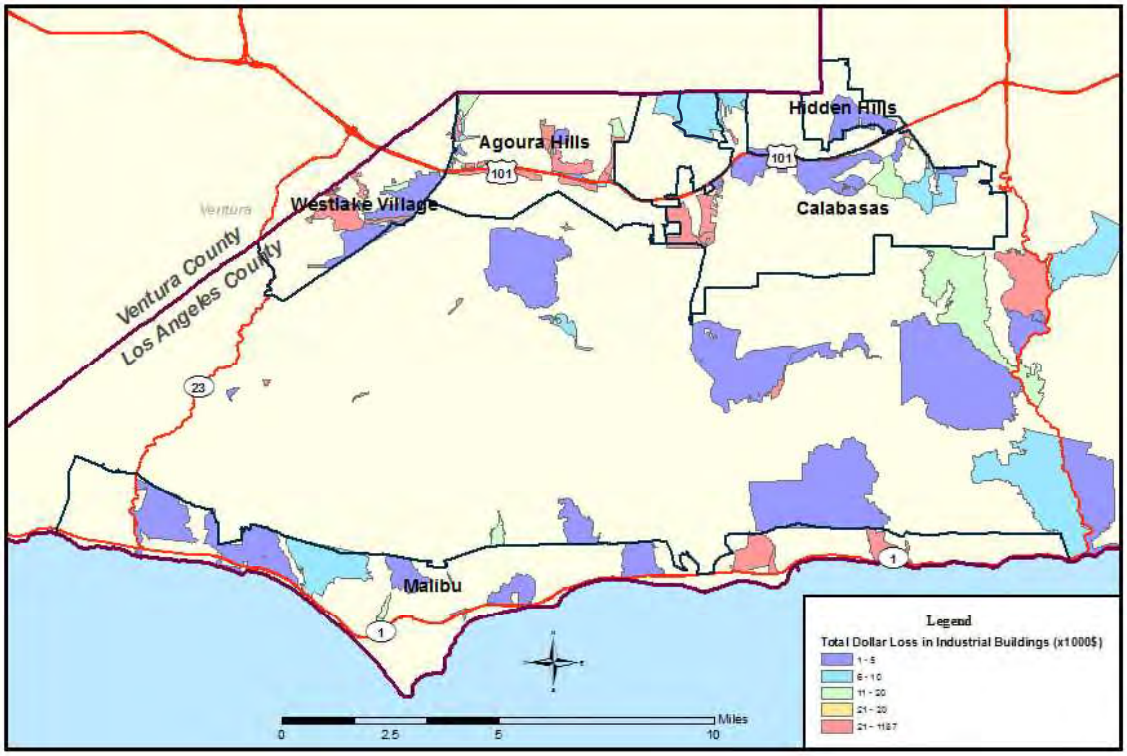
The maps below depict the 50-year Flood geographic distribution of losses for residential, commercial, and industrial facilities within the region.



Map 29: 50-year Flood Residential Building Dollar Loss Estimate



Map 30: 50-year Flood Commercial Building Dollar Loss Estimate



Map 31: 50-year Flood Industrial Building Dollar Loss Estimate

100-year Flood

It is estimated that a 100-year Flood (riverine flooding) will result in damage to residential, commercial, and industrial properties. The table below depicts the estimated number of structures impacted.

City Name	Building Count Residential	Building Count Commercial	Building Count Industrial
Agoura Hills	171	3	0
Calabasas /Hidden Hills	107	0	0
Malibu	96	0	0
Westlake Village	542	0	0
Totals	**916**	**3**	**0**

Table 115: 100-year Flood General Building Stock Damage Count

HAZUS-MH provides estimates of dollar losses to residential, commercial, and industrial facilities. Note: The total of building loss and content loss is not equal to total loss due to other costs such as inventory loss, relocation expense, and income loss.

The tables below show the economic losses for the general building stock by census block (full replacement value and depreciated replacement value).

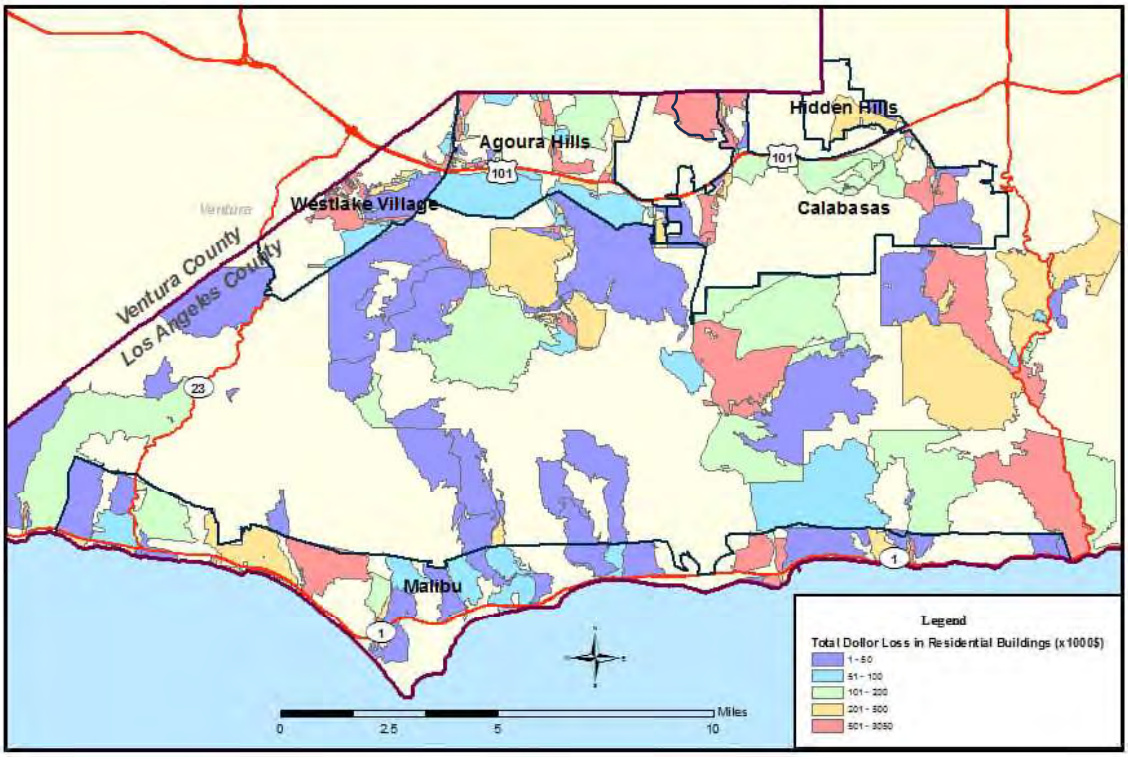
City Name	Residential Total Loss [$M]	Residential Building Loss [$M]	Residential Content Loss [$M]	Commercial Total Loss [$M]	Commercial Building Loss [$M]	Commercial Content Loss [$M]	Industrial Total Loss [$M]	Industrial Building Loss [$M]	Industrial Content Loss [$M]
Agoura Hills	37.34	22.95	14.40	42.43	12.66	29.01	4.00	1.19	2.60
Calabasas/ Hidden Hills	22.30	13.85	8.44	4.22	1.30	2.92	0.43	0.11	0.22
Malibu	21.43	13.21	8.33	10.17	3.25	6.71	2.27	0.76	1.41
Westlake Village	50.33	30.85	19.48	37.23	10.28	26.09	3.03	0.87	1.84
Totals	**131.40**	**80.86**	**50.66**	**94.06**	**27.49**	**64.73**	**9.74**	**2.92**	**6.06**

Table 116: 100-year Flood Direct Economic Loss for Full Replacement of Buildings and Contents

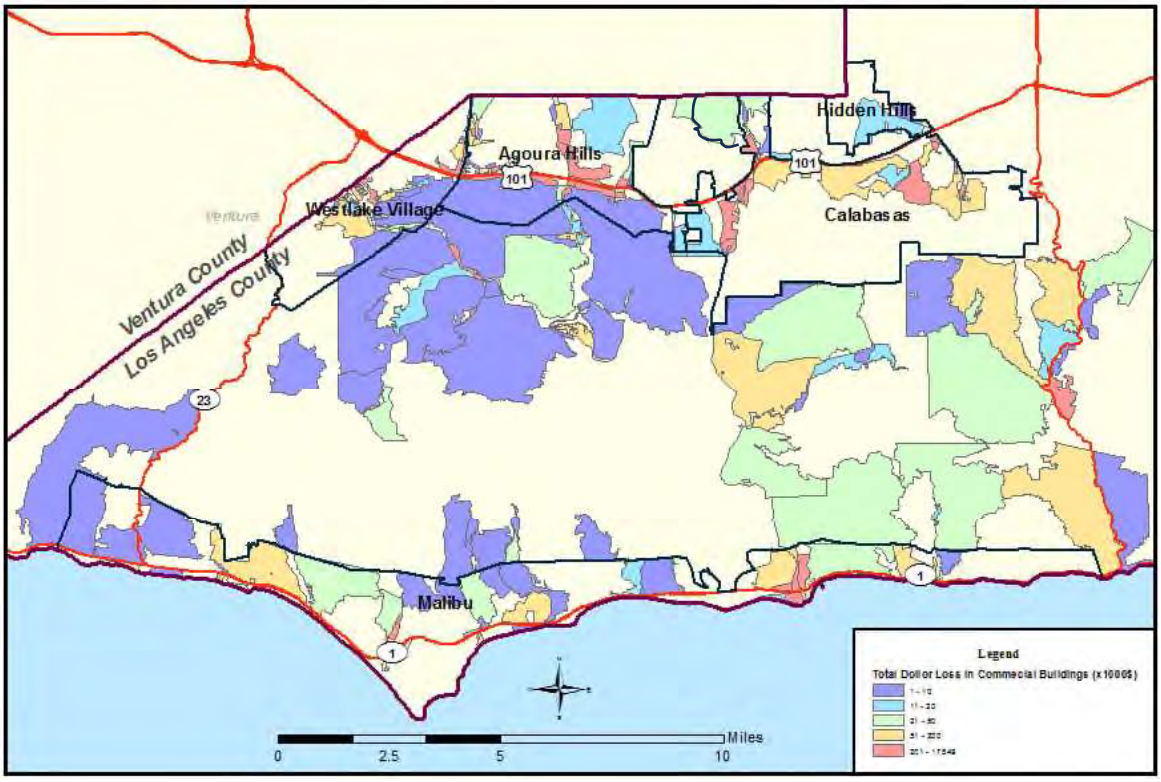
City Name	Residential Total Loss [$M]	Residential Building Loss [$M]	Residential Content Loss [$M]	Commercial Total Loss [$M]	Commercial Building Loss [$M]	Commercial Content Loss [$M]	Industrial Total Loss [$M]	Industrial Building Loss [$M]	Industrial Content Loss [$M]
Agoura Hills	18.51	11.37	7.14	26.52	8.01	18.51	2.38	0.76	1.62
Calabasas/ Hidden Hills	12.77	7.90	4.87	2.38	0.76	1.62	0.22	0.11	0.11
Malibu	12.45	7.69	4.76	5.63	1.84	3.79	1.19	0.43	0.76
Westlake Village	26.84	16.45	10.39	22.62	6.39	16.24	1.73	0.54	1.19
Totals	**70.57**	**43.40**	**27.17**	**57.15**	**16.99**	**40.16**	**5.52**	**1.84**	**3.68**

Table 117: 100-year Flood Direct Economic Loss for Depreciation Replacement Value of Bdgs and Contents

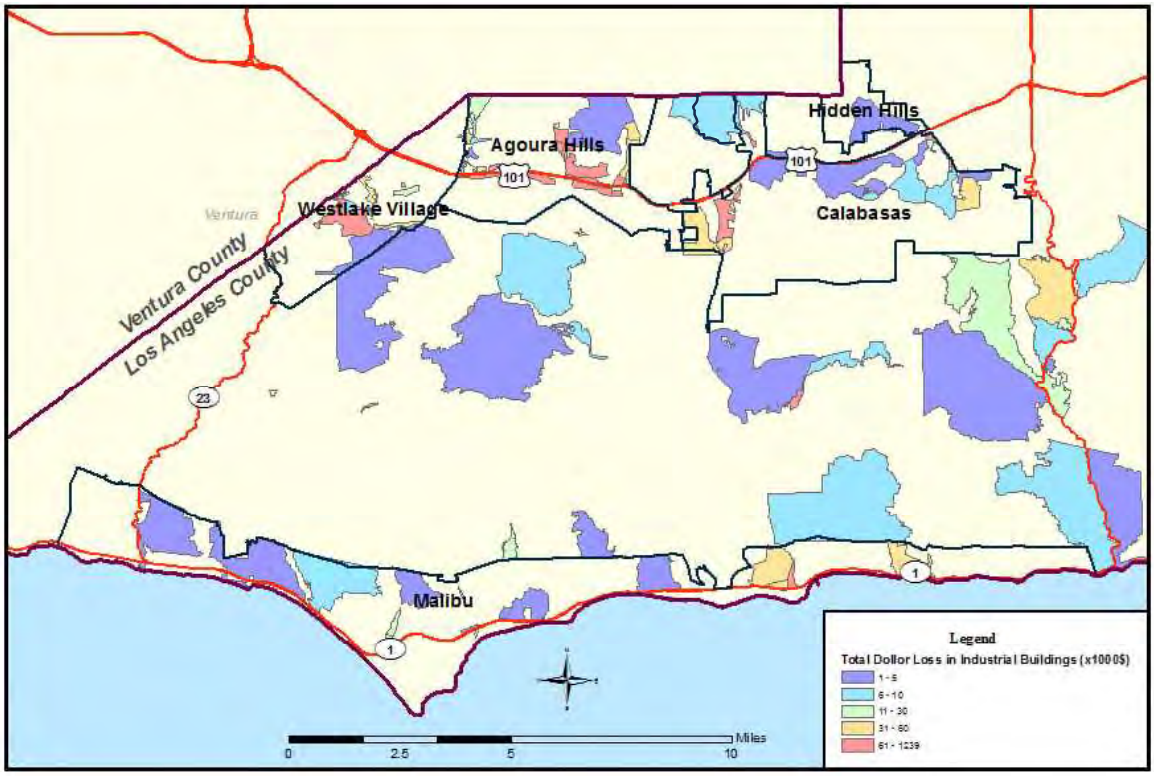
The maps below depict the 100-year Flood geographic distribution of losses for residential, commercial, and industrial facilities within the region.



Map 32: 100-year Flood Residential Building Dollar Loss Estimate



Map 33: 100-year Flood Commercial Building Dollar Loss Estimate



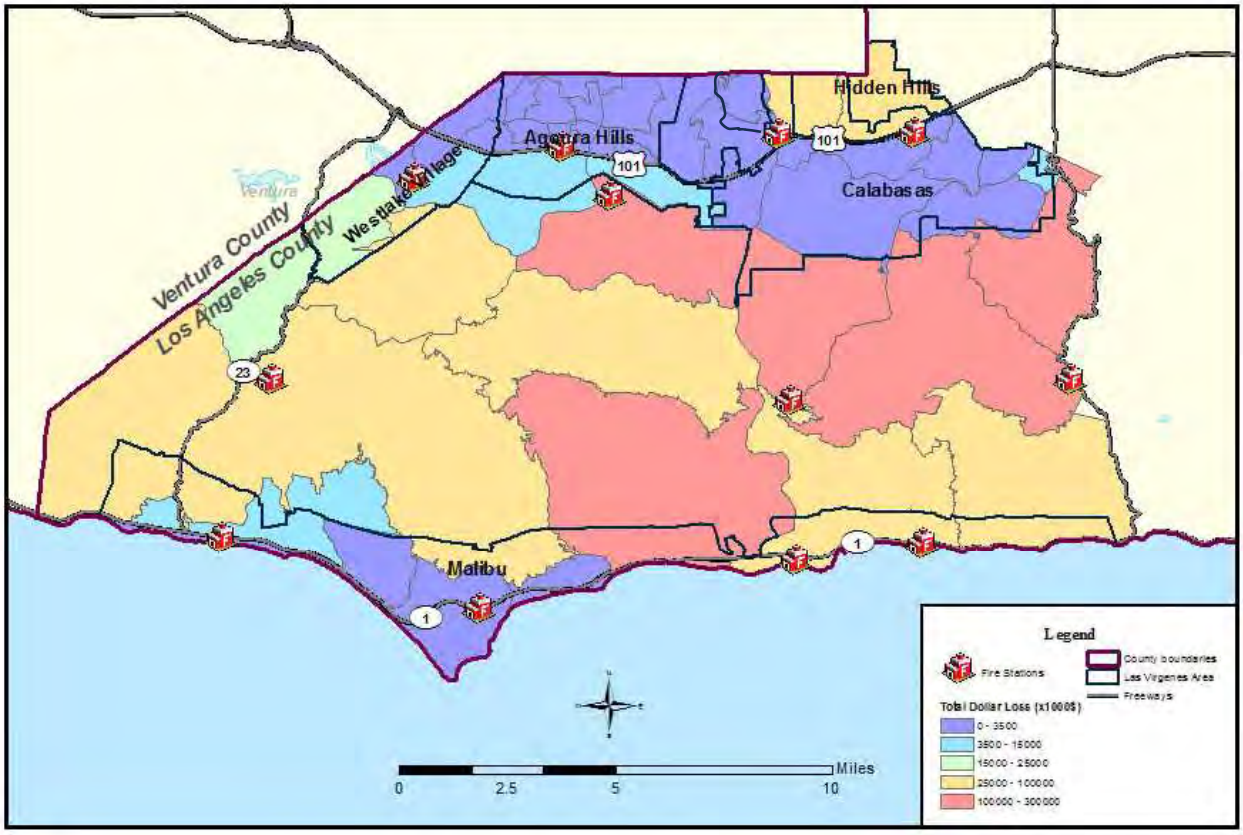
Map 34: 100-year Flood Industrial Building Dollar Loss Estimate

Wildfire Loss Estimates

If widespread wildfires were to occur, the total potential land improvement loss in urban interface areas (buildings, parking structures, infrastructure, etc.) for all cities in the Las Virgenes-Malibu Council of Governments area has been estimated at $1,644,600,000. Note: HAZUS-MH data for wildfires is not available at this time.

City Name	Total Land Improvement Loss [$M]
Agoura Hills	305.24
Calabasas /Hidden Hills	645.54
Malibu	603.11
Westlake Village	90.71
Totals	**1,644.60**

Table 118: 50-year General Building Stock Damage Count



Map 35: Wildfire $ Loss Estimate

Areas of highest potential loss from wildfire (Red=$100,000,000 to $3,000,000,000) include the southern border of Calabasas and north/central Malibu. At high risk of loss (Orange=$25,000,000 to $1,000,000,000) are Hidden Hills and portions of Malibu. The southwest portion of Westlake Village is at moderate risk of loss (Green=$15,000,000 to $25,000,000). Potential losses for all other areas remain a concern but are reduced (Light Blue=$3,500,000 to $15,000,000 and Purple=$0 to $3,500,000).

Future Development Trends

The summaries below provide brief descriptions of development trends in the Las Virgenes-Malibu Council of Governments area. While all cities within the LVMCOG enforce building code requirements and restrictions in hazard zones, development trends provide an indication of future risk – either from urban area growth in previously undeveloped land (resulting in increased risk from wildfire, landslide, flood, etc.), changes in the building inventory, or increased population densities. Additional information is provided in **Section 2: Community Profile** for each city under Land Use and Housing Characteristics and in **Section 5: Plan Maintenance and Monitoring**.

Changes in Vulnerability Due to Development Trends

For the five cities within the LVMCOG region, the vulnerability to natural hazards has remained largely unchanged since the last plan. Despite ongoing development activities and slight changes in residential / housing units, there have been no significant alterations in vulnerability attributable to changes in hazard-prone areas.

Agoura Hills Development Trends

Residential neighborhoods are fully developed and there are limited opportunities for infill development. From 2016 to 2021, the total number of residential housing units increased slightly by approximately 1.63%.

General Plan 2021-2029 Draft

Every eight years, the City of Agoura Hills General Plan Housing Element (Housing Element) is updated to incorporate and address the City's Regional Housing Needs Assessment (RHNA) allocation. For this Sixth Cycle, the City's RHNA allocation included a total of 318 units, including 199 lower income housing units. Updating the Housing Element triggers the need for additional General Plan Element updates. Specifically, the Community Conservation and Development, Community Safety, Infrastructure and Community Services, and Natural Resources Elements have been amended to ensure internal consistency and comply with state law.

To meet state housing mandates and as part of the 2022 General Plan Update (GPU), the City rezoned 20 properties with an Affordable Housing Overlay (AHO), allowing increased density and ministerial permit processing (permits involving no discretion) for affordable housing projects on those sites. To ensure that all housing projects meet the City's desired architectural and zoning standards, two sets of standards were developed:

1. Affordable Housing Overlay standards, which ensures that all projects developing under the AHO meet objective zoning requirements
2. Objective Design Standards, which ensures that ALL multi-family and mixed-use projects' design elements are evaluated based on the City's objective design standards, which focus primarily on architectural detailing.

Agoura Hills contains multiple commercial zones and established business centers. The table on the following page provides a summary of Commercial, Residential, and Mixed-Use development projects in Agoura Hills (Source: City of Agoura Hills Planning Department).

Commercial, Residential, and Mixed-Use Projects

Status	Name	Project Description	Acres	Square Feet	No. of Units / Lots / Projects
Approved - Commercial	Eastwood Ranch Animal Shelter	New animal rescue facility and merge three lots	0.82	4,900 sf + 3,374 sf	Animal Rescue Facility
Approved - Commercial	Ladyface Vista LP	5 new office buildings with surface parking, encroach into the TPZ of 2 oak trees, subdivide parcel	3.23	Building A: 3526 sf Building B: 3643 sf Building C: 5767 sf Building D: 3733 sf Building E: 6310 sf	5 Office Buildings
Approved - Commercial	Shirvanian Family Investment (New ABC North)	Industrial park with 7 buildings	10	103,000 sf	7 Building Industrial Park
In-Review - Commercial	64North	Mixed Use Development with office, retail, restaurant, and multi-family residential units with subterranean garage	0.87	17,800 sf Office 15,914 sf Residential Subterranean Garage: 17,100 + 11,850 sf	15 Residential 4 Retail
In-Review - Commercial	Agoura Business Center North	Two new industrial buildings	1.65	18,000 sf.	Two-story Office Building
In-Review - Commercial	Agoura Business Center North 28721 Canwood Street	Two Industrial Buildings	7.7	Bldg C: 35,532 sf Bldg D: 36,545	Two New Industrial Buildings
In-Review - Commercial	Bori Restaurant	New commercial building for a restaurant	0.72	2,870 sf	Restaurant
In-Review - Commercial	Chesebro Senior Care	New senior care facility with 76 rooms/beds, merge lots, and change zone to remove OA overlay	1.78	46,126 sf	Residential
In-Review - Commercial	Korten Chesebro Office	New two-story office building	0.17	2,545 sf	Two-story Office Building

Status	Name	Project Description	Acres	Square Feet	No. of Units / Lots / Projects
In-Review - Commercial	West Village	Mixed Use Development with office, retail, restaurant, and multi-family residential units with subterranean garage	18.24	123,225 sf Total Building Area	5 Commercial Buildings 78 Residential
In-Review - Residential	Brian Campbell for Gateway Church 29646 Agoura Rd	New 60 duplex residences, church, and subdivide parcel into 5 lots.	109	Residential + 25,826 sf Church Facility	66 Duplex Units and Church Facility
In-Review - Residential	Dorothy Place 28000 Dorothy Dr	New 60-unit multi-family townhouse development.	8.23	295,772 sf	60 Unit Multi-Family Townhomes

Table 119: Agoura Hills Commercial, Residential, and Mixed Use Development Trends

Calabasas Development Trends

Most developable areas within the City are already built out and the majority of undeveloped land will remain undeveloped due to environmental constraints and terrain limitations. In Calabasas, there has been a slight increase in the number of housing units since 2017 – particularly in 5 - 9 multi-family units and 10 - 19 multi-family units.

Although the City is mainly residential, there are a number of established commercial business parks and shopping centers. The table below provides a summary of pending and current development projects and initiatives in Calabasas (Source: City of Calabasas Projects, Plans & Reports in the City of Calabasas as of 12/30/2023 https://www.cityofcalabasas.com/our-city/current-projects.

Name	Location	Description	Number of Units	Size
Audi Calabasas Remodel and Addition	24650 Calabasas Road	Remodel and Addition to an Existing Audi Calabasas auto dealership	Auto Dealership Expansion	Approximately 111,531 square feet to the existing 28,966 square foot site
Barrett Medical Office and Surgery Center	24820 Calabasas Road	New Medical Office Building Construction	1	28,500 square foot 2-story building
Calabasas Community Center Improvements	27040 Malibu Hills Road	Internal and External Painting, Replacement of All Flooring, A/V & IT Upgrades, New Equipment and Supplies, and General Maintenance	1	30,000 square feet

Name	Location	Description	Number of Units	Size
City-Wide Green Street Project Phase I	Las Virgenes Road between Mont Calabasas Road and Terminus of Las Virgenes Road	Green street project that will begin north of Mont Calabasas Rd and end at the terminus of Las Virgenes Rd. This project will improve the west side of Las Virgenes Road by providing street parking and permeable pavement parking lots, construction of a multipurpose trail, implementing elements of environmentally friendly green projects through the construction of vegetated swales, stormwater treatment improvements, and mitigation of storm runoff overflow in the street. The project also includes safety improvements for pedestrians by constructing concrete sidewalk and mid-block crossings.	N/A	Las Virgenes Road between Mont Calabasas Road and Terminus of Las Virgenes Road
Clean Power Alliance	City-wide Program	Clean Power Alliance provides electricity procurement services for residents and businesses leveraging the combined purchasing power of member agencies to offer clean renewable energy at competitive rates.	N/A	N/A

Name	Location	Description	Number of Units	Size
The Commons Lane	4719 Commons Way	Construction of two, new mixed-use buildings. The project's new mixed-use buildings (referred to on the plans as Buildings A and B) contain 210,921 square feet of total new floor area with up to 119 residential units, including 12 affordable units, and up to 24,163 square feet of neighborhood-serving commercial uses. To accommodate the Project, the existing theater building (approximately 33,091 square feet) will be demolished, along with a portion of the existing surface parking lot and associated landscaping.	2	210,921 square feet
Craftsman's Corner Territory Annexation	North of Highway 101, between the Cities of Calabasas and Hidden Hills	A proposed annexation of approximately 145 acres of territory (including 85 parcels) to the City of Calabasas, and approximately 12 acres of territory (including four parcels) to the City of Hidden Hills. This area is presently part of the unincorporated territories of the County of Los Angeles.	N/A	145 acres
Housing Element Update & Related General Plan Element Updates	N/A	Updates to the Housing Element, Land Use Element, Circulation Element, and Safety Element	N/A	N/A
Kia Calabasas	24460 Calabasas Road	Construction of a New Retail Automobile Dealership for Kia Located on a Vacant Parcel Previously Occupied by Sperling Nursery.	1	47,944 square feet and an associated 2,117 square-foot car wash

Name	Location	Description	Number of Units	Size
Mulholland Gardens	24415 Mulholland Hwy	A Proposed 11-lot Subdivision Titled Mulholland Gardens on an Existing Undeveloped Parcel. The Project Site Contains Split Zoning that includes Rural Residential in the Scenic Overlay (RR-SC) and Hillside Mountainous (HM).	N/A This project is only for the subdivision and does not include residential development at this time.	176,170 square feet
Old Topanga Canyon Road / Mulholland Highway Improvement Project	Mulholland Highway from East Old Topanga Road to West Old Topanga, and Old Topanga Canyon Road and Palm Drive	Improvements on Mulholland Highway from Old Topanga Canyon Road West to Old Topanga Canyon Road East and Old and 200 feet road improvements on Old Topanga Canyon Road West. Improvements include shoulder widening, sidewalks, pavement rehabilitation, storm drain improvements, retaining wall, erosion control, new traffic signal and traffic signal modification, water facility relocation and Wild Walnut Park parking lot improvements.	N/A	Mulholland Highway from East Old Topanga Road to West Old Topanga, and Old Topanga Canyon Road and Palm Drive
The Park Apartments	24100 Park Sorrento	Construct a New Mixed-use Building including 1,600 square-foot Commercial Space and 107 Residential Units, 26.25% of which will be Designated Affordable (16 units designated for low income households, 5 units designated for very low income households).	1 including Commercial and 107 Residential Units	118,495 square feet
Wireless Telecommunications Facilities Information	City-wide	Upgrades to the Wireless Telecommunication Network	N/A	N/A

Table 120: Calabasas Development Trends

Hidden Hills Development Trends

Hidden Hills is a fully developed master planned residential community with a small restricted commercial zone (a single real estate office). Any further development or home modifications must be approved by the Hidden Hills Community Association Architectural Committee. As a result, minimal or no new development is anticipated. A proposed annexation is in progress.

Name	Location	Description	Number of Units	Size
Craftsman's Corner Territory Annexation	North of Highway 101, between the Cities of Calabasas and Hidden Hills	A proposed annexation of approximately 145 acres of territory (including 85 parcels) to the City of Calabasas, and approximately 12 acres of territory (including four parcels) to the City of Hidden Hills. This area is presently part of the unincorporated territories of the County of Los Angeles.	N/A	12 acres

Table 121: Hidden Hills Development Trends

Malibu Development Trends

Malibu is a beachfront community with the majority of residents living along Pacific Coast Highway (PCH) or in small residential communities. A number of existing residences are interspersed throughout the Santa Monica Mountains along canyons and hillsides (one mile or more inland). From 2017 to 2021, the number of 1-unit, mobile home, and smaller multi-unit structures (2 to 4 units) as well as 10 to 19 unit properties decreased while the number of 5 to 9 multi-unit structures and larger 20+ units increased.

There are also numerous established retail locations along Pacific Coast Highway including the Malibu Civic Center area. The table below provides a summary of significant commercial, residential, and educational projects in the City of Malibu (Source: City of Malibu Planning Department).

Status	Name	Project Description	Acres	Square Feet	No. of Units / Lots / Projects
Approved - Residential	The Case Project	The Case Project, formerly known as the Crummer Site Subdivision, proposed project includes the development of five single-family residences on an irregularly shaped, approximately 24-acre vacant, bluff top parcel immediately adjacent to the City of Malibu Bluffs Park	24	Varies per Single Family Unit	5 residential plus 1.74 acres dedicated for recreational use

Status	Name	Project Description	Acres	Square Feet	No. of Units / Lots / Projects
In Review - Commercial	Malibu Inn Motel	New construction of a motel above a new subterranean parking garage, surface parking lot, grading, retaining walls, landscaping, and a new onsite wastewater treatment system	1.18	7,693 sf (51,352 sf lot)	2-story motel
In Review - Commercial	Nobu Ryokan Motel & Malibu Tidepool Health	Conversion of the existing non-conforming use (motel and adjacent private gym and pool) to a bed and breakfast inn, the sale of alcohol for onsite consumption, and a lot tie for the two lots to operate conjunctively and conversion of office space in the Tide Pool building into a new guest suite for the properties	0.97	41,817 sf	16 room hotel
Approved - Commercial	Sea View Hotel	Hotel development with associated amenities, including a spa, restaurant, private decks, and a rooftop deck with a pool	1.19	51,776 sf	39 room hotel
Approved - Commercial	La Paz Ranch Project	Two vacant parcels located in the Civic Center. The approved project involves reconfiguring the site into three parcels where Parcels A and B would be developed with a new multi-building commercial (retail, office, restaurant) complex and Parcel C would be dedicated to the City.	15.2	112,058 sf Commercial 20,000 sf Future City Hall	Commercial Office and Retail Future City Hall
In Review- Educational Facilities	Malibu Middle & High School Improvements	On December 17, 2021, the Santa Monica-Malibu Unified School District (SMMUSD) submitted the draft Malibu Middle and High School (MMHS) Specific Plan for reconstruction of the middle and high school facilities, restoration of the creek, etc.	52	154,904 sf	New Malibu high school building

Status	Name	Project Description	Acres	Square Feet	No. of Units / Lots / Projects
Complete - Educational Facilities	Santa Monica College – Malibu Campus Project	The Santa Monica Community College District proposed a Santa Monica College (SMC) Malibu Campus located at 23555 Civic Center Way in Malibu, in the former Los Angeles County Sheriff's Station	2.94	128,500 sf	5 classrooms and labs, a multi-purpose community room that will convert into an Emergency Operations Center (EOC) for local emergencies, a computer lab; and administrative offices
Approved - Commercial	Whole Foods & The Park Shopping Center	The Whole Foods and the Park project (proposed project) includes the development of two vacant parcels for a new community shopping center in the Civic Center area of the City of Malibu	5.88	38,425 sf	Shopping Center

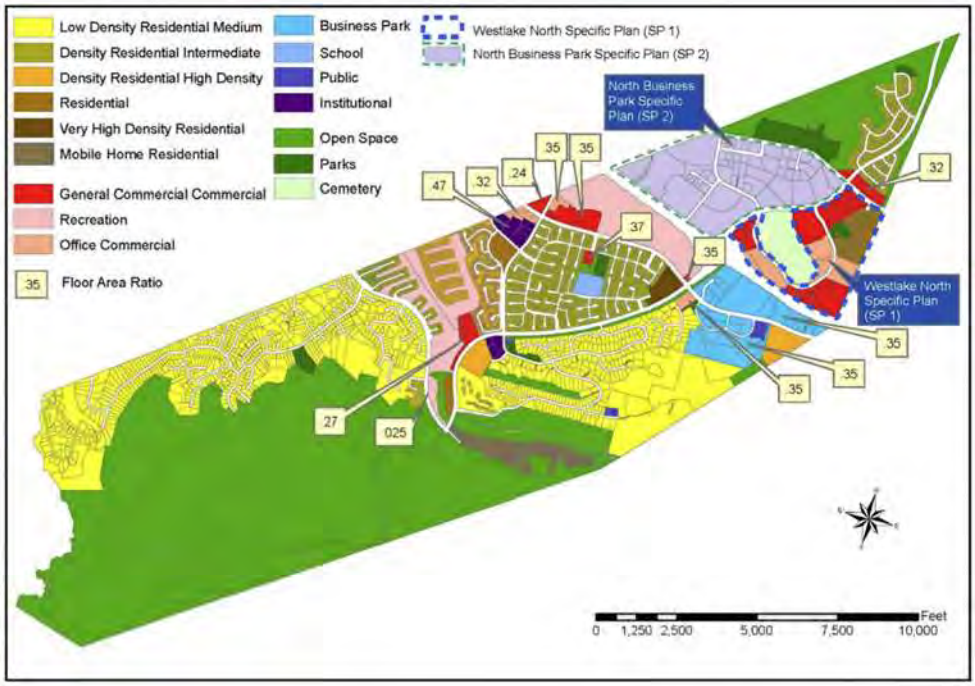
Table 122: City of Malibu Development Trends

Westlake Village

Westlake Village is a master-planned community with an array of housing types including: townhomes, condominiums, mobile homes, single-family and lakefront residences, and view-oriented estates. From 2017 to 2021, the total number of residential housing units decreased by approximately -8.29% due to a decrease in single unit, 2-unit, and large (10+ unit) housing. However, mid-size units with 3 to 9 units increased along with the number of mobile home units.

Per the Westlake Village General Plan, the City can be grouped into two categories: developed and undeveloped. The areas of the City developed with residential, office, light industrial, and commercial uses are likely to remain stable over the long-term; however, some areas are potentially subject to change and/or intensify land use. The undeveloped areas of the City can be further separated into two groups: permanent open space areas, and vacant lands for infill development.

The City of Westlake Village is predominantly built out, that is, the majority of vacant land available for development has been developed (over 99 percent of the City's total land area is presently developed or committed to preservation as open space). While future growth within the City will no longer continue to include expansion of urban uses into presently undeveloped areas, other development trends and issues can be anticipated. With the escalation of land values and regional growth pressures, the City has witnessed and will continue to experience a trend toward land use intensification within existing neighborhoods and business districts. This trend will bring with it new issues related to land use compatibility and the maintenance of community character and cohesiveness. To address this emerging trend, the City's general development policy has been expanded and refocused.



Map 36: Westlake Village Land Use Plan Map

Currently there are two new residential development projects in Westlake Village (Source: Westlake Village Planning Department).

Status	Name	Project Description	Acres	Square Feet	No. of Units / Lots / Projects
In Review-Residential	Linero Residential Project	A residential development project consisting of 693 rental units, of which 70 units would be restricted for rent to very low-income households	20	Approx. 235,095 sf (total property)	693 residential rental units
Approved - Residential	Holden Westlake Village Senior Living Community	The Holden Westlake Village Senior Living Community (formerly referred to as the Cedar Valley Senior Housing Project) is an assisted living and memory care development that will be a State licensed residential care facility	1.3	343 to 999 sf per unit	128 units, including 102 assisted living units and 26 memory care units. The project will include 15 deed restricted affordable housing units, including six low-income and nine moderate-income units.

Table 123: Westlake Village Development Trends

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SECTION 4. HAZARD MITIGATION GOALS AND STRATEGIES

This section describes the framework that focuses the plan on developing successful mitigation strategies. The framework is made up of three parts: Mission, Goals, and Strategies.

MISSION

The mission of the Las Virgenes-Malibu Council of Governments Hazard Mitigation Plan is to promote sound public policy and programs designed to protect the public, critical facilities, infrastructure, private and public property and the environment from natural and manmade hazards. The mission is achieved by developing and implementing the Hazard Mitigation Plan to guide the Region towards creating and maintaining a safer and more sustainable community.

HAZARD MITIGATION PLAN GOALS

The Hazard Mitigation Plan goals describe the overall direction that Las Virgenes-Malibu Council of Governments agencies, organizations, and citizens can take to minimize the impacts of hazards. The plan goals help to guide the direction of future activities aimed at reducing risk and preventing loss from hazards. The goals are stepping-stones between the broad direction of the mission and the specific recommendations that are outlined in the strategies.

To Protect Life, Property, Environment

- Implement activities that assist in protecting lives by making homes, businesses, infrastructure, critical facilities, and other property to be more resistant to hazards with attention to addressing the needs of the socially vulnerable community based on:
  - Socioeconomic Status
  - Household Composition and Disability
  - Minority Status & Language
  - Housing & Transportation
- Reduce losses and repetitive damages for chronic hazard events while promoting insurance coverage for catastrophic hazards.
- Encourage preventative measures for existing and new development in areas vulnerable to hazards.

Public Awareness

- Develop and implement education and outreach programs to increase public awareness of the risks associated with hazards.
- Develop and implement education and outreach programs to increase public awareness of the mitigation measures associated with hazards.
- Provide information on tools, partnership opportunities, and funding resources to assist in implementing mitigation activities.

Partnerships and Implementation

- Strengthen communication and coordinate participation among and within public agencies, citizens, non-profit organizations, business, and industry to gain a vested interest in implementation.
- Encourage leadership within public and private sector organizations to prioritize and implement local and Regional hazard mitigation activities.

Emergency Management

- Establish policies to ensure implementation of mitigation projects for critical facilities, services, and infrastructure.
- Make recommendations for updating local ordinances, city guidelines, codes, and permitting processes and establish new ordinances that support mitigation.
- Strengthen emergency operations by increasing collaboration and coordination among departments, public agencies, non-profit organizations, business, and industry.
- Coordinate and integrate hazard mitigation activities (when appropriate) with emergency operations plans and procedures.

Floodplain Management

To support the Mission of the Hazard Mitigation Plan, the floodplain management program of each city consists of a combination of:

- Permitting Process and Inspections
- NFIP Participation, Monitoring, and Compliance
- General Plans

Permitting Process and Inspections

Each city's Building & Safety Department is responsible for issuing permits and inspecting construction and development areas to ensure compliance to local codes including restrictions to reduce the threat of flood.

Participation in the National Flood Insurance Program

All the cities within the Las Virgenes-Malibu Council of Governments participates in the National Flood Insurance Program and conforms to the ongoing eligibility requirements as specified under 44 CFR §59.21. Copies of current FIRMs are provided in **Annex F: Flood Insurance Rate Maps**.

CID	Community Name	County	Init FHBM Identified	Init FIRM Identified	Curr Eff Map Date	Reg-Emer Date	Tribal
065072C	AGOURA HILLS	LOS ANGELES		03/04/86	04/04/18	03/04/86	No
060749#	CALABASAS	LOS ANGELES		12/2/80	12/21/18	03/10/93	No
060125#	HIDDEN HILLS	LOS ANGELES	04/23/76	09/07/84	(NSFHA)	09/07/84	No
060745#	MALIBU	LOS ANGELES		09/26/08	04/21/21	10/1/92	No
060744C	WESTLAKE VILLAGE	LOS ANGELES		09/26/08	04/04/18	10/1/92	No

Table 124: FEMA Community Status Book Report: California

Source: http://www.fema.gov/cis/CA.html

Note: A Non-Special Flood Hazard Area (NSFHA) is an area that is in a moderate-to-low risk flood zone (Zones B, C, X Pre- and Post-FIRM). An NSFHA is not in any immediate danger from flooding caused by overflowing rivers or hard rains. However, it's important to note that structures within a NSFHA are still at risk.

Per 44 CFR 59.2(b) To qualify for the sale of federally-subsidized flood insurance a community must adopt and submit to the Administrator as part of its application, flood plain management regulations, satisfying at a minimum the criteria set forth at Part 60 of this subchapter, designed to reduce or avoid future flood, mudslide (i.e., mudflow) or flood-related erosion damages. These regulations must include effective enforcement provisions.

The current FEMA Community Status Book Report lists each LVMCOG city's acceptance and entry date meeting their requirements per 44 CFR 59 and Part 60 into the NFIP under the Reg-Emer Date. Per FEMA this date represents:

Regular Program - The final phase of a community's participation in the NFIP. In this phase, a Flood Insurance Rate Map (FIRM) is in effect and full limits of coverage are available under the Act.

Emergency Program - The initial phase of a community's participation in the National Flood Insurance Program, as prescribed by Section 1306 of the Act.

All cities within the LVMCOG are listed as part of the Los Angeles County Aggregate Communities that participate in the NFIP (Source: LAC Public Works and FEMA as of November 2023). Examples of how each LVMCOG City meets NFIP minimal requirements are documented below:

Agoura Hills General Plan 2023
S-1.5 Preservation of Flood Plains. Preservation of flood plains as open space shall be considered, as feasible, as an alternative to channelization. (Imp S-3).
S-1.6 Floodplain Requirements. Regulate development within floodplains in accordance with the County, state and federal requirements, and maintain the City's eligibility under the National Flood Insurance Program. (Imp S-1).
S-1.7 Flood Mitigation Design. Require that new development incorporates sufficient measures to mitigate flood hazards, including the design of on-site drainage systems linking with citywide storm drainage, grading of the site so that runoff does not impact adjacent properties or structures on the site, and elevation of any structures above any flooding elevation. (Imp U-19, U-20, U-21, U-22, S-1).

Calabasas General Plan 2030
Calabasas will facilitate efforts with local, state, and federal agencies, including special districts, to address flooding issues. Development will generally be discouraged in flood-prone areas and individual developers in the City will be required to mitigate their potential contributions to downstream flooding problems.

Policies

VII-11 Incorporate adequate mitigation measures into proposed development projects to achieve an acceptable level of risk from potential flooding hazards. Mitigation measures should also address projected flooding impacts from climate change.

VII-12 Strongly discourage development within flood hazard areas and encourage retention of natural drainage as the City's preferred management strategy, and as a higher priority than attempting to implement engineering solutions.

VII-13 Ensure that new flood control and drainage facilities as well as improvements to existing facilities are consistent with the General Plan's environmental protection standards.

Hidden Hills

Hidden Hills Building Code: 5-9-5: - PROVISIONS FOR FLOOD HAZARD REDUCTION.

C. Elevation and Floodproofing. (See Section 5-9-2 definitions for "basement," "lowest floor," "new construction," "substantial damage" and "substantial improvement".)

1. Residential construction, new or substantial improvement, shall have the lowest floor, including basement,
    a. In a Zone AO, elevated above the highest adjacent grade to a height equal to or exceeding the depth number specified in feet on the FIRM, or elevated at least two feet above the highest adjacent grade if no depth number is specified.
    b. In a Zone A, elevated to or above the base flood elevation; said base flood elevation shall be determined by one of the methods in Section 5-9-4 3.B. of this ordinance.
    c. In all other zones, elevated to or above the base flood elevation. Upon the completion of the structure, the elevation of the lowest floor including basement shall be certified by a registered professional engineer or surveyor, and verified by the community building inspector to be properly elevated. Such certification and verification shall be provided to the Floodplain Administrator.
2. Nonresidential construction, new or substantial improvement, shall either be elevated to conform with Section 5-9-5 1.C.1. or together with attendant utility and sanitary facilities:

Malibu

City of Malibu is a participant in the National Flood Insurance Program administered by the Federal Emergency Management Agency (FEMA). This program provides subsidized flood insurance for all property owners, provided that the local government institutes adequate land use and development control measures for preventing and reducing property damage from flooding. In addition, the City must ensure that all development projects within the floodplain comply with FEMA regulations and the City's Floodplain Ordinance. New development projects, including redevelopment, home remodels and repairs, are reviewed the the Public Works Department to verify that the project project meets FEMA Regulations and the City Floodplain Ordinance.

DEVELOPMENT IN THE FEMA FLOOD ZONE: All development, redevelopment, remodels and repairs in a mapped FEMA Flood Zone must meet FEMA and City of Malibu Floodplain Ordinance. All development projects submitted to the Planning Department will be reviewed by the Public Works Department to verify that the project will meet the FEMA Regulations and the City's Floodplain Ordinance. Some projects may be required to elevate the structure above the flood base flood elevation and execute a FEMA Elevation Certificate.

Westlake Village General Plan 2021

Policy 2.2 Prohibit the placement of structures for human habitation within flood prone areas unless the flood hazard is eliminated by measures that do not impair the carrying capacity of the watercourse (I-5).

Objective 3 It shall be the policy of the City of Westlake Village to minimize the impacts to the public in regard to potential flooding within the City.

Policy 3.1 It shall be the policy of the City of Westlake Village to discourage development within flood hazard areas and ensure any proposed development is extensively reviewed and mitigated (I-5).

Post Flood Actions and Criteria

Each city has a person named to manage their NFIP efforts and future updates. Furthermore, actions and criteria for post-flood reviews are conducted by each city as follows:

Each city's Emergency Manager / Planner will conduct a post event "hot wash" and develop an After Action Report and Improvement Plan (AAR/IP) to document the actions taken, results, and areas for improvement. The city Emergency Manager / Planner will work with other city departments such as Planning, Building & Safety, and Finance to implement damage provisions and develop future changes to improve flood mitigation planning in the future.

NFIP Monitoring and Compliance

Each city within the LVMCOG has a designated staff position responsible for ongoing monitoring and compliance to the requirements specified by under the NFIP. In addition, this person is responsible for managing NFIP and flood mitigation efforts within each jurisdiction and requesting flood map updates ((e.g., working with the city's Emergency Manager/Coordinator and other stakeholders) and requesting flood map updates (as required).

NFIP City Contacts

The following contacts are responsible for NFIP monitoring and compliance:

City	Contact for NFIP Monitoring and Compliance
Agoura Hills	Public Works - Engineering 818-597-7329 https://www.agourahillscity.org/department/public-worksengineering
Calabasas	Engineering – Building and Safety 818-224-1670 https://www.cityofcalabasas.com/government/communitydevelopment/building-and-safety-division
Hidden Hills	Public Works 818-888-9281 https://hiddenhillscity.org/
Malibu	Public Works - Engineering 310-456-2489 x339 https://www.malibucity.org/806/Floodplain-Management
Westlake Village	Public Works – Engineering Department 818-706-1613 https://www.wlv.org/192/Engineering

General Plans – Flood Mitigation and Planning

The Planning Department within each city is responsible for maintaining and updating the General Plan. Floodplain management requirements and incorporation of flood mitigation as well as NFIP requirements are included in the Safety Element sections of the General Plan (Note: the City of Westlake Village utilizes a separate Hazards section for flood hazard goals and policies). The following snapshots of each city's General Plan provide examples of policies that relate directly to flood mitigation (outlined in blue).

Agoura Hills General Plan Safety Element (partial) – Flood Hazards

Chapter 5 COMMUNITY SAFETY

The urban and natural environments of Agoura Hills contain a number of hazards that require special consideration and treatment in the land use planning process to protect the public's safety. These hazards include flooding, unstable earth conditions, wildland and urban fires, crime, and hazardous materials. Protection from the risks of natural and man-made hazards, crime, and disease are essential in establishing a sense of well-being for residents and important considerations in attracting new businesses to the City that will provide quality jobs. Goals and policies in this chapter strive to reduce hazards, mitigate noise impacts, provide for emergency response strategies, and coordinate emergency response agencies.

A. Flood Hazards (S)

In Agoura Hills, potential flood hazards may result from overflow of natural watercourses and man-made drainage systems due to excessive and unusual storm runoff. Agoura Hills does not have a significant flooding problem, as the City's flood control facilities and storm drainage system generally have sufficient capacity to adequately protect developed areas from excessive storm runoff. However, heavy rains can result in flooding on City roadways Figure S-1 (Hazards) displays FEMA-recognized zones subject to flooding and other hazards within the community. The following goal and policies provide the City with guidance in reducing present and future flood hazards.

Flood control and storm water facilities

Goal S-1

Protection from Flood Hazards. Residents, workers, and visitors that are protected from flood hazards.

Policies

S-1.1 **Coordination of Drainage Improvements.** Locate and improve deficiencies in the storm drain system to prevent local flooding problems in the City. *(Imp U-21)*

S-1.2 **New Development.** Require new development to upgrade storm drains to handle the increased runoff generated from the development sites. *(Imp U-20, U-22)*

S-1.3 **Facility Use or Storage of Hazardous Materials.** Require that all facilities storing, using, or otherwise involved with substantial quantities of on-site hazardous materials within flood zones comply with applicable standards of elevation, anchoring, and flood proofing, and that hazardous materials be stored in watertight containers. *(Imp S-1)*

City of Agoura Hills General Plan S-1

S-1.4 **SEMS Plan.** Ensure that the City's Standardized Emergency Management System (SEMS) Plan is evaluated annually and revised as required, that the current mitigation strategies addressing flood hazards are implemented, and that effective public outreach and education are included. *(Imp S-2)*

S-1.5 **Preservation of Flood Plains.** Preservation of flood plains as open space shall be considered, as feasible, as an alternative to channelization. *(Imp S-3)*

S-1.6 **Floodplain Requirements.** Regulate development within floodplains in accordance with the County, state and federal requirements, and maintain the City's eligibility under the National Flood Insurance Program. *(Imp S-1)*

S-1.7 **Flood Mitigation Design.** Require that new development incorporates sufficient measures to mitigate flood hazards, including the design of on-site drainage systems linking with citywide storm drainage, grading of the site so that runoff does not impact adjacent properties or structures on the site, and elevation of any structures above any flooding elevation. *(Imp U-19, U-20, U-21, U-22, S-1)*

Calabasas General Plan Safety Element (partial) – Flood Hazards

VII.B Stormwater Management and Flooding

Objective

Minimize the potential for loss of life, physical injury, property damage, and social disruption resulting from flooding.

General Plan Approach

Flooding is the inundation of normally dry land because of a rise in the level of surface waters or the rapid accumulation of stormwater runoff; it becomes a hazard when the flow of water has the potential to damage property and threaten human life or health. Flood risks are greatest, and flood hazards most severe, in winter, when water bodies are usually full, and soils saturated. Flooding is primarily a natural process and, therefore, difficult to prevent. However, land use and development decisions have a significant effect on the frequency and severity of floods; in general, urbanization increases the risk of flooding by increasing stormwater runoff and, to a lesser extent, erosion. Flooding is often a regional problem that crosses multiple jurisdictional boundaries.

A 100-year flood is calculated to be the level of flood water equaled or exceeded at least once in a 100-year period. The 100-year flood is more accurately referred to as the 1% flood, since it is the event that has a 1% chance of being equaled or exceeded in any single year.

Figure VII-3 depicts the Federal Emergency Management Agency flood zones in Calabasas using Federal Emergency Management Agency data from 2008 and 2016. A small portion of western Calabasas is within the 100-year floodplain; however, most of the City is not located within any designated flood zones.

Calabasas will facilitate efforts with local, state, and federal agencies, including special districts, to address flooding issues. Development will generally be discouraged in flood-prone areas and individual developers in the City will be required to mitigate their potential contributions to downstream flooding problems.

Policies

VII-11 Incorporate adequate mitigation measures into proposed development projects to achieve an acceptable level of risk from potential flooding hazards. Mitigation measures should also address projected flooding impacts from climate change.

VII-12 Strongly discourage development within flood hazard areas and encourage retention of natural drainage as the City's preferred management strategy, and as a higher priority than attempting to implement engineering solutions.

VII-13 Ensure that new flood control and drainage facilities as well as improvements to existing facilities are consistent with the General Plan's environmental protection standards.

CITY of CALABASAS

VII-8

VII-14 For development projects, limit new impervious surfaces to those that will not individually or cumulatively increase harmful runoff into natural stream channels downstream.

VII-15 Setbacks from stream beds should be sufficient to avoid possible adverse effects associated with future stream bank erosion.

VII-16 Whenever feasible, locate essential public facilities, including health care facilities, emergency shelters, fire stations, emergency command centers, and emergency communications facilities, outside flood hazard zones.

Hidden Hills General Plan Safety Element (partial) – Flood Hazards

Code requires that property owners maintain right-of-way improvements and public works in a clean, hazard-free condition to ensure safety.

Flood Hazards

The Malibu Hydrographic Unit, located in the northwestern portion of the Los Angeles River Basin contains the City of Hidden Hills. The Malibu Hydrographic Unit occupies approximately 242 square miles in the western portion of Los Angeles County and the southeastern portion of Ventura County. The City is part of the Arroyo Calabasas Drainage Basin.

There are no year round streams or ponds within the City. Surface water runoff only occurs during and after periods of intense rainfall. The City's topography and soil conditions subject the City to flood hazards from storm drain overflow, as well as from erosions, mudflows, and debris deposits.

Flood Control Facilities

Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps indicate that the City of Hidden Hills is located in Zone C, meaning it has a low potential for flooding.

The Master Plan of Storm Drains map illustrates the existing flood control facilities. The Los Angeles County Flood Control District maintains these facilities.

Police Protection

Under the City-County Law Enforcement Services Agreement, the City contracts with the Los Angeles County Sheriff's Department for general law and traffic enforcement services. The Lost Hills Sheriff's Station, located approximately 4 miles away at 27050 Agoura Road in Calabasas, serves the City.

In addition, the Public Safety Commission plans for the general safety of the City's residents. The Commission's responsibilities include law enforcement liaison, and public safety education. The City Council appoints the Commissioners, who meet on the last Tuesday of each month. In August, 1994, the City Council amended former Public Safety Commission Ordinances and expanded the Commission.

Emergency Response Preparedness and Recovery

The Safety Element is essentially a long-range emergency response

Hidden Hills General Plan *SA-12* *Safety Element*

Malibu General Plan Safety Element (partial) – Flood Hazards

S OBJECTIVE 1.2: RISKS TO RESIDENTS AND BUSINESSES FROM DEVELOPMENT IN HAZARDOUS AREAS ARE MINIMIZED.

S Policy 1.2.1: The City shall require development to provide for analyses of site safety related to potential hazards of fault rupture, earthquake ground shaking, liquefaction, and rockfalls.

S Policy 1.2.2: The City shall require development to provide site safety analyses related to landsliding, debris flows, expansive soils, collapsible soils, erosion/sedimentation, and groundwater effects.

S Policy 1.2.3: The City shall require development to provide for safety from coastal storm flooding, coastal erosion, surfacing septic effluent, and tsunami.

S Policy 1.2.4: The City shall require development to be consistent with minimum Federal Emergency Management Agency (FEMA) guidelines for flood plain management.

S Implementation Measure 43: Encourage area residents to participate in National Flood Insurance Program.

S Implementation Measure 44: Design coastal development, except supporting structure, to be above the wave uprush level for storms within the past 100 years, and above the 100-year flood plain.

Westlake Village General Plan Hazards Chapter (partial) – Flood Hazard

j. Flood Hazard

Flood hazard areas within the City are limited to the Triunfo Canyon drainage of Triunfo Creek below Westlake Lake, the banks of the lake itself, the banks of the Las Virgenes Reservoir, and the creek along the north eastern border of the City with Agoura Hills that drains into Lake Lindero. A storm drain system has been constructed in the vicinity of the canyon to moderate the effects of storm runoff. The Federal Emergency Management Agency (FEMA) has prepared flood zone maps that define the physical limits of the flood hazard and the minimum floor elevations required for structures outside the hazard area (see Figures 11 and 11a, Chapter I).

The City has four areas that lie in flood hazard areas as identified by FEMA. The portions of Triunfo Creek and the northeastern border with Agoura Hills lie within the AE flood zone; while the banks of the Las Virgenes Reservoir and the shores of Westlake Lake lie within flood zone A. Both the A and AE flood zones are within the 100-year floodplain. Additionally, any development within the identified flood areas will be subject to the review of the flood hazards present, prior to approval.

Development on the shores of Westlake Lake has been set back several feet from the highest water level that could be expected to occur. This setback is recognized as a flood hazard area and is maintained as open space. The "spillover" design of the Westlake Dam ensures that flooding beyond the lake's banks would not occur.

The Las Virgenes Reservoir has mitigation measures in the event of a major event that could cause the dam to overflow. A concrete spillway allows additional water above the reservoir's capacity to exit the reservoir, travel along the hillside next to the dam, and drain into Three Springs Park. The water then flows to a storm drain system in the northeast corner of Three Springs Park that brings the water to Westlake Lake and farther into the Malibu Creek system. A brief storm event in 2017 caused the Las Virgenes Reservoir to use the concrete spillway for the first time. The Las Virgenes Municipal Water Districted inspected the site after the event subsided and determined that the spillway worked properly, and that there was no damage to the dam from the storm event or release of excess water down the spillway.

The flood hazard zones identified in **Figures 11 and 11a** (Chapter I) are rarely subject to flooding, but have caused flooding that resulted in damage to property in recent history.

Both the areas identified in the flood hazard zones have been inundated during storm events; however, the flooding subsided after the storm events passed.

The majority of the City of Westlake Village lies in the Very High Fire Hazard Severity Zone (see Fire Hazards in the subsequent section), and as such wildfires are a very present threat to the area. If a wildfire occurs in the open space areas of the City, any new runoff from rainfall may cause additional flooding in the City. The majority of the open space areas where that runoff may occur are within watersheds that supply the Las Virgenes Reservoir, or Triunfo Creek (**Figure 12,** Chapter I). Additionally, run off from a flood event following a wildfire would be collected by the City's storm drain system and deposited into Westlake Lake, which in turn would spill over Westlake Dam into Triunfo Creek.

In the City's largest flood hazard area (**Figure 11,** Chapter I) covers the banks of Westlake Lake, the Westlake Dam spillway, and Triunfo Creek. Development around the lake in the affected area includes three of the City's residential neighborhoods and a retail shopping center. The spillway includes the development of a residential neighborhood and the Westlake Athletic Club. Finally, the area adjacent to Triunfo Creek is the Oak Forest Estates neighborhood where a significant portion of the northern part of the neighborhood lies within the hazard area. Previous flooding along Triunfo Creek has damaged homes in the Oak Forest Estates neighborhood, and it remains a concern of the City for the potential of additional flooding that may occur in the area.

In **Figure 11a** (Chapter I) the City's other flood hazard area with development is shown along the unnamed creek that feeds Lake Lindero along the City's boundary with Agoura Hills to the north. The creek has the potential to flood and impact the Westlake Renaissance neighborhood and the adjacent commercial properties to the south. The creek also passes under Thousand Oaks Boulevard, and flood activity can cause a closure of the boulevard until drainage to Lake Lindero is able to keep up to capacity.

Although the geography and development in Westlake Village is very unlikely to change in the foreseeable future, the U.S. Army Corps of Engineers and FEMA have collectively created interactive flood hazard maps and comprehensive flood hazard information. If the data regarding flood hazards for the City is updated by any relevant agencies, this document shall be updated in accordance with the most current information available. Residents and business owners of Westlake Village are encouraged to remain current

with flood hazards outlined by FEMA and the U.S. Army Corps of Engineers, and in the event of a flood event, residents and business owners can contact the Los Angeles County Fire Department for emergency assistance.

Appendix C to this document shall supplement the information found in the this section of the General Plan in the form of the City's Emergency Response Plan. The plan shall be updated regularly and be available to the public.

k. **Summary**

In summary, there are no geologic, seismic or flooding hazards that are expected to negatively affect or be affected by development within the City if the standard codes and procedures are adhered to.

3. GOALS, POLICIES, AND PROGRAMS

The following presents the goals, objectives, and policies for Geologic, Seismic and Flooding Hazards in the City of Westlake Village. At the end of each policy is a listed "I-" and number in parentheses that refers to a corresponding implementation program.

Goal	*It shall be the goal of the City of Westlake Village to:*
	Minimize hazards to public health, safety and welfare which may result from geologic conditions, seismic activity and flooding.
Objective	*It shall be the objective of the City of Westlake Village to:*
1	Provide for an efficient and safe evacuation of the community in the event of a major disaster.
Policies	*It shall be the policy of the City of Westlake Village to:*
1.1	Maintain an effective Citywide Emergency Preparedness Plan (I-1 and I-2).
1.2	Encourage community volunteers to assist police, fire and civil defense personnel during and after a major earthquake, fire or flood (I-3).
Objective	*It shall be the objective of the City of Westlake Village to:*
2	Ensure that construction and development activities within the community do not expose residents to avoidable natural hazards.

Policies	*It shall be the policy of the City of Westlake Village to:*
2.1	Require the preparation of a detailed geologic and soils report to accompany each grading permit application in all hillside management areas (I-4).
2.2	Prohibit the placement of structures for human habitation within flood prone areas unless the flood hazard is eliminated by measures that do not impair the carrying capacity of the watercourse (I-5).
2.3	Enforce the provisions of the International Building Code, specifically Chapters 18 and 23 as they relate to earthquake-resistant design and excavation and grading (I-6).
Objective	*It shall be the objective of the City of Westlake Village to:*
3	Minimize the impacts to the public in regard to potential flooding within the City.
Policies	*It shall be the policy of the City of Westlake Village to:*
3.1	Discourage development within flood hazard areas and ensure any proposed development is extensively reviewed and mitigated (I-5).
3.2	Prohibit the construction of essential public facilities outside the flood hazard areas (I-5).
3.3	Coordinate with local emergency services to ensure that in the event of a flood, essential public facilities and infrastructure remain operational (I-1 and I-3).

Implementation Programs

I-1	Continue to update the Citywide Emergency Preparedness Plan as new information becomes available.
I-2	Periodically distribute an updated pamphlet that informs individual residents of their responsibilities for emergency preparedness.
I-3	Support training programs to train volunteers to assist police, fire protection, and civil defense personnel during and after a seismic, fire, or flooding event.
I-4	Continue to implement the provisions of the Hillside Management ordinance and coordinate with the Los Angeles County Building and Safety Department so all applicable grading and development standards are implemented.

I-5	Coordinate with the Los Angeles County Flood Control District to ensure that potential flooding hazards associated with proposed new development are fully mitigated.
I-6	Coordinate with the Los Angeles County Building and Safety Department in the review of all development proposals, ensuring the International Building Code is enforced.

HAZARD MITIGATION STRATEGIES

The Hazard Mitigation Plan identifies action items developed and submitted through data collection, research, and the public participation process. Mitigation plan activities may be considered for funding through Federal and State grant programs as well as other funds made available to the LVMCOG and each city. To help ensure activity implementation, each action item includes estimated timeframes and a list of coordinating organizations. Mitigation strategies were assigned a priority based on a combination of factors including urgency, importance, and benefit/cost. Constraints may apply to some of the action items. These constraints may be a lack of city staff, lack of funds, or vested property rights which might expose the Region to legal action as a result of adverse impacts on private property. The matrix on the following page provides a summary of the Hazard Mitigation strategies developed for the Las Virgenes-Malibu Region. See **Section 5 Plan Maintenance and Monitoring: Economic Analysis of Mitigation Projects** for further details regarding the method used to evaluate the feasibility of mitigation projects.

Hazard Mitigation Prioritization of Projects and Actions

According to the Disaster Mitigation Act (DMA) 44 CFR 201.6(c)(3)(iii)), local mitigation plans must contain a strategy (or action plan) whereby "Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs." A comprehensive cost-benefit calculation is not required as part of the Hazard Mitigation Plan (per FEMA Local Hazard Mitigation Plan Review Guide) however a detailed cost-benefit analysis may be needed later if an application for federal mitigation grant funding is made).

MITIGATION CAPABILITIES

Each city within the Las Virgenes-Malibu Council of Governments provides the following general mitigation capabilities. Specific details are provided in the table below.

Planning & Regulatory

Each city's General Plan and Development Plans include specifications and restrictions to mitigate potential losses due to disasters. For example, development in high risk areas is restricted and mitigation requirements are specified in each city's Development Plan. Additionally, each city's Planning Department (for Hidden Hills the City Engineer) and Building & Safety Departments are responsible for mitigating the potential for losses due to disasters via local building codes, permitting processes, and local development planning. Furthermore, each city has adopted California State Building Codes and State Fire Marshal Codes (including National Fire Protection Association Codes) to mitigate the potential for disasters and their consequences.

Administration & Technical

Ultimately, each City Manager is responsible for hazard mitigation planning within their jurisdiction and has an Emergency Planning Department and/or designated Emergency Manager/Planner/Analyst or Public Safety representative that is responsible for monitoring and managing their city's Hazard Mitigation activities and projects. As part of their responsibilities, this group/individual coordinates with their city's Planning Department, Building Department, Community Development, Finance, and other departments to ensure that a continued focus on mitigation planning is maintained including future land use and development plans, local regulations, and permitting requirements. Additionally, each city maintains their General Plan and Safety Element that includes hazard mitigation provisions and requirements. Further, city resources such as Information Technology Departments support mitigation planning and development plans by providing GIS mapping resources, data analyses, and local reporting capabilities.

Financial

Each city's Finance Department works with other internal departments to obtain funding for mitigation projects and activities through their General Fund, project specific funding sources (including funding via other local agencies Caltrans, Metro, etc.), as well as State and Federal grant applications. See Section 4 Hazard Mitigation Goals and Strategies – Hazard Mitigation Strategy Projects for details on costs and funding sources.

Education & Outreach

Each city provides mitigation and outreach capabilities which includes public bulletins sent via social media, city web sites, news releases, and their local CERT program. In addition, each city participates and distributes mitigation information developed by the Los Angeles County Fire Department, Sheriff's Department, and other county agencies. Additionally, each city provides the public with mitigation information from Cal-OES and FEMA.

Mitigation Capability	Agoura Hills	Calabasas	Hidden Hills	Malibu	Westlake Village
Planning & Regulatory	• Planning and Building Depts. • Agoura Hills General Plan • Agoura Hills Development Plan • CA State Building Code • CA State Fire Marshal Code • CA State Electrical Code • Agoura Hills Building Code	• Planning and Building Depts. • Calabasas General Plan • Calabasas Development Plan • CA State Building Code • CA State Fire Marshal Code • CA State Electrical Code • Calabasas Building Code	• Planning and Building Depts. • Hidden Hills General Plan • Hidden Hills Development Plan • CA State Building Code • CA State Fire Marshal Code • CA State Electrical Code • Hidden Hills Building Code	• Planning and Building Depts. • Malibu General Plan • Malibu Development Plan • CA State Building Code • CA State Fire Marshal Code • CA State Electrical Code • Malibu Building Code	• Planning and Building Depts. • Westlake Village General Plan • Westlake Village Development Plan • CA State Building Code • CA State Fire Marshal Code • CA State Electrical Code • Westlake Village Building Code
Admin & Technical	The following Administrative and Technical departments, plans, and regulations support the City of Agoura Hills mitigation planning efforts:	• The following Administrative and Technical departments, plans, and regulations support the City of Calabasas mitigation planning efforts:	• The following Administrative and Technical departments, plans, and regulations support the City of Hidden Hills mitigation planning efforts:	• The following Administrative and Technical departments, plans, and regulations support the City of Malibu mitigation planning efforts:	• The following Administrative and Technical departments, plans, and regulations support the City of Westlake Village mitigation planning efforts:

Mitigation Capability	Agoura Hills	Calabasas	Hidden Hills	Malibu	Westlake Village
	• Agoura Hills General Plan • Agoura Hills Safety Element • Deputy City Manager and Administrative Analyst (Emergency Preparedness) • City Departments (involved in Planning, Development, Building Codes, and Permitting) • Finance Department	Calabasas General Plan • Calabasas Safety Element • Director of Public Safety and Emergency Preparedness • City Departments (involved in Planning, Development, Building Codes, and Permitting) • Finance Department	Hidden Hills General Plan • Hidden Hills Safety Element • Emergency Services Coordinator • City Departments (involved in Planning, Development, Building Codes, and Permitting) • Finance Department	Malibu General Plan • Malibu Safety Element • Public Safety Director • City Departments (involved in Planning, Development, Building Codes, and Permitting) • Finance Department	Westlake Village General Plan • Westlake Village Safety Element • Administrative Analyst • City Departments (involved in Planning, Development, Building Codes, and Permitting) • Financial Management Department
Financial See Section 4 Hazard Mitigation Goals and Strategies – Hazard Mitigation Strategy Projects for details on costs and funding sources.	• Agoura Hills General Fund • US 101 Study Grants from Metro and SCAG • Area B EMPG Grants • Federal HMGP Funding • Measure R and Measure M Road Improvement Funds • HBP and Toll Credits	• Calabasas General Fund • City Landscape Maintenance Fund and LMD/LLD District Revenues • US 101 Study Grants from Metro and SCAG • Federal HMGP Funding • Measure R and Measure M and Prop 1 Road Improvement Funds • Measure W Creek Restoration Funds	• Hidden Hills General Fund • US 101 Study Grants from Metro and SCAG • Federal HMGP Funding • City and Private Funding (if Assessment District established)	• Malibu General Fund • US 101 Study Grants from Metro and SCAG • Federal HMGP Funding	• Westlake Village General Fund • US 101 Study Grants from Metro and SCAG • Federal HMGP Funding • Measure R and Measure M Road Improvement Funds
Education & Outreach	• Agoura Hills Facebook, "X" (Twitter), and Instagram • City News Releases • Agoura Hills CERT Program • Los Angeles Fire and Sheriff's, County, Cal-OES, and FEMA Information Pamphlets	• Calabasas Facebook and "X" (Twitter) • City News Releases • Calabasas CERT Program • Los Angeles Fire and Sheriff's, County, Cal-OES, and FEMA Information Pamphlets	• Hidden Hills Facebook and "X" (Twitter) • City News Releases • Hidden Hills CERT Program • Los Angeles Fire and Sheriff's, County, Cal-OES, and FEMA Information Pamphlets	• Malibu Facebook and "X" (Twitter) • City News Releases • Malibu CERT Program • Los Angeles Fire and Sheriff's, County, Cal-OES, and FEMA Information Pamphlets	• Westlake Village Facebook, "X" (Twitter), and Instagram • City News Releases • Westlake Village CERT Program • Los Angeles Fire and Sheriff's, County, Cal-OES, and FEMA Information Pamphlets

EXPANDING MITIGATION CAPABILITIES

Each city within the Las Virgenes-Malibu Council of Governments is working to improve their mitigation capabilities. Each city's ability to expand their individual mitigation capabilities is generally reliant upon their (1) available internal resources and (2) allocated budgets and (3) their ability to obtain outside financing via grant (HMGP, BRIC, etc.) and other funds such as Measure M and Measure R transportation programs. FEMA has provided guidance on additional means for cities to expand their mitigation efforts. These suggestions include:

1. 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, increasing resilience within the community.
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, increasing both efficiency and bandwidth.
4. Fostering new relationships to bring underrepresented populations and partners to the hazard mitigation planning process.
5. During the annual HMP review, seek opportunities to fund and expand and/or enhance the effectiveness of current mitigation actions.
6. During annual budgeting processes, identify new funding sources (bonds, grants, assessment districts, etc.) that can be used to support existing capabilities enhancements.

Specific details of each of the LVMCOG cities future goals for expansion of their mitigation capabilities are provided in the table below. Common requirements include improvements in evacuation planning (to mitigate the loss of life and injuries), additional resources, and grants to improve local mitigation efforts. Although each city manages its own resources and infrastructure, as members of Area B and as neighboring communities, they coordinate their mitigation planning efforts when possible but also implement their own mitigation projects separately. Additionally, all five cities utilize common social media sources such as Facebook and "X" (Twitter) to provide mitigation information to their residents. Finally, each city typically use their internal General Funds and apply for similar mitigation grant and other financing opportunities such as HMGP, BRIC, FMA, and local Measure M and Measure R transportation funding.

Mitigation Capability	Agoura Hills	Calabasas	Hidden Hills	Malibu	Westlake Village
Planning & Regulatory	• Monitor ongoing development and implement additional requirements (if needed) to mitigate the impact of future disasters • Additional Planning, Permitting, Building Inspection, and Safety resources to better manage and facilitate future development and building efforts within the City of Agoura Hills	• Work with SCG to continue to mitigate the risk of major gas pipeline issues within the city • Additional Planning, Permitting, Building Inspection, and Safety resources to better manage and facilitate future development and building efforts within the City of Calabasas • Improvements to the Calabasas	• Further document and plan to address the needs of the elderly and disabled population within the city. • Additional Planning, Permitting, Building Inspection, and Safety resources to better manage and facilitate future development and building efforts within the City of Hidden Hills	• Continue to evaluate and improve planning requirements to mitigate the risk of wildfires, floods, and earthquakes in the city • Additional Planning, Permitting, Building Inspection, and Safety resources to better manage and facilitate future development and building efforts within the City of Malibu	• Continue to work with other local agencies and Thousand Oaks to coordinate mitigation and response capabilities • Additional Planning, Permitting, Building Inspection, and Safety resources to better manage and facilitate future development and building efforts within the City of Westlake Village

Mitigation Capability	Agoura Hills	Calabasas	Hidden Hills	Malibu	Westlake Village
	• Improvements to the Agoura Hills Evacuation Plan (including evac routes, public awareness, and communications) • Additional monitoring and enforcement capabilities for wildfire mitigation in coordination with the Los Angeles County Fire Department • Further incorporate the needs of the socially vulnerable (e.g., low income, elderly, etc.) into the Agoura Hills Development Plan	Evacuation Plan (including evac routes, public awareness, and communications) • Additional monitoring and enforcement capabilities for wildfire mitigation in coordination with the Los Angeles County Fire Department • Further incorporate the needs of the socially vulnerable (e.g., low income, elderly, etc.) into the Calabasas Development Plan	• Improvements to the Hidden Hills Evacuation Plan (including evac routes, public awareness, and communications) • Additional monitoring and enforcement capabilities for wildfire mitigation in coordination with the Los Angeles County Fire Department • Further incorporate the needs of the socially vulnerable (e.g., low income, elderly, etc.) into the Hidden Hills Development Plan	• Complete adoption of the updated City of Malibu General Plan and Safety Element • Improvements to the Malibu Evacuation Plan (including evac routes, public awareness, and communications) • Additional monitoring and enforcement capabilities for wildfire mitigation in coordination with the Los Angeles County Fire Department • Further incorporate the needs of the socially vulnerable (e.g., low income, elderly, etc.) into the Malibu Development Plan	• Improvements to the Westlake Village Evacuation Plan (including evac routes, public awareness, and communications) • Additional monitoring and enforcement capabilities for wildfire mitigation in coordination with the Los Angeles County Fire Department • Further incorporate the needs of the socially vulnerable (e.g., low income, elderly, etc.) into the Westlake Village Development Plan
Admin & Technical	• Obtain additional Emergency Management resources • Obtain additional grant writing resources • Obtain additional and/or improve GIS mapping resources	• Further improve emergency power generation capabilities • Obtain additional grant writing resources • Obtain additional and/or improve GIS mapping resources	• A full time Emergency Planning and Mitigation Manager • Obtain additional grant writing resources • Obtain additional and/or improve GIS mapping resources	• Increase the use of technology (GIS, AI, etc.) to continue to evaluate and improve tsunami and seaside inundation mitigation efforts • Obtain additional grant writing resources • Obtain additional and/or improve GIS mapping resources	• A full time Emergency Planning and Mitigation Manager • Obtain additional grant writing resources • Obtain additional and/or improve GIS mapping resources • Complete acquisition of a Mobile EOC and improve mobile response capabilities
Financial	• Obtain additional mitigation project grants such as Federal HMGP Funding, BRIC and CDBG Funds • Measure R and Measure M Road Improvement Funds • Additional funding to maintain and improve social media outreach • Work with other local agencies to coordinate on	• Obtain additional mitigation project grants such as Federal HMGP Funding, BRIC and CDBG Funds • Measure R and Measure M Road Improvement Funds • Additional funding to maintain and improve social media outreach • Work with other local agencies to coordinate on projects and	• Obtain additional mitigation project grants such as Federal HMGP Funding, BRIC and CDBG Funds • City and Private Funding (if Assessment District established) • Additional funding to maintain and improve social media outreach • Work with other local agencies to	• Obtain additional mitigation project grants such as Federal HMGP Funding, BRIC, FMA, and CDBG Funds • Additional funding to maintain and improve social media outreach • Work with other local agencies to coordinate on projects and project funding on efforts that	• Obtain additional mitigation project grants such as Federal HMGP Funding, BRIC, FMA, and CDBG Funds • Measure R and Measure M Road Improvement Funds • Additional funding to maintain and improve social media outreach • Work with other local agencies to coordinate on

Mitigation Capability	Agoura Hills	Calabasas	Hidden Hills	Malibu	Westlake Village
	projects and project funding on efforts that improve mitigation within the city	project funding on efforts that improve mitigation within the city	coordinate on projects and project funding on efforts that improve mitigation within the city	improve mitigation within the city	projects and project funding on efforts that improve mitigation within the city
Education & Outreach	• Better public involvement and interest in mitigation planning • Continue to leverage social media Facebook, "X" (Twitter), and Instagram to encourage hazard mitigation • Expand CERT capabilities which will promote mitigation actions at the local level	• Better public involvement and interest in mitigation planning • Continue to leverage social media Facebook, "X" (Twitter), and Instagram to encourage hazard mitigation • Expand CERT capabilities which will promote mitigation actions at the local level	• Better public involvement and interest in mitigation planning • Continue to leverage social media Facebook, "X" (Twitter), and Instagram to encourage hazard mitigation • Expand CERT capabilities which will promote mitigation actions at the local level	• Better public involvement and interest in mitigation planning • Continue to leverage social media Facebook, "X" (Twitter), and Instagram to encourage hazard mitigation • Expand CERT capabilities which will promote mitigation actions at the local level	• Better public involvement and interest in mitigation planning • Continue to leverage social media Facebook, "X" (Twitter), and Instagram to encourage hazard mitigation • Expand CERT capabilities which will promote mitigation actions at the local level

ECONOMIC ANALYSIS OF MITIGATION PROJECTS

FEMA's approaches to identify the costs and benefits and costs associated with hazard mitigation strategies, measures, or projects include a Benefit/Cost Review and more detailed Benefit-Cost Analyses (BCA). Conducting an economic analysis for a mitigation activity can assist the cities in determining whether a project is worth undertaking now in order to avoid disaster-related damages later.

Benefit-Cost Review

The Benefit-Cost Review process includes monetary as well as non-monetary costs and benefits associated with each action. Some projects can be extremely cost-effective but not as beneficial for the community at large. The Planning Group considered a wide variety of questions, such as:

- How many people will benefit from the action?
- How are the needs of the socially vulnerable addressed?
- How large an area is impacted?
- How critical are the facilities that benefit from the action (e.g., is it more beneficial to protect the fire station than the administrative building, even though it costs more)?
- Environmentally, does it make sense to do this project for the overall community?

Benefit-Cost Analysis

The Benefit-Cost analysis is used to determine if the cost of investing in a specific mitigation project, i.e., the "cost" will result in reduced damages in the future, i.e., the "benefits" and if the loss prevented justifies the expenditure of funds for the project. If the benefit is greater than the cost, then the project is cost effective; if the benefit is less than the cost, then the project is not cost effective.

The Benefit-Cost Analysis is essentially the same for each type of hazard mitigation project. The only differences are the types of data that are used (e.g., if the project is for earthquake, flood, wind, or fire mitigation). To determine the Benefit-Cost, the project cost is compared to the anticipated dollar loss that will be prevented by the mitigation project. For example, if the project cost is $100,000 and the expected loss averted is $1,000,000, then the benefit exceeds the cost and is therefore cost effective. The ratio of the benefit versus the cost is 10:1 ($1,000,000 divided by $100,000). Priority is given to those projects with the highest Benefit-Cost Ratio or those projects with the greatest benefit to the community.

Benefit-Cost Analysis Exemptions

The following categories of mitigation measures are exempt from the FEMA policy on Benefit-Cost analysis:

- 5% Initiative Projects: States, which receive a Presidential declaration, are eligible to use up to 5% of available HMGP funding at their discretion.
- Tornado Initiative: States, which receive a Presidential declaration, are eligible to use up to an additional 5% of available HMGP funding at their discretion.
- Substantial Damage Waivers for acquisition of substantially damaged structures in 100-year floodplain.
- Mitigation planning related grants.

Benefit-Cost Methodology

For the LVMCOG HMP, mitigation projects were reviewed and prioritized by the HMP Planning Group which considered:

- The expected benefit to the community according to the following categories:
  - Protection of Life / Loss of Life Reduction
  - Protection of Property / Property Loss Reduction
  - Protection of the Environment / Environmental Loss Reduction
  - Protection of the Socially Vulnerable
  - Increase Public Awareness
  - Scope of Impact (i.e., the degree to which the project benefits the community or region)
- Costs: total estimated expense including ongoing maintenance requirements
- Constraints: the availability of resources, if funds were already budgeted or if additional budget funding was required, and the timeline for completion (if known)
- Other considerations included whether projects were already in progress or part of another effort (e.g., part of a County-wide program or existing city initiative)

Benefit-Cost Review Approach for Previous Mitigation Projects

DMA 2000 does not require Hazard Mitigation Plans to include BCA's for specific projects.[4] Consequently previous mitigation projects utilized a Benefit-Cost Review approach.

The following tables provide examples of the Benefit-Cost Review factors considered:

Benefit Factors	Evaluation Score
Protection of Life/Loss of Life Reduction	High / Medium / Low / None
Protection of Property/Property Loss Reduction	High / Medium / Low / None
Protection of the Environment/Environmental Loss Reduction	High / Medium / Low / None
Increased Public Awareness	High / Medium / Low / None
Scope of Impact	High (benefits the entire city or region) Medium (benefits a large part of the city or region) Low (benefits a targeted or limited area) None

Cost Factor	Evaluation Score
More than $500K regionally or $50K locally	High
$250K to $499K regionally or $25K to $49.9K locally	Moderately High
$100K to $249K regionally or $10K to $24.9K locally	Medium
$50K to $99K regionally or $5K to $9.9K locally	Moderately Low
Less than $50K regionally or $5K locally	Low
In-house Time	None

Constraint Factor	Evaluation Score
Resources	No Resources Available Limited Resources Available Resources Allocated and Assigned
Funding	No Funds Available (Need to Obtain New Funding) Limited Funds Available Funds Allocated
Time	Rapid or Condensed Timeframe Moderate Timeframe No Time Constraints

[4] FEMA Publication 386-5, State and Local Mitigation Planning, Using Benefit-Cost Review in Mitigation Planning, May 2007

The Benefit-Cost Model for New Mitigation Projects

For this Hazard Mitigation Plan update, new projects were evaluated using the latest Benefit-Cost Model methodology as outlined by FEMA (June 2019). This methodology incorporates more detailed analysis including the following:

Benefits

- Avoided Physical Damages
  - Structural Damage to Buildings or Infrastructure
  - Contents Damage
  - Damage to Historic/Cultural Resources
  - Site Contamination
- Avoided Loss of Service/Function
  - Public/Non-profit Sector Buildings
  - Critical Facilities
  - Roads and Bridges
  - Utilities (electric power, potable water, and wastewater)
- Avoided Fatalities/Casualties (for hazards with little or no warning time)
  - Fatalities ($6.9M each)
  - Hospitalized ($2.3M each)
  - Treat & Release ($61K each)
  - Self-treat ($14K each)
- Avoided Displacement Costs
  - Facilities Rent / Furniture Rental
  - Moving Expenses
  - Temporary Utilities
- Avoided Emergency Management Costs (including debris removal and volunteer costs)
- Avoided NFIP Administrative Costs

- Other Benefits

Societal Benefits

Social Benefit	Value
Mental Stress & Anxiety	$2,443/person
Lost Productivity	$8,736/person

Environmental Benefits (minimum 0.75 BCR required)

Environmental Benefit	Value
Green Open Space	$8,308/acre/year
Riparian	$39,545/acre/year
Wetlands	$6,010/acre/year
Forest	$554/acre/year
Marine & Estuary	$1,799/acre/year

Costs

Costs include:

- Construction Costs
- Any Other Project-related Costs such as Title Searches, Permits, etc.
- Maintenance Costs
- Any In-kind Contributions or Match from the Recipient or Sub-recipient

As indicated above FEMA BCA Toolkit automatically calculates the Benefits and Costs (based on the data input provided). Costs include ongoing maintenance and other factors. Consequently, BCA Cost calculations are higher than the initial implementation cost. Similarly, Benefits are accrued over the life of the project.

The tables below provide BCA summary tables of each City's new mitigation projects.

Agoura Hills New Mitigation Projects and Benefit-Cost Calculator Results

				Using 3% Discount Rate (For BRIC and FMA only)		
Project Title	**Benefits (B)**	**Costs (C)**	**BCR (B/C)**	**Benefits (B)**	**Costs (C)**	**BCR (B/C)**
Culvert and Drain Improvements and Erosion Mitigation	$353,713	$262,058	1.35	$659,454	$393,277	1.68
TOTAL	$353,713	$262,058	1.35	$659,454	$393,277	**1.68**

Table 125: Agoura Hills New Mitigation Project BCA Results

Calabasas New Mitigation Projects and Benefit-Cost Calculator Results

The following BCA table depicts the projected Benefit Cost Ratios of new mitigation projects initiated by the City of Calabasas.

				Using 3% Discount Rate (For BRIC and FMA only)		
Project Title	**Benefits (B)**	**Costs (C)**	**BCR (B/C)**	**Benefits (B)**	**Costs (C)**	**BCR (B/C)**
Calabasas Green Streets Program	$ 18,878,524	$ 11,900,373	1.59	$ 35,196,645	$ 17,864,882	1.97
City of Calabasas - City-wide Weed Abatement Program	$ 9,484,202	$ 9,213,144	1.03	$ 10,407,887	$ 9,905,907	1.05
City of Calabasas - Las Virgenes Creek Restoration III	$ 5,081,211	$ 5,058,407	1.00	$ 8,025,920	$ 5,382,020	1.49
City of Calabasas - Mulholland Highway Phase I and II	$ 7,592,453	$ 6,259,041	1.21	$ 14,155,178	$ 6,915,137	2.05
City of Calabasas - Upgrade Data Warehouse Storage	$ 2,050,099	$ 255,010	8.04	$ 2,289,854	$ 278,985	8.21

				Using 3% Discount Rate (For BRIC and FMA only)		
Project Title	Benefits (B)	Costs (C)	BCR (B/C)	Benefits (B)	Costs (C)	BCR (B/C)
City of Calabasas - West Calabasas Road Improvements	$ 3,732,335	$ 3,675,764	1.02	$ 6,958,471	$ 4,061,071	1.71
Emergency Power for Critical Facilities	$47,206,829	1,103,356	42.78	$65,422,563	$1,143,238	57.23
Las Virgenes Road Embankment and Shoulder Repair	$7,278,859	$576,459	12.63	$13,570,521	$874,684	15.51
McCoy Creek Mitigation / Restoration	$1,368,433	$1,190,237	1.15	$2,551,272	$1,786,688	1.43
TOTAL	**$ 46,818,824**	**$ 36,361,739**	**1.29**	**$ 77,033,955**	**$ 44,408,002**	**1.73**

Table 126: Calabasas New Mitigation Project BCA Results

Hidden Hills New Mitigation Projects and Benefit-Cost Calculator Results

				Using 3% Discount Rate (For BRIC and FMA only)		
Project Title	Benefits (B)	Costs (C)	BCR (B/C)	Benefits (B)	Costs (C)	BCR (B/C)
Hidden Hills Brush Clearance Program	$1,870,037	$88,991	21.01	$1,942,660	$90,660	21.43
TOTAL	**$1,870,037**	**$88,991**	**21.01**	**$1,942,660**	**$90,660**	**21.43**

Table 127: Hidden Hills New Mitigation Project BCA Results

Malibu New Mitigation Projects and Benefit-Cost Calculator Results

				Using 3% Discount Rate (For BRIC and FMA only)		
Project Title	Benefits (B)	Costs (C)	BCR (B/C)	Benefits (B)	Costs (C)	BCR (B/C)
FM Alert System	$16,295,666	$729,361	22.34	$17,246,100	$734,106	23.49
Broadband Improvements for Emergency Communications	$109,702,118	$8,440,149	13.00	$204,525,689	$10,825,953	18.89
TOTAL	**$125,997,784**	**$9,169,510**	**13.74**	**$221,771,969**	**$11,560,059**	**19.18**

Table 128: Malibu New Mitigation Project BCA Results

Westlake Village New Mitigation Projects and Benefit-Cost Calculator Results

				Using 3% Discount Rate (For BRIC and FMA only)		
Project Title	**Benefits (B)**	**Costs (C)**	**BCR (B/C)**	**Benefits (B)**	**Costs (C)**	**BCR (B/C)**
Home Hardening & Defensible Space Fire Prevention Grant Program	$7,406,671	$670,452	11.05	$11,699,053	$1,030,022	11.36
Mobile Emergency Operations Center	$171,679	$162,045	1.06	$271,172	$198,002	1.37
TOTAL	**$7,578,350**	**$832,497**	**9.10**	**$11,970,225**	**$1,228,024**	**9.75**

Table 129: Westlake Village New Mitigation Project BCA Results

Prioritization Review

As part of this Multi-Jurisdictional Hazard Mitigation Plan update, the Planning Group reviewed the previous project prioritization criteria in accordance with 44 CFR 201.6(d)(3). This review included considerations for changes since the previous approved HMP.

Benefit Prioritization and Categorization

Each of the mitigation projects were reviewed and prioritized by the HMP Planning Group and considered the expected benefit to the community versus the estimated cost. Other considerations included whether projects were already in progress or part of another effort, if funds were already budgeted or if additional budget funding was required, the availability of resources, ongoing maintenance requirements, and the timeline for completion (if known).

Benefits were evaluated based on five major categories:

1. Protection of Life / Loss of Life Reduction (including the socially vulnerable)
2. Protection of Property / Property Loss Reduction
3. Protection of the Environment / Environmental Loss Reduction
4. Increase Public Awareness
5. Scope of Impact

The prioritization review incorporated an assessment of lessons learned and changes in current conditions including:

- Financial Constraints and Funding Considerations
- Regulatory and Legal Requirements
- Political and Jurisdictional Changes
- Development Patterns
- Changes in Disaster Planning and Recovery Priorities (including Risk Assessments and priorities such as the needs of the socially vulnerable)
- Post-Disaster Conditions (as applicable)

Based on the review, the Planning Group determined that the pervious prioritization criteria were still valid and consistent with the goals established for the HMP. Consequently, the benefits of each project were evaluated and assigned a value (High, Medium, Low, or None). Any changes in the mitigation project list (including project revisions or new projects) considered the following criteria as defined below:

Priority 1	High Priority: The project provides a high benefit with relatively low to moderate cost and/or requires minimal implementation effort. Funding and/or resources may already be assigned or are readily available.
Priority 2	Moderate Priority: The project provides a medium benefit. Resources, costs and/or funding may need to be allocated or obtained.
Priority 3	Low Priority: The project provides a benefit, but the estimated benefits may be limited in scope. Resources and/or funding must be allocated.

Public Mitigation Planning Input

The public was invited to provide their input into the HMP and mitigation planning process (see **Section 19: Planning and Public Involvement**). Feedback was primarily obtained via a Community Disaster Preparedness and Risk Survey as well as through a Public Emergency Preparedness and Mitigation Workshop. During the HMP update process, the Hazard Mitigation Strategies and Projects were reviewed and the public's suggestions related to hazard mitigation were integrated into the existing mitigation project strategies. These ideas included improvements to Public Awareness Programs, further development and use of CERT programs, and working with SCE to address concerns related to Energy Disruptions and Wildfire risk.

Final Updated Mitigation Project List

Updates to the mitigation projects developed for this HMP are provided in the tables and project details provided on the following pages.

Summary of Regional Mitigation Projects and Strategies

The following matrix provides a summary of the Hazard Mitigation Projects implemented within the Las Virgenes-Malibu Region, the current status, and their impact on New Buildings, Existing Buildings, Infrastructure, and the Community. The hazards addressed focus on the high-risk hazards identified in the Risk Assessment (**Section 4: Risk Assessment**). The primary mitigation goals addressed by each project are listed (per Section 2: Hazard Mitigation Goals, p. 4-1), i.e., (1) Public Awareness; (2) Protect Life, Property, and the Environment; (3) Partnerships and Implementation; (4) Emergency Management. In addition, the issues addressed by each project are identified in terms of Mitigation, Preparedness, Response, and Recovery.

City	Hazard	Specific Hazards Addressed in the HMP ●									Mitigation Goal ◆				Issues Addressed ✓				Project Name / Strategy	Priority	Status	Impact on Buildings, Infrastructure, and the Community	Comments
		Earthquake	Wildfire	Climate Change - Drought	Energy Disruption	Windstorm	Landslide / Debris Flow	Flood / Severe Winter Storm	Pandemic	Terrorism / Mass Casualty Incident	Public Awareness	Protect Life, Property and the Environment	Partnerships and Implementation	Emergency Management	Mitigation	Preparedness	Response	Recovery					
Regional Agoura Hills Calabasas Hidden Hills Malibu Westlake Village	All Hazards	●	●	●	●	●	●	●	●	●	◆	◆	◆		✓	✓			Hazard Mitigation Information Campaigns Page 2-43	1	Ongoing with Annual Reviews / Modified	• Provides the public an opportunity to provide ongoing input into the risks and projects as part of Disaster Preparedness and Mitigation events. • Allows the public an opportunity to obtain information on disaster preparedness and personal/family mitigation.	LVMCOG cities conduct public Disaster Preparedness events and/or information campaigns including efforts coinciding with National Disaster Preparedness Month in September. For example, in November 2023, the City of Malibu conducted a comprehensive public workshop that provided attendees with the opportunity to ask questions and provide input on Malibu's Coastal Vulnerability Assessment and projected impacts of sea level rise. Ongoing: Once a year
Regional Agoura Hills Calabasas Hidden Hills Malibu Westlake Village	All Hazards	●	●	●	●	●	●	●	●	●	◆	◆			✓	✓			Implement a Mitigation and Preparedness Monthly Campaign Page 2-44	1	Ongoing / Modified	• Provides the public with information on disaster preparedness and mitigation in order to enhance community resiliency.	LVMCOG cities promote Disaster Mitigation and Preparedness public bulletins and awareness programs delivered via city web pages, city TV, social media, and local news. Ongoing: Monthly
Regional Agoura Hills Calabasas Hidden Hills Westlake Village	All Hazards	●	●	●	●	●	●	●	●	●	◆	◆	◆		✓	✓			Business Outreach Disaster Mitigation and Planning Program Page 2-45	1	Ongoing / Modified	• Provides local business owners and business groups with an opportunity to obtain information on disaster preparedness and mitigation, furthering the economic sustainability of the community.	LVMCOG cities work with local business groups (Chambers of Commerce, business associations, business parks, etc.) to encourage disaster mitigation and planning for local businesses. Ongoing: Whenever planning groups meet
Regional Agoura Hills Calabasas Hidden Hills Malibu Westlake Village	All Hazards	●	●	●	●	●	●	●	●	●	◆	◆	◆	◆	✓				Continue to Implement, Revise, and Maintain the Las-Virgenes-Malibu Hazard Mitigation Plan Page 2-46	1	Update Complete / Ongoing Maintenance	• Facilitates planning for future events. • Enables better response and coordination by city personnel during and after a hazardous event.	HMP update complete. Maintenance ongoing. Ongoing: Every 5 years

City	Hazard	Specific Hazards Addressed in the HMP ●									Mitigation Goal ◆				Issues Addressed ✓				Project Name / Strategy	Priority	Status	Impact on Buildings, Infrastructure, and the Community	Comments
		Earthquake	Wildfire	Climate Change - Drought	Energy Disruption	Windstorm	Landslide / Debris Flow	Flood / Severe Winter Storm	Pandemic	Terrorism / Mass Casualty Incident	Public Awareness	Protect Life, Property and the Environment	Partnerships and Implementation	Emergency Management	Mitigation	Preparedness	Response	Recovery					
Regional Agoura Hills Calabasas Hidden Hills Malibu Westlake Village	All Hazards	●	●	●	●	●	●	●	●	●		◆		◆	✓				Critical Infrastructure Assessment Page 2-47	1	Ongoing / Modified	• May add requirements to new construction permits for critical infrastructure. • Will enable response and coordination by city personnel during and after a hazardous event.	Each city continually assesses the state of readiness of critical facilities within their jurisdictions. For example, the City of Agoura Hills identified key infrastructure to maintain continuity of operations and purchased a drone to conduct hazard assessments; the City of Calabasas participated in the SCAG Earthquake Preparedness Initiative; the City of Hidden Hills designated several sites as critical and provided for backup power generation; the City of Malibu provided the Sheriff's Dept. with a list of its critical infrastructure; and the City of Westlake Village provisioned two key sites with emergency power and supplies. Ongoing: As funding becomes available
Regional Agoura Hills Calabasas Hidden Hills Malibu Westlake Village	All Hazards	●	●	●	●	●	●	●	●	●		◆		◆		✓	✓		Emergency Shelter Identification Page 2-49	1	Ongoing / Modified	• Provides for better response and coordination by city personnel during and after a hazardous event. • Improves private sector (hotels and other) participation and awareness.	Each city identified emergency shelter locations and works with the American Red Cross to establish shelters. The City of Malibu instituted a site that can be used as an evacuation shelter and to stage first responders Ongoing: As needed according to public works/emergency manager needs
Regional Agoura Hills Calabasas Hidden Hills Malibu Westlake Village	All Hazards	●	●	●	●	●	●	●	●	●		◆	◆	◆		✓	✓	✓	Pre-Established Contracts Page 2-51	1	Ongoing / Modified	• Provides for better response and coordination by city personnel during and after a hazardous event.	Each city has identified critical vendors and contractors and maintains current contact lists. For example: the City of Agoura Hills has agreements for Emergency Services assistance, construction, and debris removal; the City of Calabasas has contacts with local vendors and accounts with emergency supply and communications providers; the City of Hidden Hills has emergency vendor contracts and the Community Association work crew is available for urgent repairs; the City of Malibu has contracts for services such as debris removal, fuel, street repair, and other emergency items, and the City of Westlake Village has contracts for fuel, road repair, and supplies. Ongoing: As needed according to public works/emergency manager needs

City	Hazard	Specific Hazards Addressed in the HMP ●									Mitigation Goal ◆				Issues Addressed ✓				Project Name / Strategy	Priority	Status	Impact on Buildings, Infrastructure, and the Community	Comments
		Earthquake	Wildfire	Climate Change - Drought	Energy Disruption	Windstorm	Landslide / Debris Flow	Flood / Severe Winter Storm	Pandemic	Terrorism / Mass Casualty Incident	Public Awareness	Protect Life, Property and the Environment	Partnerships and Implementation	Emergency Management	Mitigation	Preparedness	Response	Recovery					
Regional Agoura Hills Calabasas Hidden Hills Malibu Westlake Village	All Hazards	●	●	●	●	●	●	●	●	●	◆	◆	◆	◆	✓	✓	✓	✓	Hazard Awareness Public / Private Partnerships Page 2-52	1	Ongoing / Modified	• Provides for better response and coordination by city personnel during and after a hazardous event. • Improves public preparedness and mitigation education and hazard awareness.	Individual cities have implemented public awareness/business partnership events, task force meetings, and CERT programs. In addition, in 2017 the City of Agoura Hills held a fire preparedness workshop for local businesses and residents; the City of Calabasas and City of Malibu are members of the Santa Monica Mountains Fire Safe Alliance; the City of Hidden Hills works with the Community Association and local school to promote awareness and preparedness; and the City of Westlake Village hosted emergency preparedness seminar, is in the process of creating local partnerships with homeowner associations and other community groups, and has conducted annual community events. Ongoing: Whenever planning groups meet
Regional Agoura Hills Calabasas Hidden Hills Malibu Westlake Village	• Wildfire • Energy Disruption • Windstorm		●		●	●						◆		◆	✓				Tree Pruning Program and Fire Code Sections Page 2-54	1	Ongoing / Modified	• May result in additional maintenance requirements for new commercial and residential development properties.	All cities serviced by the Los Angeles County Fire Department and require tree pruning and brush clearance per LAC Fire Code and State Fire Code. Public information is distributed, e.g., "A Roadmap to Fire Safety" and annual brush clearance mailers. Ongoing: Once a year
Regional Agoura Hills Calabasas Hidden Hills Malibu Westlake Village	All Hazards	●	●	●	●	●	●	●	●	●		◆	◆	◆		✓	✓		Communications Hardening Page 2-55	2	Ongoing	• Provides for better response and coordination by city personnel during and after a hazardous event.	The cities implemented Finalsite Connect Inc.'s Connect-CTY system (many residents participate), the Operational Area Response and Recovery System (OARRS), County-wide Integrated Radio System (CWIRS), and Sheriff's Department NIXLE system. Individual cities also implemented social media, public Wi-Fi, Amateur Radio groups, satellite telephones, radio repeaters, and back-up power generation. Ongoing: As funding becomes available

City	Hazard	Specific Hazards Addressed in the HMP ●									Mitigation Goal ◆				Issues Addressed ✓				Project Name / Strategy	Priority	Status	Impact on Buildings, Infrastructure, and the Community	Comments
		Earthquake	Wildfire	Climate Change - Drought	Energy Disruption	Windstorm	Landslide / Debris Flow	Flood / Severe Winter Storm	Pandemic	Terrorism / Mass Casualty Incident	Public Awareness	Protect Life, Property and the Environment	Partnerships and Implementation	Emergency Management	Mitigation	Preparedness	Response	Recovery					
Regional Agoura Hills Calabasas Hidden Hills Malibu Westlake Village	All Hazards (except Climate Change and Pandemic)	●	●		●	●	●	●		●	◆	◆	◆	◆		✓	✓		US 101 Freeway Corridor Improvement Study Page 2-57	2	Complete / Monitoring and Mitigation Projects Scheduled	• May add infrastructure upgrades to local land use planning and zoning requirements for new commercial development. • Will enable better response times for local emergency services personnel by improving local access routes.	The US 101 Freeway Corridor Study, Kanan Road Interchange project, and Reyes Adobe Interchange project previously completed. The City of Agoura Hills has completed all design work necessary to begin the Chesebro Interchange improvement project. The Chesebro Interchange project construction scheduled to start in Fiscal Year 2017/2018 and will be completed by FY 2018/2019. The Lindero Canyon Interchange project construction scheduled to start September 2018.
Regional Agoura Hills Calabasas Hidden Hills Malibu Westlake Village	All Hazards	●	●	●	●	●	●	●	●	●	◆	◆	◆	◆	✓	✓	✓		Emergency Preparedness Public Awareness Campaign Page 2-58	2	Ongoing	• Improves public preparedness, mitigation education and hazard awareness.	All cities implemented the Ready Set Go Wildfire Action Plan, are part of the CA Fire Alliance, and participate in the annual LA County Shake Out Earthquake Exercise. Individual city programs include local television programming, web site educational information, ongoing training, and education events. The City of Calabasas has also implemented a "Map Your Neighborhood Program". Ongoing: Whenever planning groups meet
Regional Agoura Hills Calabasas Hidden Hills Malibu Westlake Village	All Hazards (except Pandemic)	●	●	●	●	●	●	●		●		◆		◆	✓				Risk Assessment Project Page 2-59	2	Ongoing	• Enables better land use planning, building code, and zoning requirements.	All cities continuously monitor their risk exposure, update information as needed, add to their disaster mitigation goals, policies, and strategies in General Plans (as applicable) and continue to improve their GIS capabilities. In addition, the City of Agoura Hills completed a comprehensive Risk Assessment in 2015 and upgraded its GIS capabilities; the City of Calabasas developed a listing of local hazards including electrical and natural gas utility, water tanks, and flood risks; the City of Hidden Hills is working with SCE to implement underground utility lines; the City of Malibu has conducted a risk assessment on aging power and communications infrastructure in the city; and the City of Westlake Village has mapped their fire hazard areas as well as updated their GIS flood maps. Ongoing: Whenever planning groups meet / as funding becomes available

City	Hazard	Specific Hazards Addressed in the HMP ●									Mitigation Goal ◆				Issues Addressed ✓				Project Name / Strategy	Priority	Status	Impact on Buildings, Infrastructure, and the Community	Comments
		Earthquake	Wildfire	Climate Change - Drought	Energy Disruption	Windstorm	Landslide / Debris Flow	Flood / Severe Winter Storm	Pandemic	Terrorism / Mass Casualty Incident	Public Awareness	Protect Life, Property and the Environment	Partnerships and Implementation	Emergency Management	Mitigation	Preparedness	Response	Recovery					
Regional Calabasas Hidden Hills Westlake Village	• Earthquake • Wildfire • Windstorm	●	●			●						◆		◆	✓				Rehabilitation of Residential Properties Page 2-62	2	Ongoing / Modified	• Mitigates private residential property loss.	Cities implemented home renovation projects or programs (as applicable) to mitigate home property risk. For example, the City of Calabasas and City of Westlake Village have Community Development Block Grant programs for low and moderate income residents for improvements and retrofitting their properties; the City of Hidden Hills has implemented a wood shake shingle roof replacement program and is exploring funding sources. Note: the City of Agoura Hills home rehabilitation outreach program was discontinued due to lack of funding and the City of Malibu does not have a home rehabilitation program. Ongoing; Whenever planning groups meet / as funding becomes available
Regional Agoura Hills Calabasas Hidden Hills Malibu Westlake Village	All Hazards	●	●	●	●	●	●	●	●	●	◆	◆		◆		✓	✓		Advanced Community Training Page 2-63	3	Ongoing / Modified	• Improves public preparedness and mitigation education and hazard awareness.	Each city offers CERT classes on an ongoing basis throughout the year. In addition, city staff are provided ongoing training on disaster response. Ongoing: At least once a year

Summary of City Specific Mitigation Projects and Strategies

Agoura Hills

City	Hazard	Specific Hazards Addressed in the HMP ●									Mitigation Goal ◆				Issues Addressed ✓				Project Name / Strategy	Priority	Status	Impact on Buildings, Infrastructure, and the Community	Comments
		Earthquake	Wildfire	Climate Change - Drought	Energy Disruption	Windstorm	Landslide / Debris Flow	Flood / Severe Winter Storm	Pandemic	Terrorism / Mass Casualty Incident	Public Awareness	Protect Life, Property and the Environment	Partnerships and Implementation	Emergency Management	Mitigation	Preparedness	Response	Recovery					
Agoura Hills	All Hazards (includes impacts related to Climate Change, i.e., increased flood, wildfire, etc.)	●	●	●	●	●	●	●	●	●	◆	◆		◆		✓	✓	✓	Advanced Emergency Training Page 2-65	1	Ongoing	• Improves Public and Staff preparedness by implementing advanced Emergency Training through existing and/or new programs.	The City of Agoura Hills is utilizing its CERT program to provide advanced emergency training to volunteers and is promoting advanced emergency management training including FEMA courses to staff. Ongoing: Whenever planning groups meet

City	Hazard	Specific Hazards Addressed in the HMP ●									Mitigation Goal ◆				Issues Addressed ✓				Project Name / Strategy	Priority	Status	Impact on Buildings, Infrastructure, and the Community	Comments
		Earthquake	Wildfire	Climate Change - Drought	Energy Disruption	Windstorm	Landslide / Debris Flow	Flood / Severe Winter Storm	Pandemic	Terrorism / Mass Casualty Incident	Public Awareness	Protect Life, Property and the Environment	Partnerships and Implementation	Emergency Management	Mitigation	Preparedness	Response	Recovery					
Agoura Hills	All Hazards (includes impacts related to Climate Change, i.e., increased flood, wildfire, etc.) (except Pandemic)	●	●	●	●	●	●	●		●	◆	◆	◆	◆	✓		✓	✓	Agoura Road Widening Page 2-66	1	Ongoing / Roadway Complete	• Improves multi-modal access, an emergency bi-pass, and improves operational capacity.	Roadway Complete, Environmental Mitigation ongoing until Fall 2018 Ongoing: As funding becomes available
Agoura Hills	All Hazards (includes impacts related to Climate Change, i.e., increased flood, wildfire, etc.) (except Pandemic)	●	●	●	●	●	●	●		●	◆	◆	◆		✓		✓	✓	Annual Street Pavement Rehabilitation Project Page 2-67	1	Ongoing / Under Design	• Maintains critical infrastructure - Reduces the potential for loss of life, injury, and economic damage to Agoura Hills residents and businesses by keeping the public roads in a state of good repair.	Entails the removal and reconstruction of asphalt, and base, and replacing curb ramps to current ADA Standards. Ongoing: Every 1-2 years
Agoura Hills	All Hazards (includes impacts related to Climate Change, i.e., increased flood, wildfire, etc.) (except Pandemic)	●	●	●	●	●	●	●		●			◆	◆	✓		✓	✓	Fairview Road Improvement Project Page 2-67	1	Complete	• Maintains critical infrastructure for emergency egress on Fairview Road.	The City of Agoura Hills is in the process of obtaining road improvement funding and approvals for Fairview Road.
Agoura Hills	• Earthquake • Wildfire	●	●										◆	◆	✓		✓	✓	Roadside Bridge Widening Page 2-68	2	Ongoing / Completing Design and Permitting	• Reduces the potential for loss of life, injury, and economic damage to Agoura Hills residents and businesses from earthquake, wildfire, landslides, and the impacts of these hazards. Increases the City's ability to serve the community during disaster response and recovery by mitigating risks to key infrastructure	In the design and permitting process. The project will result in the widening of the bridge to eliminate bottlenecks. Will also involve the installation of a pedestrian sidewalk. Scheduled for August 2018 to August 2019. Ongoing: 3-5 years

City	Hazard	Specific Hazards Addressed in the HMP ●									Mitigation Goal ◆				Issues Addressed ✓				Project Name / Strategy	Priority	Status	Impact on Buildings, Infrastructure, and the Community	Comments
		Earthquake	Wildfire	Climate Change - Drought	Energy Disruption	Windstorm	Landslide / Debris Flow	Flood / Severe Winter Storm	Pandemic	Terrorism / Mass Casualty Incident	Public Awareness	Protect Life, Property and the Environment	Partnerships and Implementation	Emergency Management	Mitigation	Preparedness	Response	Recovery					
Agoura Hills	• Earthquake • Wildfire	●	●									◆	◆	◆	✓		✓	✓	Palo Camado Bridge Widening Page 2-68	3	Ongoing / Completing Design and Permitting	• Reduces the potential for loss of life, injury, and economic damage to Agoura Hills residents and businesses from earthquake, wildfire, landslides, and the impacts of these hazards. Increases the City's ability to serve the community during disaster response and recovery by mitigating risks to key infrastructure.	In the process of completing the design and permitting process. The project will widen the bridge to increase capacity. It will also result in the installation of traffic signals and sidewalks as well as a seismic retrofit. Ongoing: 3-5 years
Agoura Hills	• Landslide / Debris Flow • Flood / Severe Winter Storm						●	●				◆		◆	✓	✓			Culvert and Drain Improvements and Erosion Mitigation Page 2-69	2	New / Ongoing	• Mitigates the risk of a future drain failure and mitigates the impact of potential flooding / landslide.	In the process of replacing damaged drains and erosion, while enhancing the capability of culverts /drain inlets to today's building standards. Timeline: 2 years Ongoing: As funding becomes available / as needed according to public works

Calabasas

City	Hazard	Specific Hazards Addressed in the HMP ●									Mitigation Goal ◆				Issues Addressed ✓				Project Name / Strategy	Priority	Status	Impact on Buildings, Infrastructure, and the Community	Comments
		Earthquake	Wildfire	Climate Change - Drought	Energy Disruption	Windstorm	Landslide / Debris Flow	Flood / Severe Winter Storm	Pandemic	Terrorism / Mass Casualty Incident	Public Awareness	Protect Life, Property and the Environment	Partnerships and Implementation	Emergency Management	Mitigation	Preparedness	Response	Recovery					
Calabasas	Wildfire		●									◆	◆	◆	✓				Fire Code Update Page 2-71	1	Complete	• May add requirements to new construction permits. • Will reduce risk and mitigate the impact of fire on new construction.	The revised Los Angeles County Fire Code adopted by the City. Calabasas Building and Safety Staff changes to the fire code pending the next triennial cycle of the LA County Fire Code for review.
Calabasas	Wildfire		●								◆	◆		◆	✓				Incentive Based Lot Mergers Page 2-71	2	Complete	• Will mitigate future fire losses by ensuring that adequate open space is maintained between new construction projects.	The General Plan update incentivizing small lot mergers was completed and adopted by the City Council in 2008. The 2010 Development Code updates reflect such policies. No additional incentives are required at this time.
Calabasas	Flooding							●				◆		◆	✓	✓			Green Streets Program Page 2-72	2	New / Ongoing	• Will reduce risk and mitigate the impact of future flooding.	Create landscaped catch-basins within the right of way to capture, treat and infiltrate storm water runoff. Designed to catch rainwater at its source, the improvements work to avoid flooding and retain water resources for future use rather than allowing run-off into storm drains and ultimately the ocean. Ongoing: As funding becomes available / as needed according to public works
Calabasas	• Flooding • Landslide • Debris Flow • Mudslide						●	●				◆		◆	✓	✓			Mulholland Highway – Phase I & II Page 2-73	2	New / Under Design	• Will mitigate the impact of future flooding and winter storm, as well as mitigating the risk of future slope failure.	In the process of constructing retaining wall, storm drain and pedestrian sidewalk improvements to increase safety for pedestrians and retain slope from failure during heavy water events. Timeline: 1 year
Calabasas	All Hazards (except Pandemic)	●	●	●	●	●	●	●		●		◆			✓				West Calabasas Road Improvements Page 2-74	2	New / Under Design	• Maintains critical infrastructure - Reduces the potential for loss of life, injury, and economic damage to Calabasas residents and businesses by keeping the public roads in a state of good repair.	Seek areas to install multi-modal improvements improving traffic safety for all users. Includes road improvements for greater traffic flow and safety (i.e., left turn lane, bypass lane, protected bike and pedestrian improvements), as well as slope stabilization. Timeline: 2 years

City	Hazard	Specific Hazards Addressed in the HMP ●									Mitigation Goal ◆				Issues Addressed ✓				Project Name / Strategy	Priority	Status	Impact on Buildings, Infrastructure, and the Community	Comments
		Earthquake	Wildfire	Climate Change - Drought	Energy Disruption	Windstorm	Landslide / Debris Flow	Flood / Severe Winter Storm	Pandemic	Terrorism / Mass Casualty Incident	Public Awareness	Protect Life, Property and the Environment	Partnerships and Implementation	Emergency Management	Mitigation	Preparedness	Response	Recovery					
Calabasas	Wildfire		●								◆	◆		◆	✓				Citywide Weed Abatement Program Page 2-74	1	New / Ongoing	• Mitigates the impact of a future wildfire by ensuring that structures are clear of weeds, grass, and dead plants	Aims to clear weeds, grass and dead plants to 200 feet from structures in city parks, public roadways and designated areas within Calabasas' four landscape Maintenance and Lighting Districts. Ongoing: As funding becomes available / as needed according to public works
Calabasas	Flooding							●				◆	◆						Las Virgenes Creek Restoration III Page 2-75	2	New / Under Design	• Mitigates the risk of future flooding by repairing and maintaining storm drain outlets.	In the process of designing infrastructure improvements including storm drain repair and maintenance, as well as monitoring of creek/water cleanliness. Timeline: 3-4 years
Calabasas	All Hazards	●	●	●	●	●	●	●	●	●			◆	◆		✓	✓	✓	Upgrade Data Warehouse Storage Page 2-76	1	New / Ongoing	• Mitigates the impact of various disasters on Calabasas' data warehouse by enabling a cloud based solution.	Completed the setup of a cloud-based DR site for the city data infostructure, enabling users to still access the data in the event that the on-prem data servers are not available. Ongoing: 1 year
Calabasas	• Landslide / Debris Flow • Flood / Winter Storm						●	●				◆		◆	✓	✓			Las Virgenes Road Embankment and Shoulder Repair Page 2-76	2	New	• Mitigates the potential for future slope failures and protects the road surface from being undermined by future slope distress.	In the process of designing and constructing slope and shoulder stabilization and installation of RSP to prevent future slope washout. Timeline: 1 year
Calabasas	• Landslide / Debris Flow • Flood / Winter Storm						●	●				◆		◆	✓	✓			McCoy Creek Mitigation/Restoration Page 2-77	2	New	• Mitigates the potential for future slope failures and protects the road surface from being undermined by future slope distress.	In the process of designing and constructing streambank stabilization and embankment reconstruction: section of parking lot pavement and AC dike repair. Timeline: 1 year
Calabasas	All Hazards	●	●	●	●	●	●	●	●	●	◆	◆		◆	✓	✓			Emergency Power for Critical Facilities Page 2-78	1	New	• Mitigates the risk of future energy disruption and power outage by providing continuous power to critical facilities.	In the process of identifying critical facilities in need of redundant power and working on the RFP process for qualified contractors. Timeline: 1-2 years

Hidden Hills

City	Hazard	Specific Hazards Addressed in the HMP ●									Mitigation Goal ◆				Issues Addressed ✓				Project Name / Strategy	Priority	Status	Impact on Buildings, Infrastructure, and the Community	Comments
		Earthquake	Wildfire	Climate Change - Drought	Energy Disruption	Windstorm	Landslide / Debris Flow	Flood / Severe Winter Storm	Pandemic	Terrorism / Mass Casualty Incident	Public Awareness	Protect Life, Property and the Environment	Partnerships and Implementation	Emergency Management	Mitigation	Preparedness	Response	Recovery					
Hidden Hills	All Hazards (includes impacts related to Climate Change, i.e., increased flood, wildfire, etc.)	●	●	●	●	●	●	●	●	●		◆		◆	✓				Update the City of Hidden Hills General Plan and Local Ordinances Page 2-79	1	Ongoing	• May add requirements to new construction permits. • Will reduce risk and mitigate the impact of disasters on new construction and remodeled properties.	The General Plan and existing codes are regularly reviewed and modified (if necessary). The General Plan continues to incorporate elements to mitigate seismic, fire, landslide and flooding events. Ongoing: Every 10 years
Hidden Hills	Landslide / Debris Flow						●					◆		◆	✓				Comprehensive Hills Slope Management Program Page 2-79	1	Ongoing	• Will prevent future development on potentially unstable hillsides. • May add requirements to new construction permits. • Will reduce risk and mitigate the impact of landslides on new construction.	Geological evaluations are required for all proposed hillside developments. Landslides are identified, mapped, and mitigated. In addition, the City has adopted a ridgeline protection ordinance to help preserve scenic corridors. Ongoing: As planning groups meet
Hidden Hills	Wildfire		●									◆			✓				Wood Shake Shingle Roof Replacement Program Page 2-80	2	Ongoing	• Will provide incentives to replace older wood shake shingle roofs by residents.	The City is looking into a program to help offset the cost of replacing remaining wood shake roofs in the City. All new construction bans the installation of wood shake shingles. Ongoing: As funding becomes available
Hidden Hills	All Hazards (includes impacts related to Climate Change, i.e., increased flood, wildfire, etc.)	●	●	●	●	●	●	●	●	●		◆		◆		✓	✓	✓	Emergency Satellite Communications Page 2-80	2	Complete / Maintenance Ongoing	• Provides for better response and coordination by city personnel during and after a hazardous event.	The City has satellite phone and internet ability and two-way radio communications equipment. Two-way radio batteries were recently replaced. Ongoing: As planning groups meet / as funding becomes available
Hidden Hills	All Hazards (includes impacts related to Climate Change, i.e., increased flood, wildfire, etc.)	●	●	●	●	●	●	●	●	●		◆		◆		✓	✓		Advanced Emergency Training Page 2-81	2	Ongoing	• Improves public preparedness and mitigation education and hazard awareness.	CERT classes offered throughout the year. • The CERT team has continuing training in disaster response, first aid and evacuation shelter setup • The CERT first aid medical equipment trailer has been checked and updated. • City staff and CERT team members have been trained in active shooter response. Ongoing: As planning groups meet / as funding becomes available

City	Hazard	Specific Hazards Addressed in the HMP ●									Mitigation Goal ◆				Issues Addressed ✓				Project Name / Strategy	Priority	Status	Impact on Buildings, Infrastructure, and the Community	Comments
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Hidden Hills	All Hazards (includes impacts related to Climate Change, i.e., increased flood, wildfire, etc.)	●	●	●	●	●	●	●	●	●		◆	◆	◆		✓	✓		Communications Improvements Page 2-81	2	Ongoing	• Will continue to improve cellular telephone reception in areas of the City that are currently underserved.	Cellular telephone and radio coverage is regularly evaluated. In addition, the City of Hidden Hills is now authorized to send out emergency messages to cell phones (IPAWS Wide Area Alerts). Additionally, a fiber optic plan is being worked on by the community to provide high speed Internet and help provide WiFi cell service. Ongoing: As funding becomes available / as needed
Hidden Hills	All Hazards (includes impacts related to Climate Change, i.e., increased flood, wildfire, etc.)	●	●	●	●	●	●	●	●	●		◆		◆		✓	✓		Community Evacuation Routes, Planning, and Training Page 2-82	2	Complete	• Improves public safety in the event that a mass evacuation is required.	Ingress and egress to the City has been improved with addition of contractor parking areas at the gates. In addition: • The City will allow school buses, for Round Meadow Elementary School, through the gates to bring students to reunification sites if Mureau Road is closed. • The City is actively working on a revision of traffic flow at the Long Valley gate, adding a turn lane and providing contractor parking areas to keep traffic flowing into and out of Hidden Hills. This roadway update will also aid traffic flow onto the Northbound 101 freeway onramp. • The City conducted a public workshop for Wildfire evacuation for residents and large animals. Training was offered to the residents on horse trailer loading and unloading. Also offered was a CHP sponsored horse trailer inspection day.
Hidden Hills	Flood							●				◆			✓				Storm Drain Management Page 2-83	2	Ongoing	• Will ensure that storm drains are free from debris to prevent flooding.	Continue to maintain the storm drain system to ensure that drains are free from debris to prevent flooding. While the storm drains are managed by Los Angeles County, the City does work to ensure the free flow of water to prevent street flooding. Ongoing: Every 2-3 years
Hidden Hills	Energy Disruption				●									◆		✓	✓	✓	Backup Power for the City's Critical Sites Page 2-83	2	Complete / Maintenance Ongoing	• Maintain backup power systems for City Hall and the Community Center.	Backup power generation systems for City and the Community Center are maintained on an annual basis. Ongoing: Every 2-3 years

City	Hazard	Specific Hazards Addressed in the HMP ●									Mitigation Goal ◆				Issues Addressed ✓				Project Name / Strategy	Priority	Status	Impact on Buildings, Infrastructure, and the Community	Comments
		Earthquake	Wildfire	Climate Change - Drought	Energy Disruption	Windstorm	Landslide / Debris Flow	Flood / Severe Winter Storm	Pandemic	Terrorism / Mass Casualty Incident	Public Awareness	Protect Life, Property and the Environment	Partnerships and Implementation	Emergency Management	Mitigation	Preparedness	Response	Recovery					
Hidden Hills	Wildfire Energy Disruption Windstorm		●		●	●						◆	◆	◆	✓				Underground Utility Line Implementation Page 2-84	2	Ongoing	• Reduce the risk of power failure by replacing overhead power lines with underground lines to mitigate the risk of power failure and wildfires during periods of high winds.	Continuing to work with SCE to plan, approve permits, inspect, and install underground power systems. Ongoing: Every 1-2 years
Hidden Hills	Wildfire		●									◆		◆	✓	✓			Brush Clearance Program Page 2-84	1	New / Ongoing	• Reduces the risk of a wildfire and its impact to nearby homes.	Expanded brush clearance using goats around the community's perimeter that interfaces with open space. Ongoing: Every 1-2 years

Malibu

City	Hazard	Specific Hazards Addressed in the HMP ●									Mitigation Goal ◆				Issues Addressed ✓				Project Name / Strategy	Priority	Status	Impact on Buildings, Infrastructure, and the Community	Comments
		Earthquake	Wildfire	Climate Change - Drought	Energy Disruption	Windstorm	Landslide / Debris Flow	Flood / Severe Winter Storm	Pandemic	Terrorism / Mass Casualty Incident	Public Awareness	Protect Life, Property and the Environment	Partnerships and Implementation	Emergency Management	Mitigation	Preparedness	Response	Recovery					
Malibu	All Hazards (includes impacts related to Climate Change, i.e., increased flood, wildfire, etc.)	●	●	●	●	●	●	●	●	●		◆	◆			✓	✓		Bluffs Park Improvement Project Page 2-85	1	In Progress	• Improves public safety in the event that a mass emergency shelter is required.	Working to upgrade critical infrastructure roofing to improve reliability for emergency shelter.
Malibu	Flood							●				◆			✓				Catch Basin and Culvert Upgrades Page 2-86	1	Complete	• Will reduce risk and mitigate the impact of flood and landslides on new and existing construction.	Completed upgrade to City catch basins and culverts to increase capacity.
Malibu	All Hazards (includes impacts related to Climate Change, i.e., increased flood, wildfire, etc.)	●	●	●	●	●	●	●	●	●		◆	◆			✓	✓		Excavation and Emergency Shelter at Zuma Beach Page 2-86	1	Complete	• Improves public safety in the event that a mass evacuation is required.	Completed coordination with LA County Beaches to develop the Zuma Beach parking lot as an emergency shelter location and secure access.
Malibu	• Landslide • Flood						●	●				◆		◆	✓	✓			Las Flores Road Canyon Improvements Page 2-88	1	In Progress	• Will reduce risk and mitigate the impact of flood on new and existing construction in the Las Flores Creek area. • Improves public safety in the event that a mass evacuation is required.	Working to improve pavement and drainage to reduce flooding and erosion as well as maintain evacuation route reliability.
Malibu	• Wildfire • Windstorm		●			●						◆			✓				Tree Removal in City Right-of-Way Page 2-88	1	Ongoing	• Reduces the risk of wildfire. • Maintains critical infrastructure.	Continue to identify and remove trees to maintain a safe distance from power poles and reduce fire risk (as part of the Annual Street Maintenance). Ongoing: As funding becomes available / as needed according to public works
Malibu	All Hazards (except Pandemic)	●	●	●	●	●	●	●		●		◆		◆	✓	✓			City of Malibu GIS Upgrade Page 2-89	1	Complete	• Will reduce risk and mitigate the impact of hazards on new construction by improving local land use planning.	Completed GIS upgrades to incorporate more information regarding trails, geological sensitive areas, tsunami maps, etc.

City	Hazard	Specific Hazards Addressed in the HMP ●									Mitigation Goal ◆				Issues Addressed ✓				Project Name / Strategy	Priority	Status	Impact on Buildings, Infrastructure, and the Community	Comments
		Earthquake	Wildfire	Climate Change - Drought	Energy Disruption	Windstorm	Landslide / Debris Flow	Flood / Severe Winter Storm	Pandemic	Terrorism / Mass Casualty Incident	Public Awareness	Protect Life, Property and the Environment	Partnerships and Implementation	Emergency Management	Mitigation	Preparedness	Response	Recovery					
Malibu	Flood							●			◆	◆	◆	◆	✓				Flood Actions Page 2-90 FEMA MAP Program Participation Letter Pages 2-91 to 2-92	1	Complete / Ongoing	• May add requirements to land use planning and new construction permits. • Will reduce risk and mitigate the impact of flood on new construction.	Included mitigation goals in the City of Malibu General Plan (see Mitigation Plan strategy). In addition, Flood Warning and Preparedness information is made available via the City of Malibu web site (Emergency Preparedness Library). Finally, the City of Malibu is a participant in the 2012 FEMA California Coastal Analysis and Mapping Project/Open Pacific Coast Study (CCAMP). These efforts will address gaps in required engineering and mapping for high flood risk areas impacted by coastal flooding, levee systems, and other flood hazards (e.g., lakes, rivers, and ponds). Revised flood maps have been developed and City has adjusted flood zones along the coast. Ongoing: As funding becomes available
Malibu	Flood							●				◆			✓				Malibu Flood Mitigation Plan Page 2-93	1	Complete / Ongoing	• May add requirements to land use planning and new construction permits. • Will reduce risk and mitigate the impact of flood on new construction.	Flood specific goals included in the City of Malibu General Plan. Ongoing updates to mitigation goals and the General Plan are performed (as required). Ongoing: As funding becomes available
Malibu	Flood							●				◆				✓	✓		Annual Street Pavement Project Page 2-94	2	Ongoing	• Maintains critical transportation infrastructure.	Rehabilitation work is performed annually. Projects have included Broad Beach Road, Malibu Canyon Road, Civic Center Way, and Cross Creek Road. The City continues to perform annual road rehabilitation projects as necessary. Ongoing: As roads require rehabilitation / as funding becomes available
Malibu	All Hazards	●	●	●	●	●	●	●	●	●		◆		◆		✓	✓		FM Alert System Page 2-94	2	New	• Maintain and improve critical communication methods during a disaster.	In the process of securing funding for the license and infrastructure, as well as funding for 2,000 residential receivers to implement an FM Alert System. Timeline: 1 year
Malibu	All Hazards	●	●	●	●	●	●	●	●	●		◆		◆		✓	✓		Broadband Improvements for Emergency Communications Page 2-95	2	New	• Maintain and improve critical communication methods during a disaster.	The City of Malibu is looking to install conduits around the city and improve Broadband Capabilities. Timeline: 1 year

Westlake Village

City	Hazard	Specific Hazards Addressed in the HMP ●									Mitigation Goal ◆				Issues Addressed ✓				Project Name / Strategy	Priority	Status	Impact on Buildings, Infrastructure, and the Community	Comments
		Earthquake	Wildfire	Climate Change - Drought	Energy Disruption	Windstorm	Landslide / Debris Flow	Flood / Severe Winter Storm	Pandemic	Terrorism / Mass Casualty Incident	Public Awareness	Protect Life, Property and the Environment	Partnerships and Implementation	Emergency Management	Mitigation	Preparedness	Response	Recovery					
Westlake Village	All Hazards	●	●	●	●	●	●	●	●	●		◆	◆	◆		✓	✓		Communications Improvements Page 2-97	1	 Ongoing	• May add requirements to new construction permits for communications infrastructure. • Will provide for better response and coordination by city personnel during and after a hazardous event.	Westlake Village continues to work with wireless phone carriers to improve mobile phone reception in the areas of the city that are not adequately covered by wireless networks. The County-wide Integrated Radio System (CWIRS) was deployed. Furthermore, the City installed a satellite-based computer network that allows the EOC to connect to the Internet in the event of a disruption to the landline computer network. The system is regularly tested during power outages and the EOC is able to remain connected to the Internet. Ongoing: As funding becomes available
Westlake Village	All Hazards (except Pandemic)	●	●	●	●	●	●	●		●		◆		◆	✓	✓			City of Westlake Village GIS Upgrade Page 2-98	1	 Complete / Ongoing	• Will reduce risk and mitigate the impact of hazards on new construction by improving local land use planning.	The Geographic Information System was updated and higher resolution maps were created of the Westlake Reservoir, the FEMA floodplain, and the fire hazard areas. A fire hazard severity map was created. Training of personnel on the GIS was conducted and will continue to be performed on an ongoing basis. Ongoing: As funding becomes available

City	Hazard	Specific Hazards Addressed in the HMP ●									Mitigation Goal ◆				Issues Addressed ✓				Project Name / Strategy	Priority	Status	Impact on Buildings, Infrastructure, and the Community	Comments
		Earthquake	Wildfire	Climate Change - Drought	Energy Disruption	Windstorm	Landslide / Debris Flow	Flood / Severe Winter Storm	Pandemic	Terrorism / Mass Casualty Incident	Public Awareness	Protect Life, Property and the Environment	Partnerships and Implementation	Emergency Management	Mitigation	Preparedness	Response	Recovery					
Westlake Village	All Hazards (includes impacts related to Climate Change, i.e., increased flood, wildfire, etc.)	●	●	●	●	●	●	●	●	●		◆		◆		✓	✓		Emergency Power Generation Page 2-99	1	Complete / Maintenance Ongoing	• Improves internal capabilities at critical City facilities.	Generators were purchased for the EOC and the Community Room. The City must conduct a study to determine the feasibility of rewiring City Hall and the Community Rooms to provide entire facility rather than only select rooms with backup power in the event of an outage. Study must also be conducted to assess the practicality of replacing the City's diesel fuel generators with battery storage units. The city of Westlake Village also entered an MOU with the Clean Power Alliance of Southern California (CPA) in October 2022 for the design, installation, and operation of a solar plus storage system with emergency power generation capability through the power ready program. The project is currently scoped to include replacement of the Civic Center roof, installation of solar panel arrays on the new roof, and installation of a battery that is large enough to provide adequate backup power generation during an emergency, inclusive of operating the cooling center at the community rooms at the Civic Center. The project is anticipated to be completed in 2025. Timeline: 1-2 years Ongoing: As funding becomes available
Westlake Village	Wildfire		●								◆	◆			✓				Smoke Detector Installation Page 2-100	1	Complete / Ongoing	• Will encourage residents with existing structures built prior to 1986 to install smoke detectors. This will mitigate the impact of fire on existing buildings.	A program to educate the public about the importance of installing smoke detectors and replacing batteries periodically was instituted. Information was disseminated to the public through articles in a series of city newsletters. Ongoing: As funding becomes available

City	Hazard	Specific Hazards Addressed in the HMP ●									Mitigation Goal ◆				Issues Addressed ✓				Project Name / Strategy	Priority	Status	Impact on Buildings, Infrastructure, and the Community	Comments
		Earthquake	Wildfire	Climate Change - Drought	Energy Disruption	Windstorm	Landslide / Debris Flow	Flood / Severe Winter Storm	Pandemic	Terrorism / Mass Casualty Incident	Public Awareness	Protect Life, Property and the Environment	Partnerships and Implementation	Emergency Management	Mitigation	Preparedness	Response	Recovery					
Westlake Village	• Wildfire • Windstorm		●			●						◆		◆	✓				Tree Census Page 2-101	1	 Complete / Ongoing	• May result in additional tree clearing or maintenance requirements for new commercial and residential development properties.	The City's Public Works personnel identified and inspected every tree on public property in the City. Trees determined to be hazardous were cut down. The City continues to assess trees annually, and trees are cycled in the program and trimmed at an average of every 3 years. In addition, a GIS tree mapping program has developed. A Heritage Tree Ordinance was also adopted in 2018 (updated in 2022/2023) to identify trees in the city with particular significance to be monitored more closely. Ongoing: Every 3 years
Westlake Village	Flood							●				◆		◆		✓	✓		Annual Street Resurfacing Program Page 2-102	2	 Ongoing	• Maintains critical transportation infrastructure.	Ongoing effort. In 2016/17 completed asphalt overlay work on the following streets: Three Springs Drive, Fallview Rd., Timbridge Ct., Snowpeak Dr., Torchwood Pl., Yellowwood Dr., Aspen View Ct., Woodburn Ave., Carrie Pl., South Shore Pla., Sandpiper Ct., Royal Glen Rd., Lyndbrook Ct., Trowbridge Ct., Tynebourne Ct., Langspur Ct., Beaucroft Ct., Bedforhurst Ct., Village School Rd., Shropshire Dr., Dunraven Ct., Bain Ct., Hardfirled Ct., Havington Ct., Orchard View Ct. In 2017/2018 completed asphalt overlay work on the following streets: Kristen Lee Dr., Denver Springs Dr., Wellbrook Dr., Montview Ct., Grand Oaks Dr., Village Center Rd., and Greengate Ct. Completed 2016/17 slurry seal work on the following streets: Lindero Canyon Road , Oak Crest Drive and Park Terrace Completed slurry work in 2017/18 Three Springs neighborhood, First Neighborhood, Triunfo Canyon Rd, La Tienda Rd, and Russell Ranch Rd. For the past several years, Westlake Village has partnered with the City of Agoura Hills leading to reduced overall contract costs for both cities. Ongoing: Every year

City	Hazard	Specific Hazards Addressed in the HMP ●									Mitigation Goal ◆				Issues Addressed ✓				Project Name / Strategy	Priority	Status	Impact on Buildings, Infrastructure, and the Community	Comments
		Earthquake	Wildfire	Climate Change - Drought	Energy Disruption	Windstorm	Landslide / Debris Flow	Flood / Severe Winter Storm	Pandemic	Terrorism / Mass Casualty Incident	Public Awareness	Protect Life, Property and the Environment	Partnerships and Implementation	Emergency Management	Mitigation	Preparedness	Response	Recovery					
Westlake Village	All Hazards (includes impacts related to Climate Change, i.e., increased flood, wildfire, etc.)	●	●	●	●	●	●	●	●	●		◆		◆		✓	✓		Advanced Emergency Training Page 2-103	2	Ongoing	• Improves public preparedness and mitigation education and hazard awareness.	Advanced training is provided to CERT members every year and will continue to be provided. The COG offers 2 to 3 CERT classes every year. The City of Malibu hosted shelter training to which Westlake sent representatives. Westlake Village offers many different trainings to the CERT team and rotates topics to keep the team engaged and prepared. Ongoing: Every year

City	Hazard	Specific Hazards Addressed in the HMP ●									Mitigation Goal ◆				Issues Addressed ✓				Project Name / Strategy	Priority	Status	Impact on Buildings, Infrastructure, and the Community	Comments
		Earthquake	Wildfire	Climate Change - Drought	Energy Disruption	Windstorm	Landslide / Debris Flow	Flood / Severe Winter Storm	Pandemic	Terrorism / Mass Casualty Incident	Public Awareness	Protect Life, Property and the Environment	Partnerships and Implementation	Emergency Management	Mitigation	Preparedness	Response	Recovery					
Westlake Village	All Hazards (includes impacts related to Climate Change, i.e., increased flood, wildfire, etc.)	●	●	●	●	●	●	●	●	●	◆	◆	◆	◆	✓	✓	✓		Public Emergency Preparedness Page 2-104	2	Ongoing	• Improves public preparedness and mitigation education and hazard awareness.	Emergency Preparedness Plan (for residents) updated and is available through the City's website. Also, Los Angeles County established the California Fire Alliance which includes an information campaign aimed at educating the public about wildfire safety. In addition, the Los Angeles County Fire Department developed the Ready Set Go Wildfire Action Plan to inform residents of actions they can take to keep them safe from wildfires. Finally, Westlake Village and Agoura Hills hosted a joint emergency preparedness event in August 2010 aimed at educating the public. In coordination with the LA County Sheriff, Westlake Village held an Emergency Preparedness event in November 2022. Further public preparedness efforts ongoing. Ongoing: As funding becomes available / as needed based on emergency manager needs

City	Hazard	Specific Hazards Addressed in the HMP ●									Mitigation Goal ◆				Issues Addressed ✓				Project Name / Strategy	Priority	Status	Impact on Buildings, Infrastructure, and the Community	Comments
		Earthquake	Wildfire	Climate Change - Drought	Energy Disruption	Windstorm	Landslide / Debris Flow	Flood / Severe Winter Storm	Pandemic	Terrorism / Mass Casualty Incident	Public Awareness	Protect Life, Property and the Environment	Partnerships and Implementation	Emergency Management	Mitigation	Preparedness	Response	Recovery					
Westlake Village	Flood							●				◆	◆	◆	✓				Triunfo Creek Bridge Resurfacing Page 2-105	2	Completed	• Resurfaced bridge deck for maintenance to reduce the risk of flood.	Completed in 2017. LA County designed and executed the construction contract.
Westlake Village	All Hazards	●	●	●	●	●	●	●	●	●		◆		◆		✓	✓		Mobile EOC Page 2-105	2	New	• Aims to enhance disaster response capabilities by providing a flexible and mobile platform for city staff to deploy to an Incident Command System (ICS) while functioning as an EOC.	The City of Westlake Village would like to purchase a vehicle to serve as a mobile Emergency Operations Center. A mobile EOC would allow city staff to deploy to an ICS while operating as an EOC. This vehicle would be equipped with lights, speakers, radio repeaters, and more in order to help inform residents of ways to mitigate disasters while they occur. Ongoing: As funding becomes available
Westlake Village	Wildfire		●									◆		◆		✓	✓		Home Hardening & Defensible Space Fire Program Page 2-106	1	New / Ongoing	• Mitigates the impact of wildfires by enhancing the resilience of homes in a Very High Fire Severity Zone.	The City of Westlake Village would like to establish a grant program that provides funding for homeowners that will be used for home hardening. This includes vent and chimney coverings, gutter maintenance, and creation of defensible zones per Cal Fire's specifications. Bolstering home hardening and defensible spaces will mitigate damage caused by wildfires. This program would protect residents and homes in Westlake Village, most of which is in a Very High Fire Severity Zone. (The City would need to pursue grant funding for this project). Ongoing: As funding becomes available

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Strategy Organization

The Mitigation Strategies presented provide a listing of activities that the Region (normally through individual city departments) and citizens can implement to reduce risk. They reflect ongoing activities and future actions to be taken in order to reduce the loss of property and life. All of the projects listed were evaluated in terms of the benefit versus cost and were found to be beneficial (see Section 5: Plan Maintenance and Monitoring, Economic Analysis of Mitigation Projects for an explanation of the evaluation process utilized).

The strategies are organized within the following matrix. Data collection, research and stakeholder participation were used to develop the hazard mitigation strategies listed. The following categories of information are provided for each strategy:

Hazard	The type of hazard that the strategy addresses. Multi-Hazard mitigation strategies provide strategies that can be applied to multiple or all hazards.
Project Name	Name of the mitigation project strategy.
Status	Project status, e.g., Complete, Partially Complete, Ongoing, Removed (Cancelled), Discontinued, etc.
Strategy	Strategy description.
Action Items	Actions that will be completed to implement (or continue) the strategy.
Coordinating Department	The department with regulatory responsibility to address the named hazard, or that is willing and able to organize resources, find appropriate funding, or oversee implementation, monitoring, and evaluation. Participating departments are listed with the main department responsible in BOLD.
Timeline/Completion Date/Priority	The estimated timeframe for implementation along with a general implementation priority.
Total Cost / Benefit Cost Ratio (for new projects)	Estimated cost of the project. BCR for new mitigation projects
Funding Source(s)	Where the funding will be obtained.
Constraints	Constraints may apply. These constraints may include a lack of staff, lack of funds, or vested property rights which might expose the Region to legal action as a result of adverse impacts on private property.
Implementation Description	A brief description of activities associated with the project.
Plan Goals Addressed The plan goals addressed by each project are divided into four categories (see check boxes below) and are included as a method to monitor and evaluate mitigation plan progress.	
☐ Public Awareness	☐ Protect Life, Property, and the Environment
☐ Partnerships and Implementation	☐ Emergency Management

Detailed mitigation strategies for the Las Virgenes-Malibu Council of Governments are provided in the following sections. The mitigation strategies provide detailed action items that support the strategy. Common mitigation strategies that pertain to the entire Las Virgenes-Malibu Region are listed under "Regional Mitigation Strategies". Mitigation strategies that focus on one jurisdiction are contained in separate sections for each city. City specific mitigation strategies were submitted from various departments within each city. Mitigation strategies were reviewed and approved by the Steering Committee and Planning Group.

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HAZARD MITIGATION STRATEGY PROJECTS

The following Hazard Mitigation Strategies were included in the 2018 HMP, followed by the 2024 actions towards the end of each section. Additionally, each project heading includes whether it was a project brought over from the 2018 HMP or is being added as part of the 2024 HMP. An update on the status of each project from the previous Hazard Mitigation Plan is provided in the following tables for regional and city specific projects. Additional information related to mitigation activities since the previous HMP are included (as applicable) under specific projects or as new projects. The "Status" also indicates whether the project is new, ongoing, modified, or completed since the previous HMP. Additionally, the "Project Origin" along with the year specified in the project heading indicates whether the project is from the previous HMP or a new addition in this update. If any projects were not carried over from the previous HMP (where applicable), a section titled "Projects Currently Inactive or Not Applicable" is included at the beginning of each City Specific Mitigation Projects section, along with a rationale for their exclusion. No Regional Mitigation Projects were excluded from the 2024 update.

Regional Mitigation Projects

Hazard Mitigation Information Campaigns (2018)

Category	Description
City	All LVMCOG Cities: Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village
Hazard	All Hazards
Project Name	**Hazard Mitigation Information Campaigns**
Status	Ongoing / Modified
Project Origin	2018 LVMCOG MJHMP
Strategy	Conduct Hazard Mitigation and Disaster Preparedness Events and/or Information Campaigns to coincide with National Disaster Preparedness Month in September
Action Items	• Schedule workshop and information campaign • Develop program • Advertise the workshop or information campaign (city web page, city TV, and local news) • Conduct the workshop or information campaign
Coordinating Department	LVMCOG, Public Safety, Emergency Management, Emergency Services
Timeline/Completion Date/Priority	Annual Program / Priority 1
Total Cost	None, in-house staff time
Funding Source(s)	General Funding
Constraints	Time / Resources
Implementation Description	Conduct public information efforts to review Disaster Preparedness and Mitigation to promote public participation and awareness. Workshop topics: • Earthquake Mitigation and Preparedness • Wildfire / Fire Mitigation and Preparedness • Climate Change Mitigation and Preparedness • Drought Mitigation and Preparedness • Landslide Mitigation and Preparedness (including Debris Flow) • Severe Wind/Wind Storm Mitigation and Preparedness • Severe Heat Mitigation and Preparedness • Severe Cold Mitigation and Preparedness • Flood and Winter Storm Mitigation and Preparedness • Terrorism Mitigation and Preparedness • Cyber Security Mitigation and Preparedness

Plan Goals Addressed			
X	Public Awareness	X	Protect Life, Property, and the Environment
X	Partnerships and Implementation		Emergency Management

Implement Mitigation and Preparedness Campaigns (2018)

Category	Description
City	All LVMCOG Cities: Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village
Hazard	All Hazards
Project Name	**Implement Mitigation and Preparedness Campaigns**
Status	Ongoing / Modified
Project Origin	2018 LVMCOG MJHMP
Strategy	Implement Ongoing Information Campaign to Promote Disaster Mitigation and Preparedness
Action Items	**All LVMCOG Cities** • Develop informational pages, announcements, and supporting materials • Obtain electronic and/or hard copy mitigation and preparedness handouts (sources include Ready.gov, NOAA, USGS, and the American Red Cross) • Include information in city web pages and city broadcast announcements • Investigate other opportunities to reach the public such as radio interviews and press releases • CERT Training • Participant in the County of Los Angeles Genasys Protect (Zonehaven Aware) notification project which establish designated evacuation zone area names to assist with regional evacuation notifications. A public awareness campaign was also performed to apprise all residents in the COG cities of the information platform. • Implementation of mass notification systems **Agoura Hills** • Promotion of the City's AH Alert (CodeRed) mass notification system. Promotion include sign up masses, and social media reminder notifications • At the conclusion of COVID, worked with Los Angeles County Fire to restart community CERT training classes. First training held on July 11, 2023 in Agoura Hills. • City participated in the 2022 County of Los Angeles Fire Departments distribution of NOAA Weather Radios. Radios provide to LA County residents to keep them apprise of weather and other emergency notifications. • 2018 hosted post Woolsey Wildfire workshop with LA County Fire to answer questions, and educate residents on continued fire safety and proper equestrian evacuation • Conducted community Wildfire/Earthquake preparedness door-to-door walk with Mayor and City CERT members • Hosted American Red Cross Shelter Management Training for applicable City EOC staff, City CERT volunteers and neighboring City employees in March 2022, July 2022, and March 2023. • In 2022, the City updated its emergency services webpage to include a section on Home Hardening. Information and resources area available on home hardening technologies and educational pieces to assist the public with home hardening. • In 2023, the City implemented a Home Hardening Grant program, whereby one time grants in the amount of $1000 are available to eligible Agoura Hills property owners to use toward home hardening residential homes.
Coordinating Department	LVMCOG, Public Safety, Emergency Management, Emergency Services
Timeline/Completion Date/Priority	Ongoing with Annual Reviews and Updates / Priority 1
Total Cost	None, in-house staff time
Funding Source(s)	General Funding
Constraints	Time / Resources
Implementation Description	Provide disaster mitigation and preparedness bulletins via city web pages, city TV, local news, and/or other media.

Plan Goals Addressed			
X	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation		Emergency Management

Business Outreach Disaster Mitigation and Planning Program (2018)

Category	Description
City	LVMCOG Cities: Agoura Hills, Calabasas, Hidden Hills, Westlake Village
Hazard	All Hazards
Project Name	**Business Outreach Disaster Mitigation and Planning Program**
Status	Ongoing / Modified
Project Origin	2018 LVMCOG MJHMP
Strategy	Work with local business groups (Chambers of Commerce, business associations, business parks, etc.) to encourage disaster mitigation and planning for local businesses.
Action Items	• Meet with local business groups and/or make information available to increase awareness of the Hazard Mitigation Plan, mitigation programs, and planning information. • Make available and distribute disaster mitigation and preparedness information (information sources include Ready.gov and the American Red Cross). • Communicate to local businesses via city provided information resources (i.e., web pages, notification and alert resources, publications, etc.).
Coordinating Department	Public Safety, Emergency Management, Emergency Services
Timeline/Completion Date/Priority	Ongoing with Annual Reviews / Priority 1
Total Cost	None, in-house staff time
Funding Source(s)	General Funding
Constraints	Time / Resources

Implementation Description	• Identify local business groups
	• Westlake Village partners with the local chamber of commerce for a "Business Census" that identifies all businesses in Westlake Village. The last census was completed in 2017. The new version of this document will be available within the next year.
	• Make information available to local business groups. Topics may include:
	  ○ Business Hazard Mitigation Programs
	  ○ Earthquake Mitigation and Preparedness for the workplace
	  ○ Wildfire / Fire Mitigation and Preparedness for the workplace
	  ○ Climate Change / Severe Heat / Severe Cold / Drought Mitigation and Preparedness for the workplace
	  ○ Landslide and Debris Flow Mitigation and Preparedness for the workplace
	  ○ Severe Wind/Wind Storm Mitigation and Preparedness for the workplace
	  ○ Flood and Severe Winter Storm Mitigation and Preparedness for the workplace
	  ○ Terrorism and Mass Casualty Event Mitigation and Preparedness for the workplace
	  ○ Cybersecurity preparedness for the workplace
	• Work with the Los Angeles County Sheriff to establish programs increase community involvement and vigilance. For example, the City of Westlake Village has established a Business Watch Program to disseminate information and encourage participation.
	• Agoura Hills AH Alert (CodeRed) mass notification system is available for businesses to register and use. Currently, there are 614 business users in the system. NOTE: Additional Agoura Hills business outreach programs are pending.

Plan Goals Addressed			
X	Public Awareness	X	Protect Life, Property, and the Environment
X	Partnerships and Implementation		Emergency Management

Continue to Implement, Revise and Maintain the Las-Virgenes-Malibu Multi-Jurisdiction Hazard Mitigation Plan (2018)

Category	Description
City	All LVMCOG Cities: Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village
Hazard	All Hazards
Project Name	**Continue to Implement, Revise and Maintain the Las-Virgenes-Malibu Multi-Jurisdiction Hazard Mitigation Plan**
Status	Complete for 2018 / Maintenance Ongoing
Project Origin	2018 LVMCOG MJHMP
Strategy	The LVMCOG will continue to coordinate with the cities of Agoura Hills, Calabasas, Hidden Hills, Malibu and Westlake Village to update as needed the Multi-Jurisdictional Hazard Mitigation Plan.
Action Items (recurring)	• Conduct an annual review of the plan. • Implement and monitor all mitigation strategies within the stated time periods. • Plan action items will continue to address at least one, if not all, plan goals: Public Awareness, Partnership and Implementation, Protect Life, Property, and the Environment, and Emergency Management. **Agoura Hills** • The current 2018 COG HMP is available for review on the City's website.
Coordinating Department	Las Virgenes-Malibu Council of Governments (LVMCOG)
Timeline/Completion Date/Priority	Ongoing / Reviewed Annually Priority 1
Total Cost	Plan Maintenance at $10K to $15K per Year
Funding Source(s)	General Funding
Constraints	Time and Resources
Implementation Description	The Multi-Jurisdiction Hazard Mitigation Plan was updated in 2011, 2013, and 2018 as part of the strategy.

Plan Goals Addressed			
X	Public Awareness	X	Protect Life, Property, and the Environment
X	Partnerships and Implementation	X	Emergency Management

Critical Infrastructure Assessment (2018)

Category	Description
City	All LVMCOG Cities: Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village
Hazard	All Hazards
Project Name	**Critical Infrastructure Assessment**
Status	Ongoing/Modified
Project Origin	2018 LVMCOG MJHMP
Strategy	Conduct assessments of long term support for critical infrastructure.
Action Items	1. Continue to monitor the infrastructure that is most crucial to the city during an emergency event 2. Develop and implement strategies to ensure that the key infrastructure required by the city are available during a disaster
Coordinating Department	Building and Safety
Timeline/Completion Date/Priority	Ongoing with Annual Reviews / Priority 1
Total Cost	None, in-house staff time
Funding Source(s)	General Funding
Constraints	Time
Implementation Description	**All Cities** • Each city continually assesses the state of emergency readiness of its critical facilities. **Agoura Hills** • The following sites have been identified as critical: City Hall, EOC, Recreation & Event Center, City Yard as critical facilities. Two facilities have functional emergency power generators. • City Hall is stocked with emergency food for 32 staff and 25 volunteers for 3 days. • The City currently has cameras installed at major intersections that can be used for road assessments. • Additionally, the City has purchased a drone that can be used for hazard structure assessments. • The City has installed nine (9) Beacon Boxes in several locations in the City to assist outside public safety agencies responding to the city for an emergency event, whereby important community information is available. • Expansion of the Chesebro Interchange which include additional lanes, and left turn lanes and other improvements. Additional traffic lanes would provide assistance with egress from the northeast section of the City and equestrian community. • Installed removal traffic bollards on on Lewis Road, to provide another evacuation egress area for the northeast section of the City in the Old Agoura area to the US 101. • City assisted and worked with LACO in expediting replacement of bridge in unincorporated Agoura (Chesebro Rd) burnt by Woolsey Fire to accommodate two lanes of traffic to assist with better egress from the equestrian area **Calabasas** • The City of Calabasas participated in the SCAG Earthquake Preparedness Initiative as a member of the Ventura County Cohort. Rapid assessment forms to be used post-seismic event were pre-prepared for individual structures selected using the following criteria: high occupancy, community lifeline, history of damage, geotechnical conditions, critical infrastructure, major transportation routes and vulnerable populations. Staff continues to refine the draft assessment and will conduct future training for field inspectors. • The following sites have been identified as critical: City Hall, EOC, Tennis and Swim Center, Senior Center, Founders Hall, Calabasas Community Center, De Anza Park, Creekside preschool and the City Yard as critical facilities. The City has a functional emergency power generator at City Hall. • City Hall is stocked with emergency food and water for 30 staff and 10 volunteers for 3 days. • The City currently has portable message signs that can be installed at major intersections that can be used for traffic control.

Category	Description
Project Name	**Critical Infrastructure Assessment (continued)**
Implementation Description	**Hidden Hills** • The Hidden Hills City Hall and Community Center have been designated as critical. • Back-up generator power is available at City Hall and the Community Center. • Emergency food and water stored at City Hall. **Malibu** • Back-up generator power is available at City Hall • Emergency food, water and shelter supplies are available at City Hall **Westlake Village** • The Westlake Village Civic Center (City Hall, Community Rooms, and Library) have been identified as critical infrastructure. Additional backup critical facilities include Berniece Bennett Park storage room. • The City maintains contract staff for regular assessment of critical infrastructure and on-call availability during emergencies. • Bridges spanning the 101 freeway, waterways, and wash basins are also identified and inspected.
Plan Goals Addressed	

	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation	X	Emergency Management

Emergency Shelter Identification (2018)

Category	Description
City	All LVMCOG Cities: Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village
Hazard	All Hazards
Project Name	**Emergency Shelter Identification**
Status	Ongoing/Modified
Project Origin	2018 LVMCOG MJHMP
Strategy	Identify buildings, areas, locations, etc. within the community that can be used as Emergency Shelters in case of a hazard event.
Action Items	1. Build relationships with local hotels 2. Educate the hotels on hazards and procedures 3. Identify emergency shelters and provide detailed instructions on how to set up when activated as an emergency shelter 4. Conduct at minimum, yearly drills at the emergency shelters
Coordinating Department	Building and Safety
Timeline/Completion Date/Priority	Ongoing with Annual Reviews / Priority 1
Total Cost	In-house staff time / Other Costs TBD
Funding Source(s)	General Funds
Constraints	Time
Implementation Description	**All Cities** • All cities work with the American Red Cross to establish shelter sites and follow the ARC schedule of locations. • All cities continuously evaluate potential shelter sites. **Agoura Hills** • Designated Agoura High School and Willow School as emergency shelters. • City established lodging agreements with the local hotels to accommodate City EOC workers to guarantee lodging accommodations in the event EOC employees are unable to return home from their designated shift. **Calabasas** • Identified several school locations for possible use as emergency shelters: AE Wright Middle School, AC Stelle Middle School, Viewpoint School, and Calabasas High School. Also identified Founders Hall, the Senior Center, and the Calabasas Community Center as possible shelter locations. **Hidden Hills** • The City will be purchasing a portable generator and emergency blankets for the emergency evacuation supply cache. • Three 55 gallon water storage containers have been filled and stored. • Round Meadow School and the Community Center has been identified as evacuation locations. **Malibu** • The Malibu High School gymnasium has been screened by the Red Cross for use as an emergency shelter. The City is working with the Red Cross to identify additional locations. • The City has a Right-of Entry permit with Los Angeles County Department of Beaches and Harbors for the use of Zuma Beach parking lot during an emergency. The site may be used for staging first responders, providing support to the community, and a temporary evacuation site for community members and large animals.

Category	Description
Project Name	**Emergency Shelter Identification (continued)**
Implementation Description	**Westlake Village** • Calvary Community Church in Westlake Village and Civic Center Community rooms are designated as emergency shelter locations. • Berniece Bennett Park has been identified as an outdoor location to be used as a staging area, distribution point, or triage center in the event of an emergency. • EOP is being updated. • The City is currently in discussions with the school district regarding the school district's role in providing temporary shelter in the event of an emergency. • The City has identified additional locations including local hotels and the local YMCA facility to engage in discussions for future sheltering needs.

Plan Goals Addressed			
	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation	X	Emergency Management

Pre-Established Contracts (2018)

Category	Description
City	All LVMCOG Cities: Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village
Hazard	All Hazards
Project Name	**Pre-Established Contracts**
Status	Ongoing/Modified
Project Origin	2018 LVMCOG MJHMP
Strategy	Create pre-established contracts with local merchants to provide emergency items/materials in an emergency situation.
Action Items	Continue to assess needs and opportunities to create relationships with local merchants for potential contracts for key supplies, i.e. water, candles, canned food, etc.
Coordinating Department	Community Services
Timeline/Completion Date/Priority	Ongoing with Annual Reviews / Priority 1
Total Cost	None, in-house staff time
Funding Source(s)	General Funding
Constraints	Time
Implementation Description	**Agoura Hills** • Agreements with contractors for Emergency Services assistance established. Additionally, the city's residential franchise agreement includes language mandating emergency assistance for debris removal. • The city currently has contracts with the following companies to assist with emergency services: Burns Construction (Public Works). • Additionally, the city's residential franchise agreement includes language mandating emergency assistance for debris removal. • The city is currently in discussions with the City of Thousand Oaks over Mutual Aid Agreements. • City established lodging agreements with the local hotels to accommodate City EOC workers to guarantee lodging accommodations in the event EOC employees are unable to return home from their designated shift. **Calabasas** • Calabasas maintains contacts with local vendors and a list of contractors for emergencies. • Calabasas maintains an account with SOS Survival Products for emergency supplies. • Calabasas maintains a contract with KR Nida Communications for radio service. • The city currently has a contract with Burns Construction (Public Works) **Hidden Hills** • Hidden Hills contracts with local vendors and maintains a list of contractors for emergencies. • Community Association work crews and equipment are available to the City. **Malibu** • The city maintains a list of contractors that could be called upon to provide services and necessary items in the event of an emergency. For example, Burns Pacific provides street repair services as well as debris removal, fuel for the city's emergency generator and other services as required. **Westlake Village** • The city maintains agreements with private vendors of services in the event that City resources are overwhelmed in an emergency situation. • Contracts are maintained for items such as generator fuel, road repair, and supplies. • City is working to establish further contracts for "First rights" of food and other supplies from local wholesale and big box retailers.

Plan Goals Addressed			
	Public Awareness	X	Protect Life, Property, and the Environment
X	Partnerships and Implementation	X	Emergency Management

Hazard Awareness Public/Private Partnerships (2018)

Category	Description
City	All LVMCOG Cities: Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village
Hazard	All Hazards
Project Name	**Hazard Awareness Public/Private Partnerships**
Status	Ongoing/Modified
Project Origin	2018 LVMCOG MJHMP
Strategy	Continue to create public/private partnerships to educate and involve surrounding community regarding hazard events.
Action Items	Continue to monitor opportunities to promote hazard awareness and create public/private partnerships to promote disaster preparedness and mitigation.
Coordinating Department	Public Works, Community Services, Emergency Services
Timeline/Completion Date/Priority	Ongoing with Annual Reviews / Priority 1
Total Cost	None, in house staff time
Funding Source(s)	General Funding
Constraints	Time
Implementation Description	**All Cities** • Continue community outreach efforts. • Continue to provide information through each city's web site, media platforms, and CERT Program. • Continue to promote awareness programs through public forums, local schools, and other institutions. **Agoura Hills** • The City held a post Woolsey fire preparedness workshop in 2019 to educate businesses and residents about preparing for fire and possible evacuations. Mitigation efforts to protect their homes and businesses were discussed along with information of equine evaluation and preparedness. Multiple public safety agencies participated. • June 22, 2022, City Council Meeting hosted Genasys Protect (Zonehaven Aware) presentation to educate community on the information platform and encouraged resident to register with the platform. • September 24, 2022 – City Hosted "Preparedness Saturday" event in the Community to provide information and education on personal preparedness, AH Alert registration, CERT training classes and the CERT program. Attendees included the County of Los Angeles Fire Department. • 2023 – City implemented a "Home Hardening Grant" program where funding is available to assist residential property owners with home hardening technology or home hardening services to assist with home hardening to prevent fires. **Calabasas** • Provides business continuity information and guidance via the city website. • Calabasas is a member of the Santa Monica Mountains Fire Safe Alliance. • Emergency Preparedness in Calabasas a Fire Safe Council (EPIC) is a part of the Calabasas EOC Organization to assist with communication. **Hidden Hills** • There is no substantial business within Hidden Hills but City does work with the Community Association and Round Meadow Elementary School for hazard education and disaster preparedness. • Conducted a wildfire education seminar post Woolsey. • City installed smoke detector cameras on Bonneville Road. • City continues to conduct CERT training. • Community awareness using the monthly newsletter.

Category	Description
Project Name	**Hazard Awareness Public/Private Partnerships (continued)**
Implementation Description	**Malibu** • Malibu is a member of the Santa Monica Mountains Fire Safe Alliance. • Malibu is in the process of forging a public/private partnership with KBUU FM, a local radio station, to have direct access during an emergency to provide emergency information to the public. In addition, the City's 2023 Emergency Operations Plan update includes a community resource list which incorporates a variety of community organizations into the response network. **Westlake Village** • Hosted an emergency preparation seminar in which several vendors with emergency preparedness products were represented. • City established a Public Safety Advisory Board comprised of appointed community members and Councilmembers to meet regularly and consider public safety issues. • The city Sheriff facilitates community events during "National Night Out" for residents to engage with different public safety and disaster response assets on an annual basis. The city continues to be involved in this. • Partnerships are being created with local homeowners' associations and community groups to form Neighborhood Watch groups to encourage awareness and participation.

Plan Goals Addressed			
X	Public Awareness	X	Protect Life, Property, and the Environment
X	Partnerships and Implementation	X	Emergency Management

Tree Pruning Program and Fire Code Sections (2018)

Category	Description
City	All LVMCOG Cities: Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village
Hazard	Windstorm / Wildfire
Project Name	**Tree Pruning Program and Fire Code Sections**
Status	Ongoing/Modified
Project Origin	2018 LVMCOG MJHMP
Strategy	Create local City and utility awareness of tree pruning and Fire Code sections relevant to wind-resistant utility operations
Action Items	1. Continue to review and update current codes on tree pruning 2. Continue to conduct assessments of trees within each city that can pose a safety hazard 3. Implement (as needed) new codes regarding tree maintenance in each city's general plan
Coordinating Department	Public Works
Timeline/Completion Date/Priority	Ongoing with Annual Reviews / Priority 1
Total Cost	None, in-house staff time
Funding Source(s)	General Funding
Constraints	Time
Implementation Description	**All Cities** • All cities within the region are serviced by the Los Angeles County Fire Department. Requirements related to tree pruning and brush clearances are contained in the Los Angeles County Fire Code, Section 1117, "Clearance of Brush and Vegetation Growth". • All cities have tree pruning/maintenance programs and distribute information related to tree pruning and brush clearance via hardcopy and city websites. Examples include "A Roadmap to Fire Safety" and annual brush clearance mailers distributed by Los Angeles County. • Additional fire prevention requirements are contained in the California Fire Code and Los Angeles County Fire Code. • Calabasas has identified numerous dead trees after the 2018 Woolsey Fire and is removing them. **Agoura Hills** • 2023 – City implemented a "Home Hardening Grant" program where funding is available to assist residential property owners with fire ignitable vegetation removal. **Hidden Hills** • City has sent out public information on most fire retardant trees. • The City has expanded the brush clearance perimeter for communities near open space areas from the required 100 feet to 200 feet. **Westlake Village** • Westlake Village conducts tree pruning each year. Trees are cycled in the program and cut at an average of every 3 years.

Plan Goals Addressed			
	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation	X	Emergency Management

Communications Hardening (2018)

Category	Description
City	All LVMCOG Cities: Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village
Hazard	All Hazards
Project Name	**Communications Hardening**
Status	Ongoing
Project Origin	2018 LVMCOG MJHMP
Strategy	Continue to monitor and act to update, revise, upgrade communications networks, facilities, equipment, etc. in the Region to avoid communications problems during a hazard event.
Action Items	Continue to monitor and implement actions to harden each city's communications, including: 1. Antenna lease programs to avoid "black spots" in the Region 2. Additional repeaters to existing radio systems 3. Backup generators 4. MOU's with communications companies 5. Additional or upgraded wireless communication, (such as handheld radios) equipment for EOC's 6. Engage telecom providers in the development of a fiber broadband network.
Coordinating Department	Public Works, Building and Safety
Timeline/Completion Date/Priority	Ongoing with Annual Reviews Based on Budget Priorities / with Annual Reviews Priority 2
Total Cost	$100,000
Funding Source(s)	General Funding
Constraints	Funding
Implementation Description	**Agoura Hills, Calabasas, Hidden Hills, Westlake:** • Established (CodeRed) Finalisite Connect Inc.'s Connect-CTY system which allows each city to send out emergency messages to residents' communication devices, email accounts, and social media platforms. • Deployed the County-wide Integrated Radio System (CWIRS). • Continued participation in the Operational Area Response and Recovery System (OARRS). • The LA County Sheriff's Department implemented NIXLE which is a system to send geographically specific text messages and E-mails. **Agoura Hills** • Established AH Alert (CodeRed) mass notification system which allows each city to send out emergency messages to residents' communication devices, email accounts, and social media platforms. • The city also possesses, via Area B, and mobile base station that permits radio communication with LA County OEM, other cities, and public safety agencies. • The City of Agoura Hills possesses a BGAN Mobile Satellite Communication System to ensure reliable communications backup if EOC communication system is not available. • The city has enhanced the CERT Volunteer repeater • The city has established multiple social media accounts, such as "X" (Twitter), Instagram etc., accounts which are used for disseminating information. • The City has 12 handheld radios to assist with emergency communication. • The city currently uses an APP "See Click FIix" which is can be used to help identify hazards during severe weather events. • The city has 17 CERT Volunteers licensed HAM operators. The City EOC also has a ham radio received and equipment to communicate with its volunteers and other ham operators. • At its Kimberly Peak site, a new communication tower will be constructed by LA RICS.

Category	Description
Project Name	**Communications Hardening (continued)**
Implementation Description (continued)	• The City established a Communication Manager position to assist with over general communications, including emergency communications. • Via grant funding, the City has purchased twelve (12) satellite phones for the EOC to ensure constant and available communication should all other forms of communications fail. • The City purchases a very small aperture terminal (VAST) system to allow for emergency satellite communication in a mobile EOC environment. • The City has purchased a Emergency Communications vehicle to assist in the creation of a "mobile EOC" environment. • The City participates in quarterly radio communication drills with Area B cities utilizing the County issues radios and mobile base stations. • The City contract with Gieger Fuel to supply fueling for the city's emergency generator to keep communication devices operational. **Calabasas** • Acquired a portable repeater for the Calabasas radio system. • Implemented portable satellite Internet and phone capabilities (Portable Global Satellite Internet & Phone BGAN) • Implemented portable and stationary battery backup for AM radio, city radio and amateur (Ham) radio. Stationary backup batteries in city repeater. • Implemented remote messaging capability for the AM radio station. • Conducts a Calabasas Emergency Response Program (CERP) radio check on a weekly basis. • Planning staff are actively engaged with telecom carriers to increase wireless cell phone coverage and provide power back-up to existing wireless facilities. **Hidden Hills** • Maintains two satellite phones and two-way radios with repeaters. • Communications with all agencies. • Hidden Hills Has a mobile command post (emergency vehicle/fire truck) • Continuously evaluates deficiencies and improvement options. The City continues to monitor improvements in cellular reception. • Maintains an emergency generator at City Hall with a 2-week back-up fuel supply that will sustain the city's communication capabilities. • The City has several licensed amateur radio operators. • The City has installed antennas, repeaters and base stations throughout the City with solar and battery power backup. • A fiber optic plan is being worked on by the community to provide high speed Internet and help provide WiFi cell service. **Malibu** • Established Everbridge system which allows each city to send out emergency messages to residents' telephones. • Maintains a generator with the capability to operate all critical communications, I.T. and Emergency Operations Center (EOC) functions. • Participates in monthly radio drills with Disaster Management Area B partners. • Maintains Emergency Public Information (EPI) outlets via "X" (Twitter), Facebook and NIXLE, and has a Media Information Officer to run the EPI systems. • Maintains WiFi zones for public use at major City parks. • The City has installed antennas, repeaters and base stations throughout the City to establish radio communications with Fire, Sheriff, Amateur (Ham) radio operators and volunteer responders via radios installed in the VOPs office, which is located immediately adjacent to the City's EOC.

Category	Description
Project Name	**Communications Hardening (continued)**
Implementation Description (continued)	**Westlake Village** • Maintains a satellite computer network that will allow the EOC to access the Internet even if the landline-based network is disrupted. • Maintains a disaster response radio room with radio equipment capable of communicating with multiple counties and agencies. • Maintains radio network with disaster response team members and regular testing • Purchased a mobile satellite system (BGAN) to provide WiFi communication backup if EOC communication system is not available. • Established a social media presence as an additional source of information dissemination. • Installed roof mounted radio antenna switch for handheld radio access. • The Current repeater tower located on Via Colinas will be repaired in the fiscal year. The city hall system still works.

Plan Goals Addressed			
	Public Awareness	X	Protect Life, Property, and the Environment
X	Partnerships and Implementation	X	Emergency Management

US 101 Freeway Corridor Improvement Study (2018)

Category	Description
City	All LVMCOG Cities: Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village
Hazard	All Hazards
Project Name	**US 101 Freeway Corridor Improvement Study**
Status	Complete / Monitoring and Mitigation Projects Scheduled
Project Origin	2018 LVMCOG MJHMP
Strategy	Documented potential solutions to the transportation deficiencies of the 40-mile transportation corridor including, and surrounding (city streets and public transportation), the US 101 Freeway from State Route 23 in Thousand Oaks to State Route 110 in Downtown Los Angeles.
Action Items	Implement (if feasible) action items from the study and continue to monitor the corridor for opportunities for improvement.
Coordinating Department	Las Virgenes-Malibu Council of Governments, Los Angeles Department of Transportation, Caltrans, Los Angeles County Metropolitan Transit Authority (METRO), Southern California Association of Governments (SCAG)
Timeline/Completion Date/Priority	Complete / Monitoring Ongoing with Annual Reviews / Priority 2
Total Cost	$4.5 million
Funding Source(s)	General Fund
Constraints	Funding, Community Support
Implementation Description	• The City of Agoura Hills completed the construction of the US 101 Chesebro Interchange improvement project and now provides additional lanes for easier egress out the north eastern portion of the city. • The City of Calabasas completed a roundabout at Calabasas Road and Mureau Road Bridge. • The Lindero Canyon Interchange project construction was completed. • Hidden Hill's project to improve circulation at the 101/Long Valley entrance is out to bid. Construction should commence in 2024.

Plan Goals Addressed			
X	Public Awareness	X	Protect Life, Property, and the Environment
X	Partnerships and Implementation	X	Emergency Management

Emergency Preparedness Public Awareness Campaigns (2018)

Category	Description
City	All LVMCOG Cities: Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village
Hazard	Multi-Hazard
Project Name	**Emergency Preparedness Public Awareness Campaigns**
Status	Ongoing
Project Origin	2018 LVMCOG MJHMP
Strategy	A comprehensive program that would educate citizens about local hazards and what to do in case of hazard events.
Action Items	1. Continue to provide the public with information regarding hazards 2. Create public service TV shows on local cable channels 3. Obtain matched funding through partnerships with local business community
Coordinating Department	Community Services
Timeline/Completion Date/Priority	Ongoing with Annual Reviews / Priority 2
Total Cost	$30,000
Funding Source(s)	General Funding
Constraints	Funding
Implementation Description	**All Cities** • Los Angeles County, State, and Federal government established the California Fire Alliance which includes an information campaign aimed at educating the public about wildfire safety. • The Los Angeles County Fire Department developed the Ready Set Go Wildfire Action Plan to promote wildfire mitigation and preparedness. • LA County Shake Out Exercise is conducted annually. • Distribute information campaigns and educational materials via city-owned TV, web sites, newsletters, handouts, CERT programs, and social media. **Agoura Hills** • The City of Agoura Hills continues to air public service announcements and programs information aimed at educating the public about emergency preparedness and mitigation on its local TV channel. The program runs 24/7. • The City continues to hosts personal emergency training twice per year for the general public. (CERT). • The City's local disaster response team hosts informational training sessions several times per year. Meetings are open to the general public. • The City hosted a “Preparedness Saturday” event on September 24, 2022, to educate the community on personal preparedness. LA County Fire and the City’s CERT volunteers were also present at the event. The City hosted a “Public Safety Symposium” on April 20, 2023, with LA County Sheriff and LA County Fire and provided information on safety and preparedness. The event included a question and answers session. **Calabasas** • C TV – The Calabasas Channel airs public safety meetings and other emergency preparedness programs on local cable. • Calabasas website has educational information about disaster preparedness. • Map Your Neighborhood (MYN) Program serves to organize and educate residents in preparation for responding to a disaster. • AM radio – Calabasas radio 1630 AM for emergency broadcast information. • Finalsite Connect- WEA messaging.

Category	Description
Project Name	**Emergency Preparedness Public Awareness Campaigns (continued)**
Implementation Description	**Hidden Hills** • Preparedness information is made available via the City's web page, handouts, TV Channel, and City and Community Association newsletters. • Hidden Hills conducted a public workshop and training for Wildfire evacuation for residents and large animals. • Ongoing CERT training. **Malibu** • Malibu airs multi-hazard public safety announcements on local television. • Malibu's Media Team regularly posts preparedness information on all social media outlets. • Preparedness Public Service Announcements are regularly aired on Malibu's local radio station KBUU. • CERT classes are offered to the public three times each year. • Public Safety and Education events are held regularly throughout the year. **Westlake Village** • Westlake Village continues to provide TV, web site, newsletter (including video) and media information campaigns aimed at emergency preparedness and disaster mitigation. • Social media page established to increase awareness and participation. • "How To" video being developed to encourage residents to sign up to emergency notification systems.

Plan Goals Addressed			
X	Public Awareness	X	Protect Life, Property, and the Environment
X	Partnerships and Implementation	X	Emergency Management

Risk Assessment Project (2018)

Category	Description
City	All LVMCOG Cities: Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village
Hazard	All Hazards
Project Name	**Risk Assessment Project**
Status	Ongoing
Project Origin	2018 LVMCOG MJHMP
Strategy	Conduct a comprehensive city by city risk assessment of life and property in direct earthquake, fire, landslide and flood zones.
Action Items	• Monitor existing hazard zones and identify new hazard zones within each city of the Las Virgenes-Malibu COG Region (including new parcels and units). • Continue to update existing information as data becomes available and identify valuations of new buildings. • Continue to improve and/or add GIS technologies to better map hazard areas. • Conduct GIS training for internal staff (as applicable).
Coordinating Department	Planning, Public Works, Information Technology, Building and Safety
Timeline/Completion Date/Priority	Ongoing with Annual Reviews / Priority 2
Total Cost	$50,000
Funding Source(s)	General Funding
Constraints	Funding and resources

Category	Description
Project Name	**Risk Assessment Project (continued)**
Implementation Description	**All Cities** • Continuously monitoring risk exposure updating information as circumstances change and as new data becomes available. • Continue to add disaster mitigation goals, policies, and strategies in General Plans (as needed). • Continue to improve GIS capabilities (as needed) to better map community hazards and enable better planning decisions. **Agoura Hills** • The City of Agoura Hills was scheduled to conduct another comprehensive risk assessment of the city in 2019 (LossCAP Program Risk Management Evaluation, December 2015), but was delayed due to COVID. The City is scheduling to perform the assessment in 2023-2024. • The City of Agoura Hills updated its Geographic Information System (Archmap v.10.5). In addition, the City budgets $10,000 annually for GIS consultant services. • The City of Agoura Hills General Plan 2035 was adopted on March 24, 2010 and provides Community Safety hazard mitigation policies for flood, geological and seismic hazards, fire, hazardous materials, and emergency preparedness. • The 2021-2029 Housing Element update resulted in additional updates to many of the portions of the 20235 General Plan. Due to substantial changes to the 2010 EIR, a subsequent EIR was prepared and adopted in 2022. • The City is preparing to perform "utility undergrounding" project of distribution lines on Agoura Rd, from Ladyface Court to Kanan Rd. • In 2024, the City is schedule to perform additional "utility undergrounding" on Cornell Rd, south of Agoura Rd to Cornell Way. • In 2024, the City plans to conduct additional "utility undergrounding", as part of the City Linear Park project. Underground area identified are Roadside Dr to South of Agoura Rd. **Calabasas** • As part of the SCAG Post Earthquake Preparedness Initiative and as Ventura Cohort, the City developed a draft comprehensive listing of hazards, including high power So. California Edison transmission lines, water tanks, high pressure So. Ca Gas Company lines, vulnerable structures, unstable geotechnical conditions, Las Virgenes Water District treatment facilities and flood maps. The information was compiled for use in post-event rapid assessment inspections. • The City of Calabasas Emergency Operations Plan was adopted on May 24, 2023. • The City of Calabasas Transportation and Safety Element of the General Plan was adopted on April 26, 2023

Category	Description
Project Name	**Risk Assessment Project (continued)**
Implementation Description	**Hidden Hills** • The City of Hidden Hills General Plan continually monitored and updated (as needed) to identify elements requiring updates. Seismic, fire, landslide, flooding, and other hazardous risk programs are assessed. The General Plan is currently being assessed for a potential update. • The City of Hidden Hills continues to work with SCE to replace overhead power lines and poles with underground electrical systems. City of Hidden Hills mapped all utility poles within the City. **Malibu** • The Building and Safety Department conducted a survey to identify all of the soft story structures in the City. • The City of Malibu upgrades its GIS every year, including staffing, education, and equipment improvements. • A tree removal program was carried out to remove dead trees in the public right-of-way power line space to mitigate potential fire risks. • An assessment was conducted to evaluate overloaded/aging power and communication poles in the City. • The City of Malibu General Plan was adopted in July 2009 and is updated regularly as needed. The General Plan includes a Safety and Health Element that provides guidelines for reducing the potential for loss of life, injuries, damage to property, and social and economic dislocation resulting from major hazards throughout the community. The revised Hazard Mitigation Plan will become the new Safety Element in the General Plan. **Westlake Village** • Fire hazard zones were identified and a GIS fire hazard map was developed. Westlake Village relies on state's Fire Severity Zone mapping of the entire community. • Westlake Village has maps for each community but primarily uses Know Your Zone from LA County. Association in the City aid in individualized emergency alerts. Westlake Village also has Finalsite Connect to message individual communities. • Flood hazard zones related to Triunfo Creek and Three Springs Dam were identified and mapped using GIS. To identify flood zones Westlakes engineering team uses CALOES maps for review. • Training was conducted and will continue to be conducted on an ongoing basis. • City staff met with Cal Fire officials to review and approve safety elements of the General Plan update.
Plan Goals Addressed	

	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation	X	Emergency Management

Rehabilitation of Residential Properties (2018)

Category	Description
City	All LVMCOG Cities: Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village
Hazard	• Earthquake • Wildfire • Windstorm • Debris Flow
Project Name	**Rehabilitation of Residential Properties**
Status	Ongoing/Modified
Project Origin	2018 LVMCOG MJHMP
Strategy	Provide funds for low/moderate income residents to improve health and safety conditions.
Action Items	Continue to investigate opportunities and funding to mitigate hazards by providing funds, equipment and/or materials to residents that cannot afford to repair households that might pose safety hazards
Coordinating Department	Building and Safety
Timeline/Completion Date/Priority	Ongoing with Annual Reviews / Priority 2
Total Cost	Up to $35,000 per household
Funding Source(s)	General Funding
Constraints	Funding
Implementation Description	**Agoura Hills** • January 2023, the City adopted an Ordinance amending the 2022 California Green Building standards to establish a reach code and adopt all electrical building requirements to help build resiliency during climate change. • 2023 – The City initiated a Home Hardening Grant Program to assist residential property owners with implementing Home Hardening technologies at their residences. **Calabasas** • Calabasas maintains a Community Development Block Grant (CDBG) housing rehabilitation program that provides loans and grants to low and moderate income residents for emergency repairs, improvements to sub-standard properties, corrections for code violations, seismic retrofits and removal of lead-based paint and asbestos hazards. Up to a maximum of $7,500 and deferred zero percent loans of up to $15,000 are available to eligible homeowners who qualify as low or moderate income under U.S. Housing and Urban Development guidelines. **Hidden Hills** • The City has an aggressive program to eliminate all wood shake roofs. There are approximately 10 wood shake roofs left. **Malibu** • The City does not currently have a home rehabilitation program. **Westlake Village** • Home renovation projects to address safety hazards (as well as other repairs to improve the livability or energy efficiency of the house) for low and moderate income residents are considered on an individual basis as a part of the Housing Rehab Program funded through the federal Community Development Block Grant program.

Plan Goals Addressed			
	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation	X	Emergency Management

Advanced Community Training (2018)

Category	Description
City	All LVMCOG Cities: Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village
Hazard	All Hazards
Project Name	**Advanced Community Training**
Status	Ongoing/Modified
Project Origin	2018 LVMCOG MJHMP
Strategy	Provide advanced emergency training for community members.
Action Items	1. Provide CPR training for residents 2. Provide EMT training for residents 3. Provide more Automatic External Defibrillators (AED) 4. Provide training for residents and staff to be certified to operate AED's already present at some public buildings within the Region 5. Provide Advanced Emergency Training for residents 6. Provide Evacuation Training for Residents- KNOW YOUR ZONE GENASYS
Coordinating Department	Community Services, Los Angeles County Fire Department
Timeline/Completion Date/Priority	Ongoing with Annual Reviews / Priority 3
Total Cost	$25,000
Funding Source(s)	General Fund
Constraints	Funding, time
Implementation Description	**Agoura Hills** • The City of Agoura offers 2 CERT classes annually and continues to offer these classes. These classes are open to anyone who wishes to attend - residents and non-residents. • CERT members participated in community events in order to give residents an opportunity to learn more about emergency preparedness and to promote the CERT training classes. • The City hosted American Red Cross Shelter Training in March 2022, July 2022 and March 2023 for City Staff and CERT Volunteers, and neighboring jurisdiction staff to educate on requirements for shelter management. • The city currently has 28 active and trained members of the public on its CERT Disaster Response Team. • Bi-annual CPR/AED 1st Aid Training Classes are offered to active DRT Members. • Five Active Members of the City's DRT have received advanced medical training. The city will continue to offer this training to its DRT members as they become available. • There are currently 17 licensed Amateur Radio CERT volunteers. • The City's CERT volunteers continue to train in disaster response, providing first aid at community events, and received CPR/AED and basic first aid training every two years. • CERT volunteers have received and continued to receive Shelter Management training to assist city staff. • CERT volunteer has received active shooter response training. • July 11, 2023, LA County CERT training was provided to the community. The six weeks course provides training on personal preparedness to class attendees.

Category	Description
Project Name	**Advanced Community Training (continued)**
Implementation Description	**Calabasas** • Community Emergency Response Team (CERT) classes offered to residents annually. • CPR/AED/First Aid training for volunteers of the city continues to be offered. • Implemented a basic training component for residents in the MYN campaign. • Promotes amateur radio licensing classes on a quarterly basis to become a HAM radio operator. Over 100 ham radio licenses earned per year. • Calabasas will provide in person and social media outreach to HOAs to enhance awareness on evacuation zones and procedures. **Hidden Hills** • The CERT team has continuing training in disaster response, first aid and evacuation shelter setup. • The CERT first aid medical equipment trailer has been checked and updated. • City staff and CERT team members have been trained in active shooter response, CPR and AED use. • City emergency vehicle/fire truck fire equipment **Malibu** • 3 CERT classes are offered in Malibu every year. The City currently has trained over 300 members of the public in CERT. • Approximately 30 CERT graduates have completed additional training, registered as disaster services workers and are part of the official Malibu CERT Team. CPR/AED and First Aid classes are offered once a year at City Hall. **Westlake Village** • Westlake Village sends representatives to shelter training hosted by the American Red Cross when possible. • Provide staff and Disaster Response Team members with access to CPR/AED/First Aid training. • 2-3 CERT classes available to residents of Westlake Village annually in conjunction with the LA County Fire Department

Plan Goals Addressed			
X	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation	X	Emergency Management

Other Regional Hazard Mitigation Efforts

In addition to the regional mitigation projects listed, the following ongoing efforts are applicable for each city:

- New construction developments must meet all Los Angeles County Codes to mitigate the risk of earthquake, fire, and other disasters.
- There is a fuel modification program to mitigate the threat of wildfire that impacts structures that are within 200 feet of a state or national park.

Agoura Hills Mitigation Projects

Advanced Emergency Training (2018)

Category	Description
City	Agoura Hills
Hazard	All Hazards
Project Name	**Advanced Emergency Training**
Status	Ongoing
Project Origin	2018 LVMCOG MJHMP
Strategy	Provide advanced emergency management training to city personnel and the public.
Action Items	• Utilize existing programs such as CERT to provide advanced emergency training to volunteers. • Promote advanced emergency management training to city personnel including FEMA emergency management courses. .
Coordinating Department	Emergency Management
Timeline/Completion Date/Priority	Ongoing with Annual Reviews / Priority 1
Total Cost	$2,275 and $4,263
Funding Source(s)	General Fund
Constraints	Time
Implementation Description	• Improve Public and Staff preparedness by implementing advanced Emergency Training through existing and/or new programs. For example, the City of Agoura Hills conducted advanced medical training for CERT volunteers. Additionally, in 2022 and 2023 the City hosted American Red Cross Shelter Training for City Staff and CERT Volunteers to educate on requirements for shelter management. Further, the City of Agoura Hills hosted the Fire Preparedness Workshop in 2019 to educate the community on personal Fire Preparedness. • The City has sent multiple EOC staff members to FEMA/CALOES training sessions on Finance, Operations, and Logistics. • City staff also participated in CALOES Emergency Executive Management training held in the City of Calabasas.

Plan Goals Addressed			
X	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation	X	Emergency Management

Agoura Road Widening (2018)

Category	Description
City	Agoura Hills
Hazard	All Hazards
Project Name	**Agoura Road Widening**
Status	Ongoing / Roadway Complete, Environmental Mitigation Ongoing
Project Origin	2018 LVMCOG MJHMP
Strategy	Improve Multi-Modal Access, Emergency Bi-Pass, Improve Operational Capacity
Action Items	• Secure Funding, Design Process ,Right of Way, Construction, Environmental Mitigation • Final mitigation completed – May 22, 2022
Coordinating Department	Start Sept. 2010 / Completion Fall of 2018 / Priority 1
Timeline/Completion Date/Priority	Complete / Priority 1
Total Cost	$36,000,000
Funding Source(s)	Measure R
Constraints	Funding
Implementation Description	Roadway Complete

Plan Goals Addressed			
X	Public Awareness	X	Protect Life, Property, and the Environment
X	Partnerships and Implementation	X	Emergency Management

Annual Street Pavement Rehabilitation Project (2018)

Category	Description
City	Agoura Hills
Hazard	All Hazards
Project Name	**Annual Street Pavement Rehabilitation Project**
Status	Ongoing / Under Design
Project Origin	2018 LVMCOG MJHMP
Strategy	Maintain critical infrastructure - Reduce the potential for loss of life, injury, and economic damage to Agoura Hills residents and businesses by keeping the public roads in a state of good repair.
Action Items	• Repair and maintain local streets to ensure ingress/egress routes are clear and improve environmental safety. • Advertise for bids. Award contract. • Complete construction.
Coordinating Department	Public Works
Timeline/Completion Date/Priority	FY 2019-20 – Out to Bid 5/22/2019/End of September 2019 FY2020-21 – Out to Bid 4/14/20; End of September 2020 FY 2022-23 – Out to Bid 5/11/23; End of September 2023
Total Cost	FY 2019/20 $345,555; FY 2021-22 $992,000/FY 2022-23 - $810,000
Funding Source(s)	Measure R (Local, Road Rehab Fund), STP-L, SBI Funds; Prop C Funds
Constraints	Funding
Implementation Description	Remove & Reconstruct asphalt, and base. Replace curb ramps to current ADA Standards.

Plan Goals Addressed			
X	Public Awareness	X	Protect Life, Property, and the Environment
X	Partnerships and Implementation		Emergency Management

Fairview Road Improvement Project (2018)

Category	Description
City	Agoura Hills
Hazard	All Hazards
Project Name	**Fairview Road Improvement Project**
Status	Completed
Project Origin	2018 LVMCOG MJHMP
Strategy	Maintain critical infrastructure for emergency egress on Fairview Road.
Action Items	• Obtain approvals
Coordinating Department	Public Works
Timeline/Completion Date/Priority	Complete / Priority 1
Total Cost	Final Cost TBD
Funding Source(s)	General Fund
Constraints	Resources and Funding
Implementation Description	Obtain road improvement funding and approvals for Fairview Road.

Plan Goals Addressed			
	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation	X	Emergency Management

Roadside Bridge Widening (2018)

Category	Description
City	Agoura Hills
Hazard	Earthquake/Wildfire
Project Name	**Roadside Bridge Widening**
Status	Ongoing / Completing Design and Permitting
Project Origin	2018 LVMCOG MJHMP
Strategy	Reduce the potential for loss of life, injury, and economic damage to Agoura Hills residents and businesses from earthquake, wildfire, landslides, and the impacts of these hazards. Increase City's ability to serve the community during disaster response and recovery by mitigating risks to key infrastructure.
Action Items	• Begin and complete construction
Coordinating Department	Public Works
Timeline/Completion Date/Priority	Originally August 2018 - August 2019 – Completion Dependent on Permitting and Funding – Status Reviewed Quarterly and As Needed // Priority 2
Total Cost	$2,000,000
Funding Source(s)	HBP and Toll Credits
Constraints	Limited right of way
Implementation Description	Widen bridge to eliminate bottleneck. Install sidewalk.
Plan Goals Addressed	

	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation	X	Emergency Management

Palo Camado Bridge Widening (2018)

Category	Description
City	Agoura Hills
Hazard	Earthquake/Wildfire
Project Name	**Palo Camado Bridge Widening**
Status	Ongoing / Completing Design and Permitting
Project Origin	2018 LVMCOG MJHMP
Strategy	Reduce the potential for loss of life, injury, and economic damage to Agoura Hills residents and businesses from earthquake, wildfire, landslides, and the impacts of these hazards. Increase City's ability to serve the community during disaster response and recovery by mitigating risks to key infrastructure.
Action Items	• Begin and complete construction
Coordinating Department	Public Works
Timeline/Completion Date/Priority	Originally July 2018 - July 2020 – Completion Dependent on Permitting and Funding – Status Reviewed Quarterly and As Needed / Priority 3
Total Cost	$21 Million
Funding Source(s)	Measure R and Measure M
Constraints	Limited bridge height
Implementation Description	Widen bridge to increase capacity. Install traffic signals and sidewalks. Seismic retrofit.
Plan Goals Addressed	

	Public Awareness	X	Protect Life, Property, and the Environment
X	Partnerships and Implementation	X	Emergency Management

Culvert and Drain Improvements and Erosion Mitigation (2024)

Category	Description
City	Agoura Hills
Hazard	Flood/Severe Winter Storm/Landslide/Debris Flow
Project Name	**Culvert and Drain Improvements and Erosion Mitigation**
Status	New / Ongoing
Project Origin	2024 LVMCOG MJHMP
Strategy	Replace damaged drains and erosion, while enhancing the capability of culverts /drain inlets to today's building standards
Action Items	• Secure funding (in progress) • Design replacement of drains • Replace damaged drains and improve the capability of culverts
Coordinating Department	Public Works
Timeline/Completion Date/Priority	2026 / Priority 2
Total Cost / BCR	$400,000 / 1.68
Funding Source(s)	General Fund
Constraints	Time and Funding
Implementation Description	Improve drain and culvert capabilities to reduce the risk of flooding and landslides.

Plan Goals Addressed			
	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation	X	Emergency Management

Other City of Agoura Hills Mitigation Efforts

Emergency Power Generation

The City of Agoura Hills has completed implementation of emergency power generation capabilities for selected critical City locations. This furthers the City's ability to maintain continuity of operations during a power disruption.

Public Awareness

The City airs public service announcements via the City television channel and provides information through its web site, newsletters, and community events to promote emergency preparedness within the community. Examples are provided below:

The City of Agoura Hills utilizes the Connect-CTY (Finalsite Inc.) system to provide residents with critical information such as emergency notifications and targeted community outreach bulletins (such as road closures). Residents are encouraged to sign-up for the program via the City TV channel and newsletters. Currently the City has more than 7,100 residents signed-up for Connect-CTY.

Calabasas Mitigation Projects

Fire Code Update (2018)

City	Calabasas
Hazard	Wildfire
Project Name	**Fire Code Update**[5]
Status	Complete
Project Origin	2018 LVMCOG MJHMP
Strategy	Review and update existing city codes
Action Items	• Review existing codes relevant to fire protection and prevention in the wildland interface • Work with Los Angeles County Fire Department to enforce new codes
Coordinating Department	Los Angeles County Fire Department and Community Development
Timeline/Completion Date/Priority	Complete / Priority 1
Total Cost	None, in-house staff time
Funding Source(s)	General Fund
Constraints	Time
Implementation Description	Calabasas Building and Safety Staff changes to the fire code pending the next triennial cycle of the LA County Fire Code for review.

Plan Goals Addressed			
	Public Awareness	X	Protect Life, Property, and the Environment
X	Partnerships and Implementation	X	Emergency Management

Incentive Based Lot Mergers (2018)

City	Calabasas
Hazard	Wildfire
Project Name	**Incentive Based Lot Mergers**
Status	Complete
Project Origin	2018 LVMCOG MJHMP
Strategy	Initiate process to provide incentive for residents to merge smaller lots
Action Items	• Begin process to educate and provide incentive for residents to consolidate small lots into one larger lot • Encourage homes to be developed with enough distance from one another in order to prevent the spread of fires
Coordinating Department	Community Development
Timeline/Completion Date/Priority	Complete / Priority 2
Total Cost	$1,000,000
Funding Source(s)	General Fund
Constraints	Funding, community participation
Implementation Description	The General Plan update incentivizing small lot mergers was completed and adopted by the City Council in 2008. The 2010 Development Code updates reflect such policies. No additional incentives are required at this time.

Plan Goals Addressed			
X	Public Awareness	X	Protect Life, Property, and the Environment

[5] http://www.cityofcalabasas.com/departments/fire.html - All fire services are provided to residents through contract with the Consolidated Fire Protection District of Los Angeles County. The City receives fire protection and paramedic services as well as wildland fire protection and forestry tree service

	Partnerships and Implementation	X	Emergency Management

Green Streets Program (2024)

Category	Description
City	Calabasas
Hazard	Flooding
Project Name	**Green Streets Program**
Status	New/Ongoing
Project Origin	2024 LVMCOG MJHMP
Strategy	Create landscaped catch-basins within the right of way to capture, treat and infiltrate storm water runoff. Designed to catch rainwater at its source, the improvements work to avoid flooding and retain water resources for future use rather than allowing run-off into storm drains and ultimately the ocean.
Action Items	Continue to investigate opportunities for future installations of green street locations throughout the city.
Coordinating Department	Public Works
Timeline/Completion Date/Priority	Ongoing with Annual Reviews Priority 2
Total Cost / BCR	Current Phase: $5,000,000 / 1.97
Funding Source(s)	Measure M, Prop. 1 (Rd 1)
Constraints	Funding
Implementation Description	Calabasas has started a Green Streets program of locating green street improvements citywide. As funding becomes available, we will prioritize locations that best serve the objectives of flooding mitigation and sustainability.

Plan Goals Addressed			
	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation	X	Emergency Management

Mulholland Highway – Phase I & II (2024)

Category	Description
City	Calabasas
Hazard	Flooding/Landslide/Debris Flow/Mudslide
Project Name	**Mulholland Highway – Phase I & II**
Status	New/Under Design Phase I under construction; Phase II in design
Project Origin	2024 LVMCOG MJHMP
Strategy	Construct retaining wall, storm drain and pedestrian sidewalk improvements to increase safety for pedestrians and retain slope from failure during heavy water events.
Action Items	Design and construct improvements unique to this area and geography.
Coordinating Department	Public Works
Timeline/Completion Date/Priority	Feb. 2024 Priority 2
Total Cost / BCR	$5,500,000 / 2.05
Funding Source(s)	Measure M
Constraints	Difficult coordination with other agencies (i.e. school district, utilities)
Implementation Description	Construction of retaining wall, sidewalk improvements and necessary utility relocation has begun on Phase I. Design of Phase II is underway.
Plan Goals Addressed	

	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation	X	Emergency Management

West Calabasas Road Improvements (2024)

Category	Description
City	Calabasas
Hazard	All Hazards
Project Name	**West Calabasas Road Improvements**
Status	New/Under Design
Project Origin	2024 LVMCOG MJHMP
Strategy	Seek areas to install multi-modal improvements improving traffic safety for all users. Addresses Slope Erosion, Traffic Safety, and Pedestrian-Bicycle Safety.
Action Items	• Slope stabilization – retaining wall or pinned shotcrete in erosion prone areas • Road improvements for greater traffic flow and safety (i.e. left turn lane, bypass lane, protected bike and pedestrian improvements)
Coordinating Department	Public Works
Timeline/Completion Date/Priority	2025 Priority 2
Total Cost / BCR	$3,230,000 / 1.71
Funding Source(s)	Measure R
Constraints	Funding / Staff Resources
Implementation Description	• Currently in the design phase of the project • Following design, bid project for construction
Plan Goals Addressed	

	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation		Emergency Management

Citywide Weed Abatement Program (2024)

Category	Description
City	Calabasas
Hazard	Wildfire
Project Name	**Citywide Weed Abatement Program**
Status	New/Ongoing
Project Origin	2024 LVMCOG MJHMP
Strategy	Systematic abatement of weeds and brush in City Parks, and neighborhood districts.
Action Items	Contract with a landscape contractor to clear weeds, grass and dead plants to 200 feet from structures in city parks, public roadways and designated areas within Calabasas' four landscape Maintenance and Lighting Districts. Addresses weeds and other plant fuel too close to homes.
Coordinating Department	Public Works
Timeline/Completion Date/Priority	Ongoing with Annual Reviews Priority 1
Total Cost / BCR	$2,100,000 annually / 1.05
Funding Source(s)	City general landscape maintenance fund and LMD/LLD district revenues
Constraints	Funding
Implementation Description	Calabasas is in the second year of a four-year agreement to abate weeds, grass and dead plants.
Plan Goals Addressed	

X	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation	X	Emergency Management

Las Virgenes Creek Restoration III (2024)

Category	Description
City	Calabasas
Hazard	Flooding
Project Name	**Las Virgenes Creek Restoration III**
Status	New/Under Design
Project Origin	2024 LVMCOG MJHMP
Strategy	Restore creek and serving infrastructure for enhanced recreational use and wildlife preservation.
Action Items	Addresses sustainability/clean water, as well as wildlife preservation. Currently preparing grant applications for preliminary design. Issue RFP for restoration Award Contract Scope: • Repair and maintain storm drain outlets • Implement "soft-bottom" improvements • Initiate naturalization efforts at key locations(Lost Hills Rd & Las Virgenes Rd) • Trash pick-up as part of creek cleanup • Develop a connection to the County's hiking trail network • Potential development of fish passage infrastructure • On-going monitoring of creek/water cleanliness
Coordinating Department	Public Works
Timeline/Completion Date/Priority	2027 Priority 2
Total Cost / BCR	$4,500,000 / 1.49
Funding Source(s)	Measure W
Constraints	Time / Resources
Implementation Description	Developing partnership with other interested jurisdictions and environmental agencies to jointly seeking funding for preliminary design. Following preliminary design, partnership will seek construction funding and contractor.

Plan Goals Addressed			
	Public Awareness	X	Protect Life, Property, and the Environment
X	Partnerships and Implementation		Emergency Management

Upgrade Data Warehouse Storage (2024)

Category	Description
City	Calabasas
Hazard	All Hazards
Project Name	**Upgrade Data Warehouse Storage**
Status	New/Ongoing
Project Origin	2024 LVMCOG MJHMP
Strategy	Upgrade Data Warehouse to enhance cloud-based capabilities in the event that on-premises servers are not available.
Action Items	1. Identify the qualified service provider who can provide this service. 2. Identify the plan and capacity for the DR site 3. Purchase DR service
Coordinating Department	Information Technology
Timeline/Completion Date/Priority	2024 Priority 1
Total Cost / BCR	Estimated cost $40-50K per year / 8.21
Funding Source(s)	General Fund
Constraints	Funding and staffing
Implementation Description	To setup a cloud-based DR site for the city data infostructure. Users can still access the data in the event the on-prem data servers are not available.
Plan Goals Addressed	

	Public Awareness		Protect Life, Property, and the Environment
X	Partnerships and Implementation	X	Emergency Management

Las Virgenes Road Embankment and Shoulder Repair (2024)

Category	Description
City	Calabasas
Hazard	Landslide/Debris Flow / Flood/Winter Storm
Project Name	**Las Virgenes Road Embankment and Shoulder Repair**
Status	New
Project Origin	2024 LVMCOG MJHMP
Strategy	Storm damage repair and future damage prevention/mitigation
Action Items	Design and construction of slope and shoulder stabilization and installation of RSP to prevent future slope washout. Limit potential for future slope failures, and protect the road surface from being undermined by future slope distress.
Coordinating Department	Public Works
Timeline/Completion Date/Priority	2024 / Priority 2
Total Cost / BCR	$231,440 / 15.51
Funding Source(s)	General Fund
Constraints	Funding/Staff Resources
Implementation Description	• Damage assessment • Preliminary engineering
Plan Goals Addressed	

	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation	X	Emergency Management

McCoy Creek Mitigation/Restoration (2024)

Category	Description
City	Calabasas
Hazard	Landslide/Debris Flow / Flood/Winter Storm
Project Name	**McCoy Creek Mitigation/Restoration**
Status	New
Project Origin	2024 LVMCOG MJHMP
Strategy	Storm damage repair and mitigation
Action Items	Design and construct streambank stabilization and embankment reconstruction: section of parking lot pavement and AC dike repair. Limit potential for future slope failures, and protect the road surface from being undermined by future slope distress.
Coordinating Department	Public Works
Timeline/Completion Date/Priority	2024 / Priority 2
Total Cost / BCR	$500,200 / 1.43
Funding Source(s)	General Fund
Constraints	Funding/Staff Resources
Implementation Description	• Damage assessment • Preliminary engineering

Plan Goals Addressed			
	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation	X	Emergency Management

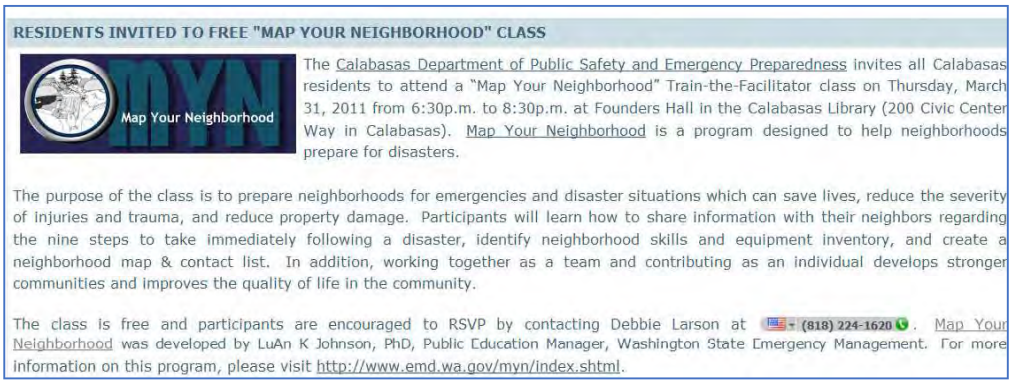
Emergency Power for Critical Facilities (2024)

Category	Description
City	Calabasas
Hazard	All Hazards
Project Name	**Emergency Power for Critical Facilities**
Status	New
Project Origin	2024 LVMCOG MJHMP
Strategy	Ensure redundant power for critical facilities
Action Items	1. Identify critical facilities in need of redundant power 2. Receive proposals and options from qualified contractor to achieve redundant power for critical city facilities
Coordinating Department	Public Safety and Emergency Preparedness, Public Works
Timeline/Completion Date/Priority	2025 / Priority 1
Total Cost / BCR	$1,000,000 / 42.78
Funding Source(s)	General Fund
Constraints	Funding
Implementation Description	Research, identify facilities, and identify redundant power options for each facility. Option #1 Develop an RFP to hire a contractor to upgrade existing generator power at the city hall complex comprised of the city hall, senior center and library. Option #2 Develop an RFP to hire a contractor to install redundant power at the senior center only as that would be the future location of the city EOC. Option #3 Develop an RFP to hire a contractor to install redundant power at the Calabasas Community center as it is the alternate city hall location identified in the city's COOP.

Plan Goals Addressed			
X	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation	X	Emergency Management

Other City of Calabasas Hazard Mitigation Efforts

- Continue the Map Your Neighborhood Program - This was a program encourages local homeowners to conduct neighborhood emergency planning.



RESIDENTS INVITED TO FREE "MAP YOUR NEIGHBORHOOD" CLASS

The Calabasas Department of Public Safety and Emergency Preparedness invites all Calabasas residents to attend a "Map Your Neighborhood" Train-the-Facilitator class on Thursday, March 31, 2011 from 6:30p.m. to 8:30p.m. at Founders Hall in the Calabasas Library (200 Civic Center Way in Calabasas). Map Your Neighborhood is a program designed to help neighborhoods prepare for disasters.

The purpose of the class is to prepare neighborhoods for emergencies and disaster situations which can save lives, reduce the severity of injuries and trauma, and reduce property damage. Participants will learn how to share information with their neighbors regarding the nine steps to take immediately following a disaster, identify neighborhood skills and equipment inventory, and create a neighborhood map & contact list. In addition, working together as a team and contributing as an individual develops stronger communities and improves the quality of life in the community.

The class is free and participants are encouraged to RSVP by contacting Debbie Larson at (818) 224-1620. Map Your Neighborhood was developed by LuAn K Johnson, PhD, Public Education Manager, Washington State Emergency Management. For more information on this program, please visit http://www.emd.wa.gov/myn/index.shtml.

- Facebook and "X" (formerly Twitter) – Social media resources are used to issue public notices. Residents can sign-up voluntarily through the City's website.

Hidden Hills Mitigation Projects

Update the City of Hidden Hills General Plan and Local Ordinances (2018)

City	Hidden Hills
Hazard	All Hazards
Project Name	**Update the City of Hidden Hills General Plan and Local Ordinances**
Status	Ongoing
Project Origin	2018 LVMCOG MJHMP
Strategy	Continue to review and update the General Plan and local ordinances for the City of Hidden Hills to reflect current conditions. The city is undergoing a General Plan assessment that could lead to an update.
Action Items	• Continue to review make adjustments to reflect changes in city conditions, most notably the Safety Element of the plan • Continue to review existing codes for possible changes or amendments
Coordinating Department	Engineering/Public Works
Timeline/Completion Date/Priority	Ongoing with Annual Reviews / Priority 1
Total Cost	None, in-house staff time
Funding Source(s)	General Fund
Constraints	Time
Implementation Description	• The City General Plan continues to incorporate elements to mitigate seismic, fire, landslide and flooding events.

Plan Goals Addressed			
X	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation	X	Emergency Management

Comprehensive Hill Slope Management Program (2018)

City	Hidden Hills
Hazard	Landslide
Project Name	**Comprehensive Hill Slope Management Program**
Status	Ongoing
Project Origin	2018 LVMCOG MJHMP
Strategy	To recognize the concern for future property damages incurred by residents
Action Items	• Continue the ongoing program that manages hill slope activity where development is already present • Continue to suggest appropriate proactive measures that govern the long-term stability of potentially active landslide areas • Prevent future development on potentially unstable hillsides and conduct geology reviews on a case by case basis
Coordinating Department	Engineering/Public Works
Timeline/Completion Date/Priority	Ongoing with Annual Reviews / Priority 1
Total Cost	None, in-house staff time
Funding Source(s)	General Fund
Constraints	Time
Implementation Description	Geological evaluations are required for all proposed hillside developments. Landslides are identified, mapped, and mitigated. In addition, the City has adopted a ridgeline protection ordinance to help preserve scenic corridors.

Plan Goals Addressed			
	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation	X	Emergency Management

Wood Shake Shingle Roof Replacement Program (2018)

City	Hidden Hills
Hazard	Wildfire
Project Name	**Wood Shake Shingle Roof Replacement Program**
Status	Ongoing
Project Origin	2018 LVMCOG MJHMP
Strategy	To providing incentives to replace older wood shake shingle roofs by residents.
Action Items	• Identify and obtain funding sources to mitigate the cost of wood shake shingle roof replacement by residents with fire resistant materials.
Coordinating Department	City of Hidden Hills Emergency Management
Timeline/Completion Date/Priority	In Progress with Annual Reviews / Priority 2
Total Cost	TBD
Funding Source(s)	General Fund
Constraints	Funding / Time
Implementation Description	The City is looking into a program to help offset the cost of replacing remaining wood shake roofs in the City. All new construction bans the installation of wood shake shingles.

Plan Goals Addressed			
X	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation		Emergency Management

Emergency Satellite Communications (2018)

City	Hidden Hills
Hazard	All Hazards
Project Name	**Emergency Satellite Communications**
Status	Maintenance Ongoing
Project Origin	2018 LVMCOG MJHMP
Strategy	Purchased satellite telephones to avoid communications problems during an emergency
Action Items	• Monitor the Service Level Agreement with the satellite communications provider • Continue ongoing maintenance and management of the satellite telephones • Purchased two new satellite phones.
Coordinating Department	Public Works, Building and Safety
Timeline/Completion Date/Priority	Complete / Maintenance Ongoing with Annual Reviews Priority 2
Total Cost	$2,000
Funding Source(s)	General Fund
Constraints	Funding
Implementation Description	• The City has satellite phone and internet ability and two-way radio communications equipment. Two-way radio batteries were recently replaced. Fire truck has emergency service communications.

Plan Goals Addressed			
	Public Awareness	X	Protect Life, Property, and the Environment
X	Partnerships and Implementation	X	Emergency Management

Advanced Emergency Training (2018)

City	Hidden Hills
Hazard	All Hazards
Project Name	**Advanced Emergency Training**
Status	Ongoing
Project Origin	2018 LVMCOG MJHMP
Strategy	Provide increased advanced emergency training for the City's Community Emergency Response Team (CERT) and staff.
Action Items	• Provide additional Advanced Emergency Training for CERT members
Coordinating Department	City of Hidden Hills Emergency Management
Timeline/Completion Date/Priority	Ongoing with Annual Reviews / Priority 2
Total Cost	$25,000
Funding Source(s)	General Fund
Constraints	Funding and time
Implementation Description	CERT training is offered on an ongoing basis: • The CERT team has continuing training in disaster response, first aid and evacuation shelter setup • The CERT first aid medical equipment trailer has been checked and updated. • City staff and CERT team members have been trained in active shooter response. • CERT training on mobile fire equipment.

Plan Goals Addressed			
	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation	X	Emergency Management

Communications Improvements (2018)

City	Hidden Hills
Hazard	All Hazards
Project Name	**City of Hidden Hills Communications Improvements**
Status	Ongoing
Project Origin	2018 LVMCOG MJHMP
Strategy	Continue to improve cellular telephone reception in areas of the City that are currently underserved.
Action Items	• Continue to work with local carriers to improve cellular telephone reception in areas of the City that are currently underserved. • Add repeaters and update existing radio systems, when necessary. • Improve community emergency notification capabilities (IPAWS).
Coordinating Department	Public Works, Building and Safety
Timeline/Completion Date/Priority	Ongoing with Annual Reviews Based on Budget Priorities / Priority 2
Total Cost	$50,000
Funding Source(s)	General Fund
Constraints	Funding
Implementation Description	• Cellular telephone and radio coverage is regularly evaluated. • Hidden Hills is now authorized to send out emergency messages to cell phones (IPAWS Wide Area Alerts). • A fiber optic plan is being worked on by the community to provide high speed Internet and help provide WiFi cell service. • Mobile command post (fire truck) has all communications.

Plan Goals Addressed			
	Public Awareness	X	Protect Life, Property, and the Environment
X	Partnerships and Implementation	X	Emergency Management

Community Evacuation Routes, Planning, and Training (2018)

City	Hidden Hills
Hazard	All Hazards
Project Name	**Community Evacuation Routes, Planning, and Training**
Status	Workshop and Training Complete / Monitoring Ongoing
Project Origin	2018 LVMCOG MJHMP
Strategy	Ensure alternate evacuation routes in case of an emergency event
Action Items	• Continue to manage alternative routes as a means of city evacuation
Coordinating Department	Engineering/Public Works
Timeline/Completion Date/Priority	Complete – Monitoring Ongoing with Annual Reviews / Priority 2
Total Cost	In-house Time Only
Funding Source(s)	General Fund
Constraints	Geographic limitations of egress routes
Implementation Description	There are only 3 points of ingress/egress (security gates) to the City of Hidden Hills: • When one of the gates is closed for any reason, signage is used to direct all persons to either or both of the open gates. • Similar signage is used for evacuation routes in the case of emergency. Plus, there is a pedestrian and equestrian exit to the Upper Las Virgenes Canyon Open Space Preserve. • Ingress and egress to the City has been improved with addition of contractor parking areas at the gates. • The City will allow school buses, for Round Meadow Elementary School, through the gates to bring students to reunification sites if Mureau Road is closed. • The City is actively working on a revision of traffic flow at the Long Valley gate, adding a turn lane and providing contractor parking areas to keep traffic flowing into and out of Hidden Hills. This roadway update will also aid traffic flow onto the Northbound 101 freeway onramp. • The City conducted a public workshop for Wildfire evacuation for residents and large animals. Training was offered to the residents on horse trailer loading and unloading. Also offered was a CHP sponsored horse trailer inspection day. • Sent out Genasys Protect (Zonehaven Protect) information to all residents.

Plan Goals Addressed			
	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation	X	Emergency Management

Storm Drain Management (2018)

City	Hidden Hills
Hazard	Flood
Project Name	**City of Hidden Hills Storm Drain Management**
Status	Ongoing
Project Origin	2018 LVMCOG MJHMP
Strategy	Continue to maintain the storm drain system to ensure that drains are free from debris to prevent flooding.
Action Items	• Continue ensure that city-owned storm drains are clear of debris.
Coordinating Department	Public Works
Timeline/Completion Date/Priority	Ongoing with Annual Reviews / Priority 2
Total Cost	$500/year
Funding Source(s)	General Fund
Constraints	None
Implementation Description	• LA County Public Works maintains the sewer system and storm drains. In the event of power failure Public Works has stand by generators to maintain 2 sewer pump stations in the City. • While the storm drains are managed by Los Angeles County, the City does work to ensure the free flow of water to prevent street flooding.

Plan Goals Addressed			
	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation		Emergency Management

Backup Power for the City's Critical Sites (2018)

City	Hidden Hills
Hazard	Power Outage, Wind, Wildfire
Project Name	**Backup Power for the City's Critical Sites**
Status	Complete / Maintenance Ongoing
Project Origin	2018 LVMCOG MJHMP
Strategy	Maintain backup power systems for City Hall and the Community Center.
Action Items	• Maintain backup power generation for City Hall and the Community Center.
Coordinating Department	Public Works
Timeline/Completion Date/Priority	Ongoing with Annual Reviews Based on Budget Priorities / Priority 2
Total Cost	$2,500/year
Funding Source(s)	General Fund
Constraints	None
Implementation Description	• Backup power generation systems for City and the Community Center are maintained on an annual basis. • Added in additional backup batteries to repeater site.

Plan Goals Addressed			
	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation	X	Emergency Management

Underground Utility Line Implementation (2018)

City	Hidden Hills
Hazard	Power Outage, Wind, Wildfire
Project Name	**Underground Utility Line Implementation**
Status	Ongoing
Project Origin	2018 LVMCOG MJHMP
Strategy	Replace overhead power lines with underground lines to mitigate the risk of power failure and wildfires during periods of high winds.
Action Items	• Continue to monitor and work with SCE to replace overhead power lines and poles with underground electrical systems.
Coordinating Department	Public Works
Timeline/Completion Date/Priority	Ongoing with Annual Reviews / Priority 2
Total Cost	None
Funding Source(s)	City General Fund and private funding if an assessment district is established.
Constraints	None
Implementation Description	• Work with SCE to plan, approve permits, inspect, and install underground power systems. Approximately 20 poles have been removed and 14 more are scheduled for removal this fiscal year. • The City has adopted an assessment district program should private residents choose to fund.

Plan Goals Addressed			
	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation	X	Emergency Management

Brush Clearance Program (2024)

City	Hidden Hills
Hazard	Wildfire
Project Name	**Brush Clearance Program**
Status	New/Ongoing
Project Origin	2024 LVMCOG MJHMP
Strategy	Expanded brush clearance around the community's perimeter that interfaces with open space.
Action Items	• Continue to carry out brush clearance efforts around the city.
Coordinating Department	Public Works
Timeline/Completion Date/Priority	Ongoing with Annual Reviews / Priority 1
Total Cost / BCR	$45,736 / 21.43
Funding Source(s)	General Fund
Constraints	None
Implementation Description	• For the last 4 years the City has done expanded brush clearance around the Communities perimeter that interfaces with open space. Instead of the required 100 feet the City uses Goats to expand to 200 feet.

Plan Goals Addressed			
	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation	X	Emergency Management

Malibu Mitigation Projects

Projects Currently Inactive or Not Applicable (from 2018 HMP)

Projects currently inactive or not applicable include those that were not carried over from the 2018 LVMCOG MJHMP, as they are either no longer relevant or active at this time. Additionally, some of these projects may now fall under the scope of other projects already included in this plan.

Project	Reason for Exclusion
City Hall Drainage Improvements	No longer applicable
Malibu Road Improvements	Not an active / scheduled project at this time
Malibu Road Storm Drain System Improvements	Drainage is owned by County Flood Control
Pacific Coast Highway Drainage Improvements	No issues with drainage in this area that need to be addressed at this time / Drainage is owned by County Flood Control
Rainsford Bridge Installation	Not applicable at this time
Road Reconstruction	Not applicable at this time
Utility Facility and Distribution Upgrades	Not applicable at this time
Water Storage	Project belongs to Water District 29

Bluffs Park Improvement Project (2018)

City	Malibu		
Hazard	All-Hazards		
Project Name	**Bluffs Park Improvement Project**		
Status	In Progress		
Strategy	Roofing upgrade for critical infrastructure to improve reliability for emergency shelter		
Project Origin	2018 LVMCOG MJHMP		
Action Items	1. Assess building and identify needs 2. Design improvements 3. Secure funding to implement the improvement project 4. Construction of improvement project		
Coordinating Department	Public Works		
Timeline/Completion Date/Priority	Scheduled for 2023/2024 Priority 1		
Total Cost	$2.5M		
Funding Source(s)	General Fund		
Constraints	Funding		
Implementation Description	In-progress.		
Plan Goals Addressed			
	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation	X	Emergency Management

Figure 66: Michael Landon Center at Bluffs Park

Catch Basin and Culvert Upgrades (2018)

City	Malibu		
Hazard	Flood		
Project Name	**Catch Basin and Culvert Upgrades**		
Status	Complete		
Project Origin	2018 LVMCOG MJHMP		
Strategy	Upgrade City catch basins and culverts to increase capacity in order to prevent flooding and landslides		
Action Items	1. Inventory catch basins and culverts 2. Identify catch basins and culverts that need upgrades 3. Design projects to increase capacity to accommodate larger water flows 4. Secure funding for project implementation 5. Implement project		
Coordinating Department	Public Works		
Timeline/Completion Date/Priority	Timeline to be determined (status reviewed annually) Priority 1		
Total Cost	$1.0M		
Funding Source(s)	General Fund		
Constraints	Funding		
Implementation Description	Complete		
Plan Goals Addressed			
	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation		Emergency Management

Excavation and Emergency Shelter at Zuma Beach (2018)

City	Malibu		
Hazard	All Hazards		
Project Name	**Excavation and Emergency Shelter at Zuma Beach**		
Status	Complete		
Project Origin	2018 LVMCOG MJHMP		
Strategy	Work with LA County Beaches to develop the Zuma Beach parking lot as an emergency shelter location and secure access.		
Action Items	1. Work with LA County Beaches to establish the Zuma Beach parking lot as an emergency shelter		
Coordinating Department	Public Works and Emergency Preparedness		
Timeline/Completion Date/Priority	Timeline to be determined (status reviewed annually) Priority 1		
Total Cost	$300K		
Funding Source(s)	General Fund		
Constraints	Funding, Time, and Permitting		
Implementation Description	Complete		
Plan Goals Addressed			
	Public Awareness	X	Protect Life, Property, and the Environment
X	Partnerships and Implementation		Emergency Management

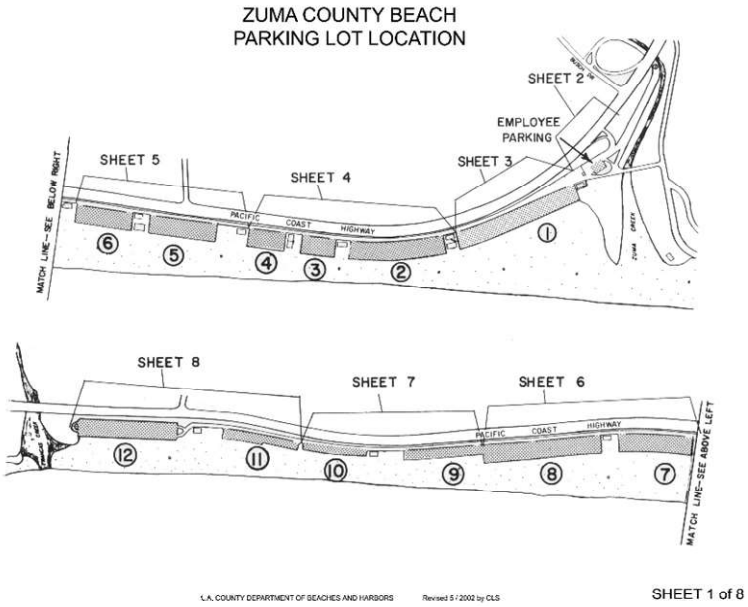


Figure 67: Zuma Beach Parking Lot

Las Flores Road Canyon Improvements (2018)

City	Malibu		
Hazard	All Hazards		
Project Name	**Las Flores Road Canyon Improvements**		
Status	In Progress		
Strategy	Improve pavement and draining to reduce flooding and erosion		
Project Origin	2018 LVMCOG MJHMP		
Action Items	1. Design road and drainage improvements to accommodate surface run-off (as identified in the Storm Drain Master Plan) 2. Secure funding to implement improvements 3. Construct road and draining improvements		
Coordinating Department	Public Works		
Timeline/Completion Date/Priority	Timeline to be determined (status reviewed annually) Priority 1		
Total Cost	$250K		
Funding Source(s)	General Fund		
Constraints	Funding		
Implementation Description	In-progress		
Plan Goals Addressed			
	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation	X	Emergency Management

Tree Removal in City Right-of-Way (2018)

City	Malibu		
Hazard	All Hazards		
Project Name	**Tree Removal in City Right-of-Way**		
Status	Ongoing		
Project Origin	2018 LVMCOG MJHMP		
Strategy	Identify and remove trees in the City Right-of-Way to maintain a safe distance from power poles and reduce fire risk.		
Action Items	1. Develop tree inventory (complete) 2. Systematically remove tress from the Right-of-Way (as part of Annual Street Maintenance)		
Coordinating Department	Public Works		
Timeline/Completion Date/Priority	Timeline to be determined (status reviewed annually) Priority 1		
Total Cost	$100K		
Funding Source(s)	General Fund		
Constraints	Funding and Time		
Implementation Description	Tree inventory complete. Tree removal in-progress/ongoing as part of Annual Street Maintenance).		
Plan Goals Addressed			
	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation		Emergency Management

City of Malibu GIS Upgrade (2018)

City	Malibu
Hazard	All Hazards
Project Name	**City of Malibu GIS Upgrade**
Status	Complete
Project Origin	2018 LVMCOG MJHMP
Strategy	Upgrade the Geographic Information Systems to incorporate more information regarding trails, geological sensitive areas, and tsunami maps etc.
Action Items	1. In progress, developing new system to utilize new technologies to better map the City and hazard areas in particular 2. Complete training and provide ongoing training to staff on how to use GIS
Coordinating Department	Planning Department
Timeline/Completion Date/Priority	Complete Priority 1
Total Cost	$40,000
Funding Source(s)	General Fund
Constraints	Funding and time
Implementation Description	GIS update complete.

Plan Goals Addressed			
	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation	X	Emergency Management

Flood Mitigation Action Plans (2018)

City	Malibu
Hazard	Flood
Project Name	**Flood Mitigation Action Plans**
Status	Complete / Ongoing
Project Origin	2018 LVMCOG MJHMP
Strategy	Implement floodplain management activities as recommended by the Flood Mitigation Plan, City of Malibu.
Action Items	1. Floodplain Regulations 2. Flood Mapping (revised and completed) 3. Flood Protections Assistance 4. Flood Protection Materials 5. Flood Protection Activities 6. Emergency Manager Training 7. Flood Warning and Preparedness
Coordinating Department	Public Works
Timeline/Completion Date/Priority	Complete / Ongoing with Annual Reviews Priority 1
Total Cost	$25,000
Funding Source(s)	General Fund
Constraints	Time, Funding
Implementation Description	Included mitigation goals in the City of Malibu General Plan (see Mitigation Plan strategy). In addition, Flood Warning and Preparedness information is made available via the City of Malibu web site (Emergency Preparedness Library). Finally, the City of Malibu is a participant in the 2012 FEMA California Coastal Analysis and Mapping Project/Open Pacific Coast Study (CCAMP). These efforts will address gaps in required engineering and mapping for high flood risk areas impacted by coastal flooding, levee systems, and other flood hazards (e.g., lakes, rivers, and ponds). Revised flood maps have been developed and the City has adjusted flood zones along the coast.

Plan Goals Addressed			
X	Public Awareness	X	Protect Life, Property, and the Environment
X	Partnerships and Implementation	X	Emergency Management

Figure 68: City of Malibu Emergency Preparedness Library

U.S. Department of Homeland Security
1111 Broadway, Suite 1200
Oakland, CA 94607-4052
FEMA

October 7, 2011

Honorable John Sibert, Mayor
City of Malibu
23825 Stuart Ranch Road
Malibu, California 90265

RE: FEMA California Coastal Analysis and Mapping Project/Open Pacific Coast Study

Dear Mayor Sibert:

Thank you for your participation in the National Flood Insurance Program administered by the U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA). Under the Risk Mapping, Assessment, and Planning (MAP) Program, Region IX has prioritized for fiscal year 2012 Flood Insurance Rate Map and Flood Insurance Study updates in support of the state of California for coastal analysis and mapping. This Program shifts focus from digital flood map production to new detailed engineering analysis, and mapping of coastal and flooding sources in many of the flood-prone communities throughout Region IX.

A feature of the Risk MAP program in Region IX is the re-study of the populated coastline for the state of California's coastal counties and communities. The California Coastal Analysis and Mapping Project (CCAMP) / Open Pacific Coast (OPC) Study will involve over 1,200 miles of new coastal flood hazard mapping and base-flood elevation determinations. Under this initiative, many coastal communities will have coastal flood data and mapping updated for the first time in over 20 years. This study effort will improve the quality of the coastal data used for both floodplain management and planning purposes.

The City of Malibu will be an important participant in the CCAMP / OPC Study. In the first phase of the re-study, coastal data from each community along the open Pacific Ocean shoreline and adjacent inland floodplains is being compiled. FEMA Region IX requests your support and assistance to identify local resources for coastal flood history, flood records, problematic flood-prone areas, topographic data, bathymetric data, beach erosion data, coastal storm or tsunami planning or mapping, and any other information that may be of importance when conducting the coastal re-study in your community. Geographic Information System (GIS) layers such as base maps, aerial photography, and land use information will be extremely useful as well. We appreciate the opportunity to partner with your community. Any data you provide will contribute significantly to an improved coastal flood mapping product which more accurately reflects your current flood risk.

Figure 69: CCAMP Letter (Page 1)

Honorable John Sibert
October 7, 2011
Page 2 of 2

FEMA will facilitate an initial kick-off meeting to discuss the following:

- Nature and intent of the re-study
- Study schedule and milestones
- Potential obstacles that might impact the study effort and potential solutions
- Available flood hazard information that could be used or incorporated into this study effort
- Key points of contact within your community, FEMA Region IX, and the Risk MAP Production and Technical Services Contractor (BakerAECOM, LLC)

In the near future, we will contact your staff to establish an available date for the initial kick-off meeting, anticipated to occur November, 2011 through January, 2012. Information will be provided at that meeting regarding how your community may benefit from the Risk MAP program and the CCAMP / OPC Study. Additionally, a new website has been developed to monitor the CCAMP / OPC Study online at www.r9coastal.org. This website allows each community to stay informed of the flood insurance re-study progress.

We look forward to working with the City of Malibu on this multi-year coastal re-study and mapping project. If you have questions about the CCAMP / OPC Study, you may contact Edward Curtis, Regional Engineer, at (510) 627-7207, or by e-mail at Edward.Curtis@dhs.gov. An alternate contact is Vince Geronimo, CCAMP / OPC Study Project Manager with BakerAECOM, at (510) 879-4533, or by email at Vince.Geronimo@aecom.com.

Sincerely,

Sally Ziolkowski

Sally Ziolkowski, Director
Mitigation Division

cc: Robert Brager, Public Works Director / Floodplain Manager, City of Malibu
Jim Thorsen, City Manager, City of Malibu
Senator Boxer, State Office
Senator Feinstein, State Office
Representative Henry Waxman, District Office

Figure 70: CCAMP Letter (Page 2)

Malibu Flood Mitigation Plan (2018)

City	Malibu
Hazard	Flood
Project Name	**Malibu Flood Mitigation Plan**
Status	In Progress / Ongoing (covered in the City General Plan)
Project Origin	2018 LVMCOG MJHMP
Strategy	Identify and implement recommendations presented in the Flood Mitigation Plan.
Action Items	1. Prioritize project recommendations 2. Develop projects and attempt to secure funding to implement
Coordinating Department	Public Works
Timeline/Completion Date/Priority	In Progress / Ongoing with Annual Reviews Priority 1
Total Cost	None, in-house staff time
Funding Source(s)	General Fund
Constraints	Funding
Implementation Description	Implemented goals within the City of Malibu General Plan related to flood mitigation. Specific goals covered under 5.3.1 S Goal 1: A community that is free from all avoidable risks to safety, health and welfare from natural and man-made hazards include: • **S Policy 1.2.4:** The City shall require development to be consistent with minimum Federal Emergency Management Agency (FEMA) guidelines for flood plain management (complete). • **S Implementation Measure 40**: Adopt and update as appropriate maps of extreme fire danger areas, 100-year flood plains, landslide and debris flow danger, active and potentially active faults, tsunami, and any other hazard areas; and inform residents of those areas of risks and possible mitigation measures. • **S Implementation Measure 43**: Encourage area residents to participate in National Flood Insurance Program. • **S Implementation Measure 44**: Design coastal development, except supporting structure, to be above the wave uprush level for storms within the past 100 years, and above the 100-year flood plain. • **S Implementation Measure 51**: Evaluate proposed development for its impact on, and from, geologic hazards, flood and mud flow hazard, and fire hazard.

Plan Goals Addressed			
	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation		Emergency Management

Annual Street Pavement Project (2018)

City	Malibu
Hazard	Flood
Project Name	**Annual Street Pavement Project**
Status	Ongoing
Project Origin	2018 LVMCOG MJHMP
Strategy	Resurface the City's public roads by repaving damaged roadways
Action Items	1. Continue to plan and commence work to complete the Pavement Rehabilitation Project 2. Clear out damaged, worn pavement 3. Replace worn pavement with new pavement
Coordinating Department	Public Works
Timeline/Completion Date/Priority	Ongoing with Annual Reviews / Priority 2
Total Cost	$600,000
Funding Source(s)	General Fund
Constraints	Funding and Time
Implementation Description	• Rehabilitation work is performed every year on the City's public roads. • Rehabilitation projects have included Broad Beach Road, Malibu Canyon Road, Civic Center Way, and Cross Creek Road. • The City will continue to perform annual road rehabilitation projects as necessary.

Plan Goals Addressed			
	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation		Emergency Management

FM Alert System (2024)

City	Malibu
Hazard	All Hazards
Project Name	**FM Alert System**
Status	New
Project Origin	2024 LVMCOG MJHMP
Strategy	Implement an FM Alert System to create additional communication avenues
Action Items	1. Obtain funding for license and infrastructure 2. Obtain funding for 2,000 residential receivers 3. Implement alert system
Coordinating Department	Public Works
Timeline/Completion Date/Priority	1 Year / Priority 2
Total Cost / BCR	$648,000 / 23.49
Funding Source(s)	General Fund
Constraints	Funding and Time
Implementation Description	• The is looking for funding for the license and infrastructure ($450,000), as well as funding for 2,000 residential receivers ($99 each) to implement an FM Alert System that can be used as a method of communication during emergency events.

Plan Goals Addressed			
	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation	X	Emergency Management

Broadband Improvements for Emergency Communications (2024)

City	Malibu		
Hazard	All Hazards		
Project Name	**Broadband Improvements for Emergency Communications**		
Status	New		
Project Origin	2024 LVMCOG MJHMP		
Strategy	Install Broadband Capabilities to greatly improve communication during a disaster		
Action Items	1. Install conduits in designated parts of the city (complete) 2. Install equipment to improve Broadband Capabilities		
Coordinating Department	Public Works		
Timeline/Completion Date/Priority	1 Year / Priority 2		
Total Cost / BCR	$5,680,000 (estimate) / 18.89		
Funding Source(s)	General Fund		
Constraints	Funding and Time		
Implementation Description	• The City of Malibu is looking to install Broadband Capabilities which can greatly improve communication during a disaster.		
Plan Goals Addressed			
	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation	X	Emergency Management

Other City of Malibu Hazard Mitigation Efforts

The City of Malibu television broadcast regularly provides public preparedness, prevention, and mitigation information. Examples are provided below:

Figure 71: City of Malibu Emergency Information TV Bulletins

Westlake Village Mitigation Projects

Projects Currently Inactive or Not Applicable (from 2018 HMP)

Projects currently inactive or not applicable include those that were not carried over from the 2018 LVMCOG MJHMP, as they are either no longer relevant or active at this time. Additionally, some of these projects may now fall under the scope of other projects already included in this plan.

Project	Reason for Exclusion
Solar Power for City Hall	Project now falls under the scope of the "Emergency Power Generation" project currently listed within this section

Communications Improvements (2018)

City	Westlake Village
Hazard	All Hazards
Project Name	**City of Westlake Village Communications Improvements**
Status	Ongoing
Project Origin	2018 LVMCOG MJHMP
Strategy	Improve cellular telephone reception in areas of the City that are currently underserved
Action Items	1. Continue to work with local carriers to improve cellular telephone reception in areas of the City that are currently underserved 2. Create antenna lease programs to avoid "black spots" in the Region 3. Add repeaters to existing radio systems 4. Engage telecommunications providers in the installation of broadband fiber infrastructure.
Coordinating Department	Public Works, Building and Safety
Timeline/Completion Date/Priority	Ongoing with Annual Reviews Based on Budget Priorities / Priority 1
Total Cost	$100,000
Funding Source(s)	General Fund
Constraints	Funding
Status Implementation	• Westlake Village continues to work with wireless phone carriers to improve mobile phone reception in the areas of the city that are not adequately covered by wireless networks. • The County-wide Integrated Radio System (CWIRS) was deployed. Furthermore, the City installed a satellite-based computer network that allows the EOC to connect to the Internet in the event of a disruption to the landline computer network. • The system is regularly tested during power outages and the EOC is able to remain connected to the Internet.

Plan Goals Addressed			
	Public Awareness	X	Protect Life, Property, and the Environment
X	Partnerships and Implementation	X	Emergency Management

GIS Upgrade (2018)

City	Westlake Village
Hazard	All Hazards
Project Name	**City of Westlake Village GIS Upgrade**
Status	Complete
Project Origin	2018 LVMCOG MJHMP
Strategy	To upgrade the Geographic Information Systems in order to add a higher resolution backdrop to map trails, flood hazard areas, geologic sensitive areas and document more detailed information
Action Items	1. Complete upgrading the system using new technologies to better map hazard areas 2. Complete training and provide ongoing training to staff on how to use GIS technologies 3. Continue to seek funding through internal grant writers
Coordinating Department	Community Development
Timeline/Completion Date/Priority	Complete / Maintenance Ongoing and Reviewed Annually Priority 1
Total Cost	$1000
Funding Source(s)	General Fund
Constraints	Funding
Implementation Description	The Geographic Information System was updated and higher resolution maps were created of the Westlake Reservoir, the FEMA floodplain, and the fire hazard areas. A fire hazard severity map was created. Training of personnel on the GIS was conducted and will continue to be performed on an ongoing basis.

Plan Goals Addressed			
	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation	X	Emergency Management

Emergency Power Generation (2018)

City	Westlake Village
Hazard	All Hazards
Project Name	**Emergency Power Generation**
Status	Ongoing
Strategy	Ensure backup power supplies for key City facilities
Project Origin	2018 LVMCOG MJHMP
Action Items	1. Purchase generators 2. Evaluate potential use of battery energy storage as source of backup power.
Coordinating Department	Public Works, Building and Safety
Timeline/Completion Date/Priority	Ongoing with Annual Reviews Based on Budget Priorities / Priority 1
Total Cost	$250,000
Funding Source(s)	General Fund
Constraints	Funding
Implementation Description	• Generators were purchased for the EOC and the Community Room. The City must conduct a study to determine the feasibility of rewiring City Hall and the Community Rooms to provide entire facility rather than only select rooms with backup power in the event of an outage. Study was conducted to assess the practicality of replacing the City's diesel fuel generators with battery storage units. Westlake Village is Currently exploring solar panels as an option. • The city of Westlake Village also entered an MOU with the Clean Power Alliance of Southern California (CPA) in October 2022 for the design, installation, and operation of a solar plus storage system with emergency power generation capability through the power ready program. The CPA issued the initial request for offer process and the end of 2022 and completed a detailed assessment of the Civic Center Complex in July 2023. The second submission round of the RFO is scheduled to be completed during the summer of 2023. After a developer is selected from the RFO process, the City will negotiate a 20-year site lease agreement directly with the developer and CPA will negotiate a Power Purchase Agreement (PPA) with the developer. The project is currently scoped to include replacement of the Civic Center roof, installation of solar panel arrays on the new roof, and installation of a battery that is large enough to provide adequate backup power generation during an emergency, inclusive of operating the cooling center at the community rooms at the Civic Center. The project is anticipated to be completed in 2025.

Plan Goals Addressed			
	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation	X	Emergency Management

Smoke Detector Installation (2018)

City	Westlake Village
Hazard	Fire
Project Name	**Smoke Detector Installation**
Status	Complete / Ongoing
Project Origin	2018 LVMCOG MJHMP
Strategy	Encourage residents to install smoke detectors in existing residences built prior to January 1, 1986
Action Items	1. Implement a program to educate the public about the importance of smoke detectors 2. Provide instructional services on how to install a smoke detector 3. Provide smoke detectors to the public
Coordinating Department	Engineering/Public Works
Timeline/Completion Date/Priority	Ongoing with Annual Reviews / Priority 1
Total Cost	$15,000
Funding Source(s)	General Fund, HMGP funds
Constraints	Funding
Implementation Description	A program to educate the public about the importance of installing smoke detectors and replacing batteries periodically was instituted. Information was disseminated to the public through articles in a series of city newsletters. Westlake Village does a periodic reminder of smoke detectors through videos and written newsletters.

Plan Goals Addressed			
X	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation		Emergency Management

Tree Census (2018)

City	Westlake Village
Hazard	Windstorm/Fire
Project Name	**Tree Census**
Status	Complete / Ongoing
Project Origin	2018 LVMCOG MJHMP
Strategy	Conduct a thorough census of the trees in the city to keep track of aging or poorly maintained trees that may create a fire or windstorm hazard
Action Items	1. Develop a team to manage the project 2. Obtain proper means of cataloguing and displaying such information such as GIS tools 3. Prepare map(s) identifying trees and separating those that pose a potential threat in case of a fire or windstorm event 4. Develop a strategy to eliminate problematic trees
Coordinating Department	Public Works
Timeline/Completion Date/Priority	One year from planning to end Priority 1
Total Cost	No Cost – In house staff time
Funding Source(s)	General Fund
Constraints	Staff time
Implementation Description	The City's Public Works personnel identified and inspected every tree on public property in the City. Trees determined to be hazardous were cut down. The City continues to assess trees annually, and trees are cycled in the program and trimmed at an average of every 3 years. In addition, a GIS tree mapping program has developed. A Heritage Tree Ordinance was also adopted in 2018 (updated in 2022/2023) to identify trees in the city with particular significance to be monitored more closely.

Plan Goals Addressed			
	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation	X	Emergency Management

Annual Street Resurfacing Program (2018)

City	Westlake Village
Hazard	Flood
Project Name	**Annual Street Resurfacing Program**
Status	Ongoing
Project Origin	2018 LVMCOG MJHMP
Strategy	Resurface the City's public roads by repaving damaged roadways.
Action Items	1. Continue the ongoing Street Resurfacing Program 2. Resurface and repair damaged and worn pavement
Coordinating Department	Public Works
Timeline/Completion Date/Priority	Ongoing with Annual Reviews / Priority 1
Total Cost	$1,500,000 per year
Funding Source(s)	Measure R, Measure M, and General Fund
Constraints	Funding, Time
Implementation Description	Ongoing effort. In 2016/17 completed asphalt overlay work on the following streets: Three Springs Drive, Fallview Rd., Timbridge Ct., Snowpeak Dr., Torchwood Pl., Yellowwood Dr., Aspen View Ct., Woodburn Ave., Carrie Pl., South Shore Pla., Sandpiper Ct., Royal Glen Rd., Lyndbrook Ct., Trowbridge Ct., Tynebourne Ct., Langspur Ct., Beaucroft Ct., Bedforhurst Ct., Village School Rd., Shropshire Dr., Dunraven Ct., Bain Ct., Hardfirled Ct., Havington Ct., Orchard View Ct. In 2017/2018 completed asphalt overlay work on the following streets: Kristen Lee Dr., Denver Springs Dr., Wellbrook Dr., Montview Ct., Grand Oaks Dr., Village Center Rd., and Greengate Ct. Completed 2016/17 slurry seal work on the following streets: Lindero Canyon Road , Oak Crest Drive and Park Terrace Completed slurry work in 2017/18 Three Springs neighborhood, First Neighborhood, Triunfo Canyon Rd, La Tienda Rd, and Russell Ranch Rd. Ongoing Effort. In Fiscal Year 2018/19 industrial and commercial streets were repaved or slurry sealed, including Russell Ranch Road, Portola Court, Sterling Center Drive, Via Colinas, Via Rocas, La Baya Drive and Corsa Avenue. Residential street repaving was also completed on Overfall Drive and Three Springs Drive. During Fiscal Year 2019/20 portions of Agoura Road and Lindero Canyon Road received slurry seal and Lindero Canyon Road was repaved from Thousand Oaks Blvd to the northern city limit. In Fiscal Year 2021/22 Lakeview Canyon Road, Watergate Road and the Civic Center parking lot were repaved. The Fiscal Year 2023/24 budget includes $1.3M for street resurfacing in primarily residential streets. The city will continue to invest in annual street maintenance and rehabilitation projects.

Plan Goals Addressed			
	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation	X	Emergency Management

Advanced Emergency Training (2018)

City	Westlake Village
Hazard	All Hazards
Project Name	**Advanced Emergency Training**
Status	Ongoing
Project Origin	2018 LVMCOG MJHMP
Strategy	Provide advanced emergency training for the City's CERT team
Action Items	• Provide Advanced Emergency Training for CERT team
Coordinating Department	Westlake Village DRT Team
Timeline/Completion Date/Priority	Complete / Ongoing updates (as required) and Annually Priority 2
Total Cost	$25,000
Funding Source(s)	General Fund
Constraints	Funding and time
Implementation Description	Advanced training is provided to CERT members every year and will continue to be provided. The COG offers 2 to 3 CERT classes every year. The City of Malibu hosted shelter training to which Westlake sent representatives. Westlake Village offers many different trainings to the CERT team and rotates topics to keep the team engaged and prepared.

Plan Goals Addressed			
	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation	X	Emergency Management

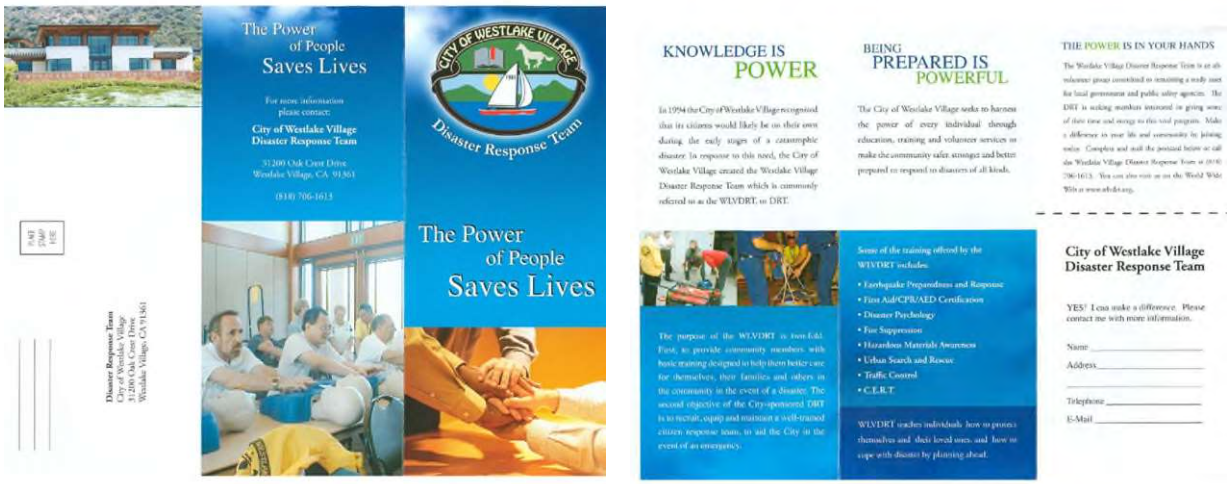


Figure 72: Westlake Village Training Brochure

Public Emergency Preparedness (2018)

City	Westlake Village
Hazard	All Hazards
Project Name	**Public Emergency Preparedness**
Status	Ongoing
Project Origin	2018 LVMCOG MJHMP
Strategy	A program to educate citizens about hazards within the City, how to prepare, and what actions to take in case of a disaster
Action Items	1. The City of Westlake Village is prioritizing emergency preparedness through initiatives such as updating the Emergency Preparedness Plan, participating in the California Fire Alliance, and hosting joint events to promote public awareness.
Coordinating Department	Community Services
Timeline/Completion Date/Priority	Ongoing with Annual Reviews / Priority 2
Total Cost	$20,000
Funding Source(s)	General Fund
Constraints	Funding
Implementation Description	• Westlake Village completed an update to the Emergency Preparedness Plan (for residents) in 2005. The plan is available through the City's website. The plan is reviewed and updated as needed. See example below. • Los Angeles County established the California Fire Alliance which includes an information campaign aimed at educating the public about wildfire safety. The Los Angeles County Fire Department developed the Ready Set Go Wildfire Action Plan to inform residents of actions they can take to keep them safe from wildfires. • Westlake Village and Agoura Hills hosted a joint emergency preparedness event in August 2010 aimed at educating the public and continually seek new opportunities to promote public awareness. Further public preparedness efforts ongoing. • In coordination with the LA County Sheriff, Westlake Village held an Emergency Preparedness event in November 2022.

Plan Goals Addressed			
X	Public Awareness	X	Protect Life, Property, and the Environment
X	Partnerships and Implementation	X	Emergency Management

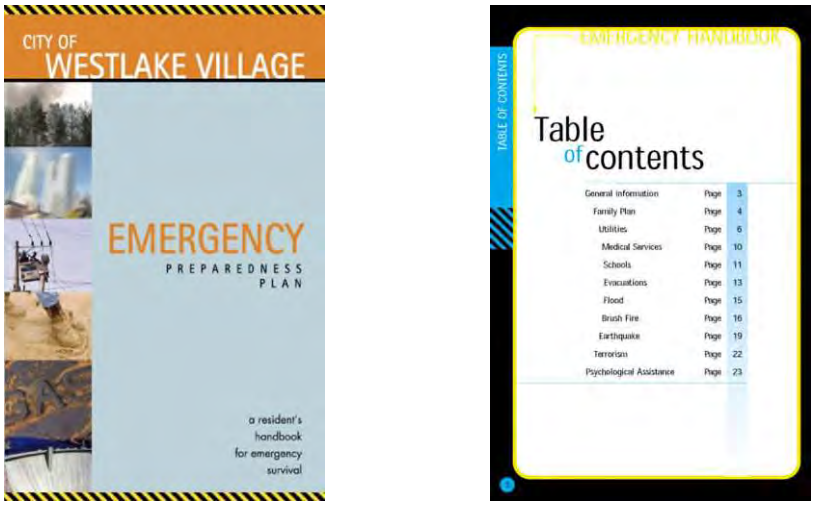


Figure 73: Westlake Village Emergency Preparedness Plan

Triunfo Creek Bridge Resurfacing (2018)

City	Westlake Village
Hazard	Flood
Project Name	**Triunfo Creek Bridge Resurfacing**
Status	Completed
Project Origin	2018 LVMCOG MJHMP
Strategy	Resurfaced bridge deck for maintenance to reduce the risk of flood.
Action Items	Completed
Coordinating Department	Public Works
Timeline/Completion Date/Priority	Complete / Priority 2
Total Cost	$100,000
Funding Source(s)	Highway Bridge Preventative Maintenance Program
Constraints	None
Implementation Description	Completed in 2017. LA County designed and executed the construction contract.
Plan Goals Addressed	

	Public Awareness	X	Protect Life, Property, and the Environment
X	Partnerships and Implementation	X	Emergency Management

Mobile EOC (2024)

City	Westlake Village
Hazard	All Hazards
Project Name	**Mobile EOC**
Status	New
Project Origin	2024 LVMCOG MJHMP
Strategy	Procure a mobile EOC to allow the city staff to deploy to an ICS while operating as an EOC.
Action Items	Purchase a vehicle to serve as a mobile Emergency Operations Center.
Coordinating Department	Public Works and Emergency Preparedness
Timeline/Completion Date/Priority	Ongoing with Annual Reviews based on Budget Priorities / Priority 2
Total Cost / BCR	$100,000 / 1.37
Funding Source(s)	General Fund
Constraints	None
Implementation Description	The City of Westlake Village would like to purchase a vehicle to serve as a mobile Emergency Operations Center. All emergency management is handled at City Hall, but there have been events where city staff needs to be at an Incident Command Site in order to mitigate damages cause by an emergency. One of the main functions of the City's response during a disaster is informing the public of necessary actions to take to protect their lives/home, and a mobile EOC would allow city staff to deploy to an ICS while operating as an EOC. This vehicle would be equipped with lights, speakers, radio repeaters, and more in order to help inform residents of ways to mitigate disasters while they occur.
Plan Goals Addressed	

	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation	X	Emergency Management

Home Hardening & Defensible Space Fire Prevention Grant Program (2024)

City	Westlake Village
Hazard	Wildfire
Project Name	**Home Hardening & Defensible Space Fire Prevention Grant Program**
Status	New/Ongoing
Project Origin	2024 LVMCOG MJHMP
Strategy	Provide a program that would protect residents and homes in Westlake Village, most of which is in a Very High Fire Severity Zone.
Action Items	Establish a grant program that provides funding for homeowners that will be used for home hardening.
Coordinating Department	Public Works and Emergency Preparedness
Timeline/Completion Date/Priority	Ongoing with Annual Reviews / Priority 1
Total Cost / BCR	$50,000 / 11.36
Funding Source(s)	General Fund
Constraints	None
Implementation Description	Home hardening is one of the most efficient ways for residents to mitigate the spread and effects of a wildfire. The City of Westlake Village would like to establish a grant program that provides funding for homeowners that will be used for home hardening. This includes vent and chimney coverings, gutter maintenance, and creation of defensible zones per Cal Fire's specifications. Bolstering home hardening and defensible spaces will mitigate damage caused by wildfires. This program would protect residents and homes in Westlake Village, most of which is in a Very High Fire Severity Zone. (The City would need to pursue grant funding for this project.

Plan Goals Addressed			
	Public Awareness	X	Protect Life, Property, and the Environment
	Partnerships and Implementation	X	Emergency Management

SECTION 5. PLAN MAINTENANCE, MONITORING, AND GENERAL PLANS

This plan maintenance section details the formal process that will ensure that the Las Virgenes-Malibu COG Multi-Jurisdictional Hazard Mitigation Plan is an active and relevant document. This section includes a description of the implementation and plan adoption process and a schedule for monitoring and evaluating the plan. Additionally, a description of how the Las Virgenes-Malibu COG will integrate public participation throughout the plan maintenance process is provided. Finally, this section includes an explanation of how the city governments in the Las Virgenes-Malibu COG intend to incorporate the mitigation strategies outlined in this plan into existing planning mechanisms such as individual city General Plans, Capital Improvement Plans, Building & Safety Codes and other programs and or plans within the cities. Note: a discussion on future development trends is provided in Section 3: Risk Assessment, Future Development Trends to highlight potential areas of focus when updating the HMP.

IMPLEMENTATION AND PLAN ADOPTION

The Las Virgenes-Malibu Council of Governments (LVMCOG) and individual cities (city councils) within the LVMCOG were responsible for adopting the Las Virgenes-Malibu Multi-Jurisdictional Hazard Mitigation Plan. These governing bodies have the authority to promote sound public policy regarding hazards.

Adoption and Implementation

The LVMCOG adopted the Las Virgenes-Malibu Multi-Jurisdictional Hazard Mitigation Plan and the LVMCOG Governing Board in conjunction with the Planning Group are responsible for plan implementation. The Executive Director of the Las Virgenes-Malibu COG serves as a convener to facilitate the Hazard Mitigation meetings. Plan implementation and evaluation are a shared responsibility among all of the LVMCOG Governing Board Members. The LVMCOG Governing Board and the Planning Group are responsible for providing information gained from committee meetings with staff and community members in their respective cities.

HMP Submission and Approval

The prior plan and this update were submitted to the State Hazard Mitigation Officer at the California Governor's Office of Emergency Services (Cal OES). Cal OES is responsible for submitting the plan to the Federal Emergency Management Agency (FEMA) for review. The review includes the criteria outlined in FEMA Mitigation Planning Final Rule 44 CFR Part 201. Upon acceptance by FEMA, the cities within the Las Virgenes-Malibu COG will maintain their eligibility for Hazard Mitigation Grant Program funds.

PLAN MONITORING, EVALUATION, UPDATES, AND FORMAL REVIEW PROCESS

The Las Virgenes-Malibu Multi-Jurisdictional Hazard Mitigation Plan is evaluated on an annual basis to determine the effectiveness of programs, and to reflect changes in development or programs that may affect mitigation priorities.

Coordinating Body

LVMCOG Governing Board members in conjunction with the Planning Group are responsible for monitoring and evaluating the progress of the mitigation strategies in the plan. The LVMCOG Governing Board and Planning Group also responsible for updating the plan.

The Las Virgenes-Malibu Hazard Mitigation LVMCOG Governing Board and Planning Group were responsible for coordinating and undertaking the formal review process. The review process includes an evaluation of the goals and action items to determine their relevance to changing conditions within the Region, as well as changes in State or Federal policy, and to ensure they are addressing current and expected conditions. The LVMCOG Governing Board and Planning Group also review the risk assessment portion of the plan to determine if this information should be updated or modified, given any new available data.

In addition, the LVMCOG Governing Board and Planning Group were responsible for ensuring that reviews and updates to the plan were performed. Further, the LVMCOG Governing Board and Planning Group provide coordination between the cities, intra-city departments, and with other public agencies.

Finally, the LVMCOG Governing Board and Planning Group conduct annual reviews of the Hazard Mitigation Plan and when deemed necessary by the Hazard Mitigation LVMCOG Governing Board in coordination with the Planning Group including a determination if a public meeting is to be held. The meetings provide the public a forum where they can express their concerns, opinions, or ideas about the plan. In addition, each City maintains an ongoing ability to receive and respond to public concerns via their City web sites.

The Planning Group comprised of representatives from each LVMCOG city and supports the LVMCOG Governing Board by attending regularly scheduled meetings to review local planning efforts and evaluate progress on mitigation efforts. The Planning Group reports progress to the LVMCOG Governing Board and works with other city departments to implement the mitigation strategies contained in this Hazard Mitigation Plan.

The city departments responsible for the various action items identified in Section 4: Hazard Mitigation Goals and Strategies will report on the status of their projects, the success of various implementation processes, difficulties encountered, success of coordination efforts, and which strategies require revision.

In addition to ongoing and annual reviews, every five years the Multi-Jurisdictional Hazard Mitigation Plan is.

Formal Review Process

Each member of the Planning Group is responsible for reviewing the Hazard Mitigation Plan for effectiveness. These reviews include:

- Quarterly Area B Meetings to obtain regional updates and new requirements and strategies for Hazard Mitigation Plans
- Ongoing updates from individual city departments on mitigation project progress including funding and completion status
- Follow-up with city departments and other stakeholders on Hazard Mitigation Plan effectiveness including the efficacy of mitigation projects
- Annual Hazard Mitigation Plan assessments

The criteria for evaluating the Hazard Mitigation Plan and individual mitigation projects include:

- Benefit / Cost Analyses (pre and post project implementation)
- Changes in local area risks, vulnerabilities, consequences, and capabilities
- After Action Reports from actual incidents
- Input from individual city departments and local agencies
- Input from the community

Plan Update

The LVMCOG governing board and planning group will begin the update process of this plan 3 years into the current plan. The update process will be conducted following similar steps taken for this plan. The plan will be thoroughly reviewed and updates to all sections will be conducted, additional public outreach meetings and surveys will occur, and the updated plan is submitted to Cal-OES and FEMA for formal review and approval. Once Cal-OES and FEMA approval are obtained, each City Council within the LVMCOG formally adopts the revised HMP for the next five years. Additional details are provided in Section 1 “Plan Update Process”.

Continued Public Participation and Involvement

The cities within the Las Virgenes-Malibu COG are dedicated to involving the public in the Hazard Mitigation Plan process. Members of the public, businesses, and other interested parties had the opportunity to provide feedback on local area risks and the Hazard Mitigation Plan. Copies of the plan are catalogued and maintained in appropriate departments as well as on city web sites to be easily accessible for public viewing. Further, each city conducts ongoing events to promote public participation. Examples include Disaster Preparedness Month events and workshops, monthly newsletter bulletins, and coordination with other programs such as CERT training. This ongoing public outreach effort provides a continual feedback opportunity to the public for their input and comments (see **Public Involvement** below for additional details).

Public Involvement

Public involvement is a key component of hazard mitigation planning (per 44 CFR §201.6(c)(4)(iii)). The cities within the Las Virgenes-Malibu COG provide access of the Hazard Mitigation Plan to the public and continue to involve the public in the Hazard Mitigation Planning, Implementation, and Maintenance process through several mechanisms:

Distribution Method	Description
City Web Pages	• Downloadable online copies of the Hazard Mitigation Plan are posted on each City's website. • Members of the Public may provide feedback on each City's mitigation via the contact information from their public web pages: o Agoura Hills (818) 597-7314 or https://www.agourahillscity.org/services/emergency-services o Calabasas (818) 224-1600 Email: info@cityofcalabasas.com and https://www.cityofcalabasas.com/government/public-safety-emergency-preparedness/emergency-preparedness o Hidden Hills (818) 888-9281 Email: eoc@hiddenhillscity.org o Malibu (310) 456-2489 ext. 313 https://malibucity.org/225/Emergency-Preparedness o Westlake Village (818) 706-1613 https://wlv.org/189/Emergency-Preparedness • Links to mitigation and preparedness resources are provided via City web sites. Examples include: o www.Ready.gov o www.fema.gov/national-flood-insurance-program o http://fire.lacounty.gov/SafetyPreparedness/SafetyPreparedness.asp o www.redcross.org/prepare
City Facilities	• Mitigation brochures and handouts are made available at designated City-owned facilities including City Halls and Libraries.
Public Surveys	• An ongoing Disaster Preparedness (Mitigation) and Risk Survey provides continual feedback opportunities to the public for their input and comments regarding hazard mitigation planning, prioritization of mitigation efforts and risks, and community mitigation and preparedness needs. https://www.surveygizmo.com/s3/4297498/2018-Las-Virgenes-Malibu-Community-Risk-Survey
Public Meetings and Events	• National Emergency Preparedness Month Annual Public Preparedness, and Mitigation Planning Events (each September). • Local Disaster Preparedness Events. • City Council Meetings (as applicable per published Agenda items).
Local Media	• Preparation and Mitigation Information Posted in Local News Media (including links to the HMP, Hazard Survey, and Planning Meetings). • Preparation and Mitigation Tips and Announcements via City TV and social media Information Bulletins.
Training Programs	• Mitigation and response activities are included in ongoing CERT Program training.

Agoura Hills HMP Web Page

Figure 74: City of Agoura Hills HMP Public Download Links

Calabasas HMP Web Page

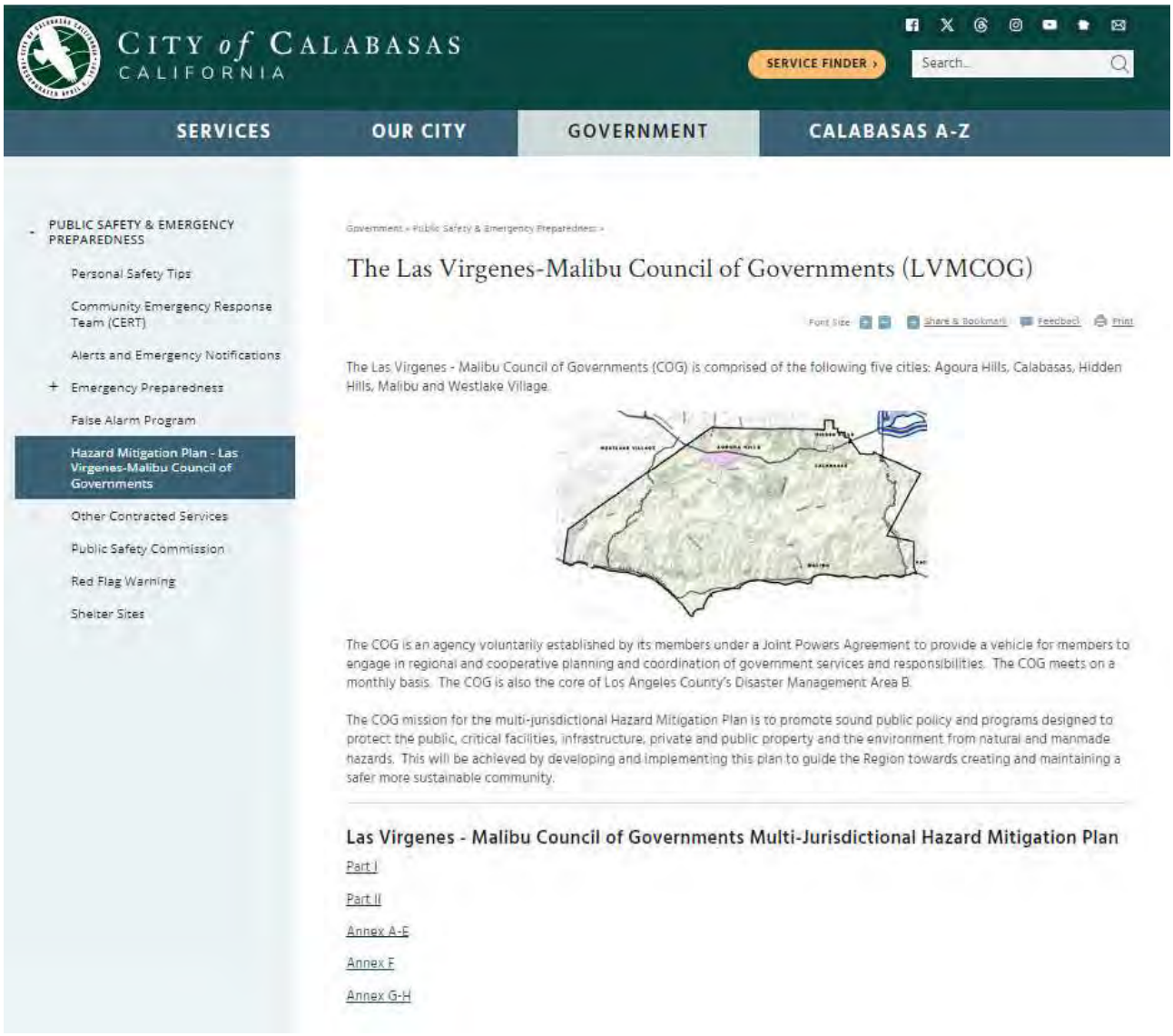


Figure 75: City of Calabasas HMP Public Download Links

Hidden Hills HMP Web Page

Figure 76: City of Hidden Hills HMP Public Download Links

Malibu HMP Web Page

Figure 77: City of Malibu HMP Public Download Link

Westlake Village HMP Web Page

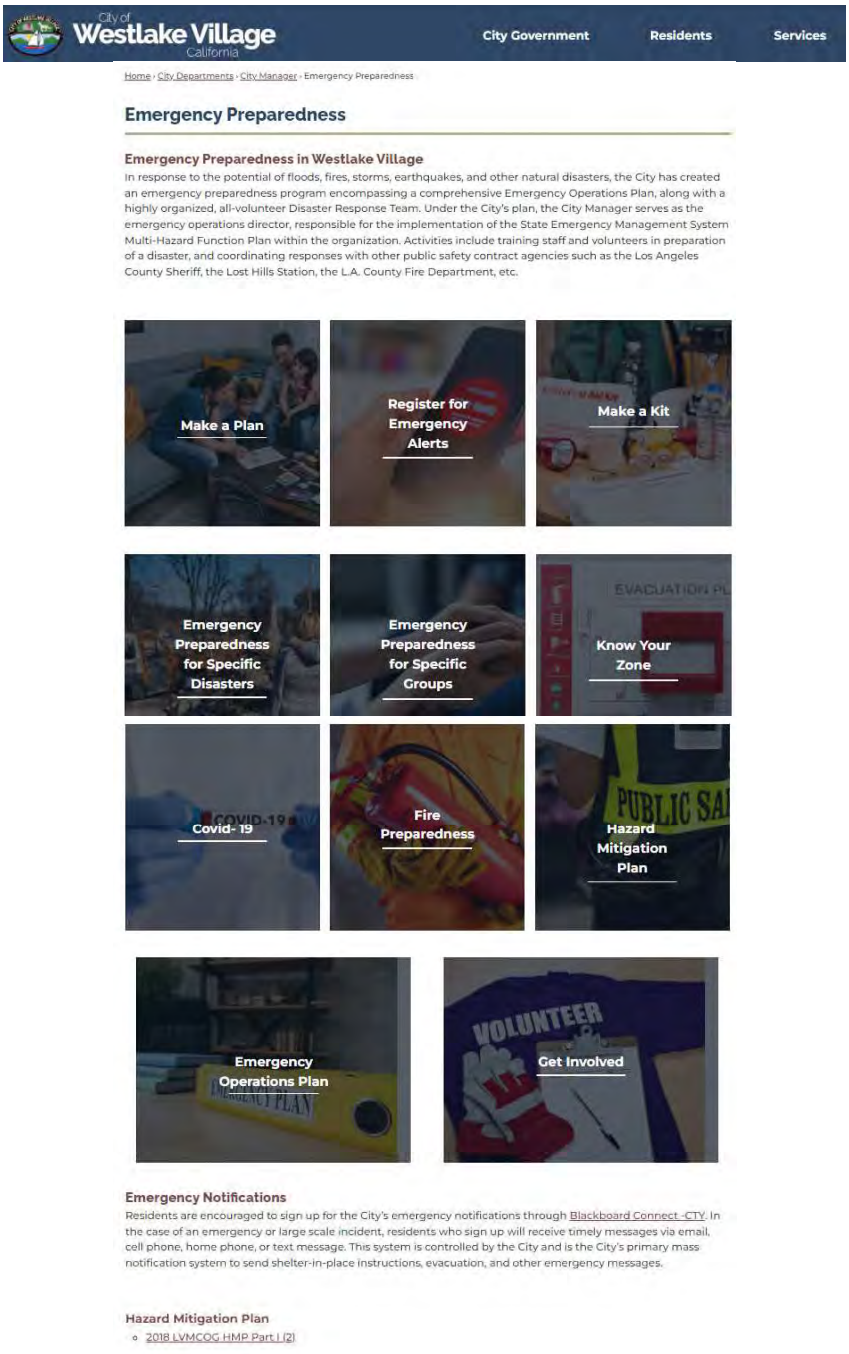


Figure 78: City of Westlake Village HMP Public Download Links

Hazard Mitigation Community Risk Survey

In August 2023, a public community risk survey was implemented. Announcements were made by each city, encouraging public input and participation via each city's web site, Emails, social media, and community news outlets. The intent of the survey was to provide a platform for local residents to voice their opinions about their disaster preparedness needs and concerns. Additionally, the survey was distributed to stakeholders from each of the 5 cities to gather feedback as part of the planning process. The survey resulted in 116 responses from members of the public who completed the survey (see **Annex C** for a summary of the results).

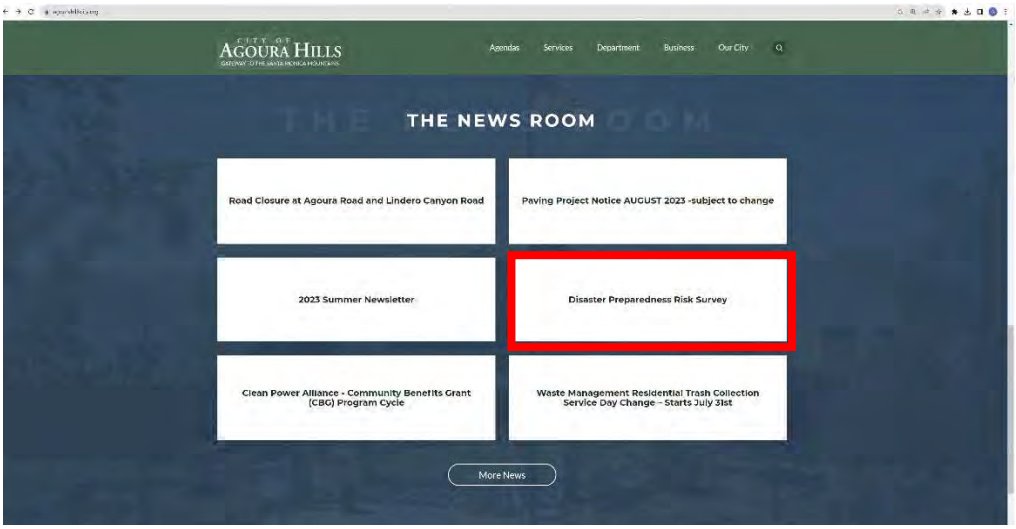


Figure 79: HMP Community Risk Survey Announcement and Link - City of Agoura Hills

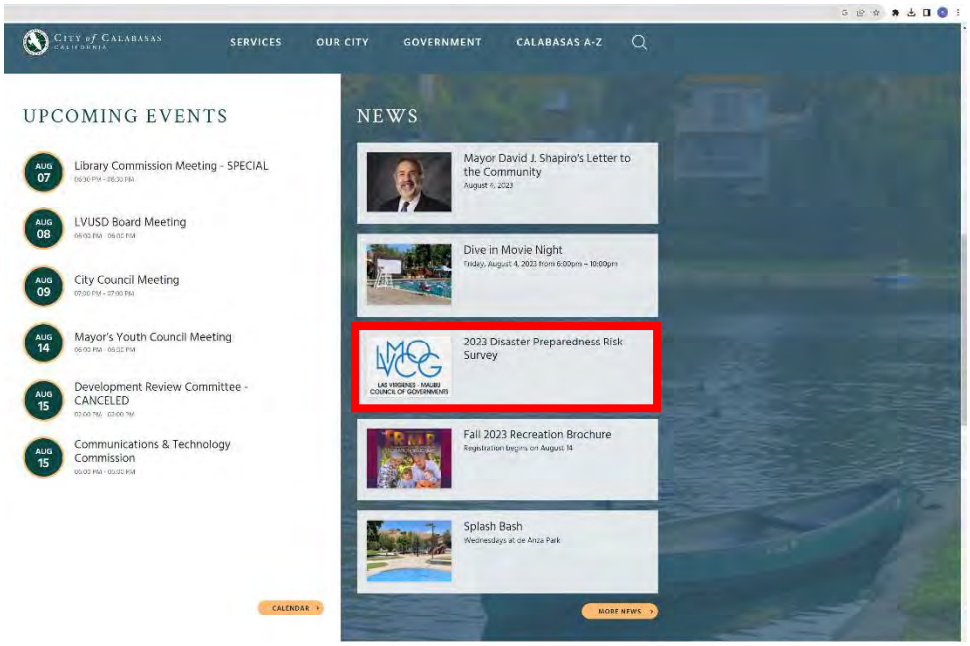


Figure 80: HMP Community Risk Survey Link - City of Calabasas

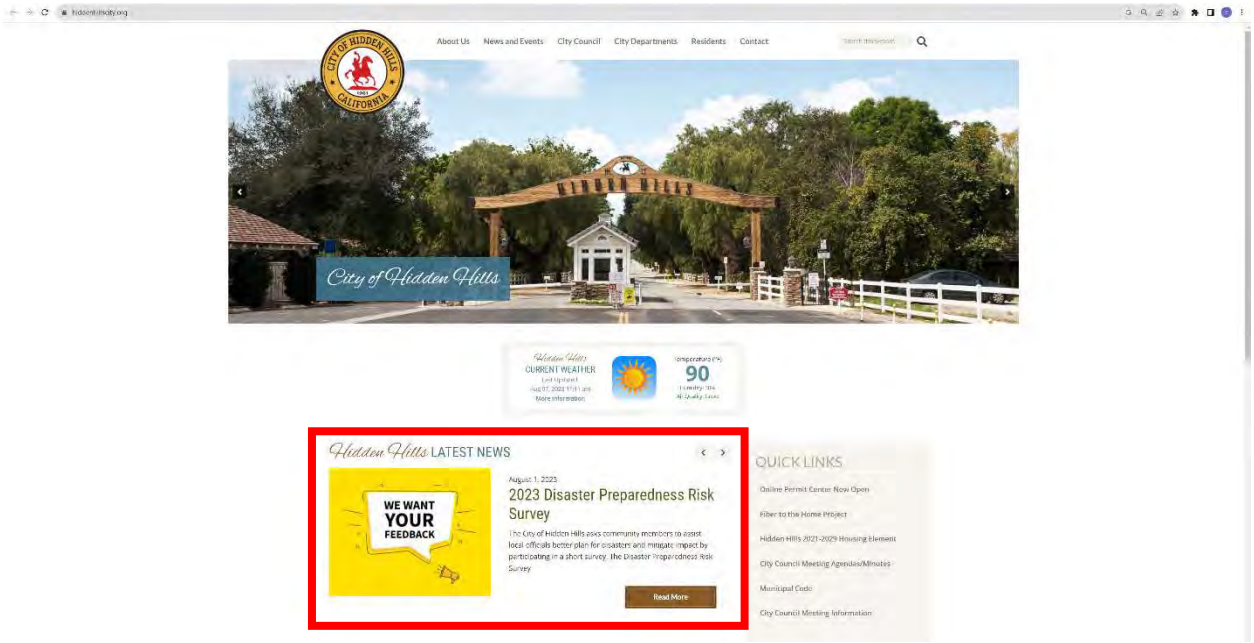


Figure 81: HMP Community Risk Survey Announcement - City of Hidden Hills

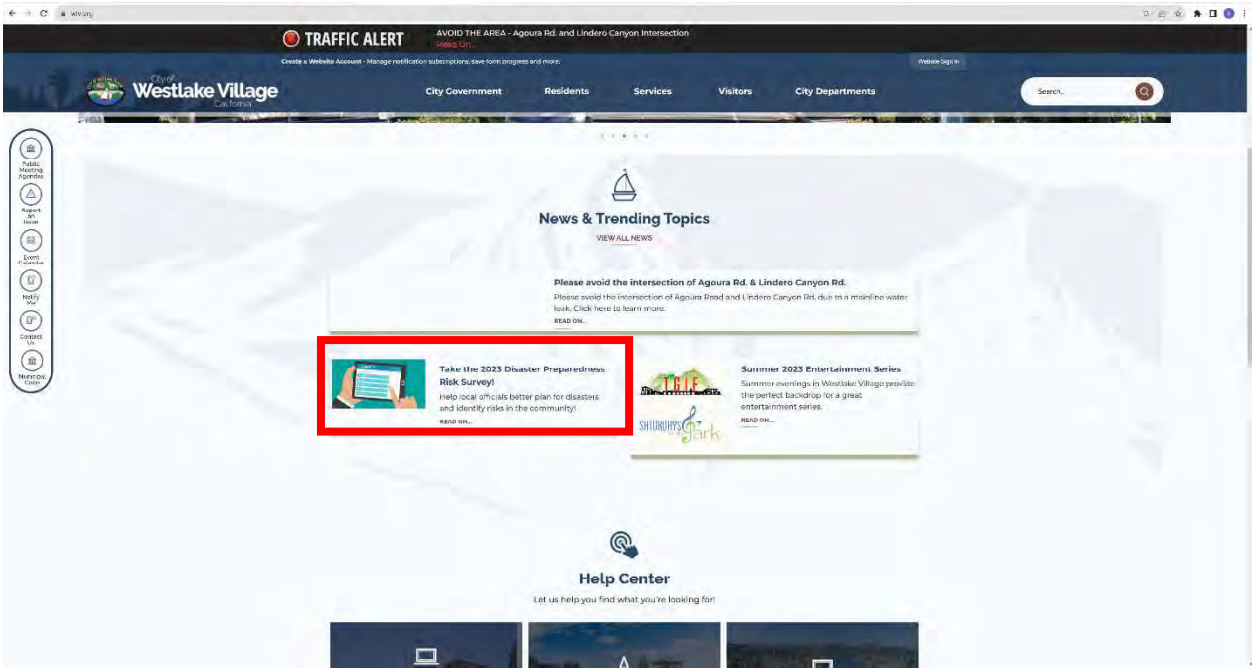


Figure 82: HMP Community Risk Survey Announcement - City of Westlake Village

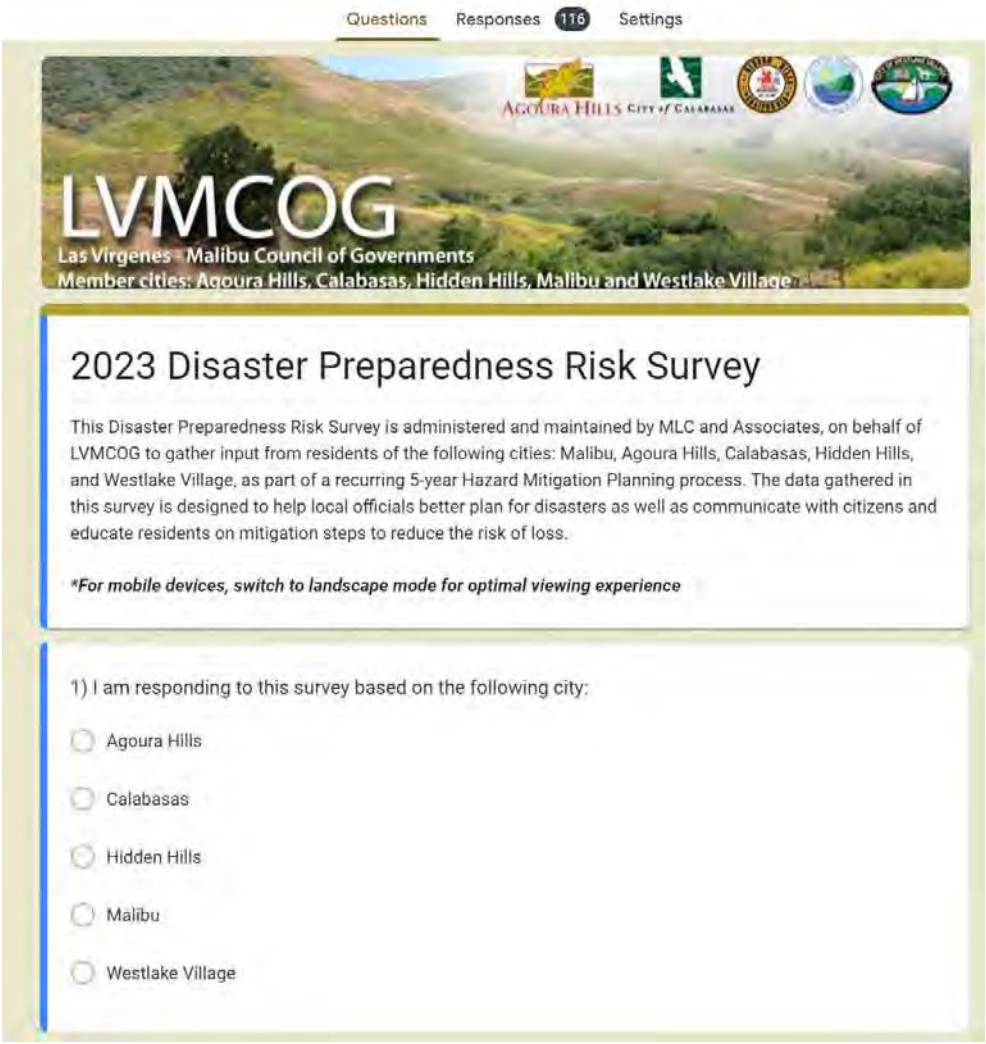


Figure 83: HMP Community Risk Survey

Public Forums and Workshops

In addition to ongoing web page, social media, and public service announcements each city conducts preparedness events. For example, on June 10, 2023 the City of Malibu conducted a Public Safety Expo to further promote preparedness and mitigation action in the community. Similarly, the cities hold events and participate in National Preparedness Month (annually in September). For example, on September 14, 2023 the City of Calabasas held Community Fire Season Briefing (see **Public Involvement section** for further details on how the public is involved in the disaster mitigation and planning process).

Furthermore, each city has established Community Emergency Response Team (CERT) programs that promote preparedness, planning, and mitigation. Finally, a series of public forums were held by each city to obtain public input to the Hazard Mitigation Plan from all residents within the LVMCOG.

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IMPLEMENTATION THROUGH EXISTING PROGRAMS

Integration of the Hazard Mitigation Plan into Existing Planning Mechanisms

In addition to ongoing disaster preparation and mitigation efforts such as quarterly Los Angeles County Disaster Management Area B meetings, each city in the LVMCOG integrates the HMP into existing planning mechanisms such as Emergency Operations Plans, General Plans, Capital Improvement Plans, Land Use Plans, Building & Safety Codes, enforcement, and permitting activities. This Multi-Jurisdictional Hazard Mitigation Plan provides a series of recommendations - many of which are closely related to the goals and objectives of existing planning programs within the cities. A description of each city's individual process is summarized below:

City	HMP Integration Process
Agoura Hills	• The Deputy City Manager and Administrative Aide are part of the HMP Planning Group and is responsible for tracking the progress of mitigation projects included in the HMP. • Risk assessments and planning elements contained within the HMP are incorporated (as needed) into the **City of Agoura Hills General Plan** (primarily within the Safety Element) as part of the General Plan update process. • The Agoura Hills Deputy City Manager works with the departments within the city to review the HMP and existing projects as well as coordinate the addition of new mitigation projects into the HMP. City of Agoura Hills departments involved in the process include (as required): o Planning & Community Development o Building and Safety o Public Works/Engineering • Updates to General Plan to incorporate HMP elements involve an ongoing process by the Agoura Hills Deputy City Manager with the Planning & Community Development Department as well as approval from the City Manager, Planning Commission, and the City Council. • The Agoura Hills 2023 Emergency Operations Plan incorporated the FEMA-approved 2018 HMP elements in guiding the planning of Evacuation and Mitigation Measures as well as Flood Classification and Measurements.

City	HMP Integration Process
Calabasas	• The Director of Public Safety and Public Safety Coordinator are part of the HMP Planning Group and are responsible for tracking the progress of mitigation projects included in the HMP. • Risk assessments and planning elements contained within the HMP are incorporated (as needed) into the City of Calabasas General Plan (primarily within the Safety Element) as part of the General Plan update process. • The Calabasas Director of Public Safety and Public Safety Coordinator work with other divisions and departments within the city to review the HMP and existing projects as well as coordinate the addition of new mitigation projects into the HMP. City of Calabasas divisions and departments involved in the process include (as required): o Planning Division o Building & Safety Division o Public Works • Updates to General Plan to incorporate HMP elements involve an ongoing process by the Calabasas Director of Public Safety and Public Safety Coordinator with the Planning Division as well as approval from the City Manager, applicable Commissions, and the City Council. • The Calabasas 2023 Emergency Operations Plan incorporated the FEMA-approved 2018 HMP elements in guiding the planning of Local Emergency Proclamations as well as the Situation Overview within the plan.
Hidden Hills	• The Hidden Hills Emergency Services Coordinator is part of the HMP Planning Group and is responsible for tracking the progress of mitigation projects included in the HMP. • Risk assessments and planning elements contained within the HMP are incorporated (as needed) into the City of Hidden Hills General Plan (primarily within the Safety Element) as part of the General Plan update process. • The Hidden Hills City Emergency Services Coordinator works with the City Manager, the Planning Department, and the Building & Safety Department to review the HMP and existing projects as well as coordinate the addition of new mitigation projects into the HMP. • Updates to General Plan to incorporate HMP elements involve an ongoing process by the Hidden Hills City Emergency Services Coordinator and City Manager as well as approval from the City Council. • The FEMA-approved 2018 HMP serves as the basis for our ongoing emergency preparedness efforts in Hidden Hills. Its elements have been integrated into various preparedness events, informational events, as well as training programs and resources for residents.

City	HMP Integration Process
Malibu	• The Malibu Emergency Services Coordinator is part of the HMP Planning Group and is responsible for tracking the progress of mitigation projects included in the HMP. • Risk assessments and planning elements contained within the HMP are incorporated (as needed) into the City of Malibu General Plan (primarily within the Safety Element) as part of the General Plan update process. • The Malibu Emergency Services Coordinator works with other departments within the city to review the HMP and existing projects as well as coordinate the addition of new mitigation projects into the HMP (see example Sign-In sheet on next page). City of Malibu departments involved in the process include (as required): o Planning Department o Public Works / Engineering o Building Safety o Public Safety o Wastewater Management/Environmental Health • Updates to General Plan to incorporate HMP elements involve an ongoing process by the Malibu Emergency Services Coordinator with the Planning Department as well as approval from the City Manager, applicable Boards, and the City Council. • The FEMA-approved 2018 HMP serves as the basis for our ongoing emergency preparedness efforts in Malibu. Its elements have been integrated into various preparedness events, informational events, as well as training programs and resources for residents. Some events include Community Emergency Response Training (CERT) Course and various events throughout the year, such as Earthquake Threat in SoCal (2023) and Earthquake Preparedness (2022).
Westlake Village	• The Westlake Village Administrative Analyst is part of the HMP Planning Group and is tasked with ongoing management of the HMP. • Risk assessments and planning elements contained within the HMP are incorporated (as needed) into the City of Westlake Village General Plan (primarily within the Safety Element) as part of the General Plan update process. • The Administrative Analyst works with other departments within the city to review the HMP and existing projects as well as coordinate the addition of new mitigation projects into the HMP. City of Westlake Village departments involved in the process include (as required): o Planning Department o Building & Safety • Updates to General Plan to incorporate HMP elements involve an ongoing process by the Westlake Village Administrative Analyst with the Planning Department as well as approval from the City Manager, applicable City Committees, and the City Council. • The Westlake Village 2019 General Plan incorporated the FEMA-approved 2018 HMP elements in guiding the planning of Climate Impacts Identification as well as updates and changes to Policies regarding the Emergency Response Plan.

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PART II: HAZARD SPECIFIC INFORMATION

- Earthquake
- Wildfire
- Climate Change
- Energy Disruption
- Landslide, Mudflows, and Debris Flows
- Windstorm
- Flood
- Tsunami
- Severe Winter Storm
- Pandemic
- Terrorism and Mass Violence

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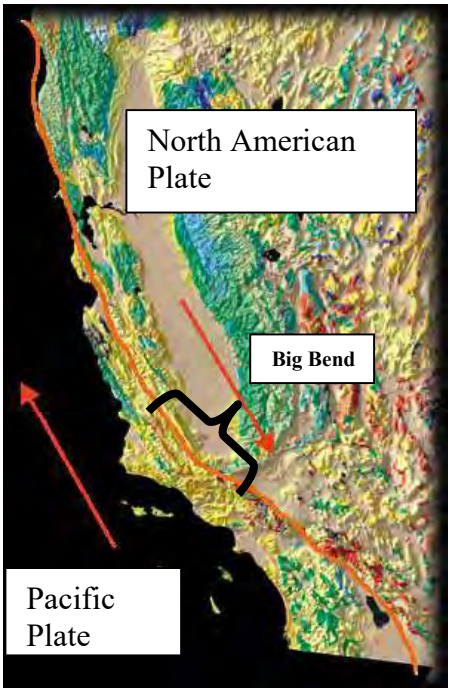
SECTION 6. EARTHQUAKE

THE NATURE OF THE EARTHQUAKE THREAT

Earthquakes occur at the boundaries of the Earth's tectonic plates as they move relative to one another. The tectonic boundary between the Pacific Plate and the North American Plate in California is along the San Andreas Fault. The fault is a transform boundary where the plates are sliding horizontally past one another.

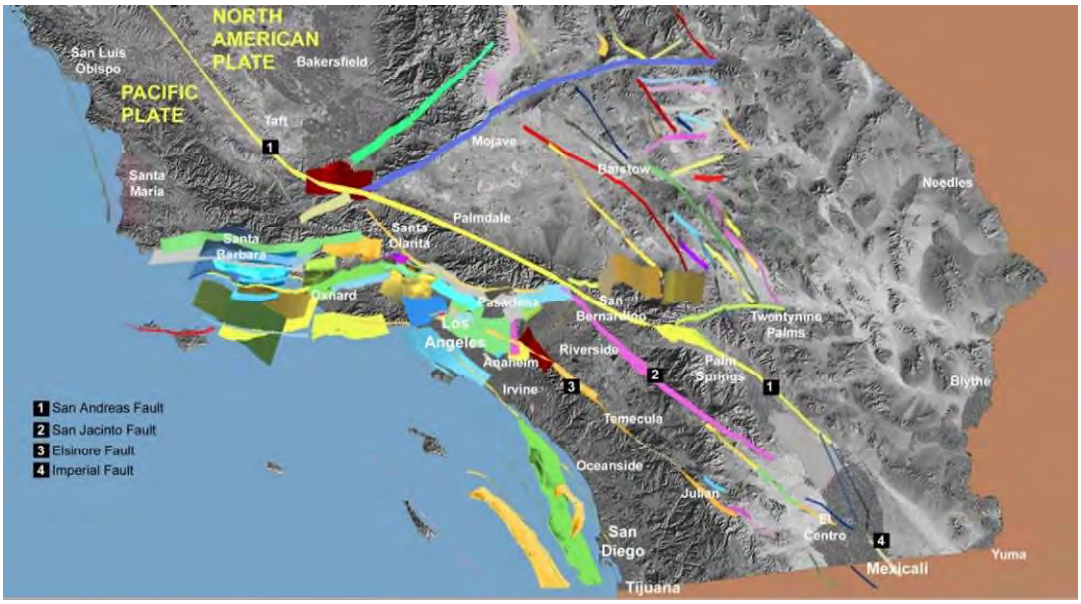
The risk of earthquakes in southern California is exacerbated by the fact that the two plates are inhibited in their motion by what is known as the Big Bend. In this section of the San Andreas the fault curves to the west then curves back to the north. This creates a barrier to simple lateral motion. This bend is a convergent (restraining) bend, creating a localized collision of tectonic plates, generating a tremendous amount of compression stress.

To release this stress, additional faults have formed over time. The "Big Bend" of the San Andreas Fault is thought to be responsible for much of the complexity of faulting in Southern California



Map 37: San Andreas Fault "Big Bend"

The map below depicts several parallel faults to the San Andreas Fault. These four faults are considered to be responsible for approximately half of the significant earthquakes in the region.

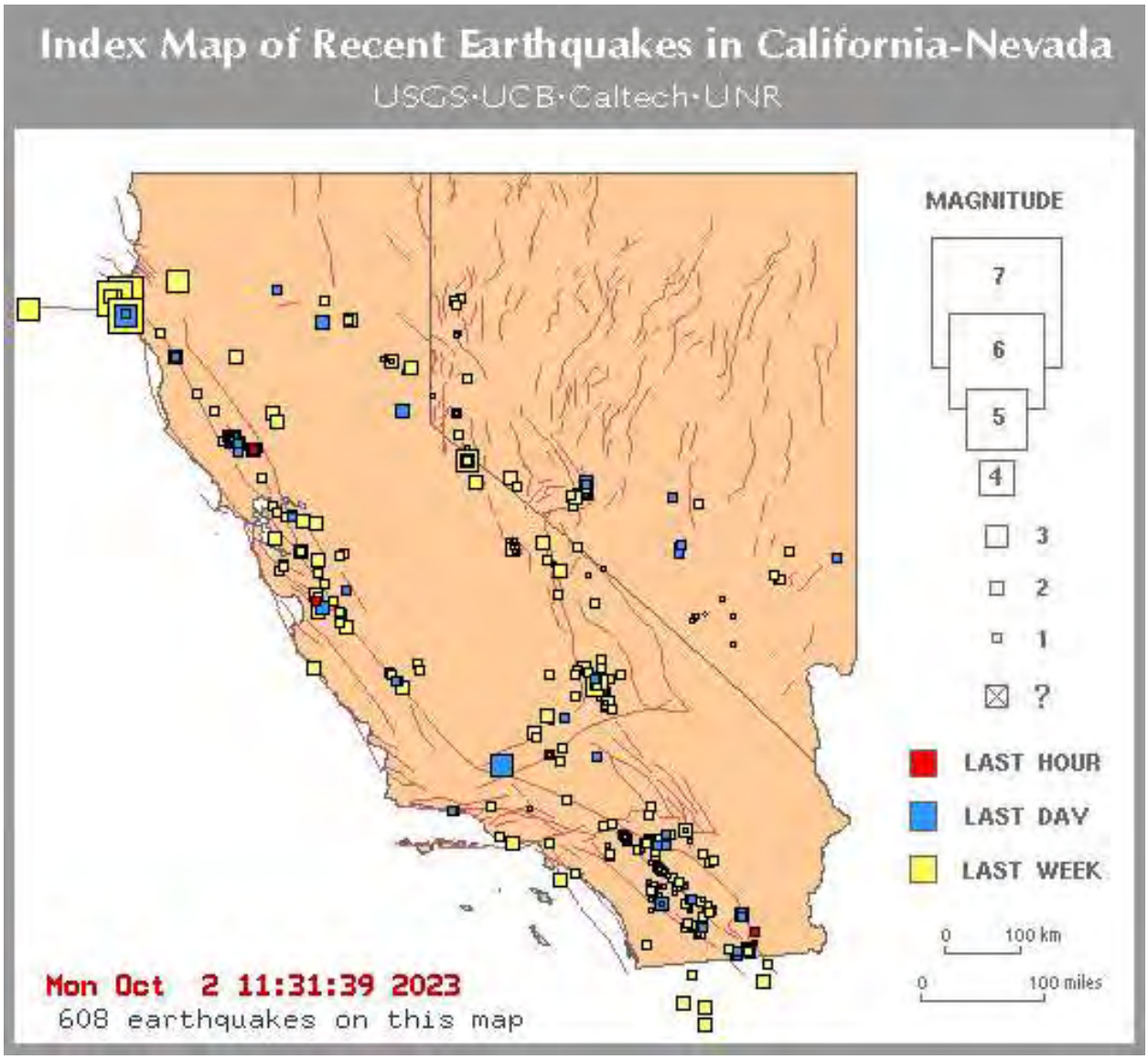


Map 38: Parallel Faults to the San Andreas Fault

SOURCE: Southern California Earthquake Center (SCEC)

HISTORICAL RECORD OF EARTHQUAKES IN SOUTHERN CALIFORNIA

Earthquakes occur *every* day in Southern California. Most are small with a magnitude less than M1. The below map depicts major faults in the Southern California region and recent seismic activity.



Map 39: Los Angeles County Earthquakes for the Past 7 Days

SOURCE: USGS-Caltech Seismic Net

History of Significant Earthquakes in Southern California

The chart below provides examples of 37 significant earthquakes (5.0M or above) in Southern California since 1857.

Date	Time	Location	Magnitude
01.09.1857	8:24 AM	Fort Tejon	7.9
02.24.1892	11:20 PM	Laguna Salada	7.3
12.25.1899	4:25 AM	San Jacinto/Hemet	6.7
04.21.1918	2:31 PM	San Jacinto	6.8
06.29.1925	7:42 AM	Santa Barbara	6.8
11.4.1927	5:51 PM	Offshore Lompoc	7.1
03.10.1933	5:54 PM	Long Beach	6.4
05.18.1940	8:37 PM	Imperial Valley	6.9
04.10.1947	7:58 AM	Manix	6.5
07.21.1952	3:52 AM	Kern County	7.5
04.9.1968	6:29 PM	Borrego Mountain	6.6
02.9.1971	6:01 AM	San Fernando	6.6
10.15.1979	4:16 PM	Imperial Valley	6.4
07.8.1986	2:21 AM	North Palm Springs	5.7
10.1.1987	7:42 AM	Whittier Narrows	5.9
11.24.1987	5:15 AM	Superstition Hills	6.6
06.28.1991	7:43 AM	Sierra Madre	5.8
04.22.1992	9:50 PM	Joshua Tree	6.1
06.28.1992	4:57 AM	Landers	7.3
06.28.1992	8:05 AM	Big Bear	6.3
01.17.1994	4:30 AM	Northridge	6.7
10.16.1999	2:46 AM	Hector Mine	7.1
12.22.2003	11:15 AM	San Simeon	6.5
07.29.2008	11:42 AM	Chino Hills	5.4
12.30.2009	10:48 AM	Northern Baja	5.8
07.7.2010	11:53 PM	Borrego Springs	5.4
08.26.2012	7:31 PM	Brawley	5.3
08.26.2012	8:57 PM	Brawley	5.4
12.14.2012	10:36 AM	Avalon	6.3
03.29.2014	4:09 AM	Brea	5.1
06.10.2016	1:04 PM	Borrego Springs	5.2
04.5.2018	12:29 PM	Santa Cruz Is	5.3
07.4.2019	10:33 AM	Searles Valley	6.4
07.5.2019	8:19 PM	Ridgecrest	7.1
06.3.2020	6:32 PM	Searles Valley	5.5
06.24.2020	10:40 PM	Lone Pine	5.8
06.5.2021	10:55 PM	Calipartria	5.3

Table 130: Significant Southern California Earthquakes Since 1857

SOURCE: Southern California Earthquake Center (SCEC) and Southern California Seismic Network

Disasters Declarations and Emergency Proclamations

FEMA disaster declarations allow state, tribal, and local governments to access federal aid for disaster response and recovery when overwhelmed. Similarly, the California Governor's Office of Emergency Services (Cal OES) issues proclamations to mobilize state resources and streamline procedures.

FEMA Disasters Declarations

Declaration Date: July 8, 2019 || California Earthquakes || DD# EM-3415-CA

Earthquakes remain a hazard in Los Angeles County and the LVMCOG region.

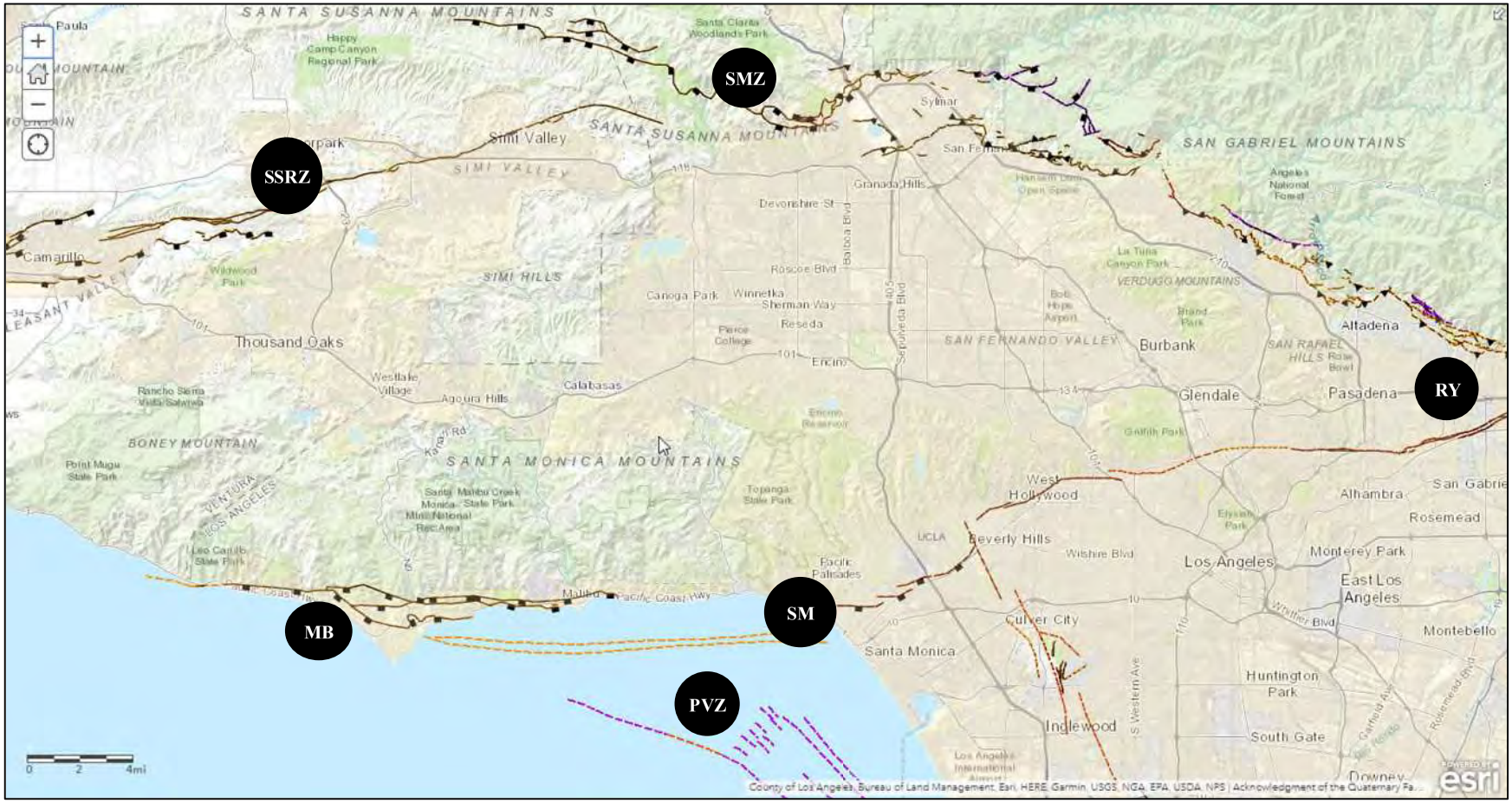
Cal OES Open State of Emergency Proclamations

No open emergency proclamations declared.

CAUSES AND CHARACTERISTICS OF EARTHQUAKES

Earthquake Faults In or Near the Las Virgenes-Malibu Region

There are multiple fault zones in proximity to the Las Virgenes-Malibu Region.



Map 40: Earthquake Faults in the LVMCOG Region

Fault Map Code	Fault Name	Probable Magnitude	Length	Distance to LVMCOG	Direction from the LVMCOG
MB	Malibu Coast Fault	6.0 – 7.0 M_w	21.1 miles	0 miles	S
SM	Santa Monica Fault	6.0 – 7.0 M_w	15.0 miles	10 miles	SE
PVZ	Palos Verdes Fault Zone	6.0 – 7.0 M_w	49.7 miles	4 miles	S
SSRZ	Simi-Santa Rosa Fault Zone	6.5 – 7.0 M_w	24.9 miles	8 miles	NW
SMFZ	Sierra Madre Fault Zone	6.0 – 7.0 M_w	46.6 miles	10 miles	N/NE
RY	Raymond Fault	6.0 – 7.0 M_w	16.2 miles	25 miles	E

SOURCE: U.S. Geological Survey and California Geological Survey, 2006, Quaternary fault and fold database for the United States, accessed 1/7/2010, from USGS web site: http//earthquakes.usgs.gov/regional/qfaults/

Las Virgenes-Malibu Region Earthquake Probability

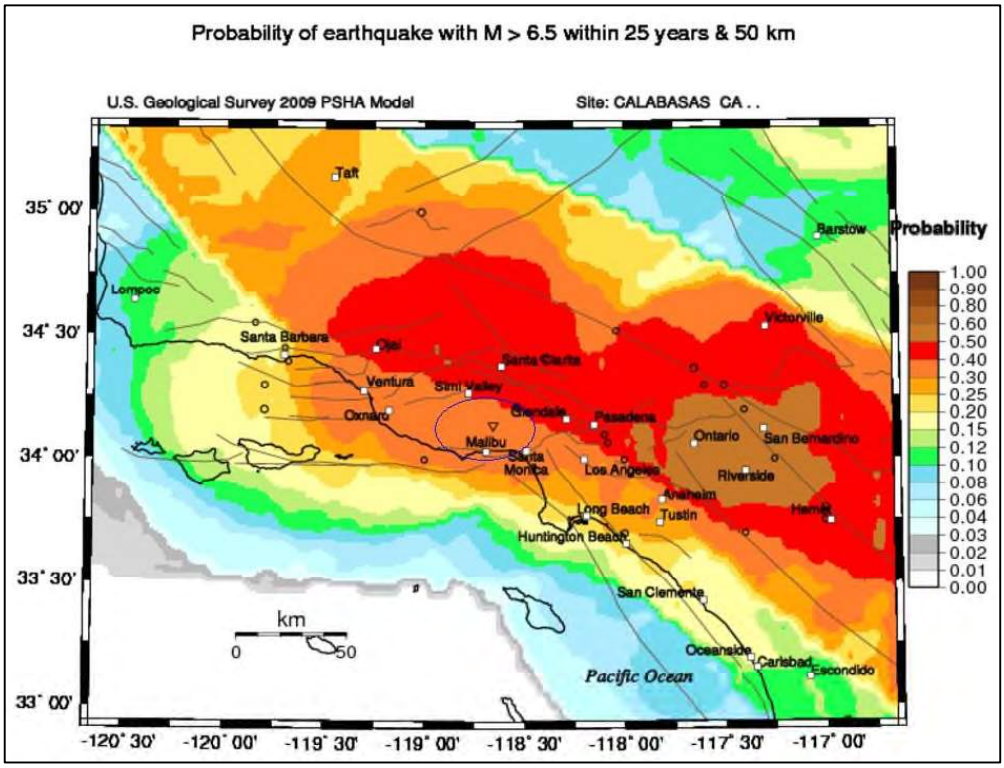
According to the U.S. Geological Survey the probability within the next 30 years for the Los Angeles Region is:

93% that an earthquake measuring magnitude 6.7
75% that an earthquake measuring magnitude 7
36% that an earthquake measuring magnitude 7.5

Additionally, the FEMA National Risk Index for the Los Angeles Region indicates a 0.983% chance of an earthquake per year.

Southern California region					
Magnitude (greater than or equal to)	Average repeat time (years)		30-year likelihood of one or more events		Readiness
5	0.24	(0.7)	100%	(1.0)	1.0
6	2.3	(0.9)	100%	(1.0)	1.0
6.7	12	(1.5)	93%	(1.0)	1.0
7	25	(1.4)	75%	(0.9)	1.1
7.5	87	(1.2)	36%	(0.9)	1.2
8	522	(0.4)	7%	(2.5)	1.3

In addition, according to the Earthquake Probabilistic Seismic Hazard Assessment (PSHA) model, there is a 30 to 40% chance that the Las Virgenes-Malibu Region will experience an earthquake of magnitude 6.5 or greater within the next 25 years.



Map 41: Southern California PHSA Model (USGS)

An earthquake of M6.5 or larger could cause a considerable number of casualties, as well as extensive damage to buildings, infrastructure, and critical facilities. The effects would be aggravated by aftershocks and secondary effects such as fire and landslides. In the event of a catastrophic earthquake, the capacity of the region to respond on its own would quickly become overwhelmed and assistance from surrounding municipalities, as well as the state and federal governments would be needed.

Following a major earthquake:

- Extensive search and rescue operations would be required
- The demand for emergency medical care would increase
- Food and temporary shelter would have to be provided for displaced individuals

Furthermore, it is likely emergency operations would be hampered by the loss of critical infrastructure and roads, damage to critical facilities, disruption of utilities, and communications disruptions. During the recovery period, extensive efforts would be required to remove debris, clear roadways, demolish unsafe structures, restore public utilities, and provide continuing care for the affected population including temporary shelters for displaced people. Finally, secondary issues such as hazardous materials releases and civil unrest could further strain resources.

ShakeMap Scenarios

Predicted ground shaking patterns throughout southern California for hypothetical scenario earthquakes are available from the United States Geological Survey as part of their on-going "ShakeMap" program. These maps are provided in terms of Instrumental Intensity, which is essentially Modified Mercalli Intensity (MMI) estimated from instrumental ground motion recordings. The following scenarios depict strong ground shaking patterns for the 1994 Northridge Earthquake and three hypothetical scenario events:

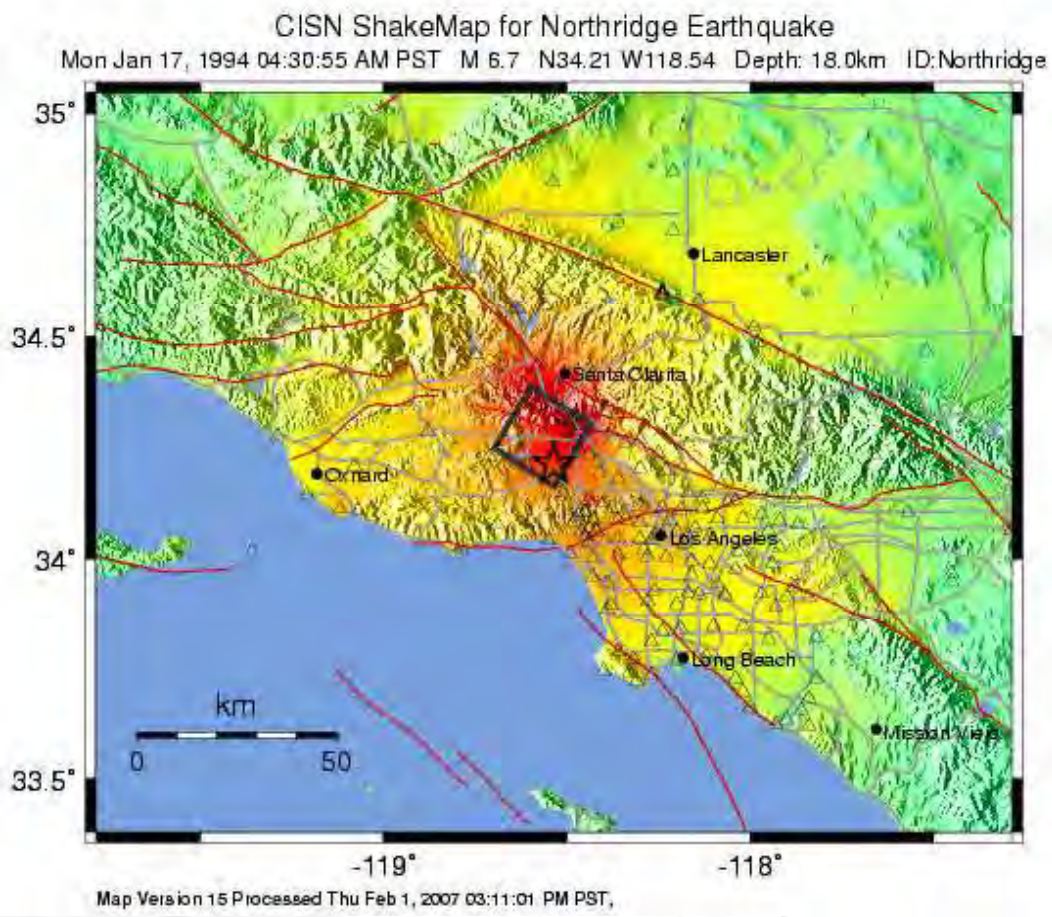
- M 6.7 1994 Northridge Earthquake
- M 6.6 Earthquake on the Santa Monica Fault Scenario
- M 6.9 Earthquake on the Newport-Inglewood Fault Scenario
- M 7.8 San Andreas Fault ShakeOut Scenario

Modeling various scenarios is useful in estimating the likely impact to local populations, infrastructure, and facilities. This information can be used to assist emergency managers and the public to better prepare for future events. Further, these studies and scenarios were used to further refine the estimated vulnerabilities and consequences of a major earthquake in the region for this HMP.

1994 Northridge Earthquake

The most recent significant seismic event in the area was the 1994 Northridge Earthquake. In terms of human impact, sixty people were killed, more than 7,000 injured, and 20,000 were left homeless.

- The shaking heavily damaged communities throughout the San Fernando Valley, Simi Valley, and the areas north and west of Los Angeles. It is estimated that the event resulted in $20 billion in losses (USGS).
- More than 1,600 buildings were "red-tagged" as unsafe to enter and another 7,300 buildings were "yellow-tagged" and restricted to limited entry. Thousands of other structures experienced minor damage.
- The impact to local infrastructure included sink holes in local roads, damaged water lines, ruptured gas lines, electrical power outages, pipeline distribution system damage, and communications disruptions.
- Seven major freeway bridges in the area collapsed and 170 were damaged - disrupting traffic in the Ventura-Los Angeles region for weeks following the earthquake.

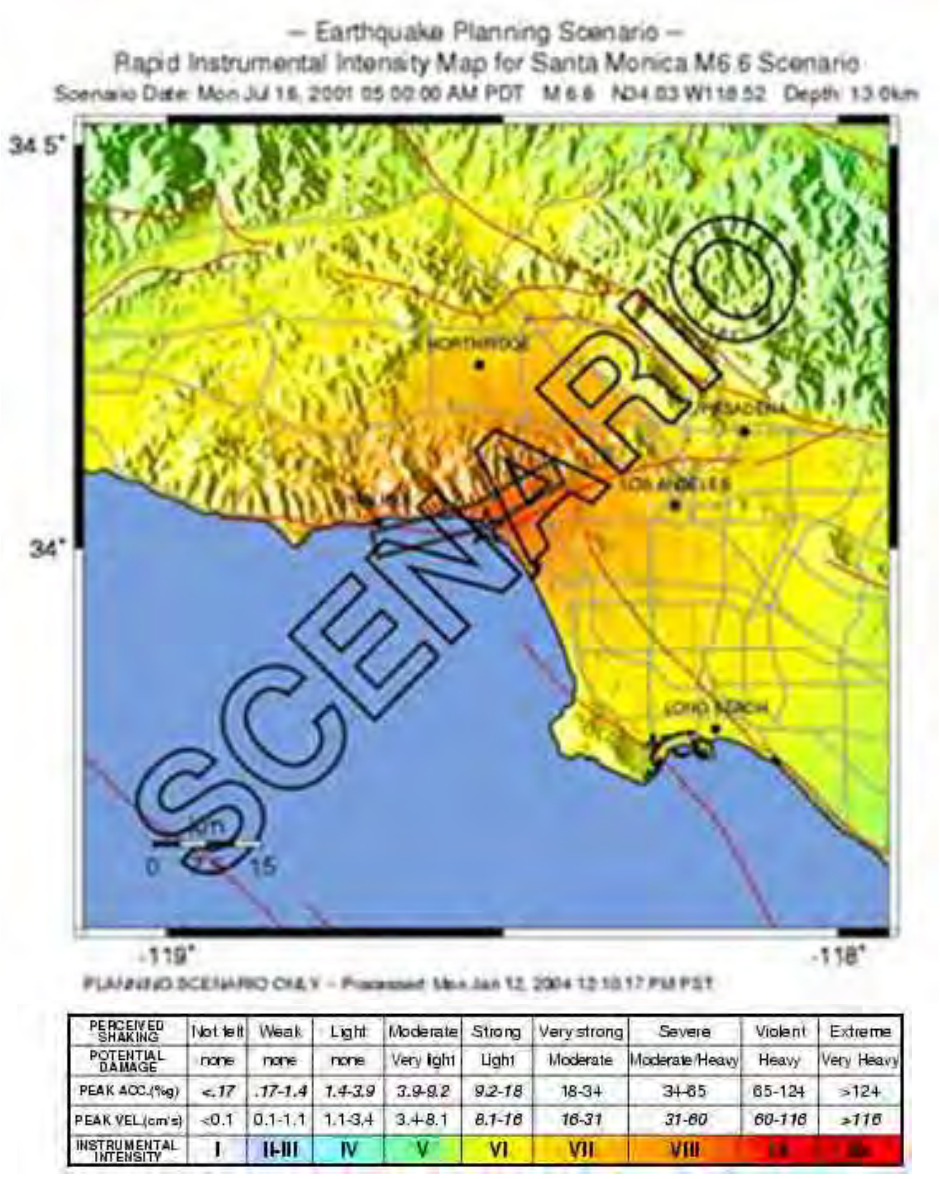


PERCEIVED SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	none	none	none	Very light	Light	Moderate	Moderate/Heavy	Heavy	Very Heavy
PEAK ACC.(%g)	<.17	.17-1.4	1.4-3.9	3.9-9.2	9.2-18	18-34	34-65	65-124	>124
PEAK VEL.(cm/s)	<0.1	0.1-1.1	1.1-3.4	3.4-8.1	8.1-16	16-31	31-60	60-116	>116
INSTRUMENTAL INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X+

Map 42: Northridge Earthquake ShakeMap

Santa Monica Fault Scenario

A M6.6 earthquake on the Santa Monica fault reflects a scenario that would result in Strong to Very Strong shaking in the Las Virgenes-Malibu Region with light to moderate potential damage.

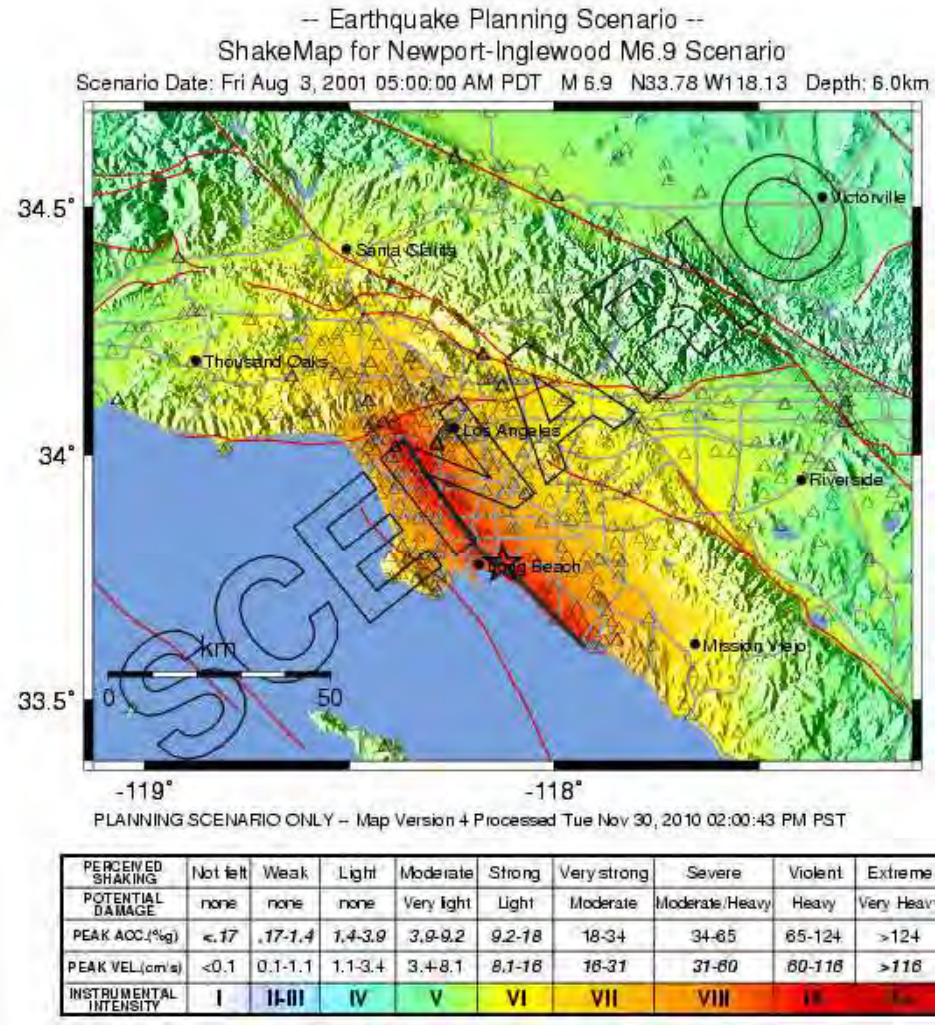


PERCEIVED SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	none	none	none	Very light	Light	Moderate	Moderate/Heavy	Heavy	Very Heavy
PEAK ACC.(%g)	<.17	.17-1.4	1.4-3.9	3.9-9.2	9.2-18	18-34	34-65	65-124	>124
PEAK VEL.(cm/s)	<0.1	0.1-1.1	1.1-3.4	3.4-8.1	8.1-16	16-31	31-60	60-116	>116
INSTRUMENTAL INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X+

Map 43: Santa Monica Fault Scenario ShakeMap

Newport-Inglewood Fault Scenario

A M6.9 earthquake on the Newport-Inglewood fault would result in parts of the Las Virgenes-Malibu Region experiencing very Strong to Severe shaking and potential damage could range from Moderate to Moderate/Heavy.

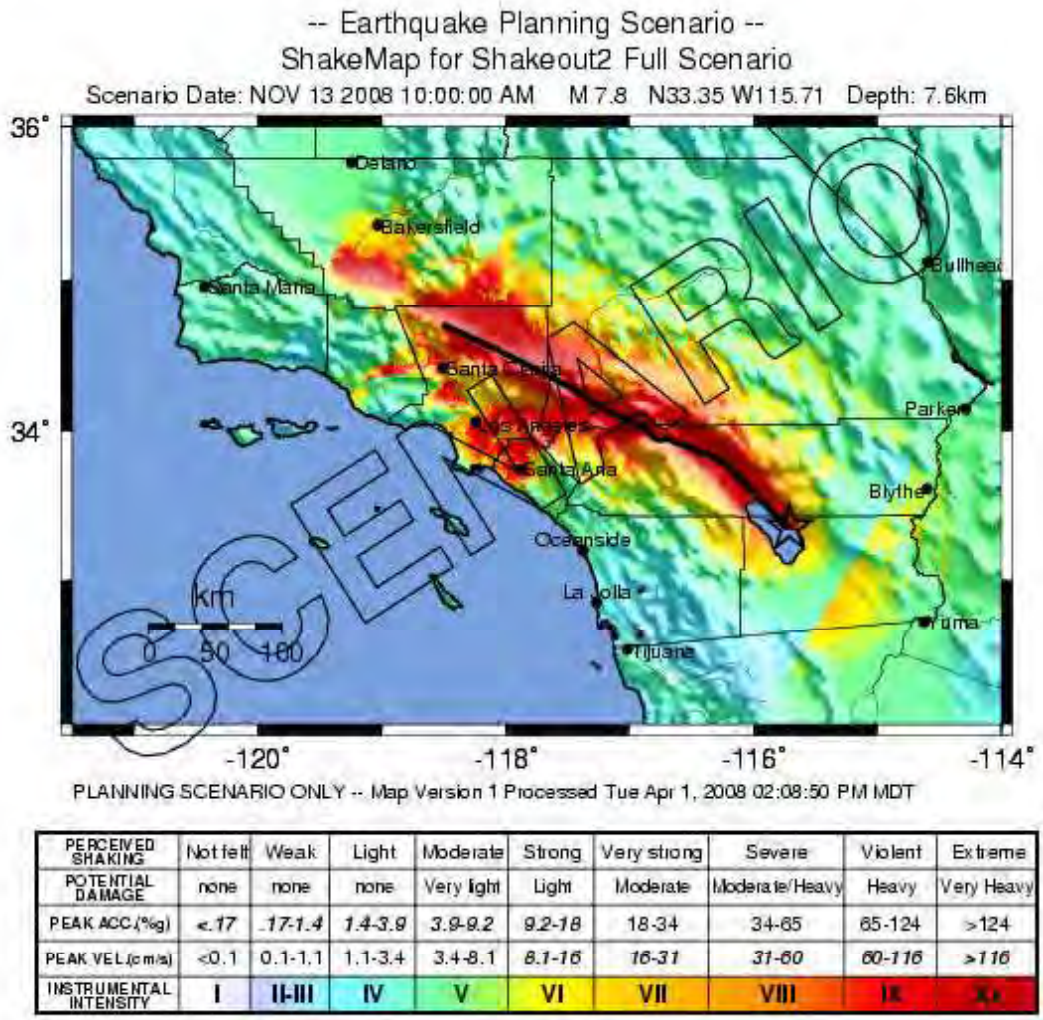


Map 44: Newport-Inglewood Fault Scenario ShakeMap

San Andreas Fault ShakeOut Scenario

A San Andreas earthquake has been used as the scenario for the annual ShakeOut Earthquake exercise and serves a basis for statewide emergency response exercises. Over 300 scientists, engineers, and others developed the San Andreas ShakeMap to study the likely consequences of a M7.8 earthquake on the San Andreas Fault.

The scenario estimates over 1,800 deaths, 50,000 injuries, $200 billion in damages and other losses, and severe, long lasting disruptions with regional implications



PERCEIVED SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	none	none	none	Very light	Light	Moderate	Moderate/Heavy	Heavy	Very Heavy
PEAK ACC.(%g)	<.17	.17-1.4	1.4-3.9	3.9-9.2	9.2-18	18-34	34-65	65-124	>124
PEAK VEL.(cm/s)	<0.1	0.1-1.1	1.1-3.4	3.4-8.1	8.1-16	16-31	31-60	60-116	>116
INSTRUMENTAL INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X+

Map 45: San Andreas Fault Scenario ShakeMap

STAKEHOLDER INPUT AND PARTICIPATION

To identify the threats, vulnerabilities, and consequences of a major earthquake on the Las Virgenes-Malibu Region, each member of the Planning Group which included representatives from the cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, and Westlake Village provided their input during planning meetings (see Annex B: Meeting Agendas and Attendees) and follow-up discussions. Specific topics of discussion included if any changes to the hazard priorities have changed since the previous HMP, how changes in the community have impacted the risk of each hazard, and what new mitigation actions can be taken. In addition, each member of the Planning Group as well as members of the public provided the input via online surveys (see Annex C: Community Disaster Preparedness and Risk Survey, Annex D: Planning Group HMP Risk Assessment Survey, and Annex E: Planning and Public Involvement).

EARTHQUAKE HAZARD IDENTIFICATION

A major earthquake impacting the Las Virgenes-Malibu area will likely result in casualties, damage to structures, and disruptions to critical infrastructure (roads, bridges, lifelines, etc.). In addition, the long-term impact to the local economy can be significant. The examples listed below provide brief descriptions of the types of damage that can be anticipated.

Casualties

Collapsed structures or falling debris can kill or injure hundreds of people and trap others. Trained search and rescue teams will be needed to pull many of the injured from badly damaged or partially collapsed structures. However, it may take rescuers many hours, perhaps days after the earthquake to free trapped people.

Additionally, damage to the transportation infrastructure could impede emergency responders. Furthermore, hospitals may not be able to provide care to the injured due to overcrowding and damage to their facilities.

Structures

In most California communities (including areas in the Las Virgenes-Malibu Region) many buildings were built before 1993 when building codes were not as strict as after the 1994 Northridge Earthquake. In addition, retrofitting is not required except under certain conditions and can be expensive. Therefore, the number of buildings at risk in the Southern California area remains a concern.

Transportation Infrastructure

Residents in the Las Virgenes-Malibu Region commute frequently by automobiles and public transportation. An earthquake can greatly damage bridges, tunnels, roads, and freeways. Although Caltrans has retrofitted numerous freeway bridges in California, there are still some that are not retrofitted. The Federal Highway Administration requires that bridges listed on the National Bridge Inventory be inspected every 2 years.

The resulting disruption caused by a major earthquake can hamper emergency response efforts and the normal movement of people and goods. Life and commerce within the region is highly dependent on the transportation infrastructure and the economic recovery of the region depends on how quickly repairs are completed. Recovery would begin with inspectors from local and state transportation agencies evaluating damage and recommending closures, scheduling immediate repairs, and studying more extensive repairs and replacement.

Lifelines

Lifelines include water, natural gas, electric power generation and distribution systems, fuel pipelines, sewer, and telecommunications systems. Ground shaking and amplification can cause pipes to break, power and telephone lines to fall, and damage cell phone and radio towers. A disruption to lifelines will hamper rescue, recovery, and rebuilding efforts as well as interrupt the distribution of important information to the public. Examples include:

- Ground shaking and ground deformation can damage pipelines and may rip many apart. Further, if soils liquefy pipelines may float or move laterally with the blocks of soil displaced by lateral spreading.
- Water pumping stations and wells are dependent on electrical power that may be unavailable in the days following an event.
- Damage to sewage pipelines can result in waste spills and failures.
- Damage to natural gas lines can result in fires or explosions as well as service disruptions.
- Power used in the Las Virgenes-Malibu Region is transported via a system of high-voltage transmission lines. Electrical transmission lines (overhead lines, power poles, and underground utility conduits) and distribution facilities (substations) can be disrupted or damaged. Ground failures such as landslides could damage lines and may take months to repair depending on accessibility. In addition, large porcelain insulators, bushings, and transformers are vulnerable to moderate ground motions and damaged transformers may take months to replace. Redundancies built into the electrical grid should mitigate some of the impact; however, a major earthquake will almost certainly disrupt the local electrical grid.
- Communications systems are vulnerable to overload in the minutes and hours following a major event. The communications infrastructure is comprised in part of hard-wired telephone and cable TV systems, microwave transmission stations, cellular telephone systems, and radio systems. Cellular systems are dependent on the hardwired connections between cell towers and land-based telephone systems. Hardwired systems and the cell phone infrastructure are owned and operated by private companies such as AT&T, Verizon, and Charter.

Fire

Downed power lines or broken gas pipelines can trigger fires. Furthermore, multiple fire emergencies may occur simultaneously. Major incidents will demand a larger share of resources and smaller fires may receive little or insufficient resources. Also, it may be more difficult for fire departments to respond to fire emergencies if fire stations suffer building damage. Finally, loss of electricity may cause pump failures resulting in a loss of water pressure in some communities, further hampering firefighting efforts.

Economy

Economic impacts include direct property damage, lost business output and productivity, business failures, business relocations, and a long term reduction in the economic base of the community. Damage to roads, bridges and buildings can impact the private sector's ability to conduct business as well as reduce consumer traffic. Consequently, companies that experience only minimal physical loss could suffer significant customer and revenue loss. Small businesses are especially vulnerable since they generally have fewer resources and are less likely to have prepared or planned for such an event.

Estimated Impact of an Event

If a major or great earthquake were to occur, the consequences to local populations, employment, and housing will be significant. The table below provides the estimated impact of a disaster using a 10% loss baseline.

Category	Agoura Hills	Calabasas	Hidden Hills	Malibu	Westlake Village	Impact if a 10% Loss Occurs
Population*	20,362	23,410	2,182	10,915	8,081	6,495
Total City Employment	11,100	11,800	5	6,483	3,700	3,309
Economy**	$621,000	$1,011,348	N/A	$578,443	$576,306	$278,710
Total Housing Units	7,799	9,401	692	6,936	3,273	2,810
Median Home Value	$857,700	$1,141,600	More than $2,000,000	More than $2,000,000	$1,029,100	More than $3.9B

Table 131: Estimated Population and Economic Loss of an Earthquake
*U.S. Census – American Community Survey 2021
**2017 U.S. Economic Census (in thousands)

Based on a 10% loss projection, more than 6,400 people would be displaced or significantly impacted, and more than 3,300 jobs could be lost (either temporarily or permanently) causing nearly $278M in economic losses. Also, more than 2,800 homes could be damaged or destroyed resulting in over $3.9 billion in losses (see Community Profile section for population, housing, and economic data).

Impact of Climate Change

Currently, earthquake research has not established a direct link between climate change and seismic activity that could impact the cities within the LVMCOG (Agoura Hills, Calabasas, Hidden Hills, Malibu, and Westlake Village), consequently climate change is not considered a contributor to the frequency or intensity of seismic events.

Impact of Land Use and Development

Each city within the LVMCOG has adopted the California State Building Code and maintains their own local requirements and development plans to control land use and development within their jurisdictions.

City	Impact of Land Use and Development
Agoura Hills	As new development projects within Agoura Hills are approved, each is required to meet or exceed the latest seismic codes to mitigate the impact of earthquakes. However, older structures that have not been retrofitted may be more susceptible to damage from severe earthquakes.
Calabasas	New development including commercial reconstruction and residential remodel projects within Calabasas are required to meet or exceed the latest seismic codes. Older structures may be more susceptible to damage from severe earthquakes.
Hidden Hills	As a fully developed community there is little room for new construction projects in Hidden Hills. However, older structures may be more susceptible to damage from severe earthquakes. Residential remodeling efforts will be required to meet the latest seismic standards.
Malibu	New development within Malibu is significantly restricted due to coastal constraints as well as hillside areas susceptible to damage due to seismic events. Further, commercial and residential development projects (new and remodels) are required to meet or exceed the latest seismic codes. Additionally, older structures, hillside homes, and areas subject to subsidence may be more susceptible to damage from severe earthquakes.
Westlake Village	New development projects within Westlake Village are reviewed and required to meet or exceed the latest seismic codes though older structures may be more susceptible to damage from severe earthquakes. Additionally, structures near the reservoir may be more prone to be impacted during an earthquake due to subsidence or water inundation.

Impact of Population Patterns

Each city within the LVMCOG (Agoura Hills, Calabasas, Hidden Hills, Malibu, and Westlake Village)

City	Impact of Population Patterns
Agoura Hills	In recent years, the population of Agoura Hills has shown a slight decrease. However, as new development projects are completed within Agoura Hills, an increase in the population and population densities may be expected to increase. As a consequence if a severe earthquake occurs, a larger number of residents can be expected to be impacted.
Calabasas	The population of Calabasas has shown a minor decrease since the previous HMP update. Consequently, it is not anticipated that an increase in the risk to local residents due to a severe earthquake will occur.
Hidden Hills	Recently, the population of Hidden Hills has shown a slight decrease so it is not anticipated that population increases will occur. However, as local residents age, there may be an increase in the number of vulnerable individuals in terms of age and disabilities which can require additional services following a seismic event.

City	Impact of Population Patterns
Malibu	The population of Malibu has shown a minor decrease since the last census. Nevertheless, as a major beach and surfing destination, daily variations in transit populations is expected. While the general level of risk has not increased, additional resources and planning may be required to manage the number of people within city limits after a seismic event.
Westlake Village	The population of Westlake Village has slightly decreased since the previous HMP update. However as local area development / redevelopment projects occur, there is the potential for an increase in the number of people at risk following a severe earthquake.

Risk of Future Earthquake

For the LVMCOG Region, the risk of future climate change events was estimated by the Working Group using the following weighted formula:

Risk = (0.45 x Probability) + (0.30 x Magnitude/Severity) + (0.15 x Warning Time) + (0.10 x Duration)

Probability		Magnitude / Severity		Warning Time		Duration	
Level ID	Value	Level ID	Value	Level ID	Value	Level ID	Value
Unlikely	1	Negligible	1	Less than 6 hrs	4	Less than 6 hrs	1
Possibly	2	Limited	2	6 to 12 hrs	3	Less than 24 hrs	2
Likely	3	Critical	3	12 to 24 hrs	2	Less than one wk	3
Highly Likely	4	Catastrophic	4	More than 24 hrs	1	More than one wk	4

The result was a climate change risk rating of 9.28 (see Annex C Working Group HMP Risk Assessment Survey for additional details):

Hazard	Probability	Magnitude	Warning Time	Duration	Risk
Earthquake	8.5	5	20	9.5	9.28

EARTHQUAKE VULNERABILITIES

Liquefaction

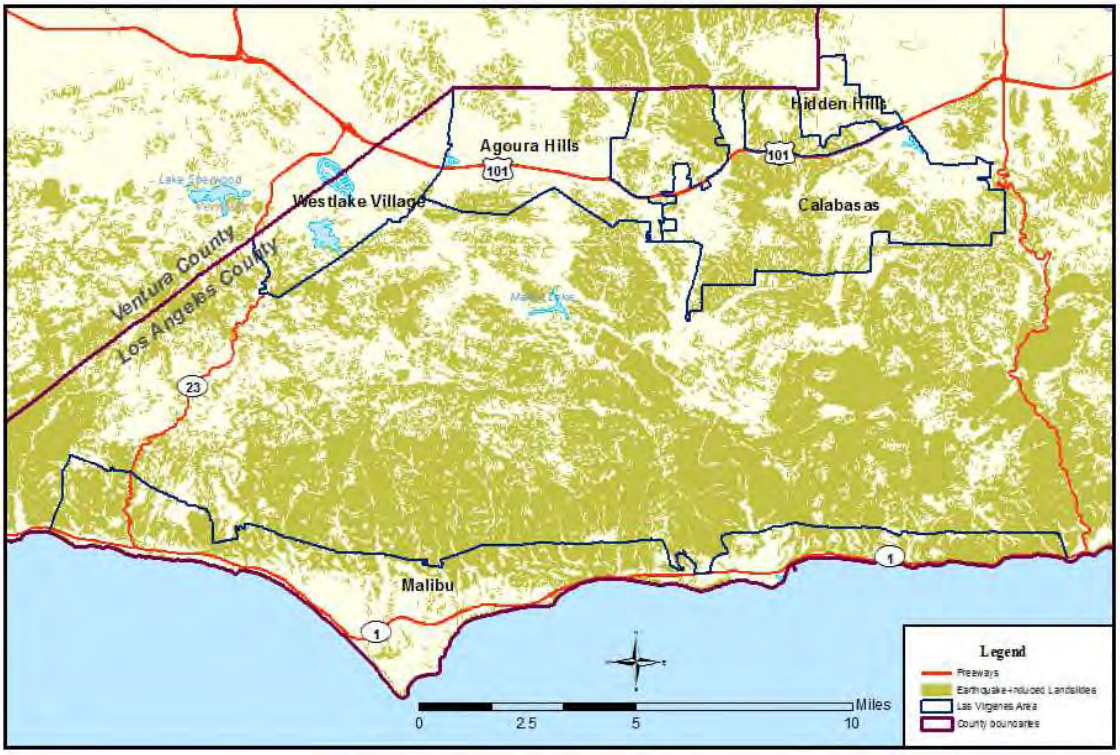
Buildings above liquefiable soils may settle or tip due to a loss of bearing capacity of the soil. Liquefaction occurs when soil grains in loose, saturated silty, sandy, or gravel soils attempt to rearrange themselves in a denser configuration when subjected to strong earthquake ground motions. The resulting increase in pressure of the water in the voids of the soil temporarily transforms the soil into a fluid, causing the soil to lose much of its strength. As the pore-water pressure builds, ground water and liquefied soil may find their way to the surface, creating sand boils on the ground surface. Several types of damaging ground failures can occur due to liquefaction including lateral spreading, ground settlement and sink holes.

Lateral spreading occurs when the subsurface soil liquefies. Gravity and inertial forces from the earthquake cause the mass to move downslope. Lateral spreading can occur on very shallow slopes (nearly flat ground) and they can cause ground displacements ranging from inches to tens of feet. This type of movement can damage utilities and structures supported by shallow or deep foundations. In the Las Virgenes-Malibu Region portions of Calabasas, Agoura Hills, and Malibu are in liquefaction zones.

Map 46: Liquefaction Zones

Landslide

The severity of seismically induced landslides and related damage is dependent on the level of ground shaking and groundwater conditions at the time of the earthquake. The map below depicts areas prone to earthquake induced landslides.



Map 47: Potential Earthquake Induced Landslide Areas

VULNERABLE POPULATIONS

In Agoura Hills, the elderly and those speaking languages other than English are particularly vulnerable during earthquakes. The elderly may face increased risks of injury and death due to mobility issues and slower response times, making evacuation and access to emergency services challenging. Non-English speakers may struggle with understanding emergency instructions and communications, potentially leading to delays in response and higher danger levels.

Calabasas residents, including those on fixed incomes, transitory workers, homeless individuals, and elderly or disabled residents, are significantly at risk. Fixed-income residents may have limited financial resources to repair damage or relocate, while transitory workers often lack stable housing, making safe shelter difficult to find. The homeless population may be extremely vulnerable due to a lack of shelter and resources. Elderly and disabled residents may face mobility challenges that hinder quick evacuation and access to emergency services.

In Hidden Hills, the older population, households with disabilities, and those with limited transportation capabilities are at heightened risk. These groups may face increased injury risk and difficulty evacuating and accessing medical care. Limited transportation may further exacerbate their vulnerability by hindering their ability to reach safe areas, potentially leading to prolonged exposure to hazardous conditions.

Malibu's transitory workers, elderly population, lower-income residents, and homeless individuals are particularly susceptible to earthquake impacts. Transitory workers often lack stable housing, increasing their risk during an earthquake. The elderly may have a higher risk of injury and face challenges accessing emergency services. Lower-income residents may have limited financial resources to recover and rebuild after damage. Homeless individuals may be the most vulnerable, as they lack shelter and resources, significantly increasing their risk of injury and death.

In Westlake Village, the elderly, disabled, homeless individuals, and residents speaking a language other than English are highly vulnerable during earthquakes. The elderly and disabled may face increased injury risks and difficulty evacuating and accessing medical care. Homeless individuals may lack shelter and resources, making them extremely vulnerable. Non-English speakers may have difficulty understanding emergency instructions, leading to delayed responses and increased risk.

EARTHQUAKE MITIGATION STRATEGIES

California Earthquake Mitigation Legislation

Code Development

Earthquakes often result in revisions and improvements in building codes. The 1933 Long Beach Earthquake resulted in the Field Act, affecting school construction. The 1971 Sylmar Earthquake brought another set of increased structural standards. Similar re-evaluations occurred after the 1989 Loma Prieta and 1994 Northridge Earthquakes. These code changes have resulted in stronger and more earthquake resistant structures.

The Alquist-Priolo Special Studies Zone Act requires the State Geologist to delineate "special studies zones" along known faults in California. Cities and counties affected by the zones must regulate certain development "projects" within the zones. The Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972 to mitigate the hazard of surface faulting to structures for human occupancy. This state law was a direct result of the 1971 San Fernando Earthquake, which was associated with extensive surface fault ruptures that damaged numerous homes, commercial buildings, and other structures (SOURCE: California Geological Survey).

The 1990 Seismic Hazards Mapping Act requires the California State Geologist to identify and map zones prone to seismically induced liquefaction, ground-shaking, landslides and other forms of ground failure resulting from earthquakes. The State Department of Conservation operates the Seismic Mapping Program for California.

The California Legislature has passed laws to strengthen the built environment and protect citizens. There are over 200 laws in the State Code related to earthquake safety. All new development within each of the individual cities within the Las Virgenes-Malibu Region comply with all current State and Los Angeles County Building Codes. The following table provides a partial list of California laws on earthquake safety.

Reference	Description
Government Code Section 8870-8870.95	Creates Seismic Safety Commission.
Government Code Section 8876.1-8876.10	Established the California Center for Earthquake Engineering Research.
Public Resources Code Section 2800-2804.6	Authorized a prototype earthquake prediction system along the central San Andreas fault near the City of Parkfield.
Public Resources Code Section 2810-2815	Continued the Southern California Earthquake Preparedness Project and the Bay Area Regional Earthquake Preparedness Project.
Health and Safety Code Section 16100-16110	The Seismic Safety Commission and State Architect will develop a state policy on acceptable levels of earthquake risk for new and existing state-owned buildings.
Government Code Section 8871-8871.5	Established the California Earthquake Hazards Reduction Act of 1986.
Health and Safety Code Section 130000-130025	Defined earthquake performance standards for hospitals.

Reference	Description
Public Resources Code Section 2805-2808	Established the California Earthquake Education Project.
Government Code Section 8899.10-8899.16	Established the Earthquake Research Evaluation Conference.
Public Resources Code Section 2621-2630 2621.	Established the Alquist-Priolo Earthquake Fault Zoning Act.
Government Code Section 8878.50-8878.52 8878.50.	Created the Earthquake Safety and Public Buildings Rehabilitation Bond Act of 1990.
Education Code Section 35295-35297 35295.	Established emergency procedure systems in kindergarten through grade 12 in all the public or private schools.
Health and Safety Code Section 19160-19169	Established standards for seismic retrofitting of un-reinforced masonry buildings.
Health and Safety Code Section 1596.80-1596.879	Required all child day care facilities to include an Earthquake Preparedness Checklist as an attachment to their disaster plan.

Table 132: Partial List of California Laws on Earthquake Safety

Source: http://www.leginfo.ca.gov/calaw.html

California Residential Mitigation Program

The California Residential Mitigation Program (CRMP) is an initiative aimed at enhancing the seismic resilience of residential structures in the state of California. Recognizing the seismic vulnerabilities of many homes in this region, the program offers resources and guidance to homeowners seeking to retrofit their properties to withstand earthquakes. CRMP provides valuable information on seismic hazards, engineering standards, and financial incentives available for retrofitting projects. By promoting proactive measures to reinforce residential structures, CRMP endeavors to mitigate potential damages and safeguard the well-being of Californian communities in the event of a seismic event.

LVMCOG Mitigation Activities

The cities of Agoura Hills, Calabasas, Malibu and West Lake Village have implemented the Los Angeles Region Uniform Code Program (LARUCP) Seismic Zone 4 requirements. These are more restrictive standards than required by the State of California Building Code.

Agoura Hills

The City of Agoura Hills General Plan (adopted in 2010 and updated in 2022) includes specific sections related to earthquake mitigation and preparedness. The Seismic Hazards Community Safety section of the General Plan, states,

> *Agoura Hills', significant seismic hazard is caused by potential ground shaking on the Simi–Santa Rosa Fault, Oak Ridge Fault, and San Cayetano Fault. The Simi–Santa Rosa Fault is approximately 7 miles from Agoura Hills and the Oak Ridge Fault and San Cayetano Fault are located 17 miles and 18 miles from the City respectively.*
>
> *The Alquist-Priolo Special Studies Zone Act requires the State Geologist to delineate "special studies zones" along known active faults in California. Cities and counties affected by the zones must regulate certain development "projects" within the zones. No Alquist-Priolo Special Studies Zones have been identified within the City of Agoura Hills.*

To minimize the adverse effects to residents, public and private property, and essential services caused by seismic and geologic hazards, the City of Agoura Hills has enacted the following policies:

- Enforcement of Building Code. Review all structures for compliance with the latest edition of the California Building Code (CBC). This code addresses all provisions associated with geologic and seismic regulations and the city requires the review of plans and inspection of all such structures considering the best management practices in site design and building construction methods.
- Geotechnical Investigations. Per City of Agoura Hill Building Code, any new structure could be subject to soils/geotechnical investigations and report to determine the potential for liquefaction, ground rupture, ground shaking, and soil bearing pressure in order to better design the structure for structural integrity.
- Slope Restrictions. Besides the hillside ordinance which has been in effect for years, and the regular CBC requirements, the City of Agoura Hills has more restrictive slope set back requirements. Slope failure repairs are subject to conditional use permit review with conditions for slope maintenance.
- Residential Footings. Due to the location of the City in relations with active faults, the City of Agoura Hills modified sections of the Governing California Residential Code (CRC) in order to provide higher standards for residential buildings in case of a seismic event by requiring continuous footings and better concrete reinforcements.
- Retrofit Critical Facilities. Encourage the upgrade, retrofitting, and/or relocation of all existing critical facilities (e.g. schools, police stations, fire stations, and medical facilities) and other important public facilities that do not meet current building code standards and are within areas susceptible to seismic or geologic hazards.

- Emergency Preparedness. At the time of any natural disaster, including an earthquake, the City staff and its consultants are trained to facilitate rapid recovery.
- The City of Agoura Hills is very involved with International Code Council (ICC) and its local chapters, California Building Officials (CALBO), and the State Building Standard Commission for the adoption, and implementation of the Building Code and all the seismic safety regulations. Additionally, every 3 years during the Code adoption process, the City has adopted more restrictive requirements than those of the State.

The following Goal and the specific policies related to earthquake mitigation included in the General Plan are described below.

Goal S-2 Protection from Geologic Hazards. Minimized adverse effects to residents, public and private property, and essential services caused by seismic and geologic hazards.
Policies

Policy	Description
S-2.1	Review Safety Standards. Regularly review and enforce all seismic and geologic safety standards, including the City's Building Code, and require the use of best management practices (BMPs) in site design and building construction methods. (Imp S-4)
S-2.2	Geotechnical Investigations. Require geotechnical investigations to determine the potential for ground rupture, ground shaking, and liquefaction due to seismic events, as well as expansive soils and subsidence problems on sites, including steep slopes, where these hazards are potentially present. (Imp S-4)
S-2.3	Retrofit Critical Facilities. Encourage the upgrade, retrofitting, and/or relocation of all existing critical facilities (e.g., schools, police stations, fire stations, and medical facilities) and other important public facilities that do not meet current building code standards and are within areas susceptible to seismic or geologic hazards. (Imp S-5)
S-2.4	Funding Programs. Pursue federal and state programs to provide additional protection against seismic activity. (Imp S-6)

The following table lists the California Building and Residential Codes (CBC and CRC) which were amended by the City of Agoura Hills in order to achieve better strengthening of structures in the community.

Amended 2022 CA Building Standards Code Section	Title
CBC 1613.5	Seismic design provisions for hillside buildings
CBC 1807.1.4	Permanent wood foundation systems
CBC 1807.2	Retaining walls
CBC 1809.3	Stepped footings
CBC 1809.7	Prescriptive footings for light-frame construction
CBC 1809.12	Timber footings
CBC 2304.10.2	Fastener requirements
CBC 2304.12.2.8	Wood used in retaining walls and cribs
CBC 2306.2	Wood-frame diaphragms
CBC 2306.3	Wood-frame shear walls
CBC 2308.6.8.1	Foundation requirements
CRC R403.1.2	Continuous footing in Seismic Design Categories D0, D1or D2
CRC R403.1.3.6	Isolated concrete footings
CRC R403.1.5	Slope
CRC R404.2	Wood foundation walls

These policies are intended to minimize the adverse effects to residents, public and private property, and essential services caused by seismic and geologic hazards – which is especially important for at risk vulnerable populations such as the elderly, very young, single parent households, and fixed income individuals since these residents may not have the financial resources to recover from a major seismic event.

Calabasas

The City of Calabasas 2030 General Plan, Safety Element includes specific policies to mitigate the threat of earthquakes and other hazards. For example:

Policy	Description
VII-1	Incorporate adequate mitigation measures into proposed development projects to achieve an acceptable level of risk from potential seismic hazards resulting from ground motion or fault rupture.
VII-2	Emphasize prevention of physical and economic loss associated with earthquakes and other geologic disasters through early identification of potentially hazardous conditions prior to project approval.
VII-3	Facilitate rapid physical and economic recovery following an earthquake, geologic disaster, or wildland fire through early investigation of the event and implementation of effective new standards for design of structures.
VII-4	Incorporate the analysis and mitigation of seismic risks into the analysis and design of water supply infrastructure.
VII-5	Discourage development within potential landslide areas and areas with severe soils limitations as the City's preferred management strategy, and as a higher priority than attempting to implement engineering solutions.
VII-6	Where engineering solutions to slope stability constraints are required, implement landform grading programs so as toto recreate a natural hillside appearance.
VII-7	Include projected climate change impacts of slope stability changes after wildfires and develop mitigation strategies for new areas deemed at risk to slope instability.
VII-8	Prior to approval of development projects within the liquefaction or landslide hazard zones depicted on Figure VII-2 or other areas identified by the City Engineer as having significant liquefaction or landslide hazards, require applicants to prepare site-specific liquefaction and/or landslide studies and mitigation. Such studies shall be subject to review and approval by the City Engineer.
VII-9	Work cooperatively with the Las Virgenes Municipal Water District to ensure that water supplies are not interrupted by seismic events such as surface rupture, ground shaking, ground failure, tsunami, seiche, or dam failure. Encourage residents, homeowners, and landlords to maintain an on-site emergency supply of water for 3-days in case a seismic event damages water lines.
VII-10	Prepare a bridge preventative maintenance plan that is regularly updated in conformance with the findings from Caltrans' annual bridge inspection reports. Implement maintenance recommendations by seeking funding from Caltrans and the Federal Highway Administration, and prioritize bridges that are part of critical evacuation routes.

These policies are intended to minimize the adverse effects to residents, public and private property, and essential services caused by seismic and geologic hazards. Specific policy implementation activities include:

- Incorporate adequate mitigation measures into proposed development projects to achieve an acceptable level of risk from potential seismic hazards resulting from ground motion or fault rupture.
- Emphasize prevention of physical and economic loss associated with earthquakes and other geologic disasters through early identification of potentially hazardous conditions prior to project approval.

- Facilitate rapid physical and economic recovery following an earthquake, geologic disaster or wildland fire through early investigation of the event and implementation of effective new standards for design of structures.
- Discourage development within potential landslide areas and areas with severe soils limitation as the City's preferred management strategy, and as a higher priority than attempting to implement engineering solutions.
- Where engineering solutions to slope stability constraints are required, implement landform grading programs so as to recreate a natural hillside appearance.
- Prior to approval of development projects within the liquefaction or landslide hazard zones or other areas identified by the City Engineer as having significant liquefaction and/or landslide hazards, require applicants to prepare site specific liquefaction and/or landslide studies and mitigation. Such studies shall be subject to review and approval by the City Engineer.

In March 2010, the City of Calabasas through the Department of Public Works published guidelines provide the minimum standards and recommended format for engineering geologic and geotechnical engineering reports submitted to the City of Calabasas. Further, in September 2010, the City of Calabasas amended its building codes to the California Building Code Standards which include Seismic design as of January 1, 2011. Finally, the City recently adopted the tri-annual CA Building Codes, which went into effect on January 1, 2023.

Together, the City of Calabasas' policies, building codes, and ongoing update efforts mitigate the risk of earthquake damage to structures in the city. This will minimize the potential for injuries and loss of life, lessen rebuilding costs, and shorten recovery timeframes. The overall impact benefits vulnerable populations such as the elderly, very young, single parent households, and fixed income residents who are less able to financially recover from the personal damage caused by a major seismic event.

Hidden Hills

The Safety Element of Hidden Hill's General Plan (1995) includes a focus on, "the reduction and/or prevention of injuries, loss of life, property damage, and economic and social disruption due to fires, floods, seismic activities, and other natural disasters."

The City of Hidden Hills Safety Element serves three key functions:

- Provide a framework by which safety considerations are introduced into the planning and development process;
- Identify and evaluate natural hazards; and
- Establish goals and policies which minimize potential adverse effects related to natural hazards

In addition, the city implements an Emergency Evacuation Plan. The Emergency Evacuation Plan is an important aspect since there are limited means of ingress and egress to the community.

Further, the City of Hidden Hills includes specific goals and policies related to natural hazards and the risk of earthquakes:

Goal 1: Protect life and property from geologic and seismic hazards in the City.

Policy	Description
1.1	Require that all new buildings in Hidden Hills comply to the current building standards.
1.2	Protect areas of potential slope instability from future residential developments.
1.3	Require a "slope stability assessment" to be conducted prior to taking action on future single family residential subdivisions which are located in areas of potential slope instability.

The Housing and Land Use Elements of the General Plan ensure that structures in Hidden Hills comply with standards for design, building materials, and are not subject to undue hazard based on their location. The City of Hidden Hills has included several mitigation requirements under Title 5, Land Use and Develop. They are:

3319.2 Geologic Hazard.

- No building or grading permit shall be issued under the provisions of this Section when the Building Official finds that property outside the site of the proposed work could be damaged by activation or acceleration of a geologically hazardous condition and such activation or acceleration could be attributed to the proposed work on, or change in use of, the site for which the permit is requested. For the purpose of this subsection, geologically hazardous condition does not include the hazard of surface displacement due to earthquake faults.
- Work requiring a building or grading permit by this Code is not permitted in an area determined by the City Engineer to be subject to hazard from landslide, settlement or slippage. These hazards include those from loose debris, slope wash and the potential for mud flows from natural slopes or graded slopes. For the purpose of this subsection, landslide, settlement or slippage does not include surface displacement due to the earthquake faults.

These plans, goals and policies are designed to mitigate the risk of earthquake damage to structures which will minimize injuries and loss of life as well as reduce rebuilding costs – which is especially important for at risk vulnerable populations such as the elderly, very young, single parent households, and fixed income individuals since these residents may not have the financial resources to recover from a major seismic event.

Malibu

The City of Malibu General Plan, Safety and Health Element includes goals and measures to mitigate the risk of earthquakes.

5.3.1 S Goal 1: A Community that is Free from All Avoidable Risks to Safety, Health and Welfare from Natural and Man-Made Hazards

Objective	Policy	Description
S Objective 1.1: Losses to Life and Property from Natural and Man-Made Hazards Greatly Reduced from Historic Levels.	S Policy 1.1.1	The City shall protect people and property from environmental hazards.
S Objective 1.2: Risks to residents and businesses from development in Hazardous areas are minimized.	S Policy 1.2.1	The City shall require development to provide for analyses of site safety related to potential hazards of fault rupture, earthquake ground shaking, liquefaction, and rockfalls.

Specific measures related to earthquake mitigation include:

S Implementation Measure	Description
39	Develop and maintain a development geo-hazard database to incorporate findings from site specific and area hazard-related studies.
40	Adopt and update as appropriate maps of extreme fire danger areas, 100- year flood plains, landslide and debris flow danger, active and potentially active faults, tsunami, and any other hazard areas; and inform residents of those areas of risks and possible mitigation measures.
41	Require that all new construction be designed to be earthquake resistant to maximum probable earthquakes.
42	Apply all restrictions and investigation requirements mandated by the State under the Alquist-Priolo Special Studies Zones Act for faults classified as “active” to development on properties crossed by or adjacent to the Malibu Coast Fault.
45	Require that all critical use facilities (hospitals, police and fire stations) be earthquake resistant designed for the effects of a maximum credible earthquake.
47	To protect slope stability, restrict grading or development related vegetation clearance where the slope exceeds 2:1, except as required for fire safety, driveways and utilities and where there is no reasonable alternative.
50	Require that soils, geologic and structural evaluation reports with appropriate mitigation measures be prepared by registered soils engineers, engineering geologists, and/or structural engineers and that all recommended mitigation measures be implemented.
51	Evaluate proposed development for its impact on, and from, geologic hazards, flood and mud flow hazard, and fire hazard.

The City also implements a comprehensive Emergency Operations Plan and has developed a Mass Evacuation Plan.

These City of Malibu plans, goals, objectives, and measures are designed to mitigate the risk of earthquake damage to structures which will minimize injuries and loss of life as well as reduce rebuilding costs. Mitigation is particularly critical for at risk vulnerable populations such as the elderly, very young, single parent households, low income and fixed income individuals since these residents may not have the financial resources to recover from a major seismic event.

Westlake Village

The Los Angeles County Department of Public Works oversees Westlake Village's Building and Safety Department. The Building and Safety Division is the enforcement, through the plan check and inspection process, of the Building, Plumbing, Mechanical, and Electrical Codes, as well as other local and State requirements relevant to the construction and occupancy of public and private structures. Other pertinent State and local requirements enforced by Building and Safety include zoning requirements, general hazards mitigation, geology, disabled access, and environmental protection.

Prior to development on certain soils such as thicker alluvium where liquefaction may occur, the City of Westlake Village requires a soils report. Additionally, if a hillside development is planned on an area located on sediments or volcanic rock, an engineering geology and soil investigation is required.

In addition, the City of Westlake Village General Plan (1993) contains specific goals, objectives, and policies to address the risk of earthquakes and other hazards within the city.

Goal	It shall be the goal of the City of Westlake Village to minimize hazards to public health, safety and welfare which may result from geologic conditions, seismic activity and flooding.
Policies & Objectives	Objective It shall be the objective of the City of Westlake Village to: 1. Provide for an efficient and safe evacuation of the community in the event of a major disaster. Policies It shall be the policy of the City of Westlake Village to: 1.1. Maintain an effective Citywide Emergency Preparedness Plan (I-1 and 1-2). Objective It shall be the objective of the City of Westlake Village to: 2. Ensure that construction and development activities within the community does not expose residents to avoidable natural hazards. Policies It shall be the policy of the City of Westlake Village to: 2.1. Require the preparation of a detailed geologic and soils report to accompany each grading permit application in all hillside management areas (I-4). 2.2. Prohibit the placement of structures for human habitation within flood prone areas unless the flood hazard is eliminated by measures that do not impair the carrying capacity of the watercourse (I-5). 2.3. Enforce the provisions of the Uniform Building Code, specifically Chapters 23 and 70 as they relate to earthquake-resistant design and excavation and grading (I-6).

The City of Westlake Village Implementation Program includes:

I-1	Continue to update the Citywide Emergency Preparedness Plan as new information becomes available.
I-2	Periodically distribute an updated pamphlet which informs individual residents of their responsibilities for emergency preparedness.
I-3	Support training programs to train volunteers to assist police, fire protection and civil defense personnel during and after a seismic, fire or flooding event.
I-4	Continue to implement the provisions of the Hillside Management ordinance and coordinate with the Los Angeles County Building and Safety Department so all applicable grading and development standards are implemented.
I-5	Coordinate with the Los Angeles County Flood Control district to ensure that potential flooding hazards associated with proposed new development are fully mitigated.
I-6	Coordinate with the Los Angeles County Building and Safety Department in the review of all development proposals, ensuring Chapters 23 and 70 of the Uniform Building Code are enforced.

The City of Westlake Village's goals, policies, and objectives are designed to mitigate the impact of earthquakes by reducing the potential for loss of life, injuries, and property damage (including critical infrastructure and utilities) by mandating minimum standards for building and construction as well as ongoing maintenance of responsible planning efforts. Further, as new seismic research informs updated construction standards, the city will evaluate and update their building requirements including conformance to the California Building Code. These goals, policies, and objectives are especially important for at risk populations such as elderly, disabled, young and fixed income or financially underserved individuals who benefit by reducing the risk of injury and property loss.

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SECTION 7. WILDFIRE

THE NATURE OF THE WILDFIRE THREAT

Fire is a natural part of the ecosystem in Southern California. However, wildfires present a substantial hazard to life and property in communities such as the Las Virgenes-Malibu Region that are built within or adjacent to hillsides and mountainous areas. Consequently, there is a significant potential for losses due to fire in the Region (including wildland and urban fires).

HISTORICAL RECORD OF SIGNIFICANT FIRES

The table below provides a summary of the Top 20 Most Destructive Wildfires in California according to the California Division of Forestry and Fire Protection (CAL FIRE) as of September 2023.

Top 20 Most Destructive California Wildfires

	FIRE NAME *(CAUSE)*	DATE	COUNTY	ACRES	*STRUCTURES*	DEATHS
1	**CAMP** *(Powerlines)*	November 2018	Butte	153,336	**18,804**	85
2	**TUBBS** *(Electrical)*	October 2017	Napa & Sonoma	36,807	**5,636**	22
3	**TUNNEL - Oakland Hills** *(Rekindle)*	October 1991	Alameda	1,600	**2,900**	25
4	**CEDAR** *(Human Related)*	October 2003	San Diego	273,246	**2,820**	15
5	**NORTH COMPLEX** *(Lightning)*	August, 2020	Butte, Plumas, & Yuba	318,935	**2,352**	15
6	**VALLEY** *(Electrical)*	September 2015	Lake, Napa & Sonoma	76,067	**1,958**	4
7	**WITCH** *(Powerlines)*	October 2007	San Diego	197,990	**1,650**	2
8	**WOOLSEY** *(Electrical)*	November 2018	Ventura	96,949	**1,643**	3
9	**CARR** *(Human Related)*	July 2018	Shasta County, Trinity	229,651	**1,614**	8
10	**GLASS** *(Undetermined)*	September 2020	Napa & Sonoma	67,484	**1,520**	0
11	**LNU LIGHTNING COMPLEX** *(Lightning/Arson)*	August 2020	Napa, Solano, Sonoma, Yolo, Lake, & Colusa	363,220	**1,491**	6
12	**CZU LIGHTNING COMPLEX** *(Lightning)*	August 2020	Santa Cruz, San Mateo	86,509	**1,490**	1
13	**NUNS** *(Powerlines)*	October 2017	Sonoma	44,573	**1,355**	3
14	**DIXIE** *(Powerlines)*					
15	**THOMAS** *(Powerline)*	December 2017	Ventura & Santa Barbara	281,893	**1,063**	2
16	**CALDOR** *(Human Related)*	September 2021	Alpine, Amador, & El Dorado	221,835	**1,005**	1
17	**OLD** *(Human Related)*	October 2003	San Bernardino	91,281	**1,003**	6
18	**BUTTE** *(Powerlines)*	September 2015	Amador & Calaveras	70,868	**965**	2
19	**JONES** *(Undetermined)*	October 1999	Shasta	26,200	**954**	1
20	**AUGUST COMPLEX** *(Lightning)*	August 2020	Mendocino, Humboldt, Trinity, Tehama, Glenn, Lake, & Colusa	1,032,648	**935**	1

"Structures" include homes, outbuildings (barns, garages, sheds, etc) and commercial properties destroyed.
This list does not include fire jurisdiction. These are the Top 20 regardless of whether they were state, federal, or local responsibility.
*Numbers not final

10/24/2022

Table 133: CAL FIRE Top 20 Most Destructive Wildfires

Source: CAL FIRE (https://34c031f8-c9fd-4018-8c5a-4159cdff6b0d-cdn-endpoint.azureedge.net/-/media/calfire-website/our-impact/fire-statistics/featured-items/top20_destruction.pdf?rev=ee6ea855632a4b56a46adea1d3c8022f&hash=5B8B3A1A35CBB52CB0ED7A010F0B52E0)

History of Fire Events in the Las Virgenes-Malibu Region

The Las Virgenes-Malibu COG Region has a long history of wildland fires. In fact, over the past 110 years nearly the entire Las Virgenes Malibu Region has been impacted by fire. Major fires since 2005 in the Las Virgenes-Malibu Region include the following events:

Name	Year	Estimated Acres	Structure Loss
Woolsey Fire	2018	96,949	1,643
Lost Fire	2008	167	0
Corral Fire	2007	4,901	53
Malibu Canyon Fire	2007	4,565	22
Sherwood Fire	2006	168	0
Topanga Fire	2005	24,175	323

Table 134: Major Fires Near of / In the Las Virgenes-Malibu Region

The map below outlines the burn area and starting location of the 2018 Woolsey Fire. The fire which burned almost 100,000 acres, included 3 casualties, and prompted evacuations of nearly 300,000 people was primarily fueled by dry conditions, strong Santa Ana winds, and parched vegetation. Per California Public Utilities Commission, Cal Fire's investigation report states that the fire was caused by "electrical equipment associated with the Big Rock 16kV circuit, owned and operated by Southern California Edison (SCE)", as well as a series of other events. The Woolsey Fire ultimately led to widespread destruction of homes, wildlife habitats, and natural landscapes, prompting extensive emergency response efforts and a substantial recovery process for affected communities.

Figure 84: Woolsey Fire Smoke Plume
Credit: U.S. Forest Service

Map 48: Woolsey Fire Perimeter
Source: National Park Services (https://www.nps.gov/samo/learn/management/2018-woolsey-fire.htm)

Disasters Declarations and Emergency Proclamations

FEMA disaster declarations allow state, tribal, and local governments to access federal aid for disaster response and recovery when overwhelmed. Similarly, the California Governor's Office of Emergency Services (Cal OES) issues proclamations to mobilize state resources and streamline procedures.

FEMA Disasters Declarations

Declaration Date: September 1, 2021 || California Caldor Fire || DD# EM-3571-CA

While wildfires remain a hazard in Los Angeles County and the LVMCOG region, the Caldor Fire did not directly impact the LVMCOG region.

Cal OES Open State of Emergency Proclamations

Proclamation Date: 9/25/20 || Creek Fire / Bobcat Fire / I-10 Freeway

The Creek fire and Bobcat fire occurred near the LVMCOG area but did not directly impact the region, besides possible smoke and debris in the area. Additionally, the I-10 freeway fire occurred roughly 30 miles from the LVMCOG region, likely not having any direct impact.

CAUSES AND CHARACTERISTICS OF WILDFIRES

Southern California has two distinct areas of risk for wildland fire. First, the foothills and lower mountainous areas which are often covered with scrub brush or chaparral. Second, the higher elevation mountains which are contain large forest areas. In fact, the magnitude of the 2003 fires that struck Southern California were the result of three primary factors: (1) severe drought, accompanied by a series of storms that produced thousands of lightning strikes and windy conditions; (2) an infestation of bark beetles that has killed thousands of mature trees; and (3) the effects of wildfire suppression over the past century that led to a build-up of brush and small diameter trees in the forests.

Las Virgenes-Malibu Region Wildfire Probability

For the Los Angeles Region, the FEMA National Risk Index indicates a 0.808% chance of a wildfire occurring every year.

STAKEHOLDER INPUT AND PARTICIPATION

To identify the threats, vulnerabilities, and consequences of a major Wildfire on the Las Virgenes-Malibu Region, each member of the Planning Group which included representatives from the cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, and Westlake Village provided their input during planning meetings (see Annex B: Meeting Agendas and Attendees) and follow-up discussions. Specific topics of discussion included if any changes to the hazard priorities have changed since the previous HMP, how changes in the community have impacted the risk of each hazard, and what new mitigation actions can be taken. In addition, each member of the Planning Group as well as members of the public provided the input via online surveys (see Annex C: Community Disaster Preparedness and Risk Survey, Annex D: Planning Group HMP Risk Assessment Survey, and Annex E: Planning and Public Involvement).

WILDFIRE HAZARD IDENTIFICATION

Urban/Wildland Interface Fires

The Las Virgenes-Malibu Region is like many Southern California communities that are challenged by the increasing number of houses being built on the urban/wildland interface. The National Wildland Coordinating Group defines urban/wildland interface as "the line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuel.

In terms of urban/wildland interface fires, there are three categories of concern:

- The classic urban/wildland interface exists where well-defined urban and suburban development presses up against open expanses of wildland areas;
- The mixed urban/wildland interface is characterized by isolated homes, subdivisions and small communities situated predominantly in wildland settings;
- Occluded urban/wildland interfaces exist where islands of wildland vegetation occur inside a largely urbanized area.

Figure 85: Woolsey Fire – Overlooking King Gillette Ranch

Figure 86: Woolsey Fire - Peter Strauss Ranch

Source: National Park Service

Very High Fire Hazard Severity Zones

For the purposes of describing the severity of fire hazard areas, the Los Angeles County Fire Department classifies areas according to criteria established in the State legislation commonly referred to as the "Bates Bill". The Bates Bill Process determines **V**ery **H**igh **F**ire **H**azard **S**everity **Z**ones (VHFHSZs) including Local Responsibility Areas (LRAs).

Very High Local Responsibility Areas (LRA)	Government Code 51175-89 directs the California Department of Forestry and Fire Protection (CAL FIRE) to identify areas of very high fire hazard severity zones within Local Responsibility Areas (LRA). Mapping of the areas, referred to as Very High Fire Hazard Severity Zones (VHFHSZ), is based on data and models of, potential fuels over a 30-50 year time horizon and their associated expected fire behavior, and expected burn probabilities to quantify the likelihood and nature of vegetation fire exposure (including firebrands) to buildings. Public Resources Code 4201-4204 directs the California Department of Forestry and Fire Protection (CAL FIRE) to map fire hazard within State Responsibility Areas (SRA) based on fuel loading, slope, fire weather, and other relevant factors present, including areas where winds have been identified by the department as a major cause of wildfire spread. These zones, referred to as Fire Hazard Severity Zones (FHSZ), classify a wildland zone as Moderate, High, or Very High fire hazard based on the average hazard across the area included in the zone.
Very High State Responsibility Areas (SRA)	The State Board of Forestry and Fire Protection classify areas in which the primary financial responsibility for preventing and suppressing fires is that of the state. These include: lands covered wholly or in part by timber, brush, undergrowth or grass, whether of commercial value or not; lands which protect the soil from erosion, retard run-off of water or accelerated percolation; lands used principally for range or forage purposes; lands not owned by the Federal government; and lands not incorporated. By Board regulations, unless specific circumstances dictate otherwise, lands are removed from SRA when housing densities average more than 3 units per acre over an area of 250 acres.
Very High Federal Responsibility Areas (FRA)	The State and Federal Agencies jointly develop and review the Annual Operating Plan for the protection of Federal Responsibility Areas (FRA) located within State DPAs. As identified in the Annual Operating Plan, the State provides wildland fire protection at a level, which is most nearly equivalent to the wildland fire protection that would be provided directly by the Federal Agencies on FRA of equal hazard, risk, and value. Federal Agencies retain all land management responsibilities except for wildland fire protection on FRA within the area where the State has direct protection responsibility. This does not preclude the Federal Agencies from conducting fire prevention activities on these lands.

In order to comply with the Bates Bill, the cities within the Las Virgenes-Malibu Region completed an evaluation of the following factors to determine the areas of the Region which would qualify as a Very High Wildland Fire Hazard Severity Zones.

- Fuel
- Topography
- Dwelling density
- Weather
- Infrastructure
- Fire codes and ordinances as they relate to brush issues

Each factor was given a value of 1-4 with a 4 being the highest danger rating. Any total score over 10 qualified the area as being one of VHFHSZ. Each of the three areas evaluated rated 10 or above with the highest area receiving a 12.

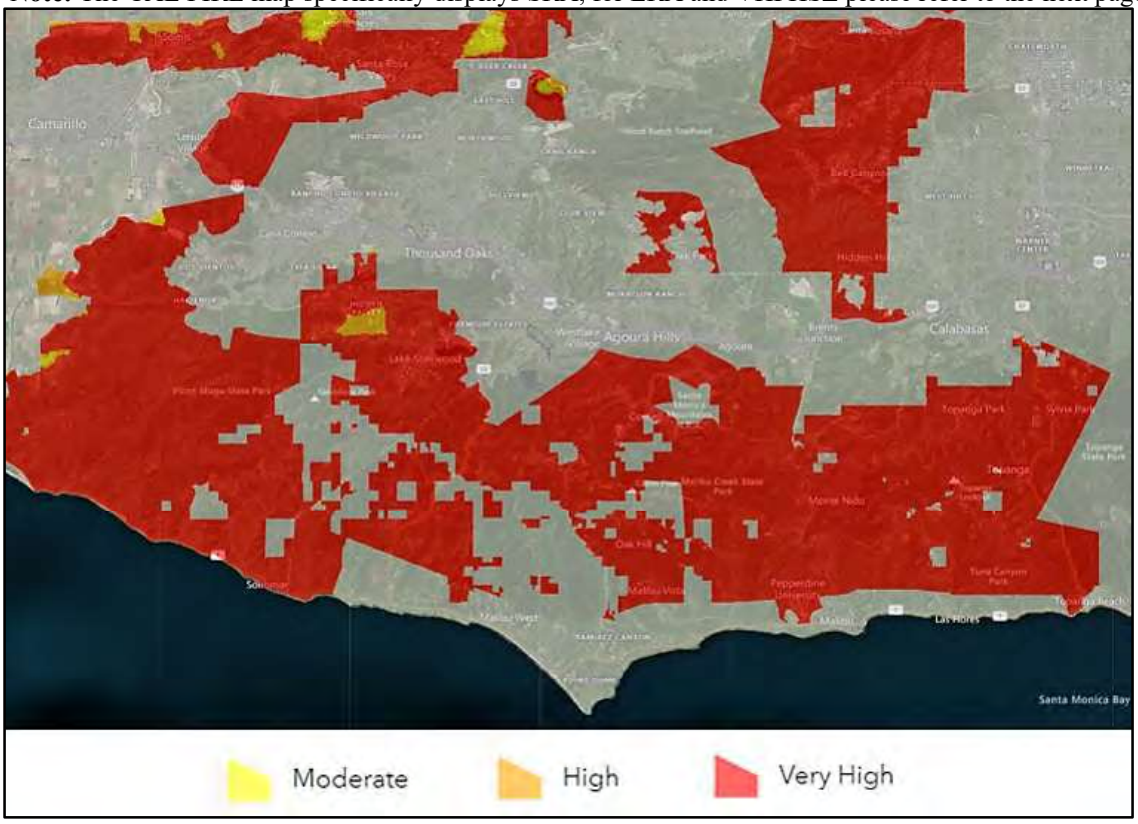
All five cities within the Las Virgenes-Malibu Region have been designated as VHFHSZs. Fire zone areas are rated on a scale of I – IV, with IV representing the most severe fire hazard zone. The Region contains both Zone III and Zone IV areas.

Identifying the hazard area as set forth above is the first step in assessing each city's vulnerability to wildland fires. Other key factors in assessing wildfire risk include:

- Ignition sources
- Building materials and design
- Community design
- Structural density
- Slope
- Vegetative fuel
- Fire occurrence
- Weather, as well as occurrences of drought

The CAL FIRE map below depicts the Fire Hazard Severity Zones State Responsibility Areas (SRA) for the LVMCOG Region.

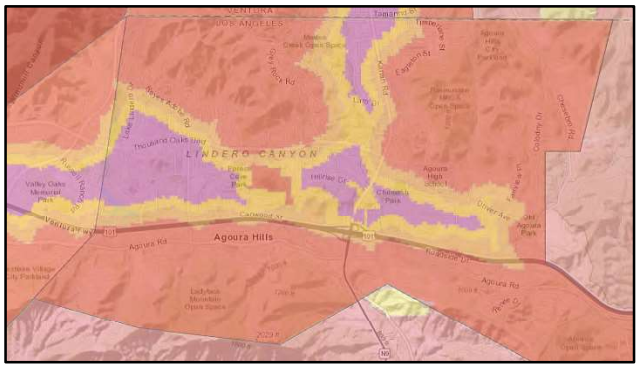
Note: The CAL FIRE map specifically displays SRA, for LRA and VHFHSZ please refer to the next page.



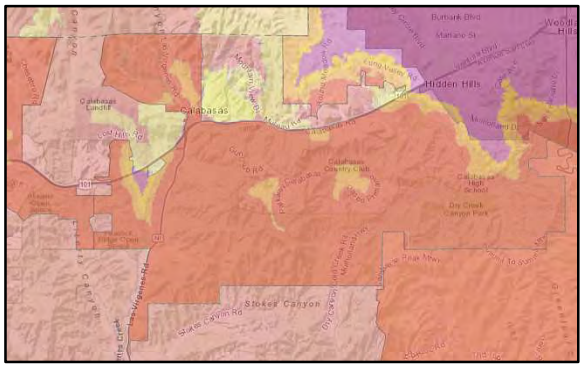
Map 49: FHSZ SRA for the LVMCOG Region (currently in the regulatory process as of September 29, 2023)

The following maps depict the Fire Hazard Severity Zones (SRA and LRA) for each city within the LVMCOG, per County of Los Angeles Bureau of Land Management, Esri, Garmin, USGS, NGA, EPA, USDA, NPS, HERE (pending adoption as of 9/29/23):

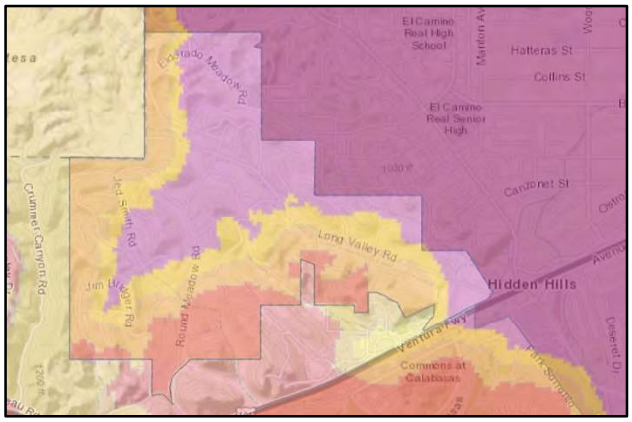
Agoura Hills



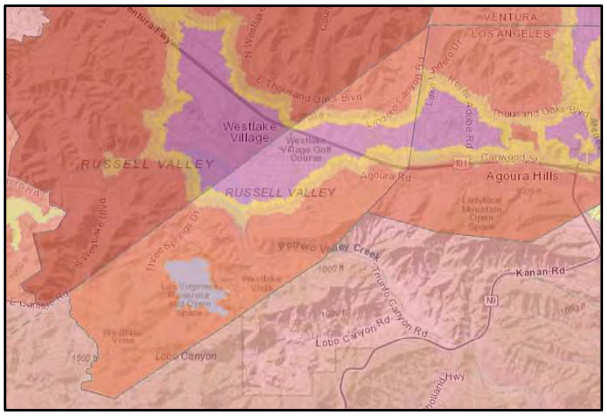
Calabasas



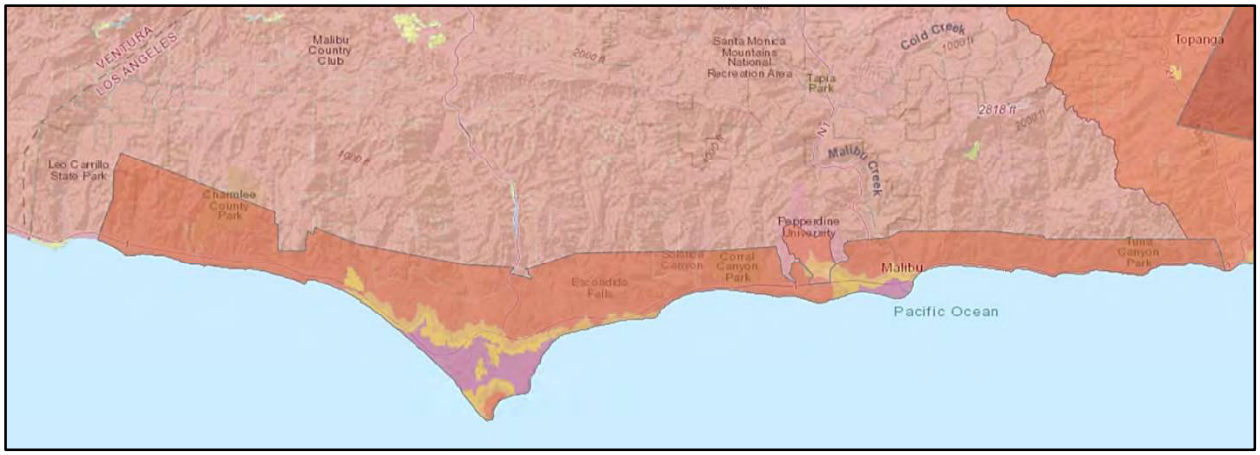
Hidden Hills



Westlake Village



Malibu



Urban Unzoned | Non-Wildland/Non-Urban | Moderate | High | Very High

Estimated Impact of an Event

If a major wildfire were to occur, the consequences to local populations and housing in urban interface areas will be significant. The table below provides the estimated impact of a disaster using a 5% loss baseline.

Category	Agoura Hills	Calabasas	Hidden Hills	Malibu	Westlake Village	Impact if a 5% Loss Occurs
Population*	20,362	23,410	2,182	10,915	8,081	3,248
Total City Employment	11,100	11,800	5	6,483	3,700	1,654
Economy** (in thousands)	$621,000	$1,011,348	N/A	$578,443	$576,306	139,355
Total Housing Units	7,799	9,401	692	6,936	3,273	1,405
Median Home Value	$857,700	$1,141,600	More than $2,000,000	More than $2,000,000	$1,029,100	More than $1.9B

Table 135: Estimated Population and Economic Loss of a Wildfire
*U.S. Census – American Community Survey 2021
**2017 U.S. Economic Census (in thousands)

Based on a 5% loss projection, more than 3,200 residents and more than 1,600 jobs would be displaced or significantly impacted resulting in more than $139M in economic losses, and more than 1,400 homes could be damaged or destroyed resulting in over $1.9 billion in losses (see Community Profile section for population, housing, and economic data).

Impact of Climate Change

For each city within the LVMCOG (Agoura Hills, Calabasas, Hidden Hills, Malibu, and Westlake Village), climate change has led to an increase in the potential impact of wildfires. Sporadic higher rainfall years cause local vegetation growth to become denser followed by frequent drought conditions greatly increases the risk of wildfires across the entire LVMCOG area. Although each city within the LVMCOG is at risk of wildfires due to climate change, the City of Malibu in particular has experienced major wildfires in the past and the risk of future events is exasperated by climate change. This risk is especially significant due to Malibu's susceptibility to Santa Ana winds driving expansion of uncontrolled fires in the area especially along the Santa Monica Mountains.

Impact of Land Use and Development

Each city within the LVMCOG is subject to Public Resources Code 4201-4204 which directs the California Department of Forestry and Fire Protection (CAL FIRE) to map fire hazard within State Responsibility Areas (SRA) based on fuel loading, slope, fire weather, and other relevant factors present, including areas where winds have been identified by the department as a major cause of wildfire spread. These zones, referred to as Fire Hazard Severity Zones (FHSZ), classify a wildland zone as Moderate, High, or Very High fire hazard based on the average hazard across the area included in the zone. Consequently, the cities within the LVMCOG manage land use and have restrictions on development within their cities to mitigate the risk of wildfire. Further, as part of Los Angeles County, the Los Angeles County Fire Department is the primary agency responsible for overall wildfire programs within the area.

City	Impact of Land Use and Development
Agoura Hills	New development projects within Agoura Hills limited according to the city's development plan and other restrictions to mitigate the impact of wildfires. While fully developed commercial zones are generally not prone to wildfire, residential properties are located near wildfire areas such as hillside communities. If a wildfire were to occur, future development densities especially in hillside areas could be impacted to further mitigate the impact of fire.
Calabasas	New development in the city are restricted to areas according to the city's development plan. Furthermore commercial and residential projects within Calabasas must comply with setback requirements to ensure clear space between areas of high fire hazard. While the commercial district of Calabasas is generally not prone to wildfire, residential areas are located in the Calabasas hillsides and are at greater risk. If a wildfire occurs, future development plans may increase the number of restrictions on new development or redevelopment projects, particularly residential properties in hillside areas.
Hidden Hills	As a fully developed community there is little room for new construction projects in Hidden Hills. Homes are densely located along hilly areas of the city and must meet brush and tree clearance requirements to mitigate the risk of wildfire. If a wildfire were to occur, the future density of structures within Hidden Hills could be reduced if additional building restrictions are implemented.
Malibu	New development within Malibu is significantly restricted due to coastal constraints. While areas along the shoreline are generally not susceptible to wildfire, the hillside and mountain areas of Malibu are especially susceptible to wildfire. Consequently, structures in these areas (especially those located in isolated roads) impacted by wildfire may face future restrictions or may be converted to wildland if reconstruction is not feasible.
Westlake Village	Developed areas within Westlake Village must comply with state and local regulations including brush and tree clearance requirements to mitigate the impact of wildfires. If a wildfire were to occur, areas of Westlake Village could face additional development constraints especially those areas located in the hillsides surrounding the city.

Impact of Population Patterns

City	Impact of Population Patterns
Agoura Hills	In recent years, the population of Agoura Hills has shown a slight decrease. Although construction in wildfire prone areas is restricted, as new development projects are completed within Agoura Hills, an increase in the population and population densities may be expected. As a consequence if a wildfire occurs, a larger number of residents can be expected to be impacted due to the direct impact of fire as well as secondary effects such as smoke and poor air quality. Further, a future wildfire could result in additional restrictions on rebuilding efforts in fire prone areas resulting in a change in population patterns.
Calabasas	The population of Calabasas has shown a minor decrease since the previous HMP update. Consequently, it is not anticipated that an increase in the risk to local residents due to a wildfire will occur and population patterns are expected to remain unchanged. However, all residents may be subject to secondary effects such as smoke and poor air quality.

City	Impact of Population Patterns
Hidden Hills	Recently, the population of Hidden Hills has shown a slight decrease and residential neighborhoods are well established. However, as local residents age, there may be an increase in the number of vulnerable individuals in terms of age and disabilities which can require additional services following a wildfire especially health issues due to smoke and poor air quality in addition to the secondary impacts of wildfires such as power outages. Consequently, a shift in population patterns may occur.
Malibu	The population of Malibu has shown a minor decrease since the last census. Nevertheless, as a major beach and surfing destination, daily variations in transit populations is expected. While the general level of risk has not increased, additional resources and planning may be required to manage the number of people within city limits during a wildfire event. Additionally, reconstruction of wildfire damaged or destroyed properties may result in a shift in local population densities and could even result in an increase in the amount of wildland areas where future development is prohibited causing a change to population patterns in the area.
Westlake Village	The population of Westlake Village has slightly decreased since the previous HMP update. However as local area development / redevelopment projects occur, there is the potential for an increase in the number of people at risk of a wildfire as well as an increase in the number of vulnerable individuals in terms of age and disabilities which can require additional services following a wildfire especially health issues due to smoke and poor air quality in addition to the secondary impacts of wildfires such as power outages. Further, if a wildfire were to occur, future population densities may shift due to additional limits to construction/reconstruction in wildfire damaged areas.

Risk of Future Wildfire

For the LVMCOG Region, the risk of future climate change events was estimated by the Working Group using the following weighted formula:

Risk = (0.45 x Probability) + (0.30 x Magnitude/Severity) + (0.15 x Warning Time) + (0.10 x Duration)

Probability		Magnitude / Severity		Warning Time		Duration	
Level ID	Value	Level ID	Value	Level ID	Value	Level ID	Value
Unlikely	1	Negligible	1	Less than 6 hrs	4	Less than 6 hrs	1
Possibly	2	Limited	2	6 to 12 hrs	3	Less than 24 hrs	2
Likely	3	Critical	3	12 to 24 hrs	2	Less than one wk	3
Highly Likely	4	Catastrophic	4	More than 24 hrs	1	More than one wk	4

The result was a climate change risk rating of 9.43 (see Annex C Working Group HMP Risk Assessment Survey for additional details):

Hazard	Probability	Magnitude	Warning Time	Duration	Risk
Wildfire	9.5	9	3	20	**9.43**

WILDFIRE VULNERABILITIES

Base Hazard Factors

In order to determine the "base hazard factor" of specific wildfire hazard sites and interface areas, several factors must be considered. Categories used to assess the base hazard factor include:

- Topography (location, characteristics and
- Fuels
- Development (site/building construction and design, landscaping, defensible space, accessibility, etc.)
- Weather

Topography

Topography influences the movement of air, thereby directing a fire's course. In general, if the percentage of uphill slope doubles the rate of fire spread doubles. Gulches and canyons can funnel air and act as chimneys, which intensify fire behavior and cause the fire to spread faster. Unfortunately, hillsides with hazardous topographic characteristics are also desirable, residential areas in many communities. This underscores the need for wildfire hazard mitigation and increased education and outreach to homeowners living in interface areas. Numerous canyons, saddles, and ridges in the VHFHSZ will also contribute to erratic fire behavior due to the funnel and subsequent acceleration effect it will have on wind traveling through the area.

Fuels

An important element in understanding the danger of wildfire is the availability of diverse fuels in the landscape, such as natural vegetation, manmade structures and combustible materials. A house surrounded by brushy growth rather than cleared space allows for greater continuity of fuel and increases the fire's ability to spread. After decades of fire suppression "dog-hair" thickets have accumulated, which enable high intensity fires to flare and spread rapidly.

In addition, fuel is a key factor in wildfire behavior. Fuel is classified by volume and by type. Volume is described in terms of "fuel loading," or the amount of available vegetative fuel. In the Las Virgenes- Malibu Region, there are several types of fuel including a large amount of chaparral and woodland vegetation that is a catalyst for fire activity.

Like much of Southern California, chaparral is a primary fuel prevalent in the Las Virgenes-Malibu Region along with grasses, non-native vegetation and large trees such as junipers, palm, eucalyptus, pines, and locally prevalent oaks.

Added to this is the fact that a large percentage of the fuel beds in the Santa Monica Mountains contain dead and downed vegetation. This "die back" condition is due largely to drought conditions. These fuel beds are extremely receptive to ignition and spread of wildfires more quickly than live vegetation. This type of fuel mode is of particular concern when fires are wind driven, which can lead to short and long range spotting - which can affect the entire Region.

Development

Growth and development in scrubland and forested areas is increasing the number of structures in the Las Virgenes-Malibu interface areas. Wildfire has an effect on development, yet development can also influence wildfire. Owners often prefer homes that are private, have scenic views, are nestled in vegetation and use natural materials. There are many types of these homes within the Region that use vegetation as privacy barriers. A private setting may be far from public roads, or hidden behind a narrow, curving driveway. These conditions make evacuation and firefighting difficult. Similarly, narrow and winding roads in these developed areas tend to make evacuation of civilians slow and difficult especially when fire resources are trying to gain access to the area utilizing the same roads.

Wildfire hazard areas are commonly identified in Regions of the urban/wildland interface. Ranges of the wildfire hazard are further determined by the ease of fire ignition due to natural or human conditions and the difficulty of fire suppression. The wildfire hazard is also magnified by several factors related to fire suppression/control such as the surrounding fuel load, weather, topography, and property characteristics. Generally, hazard identification rating systems are based on weighted factors of fuels, weather and topography.

Within the cities in the Las Virgenes-Malibu Region, increased development in and adjacent to naturally vegetated areas exposes additional structures to potential wildland fires. With sound construction practices, sufficient water flows, brush clearance and provision of adequate access the risk can be reduced.

Weather

Drought

Weather patterns combined with certain geographic locations can create a favorable climate for wildfire activity. Areas where annual precipitation is less than 30 inches per year are extremely fire susceptible. This is a definite classification of the Las Virgenes-Malibu Region. Recent concerns about the effects of climate change (particularly drought) have contributed to concerns about wildfire vulnerability (see **Climate Change** section for additional details).
Drought also leads to less frequent irrigation which can contribute to wildfires. From 2007 to 2009 and again from 2012 to 2016 Southern California experienced severe drought conditions. This corresponds to the most recent years when significant wildfires have occurred.

Wind

High-risk areas in Southern California share a hot, dry season in late summer and early fall when high temperatures and low humidity favor fire activity. The “Santa Ana” winds, which are heated by compression as they flow down to Southern California from Utah, create a particularly high risk, as they can rapidly spread what might otherwise be a small fire.

The Las Virgenes-Malibu Region experiences Santa Ana Wind conditions typically in the fall months. This poses a threat in two ways. A fire starting in the Las Virgenes-Malibu Region will spread rapidly and has the potential of overwhelming initial attack forces and destroying structures within minutes of ignition. A fire starting adjacent to the Las Virgenes-Malibu Region could quickly burn into the area either by direct flame contact or by fire brands being carried by the winds and spotting onto structures or combustible vegetation.

Wind bends the flames to pre-heat the fuel ahead and can carry fire brands up to a quarter mile or more ahead of the flame front. The majority of catastrophic fires that Southern California has experienced have occurred in the months of September, October, and November when Santa Ana Winds typically occur. Wind is considered to be the primary factor that influences fire spread. Furthermore, in the City of Malibu, severe wind gusts can occur through local canyons and valleys, propelling and increasing the intensity of wildfires.

SCE Public Safety Power Shutoffs

High winds combined with severe wildfire risk increase the threat of power line related fires. Trees can fall onto power lines sparking a fire and wind-blown debris can cause sparks and ignite. In response, Southern California Edison (SCE) has issued public notices that it may de-energize selected power lines during these high risk periods. The SCE website states, "In alignment with its operational safety practices, we may proactively shut off power in high fire risk areas when extreme weather conditions present a clear and imminent danger to public safety. We take pride in service reliability; de-energizing customers is not something we take lightly and is only sparingly used in the most extreme conditions. This will only occur after exhausting a number of other operational practices." Most cities within LVMCOG have experienced a PSPS multiple times and are constantly working to refine response procedures to support the community and manage infrastructure outages.

Figure 87: SCE Public Safety Power Shutoff Process

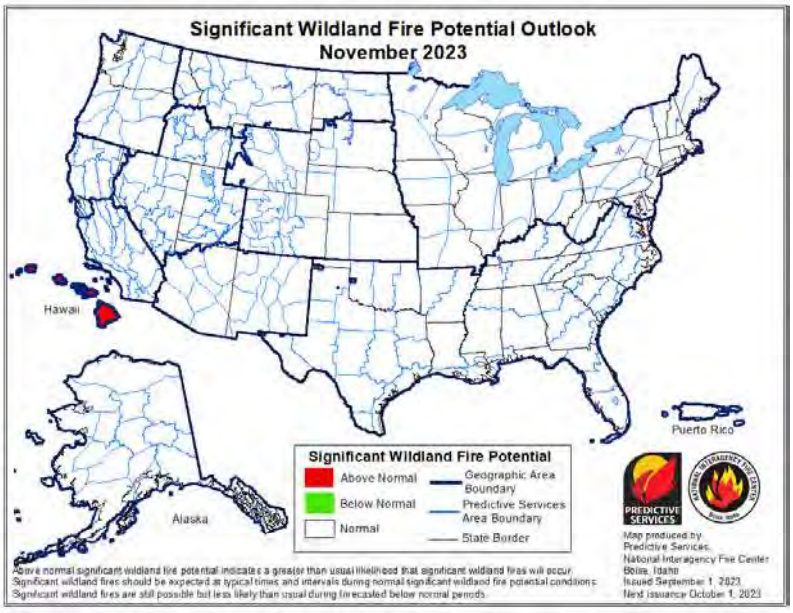
The Threat of Urban Conflagration

An urban conflagration could start either as a result of a lightning strike, arson, human error, earthquake or other phenomenon. Possible scenarios include a fire in planned community that quickly spreads to nearby homes due to a combination of high winds and high temperatures.

Business structures are also at risk however this threat is mitigated by requirements for commercial sprinkler systems. Nevertheless, there is still a risk of widespread fire if local water supplies are disrupted due to extremely high demand, power outage, or line breaks (cause by an earthquake or other damage). Examples include high rise offices, large hotels, and retail centers.

Wildfire Probabilities

Southern California and the cities within the LVMCOG are perennially under threat of wildfire. This situation will worsen as the impacts of climate change continue (see Climate Change section for details). Further, the National Interagency Coordination Center lists the potential outlook of fire for the Southern California region as "Normal" as of November 2023, which can be attributed to increased rainfall and the influence of Hurricane Hillary during August 2023. However, it is expected that the potential of a wildland fire will return to above normal levels, primarily due to accelerated vegetation growth.



Map 50: Significant Wildland Fire Potential Outlook – November 2023

VULNERABLE POPULATIONS

In Agoura Hills, the elderly and those speaking languages other than English are particularly vulnerable during wildfires. The elderly may face increased risk due to slower evacuation times and health conditions that could be exacerbated by smoke and poor air quality. Non-English speakers may struggle with receiving timely evacuation orders and understanding safety measures, increasing their risk of harm.

Calabasas residents, including those on fixed incomes, transitory workers, homeless individuals, and elderly or disabled residents, face heightened risk during wildfires. Fixed-income residents may lack the resources to invest in fire-resistant measures or afford temporary relocation. Transitory workers and homeless individuals may not have access to reliable shelter or transportation, complicating evacuation efforts. Elderly and disabled residents may experience significant difficulty in evacuating quickly and safely, potentially leading to higher injury rates.

In Hidden Hills, the older population, households with disabilities, and those with limited transportation capabilities are at substantial risk from wildfires. Older adults and those with disabilities may find it challenging to evacuate swiftly, and limited transportation options can leave these individuals stranded in hazardous areas. Additionally, smoke inhalation and heat can pose serious health threats to these populations.

Malibu's transitory workers, elderly population, lower-income residents, and homeless individuals are particularly vulnerable during wildfires. Transitory workers and the homeless may not have stable housing, making it difficult to find safe, fire-resistant shelter. Elderly individuals may struggle with mobility issues that hinder quick evacuation, and lower-income residents may lack the financial means to secure temporary housing or rebuild after a wildfire. Homeless individuals are at extreme risk due to exposure and lack of resources.

In Westlake Village, the elderly, disabled, homeless individuals, and residents speaking a language other than English face significant risks from wildfires. The elderly and disabled may find it difficult to evacuate due to mobility issues and health concerns, while homeless individuals are highly vulnerable due to lack of shelter and resources. Non-English speakers may miss critical evacuation alerts and safety instructions, increasing their risk during wildfires.

WILDFIRE MITIGATION STRATEGIES

Genasys Protect (Zonehaven) Aware Program

The Genasys Protect (Zonehaven) AWARE is a mapping tool used by all LVMCOG cities and is designed to work in combination with public alert and warning systems such as ALERT LA County and local City emergency alert systems. This tool ensures that both first responders and residents have access to the same Zone maps for efficient evacuation planning. Currently implemented in the Santa Monica Mountain region, residents can easily identify their specific "Zone" and access vital information about emergency services, real-time zone status updates, available shelters, and more. In the event of significant incidents requiring evacuations, the Zone map is continuously updated in real time.

Los Angeles County Fire Department

First Responders

The Las Virgenes-Malibu Region is located at the Central Operations Bureau, Division of the Los Angeles County Department (LACoFD). Battalion 5 of the LACoFD serves the Las Virgenes-Malibu Region with a total of 12 stations assigned to serve five cities and over 68,000 residents. The cities include Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village. Battalion 5 headquarters are located at 29575 Canwood St. Agoura Hills CA 91301.

Operating 9 divisions and 22 battalions, LACoFD answers approximately 400,000 emergency calls annually. The Department currently has 177 fire stations, 75 paramedic squads, 9 wildland fire suppression camps, 10 bulldozers, 10 helicopters, 23 Prevention Offices, 12 Forestry Units and numerous other response vehicles and facilities. It serves 58 incorporated cities, as well as the unincorporated areas of the County. Additionally, the Department has Planning, Information Management, Lifeguard, and Health Hazardous Materials Divisions which provide valuable services to the more than 4.0 million people who reside in the 1.2 million housing units located throughout the Department's 2,311 square mile area. The LACoFD is one of six Contract Counties that maintain a contractual relationship with California Department of Forestry and utilizes the California Fire Plan within Los Angeles County as the primary wildland fire protection plan.

Other Agencies

It is important to work with other organizations and agencies to create a more comprehensive Hazard Mitigation Plan. There are numerous agencies with which Division VII of the LACoFD works closely, including but not limited to:

Political Entity	Jurisdiction
Los Angeles County Sheriff's Department	Local Government/ Law Enforcement
City of Los Angeles	Local Government/LRA Fire Protection
Ventura County Fire Department	LRA and SRA Fire Protection
National Park Service	Public Land Ownership, DPA Fire Protection
CAL FIRE	Contract
City of Agoura Hills	Tax Share
City of Hidden Hills	Tax Share
City of Malibu	Tax Share
City of Westlake Village	Tax Share
City of Calabasas	Tax Share
California State Parks	Public Land Ownership, SRA Fire Protection
Santa Monica Mountains Conservancy	Public Land Ownership, Recreational Use
Public Utility Companies	State/County
California Department of Forestry and Fire Protection	State/County

Table 136: Political Entities that Coordinate with the LACoFD to Mitigate the Threat of Fire

Fire Prevention Division

The Las Virgenes-Malibu area is part of the LACoFD Fire Prevention Central Region. Fire prevention and code enforcement in this area historically requires concentrated efforts related to water supplies for fire protection and vehicular access for fire apparatus. Geographic and terrain limitations as well as the lack of water supply in mountainous terrain present challenges that LACoFD Inspectors review and inspect, often times providing alternative solutions for the owners/occupants to consider.

Fire Prevention Programs

The Los Angeles County Fire Department manages an active effort in order to prevent the possibility of a wildfire occurring within the Las Virgenes-Malibu Region. The following list provides a sample of the programs, activities and practices.

Prescribed Burning

The health and condition of brush will determine the magnitude of wildfire. The LACoFD does practice prescribed burning. If fuels (slash, dry or dead vegetation, fallen limbs and branches) are allowed to accumulate over long periods of time without being methodically cleared, fire can move more quickly and destroy everything in its path. The results are more catastrophic than if the fuels are periodically eliminated. Prescribed burning is the most efficient method to remove these fuels.

Pre-Fire Management Plan

As a preventative measure, the LACoFD also implements a Pre-Fire Management Plan whose overall goal is to reduce the total cost and losses from wildland fires in California by protecting assets at risk through focused pre-fire management prescriptions and increased initial attacks.

Fuel Modification Plan

The Fuel Modification Plan is part of the Forestry Division of the LACoFD. This publication was prepared to establish a set of guidelines and landscape criteria for all new construction relating to fuel modification planning that will reduce the threat of fire in high hazard areas.

Vegetation Management Program

The Vegetation Management Program (VMP) is a cost-sharing program that focuses on the use of prescribed fire, mechanical, biological and chemical means for addressing wildland fire fuel hazards and other resource management issues on State Responsibility Area (SRA) and Local Responsibility Area (LRA) lands. The use of prescribed fire mimics natural processes, restores fire to its historic role in wildland ecosystems, and provides significant fire hazard reduction benefits that enhance public and firefighter safety.

The Los Angeles County Fire Department created the Vegetation Management Program in 1979 to develop strategies for responding to the growing fire hazard problem. These include:

- An ongoing effort to analyze the history of wildland fires in Los Angeles County
- Experimentation with different methods of reducing and removing fuels in fire prone areas
- Evaluation of the environmental impacts and effects of these practices

Brush Clearance Inspection Program

Mandated by the LA County Fire Code, all property owners in the region are presently required to maintain a firebreak around and adjacent to all buildings and structures by removing all flammable vegetation or other combustible growth for a minimum distance of 200 feet from the structure or to the property line, whichever is closer.

The Brush Clearance Program is a joint effort between the Los Angeles County Fire Department and the County of Los Angeles Department of Agricultural Commissioner/Weights and Measures, Weed Hazard and Pest Abatement Bureau (Weed Abatement Division). This unified enforcement legally declares both improved and unimproved properties a public nuisance, and where necessary, requires the clearance of hazardous vegetation. These measures create "Defensible Space" for effective fire protection of property, life and the environment. The Department's Brush Clearance Unit enforces the Fire Codes as it relates to brush clearance on improved parcels, coordinates inspections and compliance efforts with fire station personnel, and provides annual brush clearance training to fire station personnel.

Fire Retardant Foam

All the Los Angeles County Fire Department fire engines are equipped with fire retardant foam capability. This type of program demonstrates the value of pre-suppression and prevention efforts when combined with property owner support to mitigate hazards within the wildland/urban interface.

Federal Programs

The role of the federal land managing agencies in the wildland /urban interface is to reduce fuel hazards on the lands they administer; cooperate in prevention and education programs; provide technical and financial assistance; and develop agreements, partnerships and relationships with property owners, local protection agencies, states and other stakeholders. These relationships focus on activities before a fire occurs, which render structures and communities safer and better able to survive a fire occurrence.

Federal Emergency Management Agency (FEMA) Programs

FEMA is directly responsible for providing fire suppression assistance grants and, in certain cases, major disaster assistance and hazard mitigation grants in response to fires. The role of FEMA in the wildland /urban interface is to encourage comprehensive disaster preparedness plans and programs, increase the capability of state and local governments and provide for a greater understanding of FEMA programs at the federal, state and local levels.

Fire Management Assistance Grant (FMAG)

The Fire Management Assistance Grant (FMAG) program extends support to local, state, and tribal authorities for the purpose of mitigating, managing, and containing fires on both publicly and privately owned forests or grasslands. This aid is provided when such fires pose a significant threat of devastation on a scale that could qualify as a major disaster.

Fire Suppression Assistance Grants

Fire Suppression Assistance Grants may be provided to a state with an approved hazard mitigation plan for the suppression of a forest or grassland fire that threatens to become a major disaster on public or private lands. These grants are provided to protect life and improved property as well as encourage the development and implementation of viable multi-hazard mitigation measures. The grant may include funds for equipment, supplies and personnel. A Fire Suppression Assistance Grant is the form of assistance most often provided by FEMA to a state for fires. The grants are cost-shared with states. FEMA's Fire Administration (USFA) provides public education materials addressing wildland/urban interface issues and the USFA's National Fire Academy provides training programs.

Hazard Mitigation Grant Program

Following a major disaster declaration, the FEMA Hazard Mitigation Grant Program provides funding for long-term hazard mitigation projects and activities to reduce the possibility of damages from all future fire hazards and to reduce the costs to the nation for responding to and recovering from the disaster.

National Wildland/Urban Interface Fire Protection Program

Federal agencies can use the National Wildland/Urban Interface Fire Protection Program to focus on wildland/urban interface fire protection issues and actions. The Western Governors' Association (WGA) can act as a catalyst to involve state agencies, as well as local and private stakeholders, with the objective of developing an implementation plan to achieve a uniform, integrated national approach to hazard and risk assessment and fire prevention and protection in the wildland/urban interface. The program helps states develop viable and comprehensive wildland fire mitigation plans and performance-based partnerships.

U.S. Forest Service

The U.S. Forest Service (USFS) is involved in a fuel-loading program implemented to assess fuels and reduce hazardous buildup on forest lands. The USFS is a cooperating agency and, while it has little to no jurisdiction in the lower valleys, it has an interest in preventing fires in the interface, as fires often burn up the hills and into the higher elevation US forest lands.

Fire Codes

Fire codes have been amended throughout the years to assist fire department personnel with wildland firefighting in the rural/urban interface zones. Building construction in these areas may have additional requirements for non-combustible construction components and water supplies. Inspectors assigned to these regional offices provide developers and homeowners with information for fire safe construction and fire protection systems.

Building Codes

All five Malibu-Las Virgenes COG cities are located within the Very High Fire Hazard Severity zone (VHFHSZ). Class A roofing material and one-hour rated exterior construction of structures is required by Fire and Building Codes.

Public Education and Involvement

The Fire Prevention Division within the Los Angeles County Fire Department (LACoFD) focuses on educating the community about the benefits of proper safety practices and identifying and eliminating all types of hazardous conditions, which pose a threat to life, the environment and property.

Ready Set Go!

The Los Angeles County Fire Department promotes wildfire prevention, loss mitigation, and preparedness via its website, through public information campaigns, and neighborhood inspections. As part of this effort, the LACoFD has published a personal wildfire action plan for residents living in the interface region called Ready Set Go! The plan describes the actions and tools necessary to successfully prepare for a wildfire. It gives guidance on retrofitting houses with fire-resistive features and describes how to create the necessary defensible space around the home. This publication also helps families prepare well ahead of time so that they are ready to quickly evacuate from an area endangered by a fast-approaching wildfire.

Additionally, the County Fire Department makes a variety of Safety Handouts available on their website and at various fire stations in the Las Virgenes-Malibu Region. These documents include but are not limited to:

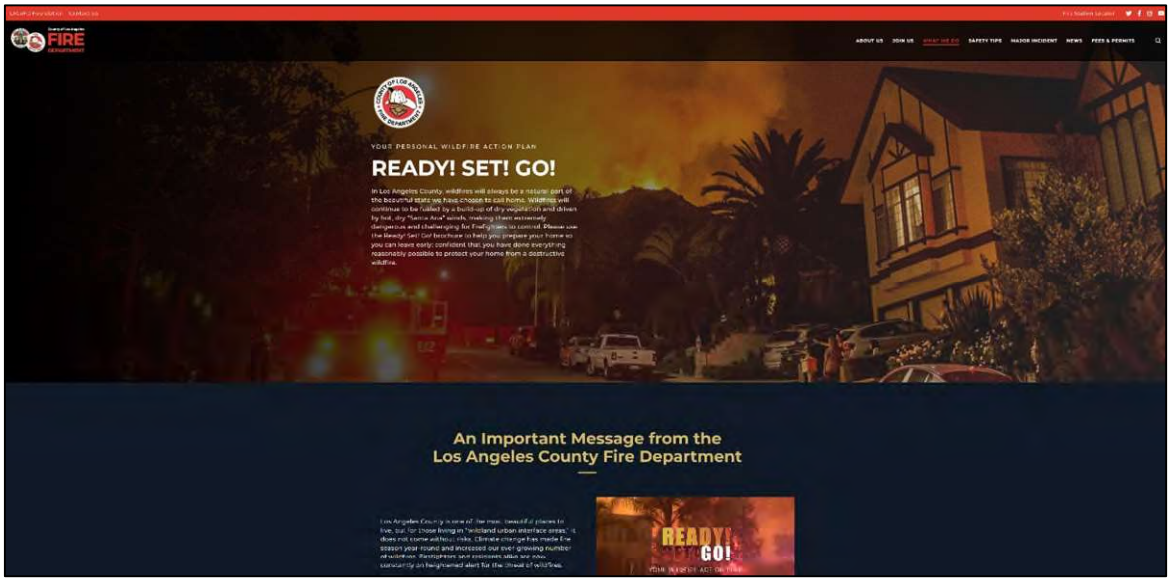


Figure 88: LACoFD Ready Set Go Web Page

- Home Fire Safety Tips
- Brush Clearance Tips
- Exit Drills in the Home
- Storm Safety Guidelines
- Rolling Electric Outage Safety
- Link to Southern California Gas Company for safety tips on gas appliances

A Road Map to Fire Safety

The Santa Monica Mountains Fire Safety Alliance developed a booklet on how to create a defensible space for residents of the Santa Monica Mountains. *A Road Map to Fire Safety* includes fire hazard reduction guidance, FAIR Plan insurance material, environmental considerations, topography and vegetation facts, and fire prevention organization information. The booklet is distributed by the Los Angeles County Fire Department and each LVMCOG city in hardcopy and softcopy formats.

Figure 89: A Road Map to Fire Safety Booklet

Community Education

The cities within the Las Virgenes-Malibu Region provide ongoing community education on fire hazards through the following programs:

- CERT (Citizen Emergency Response Team) training
- The City of Calabasas offers Calabasas Emergency Response Program (CERP) and Volunteers on Patrol program.
- The City of Malibu offers an Emergency Preparedness Program and Home Ignition Zone Assessment. Additionally, the City of Malibu Fire Liaisons serve as official contacts for Firewise Communities in the City and work to assist new neighborhoods in achieving Firewise Recognition.
- The City of Westlake has a CERT Program and Volunteers on Patrol Team.

The Las Virgenes-Malibu Regional cities along with the LACoFD educate the public in terms of fire and life Safety by providing the following special programs upon request. Fire Safety Education Programs that consist of the following:

- Local cable television education and informational programs are shown throughout the year, but most often during the months considered being fire season.
- Informational brochures have also been prepared and are distributed informing citizens about the need for evacuation plans and tips on home protection.

Connect-CTY, Code Red, and Alert LA County Emergency Mass Notification System

Many residents of the Las Virgenes- Malibu COG (excluding Malibu residents who utilize Everbridge) participate in the *Connect*-CTY service (Finalsite Connect Inc and Code Red) which allows authorized civic leaders to create and rapidly disseminate time-sensitive messages to every telephone number stored in the notification database. With the *Connect*-CTY and Code Red service, authorized users can send thousands of messages in minutes. Only authorized officials are allowed access to the system.

In addition, Los Angeles County has implemented an emergency mass notification system that will be used to contact County residents and businesses via recorded phone messages, text messages or e-mail messages in case of emergency. The system, called **Alert LA County**, will be used by the County's Emergency Operations Center to notify residents and businesses of emergencies or critical situations and provide information regarding necessary actions such as evacuations.

BAER (Burned Area Emergency Rehabilitation)

The Los Angeles County Fire Department working in cooperation with the U.S. Forest Service, surveys burned areas after wildfires in order to determine what mitigation efforts are necessary to avoid mudslides in the event of a large rainfall (ex. strategically placing K-rails to deter mudslides) and to begin re-vegetation.

LVMCOG Mitigation Activities

All cities within the Las Virgenes-Malibu Council of Governments provide information regarding wildfire mitigation along with other emergency information on their websites. Wildfire mitigation planning advice can be downloaded or viewed online.

Agoura Hills

The City of Agoura Hills has implemented local fire codes to supplement County and State requirements. Additionally, during the code adoption process the City adopted more restrictive provisions by requiring construction in the city to comply with the Very High Fire Hazard Severity Zone Construction Standards. This provision requires that all structures built in Agoura Hills meet the more restrictive sections of the code including the method and material used for construction (i.e. Roof, Deck, Patio, Eave materials, window types, etc.). Additionally, these requirements benefit the socially vulnerable by mitigating the potential for future wildfires causing loss of life and injuries, damaging or destroying properties, and generating health issues which is especially important for lower income, fixed income, single parent households, and the elderly who may not have the financial or healthcare resources to recover.

The City has agreement with the Los Angeles County Fire Department for all Fire Services including Fire Prevention. In addition to the fire suppression and LA County Fire Prevention reviews plans and inspects construction projects for brush clearance, fire sprinkler and access to and around the project site. The City of Agoura Hills staff and its consultants are also trained and ready to assist its community for a fast recovery from all natural disasters including but not limited to fire. Codes Sections specific to Agoura Hills which were modified to provide better protection against fire, include:

Section	Title
2022 CBC Sec. 701A.1	Scope for Fire Severity Zone Wildland-Urab Interface (WUI) Construction Standards
2022 CBC Sec. 701A.3.1	Exception #5 – Roof Repair New, Additions, Alterations, Repair
2022 CBC Sec. 705A.2	Roof Covering
2022 CBC Sec. 903.2	Fire Sprinklers – Where Required

In addition, the City of Agoura Hills General Plan (2010) includes objectives, strategies, and policies related to wildfire mitigation. Specifically, Goal S-3 Protection from Fire Hazards. Minimize risks to persons and property in Agoura Hills from urban and wildland fires.

Reference #	Title	Strategy and Policy
S-3.1	Coordination with the Los Angeles County Fire Department	Cooperate with the Los Angeles County Fire Department in periodically evaluating services and service criteria to ensure that the City continues to receive adequate fire protection and prevention services. (Imp CS-26)

Reference #	Title	Strategy and Policy
S-3.2	Wildfire Mitigation	Coordinate with the Los Angeles County Fire Department on appropriate wildland fire mitigation. (Imp CS-26)
S-3.3	New Development	Continue to ensure that all new development incorporates current state, county, and City, fire safe building code requirements, as appropriate. (Imp CS-32)
S-3.4	Fire Protection Systems	Require all new commercial and multiple-unit residential developments to install fire protection systems, as required by the state and City buildings and fire codes, and encourage the use of automatic sprinkler systems in existing structures. (Imp CS-32)
S-3.5	Funding	Ensure that new developments pay a pro-rata share for increased fire protection as necessitated by that particular development. (Imp S-7, CS-26)
S-3.6	Fire Inspection	Work with the County Fire Department to ensure an ongoing fire inspection program to reduce fire hazards associated with critical facilities, public assembly facilities, industrial buildings, and nonresidential buildings. (Imp CS-26)
S-3.7	SEMS Plan	Incorporate and periodically review fire prevention and protection procedures in the City's Standardized Emergency Management Systems (SEMS) Plan. (Imp S-2)
S-3.8	Fire Department Review	Continue review by the Los Angeles County Fire Department of proposed structures and developments within the community, as applicable, to assure adequacy of structural fire protection, access for firefighting, water supply, and vegetation management. (Imp CS-26, CS-30)
S-3.9	Disaster Communication	Improve disaster coordination and communication with other public agencies. (Imp S-19, CS-26, CS-27)
S-3.10	Emergency Evacuation	Plan for emergency evacuation, including identifying standards for evacuation, and maintain adequate departure paths especially in areas that do not have at least two emergency evacuation routes (i.e., points of ingress and egress). (Imp S-20)
S-3.11	Emergency Access	Ensure new development has adequate emergency access through sufficient road widths according to the Los Angeles County Fire Department standards, which are currently 26 feet wide for single-story structures and 28 feet wide for multi-story structures, as well as adequate, visible street address signage to identify buildings. (Imp CS-30)
S-3.12	Fuel Load	Work to minimize fuel loads, or the amount of material that can be burned, within the wildland/urban interface within the City to the extent feasible, in coordination with the County Fire Department and other relevant agencies. (Imp S-22)
S-3.13	Public Education	Limit risk of wildfire through public education and planning, including working with community groups, including at risk populations, and other agencies to present information and training about evacuation, wildfire prevention and awareness, and defensible space. (Imp S-23)

Reference #	Title	Strategy and Policy
S-3.14	Siting of Critical Facilities and Infrastructure	Encourage the location and development of new essential public services, such as health care facilities, emergency shelters, fire stations, and infrastructure outside of the Very High Fire Hazard Severity Zone, to the extent feasible. (Imp S-17)
S-3.15	Local Hazard Mitigation Plan	Implement measures of the Las Virgenes-Malibu Council of Governments Multi-Jurisdictional Hazard Mitigation Plan relevant to the City, and work to ensure the Hazard Mitigation Plan is periodically updated. (Imp S-21)
S-3.16	Building Code	Continue to update the City's Building Code as necessary by incorporating structural hardening measures, such as fire rated roofing and fire resistant construction materials, and other measures to protect structures in a fire. (Imp S-24)
S-3.17	Communication Systems	Continue to evaluate and update communications systems in the City to provide early warning and notification about wildfire threats. (Imp S-16)
S-3.18	Maintain Availability of Fire Hazard Maps	Maintain collection of maps relating to fire hazards to help educate and assist builders and homeowners in mitigating against wildfire. Imp S-21, S-25)
S-3.19	Home Hardening	Promote the use of home hardening techniques that increase a structure's resistance to heat, flames, and embers through education and training. (Imp S-23)
S-3.20	Water Supply and Fire Flow	Work cooperatively with the Las Virgenes Municipal Water District and the Los Angeles County Fire Department, as appropriate, to ensure adequate water supply and facilities, including fire flow, for fire-fighting to serve all areas and populations of the City. (Imp U-5, CS-26)
S-3.21	Site Specific Fire Protection	Require applicants for new and re - development projects in the Very High Fire Hazard Severity Zone (VHFHSZ) to prepare a project-specific fire protection plan as part of initial application submittal. The fire protection plan shall at a minimum identify site ingress/egress, evacuation routes, emergency vehicle access, visible home addressing and signage, and fuel modification zones. (Imp S-26)
S-3.22	Existing Non-Conforming Development	Work with owners of developed property that does not meet current fire safety standards for access, water supply and fire flow, signage and vegetation clearance in the VHFHSZ, and provide guidance on how to meet the standards. (Imp S-30, S-23, CS-26)

The City of Agoura hills has strategically placed fire-resistant Beacon Boxes around the city which display critical information for public safety personnel such as water resources, road networks, egress areas, safe refuge areas, and high burn risk areas. The locations within Agoura Hills include:

1) Liberty Canyon
2) Amistosa
3) Old Agoura Park
4) Foothill Dr.
5) Sumac Park
6) Willow Elementary
7) Grey Rock Rd.
8) Reyes Adobe Rd.
9) Reyes Adobe Park
10) City Hall

The City of Agoura Hills has acquired a communications vehicle which will serve as a mobile Emergency Operation Center, if needed, to allow the city to continue to communicate with other public safety partners during an event.

The City has implemented a Home Hardening Grant Program for eligible property owners to promote Home Hardening of properties. The City partnered with the Resource Conservation District of the Santa Monica Mountains to provide home ignition zone evaluations as part of the process. One time grant funds are provided as an incentive for residents to take action on the Post Home Ignition Zone Evaluation Report.

The City has also implemented & completed an emergency evacuation plan, in addition to updating its Emergency Operations Plan (EOP).

Calabasas

The City of Calabasas 2030 General Plan, Safety Element includes specific policies to mitigate the threat of wildfires and other hazards. City of Calabasas Policies involving wildfire mitigation include:

Policy	Description
VII-17	Actively collaborate with regional, state and federal fire agencies to coordinate and implement wildfire mitigation measures and fuel load modifications / 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, particularly potential wildfire approach pathways identified as high risk areas located to the north and south of the city as identified in Figures 6 and 7 of Appendix D-1 Wildfire Assessment. Establish and maintain for the future, a cooperative management agreements with entities that have jurisdiction over lands located to the north and south of the city limits.
VII-18	Survey the conditions in the wildfire approach pathways located within city limits as identified in Figure 8 of Appendix D-1 Wildfire Assessment in collaboration with the Los Angeles County Fire Department to assess vegetation management actions that could reduce wildfire movement.
VII-19	Actively engage with the County of Los Angeles, Santa Monica Mountains Conservancy, and Resource Conservation District of the Santa Monica Mountains as part of wildfire planning and implementation initiatives for unincorporated county areas that impact the City of Calabasas, including in particular those related to the Los Angeles County Fire Department Strategic Plan and the Los Angeles County Countywide Community Wildfire Protection Plan.
VII-20	Prepare a Community Wildfire Protection Plan for the City Calabasas that aligns with Los Angeles County's Countywide Community Wildfire Protection Plan by the next revision of the City of Calabasas Safety Element.
VII–21	Develop and maintain a GIS-based land inventory to identify fuel reduction status and points of contact to inform load reduction activities.
VII-22	Incorporate wildfire risk reduction measures, including healthy hillside management, load clearing, and brush management into plans, operations, and maintenance procedures for public access roads, parks, trails, open space, critical roads, and critical infrastructure.
VII–23	Conduct a City-wide survey of vegetation conditions in drainage corridors, hillsides, and similarly well-vegetated areas that could provide opportunities for wildfire to travel into built areas and specify recommended actions to reduce wildfire risks in these locations. VII-24 Minimize risks to existing development by identifying existing non-conforming development that does not meet contemporary fire safe standards, in terms of road standards and vegetative hazard, and require all new development to meet or exceed California Code of Regulations, division 1.5, chapter 7, subchapter 2, articles 1-5 requirements (State Responsibility Area Fire Safe Regulations).
VII–25	Encourage existing businesses and residents to adopt drought tolerant and fire resistant landscaping practices.
VII-26	Support Los Angeles County's Defensible Space Inspection Program that enforces defensible space standards of existing development in Calabasas by posting informational resources on the City's website and distributing via social media platforms.
VII-27	Develop and disseminate education and outreach materials to homeowners, residents, businesses, and landlords regarding retrofits and hardening that align with recommendations from CAL FIRE's Wildfire Home Retrofit Guide. Identify resources that can provide financial support for home retrofit and home hardening projects.

Policy	Description
VII-28	Develop and regularly update building and landscaping requirements and protocols that integrate CAL FIRE and Los Angeles County Fire Department regulations and procedures for retrofits and future development. Require ongoing maintenance and upkeep to be codified as part of building covenants or homeowner covenants, conditions and restrictions. Update the Calabasas Municipal Code with incentives for home retrofits.
VII-30	Update landscaping requirements and guidelines regarding landscape design, species preferences, installation, and maintenance to reduce vulnerability to ember ignition, and wildfire impacts.
VII-31	Minimize wildfire risk by increasing resistance of structures to heat, flames, and embers. Review current building code standards and other applicable statutes, regulations, requirements, and guidelines regarding construction, and specifically the use and maintenance of non-flammable materials (both residential and commercial) and consider adopting amendments to implement these higher standards.
VII-32	To reduce vulnerability of structures to ember ignition and wildfire impacts, review current building code standards and other appliable statutes, regulations, requirements, and guidelines regarding construction, and specifically the use and maintenance of non-flammable materials (both residential and commercial).
VII–33	Update the City's development standards to be in conformance with title 14, California Code of Regulations, division 1.5, chapter 7, subchapter 2, articles 1-5 (commencing with section 1270) (State Responsibility Area Fire Safe Regulations) and title 14, California Code of Regulations, division 1.5, chapter 7, subchapter 3, article 3 (commencing with section 1299.01) (Fire Hazard Reduction Around Buildings and Structures Regulations).
VII–34	Discourage development where wildfire risk mitigation measures would significantly impact biological resources. Where development must be accommodated, implement fuel modification techniques that would not adversely affect significant biological resources, to the greatest extent feasible. Site structures to maximize low-flammability landscape features to buffer against wildfire spread encourage sensitive siting of structures.
VII-35	In lieu of more highly combustible and non-native tree species, encourage existing residents and new developments to plant native oaks in strategic locations and near existing oak woodlands to protect developments from wildfires, as well as to lessen fire risk associated with developments.
VII-36	Coordinate with local organizations, such as Emergency Preparedness in Calabasas: A Fire Safe Council (EPIC), to pursue and allocate grant funding to support wildfire risk reduction activities.
VII–37	Coordinate with Los Angeles County Fire Department to evaluate their the City's capacity to adequately suppress wildfire, taking into account water supply availability and fire protection, including fire stations, fire engines and personnel, required for existing and newly developed areas, as part of the next Las Virgenes-Malibu Council of Governments Multi-Jurisdictional Hazard Mitigation Plan update.
VII-38	Coordinate with the Las Virgenes Municipal Water District to ensure the long term maintenance and integrity of water supply and water pressure for existing and future developed areas for firefighting purposes. Support the Las Virgenes Triunfo Joint Powers Authority's proposed Pure Water Project in order to provide residents with a locally produced water source that can be relied on through disasters and hazard events.
VII–39	Permit new development only within areas that have adequate water resources available, to include water pressure, onsite water storage, or fire flows.
VII-40	Limit new development along steep slopes and amidst rugged terrain to limit rapid fire spread and increase accessibility for fire-fighting.

Policy	Description
VII-41	Whenever feasible, locate new essential public facilities, including health care facilities, emergency shelters, fire stations, emergency command centers, and emergency communications facilities, in areas of the City that are already developed rather than on properties adjacent to undeveloped lands.

In addition, the City of Calabasas Land Use and Development Code (2010) includes requirements intended to mitigate the threat of wildfire.

- Within the HM, RR, or RC zones, structures intended for human occupancy are to be located along a paved, all weather, accessible (to emergency personnel) road for the purpose of avoiding the need for firefighters to move equipment onto properties without adequate turnaround space. If a structure cannot feasibly be sited in this manner, the structure shall contain sprinklers as required by the city.
- Prior to approval of a building permit for any new structure intended for human occupancy within areas subject to wildland fires, applicants should meet with the County Consolidated Fire Districts to determine the most fire-safe location for the structure. New structures intended for human occupancy within areas subject to wildland fires are generally to be located on the lowest portion of the site. In addition, adequate setbacks from the top of slopes which have natural vegetation shall

These policies and codes are intended to reduce the risk of future wildfires to all residents and benefit the socially vulnerable by mitigating wildfire caused loss of life and injuries, damage or destroyed properties, and health issues. In particular, mitigation benefits the socially vulnerable including lower income, fixed income, single parent households, and the elderly who may not have the financial or healthcare resources to recover.

Hidden Hills

The City of Hidden Hills has an extensive fire prevention program. The City reviews each new development to ensure that structures are adequately separated and that fire retardant materials are used in construction. In addition, the Hidden Hills Municipal Code requires that property owners maintain right-of-way improvements and public works in a clean, hazard-free condition to ensure safety.

The following City of Hidden Hills building codes are implemented as preventative measures for loss of life and property because of a fire hazard event. These standards benefit the socially vulnerable by mitigating the potential for future wildfires damaging or destroying properties and causing loss of life and injuries – especially lower income, fixed income, single parent households, and the elderly who may not have the financial resources to recover.

Section	Title
Section 1. Chapter 3 of Title 4	City of Hidden Hills Fire Code

In addition, the Safety Element of Hidden Hill's General Plan (1995) includes a focus on, "the reduction and/or prevention of injuries, loss of life, property damage, and economic and social disruption due to fires, floods, seismic activities, and other natural disasters."

The City of Hidden Hills Safety Element serves three key functions:

- Provide a framework by which safety considerations are introduced into the planning and development process;
- Identify and evaluate natural hazards; and
- Establish goals and policies which minimize potential adverse effects related to natural hazards

The City has also implemented an Emergency Evacuation Plan. The Emergency Evacuation Plan is an important aspect since there are limited means of ingress and egress to the community. The City of Hidden Hills includes specific goals and policies related to natural hazards and wildfire:

Goal 2: Protect natural resources, life, and property from fire hazards in the City.

Policy	Description
2.1	In all areas, maintain around and adjacent to all structures a cleared firebreak for a distance not less than 100 feet.
2.2	Permit future residential development only within areas of minimal slope.
2.3	Require minimum road standards in all new subdivisions in order that fire equipment will have access to all properties and that there is a safe means for people to evacuate fire areas. This shall include private drives over 100 feet in length.
2.4	Fire hydrants must be within 600 road feet of a given building site.
2.5	Establish and enforce minimum standards of fire protection for new developments.
2.6	Conduct a study on the adequacy of the City's water system for fire protection.

Malibu

The City of Malibu Building Code includes wildfire mitigation standards for residential construction. Specifically, 17.40.040 Residential Development Standards requires:

> 1. Every residence shall have a roof constructed with roofing material in compliance with a rating as specified by Section 1603 (Fire Zone 4) of Title 26 (Los Angeles Building Code) of this code (see Chapter 15.04).
>
> 8c. Ridgetop development is particularly susceptible to wildfire hazard. In addition to the criteria to reduce visual impact, the planning director shall evaluate all ridgeline development on slopes of at least 3:1 to incorporate adequate setbacks to address potential fire hazard concerns.

In addition, the City of Malibu General Plan, Safety and Health Element identifies areas of high wildfire risk and includes goals and measures to mitigate the risk of wildfire.

5.3.1 S Goal 1: A Community that is Free from All Avoidable Risks to Safety, Health and Welfare from Natural and Man-Made Hazards

S Objective 1.1: Losses to Life and Property from Natural and Man-Made Hazards Greatly Reduced from Historic Levels.

Policy	Description
S Policy 1.1.1	The City shall protect people and property from environmental hazards.
S Policy 1.1.2	The City shall minimize the risk of loss from fire.

Measures to implement wildfire mitigation in the City of Malibu are defined as follows:

Measure	Description
S Implementation Measure 1	Develop a master plan of fire prevention and control identifying hazards, assessing acceptable levels of cost and risk and determining protection programs.
S Implementation Measure 2	Work with other agencies to ensure effective and efficient fire suppression, prevention and rescue services.
S Implementation Measure 3	Encourage owners of swimming pools to obtain gasoline powered pumps to use in firefighting.
S Implementation Measure 4	Establish programs and guidelines for fire-safe landscaping including buffers comprised of fire resistant vegetation between residential areas and open space areas and encourage use of fire-safe landscaping principles which emphasize plant species with low fuel volumes.
S Implementation Measure 5	Work with the Los Angeles County Fire Department to adopt a program for controlled burning of combustible vegetation, based on the recommendations of the responsible forestry and fire-protection official.
S Implementation Measure 6	Work with the Los Angeles County Fire Department to enforce code requirements for flammable brush clearance, and reduction of flammable vegetation, including both native plants and ornamental landscaping.

Measure	Description
S Implementation Measure 7	Work with appropriate agencies to assure sufficient stored water and provide non-monetary incentives for on-site or area-wide shared storage water suitable for firefighting equal to one gallon for each square foot of structural floor area for all new development.
S Implementation Measure 8	Work with the Los Angeles County Fire Department to establish standards for firefighting equipment access suitable for Malibu.
S Implementation Measure 9	Create a major streets and routes plan which includes streets available as wildfire escape routes.
S Implementation Measure 10	Require all new and remodel structures to have Class A fire-retardant roofing.
S Implementation Measure 11	Develop guidelines and standards for all new and remodel structures to utilize fire-resistant building materials and designs, and, if feasible, to be sited to minimize fire hazards.
S Implementation Measure 12	Provide South Coast Air Quality Management District regional wind patterns maps to homeowners, architects and contractors to help them plan development siting and design that minimizes fire hazards.
S Implementation Measure 13	Work with the Los Angeles County Fire Department to provide on-site fire safety inspections of individual homes, when requested by resident or owner, and advise homeowners on ways to minimize fire hazards while maintaining slope stability and appropriate vegetation.
S Implementation Measure 14	Encourage and support arson and neighborhood watch programs.
S Implementation Measure 15	Require that all camping be in designated fire-safe camping areas.
S Implementation Measure 16	Develop a permanent, ongoing homeowner watershed area management plan to reduce fire hazards while maintaining appropriate vegetation that will stabilize the watershed and control the flow of water from it. Application of such plan in Resource Protection Areas shall be subject to review and approval for compliance with resource protection requirements.
S Implementation Measure 17	Work with water service providers to identify neighborhoods with inadequate flow from fire hydrants, and to upgrade deteriorated and undersized water-distribution systems.

S OBJECTIVE 1.2: RISKS TO RESIDENTS AND BUSINESSES FROM DEVELOPMENT IN HAZARDOUS AREAS ARE MINIMIZED.

Measure	Description
S Implementation Measure 39	Develop and maintain a development geo-hazard database to incorporate findings from site specific and area hazard-related studies.
S Implementation Measure 40	Adopt and update as appropriate maps of extreme fire danger areas, 100- year flood plains, landslide and debris flow danger, active and potentially active faults, tsunami, and any other hazard areas; and inform residents of those areas of risks and possible mitigation measures.
S Implementation Measure 47	To protect slope stability, restrict grading or development related vegetation clearance where the slope exceeds 2:1, except as required for fire safety, driveways and utilities and where there is no reasonable alternative.
S Implementation Measure 51	Evaluate proposed development for its impact on, and from, geologic hazards, flood and mud flow hazard, and fire hazard.

Specific actions include the following:

- The City of Malibu has strategically placed 47 fire-resistant Beacon Boxes around the city which display critical information for public safety personnel such as water resources, road networks, egress areas, safe refuge areas, and high burn risk areas.
- The City of Malibu has adopted a Community Wildfire Protection Plan (CWPP) aimed at reducing wildfire risks in the community. In includes measures such as vegetation management, firebreak creation, and community education.
- The City of Malibu's Fire Hazard Tree Removal program addresses the critical need to identify and remove hazardous trees that pose a significant risk during wildfires. This initiative focuses on proactive measures to safeguard lives and property.
- The City of Malibu utilizes Everbridge for their disaster notification system which includes both landline and cell phone contacts.
- The City's three Fire Safety Liaisons are actively working with neighborhoods to achieve Firewise recognition and working to get the City included on the State's Wildfire Risk Reduction Community List. In addition, the Liaisons are working on implementing the recommendations in the Subdivision Review Program. (https://bof.fire.ca.gov/projects-and-programs/subdivision-review-program/)

These City of Malibu plans, goals, measures, and actions are designed to reduce the risk and mitigate the damaged caused by wildfires. These efforts are especially important due to the historical risk of fire in the area. Furthermore, these requirements benefit the socially vulnerable by mitigating the potential for future wildfires which can result in significant loss of life and injuries, damage or destruction of residential and commercial properties, and air quality health issues particularly for lower income, fixed income, single parent households, and the elderly who may not have the financial or healthcare resources to recover.

Westlake Village

The Building and Safety Division of the Los Angeles County Department of Public Works serves under contract as the City's Building and Safety Department. Building and Safety is responsible for enforcing zoning restrictions and other regulations designed to reduce the threat of fire.

The City of Westlake Village General Plan (1993) contains specific goals, objectives, and policies to address fire hazards within the city.

Goal	It shall be the goal of the City of Westlake Village to: Protect the community from fire hazards in order to reduce potential fire damage and the loss of life.
Policies & Objectives	It shall be the objective of the City of Westlake Village to: 3. Reduce fire hazards in the community's built environment by incorporating sound fire prevention designs, materials and systems into new structures. Policies It shall be the policy of the City of Westlake Village to: 3.1. Continue to require that all structures and facilities in the City adhere to City, State and National regulatory standards such as the Uniform Building and Fire Codes and other applicable fire safety standards (I-1). 3.2. Prohibit the use of wood shingle/shake roofs and require the use of fire retardant non-wood roofing materials (I-7). 3.3. Encourage the installation of smoke detectors in existing residences built prior to January 1, 1986 (I-2). Objective It shall be the objective of the City of Westlake Village to: 4. Reduce the risk of property damage and human injury by incorporating fire safety designs into the planning of new developments. Policies It shall be the policy of the City of Westlake Village to: 4.1. Require adequate emergency access (i.e., two viable points of ingress and egress) for emergency vehicles and evacuation in the event of a fire (I-3). 4.2. Promote the clustering of development in hillside areas (I-4). Objective It shall be the objective of the City of Westlake Village to: 5. Ensure that the risk of damage and injury from brush fires is significantly reduced. Policies It shall be the policy of the City of Westlake Village to: 5.1. Require that developments located in wildland interface areas incorporate and maintain a fuel modification program, (i.e., brush clearance and the planting of slow burning and fire retardant vegetation) to reduce the threat of wildfires (I-5). 5.2. Ensure that high fuel brush vegetation in wildland areas is cleared/maintained as required to reduce the risk of brush fires (I-6). 5.3. Require all brush clearance/maintenance zones be located on the site they are intended to protect (I-8).

The City of Westlake Village Implementation Program includes:

I-1	Cooperate with the Los Angeles County Building and Safety Department as well as the Fire Department to ensure all applicable fire codes and standards are enforced.
I-2	Investigate the feasibility of providing a city rebate program for residents who purchase new smoke detectors for their homes where smoke detectors are absent.
I-3	Utilize the City's design review process to evaluate the fire safety aspects of proposed developments. Coordinate with the Los Angeles County Fire department to ensure adequate emergency access is being provided by all proposed developments.
I-4	Implement the Hillside Management Ordinance.
I-5	Coordinate with the Los Angeles County Fire Department to ensure that an adequate fuel modification program is actively being implemented and enforced.
I-6	In event of noncompliance, encourage the Los Angeles County Fire Department to enforce the required maintenance of high fuel areas, through notification and citation of violators.
I-7	Review and revise, as needed, current building codes pertaining to fire retardant roof materials and construction techniques.
I-8	Modify the hillside ordinance to require all brush clearance and maintenance zones be located on the site they are intended to protect.

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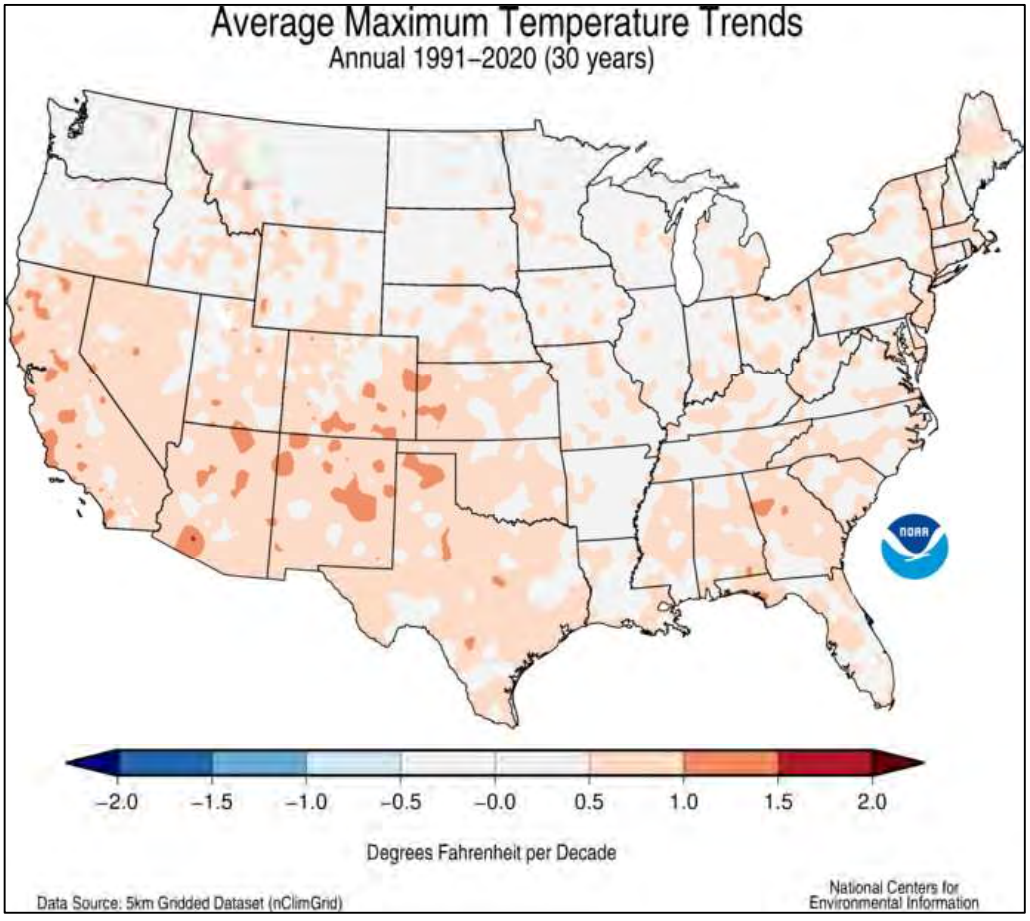
SECTION 8. CLIMATE CHANGE

THE NATURE OF THE CLIMATE CHANGE THREAT

According to "California's Fourth Climate Change Assessment" developed by the State of California, continued climate change will have a severe impact on California. Increased temperatures, drought, wildfires, and sea level rise are several of the main concerns related to climate change in the Southwest.

Temperature Rise

By the year 2100, the average annual maximum daily temperature is expected to increase 2° to 9.7° Fahrenheit.[6] This rise in temperature can result in power outages (from increased demands combined with limited supplies), drought, wildfires, sea level rise as well as agriculture and livestock losses. The National Centers for Environmental Information (NCEI) under the National Oceanic and Atmospheric Administration (NOAA) tracks temperature trends. The map below depicts the Maximum Annual Temperature trends for the U.S.



Map 51: Average Annual Maximum Temperature Trends – June 1991 – 2020 (30 years)

Source: NCEI NOAA (https://www.ncei.noaa.gov/access/monitoring/us-trends/tmax/jun)

[6] NOAA (https://www.climate.gov/news-features/understanding-climate/climate-change-global-temperature-projections)

Water and Drought

Despite the heavy snowpack created in 2022, by 2050, the water supply from the California snowpack is projected to decline by two-thirds. This will lead to water shortages of up to 16 percent in certain regions causing losses in agriculture as well as community water consumption restrictions.

Wildfire

By 2100, the frequency of severe wildfires is expected to increase, with a projected 77 percent rise in the average area burned statewide. In the areas that have the highest fire risk, wildfire insurance is estimated to see costs rise by 18 percent by 2055[7] (see **Wildfire** section for additional area specific information).

Sea Level Rise

The "California's Fourth Climate Change Assessment" predicts that 31 to 67 percent of Southern California beaches may completely erode by 2100 without large-scale human interventions. This will lead to $17.9 billion in losses to residential and commercial buildings statewide by 2050 from a projected 20 inches (50 cm) of sea level rise. Further, if a 100-year coastal flood were to occur, this cost would nearly double. For the City of Malibu, current projections estimate that the coastline risk of seal level rise ranges from Low to Moderate – though the loss of beach sand and higher waves can still have a significant impact on the area. The map below provides an example of areas subject to high tide flooding in Malibu. Note that multiple housing structures will be at risk along the entire Malibu coastline.

In addition, a rise in sea level could impact Pacific Coast Highway, the major transportation route through the City of Malibu. As a result of the overall threat of sea level rise in the State of California, Caltrans is currently conducting climate vulnerability assessments to address these and other impacts to ultimately develop climate adaptation strategies for each of its 12 districts across the state. Additionally, the City of Malibu is conducting a Coastal Vulnerability Assessment to further understand the sea level rise risk and areas for potential mitigation (see Malibu Mitigation Activities section).

Map 52: City of Malibu High Tide Flood Zones
Source: NOAA Office for Coastal Management

[7] California's Fourth Climate Change Assessment

Drought

Drought ais a climate change related natural disaster. An overview is provided below. Further, additional information and a discussion of the impact of drought is included in the **Estimated Impact of Climate Change and Drought** of this section.

Drought can have a major economic, wildland/wildlife, and human impact. As of 2018, the Las Virgenes-Malibu region and much of the population in the State of California remain under severe drought conditions after more than 6 years of drought (U.S. Drought Monitor for California map below). Additional details on the impact of drought and climate change on the LVMCOG Region are included in the **Climate Change and Drought History** of this section.

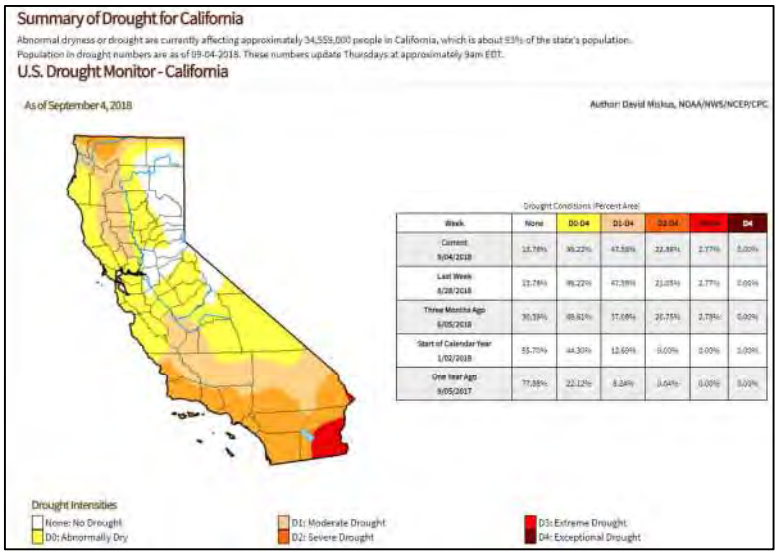


Figure 90: California Drought Monitor, September 2018

Source: National Integrated Drought Information System

Further, it is important to note that drought can have a secondary impact to the hydro-electric power generation capabilities of the entire western U.S. As a result, drought remains a concern for the entire western region.

2011 to 2017 Drought

The 2011 to 2017 drought had a major impact on the entire state including the imposition of water use restrictions, water shortages in some areas, agricultural losses, and an increase in the threat of wildfire.

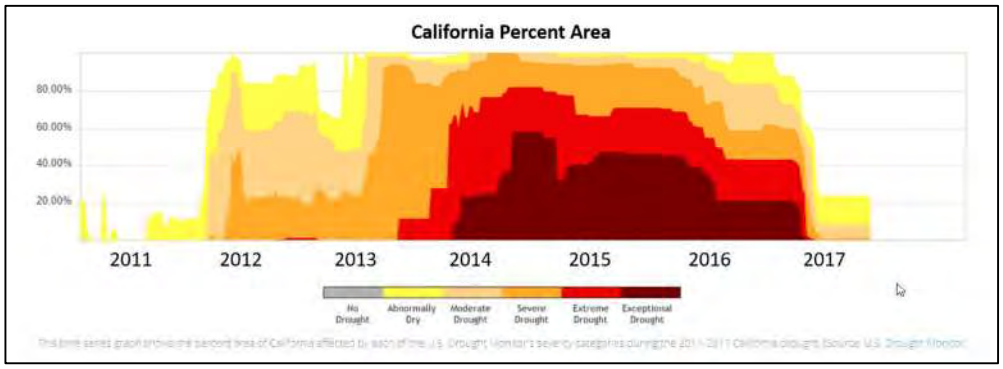
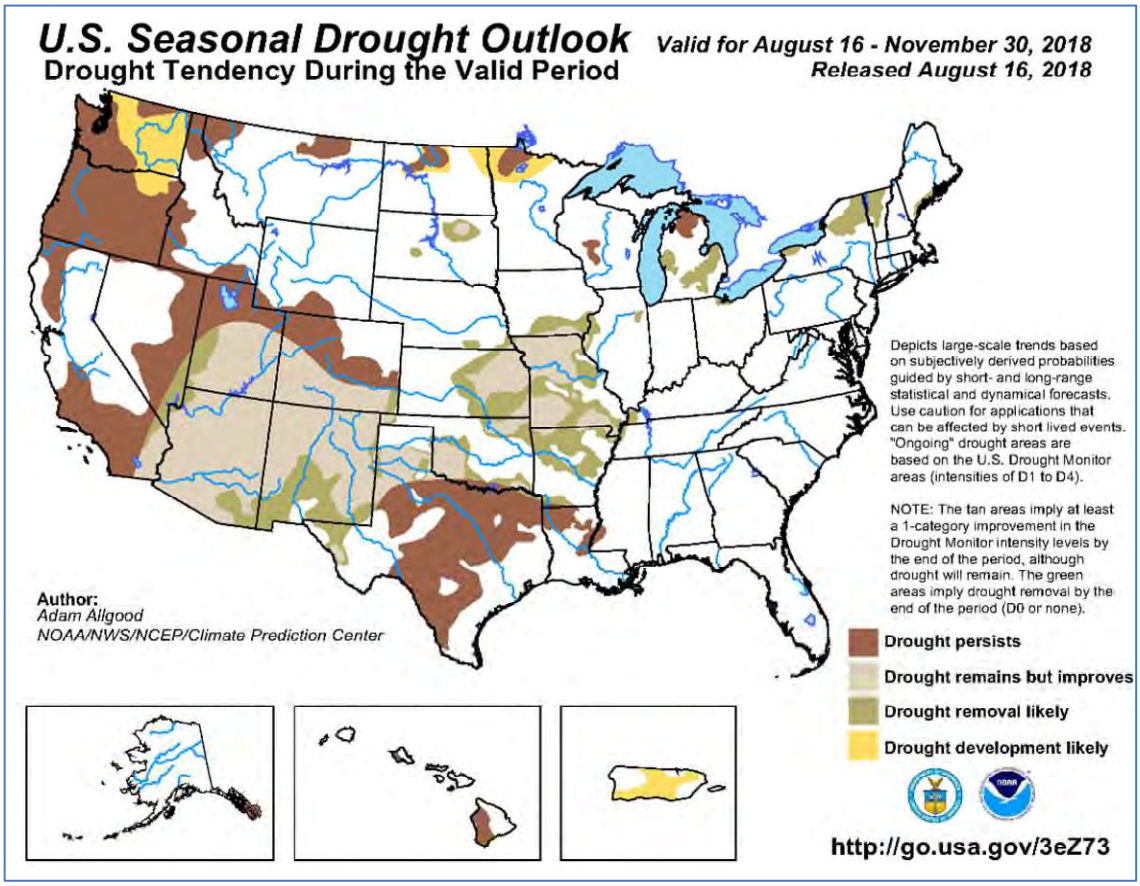


Figure 91: 2011-2017 California Drought Percent of Area Impact by Year

Source: National Integrated Drought Information System

Future Drought Projections

Despite the heavy rains in 2017 that ended the historic California drought, the threat of ongoing and frequent drought remains. In fact, throughout 2018, drought has persisted in Southern California and much of the Western U.S. (see U.S. Seasonal Drought Outlook map below).



Map 53: U.S. Seasonal Drought Outlook

Source: NWS Climate Prediction Center

Water Supply Management and Drought Considerations

The cities of Agoura Hills, Calabasas, Hidden Hills, and Westlake Village rely on the Las Virgenes Municipal Water District (LVMWD) for their water supply management. Similarly, Malibu's water supply falls under the jurisdiction of the Metropolitan Water District of Southern California (MWD). Consequently, drought is not included as a standalone hazard within the plan, as the management and response to water scarcity primarily fall within the scope of these respective water districts and agencies. However, while drought may not be listed as a separate hazard, the potential impacts of water scarcity are considered within broader hazard assessments and mitigation strategies.

Las Virgenes-Malibu Region Climate Change Probability

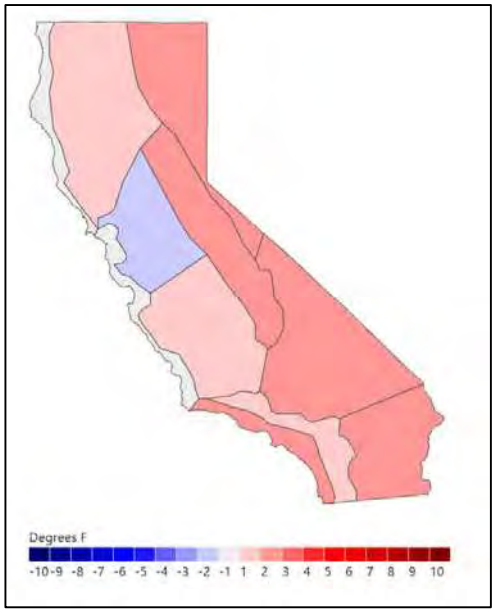
Although the FEMA National Risk Index does not include a separate category for climate change, they do indicate 73 drought events per year.

CLIMATE CHANGE AND DROUGHT HISTORY

Temperature

Overall, temperatures in the South Coast Region of California have fluctuated year-to-year but have shown a consistent increase since 2013. The table on the right provides a summary of the annual average temperature from 2000 to 2022.

Source: The National Drought Mitigation Center, University of Nebraska-Lincoln



Map 54: CNAP Mean Temperature Departures from 1981-2010 Average

Furthermore, the average temperature in the South Coast Region rose 1 degree from 2000 to 2022 and in the summer of 2023, most of the country experienced some of the highest temperatures on record.

Year	Mean Temperature Degrees F	Historical Average	Departure
2022	70.7	69.1	1.5
2021	73.9	69.1	4.8
2020	69.4	69.1	0.3
2019	70.2	69.1	1.1
2018	70.2	69.1	1.1
2017	71.7	69.1	2.6
2016	72.6	69.1	3.5
2015	73.5	69.1	4.3
2014	70.8	69.1	1.6
2013	71.2	69.1	2.1
2012	68.5	69.1	-0.7
2011	65.8	69.1	-3.3
2010	68.1	69.1	-1
2009	66.5	69.1	-2.6
2008	70.1	69.1	0.9
2007	69.7	69.1	0.6
2006	72.4	69.1	3.2
2005	65.1	69.1	-4
2004	69.8	69.1	0.6
2003	70.5	69.1	1.4
2002	70.4	69.1	1.2
2001	70.6	69.1	1.4
2000	71.4	69.1	2.3

Table 137: Mean Temperature Observations and Departures for the South Coast

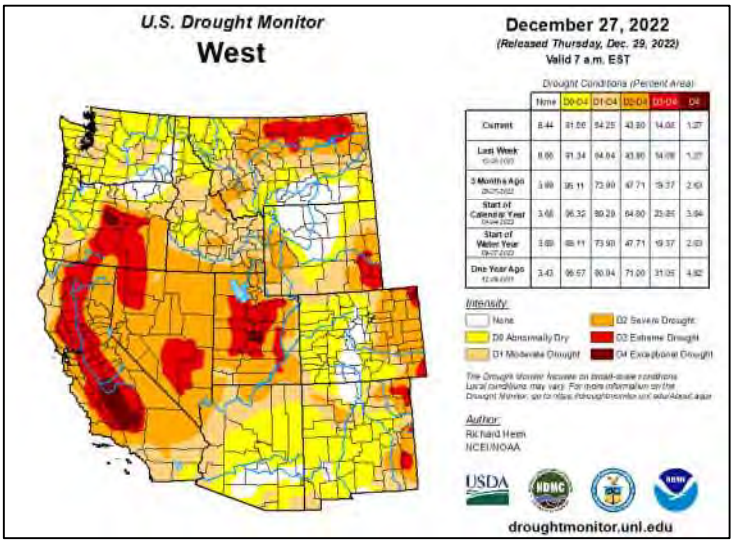
Source: Western Regional Climate Center

Figure 92: Time Series - Departures from 1991 – 2020 Computed Average(s) for 1-month periods ending in June

Source: Western Regional Climate Center

Drought

California is chronically under drought conditions. Although the end of 2022 to early 2023 was a major rainfall period, in general, drought conditions are expected to continue. Previously from 2021 to 2022, significant areas of California were in Severe to Exceptional Drought conditions. Similarly, from 2014 through 2016 a large part of the state was under Exceptional Drought status (Source: National Drought Mitigation Center, University of Nebraska-Lincoln).



Map 55: U.S. Drought Monitor - Western States Status (Dec 2022)

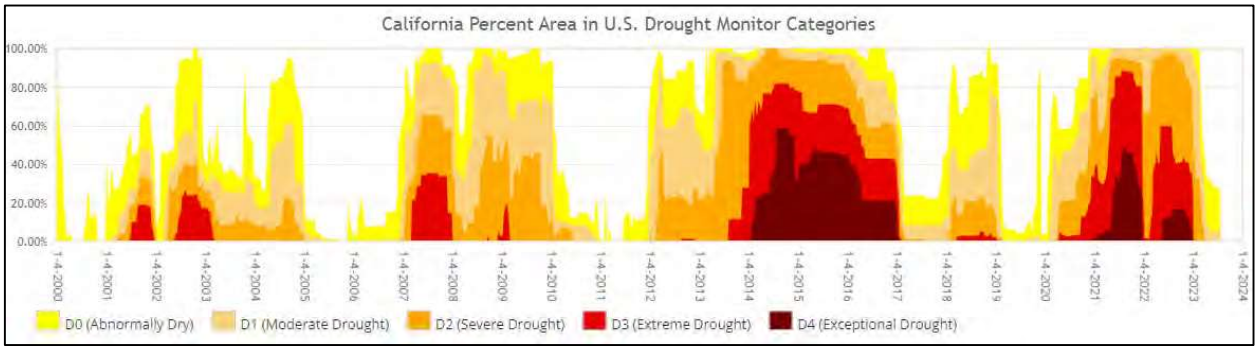


Figure 93: California Percent Area in U.S. Drought Monitor Categories

The table below provides a summary of the rainfall variations from 1980 to 2022 in Los Angeles County, California.

Year	Precipitation (inches)	Percent of Average		Year	Precipitation (inches)	Percent of Average
2022	7.19	45.50		2000	12.19	77.12
2021	7.02	44.41		1999	6.93	43.85
2020	12.11	76.60		1998	27.80	175.91
2019	22.97	145.38		1997	12.02	76.08
2018	10.24	64.78		1996	18.23	115.35
2017	12.57	79.55		1995	25.51	161.43
2016	11.78	74.52		1994	10.01	63.36
2015	7.55	47.80		1993	27.12	171.62
2014	9.56	60.47		1992	25.61	162.05
2013	4.75	30.07		1991	16.62	105.18
2012	9.23	58.39		1990	7.14	45.21
2011	12.02	76.06		1989	5.25	33.19
2010	25.18	159.32		1988	12.44	78.69
2009	9.99	63.21		1987	12.57	79.52
2008	14.59	92.32		1986	16.18	102.36
2007	6.37	40.29		1985	8.34	52.80
2006	13.23	83.69		1984	10.11	64.00
2005	27.40	173.39		1983	34.60	218.91
2004	18.43	116.64		1982	19.32	122.28
2003	14.62	92.50		1981	11.70	74.01
2002	7.49	47.37		1980	24.83	157.10
2001	17.12	108.34				

Table 138: Precipitation Observation and Percents of Average for the South Coast

Source: Western Regional Climate Center

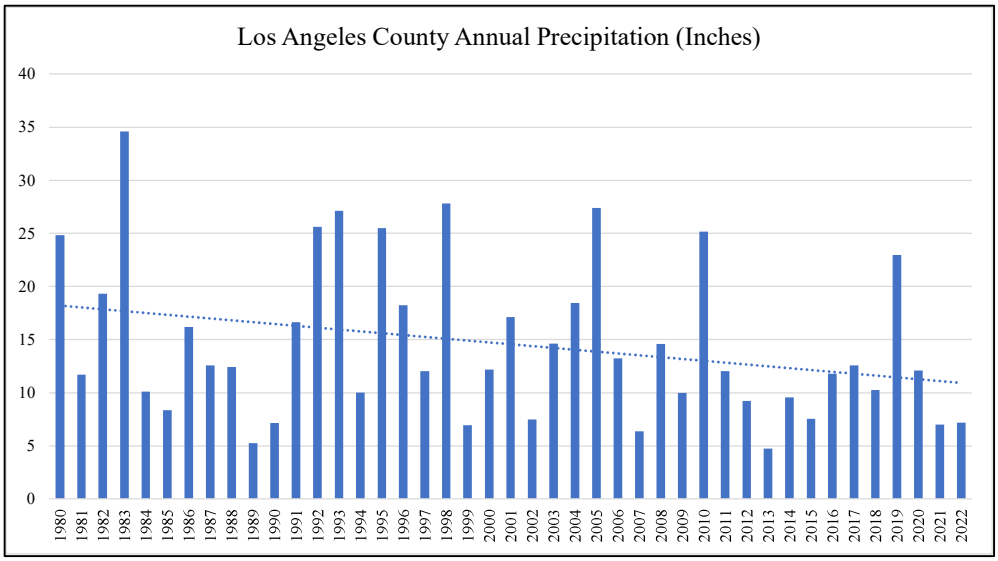


Figure 94: Annual Precipitation in Los Angeles County

Although the rainfall history shows significant variations between dry and extremely wet years, the overall rainfall trend has been moving downward over time which indicates a higher likelihood of drought in the future.

Extreme Weather Fluctuations (Heat and Cold)

Average temperatures in Los Angeles County have shown annual fluctuations between heat and cold with several extreme years showing larger variations than normal. For example, in 2014 the average temperature was over 3 degrees higher than the average and in 1998 the temperature was nearly 2 degrees lower than average. These temperature fluctuations can have a significant impact on the community due to changes in weather patterns, damage to plant life, loss of agriculture, and impact on wildlife. The following table illustrates the departure from normal readings from 1980 to 2022. Furthermore, the overall trend since 1980 has been a gradual temperature rise therefore periods of future high temperatures can be anticipated.

Year	Los Angeles County Temperature (Degrees F)	Departure from Normal		Year	Los Angeles County Temperature (Degrees F)	Departure from Normal
2022	62.80	1.18		2000	61.82	0.20
2021	62.79	1.18		1999	61.00	-0.62
2020	62.38	0.76		1998	59.86	-1.76
2019	61.11	-0.51		1997	62.85	1.24
2018	63.49	1.88		1996	62.99	1.38
2017	63.88	2.27		1995	62.15	0.54
2016	63.63	2.01		1994	61.33	-0.28
2015	64.02	2.41		1993	61.34	-0.27
2014	64.70	3.08		1992	62.15	0.54
2013	62.51	0.89		1991	60.89	-0.73
2012	62.81	1.20		1990	61.68	0.07
2011	60.58	-1.03		1989	61.63	0.02
2010	60.63	-0.99		1988	61.40	-0.22
2009	62.07	0.46		1987	60.86	-0.76
2008	62.49	0.87		1986	61.84	0.22
2007	62.20	0.59		1985	61.02	-0.59
2006	61.89	0.28		1984	62.27	0.66
2005	61.30	-0.32		1983	61.03	-0.58
2004	61.75	0.13		1982	60.00	-1.62
2003	62.49	0.87		1981	62.68	1.06
2002	61.43	-0.18		1980	61.54	-0.07
2001	61.38	-0.23				

Table 139: Los Angeles County Average Temperature 1980 - 2022

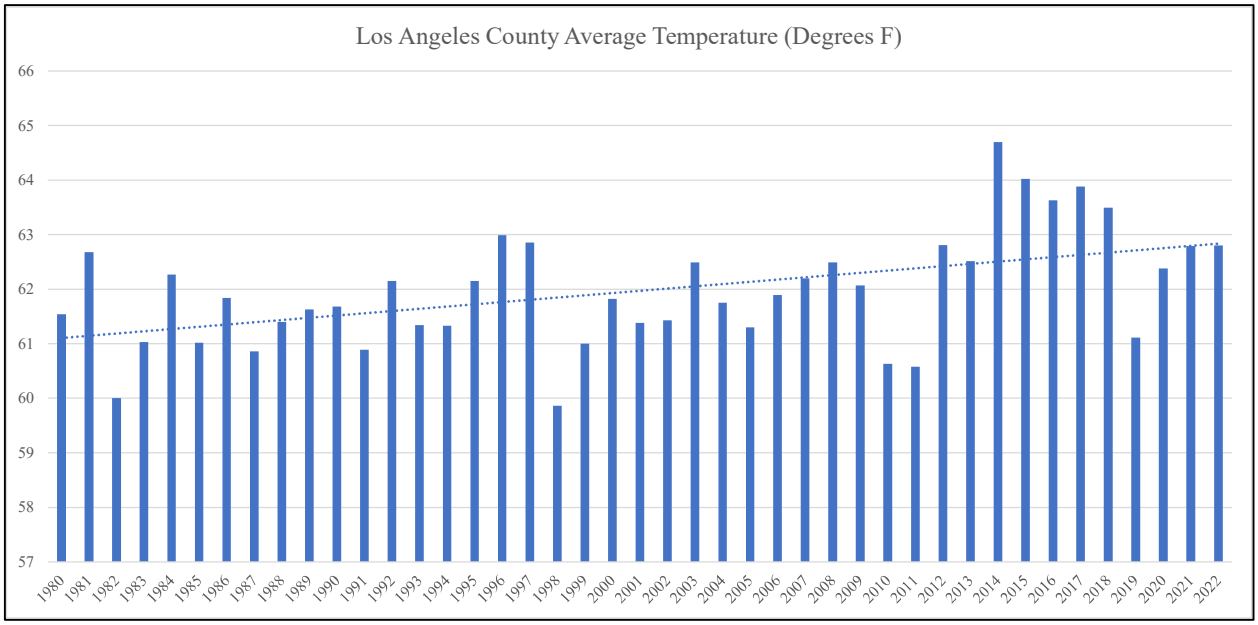


Figure 95: Average Annual Temperature for Los Angeles County

Sea Level Rise (SLR)

According to the California Office of Environmental Health Hazard Assessment (OEHHA) May 2018 report, Indicators of Climate Change in California,[8] sea levels along the California coast have generally risen over the past century (except along the far north coast where uplift of the land surface has occurred due to the movement of the Earth's plates).

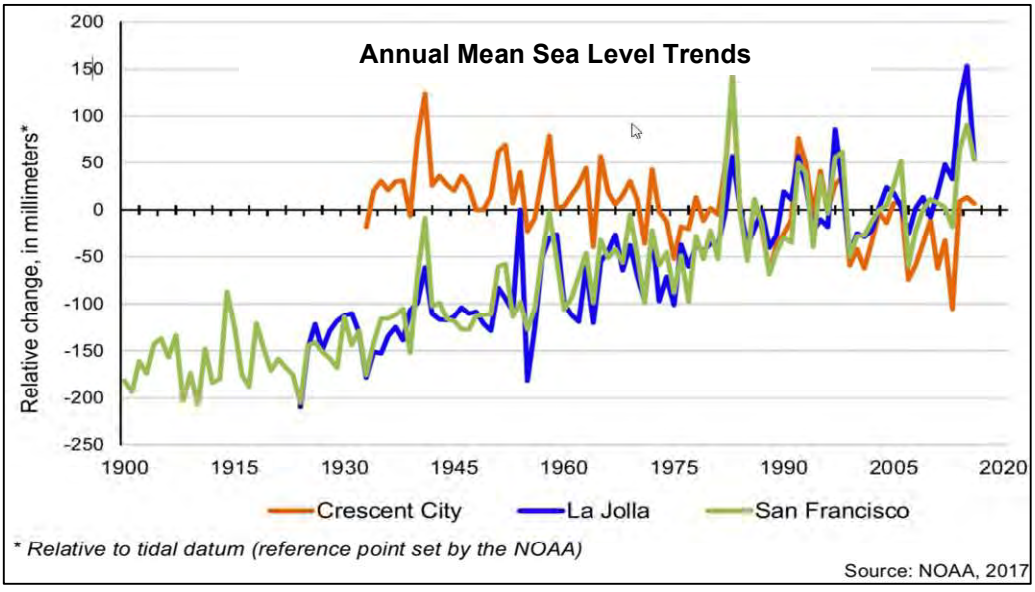


Figure 96: Annual Mean Sea Level Trends

[8] Milanes, et.al., Indicators of Climate Change in California, 2018

Measurements at La Jolla and San Francisco have climbed since 1990 from a standard elevation established by the National Oceanic and Atmospheric Administration (NOAA) as a reference point. Specifically, the mean sea level has increased by 180 millimeters (mm) or 7 inches since 1900 in San Francisco and approximately 150 mm or 6 inches since 1924 in La Jolla. Further, the 16 tide stations operated by NOAA in California shows an overall increase of 0.96 mm/year in the Los Angeles area coast from 1923 to 2016 (see table below) which equates to a total of 99.84 mm or approximately 4 inches.

Sea Level Trends (as reported by NOAA)

Location	Period of record	Trend, mm/year (inches/year)
Alameda*	1939-2016	+0.72 (+0.03)
Arena Cove	1978-2016	+0.53 (+0.02)
Crescent City	1933-2016	-0.80 (-0.03)
La Jolla	1924-2016	+2.17 (+0.09)
Los Angeles	1923-2016	+0.96 (+0.04)
Monterey	1973-2016	+1.39 (+0.05)
Newport**	1955-1993	+2.22 (+0.09)
North Spit	1977-2016	+4.68 (+0.18)
Point Reyes	1975-2016	+1.98 (+0.08)
Port Chicago*	1976-2016	+1.58 (+0.06)
Port San Luis	1945-2016	+0.84 (+0.03)
Redwood*	1974-2016	+1.99 (+0.08)
San Diego	1906-2016	+2.15 (+0.08)
San Francisco	1897-2016	+1.94 (+0.08)
Santa Barbara	1973-2016	+1.01 (+0.04)
Santa Monica	1933-2016	+1.51 (+0.06)

* Gauge not along the outer coast
** Currently inactive

Source: NOAA, 2017

Map 56: Sea Level Trends

Additionally, according to the "Indicators of Climate Change in California"[9] report, since the mid-19th century, global mean sea levels have been rising at a higher rate than during the previous two millennia.

- The rate of increase between 1993 and 2010 was at 3.2 mm/year (approx. 0.1 inch/year)
- The rate of increase between 1901 and 2010 was 1.7 mm/year (approx. 0.07 inch/year)

The Threat of Sea Level Rise to California

In 2020, a report by the California Legislative Analyst's Office (LAO) studied the effects of sea level rise in the state. The report entitled "The Threat of Sea Level Rise to California" cited the following major areas impacted by sea level rise:

- Public Infrastructure
- Private Property
- Vulnerable Communities
- Natural Resources
- Drinking and Agricultural Water Supplies
- Toxic Contamination
- Economic Disruption

[9] Milanes, et.al., Indicators of Climate Change in California, 2018

The following sections are quoted from the study[10]:

Public Infrastructure

Damage to public infrastructure located along California's coast represents one of the greatest threats from SLR, as these assets are key components of state and local systems of public health, transportation, and commerce. Examples of publicly owned infrastructure located along the coast include water treatment plants, roads and highways, railways, piers and marinas, and public recreational trails. Depending upon the specific location of these facilities, they could be impacted by both flooding from waves or rising groundwater levels, as well as damage from cliff erosion. In addition, flooding from SLR threatens several important California ports and airports—including those in Long Beach, Los Angeles, San Diego, and Oakland that are managed by public special districts.

For example, a March 2020 study of SLR vulnerability in the San Francisco Bay Area found that four feet of higher water levels (either from SLR alone or in combination with periodic storm surges) would expose key transportation and commerce infrastructure in the region to flooding. Locations identified as being at risk include: 59 miles of highways and bridges, 48 miles of freight rail lines, 20 miles of passenger rail lines, 11 acres of ferry terminals, 780 acres of seaports, and 4,670 acres of airports. Such flooding could render this important infrastructure unusable for extended periods of time or, in some cases, permanently and require costly repairs or modifications.

A different study conducted in 2018 estimated potential impacts from SLR on wastewater infrastructure along the coast. Researchers found that 15 wastewater treatment plants in California will be exposed to flooding with three feet of SLR, growing to 36 facilities with six feet of SLR. Facilities in the San Francisco Bay region are particularly vulnerable, accounting for 30 of those 36 statewide plants, with rising groundwater levels magnifying flood risk. The study also found that with just over three feet of SLR, 28 percent of the plants in the Bay Area region will experience flooding on at least one-quarter of their surface areas. Flooding of such facilities could cause them to become inoperable for extended periods of time and create a risk of sewage leaks, posing serious threats to public health.

The erosion of coastal cliffs in California is already beginning to cause transportation disruptions. For example, in winter 2019, a portion of railway tracks used to carry passengers between Los Angeles and San Diego had to be closed to repair damage from a bluff collapse near the City of Del Mar.

Private Property

In addition to publicly owned assets, private property is also threatened by the effects of SLR. Specifically, both houses and businesses located along the coast face the threat of increased flooding, and those in cliff-side locations face damage from eroding bluffs.

[10] Petek Gabriel, California Legislative Analyst's Office, What Threat Does Sea-Level Rise Pose to California?, 2020

A 2015 economic assessment by the Risky Business Project estimated that if current global greenhouse gas emission trends continue, between $8 billion and $10 billion of existing property in California is likely to be underwater by 2050, with an additional $6 billion to $10 billion at risk during high tide. Moreover, a recent study by researchers from the U.S. Geological Survey (USGS) estimated that by 2100, roughly six feet of SLR and recurring annual storms could impact over 480,000 California residents (based on 2010 census data) and $119 billion in property value (in 2010 dollars). When adding the potential impacts of a 100-year storm a storm with a one-in-100 likelihood of occurring in a given year these estimates increase to 600,000 people and over $150 billion of property value.

Vulnerable Communities

While many coastal communities contain affluent neighborhoods, many of those communities include more vulnerable populations who also face the risk of more frequent flooding and damage from erosion. Those who will be affected include renters (who are less able to prepare their residences for flood events), individuals not proficient in English (who may not be able to access critical information about potential SLR impacts), residents with no vehicle (who may find it more difficult to evacuate), and residents with lower incomes (who have fewer resources upon which to rely to prepare for, respond to, and recover from flood events).

A 2009 study found that flooding from four and a half feet of rising seas combined with a 100-year storm in California would affect 56,000 people who earn less than $30,000 annually, 45,000 renters, and 4,700 individuals who are linguistically isolated and less likely to understand flood warnings. Additionally, a recent report estimated that four feet of higher water levels would cause daily flooding for nearly 28,000 socially vulnerable residents in the San Francisco Bay Area region. (The researchers defined social vulnerability using a variety of indicators, including income, education level, English proficiency, age, disability status, housing status, citizenship status, and access to vehicles.)

Natural Resources

In addition to buildings and infrastructure, SLR also poses a threat to ecological resources across the state. Flooding has the potential to inundate coastal beaches, dunes, and wetlands. This threatens to impair or eliminate important habitats for fish, plants, marine mammals, and migratory birds. Higher sea levels will also cause salt water to encroach into thereby degrading coastal estuaries where fish and wildlife currently depend upon freshwater conditions. A 2018 report by the State Coastal Conservancy and The Nature Conservancy found that 55 percent of California's existing coastal habitats are highly vulnerable to five feet of SLR, including 60 percent of the state's iconic beaches, 58 percent of rocky intertidal habitat, 58 percent of marshes, and 55 percent of tidal flats. The researchers estimated that five feet of SLR would also drown 41,000 acres of public conservation lands and add stress to 39 species whose populations have already been classified as rare, threatened, or endangered.

Humans are also dependent on these coastal environments, both for the natural processes that they provide (such as filtering stormwater runoff to improve water quality and providing protection from flooding), as well as their recreational benefits. Millions of California residents visit the coast annually to fish, swim, surf, and enjoy nature, particularly along the one-third of

the coastline owned by the State Park system. The state's Safeguarding California Plan cites that for every foot of SLR, 50 feet to 100 feet of beach width could be lost. Moreover, a recent scientific study by USGS researchers predicted that under scenarios of three feet to six feet of SLR, up to two-thirds of Southern California beaches may become completely eroded by 2100.

Drinking and Agricultural Water Supplies

SLR has the potential to impact the fresh water resources upon which Californians depend for drinking, bathing, and growing crops in two primary ways.

First, SLR may cause salty sea water to contaminate certain fresh groundwater supplies. Some coastal regions of the state are heavily dependent on drawing fresh water from underground aquifers to support their population and to grow crops. In some areas rising sea levels are likely to push saltwater up into these groundwater basins, thereby degrading key fresh water resources. The degree of this risk is still unknown and being researched, and will vary across the state based on factors like local geology and hydrology. Additionally, SLR may exacerbate conditions for coastal fresh water aquifers that already are experiencing some degree of saltwater intrusion due primarily to their current pumping practices—including in the Pajaro and Salinas Valleys, the Oxnard Plain, and certain areas in Los Angeles and Orange Counties.

Second, SLR could impair one of the state's key water conveyance systems. The State Water Project brings fresh water supplies to 27 million people and to irrigate 750,000 acres of farmland. The system is highly dependent on the integrity of the levees in the Sacramento-San Joaquin Delta to successfully move this water from the northern to the central and southern parts of the state. Higher sea levels pushing into the Delta from the ocean through the San Francisco Bay, however, will place more pressure on those levees. Should the levees in the southern part of the Delta be damaged and breached by these higher water levels, it would cause salt water to flood further into the estuary. This could contaminate the fresh river water supplies that currently pass through the Delta into the State Water Project's pumps and canals. Additionally, even if levees remain undamaged, SLR will on the natural bring salty tides further into the Delta estuary. This will require the state to direct greater flows of fresh river water to "push back" on those tides in order keep saltwater away from the conveyance pumps located at the southern end of the Delta. Research suggests that such conditions would therefore likely decrease the amount of freshwater supplies available for exporting via the State Water Project.

Toxic Contamination

Flooding and rising groundwater levels caused by SLR could also threaten public health by exposing coastal residents to toxic contamination. Specifically, in areas where underground sea water pushes the water table up towards or above the ground surface, water could also damage and intrude into underground sewer pipes and systems. This could lead to more prevalent incidents particularly during high tides and storms of raw sewage seeping into fresh groundwater aquifers or backing up into streets and homes. Additionally, water infiltrating upward may flow through hazardous contaminants currently buried in the soil and carry them toward the surface, thereby distributing pollutants into fresh groundwater supplies and surface soils, as well into stormwater runoff that flows through local streets and fields. Contaminated lands located along the coast and bay at risk of both surface and groundwater flooding include active and closed landfills, as well

as "brownfields" which are undergoing or require cleanup—such as federal Superfund sites, military cleanup sites, and California Department of Toxic Substances Control sites. Flooding from SLR could also lead to toxic contamination from facilities that generate and store hazardous materials, such as laboratories, manufacturing facilities, and gas stations. Floodwaters could penetrate both surface-level and underground tanks and force out toxic liquids, or liberate waste from pits or piles.

Available research suggests the threat of SLR causing harmful contamination is significant. For example, research suggests that more than 330 facilities across California that contain hazardous materials and are being regulated by the U.S. Environmental Protection Agency are at risk of flooding with 1.4 meters (about five feet) of SLR combined with a 100-year storm. Additionally, a study undertaken in Contra Costa County found that 28 brownfield sites within the county are at risk of flooding with two feet of SLR combined with a 100-year flood, growing to 38 sites with six feet of SLR. (The study did not consider the potential compounding impacts of groundwater flooding.) These sites contain 68 different contaminants of concern, including various metals, corrosive materials, petroleum products, volatile organics, and pesticides. The study found that "these contaminants can potentially affect soil, sediments, sediment vapor, groundwater, or surface water."

Economic Disruption

The potential impacts of SLR could have negative impacts on the economy and tax base—both locally and statewide if significant damage occurs to certain key coastal infrastructure and other assets. For example, according to California's Fourth Climate Change Assessment, the state's ports were the destination for $350 billion in goods imported to the U.S. in 2016 by far the largest of any state. This economic activity would be disrupted by flooding of the docks, surrounding roadways, or adjacent railways through which goods are distributed. The productivity of the state's workforce—and associated economic output would also be affected by SLR. For example, a recent study[11] found that over 104,000 existing jobs in the San Francisco Bay Area including from some of the highly successful technology companies located along the Bay's shore would need to relocate or be lost under a scenario of four feet of flooding in the region.

Moreover, the potential erosion of beaches associated with SLR would impact not only Californians' access to and enjoyment of key public resources, but also beach-dependent local economies. For example, research on the potential economic impacts of SLR specific to the San Diego region found that the tourism and recreation industries face the greatest vulnerabilities. Overall, the study[12] found that about three feet of SLR combined with a 100-year storm would pose a threat to 830 business establishments in San Diego County, which could in turn affect 15,000 jobs, $2 billion in property sales, and $2 billion in regional gross domestic product. A scenario of six feet of SLR combined with a 100-year storm increases the scope of this vulnerability to over 2,600 business establishments, which would affect 49,000 jobs, $8 billion in sales, and $6.1 billion of the county's gross domestic product.

[11] Adapting to Rising Tides, Summary of Regional Sea Level Rise Vulnerability and Adaptation Study, March 2020
[12] Middlebury Institute of International Studies at Monterey, Regional Economic Vulnerability to Sea Level Rise in San Diego County, March 2018

Additionally, if property values fall considerably from the increased risk and frequency of coastal flooding, over time this will affect the annual revenues upon which local governments depend. To the degree local property tax revenues drop, this also could affect the state budget in some years because the California Constitution could require that losses in certain local property tax revenues used to support local schools be backfilled by the state's General Fund.

Sea-Level Rise Threat to the City of Malibu

According to the City of Malibu General Plan, *"Elevations within the City range from sea level to approximately 1,700 feet above sea level. Most of the developed areas along the coast lie below 100 feet with the exception of the Point Dume and Malibu Park areas which reach an elevation of 500 feet. The hillsides and coastal mesas such as Big Rock and Las Flores have elevations ranging from 300 to 400 feet above sea level."* As a consequence, the threat of sea level rise is a concern. According to a 2016 report on the risk of sea-level rise prepared for the County of Los Angeles[13], the City of Malibu is at risk of sea-level rise due to the close proximity of assets and infrastructure to the shoreline and the anticipated reduction of beach width (sand front) along the coast due to wave runup and inundation. Further, continued sea-level rise will leave the City of Malibu more vulnerable to future storm events. Finally, if the situation continues, the erosion and loss of beaches can have a significant economic impact to the City. However, the City of Malibu is conducting a Coastal Vulnerability Assessment to further understand the sea level rise risk and areas for potential mitigation (see Malibu Mitigation Activities section).

High Tide Flooding

As a result of the report cited above as well as other similar studies, the City of Malibu may expect an increase in erosion, coastal flooding, and damage to infrastructure as sea level rise continues. The maps below provide an estimate of areas of Malibu that are susceptible to coastal flooding due to high tides.

Map 57: Malibu Coastal Flood Areas from a High Tide Flooding – Puerco Beach to Malibu Beach

[13] Noble Consultants-G.E.C., Inc., Final Report Los Angeles County Public Beach Facilities Sea-Level Rise Vulnerability Assessment, 2016.

Map 58: Coastal Flood Areas from High Tide Flooding - Malibu Beach and Malibu Lagoon

Source: NOAA

Disasters Declarations and Emergency Proclamations

FEMA disaster declarations allow state, tribal, and local governments to access federal aid for disaster response and recovery when overwhelmed. Similarly, the California Governor's Office of Emergency Services (Cal OES) issues proclamations to mobilize state resources and streamline procedures.

FEMA Disasters Declarations

No disaster declarations.

Cal OES Open State of Emergency Proclamations

Proclamation Date: 10/19/21 || Drought

The Drought proclamation remains a hazard to Los Angeles County as well as the LVMCOG region.

STAKEHOLDER INPUT AND PARTICIPATION

To identify the threats, vulnerabilities, and consequences of a major climate change event on the Las Virgenes-Malibu Region, each member of the Planning Group which included representatives from the cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, and Westlake Village provided their input during planning meetings (see Annex B: Meeting Agendas and Attendees) and follow-up discussions. Specific topics of discussion included if any changes to the hazard priorities have changed since the previous HMP, how changes in the community have impacted the risk of each hazard, and what new mitigation actions can be taken. In addition, each member of the Planning Group as well as members of the public provided the input via online surveys (see Annex C: Community Disaster Preparedness and Risk Survey, Annex D: Planning Group HMP Risk Assessment Survey, and Annex E: Planning and Public Involvement).

ESTIMATED IMPACT OF CLIMATE CHANGE AND DROUGHT

The consequences to local populations and employment of climate change and/or drought is difficult to measure. However, it is anticipated that severe heat will cause power outages, cause health problems, reduce economic output, and lead to decreased worker productivity. The table below provides the estimated impact of a disaster using an overall 10% loss baseline.

Category	Agoura Hills	Calabasas	Hidden Hills	Malibu	Westlake Village	Impact if a 10% Loss Occurs
Population*	20,362	23,410	2,182	10,915	8,081	6,495
65 Years and Older*	3,164	3,873	326	3,149	2,103	1,262
Total City Employment	11,100	11,800	4.5	6,483	3,700	3,309
Economy** (in thousands)	$621,000	$1,011,348	N/A	$578,443	$576,306	$278,710

Table 140: Estimated Population and Economic Loss of Climate Change and Drought

*U.S. Census – American Community Survey 2021
**2017 U.S. Economic Census (in thousands)

The table below provides the estimated impact of sea level rise for the City of Malibu using an overall 1% loss baseline.

Category	Malibu	Impact if a 1% Loss Occurs
Total Owner-Occupied Units	3,395	34
Average Home Value	$2,000,000	More than $88.8M

Table 141: Estimated Owner-Occupied Home Losses Due to Sea Level Rise

Based on a 10% loss projection, nearly 6,500 people could be impacted (either directly or indirectly) including over 1,200 people aged 65 years and older (high risk group) with potentially more than 3,300 jobs lost, either temporarily or permanently resulting in a negative economic impact of more than $278M.

Further, sea level rise can have a profound human and economic impact to the City of Malibu. If 1% of owner-occupied units were impacted, the loss would amount to 34 homes valued at more than $88 million (see individual city Community Profile sections for population, housing, and economic data).

Impact of Climate Change

Each city within the LVMCOG (Agoura Hills, Calabasas, Hidden Hills, Malibu, and Westlake Village) are subject to the regional impacts of climate change. High heat and drought conditions are expected to continue interspersed with periods of other extreme weather such as severe winter storms and flooding.

Impact of Land Use and Development

City	Impact of Land Use and Development
Agoura Hills	During severe weather such as winter storms, developed areas located on hillsides may be impacted by landslides and areas in lower elevations may be at greater risk of flooding, mudslides, and debris flows. Further, extreme drought could result in an increase in wildfire prone areas as well as cause new water restrictions and development requirements which may reduce future development densities and/or changes to local land use plans.
Calabasas	Continued extreme weather events caused by climate change such as severe winter storms put residential areas are located in the Calabasas hillsides at greater risk of landslides and low lying areas are subject to flooding, debris flows, and mudslides. Consequently, future development plans may increase the number of restrictions on new development or redevelopment projects, particularly residential properties in hillside areas and in low lying areas below hillside slopes. Additionally prolonged periods of drought could result in an increase in areas subject to wildfire as well as force limits to water use leading to changes in land use patterns and future development plans.
Hidden Hills	Ongoing climate change issues are not expected to result in changes in residential patterns in Hidden Hills. Nevertheless, if severe winter storms caused by climate change occur, an increase in the risk of local flooding, landslides, debris flows, and mudflows may occur which could result in the loss of structures and buildable land – changing land use patterns. Additionally ongoing extreme drought may result in forced water use restrictions which could cause changes to building requirements.
Malibu	Climate change may result in an increase in the intensity of winter storms causing coastal flooding due to sea level rise as well as inland flooding in low lying areas and those along riverine zones. Further, debris flows and mudflows could increase while cliffside developments and mountain residential areas are susceptible to landslides. Consequently, structures in coastal areas, riverine zones, cliff sides, and those located along isolated roads may face future restrictions or may be converted to public areas or wildland if reconstruction is not feasible. The result would be a change in land use patterns in Malibu.
Westlake Village	Climate change caused extreme weather could result in severe winter storms, flooding, debris flows and mudflows in riverine areas within Westlake Village and below the reservoir. Additionally, hillside areas may be undermined causing landslides. The result could cause changes in land use patterns due to additional development constraints especially those areas located in the hillsides and low lying streams in the city.

Impact of Population Patterns

City	Impact of Population Patterns
Agoura Hills	Ongoing extreme weather caused by climate change is not expected to cause significant changes to the population of Agoura Hills as the demand for housing in the area continues to remain high. However, construction in flood, landslide, debris flow, and mudflow prone areas could limit population densities in these areas. Likewise, ongoing drought conditions may cause water use restrictions that can cause changes in population patterns by limiting the number of new housing projects.
Calabasas	It is not anticipated that climate change will significantly impact population patterns in the City of Calabasas due to the area's desirable location and local demand for housing. However, as with other cities in the area, construction in flood, landslide, debris flow, and mudflow prone areas could limit population densities in these areas. Likewise, ongoing drought conditions may cause water use restrictions that can cause changes in population patterns by limiting the number of new housing projects.
Hidden Hills	Population patterns are expected to remain unchanged due to climate change unless areas of the city are deemed to be unusable following a severe weather event due to a major flooding, landslide, debris flow, or mudflow. In addition, ongoing drought conditions are not expected to change the population density in the City of Hidden Hills.
Malibu	Ongoing climate change can result in an increase in the number of severe winter storms leading to flooding, landslides, debris flows, and mudflows in the area which may cause a shift in local population densities and could even result in an increase in the amount of wildland areas where future development is prohibited leading to a slight reduction in the local population.
Westlake Village	Climate change driven severe winter storms can cause flooding, landslides, debris flows, or mudflows in the City of Westlake Village especially in areas along hillsides and low lying riverine zones. Consequently, if a severe event occurs, future population densities may shift due to additional limits to construction/reconstruction in hazard prone areas. Conversely, ongoing drought conditions are not expected to change population patterns in the area due to the continued high demand for housing.

Risk of Future Climate Change

For the LVMCOG Region, the risk of future climate change events was estimated by the Working Group using the following weighted formula:

Risk = (0.45 x Probability) + (0.30 x Magnitude/Severity) + (0.15 x Warning Time) + (0.10 x Duration)

Probability		Magnitude / Severity		Warning Time		Duration	
Level ID	Value	Level ID	Value	Level ID	Value	Level ID	Value
Unlikely	1	Negligible	1	Less than 6 hrs	4	Less than 6 hrs	1
Possibly	2	Limited	2	6 to 12 hrs	3	Less than 24 hrs	2
Likely	3	Critical	3	12 to 24 hrs	2	Less than one wk	3
Highly Likely	4	Catastrophic	4	More than 24 hrs	1	More than one wk	4

The result was a climate change risk rating of 7.25 (see Annex C Working Group HMP Risk Assessment Survey for additional details):

Hazard	Probability	Magnitude	Warning Time	Duration	Risk
Climate Change	9	6	3	9.5	7.25

CLIMATE CHANGE VULNERABILITIES

In terms of vulnerabilities, the main concerns involve the impact of:

- Excessive Heat leading to power outages and heat-related health issues
- Drought and Limited water supplies causing:
  - Reduced water availability to the local community and residents
  - Livestock and domesticated animal losses (including pets, horses, etc.)
  - Damage to local natural habitats
- Sea Level Rise (City of Malibu)
- Wildfire (see **Wildfire** section)

See "The Threat of Sea Level Rise to California" section for additional vulnerabilities.

Climate change vulnerabilities within the LVMCOG include areas subject to an increased threat of wildfire, flood, landslide, debris flow, and mudslides. Specially the hillside and mountain areas and those below higher elevations in northern and southern Agoura Hills, southern and western areas of Calabasas, southern and western Hidden Hills, the Santa Monica Mountain areas of Malibu as well as Malibu Lagoon, and southern Westlake Village. As a result, there is a risk to lives and health, school closures, significant damage to critical infrastructure, long term business and industry closures resulting in significant economic losses, and damage or destruction of commercial and residential properties.

Climate Change Probabilities

According to the Environmental Protection Agency (EPA), continued emissions of greenhouse gases will lead to further climate changes. Future changes are expected to include a warmer atmosphere, a warmer and more acidic ocean, higher sea levels, and larger changes in precipitation patterns. The extent of future climate change depends on what we do now to reduce greenhouse gas emissions. The more emitted, the larger future changes will be.

Temperature Rise

California can expect an increase in temperature in the future. A recent presentation by the California Public Utilities Commission, Policy & Planning Division [14] stated that extreme heat days in some cities in California are likely triple by 2030. The graph below depicts the number of Extreme Heat days by year from 1950 through 2005 with predictions to 2099. The Indicators of Climate Change in California, Fourth Edition (2022) report[15] summarized trends in extreme heat conditions for the state. The report indicated that the number of daytime and nighttime heat waves increased from 1950 to 2021.

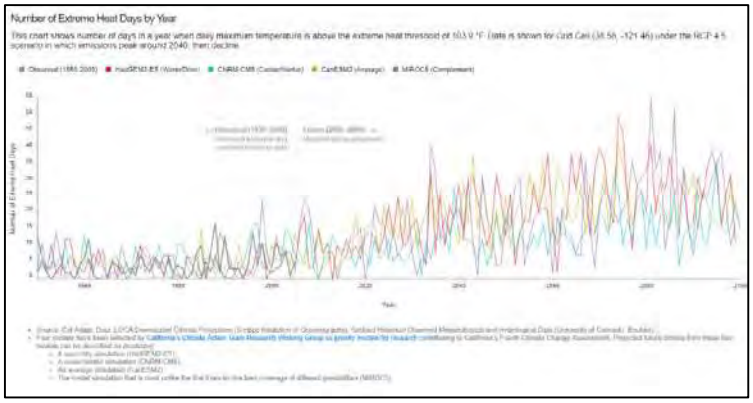
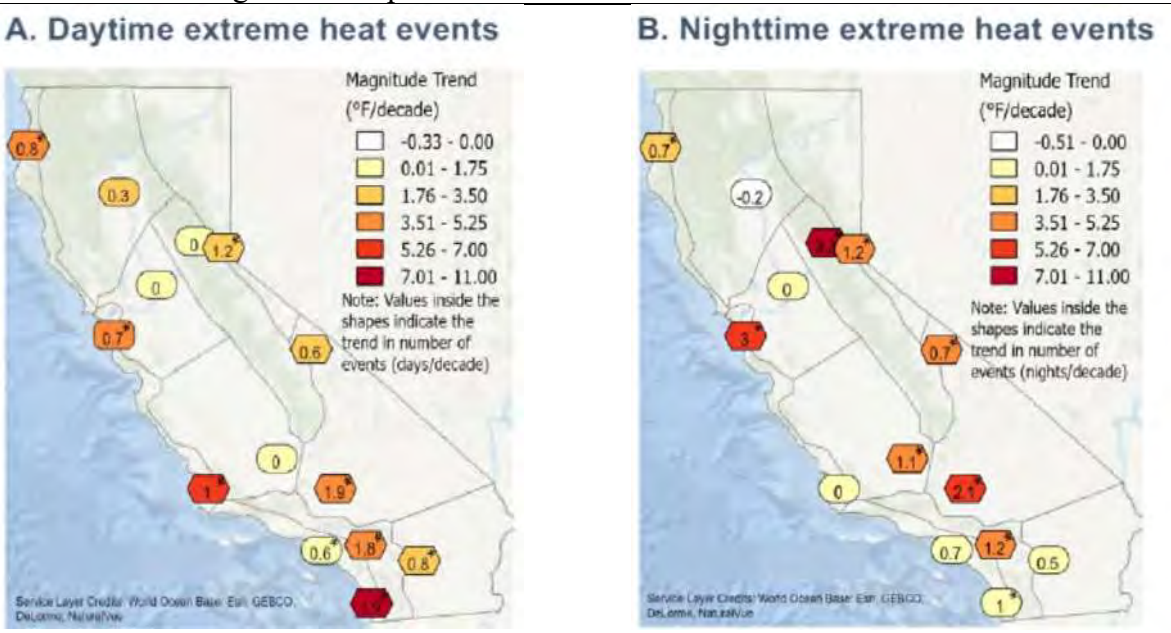


Figure 97: Number of Extreme Heat Days by Year

[14] Douglas, Kristin, California in 2050: Some Sizzling Predictions, California Public Utilities Commission, Policy & Planning Division, 2017

[15] California Environmental Protection Agency, Office of Environmental Health Hazard Assessment (OEHHA), Indicators of Climate Change in California, Fourth Edition, 2022

For the cities within the LVMCOG the overall trend per decade shows a 0.6 F daytime temperature increase and a 0.7 F nighttime temperature increase.



Map 59: Magnitude and Frequency of Extreme Heat Events (trend per decade 1950 - 2021)

Source: Cal-Adapt, 2018, Dunn 2019, and RCC-ACIS, 2021

An extreme heat event occurs between April and October when the temperature is at or above a location-specific historical temperature threshold, set at the 95th percentile of daily maximum for daytime extreme events. The rate of change (per decade) in frequency, the total number of extreme heat events each year, is the value in each shape (hexagon or oval); an asterisk indicates a statistically significant trend ($p < 0.05$). The rate of change (per decade) in magnitude, the annual sum of daily exceedances above the historical temperature threshold, in degrees Fahrenheit (°F), is presented using the fill colors (see legend); a hexagon denotes a trend that is statistically significant ($p < 0.05$), while an oval is not significant. The outlines on the map show the boundaries of the eleven climate regions, as defined by the Western Regional Climate Center.

Per the report, "Since 1950, nighttime extreme heat events have increased in magnitude and frequency more than daytime heat events. The maps show decadal trends in the magnitude and frequency of daytime and nighttime extreme heat events during the warm months between April and October at selected locations."

Drought

According to the Indicators of Climate Change in California, Fourth Edition (2022) report[16], "California experiences high year-to-year variability in precipitation: some years are very wet, while others are very dry. Since the early 1980s, precipitation over the state has become more variable. The same is true across the state's climate regions (see appendix; also He and Guatam, 2016). The past decade included the third wettest year on record (2017) and the second driest (2021). In 2017 California emerged from a severe and prolonged drought. From October 2018 to September 2019, California transitioned from a very dry fall into a very wet winter. The water year 2021 was the second driest on record, following 1924."

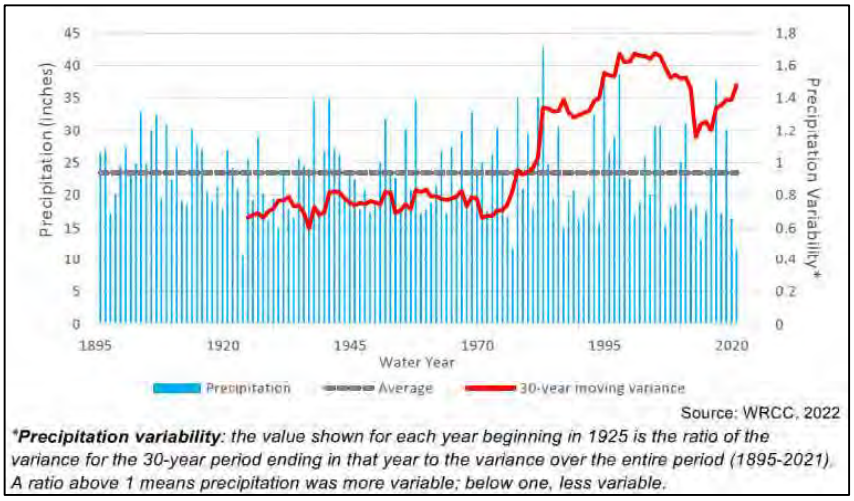


Figure 98: Statewide Annual Precipitation (1895-2021) - California

"Precipitation totals are tracked by "water year," from the beginning of the rainy season in October through the following September, the end of the dry season. This is more useful than a calendar year in California due to its typically dry summer and wet winter ("Mediterranean") climate. On average, 75 percent of the state's annual precipitation occurs from November through March, with 50 percent occurring from December through February."

Long-term, the LVMCOG region can expect lower than historical precipitation in the future. The chart below provides a predictive model of accumulated rainfall for the area from 2046 to 2074.

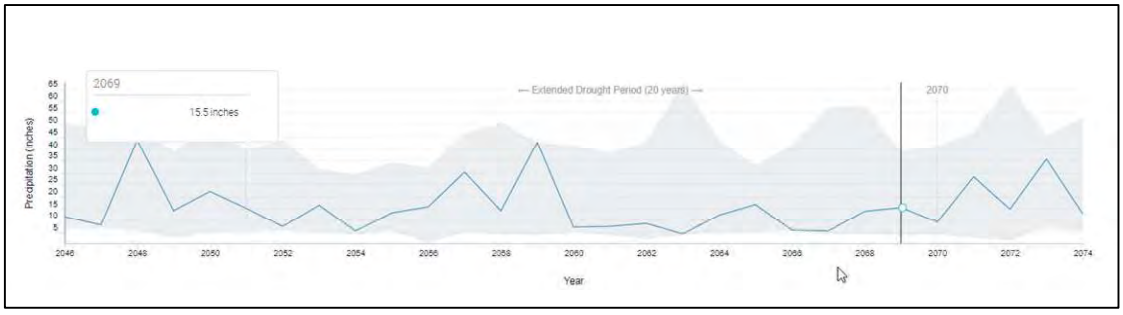


Figure 99: Extended Drought Scenario (2051 - 2070)
Source: Cal-adapt.org

[16] California Environmental Protection Agency, Office of Environmental Health Hazard Assessment (OEHHA), Indicators of Climate Change in California, Fourth Edition, 2022

Sea Level Rise

In terms of Sea Level rise, Cal-Adapt reports that, "Global models indicate that California will see substantial sea level rise during this century, with the exact magnitude depending on such factors as, global emissions, rate at which oceans absorb heat, melting rates and movement of land-based ice sheets, and local coastal land subsidence or uplift." As indicated in the Sea Level Rise Threat section above, Malibu Lagoon and the entire Malibu coast are susceptible to flooding.

For the City of Malibu, on September 11, 2017 the USGS provided a presentation to the Malibu City Council[17] that provided an exposure analysis for the city. The analysis indicated the following impacts based on various Sea Level Rise (SLR) scenarios:

Condition (by 2100)	Projected Impact
With 3 ft SLR	• 13.6 miles of roadway / bikeway will be impacted
With 3 ft SLR + 100 yr storm	• 25.7 miles of roadway / bikeway impacted • 1695 buildings impacted (mainly residential)
With 5.5 ft SLR + 100 yr storm	• 29.6 miles of roadway / bikeway impacted • 1916 buildings impacted (mainly residential)

Table 142: Sea Level Rise Impacts for the City of Malibu (by 2100)

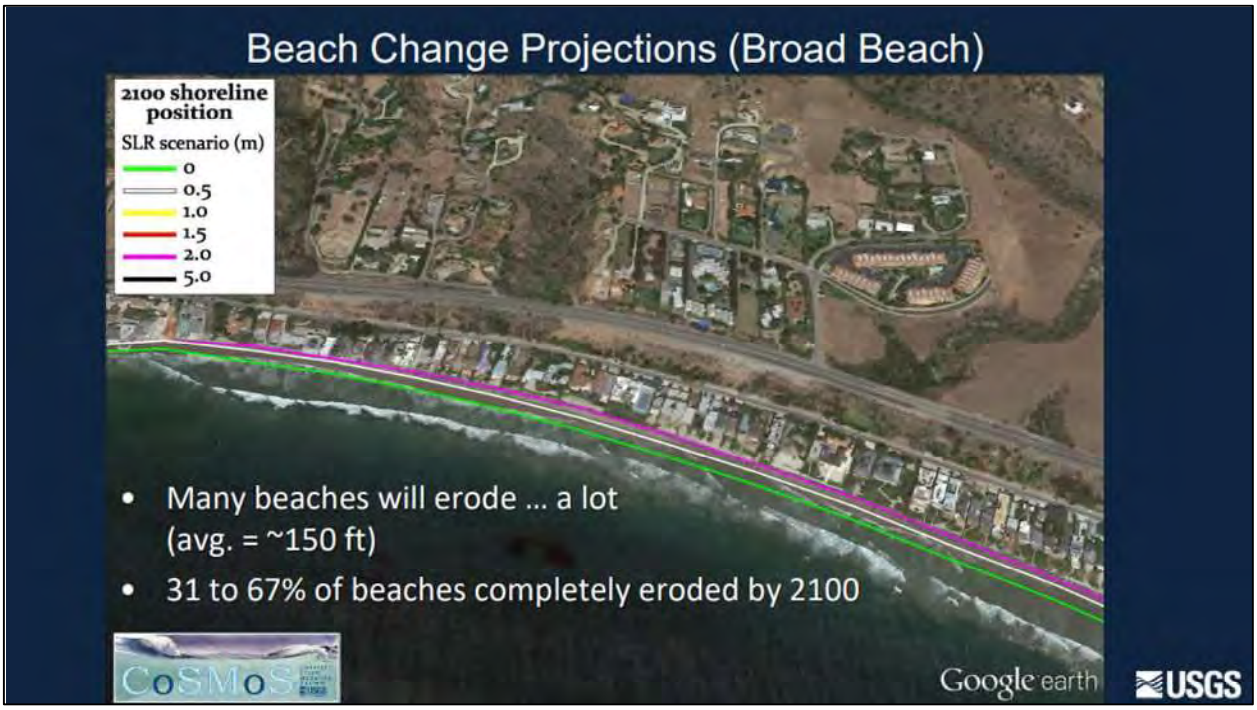


Figure 100: Beach Change Projections

[17] Hart, Juliette, Malibu City Council Presentation, Sea Level Rise: From Global to Local, 2017

VULNERABLE POPULATIONS

In Agoura Hills, the elderly and those speaking languages other than English are particularly vulnerable to the impacts of climate change. The elderly may suffer from heat-related illnesses during extreme heat events and have difficulty adapting to changing environmental conditions. Non-English speakers may face barriers in accessing climate change information and resources, limiting their ability to respond effectively to climate threats.

Calabasas residents, including those on fixed incomes, transitory workers, homeless individuals, and elderly or disabled residents, are highly vulnerable to climate change. Fixed-income residents may struggle to afford adaptations such as air conditioning or home modifications for climate resilience. Transitory workers and homeless individuals may be exposed to extreme weather without adequate shelter. Elderly and disabled residents may face increased health risks from heatwaves and other climate-related events, and may have limited capacity to adapt.

In Hidden Hills, the older population, households with disabilities, and those with limited transportation capabilities face significant risks from climate change. Older adults and those with disabilities may be particularly affected by extreme weather conditions, such as heatwaves and severe storms, which can exacerbate health issues. Limited transportation can hinder their ability to relocate to safer areas during climate-related emergencies, though a climate-related emergency that requires relocation may be rare.

Malibu's transitory workers, elderly population, lower-income residents, and homeless individuals are especially susceptible to climate change impacts. Transitory workers and homeless individuals often lack stable housing, making them highly vulnerable to extreme weather events and rising sea levels. The elderly may have difficulty coping with temperature extremes and accessing cooling centers, while lower-income residents may struggle to afford necessary adaptations to their homes.

In Westlake Village, the elderly, disabled, homeless individuals, and residents speaking a language other than English are particularly at risk from climate change. The elderly and disabled may face heightened health risks from heatwaves and other climate events, and may have difficulty accessing cooling centers or other resources. Homeless individuals are highly vulnerable due to exposure and lack of resources, while non-English speakers may face challenges in accessing critical climate information and services.

CLIMATE CHANGE MITIGATION STRATEGIES

LVMCOG Mitigation Activities

Agoura Hills

The City of Agoura Hills has implemented several strategies to mitigate the impact of climate change and encourage environmental sustainability. For example, in 2020 the City conducted a public survey and workshop then developed a Climate Action Adaptation Plan to obtain input from community members and address the growing impact of climate change.

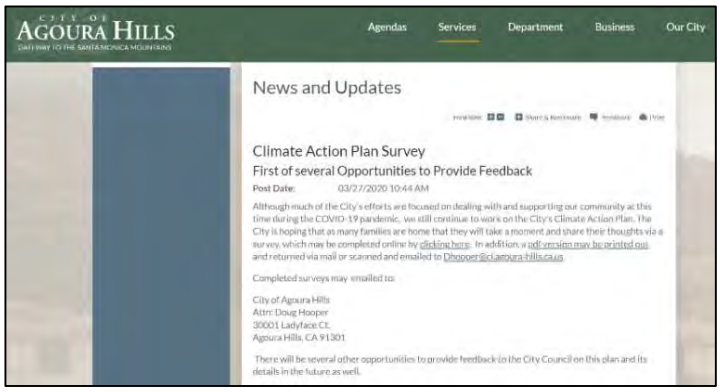


Figure 101: City of Agoura Hills CAAP Program

In addition, on May 13, 2015, the Agoura Hills City Council approved Resolution No. 15-1782 consenting to include properties within the incorporated area of Agoura Hills in the Los Angeles County Energy Program to finance renewable energy sources and energy and water efficiency improvements. The program provides property owners two County approved administrators for the Property Assessed Clean Energy (PACE) Financing Programs to assist with these improvements. In 2020, Los Angeles County ended the PACE Program however approved projects were to continue until completion.

The City of Agoura Hills Solid Waste Management Department works to reduce waste and encourage recycling. Key efforts include:

- Residential Recycling
- Commercial Recycling
- Electronic Waste Collection
- Organic Recycling
- Construction and Demolition Debris Recycling
- Household Hazardous Waste and E-Waste Disposal
- Illegal Dumping Reporting
- SHARPS Disposal

Figure 102: City of Agoura Hills Solid Waste Management Web Page

Further, the Agoura Hills General Plan Update (2010) includes a discussion on the issue of Climate Change and the need for the City to adopt and promote sustainability efforts including the Green Building Program.

> The General Plan excerpt:
>
> A key theme of the City of Agoura Hills' General Plan is sustainability. The General Plan, inherently through its goals and policies, takes steps to address the challenging issue of climate change by reducing Green House Gas (GHG) emissions, improving energy efficiency, reducing the urban heat island effect, recycling, and managing water use. The General Plan will reduce GHG emissions primarily through land use patterns that support public transit, increased opportunities for pedestrians, bicycle, and transit-use, and through requirements for "green building" practices and alternative energy systems. Policies also address adaptation to climate change, such as increasing flood protection.
>
> The sources, impacts of, and solutions to climate changes are complex. Climate change and GHG emissions reduction are addressed throughout policies and programs of the General Plan rather than in a single section. **Appendix A, General Plan Policies Addressing Climate Change**, includes a table that summarizes, by topic area, Agoura Hills General Plan policies that address climate change.

Appendix A General Plan Policies Addressing Global Climate Change includes the multiple policies and programs to meet the following objectives:

Mitigation Objective A: Reduction in Greenhouse Gas Emissions

- Strategy A-1: Reduce vehicle trips generated, gasoline consumption, and greenhouse gas emissions
- Strategy A-2: Reduce non-renewable electrical and natural gas/energy consumption and generation (energy efficiency
- Strategy A-3: Increase generation and use of renewable energy sources
- Strategy A-4: Reduce water consumption
- Strategy A-5: Reduce solid waste and maximize reuse of solid waste
- Strategy A-6: Promote carbon dioxide consuming landscaping
- Strategy A-7: Maximize preservation of open spaces and natural areas

Adaptation Objective B: Adapting Current Strategies so that Climate Change is Integral to Planning Activities and Decisions

- Strategy B-1: Reduce risks from wildfire, flooding, and other hazards resulting from climate change
- Strategy B-2: Conserve and improve water supply due to shortages from climate change
- Strategy B-3: Provide education and leadership in response to climate change actions

Specific Climate Change Natural Resources programs and policies included in the General Plan, Strategy B-3 are listed under NR-10 Greenhouse Gas Reduction. Reduce emissions from all activities within the City boundaries to help mitigate the impact of climate change.

- NR-10.1 Climate Change. Comply with all state requirements regarding climate change and greenhouse gas reduction and review the progress toward meeting the emission reductions targets. (Imp NR-25)
- NR-10.2 Regional Coordination. Ensure that that any plans prepared by the City, including the General Plan, are aligned with, and support any regional plans to help achieve reductions in greenhouse gas emissions. (Imp NR-26)
- NR-10.3 Outreach and Education. Partner with local agencies and organizations to coordinate outreach and education regarding the effects of greenhouse gas emissions and climate change. (Imp NR-27)

The City's Green Building Program, according to the City's website, *"is committed to providing a more livable, equitable, and economically vibrant community through the reduction of greenhouse gas (GHG) emissions and enhancing the community's resilience towards vulnerabilities and risks posed by climate change".* This program includes other initiatives including installation of Electric Vehicle Charging Stations and Solar Panel Installation Program.

Agoura Hills is a member of the Clean Power Alliance (CPA), which enables the city to control the amount of electricity generated from clean energy sources.

The City of Agoura hill is taking on additional initiatives to address climate change, including:

- Solar Project for the Agoura Hills Recreation & Event Center in the 2024 Calendar Year
- Participation in the SCE Charge Ready Program in 2022-2023 which allowed the City to install 4 new EV Charging Stations (with 7 ports) available to the public 24/7
- Public Works Department replacing all 120 fluorescent City Street Sign bulbs to LED bulbs
- Plans to implement a new Polystyrene policy pertaining to the use of Styrofoam products, which was identified as a City Council Goal for the 2023 – 2024 Fiscal Year
- Multiple Environmental Responsibility Subcommittee Meetings in October 2023

Calabasas

The City of Calabasas has implemented an active Green City Program. According to the City's website, "*To ensure a viable future, the City of Calabasas is taking a leadership role and addressing the impacts placed on the environment by urbanization and a growing populace. These impacts include air and water pollution, climate change, and habitat loss. The City of Calabasas takes pride in its environmental stewardship and seeks to further its stewardship role by adopting a set of green building standards to help create high performance new and remodeled buildings that utilize efficient site and building design, sustainable construction practices, use of rapidly renewable, recovered or recycled building materials, and use of operational practices which have less of an impact on the environment than conventional methods*".

Figure 103: City of Calabasas Green City Web Page

City of Calabasas is working with Los Angeles County to provide energy efficient retrofits to its residents. Los Angeles County invested approximately $11 million in federal grant funds to build a PACE program to serve the county's 88 cities and nearly 10 million residents. The program is designed to encourage private property owners to invest in energy efficiency retrofits and is key part of a broader home retrofit program for LA County.

Renewable Funding was selected to develop and administer the PACE program and worked in partnership with BKi, Build It Green, Energy Coalition and South Bay Environmental Service Centers. LA County's initiative was developed at the request of the Board of Supervisors. The LA County PACE program was authorized under California's AB 811, which enables municipalities to provide private property owners with the ability to finance energy efficiency and renewable energy improvements through a voluntary property tax assessment that is paid back over 20 years. Note: in 2020, the Los Angeles County PACE program ended and no new contracts were approved, however existing contracts were managed to completion.

Other previous and current "Green" projects implemented by the City include:

Project	Description
City of Calabasas Civic Center	In July 2008, the City of Calabasas completed construction of a high performance, resource-friendly Civic Center consisting of a City Hall and Public Library. Both buildings were designed to meet a "Gold" standard from the United States Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED) Green Building Rating System for new construction. Sustainable design features include the use of energy and water efficient HVAC and plumbing systems, recycled and locally manufactured materials, use of a "cool" energy star rated roof, drought tolerant landscaping, low flow irrigation system, use of recycled water for landscape, use of natural daylight, increased views, systems to monitor and provide healthy indoor air quality and much more. Both the City Hall and Public Library were awarded a LEED Gold Certification by the United States Green Building Council (USGBC) on January 20, 2010.
Non-Residential Green Building Ordinance	On January 7, 2004, the City Council voted unanimously to approve an ordinance requiring all new non-residential development to achieve the equivalent of a "Certified" or "Silver" rating using the Leadership in Energy and Environmental Design (LEED) v.2.0 rating system. The Green Development Ordinance implements development standards that require new or significantly remodeled, buildings to be high performance environmentally friendly buildings.
Alternative Fuel Vehicle Fleet	The City's vehicle fleet consists of automobiles, trucks and vans for City employees and includes public transit shuttles and old fashioned trolley cars to serve the general public. Recognizing that standard gasoline using automobiles consume considerable energy and contribute significantly to air pollution, the City continues to build a vehicle fleet consisting of alternative fuel vehicles to improve fuel efficiency. Recently, the City added nine hybrid vehicles to the City's fleet for use by inspectors, saving gallons of gas from being consumed each year.

Project	Description
Mixed Use Development Ordinance	The Land Use Element of the General Plan states that a primary goal of the Land Use Element is to: • "…provide a distribution of land uses that maintains, yet also enhances the environmental, social, physical, and economic well-being of Calabasas". (General Plan, 2008, II-1) • Additionally, the Community Design Element of the General Plan establishes that, in order for new development to conform to the character of its natural setting: • "…new development should be accomplished through infill and revitalization of existing developed areas in order to conserve undeveloped areas" (General Plan, 2008, IX-8), • Mixed Use development constructed on infill parcels, or on existing developed areas as part of a revitalization plan, will enable Calabasas to maintain and enhance its existing natural environment, as well as boosting the social, physical and economic well-being of the City. Mixed Use does so through efficient and sustainable land use design, which involves combining different land use categories (such as residential and commercial uses) into one development. This eliminates automobile trips between the different land uses, and promotes walkability and a pedestrian-oriented environment. Through more compact, higher-density design, mixed use development helps conserve land as open space, and thus supports the City's key vision of protecting the natural environment of Calabasas which has attracted so many of the City's residents to the area. • Consequently, the City has adopted a Commercial Mixed Use zoning district, along with the General Plan identifying three different densities of mixed use land use districts, as follows: o Mixed Use 0.60 – where the maximum Floor Area Ratio (FAR) is 60% o Mixed Use 0.95 – where the maximum Floor Area Ratio (FAR) is 95% o Mixed Use 1.0 – where the maximum Floor Area Ratio (FAR) is 100%
Recycling Program	With the passage of AB 939 (California Integrated Waste Management Act) in 1989, Calabasas has set up a number of recycling programs to ensure that it meets the State's goal of a 50% diversion rate. These programs include curbside recycling, construction waste recycling, electronic waste recycling, and household hazardous waste round-ups. In addition, City staff provides outreach and technical assistance to the public, businesses and schools, and has initiated innovative programs to maximize waste prevention and recycling, and partner with organizations with compatible goals. More recently, the Calabasas City Council adopted a resolution on January 16, 2007 setting a new diversion goal of 75% by 2012, making Calabasas only the second California city (after San Francisco) and the first city in Southern California to set such an ambitious goal for recycling.
Polystyrene Ban	In 2007, the Calabasas City Council adopted Ordinance 2007-233 banning retail food establishments, nonprofit food providers and City facilities from using food packaging materials made of expanded polystyrene, known popularly by the trademark name Styrofoam. The ordinance required food service establishments in Calabasas to start using environmentally acceptable packaging by March 31, 2008, and to report on-going compliance with the ordinance on the first business day of each calendar year.

Project	Description
Watershed Management	The City's Environmental Services Division oversees a variety of activities that help reduce or eliminate pollutants from storm water and urban runoff, and enhance the water quality of our local watersheds. These activities include stream restorations, water quality monitoring, capital improvements, public education and outreach, and regulatory activities. Las Virgenes Creek Restoration Between 2003 and 2008, the City actively engaged in the Las Virgenes Creek Restoration Project, a project that restored 440 linear feet of a concrete channelized streambed to a natural condition. The Las Virgenes Creek is a part of the Malibu Creek Watershed which provides habitat for numerous animal species including Southern Steelhead Trout, the Southwestern Pond Turtle, Arroyo Toad, Pacific Tree Frog, American Goldfinches, Song Sparrows, Coyotes, and Mountain Lions. The City of Calabasas has sought funding from numerous State and Federal agencies for the restoration effort. In 2003, the City Council approved a conceptual design with final construction completed in Spring of 2008. The project has successfully achieved the following goals: • Enhanced Wildlife Habitat • Public Outreach and Education • Footpath and Trail Connection • Enhanced Water Quality • Increased aesthetics Other Water Quality programs include: • Water Quality Monitoring • Water Quality Mitigation • Urban Runoff Mitigation • Watershed Regulation
City Events	City Events include: • Household Hazardous Waste Collection Program • Wildlife Restoration Days • Earth Day Festival • Arbor Day

The City's website is used to provide the community with information on efforts that promote environmental sustainability and initiatives that support the City's activities to fight climate change. The City's Green City Program includes:

- Green Construction – Guidelines on sustainable design and construction options for homeowners
- Green Streets – Storm water management program information
- Green Rebates and Incentives – Links for homeowner incentive programs
- Helpful Links – Other links to green information websites

Hidden Hills

The City of Hidden Hills implemented a "Green Streets" program that helps to combat the effects of climate change. The City incorporates "Best Management Practices" (BMP) to improve water quality, facilitate groundwater replenishment, create parks and wildlife habitats, and provide pedestrian and bicycle accessibility.

Green streets are defined as right-of-way areas that incorporate infiltration and/or biofiltration BMPs to collect, retain, or detain stormwater runoff as well as a design element that creates attractive streetscapes. Green street BMPs may include, but are not limited to, street trees, permeable pavement, bioretention areas, and vegetated swales. As part of the program the City's policy is as follows:

- The City shall review new development redevelopment streets and roadway projects and CIPs conducted within the right-of-way that create or replace 10,000 square feet or more of impervious surface for opportunities to incorporate green street BMPs. This excludes routine maintenance or repair and linear utility projects.
- The City shall consider opportunities to replenish groundwater, create attractive streetscapes, connect neighborhoods, create parks and wildlife habitats, and provide pedestrian and bicycle accessibility through new development and redevelopment streets and roadway projects and Capital Improvement Projects (CIPs).
- The City's review of CIPs shall result in a prioritized list of CIPs best suited for green street BMPs. Green street BMPs shall be implemented in high priority CIPs.
- The City shall review and update the prioritized list annually.
- The City shall evaluate effectiveness of green street BMPs.

The City of Hidden Hills promotes solar installations in accordance with California Assembly Bill 2188 which amended the California Solar Rights Act, to require that every city create an expedited, streamlined permitting process for small residential rooftop solar systems. The purpose of the law is to further State policy of promoting and encouraging the installation and use of solar energy systems by limiting obstacles to their use and minimizing the permitting costs of such systems. The City of Hidden Hills created a web page and forms to help the applicants with the permitting process for Small Residential Rooftop Solar Systems.

Figure 104: City of Hidden Hills Solar Energy Web Page

Malibu

The City of Malibu promotes public awareness of the impact of climate change through "Earth Month". For example, the City hosts an Earth Month Speaker Series which has included various topics such as the impact on the earth and climate change anxiety.

The City of Malibu has implemented several initiatives to reduce its carbon emissions and promote environmental sustainability. In addition, the City website provides the community with links and information on California Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006 which requires a reduction of greenhouse gas (GHG) emissions. Examples of information links that the public is encouraged to investigate include:

CPA CLEAN POWER ALLIANCE	The Clean Power Alliance enables residents and business to obtain the percentage of clean energy delivered: 36%, 50%, or 100%.
WESTSIDE Energy Partnership	The Westside Energy Partnership is a collaboration between the City of Malibu, Southern California Edison, and SoCal Gas. The West Side Partnership encourages citizens to reduce energy use as a means to lowering utility bills and helping the environment. Examples include: HERO Program - Finance projects for renewable energy, energy and water efficiency improvements, and electric vehicle charging infrastructure. Summer Discount Plan – Earn up to $180 in credits on your energy bill with the Southern California Edison Summer Discount Plan. There is no cost to enroll or participate in the program. Time-of-Use Rates (TOU) - Southern California Edison's TOU plans can assist with energy costs. Take advantage of lower rates during off-peak and super off-peak periods. Medical Baseline Allowance – Southern California Edison and SoCalGas offer financial assistance for powered medical equipment. Energy Star – Tool to find rebates and special offers available by zip code. Energy Upgrade California - Learn the connection between saving water and saving energy. Southern California Edison - Information about rebates, incentives, and savings tips. Southern California Gas - Find out what home improvements are eligible for rebates.

The City of Malibu has an Environmental Sustainability Department to manage its initiatives to improve the environment. These programs also support the City's efforts to counter-act climate change. The City of Malibu, Environmental Sustainability Department maintains a Facebook site to promote environmental sustainability and provide the public with information on programs that the City has implemented as well as ideas for improving the environment.

Figure 105: City of Malibu Environmental Programs Web Page

The City of Malibu Planning Division oversees the City's land use which includes coastal development. As part of this responsibility, requirements that address the impact of climate change and sea level rise are included in the City's Local Coastal Program (LCP). Examples include:

- All new development on the beach or oceanfront bluff must be setback as far as possible and elevated above the base Flood Elevation.
- All new development that would require shoreline armoring or hardening should be prohibited.
- All applicants for new development on beachfront or bluff-top property must include an impact report and analysis that addresses the effect of the development in relation to a number of things including future projections of sea level rise.

Figure 106: City of Malibu Environmental Sustainability Facebook Page

In 2019, the City of Malibu initiated a Coastal Vulnerability Assessment to obtain additional data on sea level rise. However due to the COVID-19 pandemic a delay occurred and the program was re-started in the spring of 2023 with a series of public workshops. Additionally, the City has partnered with The Bay Foundation and Los Angeles County Department of Beaches and Harbors, and the California State Coastal Conservancy on the Malibu Living Shoreline Project (start of implementation in the winter of 2020-2021). The aim of the project is to restore three acres of sandy beach and dune habitat at Zuma and Point Dume County Beaches, providing a cost-effective and low-impact solution to increase the resiliency of the beach shorelines.

In October and November of 2023, the City of Malibu held multiple Environmental Sustainability Subcommittee Special Meetings to discuss and address environmental and climate change efforts within the city.

Further, the City of Malibu regulates development activities along the coast in conjunction with the regulatory authority of the State of California. Other mitigation strategies in the future that may be undertaken by the State or County of Los Angeles may include beach sand replacement, sand dune maintenance, and shorefront protection strategies. These strategies were summarized in the 2016 report in the table, "Suggested Adaptive Management Strategy for Los Angeles County Public Beach Assets"[34] as follows:

Region	Malibu									Santa Monica Bay							Palos Verdes		
Potential strategy for existing or future asset on beach	Nicholas Canyon County Beach	El Sol County Beach	Zuma County Beach	Point Dume County Beach	Latigo Shores County Beach	Dan Blocker County Beach	Malibu Surfrider County Beach	Las Tunas County Beach	Topanga County Beach	Will Rogers State Beach	Venice Beach	Dockweiler State Beach	Manhattan Beach	Hermosa Beach	Redondo Beach	Torrance Beach	Royal Palms County Beach	White Point County Beach	Point Fermin Beach
Temporary winter berm protection			1							2	1	1	2	1	2	2			
Dune building and maintenance	2											2							
Maintain existing sand retention devices										2	2	2			2				
Beach nourishment			3	3					3	3	3	3	3	3	3	3			
Natural dunes and retreat	3	3			3	3	3	3									3	3	3

Adaptive management strategy key

1 = Short term period when sea-level rise is less than than 1 foot
2 = Transitional period when sea-level rise is between 1 and 2 feet
3 = Long term period when sea-level rise exceeeds 2 feet

Table 143: Suggested Adaptive Management Strategy for Los Angeles County Public Beach Assets

Additionally, in 2022, the City of Malibu held outreach events regarding climate change efforts, including the following events:

Westlake Village

The City of Westlake Village has implemented several programs to address the impact of climate change. The City's Sustainability website provides residents with an easy to access portal to these programs which prioritize environmental stewardship as a means to counteract the impact of climate change. The City's website provides the community with information on the program and actions that the public can take to contribute to the effort.

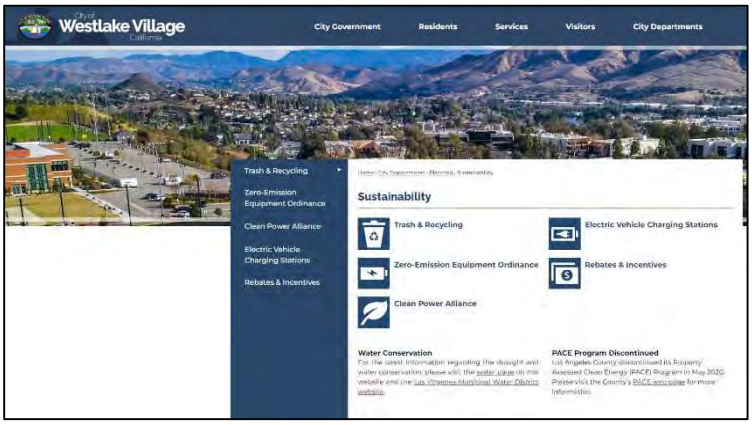


Figure 107: City of Westlake Village Sustainability Web Page

The website includes information on conservation, rebates, and other environmental tips as well as environmental programs that the City participates in.

In September, October, and November 2023, the City of Westlake Village held an Environmental City Council Committee Meeting to discuss and address environmental and climate change efforts within the City.

As part of its Green efforts, the City provides information on:

- Trash & Recycling
- Zero-Emission Equipment Ordinance
- Clean Power Alliance
- Electric Vehicle Charging Stations
- Rebates & Incentives

Additionally, in June 2020, the City began emphasizing the need and benefits of renewable energy through its membership in the Clean Power Alliance. As part of this program, the City of Westlake Village chose "Lean Power" as the default option for the community. Lean Power provides 36% renewable content at the lowest possible cost and offers customers an overall 1-2% discount on their electric bill, as compared to what they would pay if they remained on SCE rates for energy supply. Residents were offered three rate options with various levels of environmental benefits and costs:

Lean Power (Westlake Village's Choice)	Clean Power	100% Green Power
Provides 36% renewable content at the lowest possible cost - with the added benefit of local management and control. Our community has selected Lean Power as our default option.	Provides 50% renewable content and the opportunity to support building a cleaner future, all at cost competitive rates.	Provides 100% renewable content and gives you the opportunity to be an environmental champion - leading the way to a greener future.

On Earth Day 2019, the City of Westlake Village unveiled twenty-two electric vehicle charging stations (EVSE) that are available at publicly accessible locations around the City, some of which are open to the public 24 hours a day to further the City's commitment to investing in clean air and sustainable practices. All of the City's stations are 'Level 2' with a maximum output current of 6.6kW. As one of the largest per-capita installations of any city around, six stations are located at the Westlake Village Civic Center and sixteen at the Westlake Village Community Park. These projects were completed in partnership and funding provided by the City of Westlake Village, the Mobile Source Air Pollution Reduction Review Committee of the South Coast Air Quality Management District, Southern California Edison's ChargeReady program, and ChargePoint Inc. Further, the City promotes rebates and incentives to residents for energy conservation and air quality efforts.

Figure 108: Westlake Village Green Rebate and Incentive Programs

In 2022, the City Council adopted an ordinance to prohibit the use of gasoline powered leaf blowers in Westlake Village starting January 1, 2023. This prohibition applies Citywide to all homeowners,

gardeners, homeowners associations, and landscape maintenance companies. Eligible landscape maintenance professionals can now obtain zero-emission landscape equipment at reduced or no cost through the Clean Off-Road Equipment Voucher Incentive Program (CORE). A Business Outreach Day was held at the Westlake Village Civic Center on January 4, 2023. The American Green Zone Alliance and City staff shared information on how landscape maintenance companies could receive up to 70% off of new electric landscaping equipment. Equipment demonstrations and Spanish translation were provided. Additionally, virtual community workshops were held via Zoom on May 26, 2022, and June 28, 2022. An in-person workshop and equipment demonstration was held on September 7, 2022, at the Westlake Village Civic Center.

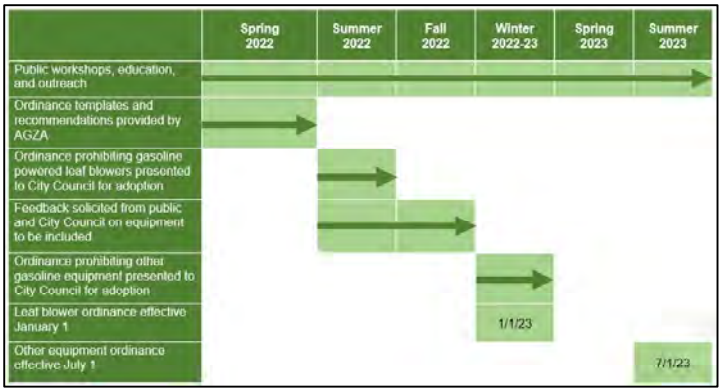


Figure 109: City of Westlake Village Zero Emission Ordinance Timeline

The City of Westlake Village has an active trash and recycling program which is promoted via the City website. These efforts are designed to reduce the impact waste and promote conservation efforts by residents.

Figure 110: City of Westlake Village Trash & Recycling Programs

Finally, the City of Westlake Village also participates in environmental outreach efforts throughout the Malibu Creek Watershed that include beach clean-ups, Earth Day events, annual watershed tour, printed materials, and television and radio broadcasts that support Eco-friendly messages. Other City programs include:

- Nearly all City vehicles are fuel efficient hybrids or EV vehicles (one gas powered truck).
- City streets are swept weekly to reduce unwanted materials entering our storm drains.
- The City conducts weekly water quality monitoring tests to better protect our streams and creeks. Westlake Village tests have shown bacteria levels well below the state mandated levels.
- The City employs a synchronized traffic signal network thereby limiting emissions by minimizing congestion on major thoroughfares.
- The City has updated several in-house procedures to ban the use of polystyrene foam products at City Hall.

The City of Westlake Village has equipped City Hall with an emergency generator. Additionally, the City contracts with a vendor to provide fuel. The City currently has a solar project that is intended to replace the diesel generator on site. Additionally, the City has multiple battery powered generators that could be used in case of emergency.

- The City operates Westlake Village Transit which helps to deliver hundreds of kids to school and reduce traffic congestion in and around our neighborhood schools.
- The City provides household hazardous waste and e-waste recycling curb-side pick-up.
- The City's annual street resurfacing project recycles and uses approximately 20,000 waste tires per year on average. That equates to about 2.2 tires per City resident.
- The City's traffic signals and safety lights use LED lights as a means of reducing energy costs.

Through an extensive recycling program, the City has diverted 62% of the City's waste from the landfill, exceeding the state's 50% waste diversion goal by 12%.

SECTION 9. ENERGY DISRUPTION

THE NATURE OF THE ENERGY THREAT

Energy is a critical dependency throughout the LVMCOG Region. Sources of energy include electric power, natural gas, oil and fuel supplies. The focus of this section is on electric power disruptions.

The electric power system of North America is comprised of four major sections: the Quebec Interconnection, Eastern Interconnection, Western Interconnection and the ERCOT Interconnection. California is part of the Western Interconnection. Within each Interconnection there are interdependent power generators and transmission lines. As such, a failure in any part of an Interconnection can cause a widespread disruption to all or a major section of the electrical grid.

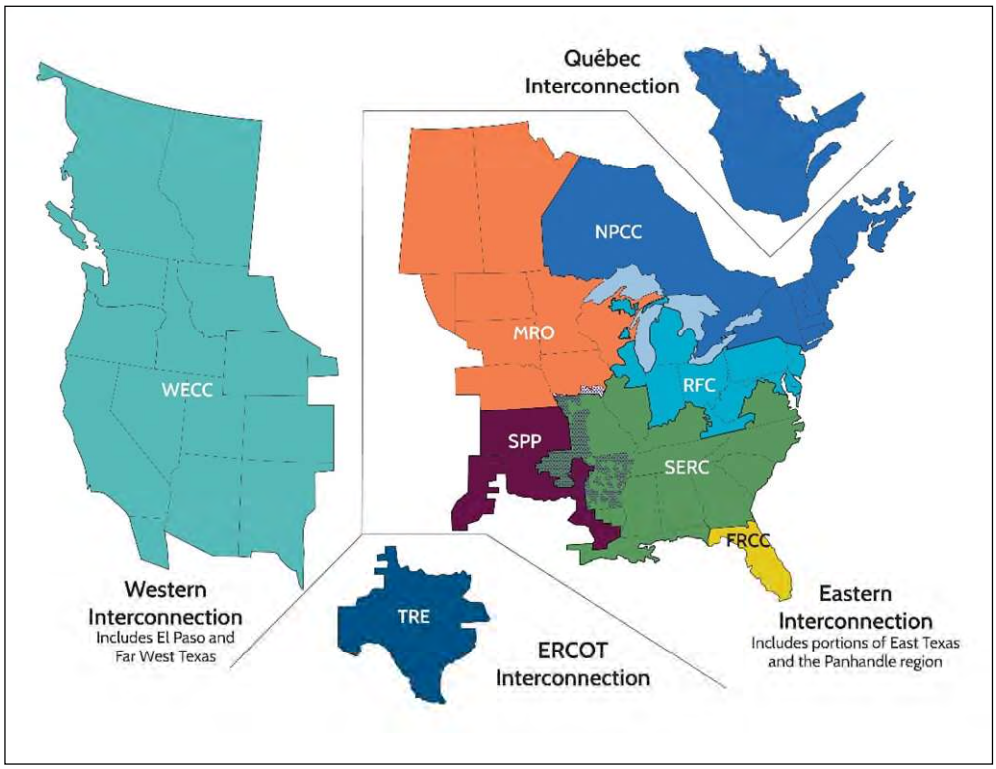


Figure 111: NERC Interconnections

Energy disruptions have a major impact on the public, businesses, and critical infrastructure. Such disruptions result from natural or human-generated disasters or be a result of other issues such as spikes in demand during peak energy use, unanticipated power plant shutdowns, transmission system congestion, and equipment or system failures.

HISTORICAL RECORD OF POWER OUTAGES

Energy disruptions have a major impact on the public, businesses, and critical infrastructure. Within Southern California and Los Angeles County (including the LVMCOG Region), there have been incidents of major power outages in the past. The table below lists examples of major and minor power failures in the area since 1996 to depict the variety of causes and impacts from natural events, technology failures, and man-made incidents.

Event Year	Event	Affected Areas	Cause
2023 October 1 to December 12	Public Safety Power Shutoff (PSPS) Events	Multiple counties in California were subjected to PSPS from by Southern California Edison (SCE)	Sustained strong dry winds resulted in multiple PSPS events to reduce the potential for wildfires due to downed power lines and blown debris.
2014	Pasadena Power Outage	Several thousand home and businesses in Pasadena experienced a prolonged blackout.	Man-made: Mylar balloon tangled in power lines.
2014	Los Angeles County Blackouts	More than 50,000 homes were without power in Los Angeles County.	Natural: Winter storms.
2013	Malibu Power Outage	More than 3,000 customers along Pacific Coast Highway lost power in a local outage.	Natural: Bird striking power lines.
2013	Los Angeles County Power Outage	Power outage impacting more than 69,000 homes in Los Angeles County including parts of Calabasas and Westlake Village.	Undetermined: Downed power lines.
2011	Southwest Blackout	California – San Diego, Orange, Riverside, and Imperial Counties. Also affected states in Northern Mexico, as well as counties in Arizona.	Man-made: human error.
2011	Southern California Windstorm	More than 340,000 homes were without power in Los Angeles County including the San Gabriel Valley, Westchester, Highland Park, South Los Angeles, and the San Fernando Valley.	Natural: Downed trees caused by high winds brought down power lines resulting in major power outages in the region.
2005	Los Angeles Blackout	The City of Los Angeles, West Los Angeles, San Fernando Valley, Hollywood	Man-made: human error
2004	Rolling Blackouts	Forced blackouts in local communities from Calabasas to Simi Valley.	Technology: Power company equipment failure.
2000 – 2001	California Electricity Crisis	The State of California	Man-made: energy shortages caused by market manipulation, regulation and deregulation, price caps, supply and demand.
1996	Western North American Blackouts	Arizona, California, Colorado, Idaho, Montana, Nebraska, Nevada, New Mexico, Oregon, South Dakota, Texas, Utah, Washington and Wyoming, Alberta, British Columbia, and Baja California Norte in Mexico.	Man-made: trees too close to power lines caused systemic failures.

Table 144: Large Power Outages in Southern California

Average Power Outage Duration, Frequency, and Duration

Southern California Edison (SCE) provides distributes electricity for the LVMCOG region. The **SCE Annual Electric Reliability Report 2022** provides average power outage data for its service region.

Acronym	Description
MED	Major Event Day: A day in which the daily system SAIDI exceeds a threshold value. For purposes of calculating daily system SAIDI, any interruption that spans multiple calendar days is accrued to the day on which the interruption began. Statistically, days having a daily system SAIDI greater than a threshold value are days on which the energy delivery system experienced stresses beyond that normally expected (such as severe weather). Events are excluded based on the "2.5 beta method." Per IEEE Standard 1366, days are excluded from a given year's metric if their SAIDI exceeds 2.5 times the standard deviation of the natural logarithm of daily SAIDI over the previous five-year period.
SAIDI "What's the total time my power service will be unexpectedly interrupted this year?"	The System Average Interruption Duration Index is the amount of time on average a customer was without power in a year due to sustained interruptions (measured in minutes per customer). sum of all "sustained" customer interruption durations total number of customers served
SAIFI "How many times will my power service be unexpectedly interrupted this year?"	The System Average Interruption Frequency Index is the number of times an average customer was without power in a year due to service interruptions lasting more than 5 minutes (measured in interruptions per customer). sum of total quantity of "sustained" customer interruption durations total number of customers served
MAIFI "How many times will my power service be momentarily interrupted (≤5 minutes) this year?"	The Momentary Average Interruption Frequency Index is the number of times an average customer was without power in a year due to service interruptions lasting 5 minutes or less (measured in interruptions per customer). sum of total quantity of "momentary" customer interruptions total number of customers served
CAIDI "How long will it take to restore my power after an unexpected interruption?"	The Customer Average Interruption Duration Index is the average time required to restore service for a sustained outage. SAIDI SAIFI

The table below summarizes SCE's 2022 performance for unplanned outages including and excluding MEDs. The table also consists of a 10-year average performance for unplanned outages including and excluding MEDs for comparison.

	Total System Indices (All Interruptions Included)				Total System Indices (Major Event Days Excluded)			
YEAR	SAIDI	SAIFI	MAIFI	CAIDI	SAIDI	SAIFI	MAIFI	CAIDI
2022	131.13	1.08	1.42	121.45	101.03	0.96	1.23	104.83
10 Year Avg (2013-2022)	143.09	1.02	1.45	139.67	94.70	0.88	1.29	107.20

Table 145: SCE 10-Year Average Performance for Unplanned Outages

The 10 year average performance indicates that a customer may experience 1 sustained power outage lasting over 2.3 hours and nearly 1-1/2 momentary power outages per year.

During 2022, there were fewer PSPS events that required de-energization of one or more circuits than prior years and SAIDI and SAIFI impact was smaller than prior years. The table below contains the required SAIDI, SAIFI, MAIFI[2] and CAIDI indices for 2013-2022 including and excluding MEDs for the SCE system unplanned outages. All calculations are based on the IEEE 1366 method for MEDs. Reliability indices are for unplanned outages only.

	Total System Indices (All Interruptions Included)				Total System Indices (Major Event Days Excluded)			
YEAR	SAIDI	SAIFI	MAIFI	CAIDI	SAIDI	SAIFI	MAIFI	CAIDI
2022	131.13	1.08	1.42	121.45	101.03	0.96	1.23	104.83
2021	179.79	1.11	1.57	161.70	103.82	0.96	1.43	108.10
2020	201.32	1.06	1.38	190.47	91.40	0.87	1.25	105.51
2019	177.97	1.04	1.38	171.17	90.75	0.87	1.23	104.75
2018	136.82	0.87	1.43	156.61	71.25	0.72	1.27	99.58
2017	139.73	1.19	1.84	117.19	91.72	0.87	1.42	105.40
2016	134.48	1.10	1.55	122.26	109.98	0.99	1.40	110.69
2015	114.83	0.92	1.42	125.40	100.15	0.86	1.29	116.56
2014	112.25	0.97	1.36	116.28	92.40	0.86	1.23	107.12
2013	102.61	0.91	1.20	112.76	94.49	0.88	1.18	107.85

Table 146: Unplanned Outage System Indices (2013-2022)

Las Virgenes-Malibu Energy Disruption Probability

Although the probability of an energy disruption is difficult to predict, the FEMA National Risk Index indicates 2.1 lightning events per year, 0.5 tornado events per year, 0.2 strong wind events per year, and 2.6 winter weather events per year in the Los Angeles region, which can trigger energy disruptions.

STAKEHOLDER INPUT AND PARTICIPATION

To identify the threats, vulnerabilities, and consequences of a major energy distribution on the Las Virgenes-Malibu Region, each member of the Planning Group which included representatives from the cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, and Westlake Village provided their input during planning meetings (see Annex B: Meeting Agendas and Attendees) and follow-up discussions. Specific topics of discussion included if any changes to the hazard priorities have changed since the previous HMP, how changes in the community have impacted the risk of each hazard, and what new mitigation actions can be taken. In addition, each member of the Planning Group as well as members of the public provided the input via online surveys (see Annex C: Community Disaster Preparedness and Risk Survey, Annex D: Planning Group HMP Risk Assessment Survey, and Annex E: Planning and Public Involvement).

DISASTERS DECLARATIONS AND EMERGENCY PROCLAMATIONS

FEMA disaster declarations allow state, tribal, and local governments to access federal aid for disaster response and recovery when overwhelmed. Similarly, the California Governor's Office of Emergency Services (Cal OES) issues proclamations to mobilize state resources and streamline procedures.

FEMA Disasters Declarations

No disaster declarations.

Cal OES Open State of Emergency Proclamations

Proclamation Date: 8/31/22 || Heat/Energy

Significant heatwaves across the entire state strained Californias power grid, threatening to cause energy disruption. The proclamation urged the state residents to conserve electricity.

Proclamation Date: 1/4/23 || December 2022-January 2023 Storms

Severe winter storms struck California causing high winds, and expected flooding, and widespread power outages. This declaration was a hazard to the entire state of California.

POWER OUTAGE HAZARD IDENTIFICATION

Electrical power is supplied to the Las Virgenes-Malibu Region by Southern California Edison (SCE). Power outages can occur whenever there is a severe disruption to power generation facilities or the electric distribution network (for instance during a severe storm, earthquake, or wildfire).

In addition, during certain extreme weather conditions, SCE and other electric system distribution utilities implement proactive de-energization known as Public Safety Power Shutoff (PSPS). A PSPS is an operational protocol that is implemented in order to minimize the threat of wildfires and keep communities safe from potentially dangerous situations.

In addition, human error is a potential risk. For example, on September 8, 2011 an Arizona Public Service (APS) employee is believed to have caused a major power outage that included Arizona and portions of Southern California including San Diego, Orange, and Imperial Counties. The outage impacted more than 5 million people. While the Las Virgenes-Malibu Region was not impacted, this event demonstrates the potential for widespread power disruptions.

Furthermore, there is an ongoing risk of cyber-attack to the nation’s critical infrastructure. On August 14, 2003, the MSBLAST worm (Blaster) and SoBig worms were suspected of causing a massive blackout in the Northeastern Interconnect impacting 50 million customers from the mid-west to the east coast.

CAUSES AND CHARACTERISTICS OF ENERGY EVENTS

Energy threats can be categorized into five types of events:[18]

- Natural disasters caused by nature (e.g., floods, wind, earthquakes)
- Extreme weather conditions causing damage to electrical distribution systems or forcing implementation of PSPS
- Accidental events caused by technological failure (e.g., pipeline rupture, chemical spills, nuclear system failure)
- Systemic threats caused by the physical inability of the energy delivery system (generation and distribution) to meet demand
- Deliberate attacks caused by people – (e.g. terrorists, criminals, hackers, delinquents, employees)

Natural Disasters

Natural hazard events have the potential to cause disruptions in the energy supply. In the Lancaster area, the following types of events can cause outages or other energy events:

- Drought
- Earthquakes
- Flooding
- Severe storms
- Subsidence
- Wildfires
- Windstorms

Public Safety Power Shutoffs

During extreme weather conditions such as sustained strong dry winds can result in Public Safety Power Shutoffs (PSPS) to reduce the potential for wildfires due to downed power lines and blown debris. For example, in December 2017, arcing SCE power lines during high winds caused the Thomas Fire which resulted in 440 square miles burned. Per an investigation by the Ventura Fire Department, the arc, "deposited hot, burning or molten material onto the ground, in a receptive fuel bed, causing the fire".[19]

Accidental Events

Accidental events that cause energy disruptions can be due to technological failure, hazardous materials releases, pipeline rupture, nuclear system failure, accidental actions or inaction. Accidents can be a localized event such as a car crashing into a power pole or a local transformer incident or can be more widespread such as the Southwest Blackout of 2011 that was caused by an employee making repairs at an electrical substation. As the energy infrastructure ages, there is the possibility of equipment failure that can cause intermittent power or pipeline failures.

[18] The National Association of State Energy Officials (NASEO) *State Energy Assurance Guidelines*

[19] Weber, Christopher, "Report: Power lines sparked massive Southern California fire". AP NEWS. March 14, 2019

Systemic Threats

Systemic threats affect the entire energy distribution and production network, including production plants and distribution infrastructure. Systemic events occur when energy delivery systems are physically unable to meet demand. Examples of systemic threats include insufficient power generation capabilities during peak demand such as such as during a prolonged heat wave.

Deliberate Attacks

Deliberate attacks are intentional, malicious acts caused by people that are aimed at personnel, equipment, infrastructure, or computer systems (cyber-attacks). Many power plants and other infrastructure are remotely controlled by supervisory control and data acquisition (SCADA) systems. SCADA systems are vulnerable to attack by hackers who can access the system and perform acts of sabotage against a target, and an attack against SCADA can shut down an energy provider's operations. A deliberate attack such as a Denial of Service attack can slow or shut down a provider's Web site and make it difficult for customers to access personal or billing information. In addition, physical attacks can target distribution points, transmission lines, and pipelines.

POWER OUTAGE HAZARD IDENTIFICATION

A large power outage in the LVMCOG Region that happens during the hottest part of summer or the coldest part of winter will likely result in injury and in extreme cases fatalities. An outage at any time will disrupt roads, highways, lifelines, public services, and the general health of local populations. The examples listed below provide brief descriptions of the types of impacts that can be anticipated.

Injuries

There is a potential for injuries both at home and on the roads during a power outage. During an outage, traffic signals will no longer function, creating the potential for automobile and pedestrian accidents. If the outage occurs at night, streetlights will not work, increasing the probability of accidents and corresponding injuries. Emergency responders will have difficulty navigating traffic if the outage causes traffic issues on city streets, and police will probably be used to manage traffic at high-volume intersections, reducing their ability to respond to accident sites. Finally, injuries and fatalities can result from inappropriate use of household generators during power outages.

Transportation Infrastructure

Residents in the LVMCOG area commute frequently by automobiles and public transportation. A power outage will affect the usability of roads, railways, highways, and freeways. Street signals and streetlights will not work causing traffic jams and increase the possibility of accidents.

Lifelines

Many lifelines are dependent on power, including water pumping stations, food distribution, telecommunications systems, some natural gas and fuel pipelines, and sewage systems. A power outage will prevent these systems from running normally as they are reliant on electricity for operations. A disruption to lifelines will impede the ability to distribute important information to the public, as well as endanger public health and safety. Examples include:

- Water pumping stations, wells, and sewage treatment plants are dependent on electrical power. While the pumping stations have backup generators in case of power outages, an extended outage may affect the ability of these stations to provide or preserve the safety of water.
- Perishable foods are dependent on refrigeration and electrical power. Without electricity, these foods expire relatively quickly, leading to the potential of foodborne illness.
- The telecommunications infrastructure is comprised in part of hard-wired telephone and cable systems (including Internet Service Providers), microwave transmission stations, cellular telephone systems, and radio systems. Industries dependent on the telecommunications sector include oil and gas, electric power, transportation, emergency services, government services, water, and banking and finance. Most telecommunications providers have backup power plans and agreements to procure the fuel needed to run during a power outage, although an extended outage may impede the ability of telecommunications providers to continue to deliver service to the dependent industries.
- Some gas and fuel pipelines may be dependent on electricity at pumping and filtering stations. Utility offices and command centers may be reliant on natural gas or other fuels to maintain continuity of operations.

Services

Public facilities are electricity dependent and will be disrupted during a power outage. An extended outage will affect the ability of some organizations to continue to provide public services as well as affect the ability of residents to function normally. Examples include:

- Most hospitals have backup generators to get through short power outages and plans to get through longer outages and battery systems to keep critical equipment functioning. Nevertheless, generators have been known to fail during power outages. In the case of generator failures, hospitals may have to move patients to other facilities and postpone scheduled non-emergency services.
- Emergency call centers are dependent on electricity to run and to dispatch emergency services. During a power outage they may be able to sustain operations for a period of time utilizing power generators, however if the situation persists over several days, generators will run out of fuel and the rate of equipment failure will likely increase.
- A power outage may cause pump failures that result in a loss of water pressure in some areas, hampering firefighting efforts.

- ATMs and banks rely on electricity to provide money and services. Credit card and Point of Sale systems rely on electricity to process transactions. Without access to banks and ATMs, cash may be in short supply during a power outage, and many stores will only be able to accept cash transactions. Some stores will not be able function as cash registers, inventory systems, and electronic entry doors are dependent on electricity.
- Gas stations rely on electricity to power gas pumps and payment processing devices; therefore, many gas stations will be inoperable during a power outage.
- Government services that rely on banking, transportation, or communications, such as electronic checks, may be delayed during an outage.

Personal Safety

There will be risks to personal safety during a prolonged power outage. A prolonged outage will compromise medications that require refrigeration (such as insulin and diabetes medications) and prevent home medical equipment from operating. Further, closed pharmacies mean a lack of access to prescription refills. Stress caused by power outages may exacerbate existing medical conditions such as respiratory disease, asthma and cardiovascular conditions. Power outages may stress people trapped in elevators, subways, mines, or other enclosed or isolated spaces.[20] Home accidents such as food and carbon monoxide poisoning increase, and heat related illness such as hyperthermia or hypothermia is a concern depending on the location and date of the outage and weather conditions.[21] Additionally, a loss of Internet access will have a widespread impact including ISP supported communications, navigation systems, and access to public information.

Economy

The direct economic impacts due to power outages include lost business output and productivity, property damage, business and government overtime costs, increased waste, and commodities losses caused by a lack of refrigeration. Indirect impacts include diversion of capital investments into blackout protection systems.[22]

Furthermore, manufacturing companies may suffer heavy losses from a power outage, caused by production line disruptions, equipment failure, and increased accidents. Companies outside of the manufacturing sector will likely suffer minimal physical loss in a power outage, but can suffer significant customer and revenue loss. Small businesses are especially vulnerable as they generally have fewer resources and are less likely to have prepared or planned for such an event. For example, the estimated permanent economic losses from the thirteen-hour Southwest Blackout in September 2011 resulted in losses between $97 million to $118 million dollars.[23]

[20] G. Brooke Anderson and Michelle L. Bell, Lights out: "Impact of the August 2003 power outage on mortality in New York, NY", *Epidemiology*. 2012 March; 23(2): 189–193.
[21] Broder J, Mehrotra A, Tintinalli J., "Injuries from the 2002 North Carolina ice storm, and strategies for prevention", *Injury*. 2005 Jan 36(1):21-6.

[22] Electricity Consumers Research Council, "The Economic Impacts of the August 2003 Blackout"
[23] National University System Institute for Policy Research, "Economic impact of September 9th Power Outage"

Estimated Impact of an Event

If an energy disruption were to occur, the consequences to local populations could be significant. The table below provides the estimated impact of a disaster using a 10% loss baseline.

Category	Agoura Hills	Calabasas	Hidden Hills	Malibu	Westlake Village	Impact if a 10% Loss Occurs
Population	20,362	23,410	2,182	10,915	8,081	6,495
Total Owner-Occupied Units	5,861	6,010	603	3,395	2,492	1,836
Total City Employment	11,100	11,800	4.5	6,483	3,700	6,618
Economy* (in thousands)	$621,000	$1,011,348	N/A	$578,443	$576,306	$557,419

Table 147: Estimated Population and Economic Loss of a Power Disruption

Source U.S. Census Bureau 2021 American Community Survey 5-Year Estimate
***2017 U.S. Economic Census (in thousands)**

Based on a 10% loss projection, nearly 6,500 people would be impacted, and more than 6,600 jobs could be disrupted causing over $557M in economic losses. Also, more than 1,800 homes could experience an energy loss (see Community Profile section for population, housing, and economic data).

Impact of Climate Change

For each city within the LVMCOG (Agoura Hills, Calabasas, Hidden Hills, Malibu, and Westlake Village) depend on Southern California Edison for electrical power and Southern California Gas Company for natural gas services. Consequently, climate change driven events such as wildfire, flooding, landslides, debris flows, and mudflows can damage the power infrastructure and pipelines resulting in a cut-off of energy to either or all cities withing the LVMCOG. Additionally, ongoing drought in the Western U.S. can cause limits to hydro-electrical power capabilities resulting in brown outs and blackouts in the region.

Impact of Land Use and Development

Since each city within the LVMCOG (Agoura Hills, Calabasas, Hidden Hills, Malibu, and Westlake Village) depends on Southern California Edison for electrical power and Southern California Gas Company for natural gas services a regional energy disruption may impact all LVMCOG cities simultaneously or cause sporadic outages in one or more area. Ongoing energy disruptions are not anticipated to impact land use or development in any LVMCOG city other than require SCE to maintain brush and tree clearance around power lines and SCG to maintain their pipeline infrastructure.

Impact of Population Patterns

Each city within the LVMCOG (Agoura Hills, Calabasas, Hidden Hills, Malibu, and Westlake Village) depends on Southern California Edison for electrical power and Southern California Gas Company for natural gas services. Energy disruptions are not expected to change population patterns in either LVMCOG city.

Risk of Future Energy Disruption

For the LVMCOG Region, the risk of future climate change events was estimated by the Working Group using the following weighted formula:

Risk = (0.45 x Probability) + (0.30 x Magnitude/Severity) + (0.15 x Warning Time) + (0.10 x Duration)

Probability		Magnitude / Severity		Warning Time		Duration	
Level ID	Value	Level ID	Value	Level ID	Value	Level ID	Value
Unlikely	1	Negligible	1	Less than 6 hrs	4	Less than 6 hrs	1
Possibly	2	Limited	2	6 to 12 hrs	3	Less than 24 hrs	2
Likely	3	Critical	3	12 to 24 hrs	2	Less than one wk	3
Highly Likely	4	Catastrophic	4	More than 24 hrs	1	More than one wk	4

The result was a climate change risk rating of 8.20 (see Annex C Working Group HMP Risk Assessment Survey for additional details):

Hazard	Probability	Magnitude	Warning Time	Duration	Risk
Energy Disruption	5.67	15	3.33	6.5	8.20

POWER OUTAGE VULNERABILITIES

All cities within the LVMCOG (Agoura Hills, Calabasas, Hidden Hills, Malibu, and Westlake Village) as well as the entire Southern California region is vulnerable to power outages. Major concerns regarding the impact on communities from power outage events is the failure of critical infrastructure and the danger to public health. Critical infrastructure failures may require days or weeks to repair. In addition, the impact to business and industry can result in immediate and long term economic loss. Additionally equipment may be damaged and result in increased recovery costs to residents, businesses, commercial, and industrial organizations. Finally, vulnerable populations dependent on electrical power for medical devices and air conditioning or heating are at risk.

Critical Infrastructure

Critical infrastructure can fail during a power outage, especially if the event lasts longer than a few days. Outages will affect water and sewer systems, pipelines, transportation networks, emergency facilities, telecommunications systems, hospitals, and other essential sites. Power outages that last a few hours may only be an inconvenience as most critical infrastructure component have generators or backup power capabilities, but prolonged outages will affect the usability of generators and depend heavily on access to fuel sources. Finally, the failure of services such as the sewage system may pose a hazard to the health of the local community.

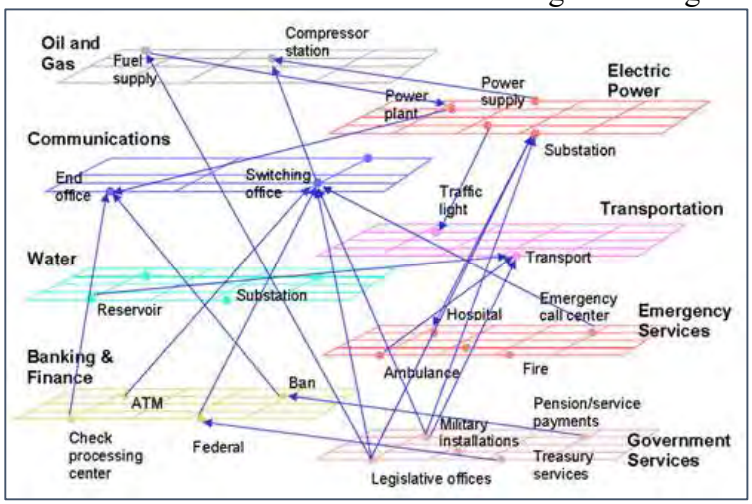


Figure 112: Infrastructure Interdependencies

Source: FCC Public Safety and Homeland Security Bureau

Many infrastructure components are dependent on each other. For example, pipelines depend on electricity, and while fuel can be used to run generators, once existing fuel supplies are depleted, it is difficult to procure new supplies without electricity. If gasoline is unavailable, transportation systems become unreliable. As a result, these "infrastructure interdependencies" can create larger issues the longer a power outage lasts.

Business and Industry

Power outages impact businesses by causing shutdowns during the course of the event. Damage to physical property, interruptions in the supply chain, damage to refrigerated or heated goods that rely on electricity to maintain a certain temperature, and losses to goods on production lines that must be shut down at the time of the event are expected during a power outage. Further, some computer-based businesses will not be able to function without access to power, cooling systems, and the Internet.

Public Health and Safety

A Yale University study of the August 2003 blackout that affected the Northeast and Midwest regions of the United States and parts of Canada showed an increase in accidents and illness that lead to an increased number of deaths during the event.[24] A study by the New York City Department of Health and Mental Hygiene for the same event showed an increase in foodborne related illness as a direct result of the outage.[25] Injuries due to slips and falls and heat related illness or hyperthermia are commonly reported during power outages. Hospitals may fill as people will not be able to utilize home-based medical equipment or procure prescription medications.

VULNERABLE POPULATIONS

In Agoura Hills, the elderly and those speaking languages other than English are especially vulnerable to energy disruptions. The elderly may rely on electrically powered medical devices and air conditioning, and power outages could pose serious health risks. Non-English speakers may have difficulty receiving timely information about outages and accessing support services.

Calabasas residents, including those on fixed incomes, transitory workers, homeless individuals, and elderly or disabled residents, face significant risks during energy disruptions. Fixed-income residents may struggle to afford alternative power sources or temporary relocation. Transitory workers and homeless individuals often lack stable housing with reliable power, increasing their vulnerability. Elderly and disabled residents may depend on electricity for medical devices, making outages particularly dangerous for them.

In Hidden Hills, the older population, households with disabilities, and those with limited transportation capabilities are at high risk during energy disruptions. Older adults and those with disabilities may depend on electrically powered medical equipment and climate control, and power outages can severely impact their health and safety. Limited transportation may prevent these individuals from reaching locations with power, if a prolonged outage were to occur.

Malibu's transitory workers, elderly population, lower-income residents, and homeless individuals are particularly susceptible to energy disruptions. Transitory workers and homeless individuals often lack stable housing and access to reliable electricity, making power outages especially challenging. Elderly individuals may rely on medical devices and air conditioning, and lower-income residents may not afford alternative power sources or temporary relocation, increasing their vulnerability during outages.

In Westlake Village, the elderly, disabled, homeless individuals, and residents speaking a language other than English are highly vulnerable to energy disruptions. The elderly and disabled may rely on electricity for medical devices and climate control, making outages dangerous. Homeless individuals lack stable access to electricity and resources, exacerbating their risk. Non-English speakers may have difficulty accessing information about outages and available services, increasing their vulnerability.

[24] Lights out: Impact of the August 2003 power outage on mortality in New York, NY
[25] New York City Department of Health and Mental Hygiene, "Diarrheal illness detected through syndromic surveillance after a massive power outage: New York City, August 2003"

ENERGY DISRUPTION MITIGATION STRATEGIES

Southern California Edison (SCE) provides power to all cities within the LVMCOG Region and is responsible for managing the power supply. Consequently, the LVMCOG cities have no jurisdiction over SCE or its operations.

To mitigate the threat of power outages, SCE has an emergency preparedness program in place to address pre- and post-disaster planning needs. Additionally, they have included in their plans the need to communicate with the public during an outage. SCE also continually assesses the vulnerability of their system to hazards and takes steps to mitigate the risk. This includes contingency plans for shutting down parts of the electric distribution network in high risk wildfire conditions such as during periods of extreme wind.

SCE conducts regular briefings to each of the LVMCOG cities to provide updates on their mitigation efforts. For example, SCE has provided the LVMCOG multiple presentations on Wildfire Mitigation, Safety, and Grid Resiliency. During these presentations, SCE outlines the major threats to the electric system and the ongoing risk of wildfire, steps being taken to harden the system against these threats, mitigation and monitoring efforts, and the steps taken if a public safety power shutoff is implemented. For example, during high wildfire risk periods, SCE may de-energize the system to prevent wildfires ignited by the electric power transmission system (see Wildfire section for related details). In such cases, SCE has stated that it will provide notifications starting 48 hours prior to a potential power shutoff to:

- First responders
- Local governments
- Water & Communication Service Providers
- Critical Care and Medical Providers
- Customers

The cities within the LVMCOG are investigating the implications of such actions and the potential impacts to their communities. In addition, LVMCOG cities have implemented building codes, zoning ordinances, and growth and development plans to help mitigate future energy disruptions:

- Building codes can be used to ensure that minimum required construction standards are met to safeguard public health and safety and can also increase a community's ability to handle electrical outages by requiring that facilities are adequately prepared for power disruptions. For example, commercial and industrial buildings may be required to have emergency power systems to operate fire control systems and alarms and sites with elevators may be required to have backup power.
- Zoning ordinances can specify the type of land use that is acceptable in various locations in a community, and thus affect the electric power requirements of an area as areas zoned "residential" will have a different electricity profile than areas zoned "commercial" or "industrial".
- Growth and Development plans are developed by each city. Southern California Edison (SCE) develops future long-term demand projections as a starting point for planning the expansion of electric power generation, transmission, and distribution facilities.

Finally, several cities within the LVMCOG have installed and maintain emergency power generation for designated critical sites.

Agoura Hills

The City of Agoura Hills has installed and maintains an emergency generator at City Hall. In addition, a second critical site has been equipped with generator capabilities.

Calabasas

The City of Calabasas maintains an emergency generator at City Hall and is in the process of investigating options and funding for upgrading the system to ensure adequate power supplies during emergencies. These options include additional fixed generators and portable generators.

Hidden Hills

The City of Hidden Hills has equipped City Hall and the Community Center with emergency generators. Further, the City is in the process of purchasing a portable generator for additional resiliency. Additionally, the Las Virgenes Municipal Water District (LVMWD) is in the process of constructing a permanent generator in the Hidden Hills pump station to replace the need for portable generators which will help ensure ongoing water supplies in the event of a power outage. Also, Spectrum provides Internet access within the City of Hidden Hills and has upgraded their battery backup system to enable 72 hours of operation at each node in Hidden Hills which will allow for extended Internet access if a power failure occurs. Finally, the City of Hidden Hills upgraded its radio communications tower and facility to allow for solar power, backup battery power, and portable generator power via a quick connect system.

Malibu

The City of Malibu maintains an emergency generator at City Hall and has distributed small personal generators to residents as part of a Senior Preparedness Program (CDBG Grant funded). Further, the City has taken additional steps to provide communications in the event of a power disruption including:

- Satellite communications between City Hall and CERT members
- A plan to distribute incident information at strategically located Information Stations within the City
- Setup of Information Stations to provide community members with access to limited satellite Internet access

Westlake Village

The City of Westlake Village has equipped City Hall with an emergency generator. Additionally, the City contracts with a vendor to provide fuel. The City currently has a solar project that is intended to replace the diesel generator on site. Additionally, the City has multiple battery powered generators that could be used in case of emergency.

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SECTION 10. LANDSLIDE, DEBRIS FLOWS, AND MUDFLOWS

THE NATURE OF THE LANDSLIDE, DEBRIS FLOW, AND MUDFLOW THREAT

Landslides are defined as, the movement of a mass of rock, debris, or earth (mud) flow down a slope. Landslides are a type of "mass wasting" which denotes any down slope movement of soil and rock under the direct influence of gravity (FEMA). Landslides can be initiated by rainfall, earthquakes, changes in groundwater, disturbance and change of a slope by man-made construction activities, or any combination of these factors. Underwater landslides can also occur causing tidal waves and damage to coastal areas. Debris flows are fast-moving landslides that are particularly dangerous to life and property because they move quickly, destroy objects in their paths, and often strike without warning. Debris flows generally occur during periods of intense rainfall or rapid snowmelt and usually start on hillsides or mountains. Debris flows can travel at speeds up to and exceeding 35 mph and can carry large items such as boulders, trees, and cars (USGS). A mudflow is defined as, "A river of liquid and flowing mud on the surface of normally dry land areas, as when earth is carried by a current of water. Other earth movements, such as landslide, slope failure, or a saturated soil mass moving by liquidity down a slope, are not mudflows" (FEMA).

The size of a landslide or debris flow normally depends on the geology and the initial cause of the event. Landslides and debris flows vary greatly in their volume of rock and soil, the length, width, and depth of the area affected, frequency of occurrence, and speed of movement. Some characteristics that determine the type of landslide or debris flow are slope of the hillside, moisture content, and the nature of the underlying materials and the type of failure depends on their composition and characteristics.

Landslides can be described as either: (1) rapidly moving (generally known as debris flows), and (2) slow moving. Rapidly moving landslides or debris flows present the greatest risk to human life. People living in or traveling through areas prone to rapidly moving landslides are at increased risk of serious injury. Slow moving landslides can cause significant property damage but are less likely to result in serious human injuries (USGS).

Nationally, landslides (including mudslide and debris flows) cause 25 to 50 deaths each year. The best estimate of direct and indirect costs of landslide damage in the United States range between $2 billion and $4 billion annually (U.S. Geological Survey)[26]. As a seismically active region, California has had a significant number of locations impacted by landslides. Further, landslides and debris flows/mudslides are a particular risk in areas denuded by wildfire when significant rains occur. In addition to the potential loss of life, landslides can result in private property damage, impact transportation corridors, break fuel and energy conduits, and disrupt communication facilities.

Within the Las Virgenes-Malibu Region there are areas that are susceptible to landslides and debris flows due to slope instability, fire activity, rainfall and the geologic make-up of the area. Although all of the cities within the LVMCOG prohibit development in areas that may be prone to landslides, there are existing properties that may be susceptible to landslide activity.

[26]American Geosciences Institute, https://www.americangeosciences.org/critical-issues/faq/how-much-do-landslides-cost-terms-monetary-losses

Debris Flow

A debris or mud flow is a river of rock, earth and other materials, including vegetation that is saturated with water. This high percentage of water gives the debris flow a very rapid rate of movement down a slope. Debris flows can have speeds on the order of 20 mile per hour and can often move much faster (California Department of Conservation). This high rate of speed makes debris flows extremely dangerous to people and property in its path. In the event of a major landslide, debris flow can destroy roadway pavement and fill the storm drain catch basins. Any significant surface movement along streets will isolate residents and disrupt utilities in those areas. Although no significant debris flow resulting from landslide activity has been recorded in the Las Virgenes-Malibu Region, it remains a possibility.

HISTORICAL RECORD OF LANDSLIDE, DEBRIS FLOW, AND MUDFLOW EVENTS

History of Landslides, Debris Flows, and Mudflows in Southern California

The National Weather Service has documented the following significant flood triggered landslide, debris flows, and mud slide events in Southern California since 2014 (additional flood events are documented in the **Flood and Severe Winter Storm** section).

Date(s)	Weather	Adverse Impacts
9.12.2022	Moisture from remnants of Tropical Cyclone Kay brought precipitable water measured at 2.35" inches, a record level for September and the second wettest all-time in the sounding record back to 1956. Rainfall ranged from 2 to 6" from the Anza Borrego Desert to Mt. Laguna on 9.9. Thunderstorms erupted in the mountains and desert and Inland Empire from 9.10 to 9.12. Including one storm producing a rain rate of 2.44" in one hour at Raywood Flats on 9.12.	On 9.12, flash floods and debris flows flowed into Forest Falls and Oak Glen, where 30 homes and businesses were damaged. Search and rescue operations found all missing persons but one, a woman who was killed in Forest Falls. 14 evacuees spent at least one night at a Red Cross shelter. Several roads and highways in this area were blocked by debris and closed. Other massive debris flows, including large trees and boulders, flowed down Banning and Mias Canyons above Banning. Flash floods were also reported in Barona and Temescal Valley.
8.13.2022	Thunderstorms hit the San Bernardino Mountains. 2.28" at Yucaipa Ridge.	The rain came in a short time and triggered debris flows and flash floods into Forest Falls.
7.31.2022	Numerous heavy thunderstorms struck the El Dorado burn scar (above Yucaipa). Rainfall intensities exceeded 1" in 1 hour and a couple approached 2" per hour. Some weakening thunderstorms managed to drift across southern Orange County to the coast.	Significant flash floods and debris flows that closed parts of highway 38 near Angelus Oaks for days. Storms in the high desert led to several flash floods.
12.23-24.2021	A series of storms paraded through the region, each bringing heavy rain during late December. Two-day totals for this storm reached 6" in the mountains, but Lytle Creek alone achieved just over 8". The northern Inland Empire got 2-5", while most other lower elevation stations received 0.75-3". Even parts of the lower deserts got more than one inch.	Several mountain roadways were washed out, including Highways 18 and 243. Flooding was observed in the Mojave River in Hesperia, along Indian Canyon Road near Palm Springs, in San Bernardino, in Cherry Valley just below the Apple Fire burn scar, and in nearby Oak Glen. Debris flows inundated parts of Silverado Canyon within the Bond Fire burn scar.
12.14.2021	A significant winter storm brought heavy rain to lower elevations. 5 to 6" of rain fell on the southwest slopes of the San Gabriel and San Bernardino Mountains, with Lytle Creek singularly achieving 7.06".	Several debris flows occurred, in the Bond Fire burn scar in eastern Orange County and below the Apple Fire burn scar near Beaumont. Localized flooding was common across the region. Rocks and debris closed some mountain highways.

Date(s)	Weather	Adverse Impacts
10.25.2021	A significant storm for October tapped into a weakening atmospheric river to bring over 2" of rain to parts of the San Bernardino Mountains. 1-2" were common in the mountains, while 0.25- 1" was common at lower elevations, including the high desert.	The rain combined with vulnerable burn scars to produce rock slid mud and debris flows that closed es, off several highways in the mountains. These closures were near Big Bear Dam, Oak Glen and Forest Falls.
7.30.2021	A surge of monsoon moisture produced numerous heavy thunderstorms across the mountains. Rain rates of 1.0 to 1.5 inches per hour were observed in the heavier storms.	Several flash floods and debris flows occurred, particularly on the El Dorado Fire burn scar along Highway 38 near Angelus Oaks.
7.26.2021	Widespread showers and thunderstorms hit the entire region, even to the coast. Many locations in mountains and deserts received over one inch of rainfall, with Lake Cuyamaca topping the list at 2.32", Indio 1.60" and Apple Valley 1.34". West of the mountains, amounts ranged from 0.01" to 0.83" inch at Rincon Springs. Distribution was not uniform in any respect.	A flash flood spread sand and rocks across Dillon Road and Ramon Road near Thousand Palms. Several Indio streets were flooded with water.
3.11.2021	A powerful storm contained a heavy burst of rain in eastern Orange County that struck the Bond Fire burn scar in Silverado Canyon. 0.20 inch of rain fell in 15 minutes.	A debris flow went over roads and into homes, damaging six homes and eight vehicles in Silverado. The flow also closed a stretch of Silverado Canyon Road.
1.28-29.2021	A powerful winter storm and atmospheric river brought heavy rain. 4 to10 inches fell across San Luis Obispo and Santa Barbara Counties, 2 to 6 inches fell in Ventura County and 1 to 4 inches fell in Los Angeles County. 1.5 inches of rain fell across Santiago Canyon in eastern Orange County.	Many areas flooded, including Santiago Canyon where mud and debris flows covered roads and damaged homes. A vehicle got stuck in floodwaters in Perris, prompting a water rescue. 8 people were trapped in a flooding storm drain between Otay Mesa and San Ysidro. 7 were helped to safety, but one perished.
4.8-10.2020	A warm front moved through the region on 4/8 and brought waves of showers from south to north. Following the warm front, an upper low moved into the California Bight and stalled on 4/9, bringing 3 to 5 inches of rain to Orange County and San Diego County through 4/10. Many locations recorded their highest daily rainfall record: San Diego (1.98"), Chula Vista (1.56"), and Vista (3.18"). Oceanside Harbor recorded their wettest 24-hours on record with 3.06". Six-day storm totals were 3 to 7 inches along the coast and valleys, 4 to 8 inches with locally 10 in the mountains, and 1 to 2 inches in the deserts. Rainfall in San Diego County was 3-4" inches in a 24 hour period. All-time daily rainfall records were broken on 4/10 in Oceanside and Vista, each recording over 3". Monthly rainfall records were broken for April at those locations, each receiving over 6" in just six days.	Numerous flash floods and floods resulted. Flood waters combined with mud, boulders and debris in Bonsall, Oceanside, Carlsbad, Encinitas, Vista, Pacific Beach, Del Mar, Valley Center, Rancho Penasquitos and several spots in Mission Valley. Highway 78, a major freeway corridor between Oceanside and Escondido, was closed in both directions from flooding on adjacent Buena Vista Creek. Numerous swift-water rescues were made all across San Diego County. The San Diego River at Fashion Valley reached a peak of 12.5 feet.
3.12.2020	An atmospheric river brought heavy rain and thunderstorms, especially to the deserts where 1 to 2 inches fell. 550 lightning strikes occurred.	Flash flooding was observed near Canebrake, Borrego Springs, Lakeview, Riverside, Corona, parts of the Coachella Valley, Apple Valley. A mudslide occurred near Pinyon Pines. A road was eroded near Mentone. Water rescues happened in Glen Avon and Corona.

Date(s)	Weather	Adverse Impacts
2.14.2019	A major atmospheric river pummeled Southern California with heavy rain. Many mountain locales recorded 8 to 10 inches of rain, with Palomar Mountain recording over 10 inches. Palm Springs recorded 3.69 inches, the third wettest day on record.	Flash flooding resulted with damage to roads. High snow levels resulted in flooding in the San Bernardino Mountains. Flash flooding and debris flows occurred at and below the Holy Fire burn scar near Lake Elsinore. Highways ripped out by water and debris on both sides of Mt. San Jacinto were closed for weeks for major repairs.
2.2.2019	A strong downpour across the burn scar of the 2017 Whittier Fire triggered a debris flow in Duval Canyon (Giorgi 2019).	The event clogged and damaged a culvert beneath Highway 154, shutting down the highway for a month between Highway 246 in Santa Ynez to Highway 192 in Santa Barbara for clearing, severing a key north-south arterial linking north county and south county.
1.19.2018	On Tuesday, January 9, 2018, following the 2017 Thomas Fire, which burned 281,893 acres in Ventura and Santa Barbara Counties, a reported 0.54 inches of rain fell within 5 minutes in the burn scars from the Thomas Fire in the foothills of Montecito. Over two days a total of four inches of rain fell in the area.	The heavy rains caused massive debris flows and flooding that damaged or destroyed 408 homes, killed 23 residents, and led to the closure of Highway 101 and the UPRR for more than 3 weeks, cutting off the county from communities to the south. California Geological Survey scientists estimated the Montecito debris flow as having speeds of 10-15 mph, being up to 25-30 feet deep, and capable of carrying boulders as large as a tow truck. (California Geological Survey 2019b).
1.5-7.2016	A strong, low latitude jet stream brought a series of storms through Southern California with periods of moderate to heavy rain. Three-day rainfall totals were around 2-7" for the coast, valley and foothill areas, and 1- 3" for the deserts. After several years of drought, this was the only precipitation event of significance during an otherwise disappointing strong El Niño season.	Flooding resulted nearly everywhere, with southwestern San Diego County being hardest hit. Floods buried cars in Ocean Beach and Mission Valley. High water rescues occurred on 1.6 around San Diego. Small mudslides, including boulders on highways were reported near Ramona, Redlands, Crestline, Orange, Rancho San Diego and De Luz. Three debris flows in Silverado Canyon below a burn scar.
9.15.2015	A Pacific trough tapped into remnant moisture from tropical cyclone Linda. 1-2" of rain was common across the entire region.	Major traffic jam during the morning commute in LA and Orange County, along with a debris flow in Silverado Canyon, and widespread urban flooding.
7.18-19.2015	Moisture from Hurricane Dolores, along with monsoon moisture resulted in showers and thunderstorms over most Southern California. Rainfall ranged from 0.5-4", including a record 1.71" at San Diego on 7.18 (unprecedented rainfall: single-day and July monthly total). The San Diego River at Fashion Valley had 2 crests above monitor stage, 7.7 feet on the 18th and 8.8 feet on 7.19. On 7.19 over 6" of rain fell over several hours just west of Desert Center.	A debris flow hit the burn scar of Silverado Canyon. Flash floods hit Moreno Valley, Perris, and La Mesa on 7.19. A wet microburst struck Tierrasanta on 7.18, causing wind damage. A haboob caused wind damage in the Anza Borrego Park and in Palm Desert. The rain caused the first rain-out of a Los Angeles Angels baseball game since 1995, and a rare 2-hour rain delay at the San Diego Padres baseball game. Over 2000 lightning strikes were reported on 7.18, some starting small brush fires. Near Desert Center on 7.19 eastbound lanes of Interstate 10 collapsed where they crossed a heavily flowing wash. A vehicle drove into the hole in the collapsed bridge, trapping the driver and requiring rescue. I-10 was closed in both directions causing huge traffic backups.

Date(s)	Weather	Adverse Impacts
7.6.2015	Monsoon thunderstorms hit the mountains and upper desert. A few spots received up to around one-third of an inch, including a portion of the Lake Fire burn area south of Big Bear Lake.	Several debris flows resulted, including one consisting mostly of ash and mud over portions of Highway 38, up to a foot deep in some areas.
12.3-4.2014	A Pacific storm brought moderate to heavy rain. Two-day rainfall totals of 1-2" were recorded west of the mountains, while the southern slopes of the San Bernardino County mountains saw up to 5" of rain (isolated amount of 14.5" at Yucaipa Ridge).	Flooding resulted, with mud, debris and water closing several roadways and stranding vehicles. Mud with debris 10 feet high piled up on Soboba Rd. north of San Jacinto. A swift water rescue was needed.
9.7-8.2014	Weakening Hurricane Norbert brought moisture to produce thunderstorms mainly in Riverside and San Diego Counties. Rainfall amounts of 1 to 2 inches fell over the city of Riverside, San Bernardino and Hemet, while the mountains in that county saw up to 0.60" near Sky Valley. Early morning thunderstorms on 9.8 drenched parts of the Coachella Valley which received 0.33" up to just over 3 inches near the lower foothill in Thousand Palms and La Quinta.	Widespread flash flooding, most notably in the Coachella Valley on 9.8. Mud and water closed roads and stranded vehicles in La Quinta, Palm Desert, and Thousand Palms. Homes in La Quinta were surrounded by water. Moving water was 3 feet deep on roads and 4 to 5 feet of standing water submerged vehicles. Mud was several feet deep on Varner Road.
8.12.2014	A heavy thunderstorm struck east of Julian.	A debris flow blocked Hwy. 78 east of Julian on the Banner Grade that was one to two feet deep. The Banner Fire burn scar contributed to this flow.
2.28-3.1.2014	A very wet storm was the only significant storm of the 2013-14 wet season. Rainfall ranged from 1 inch at the coast to up to 8 inches in the mountains. Up to 1 inch fell in the desert. Yucaipa Ridge measured over 11 inches.	Urban and flash flooding with mud/debris flows, causing numerous road closures and swift water rescues in and around Anaheim, San Diego-Fashion Valley, Escondido, Fallbrook and Lake Elsinore. Mud slides closed Hwy. 74 (Ortega Highway) stemming from the Falls Fire burn scar. Many road closures in the Coachella Valley where rivers saw rises of 2 to 5 feet, in some instances within 12 hours. On 3.1, flooding resulted in Oceanside, Temecula, Sea World San Diego, as well as minor street flooding in Mission Viejo.

Table 148: A History of Significant Weather Events in Southern California - Organized by Weather Type (Feb 2023) – From 2014 to 2022

Las Virgenes-Malibu Landslide Probability

According to the FEMA National Risk Index, the Los Angeles region records the chance of landslides as 0.2 events per year.

Disasters Declarations and Emergency Proclamations

FEMA disaster declarations allow state, tribal, and local governments to access federal aid for disaster response and recovery when overwhelmed. Similarly, the California Governor's Office of Emergency Services (Cal OES) issues proclamations to mobilize state resources and streamline procedures.

FEMA Disasters Declarations

Declaration Date: 1/9/23 || California Severe Winter Storms, Flooding, and Mudslides || DD# em-3591-CA

Winter storm conditions caused flooding, debris flows and mudslides across most of California, though most damage was sustained outside the LVMCOG region.

Declaration Date: 3/10/23 || California Severe Winter Storms, Flooding, Landslides, and Mudslides || DD# EM-3592-CA

Landslides and mudslides occurred during a severe winter storm, despite heavy damage reported across the state coast, the LVMCOG region was not as heavily affected.

Cal OES Open State of Emergency Proclamations

Proclamation Date: 9/16/22 || Tropical Storm Kay

Tropical storm conditions brought heavy rainfall and strong winds across southern California, causing flooding and debris flows. The storm system, including debris flows, also damaged or destroyed roads in Imperial, Inyo, Los Angeles, and Riverside counties.

Significant Southern California Landslides, Debris Flows, and Mudflows

2023 Rolling Hills Estates Landslide

In July 2023, a landslide destroyed 12 homes in Rolling Hills Estates on the Palos Verdes Peninsula (south of the Malibu coast) with other residents forced to evacuate. Each of the 12 destroyed homes was valued at over $1 million each resulting in a total loss of more than $15.5 million.

2022 Southern California Mudflows

In 2022, heavy rains in the Southern California area resulted in numerous cases of landslides and mudflows. For example, in Oak Glen near Yucaipa flashfloods resulted in mudflows that destroyed several homes and businesses.

2018 Southern California Mudflows

In January 2018, a series of mudflows occurred in the Los Angeles, Orange, Riverside, and Santa Barbara Counties. These mudflows occurred in areas that had previously experienced major wildfires. Subsequent rains resulted in multiple mudflow events. Specifically, the Montecito Mudslide caused 23 reported deaths, multiple injuries, and at least $177 million in property damage.[27]

Figure 113: Montecito Mudflow 2018

Source: Matt Udkow, Santa Barbara County Fire Department

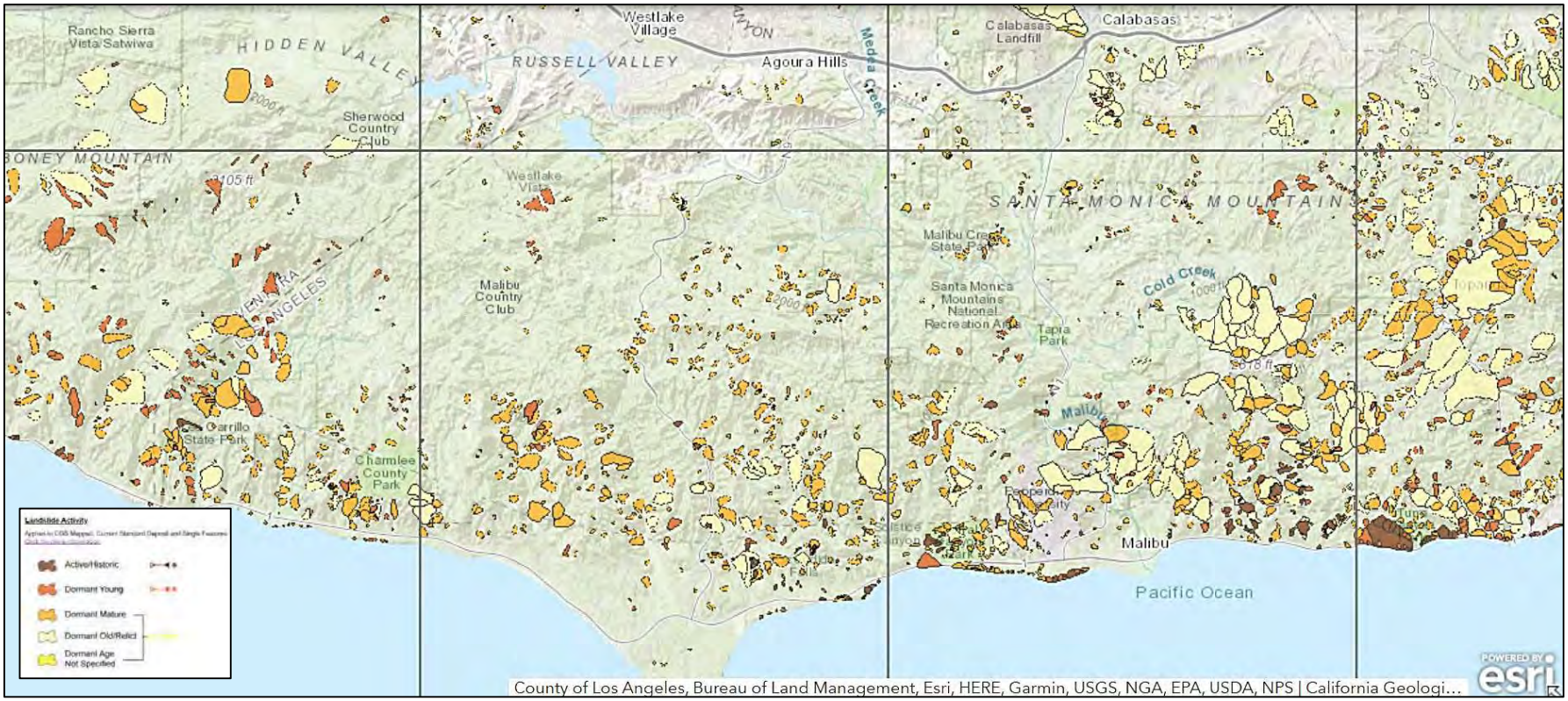
1994 Northridge Earthquake Landslide Related Impact

As a result of the magnitude 6.7 Northridge, California, earthquake, more than 11,000 landslides occurred over an area of 10,000 km^2. Most were in the Santa Susana Mountains and in mountains north of the Santa Clara River Valley. The earth movement destroyed dozens of homes, blocked roads, and damaged oil-field infrastructure. It also caused deaths from Coccidioidomycosis (Valley Fever), the spore of which was released from the soil and blown toward the coastal populated areas. The spore was released from the soil by the landslide activity.

[27] Robert D. Niehaus, Inc., Preliminary Impact Assessment: Montecito Mudslides, 2018

Landslides, Debris Flows, and Mudflows in the Las Virgenes-Malibu Region

The cities within the Las Virgenes-Malibu Region are subject to landslide events due to heavy rains or seismic events. The map below depicts the historic dormant and active landslide (debris flow and/or mudflows) areas within each city. Note: No historic or active landslide zones are within the boundaries of Hidden Hills.



Map 60: Dormant and Active Landslide Areas in the LVMCOG Region

Source: California Department of Conservation (https://maps.conservation.ca.gov/cgs/lsi/app/)

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Agoura Hills Landslides, Debris Flows, and Mudflows

Examples of landslide events in the City of Agoura Hills since 1990 include the Via Amistosa, Morrison Ranch, Liberty Canyon Slope Failure, Laura La Plante, Laro, and Chateau Park landslides. In 1999, Agoura Hills experienced the Kanan Slope Repair as a result of the El Nino storms of 1998. However, as of 2023 all remediation slope repairs have been completed. The City will continue future repair efforts as a result of future storms.

Calabasas Landslides, Debris Flows, and Mudflows

In January 2023 a mudslide blocked the northbound lanes at the intersection of Mulholland Highway and Stunt Road near the southwest border of the City of Calabasas. In June 2022, a large rock blocked Mulholland Highway near Las Virgenes Road in Calabasas (no injuries reported).[28] This event disrupted traffic in the area until the roadway could be cleared.

Malibu Landslides, Debris Flows, and Mudflows

Due to the topography of the area, landslides in Malibu can severely disrupt transportation at a regional level. For example, Pacific Coast Highway is a heavily used transportation route and road closures due to landslides are a major concern. Recent incidents in the City of Malibu have included the Highway 23, Little Dume Beach, and Piuma Road landslides (see 2021-2023 summary below). Previous events include the: Calle del Barco, Kanan, Pacific Coast Highway, Las Flores, Love, and Malibu Road landslides.

2021 - 2023 Malibu Landslides / Mudslides

In December 2021, a mud and rockslide forced the closure of Highway 23 (no injuries reported). Also, in November 2021, a rockslide near Little Dume beach occurred requiring closure of the area until the potential for further rock falls could be determined. In October 2022, a landslide north of Pacific Coast Highway resulted in the closure of Highway 23 between Westlake Village and Malibu. Road clearing and repair efforts required the road to be shut down for 3 weeks. In March 2023, a rockslide caused by heavy rains occurred south of Piuma Road causing several large boulders to fall onto Malibu Canyon Road. The rockslide required the closure of the road for 24 hours while clean-up crews cleared the road (no injuries reported).

Other landslide events periodically occur in the City of Malibu and the City has taken steps to monitor and mitigate the issue. For example, The Malibu Road Landslide Assessment District was authorized in 1998 (Resolution 98-036) to provide funding to maintain and monitor dewatering facilities that are intended to stabilize the landslide area.[29]

[28] https://cadoc.maps.arcgis.com/apps/webappviewer/index.html?id=bc48ad40e3504134a1fc8f3909659041
[29] Fugro, Annual Report Malibu Road Landslide Assessment District, June 2017

STAKEHOLDER INPUT AND PARTICIPATION

To identify the threats, vulnerabilities, and consequences of a major landslide, debris flow, and mudflow on the Las Virgenes-Malibu Region, each member of the Planning Group which included representatives from the cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, and Westlake Village provided their input during planning meetings (see Annex B: Meeting Agendas and Attendees) and follow-up discussions. Specific topics of discussion included if any changes to the hazard priorities have changed since the previous HMP, how changes in the community have impacted the risk of each hazard, and what new mitigation actions can be taken. In addition, each member of the Planning Group as well as members of the public provided the input via online surveys (see Annex C: Community Disaster Preparedness and Risk Survey, Annex D: Planning Group HMP Risk Assessment Survey, and Annex E: Planning and Public Involvement).

CAUSES AND CHARACTERISTICS OF LANDSLIDES, DEBRIS FLOWS, AND MUDFLOWS

Landslide, Debris Flows, and Mudflows Events and Impacts

Landslides including debris flows and mudflows are a common hazard in California. Weathering and the decomposition of geologic materials produces conditions conducive to landslides and human activity further exacerbates landslide potential. Many landslides are difficult to mitigate, particularly in areas of large historic movement with weak underlying geologic materials.

Rock falls occur when blocks of material come loose on steep slopes. Weathering, erosion, or excavations, such as those along highways, can cause falls where the road has been cut through bedrock. These rock falls are fast moving with materials free falling or bouncing down slopes. The volume of material involved is generally small, but large boulders or blocks of rock can cause significant damage.

As communities continue to modify the terrain and influence natural processes, it is important to be aware of the physical properties of the underlying soils as they (along with climate) create landslide hazards. This is especially important with the demands placed on buildable land (particularly in urban areas) that increases the tendency to build on geologically marginal areas such as hillside lots.

LANDSLIDE, DEBRIS FLOWS, AND MUDFLOWS HAZARD IDENTIFICATION

Landslides, debris flows, and mudflows are often triggered by periods of heavy rainfall. Earthquakes, subterranean water flows, pipeline ruptures, and excavations may also trigger landslides. Certain geologic formations are more susceptible to landslides than others. Human activities, including locating development near steep slopes, can increase susceptibility to landslide events. Further, wildfires can denude large areas of hillsides increasing their susceptibility to landslides, debris flows, and mudflows.

Natural Processes

Natural processes can cause landslides, debris flow, or mudflows or re-activate historical sites with previous events. Seismic tremors can trigger landslides on slopes with a history of landslide movement. Earthquakes can also cause additional failure (lateral spreading) that can occur on moderate slopes above steep streams and riverbanks.

Land Development, Grading, and Excavation

Although landslides including debris flows and mudflows are a natural geologic process, the incidence of landslides and their impacts on people can be exacerbated by human activities. Grading for road construction and development can increase slope steepness. Grading and excavation can decrease the stability of a hill slope by adding weight to the top of the slope, removing support at the base of the slope, and increasing water content.

Drivers for hillside development include intensification of existing development on residential lots and expansion into undeveloped areas. Intensification consists of additional construction and modification of existing construction or the complete demolition and redevelopment of a residential lot.

Intensification expands developed pad areas into previously "natural" hill slope areas and often involves a corresponding increase in the size and volume of the onsite sewage disposal systems. Other human activities effecting landslides include: excavation, drainage modifications, groundwater alterations, and changes in vegetation and soil conditions.

Drainage and Groundwater Alterations

Water flowing through or above ground is often the trigger for landslides, debris flows, and mudflows. Any activity that increases the amount of water flowing into landslide-prone slopes can increase the hazard. Broken or leaking water or sewer lines can be especially problematic, as can water retention facilities that direct water onto slopes. Ineffective storm water management and excess runoff can also cause erosion and increase the risk of landslide hazards. Drainage can be affected naturally by the geology and topography of an area; development that results in an increase in impervious surfaces impairs the ability of the land to absorb water and may redirect water to other areas. Channels, streams, ponding, and erosion on slopes all indicate potential slope problems.

Road and driveway drains, gutters, downspouts, and other constructed drainage facilities can concentrate and accelerate flow. Ground saturation and concentrated velocity flow are major causes of slope problems and may trigger landslides. Building Codes require drainage devices to dispose storm runoff away from hillside developments. Storm runoff is designed to be discharged into the storm drain system. Storm drain catch basins are normally maintained by Public Works Departments and are regularly cleaned to prevent any flooding or ponding.

Changes in Vegetation and Soil Conditions

Wildland fires in hills covered with chaparral are often a precursor to debris flows or mudflows in burned out canyons. The extreme heat of a wildfire can create a soil condition in which the earth becomes impervious to water by creating a waxy-like layer just below the ground surface. Since water cannot be absorbed into the soil, it rapidly accumulates on slopes, often gathering loose particles of soil in to a sheet of mud and debris.

If vegetation on very steep slopes has been removed either by wildfire or man-made development, there is an increased risk. Additionally, changing away from native ground cover plants may increase the risk of landslide, debris flow, or mudflow. For example, if certain vegetation requires heavy watering, soil conditions can change and trigger landslides.

Landslide, Debris Flow, and Mudflow Risk Factors

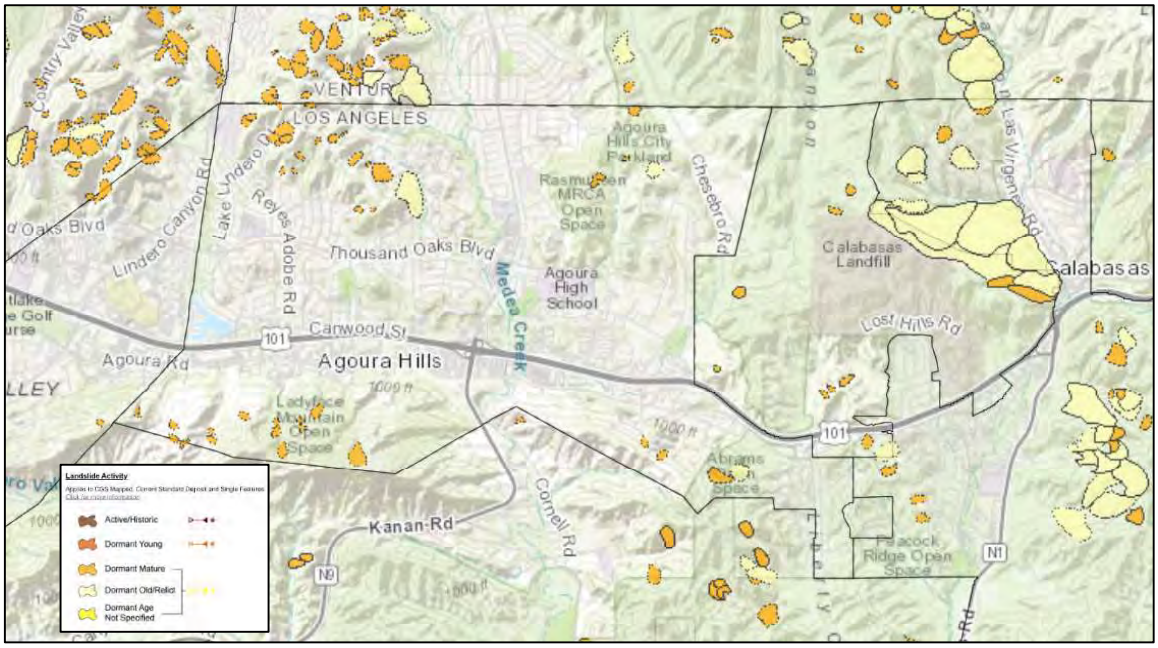
Locations at risk from landslides, debris flows, or mudflows include areas with one or more of the following conditions:

1. On or close to steep hills;
2. Steep road-cuts or excavations;
3. Existing landslides or places of known historic landslides, debris flows, or mudflows (such sites often have tilted power lines, trees tilted in various directions, cracks in the ground, and irregular-surfaced ground);
4. Steep areas where surface runoff is channeled, such as below culverts, V -shaped valleys, canyon bottoms, and steep stream channels; and
5. Fan-shaped areas of sediment and boulder accumulation at the outlets of canyons.
6. Canyon areas below hillside and mountains that have recently (within 1-6 years) been subjected to a wildland fire.

Potential Landslide, Debris Flow, and Mudflow Areas

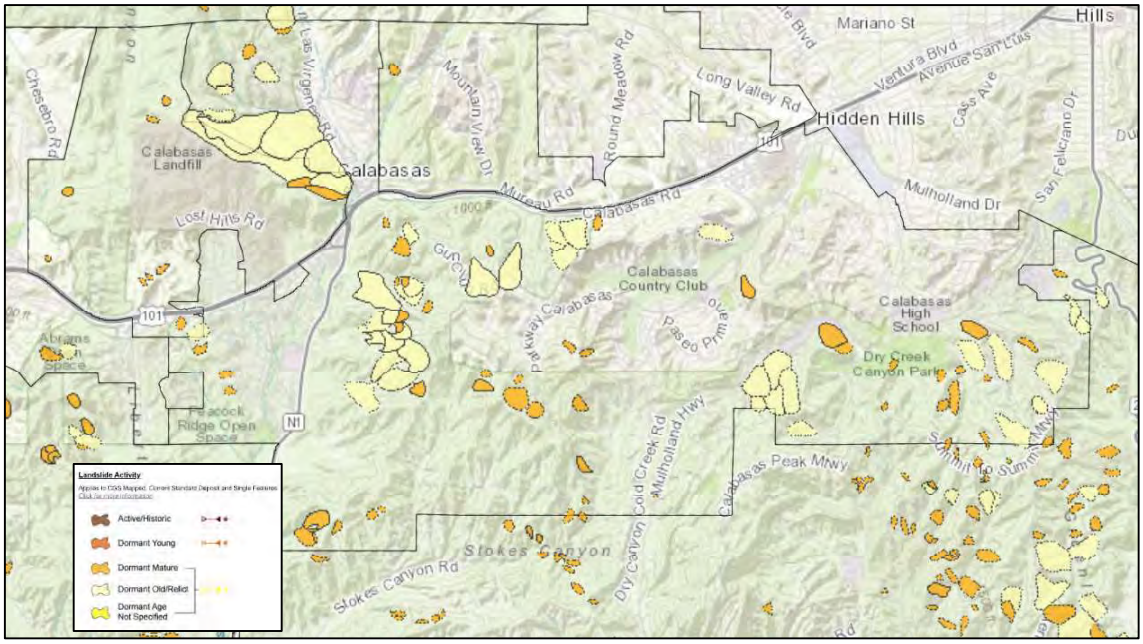
The following potential landslide, debris flow, and mudflow areas have been identified for each city within the LVMCOG (note: no landslide hazards were identified within the City of Hidden Hills). Source: County of Los Angeles, Bureau of Land Management, Esri, HERE, Garmin, INCREMENT P, USGS, METI/NASA, NGA, EPA, USDA | California Geological Survey

Agoura Hills



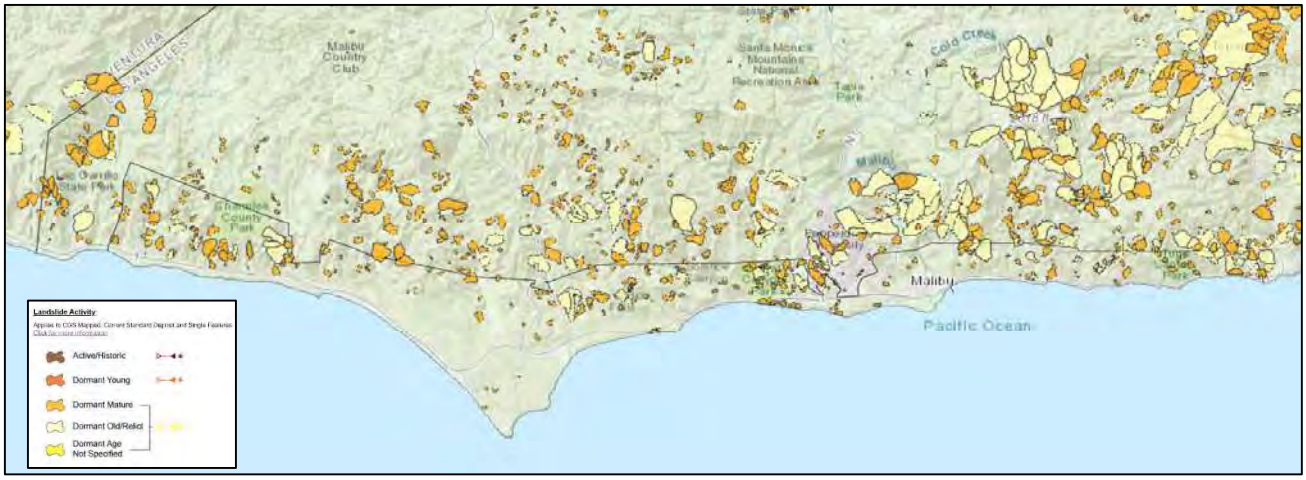
Map 61: Agoura Hills Landslide, Debris Flow, and Mudflow Areas

Calabasas



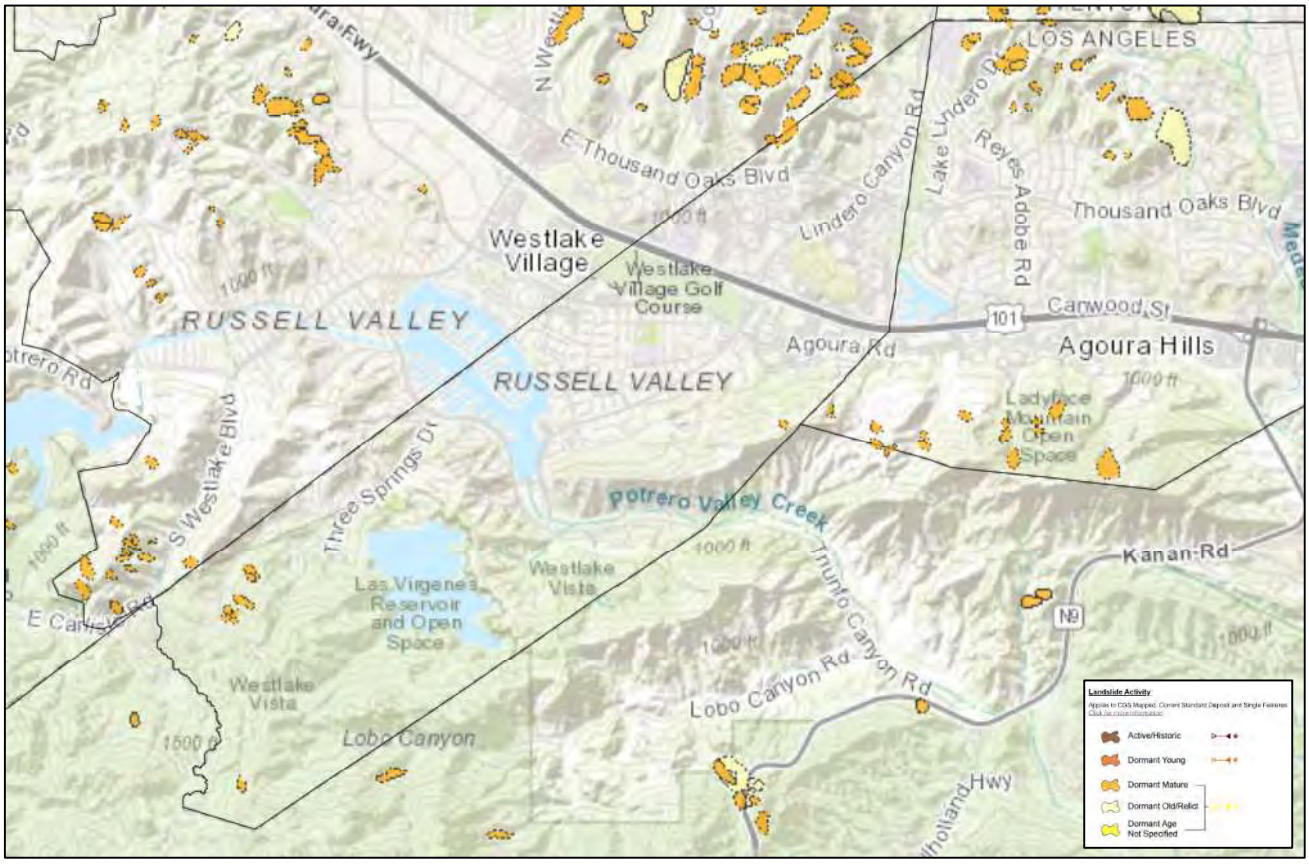
Map 62: Calabasas Landslide, Debris Flow, and Mudflow Areas

Malibu



Map 63: Malibu Landslide, Debris Flow, and Mudflow Areas

Westlake Village



Map 64: Westlake Village Landslide, Debris Flow, and Mudflow Areas

Estimated Impact of an Event

If landslides, debris flows, or mudflows were to occur, the consequences to local populations and housing could be significant. The table below provides the estimated impact of a disaster using a 0.1% loss baseline.

Category	Agoura Hills	Calabasas	Hidden Hills	Malibu	Westlake Village	Impact if a 0.1% Loss Occurs
Population	20,362	23,410	2,182	10,915	8,081	65
Total Owner-Occupied Units	5,861	6,010	603	3,395	2,492	18
Median Home Value	$857,700	$1,141,600	$2,000,000+	$2,000,000+	$1,029,100	More than $25,302,240 (based on an average home value of $1,405,680 x Total Owner Occupied Units Impacted)

Table 149: Estimated Population and Economic Loss of Multiple Landslides

Source U.S. Census Bureau 2021 American Community Survey 5-Year Estimate

Based on a 0.1% loss projection, approximately 65 people could be displaced or significantly impacted, and approximately 18 homes could be damaged or destroyed resulting in over $25 million in losses based on an average home value of $1,405,680 and damage to 18 owner occupied units (see Community Profile section for population, housing, and economic data).

Impact of Climate Change

Each city within the LVMCOG (Agoura Hills, Calabasas, Hidden Hills, Malibu, and Westlake Village) are subject to the regional impacts of climate change. Periods of extreme weather causing an increased risk of landslides, debris flows, and mudflows are expected to continue as severe weather patterns occur. Specific areas of concern within the LVMCOG include hillside landslides, debris flows, and mudflow as well as sink holes (all cities) especially near riverine zones (such as in Malibu, Westlake Village, Calabasas, and Agoura Hills). Additionally, a landslide, mudslide, or debris flow damaging local freeways/highways and major transportation routes will cause extensive commuter and commercial disruptions to the entire area. In particular, the City of Malibu could be cut off if Pacific Coast Highway 1 were blocked. Further, smaller roads through the Santa Monica Mountains between Malibu and Agoura Hills, Calabasas, and Westlake Village can become blocked due to downed landslides, mudslides, and debris flows.

Impact of Land Use and Development

City	Impact of Land Use and Development
Agoura Hills	New development projects within Agoura Hills limited according to the city's development plan and other restrictions to mitigate the impact of landslides, debris flows, and mudflows. Developed areas located on hillsides may be impacted by landslides and areas in lower elevations may be at greater risk of mudslides and debris flows. Consequently, if a major landslide, debris flow, or mudflow event were to occur, future development densities especially in hillside areas could be further limited to mitigate the impact resulting in a change to local land use plans.

City	Impact of Land Use and Development
Calabasas	New development in the city are restricted to areas according to the city's development plan. Furthermore, properties in Calabasas must comply with drainage and other flood control requirements to mitigate the impacts of landslides, debris flows, and mudflows. Nevertheless, residential areas are located in the Calabasas hillsides and are at greater risk of landslides while low lying areas are subject to debris flows and mudslides. If major landslide, debris flow, or mudflow occurs, future development plans may increase the number of restrictions on new development or redevelopment projects, particularly residential properties in hillside areas and in low lying areas below hillside slopes.
Hidden Hills	As a fully developed community there is little room for new construction projects in Hidden Hills so no changes in residential patterns are anticipated if a landslide, debris flow, or mudflow occurs except in the case of loss of buildable land. Additionally, future building restrictions or requirements could be implemented to further mitigate the potential for future damage from landslides, debris flows, or mudflows which will result in a change in land use patterns.
Malibu	New development within Malibu is significantly restricted due to coastal constraints. Low lying areas along the riverine areas are subject to debris flows and mudflows while cliffside developments and mountain residential areas are susceptible to landslides. Consequently, structures in these areas (especially cliff side development and those located in isolated roads) may face future restrictions or may be converted to wildland if reconstruction is not feasible.
Westlake Village	The Westlake Village development plan as well as local regulations and requirements are in place to mitigate the impact of landslides, debris flows, and mudflows in the area. Regardless, if extreme weather in the area were to occur, riverine areas within Westlake Village and below the reservoir may experience downstream flooding which can cause debris flows and mudflows. Additionally, hillside areas may be undermined causing landslides. The result could cause changes in land use patterns due to additional development constraints especially those areas located in the hillsides and low lying streams in the city.

Impact of Population Patterns

City	Impact of Population Patterns
Agoura Hills	In recent years, the population of Agoura Hills has shown a slight decrease. Although construction in landslide, debris flow, and mudflow prone areas is managed by local regulations and development plans, as new development projects are completed within Agoura Hills, an increase in the population and population densities may be expected. As a consequence if a landslide, debris flow, and mudflow occurs, a number of residents could be impacted. Further, a landslide, debris flow, and mudflow event could result in additional restrictions on rebuilding efforts in hazard prone areas resulting in a change in population patterns.
Calabasas	The population of Calabasas has shown a minor decrease since the previous HMP update. Consequently, it is not anticipated that an increase in the risk to local residents due to landslide, debris flow, or mudflow will occur and population patterns are expected to remain unchanged unless areas of the city are deemed to be unusable.

City	Impact of Population Patterns
Hidden Hills	Recently, the population of Hidden Hills has shown a slight decrease and residential neighborhoods are well established. Consequently, population patterns are expected to remain unchanged unless areas of the city are deemed to be unusable due to a major landslide, debris flow, or mudflow.
Malibu	The population of Malibu has shown a minor decrease since the last census. Reconstruction of areas damaged by landslide, debris flow, and mudflow may result in a shift in local population densities and could even result in an increase in the amount of wildland areas where future development is prohibited leading to a slight reduction in the local population.
Westlake Village	The population of Westlake Village has slightly decreased since the previous HMP update. However as local area development / redevelopment projects occur, there is the potential for an increase in the number of people at risk of a landslide, debris flow, or mudflow especially in areas along hillsides and low lying riverine zones. Consequently, if a severe landslide, debris flow, or mudflow were to occur, future population densities may shift due to additional limits to construction/reconstruction in hazard prone areas.

Risk of Future Landslide, Debris Flow, Mudslide

For the LVMCOG Region, the risk of future climate change events was estimated by the Working Group using the following weighted formula:

Risk = (0.45 x Probability) + (0.30 x Magnitude/Severity) + (0.15 x Warning Time) + (0.10 x Duration)

Probability		Magnitude / Severity		Warning Time		Duration	
Level ID	Value	Level ID	Value	Level ID	Value	Level ID	Value
Unlikely	1	Negligible	1	Less than 6 hrs	4	Less than 6 hrs	1
Possibly	2	Limited	2	6 to 12 hrs	3	Less than 24 hrs	2
Likely	3	Critical	3	12 to 24 hrs	2	Less than one wk	3
Highly Likely	4	Catastrophic	4	More than 24 hrs	1	More than one wk	4

The result was a climate change risk rating of 6.40 (see Annex C Working Group HMP Risk Assessment Survey for additional details):

Hazard	Probability	Magnitude	Warning Time	Duration	Risk
Landslide (including Debris Flow and Mudslide)	3	3.67	20	9.5	6.40

LANDSLIDE, DEBRIS FLOW, AND MUDFLOW VULNERABILITIES

Landslides, debris flows, and mudflows can result in loss of life and injuries, damage or destroy homes, and cause significant economic harm to the area. Additionally, these events affect a variety of functions including utility services, transportation systems, and critical lifelines. Communities may suffer immediate damages and loss of service. Disruption of infrastructure, roads, and critical facilities may also have a long-term effect on the economy. Utilities, including potable water, wastewater, telecommunications, natural gas, and electric power are all essential to service community needs. Natural gas pipes may also be at risk of breakage from landslides, debris flows, or mudflows.

Roads

Public Works Departments along with other departments within the cities in the Las Virgenes-Malibu Region are responsible for cleaning-up slides that inhibit the flow of traffic or are damaging roadways. Public agencies can usually only repair the roadway itself, as well as the areas adjacent to the slide. Individual property damage does not fall under their immediate attention.

Landslide, debris flow, and mudflow hazards can be alleviated by grading slides, by: installing load bearing walls on roadsides and installing new drainage systems on slopes to divert water from potential landslide, debris flow, or mudflow areas. This type of response activity is often the most cost-effective in the short-term but is only temporary.

Lifelines and Critical Facilities

Landslides, debris flows, and mudflows can have direct and indirect impacts on lifelines and critical facilities. Closed transportation arteries may result in an inability of hospitals and other emergency facilities to receive and transport patients as well as obtain emergency supplies. Loss of power and telephone service are also potential consequences of landslide events. Soil erosion in hillside areas can undermine the soil supporting high voltage transmission towers and communication networks. Finally, soil displacement can result in pipeline breaks, further exasperating the potential for landslides.

For the LVMCOG region, specific areas vulnerable to landslides, debris flows, and mudflows include residential areas, businesses, commercial districts, and industrial sites located in or near hillside and mountain areas as well as regions below higher elevations in northern and southern Agoura Hills, southern and western areas of Calabasas, southern and western Hidden Hills, the Santa Monica Mountain areas of Malibu, and southern Westlake Village.

VULNERABLE POPULATIONS

In Agoura Hills, the elderly and those speaking languages other than English are vulnerable to landslides, debris flows, and mudflows. The elderly may have difficulty evacuating quickly due to mobility issues, and non-English speakers may struggle with understanding evacuation orders and safety instructions, increasing their risk.

Calabasas residents, including those on fixed incomes, transitory workers, homeless individuals, and elderly or disabled residents, face significant risks from landslides and related hazards. Fixed-income residents may lack the resources to repair damage or relocate. Transitory workers and homeless individuals often lack stable housing, making it difficult to find safe shelter. Elderly and disabled residents may experience significant difficulty in evacuating quickly, increasing their risk of harm.

In Hidden Hills, the older population, households with disabilities, and those with limited transportation capabilities are at high risk from landslides, debris flows, and mudflows. Older adults and those with disabilities may find it challenging to evacuate swiftly, and limited transportation options can leave these individuals stranded in hazardous areas. The sudden nature of these events can particularly endanger those with mobility issues.

Malibu's transitory workers, elderly population, lower-income residents, and homeless individuals are particularly vulnerable to landslides and related hazards. Transitory workers and the homeless often lack stable housing, increasing their risk. The elderly may face mobility challenges that hinder quick evacuation, while lower-income residents may lack the financial means to secure temporary housing or rebuild after such events.

In Westlake Village, the elderly, disabled, homeless individuals, and residents speaking a language other than English face significant risks from landslides, debris flows, and mudflows. The elderly and disabled may have difficulty evacuating due to mobility issues, while homeless individuals are highly vulnerable due to lack of shelter and resources. Non-English speakers may miss critical evacuation alerts and safety instructions, increasing their risk.

LANDSLIDE MITIGATION STRATEGIES

LVMCOG Mitigation Activities

Landslide mitigation activities include current mitigation programs and activities that are being implemented by local or regional organizations. Building and Zoning Codes provide examples of mitigation activities common to all LVMCOG cities.

Building/Zoning Codes

All cities within the Las Virgenes-Malibu Region follow the California Building Code. The CBC requires geotechnical investigation of the potential soil liquefaction and soil strength loss during earthquakes for development in the liquefaction zones. The geotechnical reports are to address potential consequences of any liquefaction and soil strength loss and discuss mitigating measures.

Agoura Hills

The City of Agoura Hills has implemented the following regulations in order to provide better preventive measures for loss of life and property due to landslide:

- Requirement for geotechnical and geologic report submittal and review prior to development entitlement.
- Requirement for graded slopes to be landscaped for stability.
- More restrictive foundation support requirements than the State adopted Building and Residential codes (CBC, CRC).

The following building codes provide examples of how Agoura Hills has enacted preventative measures against loss of life and property because of a landslide.

Agoura Hills Code Section	Title
8102 (ppp)	Engineered Grading Requirements
8103(qqq)	Seismic Design Provisions for Hillside Buildings
8102 (ss)	Retaining Walls
8202 (ddd) California Building Code Adoption & Local Grading Amendments	Maintenance of Protective Structures / Devices / Installations and Grading

In addition, 9652.5 – Policy: Hillside Management and Significant Ecological Areas specifies:

9652.5. - Policy.
Either a conditional use permit or an architectural review approval shall be obtained before the issuance of any building or grading permit, approval of minor land division or subdivision, importation of fill material for the purpose of altering natural terrain, or commencement of any construction or enlargement of any building or structure on any parcel that is in, or partly in, a hillside area or SEA. In addition to preserving the natural character of the hillsides and valleys within the City of Agoura Hills and ensuring the preservation of the scenic viewshed, hillside development regulations are designed to protect residents from geologic hazards, such as unstable soils and erosion, and the possible loss of life and destruction of property. The intention and policy of the city is to:

1. Encourage minimal grading which relates to the natural contours of the land as opposed to padding or stairstep grading;
2. Require the retention of trees and other vegetation which stabilize hillsides, retain moisture, prevent erosion, and enhance the natural scenic beauty, and, when necessary, require additional landscaping to promote the above;
3. Require immediate planting whenever appropriate to maintain cut and fill slopes;
4. Encourage a variety of building types and design to reduce grading and disturbance of the natural character of the area; and
5. Require the retention of natural landmarks and prominent natural features which enhance the character of a specific area.

Calabasas

The following building codes provide examples of how Calabasas has enacted preventative measures against loss of life and property due to landslide.

Calabasas Code Section	Title
Title 15 – Building and Construction	Chapter 10: Grading Permit Requirements and Procedures Chapter 11: Grading, Erosion and Sediment Control Standards 15.11.020 Excavations and Fills 15.11.050 Revegetation and Slope Surface Stabilization 15.11.070 Setbacks for Cut and Fill Slopes 15.11.080 Storm Drainage and Runoff 15.11.100 Erosion and Sediment 15.16 Flood Hazard Prevention

In addition, the City of Calabasas has enacted specific requirements for land use and development under Title 17 of the Calabasas Municipal Code. Regulations related to landslide mitigation include the following:

17.18.020 - Old Topanga (-OT) overlay zone.
A. Purpose and Applicability. The Old Topanga (-OT) overlay zone is applied to the Old Topanga area of the city. This is a mountainous area where existing parcels were created before modern zoning and subdivision regulations required appropriate relationships between parcel size, terrain, and building size. The intent of this zoning district is to:

1. Ensure that the scale of residential development is in reasonable proportion to the size of the building site and its environmental constraints, including slope and vegetation;
2. Provide standards for appropriate development in relation to the high fire hazards, flood hazards, access problems, and steep slopes of the areas to which this overlay zoning district may be applied; and
3. Ensure that development is consistent with the hillside and ridgeline regulations in Article III and the grading ordinance in Title 15.

17.18.025 - Calabasas Highlands (CH) Overlay Zone.
A. Purpose and Applicability. The Calabasas Highlands (-CH) overlay zone is applied to the Calabasas Highlands area of the city. These are mountainous areas where existing parcels were created before modern zoning and subdivision regulations required appropriate relationships between parcel size, terrain, and building size. The intent of this zoning district is to:

1. Ensure that the scale of residential development is in reasonable proportion to the size of the building site and its environmental constraints, including slope and vegetation;
2. Provide standards for appropriate development in relation to the high fire hazards, flood hazards, access problems, and steep slopes of the areas to which this overlay zoning district may be applied; and
3. Ensure that development is consistent with the hillside and ridgeline regulations of Article III in this title and the grading ordinance in Title 15.

Hidden Hills

Although the risk of landslide in Hidden Hills is low, the following building codes have been implemented as preventative measures to protect against the loss of life and property due to a landslide event.

Hidden Hills Code Section	Title
Title 5 – Land Use and Development	Chapter 5-9-3: General Provisions (8) Flood-Related Erosion-Prone Area Chapter 5-5B-4: Foundations on Expansive Soil Chapter 5-5B-6: Excavation and Grading J112.2: Geologic Hazard J113: Geology and Engineering Report Chapter 5-9-5: Provisions for Flood Hazard Reduction

As part of implementation of building codes to mitigate the risk of landslides, the City of Hidden Hills has an ongoing comprehensive hill slope management program.

Malibu

The City of Malibu Local Coastal Program Land Use Plan (LUP) adopted by the California Coastal Commission (9/13/2002) includes policies to minimize the hazards associated with shoreline and bluff development including slope stability and landslide potential in hillside areas. Specific policies related to landslide mitigation include:

C. Land Use Plan Policies

4.1 The City of Malibu and the Santa Monica Mountains coastal zone contains areas subject to hazards that present substantial risks to life and property. These areas require additional development controls to minimize risks, and include, but shall not be limited to, the following:

- Low Slope Stability & Landslide/Rockfall Potential: hillside areas that have the potential to slide, fail, or collapse.
- Fault Rupture: the Malibu Coast-Santa Monica Fault Zone.
- Seismic Ground Shaking: shaking induced by seismic waves traveling through an area as a result of an earthquake on a regional geologic fault.
- Flood prone areas most likely to flood during major storms.
- Liquefaction: areas where water-saturated materials (including soil, sediment, and certain types of volcanic deposits) can potentially lose strength and fail during strong ground shaking.
- Liquefaction/Flood prone areas where saturated sediments lie in flood plains.
- Tsunami: shoreline areas subject to inundation by a sea wave generated by local or distant earthquake, submarine landslide, subsidence, or volcanic eruption.
- Wave Action: shoreline areas subject to damage from wave activity during storms.
- Fire Hazard: areas subject to major wildfires classified in Fire Zone 4 or in the Very High Fire Hazard Severity Zone.

1. General Development

4.2 All new development shall be sized, designed and sited to minimize risks to life and property from geologic, flood, and fire hazard.

4.3 Information should be provided to the public concerning hazards and appropriate means of minimizing the harmful effects of natural disasters upon persons and property relative to siting, design and construction.

4.4 On ancient landslides, unstable slopes and other geologic hazard areas, new development shall only be permitted where an adequate factor of safety can be provided, consistent with the applicable provisions of Chapter 9 of the certified Local Implementation Plan.

4.5 Applications for new development, where applicable, shall include a geologic/soils/geotechnical study that identifies any geologic hazards affecting the proposed project site, any necessary mitigation measures, and contains a statement that the project site is suitable for the proposed development and that the development will be safe from geologic hazard. Such reports shall be signed by a licensed Certified Engineering Geologist (CEG) or Geotechnical Engineer (GE) and subject to review and approval by the City Geologist.

4.6 The remediation or stabilization of landslides that affect existing structures or that threaten public health or safety may be permitted. Alternative remediation or stabilization techniques shall be analyzed to determine the least environmentally damaging alternative. Maximum feasible mitigation shall be incorporated into the project in order to minimize adverse impacts to resources.

4.7 Hillside Management Program requirements shall be applicable to proposed development on steep slopes.

4.8 Grading and/or development-related vegetation clearance shall be prohibited where the slope exceeds 40 percent (2.5:1), except that driveways and/or utilities may be located on such slopes, where there is no less environmentally damaging feasible alternative means of providing access to a building site, provided that the building site is determined to be the preferred alternative and consistent with all other policies of the LCP.

4.9 Buildings within flood prone areas subject to inundation or erosion shall be prohibited unless no alternative building site exists on the property and proper mitigation measures are provided to minimize or eliminate risks to life and property from flood hazard.

4.10 New development shall provide adequate drainage and erosion control facilities that convey site drainage in a non-erosive manner in order to minimize hazards resulting from increased runoff, erosion and other hydrologic impacts to streams.

4.11 New development involving a structure dependent on a wastewater disposal system shall utilize secondary treatment, at a minimum, and evapotranspiration waste disposal systems or other innovative measures, where feasible.

4.12 Land divisions, including lot line adjustments, shall be prohibited unless all proposed parcels can be demonstrated to be safe from flooding, erosion, and geologic hazards and will provide a safe, legal, all-weather access road(s), which can be constructed consistent with all policies of the LCP.

4.13 Land Divisions including lot line adjustments shall be prohibited unless all proposed parcels and access roads are found to comply with all applicable fire safety regulations and all required approvals are obtained.

4.14 New development shall be prohibited on property or in areas where such development would present an extraordinary risk to life and property due to an existing or demonstrated potential public health and safety hazard.

4.15 Existing, lawfully established structures, which do not conform to the provisions of the LCP, may be maintained and/or repaired provided that such repair and maintenance do not increase the extent of nonconformity of the structure. Except as provided below, additions and improvements to such structures may be permitted provided that such additions or improvements comply with the current standards and policies of the LCP and do not increase the extent of nonconformity of the structure. Substantial additions, demolition and reconstruction, that result in demolition and/or replacement of more than 50% of the exterior walls shall not be permitted unless such structures are brought into conformance with the policies and standards of the LCP.

In addition to the above referenced policies, the City of Malibu Zoning and Building Codes address development regarding grading, drainage, general building guidelines on slopes, as well as Geotechnical Engineering Standards. The following codes are implemented as preventative measures for loss of life and property, in addition to maintaining standards.

Malibu Code Section	Title
Title 17 Zoning, Chapter 17.40 Property Development and Design Standards	Slope and Set Back Requirements
Title 26 Building Code, Appendix J Grading	J101.2: Flood Hazard Areas J101.5: Protection of Utilities J101.7: Storm Water Control Measures J103.1: Permits Required J104.2.1: Grading Designation J104.2.3: Engineered Grading Requirements J109: Drainage and Terracing J110: Slope Planting and Erosion Control
Title 26 Building Code, Chapter 1 Administration	Section 111 Engineering Geology and Soils Engineering Reports

Generally, the ordinance requires slope stability analyses for proposed developments with slopes steeper than 4:1 (horizontal:vertical). More detailed surface and subsurface investigations are warranted for slopes of 4:1 or flatter if indicated by engineering and geologic hazards.[30] This may include soils, vegetation, geologic formations, and drainage patterns. Site evaluations may also occur where stability might be lessened by proposed grading/filling or land clearing. Requirements for grading and erosion control are included in the Plan Check Submittal Checklist. Additionally, the City of Malibu has an Information Bulletin regarding Erosion Control, distributed to residents during heavy storms.

[30] City of Malibu, Guidelines for the Preparation of Engineering Geology and geotechnical Engineering Reports and Procedures for Report Submittal, 2013

City of Malibu Environmental Sustainability Department Permit Services
Plan Check Submittal Checklist – Grading

Site Address: Owner Name:

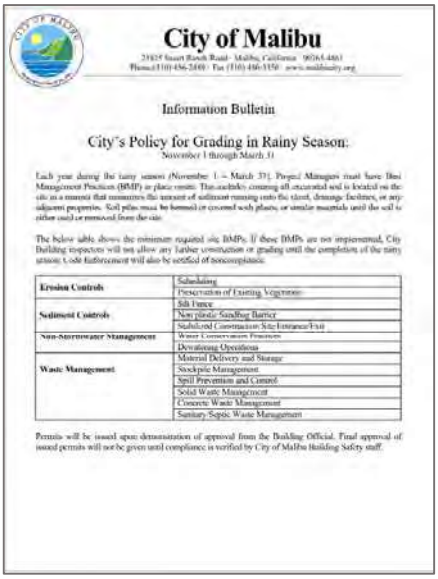
Applicant Name: Phone:

Submittal documents may vary based upon the scope of work. Prior to submitting for plan check applicants are advised to discuss their projects with a Building Permit Technician to determine what documentation will be required at time of submittal. **All plan check review fees, including City specialist fees shall be collected at time of submittal. All forms shall be completed at time of submittal.**

Submittal Requirements:

1. Submittal Checklist
2. City Specialist Review Fee (staff to check if fee review required)
   a) Coastal Engineering $_____ No Review Required _____
   b) EH Project Review $_____ No Review Required _____
   c) EH – OWTS Review $_____ No Review Required _____
   d) Geology $_____ No Review Required _____
   e) Public Works $_____ No Review Required _____
   f) PW – WQMP/ $_____ No Review Required _____
   "Water Quality Mitigation Plan
3. Three (3) sets* of Grading, Drainage, Erosion Control & Storm Water Management Plan (SWMP)
   a) Two (2) sets* of plans shall be "green" stamped (conformance approved by Planner of record
   b) Conditional Planning Commission Resolution or Notice of Decision applied on plan size sheet)
   c) Civil drawings shall be a minimum plan size of 24" x 36". Plans shall include, but not limited to:
   - Drawn to scale to indicate project address, assessor's parcel number, property owner's name, vicinity and extent of the work proposed. Grading quantities, proposed cut and fill range locations, showing proposed setbacks from property lines when applicable.
   - Proposed grades for the pad area around the proposed structure(s) to maintain its shape and building height.
   - Proposed drainage system including the proposed points of discharge.
   d) Total Grading Yardage Verification Certificate 8½" x 11" (signed on plan size sheet)
4. Hydrology and Hydraulic Computations - One (1) set 8½" x 11"
5. Total Grading Yardage Verification Certificate* (wet signature and signed by licensed civil engineer) _____
6. Earthwork / Grading Calculations – One (1) set 8½" x 11" _____
7. Soils Reports - Provide a memo of all Geology and Geotechnical and/or Coastal Engineering Reports including report date and reference number associated with review and verify reports are available in Trakit.

Figure 115: Malibu Plan Check Submittal Checklist - Grading



City of Malibu

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Information Bulletin

City's Policy for Grading in Rainy Season:
November 1 through March 31

Each year during the rainy season (November 1 – March 31), Project Managers must have Best Management Practices (BMP) in place onsite. This includes covering all excavated soil is located on the site in a manner that minimizes the amount of sediment running onto the street, drainage facilities, or any adjacent properties. Soil piles must be bermed or covered with plastic, or similar materials until the soil is either used or removed from the site.

The below table shows the minimum required site BMPs. If these BMPs are not implemented, City Building inspectors will not allow any further construction or grading until the completion of the rainy season. Code enforcement will also be notified of noncompliance.

Erosion Controls	Scheduling
	Preservation of Existing Vegetation
Sediment Controls	Silt Fence
	Non-plastic Sandbag Barrier
	Stabilized Construction Site Entrance/Exit
Non-Stormwater Management	Water Conservation Practices
	Dewatering Operations
Waste Management	Material Delivery and Storage
	Stockpile Management
	Spill Prevention and Control
	Solid Waste Management
	Concrete Waste Management
	Sanitary/Septic Waste Management

Permits will be issued upon demonstration of approval from the Building Official. Final approval of issued permits will not be given until compliance is verified by City of Malibu Building Safety staff.

Figure 114: Malibu Erosion Control Information Bulletin

These City of Malibu's goals and standards mitigate the impact of landslides, debris flows, and mudflows by managing hillside development, building, and construction including slope stabilization and set-back requirements. These standards enables the city to mitigate the potential landslides, debris flows, and mudflow which can cause loss of life, injuries, and property loss including damage to critical infrastructure and utilities. Furthermore, the socially vulnerable benefit since the elderly, disabled, very young and fixed income and financially underserved individuals may not have the resources or ability to recover from a catastrophic event.

Westlake Village

The City of Westlake Village has identified areas in the city that may have unstable slopes. Engineering/geology soils investigations are required prior to hillside development in unstable slope areas in order to mitigate the loss of property or life due to a landslide. Local building codes and regulations are managed by the Building and Safety Division of the Los Angeles County Department of Public Works, which serves under contract as the City's Building and Safety Department. The following building codes are implemented as preventative measures for loss of life and property due to a landslide event.

Westlake Village Code Section	Title
Building Code Chapter 8.5 Floodplain Management	8.5.015: Methods of Reducing Flood Losses
Article 9 Zoning Regulations	Chapter 9.17 Hillside Development

Specifically, Westlake Village Zoning Regulations require a Soils and Geologic Report when applying for a new construction project grading permit.

9.17.050 Site Planning Standards, E. Grading Standards
A detailed Soils and Geologic Report shall accompany each Grading Permit application. The report shall address such items as the recommended maximum slope angles for natural and manmade cuts and fill slopes, the effect of saturation or supersaturation of soils due to over-watering (irrigation), seismic safety, liquefaction, and soil or rock erosion. The foregoing items are minimum requirements for the report. The report shall address any other items necessary, in the professional opinion of the soils and/or geologic engineer, and as required by the City.

The City of Westlake Village's goals, policies, objectives, and programs are designed to mitigate the impact of landslides, debris flows, and mudflows by requiring standards for hillside development, building, and construction. By enforcing these standards, the city reduces the potential for loss of life, injuries, and property loss including damage to critical infrastructure and utilities. These efforts benefit the socially vulnerable such as the elderly, disabled, very young and fixed income or financially underserved individuals who may be at risk of loss of life, injury, and property damage/destruction - especially in areas along hillside slopes and below the city's hilltops.

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SECTION 11. WINDSTORM

THE NATURE OF THE WINDSTORM THREAT

Severe windstorms pose a significant risk to life and property by creating conditions that disrupt essential systems such as public utilities, telecommunications, and transportation routes. High winds have the potential to cause damage to local homes and businesses from falling trees and debris. In addition, windstorms increase the risk of wildfire as the moisture content decreases in brush and vegetation on hillsides, especially in urban interface areas.

HISTORICAL RECORD OF WIND EVENTS

History of Severe Winds in Southern California

The National Weather Service has documented the following severe wind events in Southern California since 2014.

Date(s)	Weather	Adverse Impacts
12.31.2022 to 1.1.2023	Strong winds accompanied a winter storm with gusts over 60 mph on ridgetops and adjacent desert slopes. The highest measured gust was 79 mph at Toro Peak. Gusts near the coast reached 35 to 40 mph.	Several trees at the coast were toppled, causing damage.
11.25.2022	This Thanksgiving, an upper low diving south through the Southwest propelled offshore winds, with many gusts 60 to 77 mph in the foothills. Sill Hill was the extreme outlier, achieving 88 mph.	
11.15 to 16.2022	Offshore winds exceeded 80 mph for a few locations in the foothills of the San Bernardino, Santa Ana, and San Diego County Mountains. Many more spots exceeded 60 mph.	
11.8 to 9.2022	A deep trough of low pressure brought strong winds to the region. Winds gusted to over 70 mph in the mountains, downing trees and triggering minor power outages. An impressive gust of 101 mph was recorded at Burns Canyon (east side of San Bernardino Mountains).	Trees were downed in the mountains and power outages were incurred.
9.9.2022	Remnants of Tropical Cyclone Kay brought strong, easterly winds early in the morning. Observed wind gusts in the mountains and foothills ranged from 70 to 95 mph. One gust from Cuyamaca peak came in at 727 a.m. and registered 109 mph, which was verified to be the strongest measured wind gust ever observed in Southern California. Other gusts: Big Black Mountain 96 mph, Sill Hill 91 mph, Otay Mountain 81 mph, Mt. Laguna Observatory 80 mph. Thankfully, wind gusts in the populated areas were not nearly as strong.	
1.21 to 22.2023	Strong Santa Anas peaked in the foothills of the San Gabriel and San Bernardino Mountains and adjacent valleys ranged from 50 to 80+ mph.	Numerous trees and power poles in Upland, Ontario and Claremont were downed, crushing several vehicles, damaging homes and knocking out power.
12.14.2021	Winter storm winds on the lee slopes of the mountains reached over 80 mph, while coastal areas experienced gusts over 40 mph.	Trees and power lines were damaged.

Date(s)	Weather	Adverse Impacts
2.28.2021	A great month for offshore winds as more Santa Anas developed. Fremont Canyon had the top gust at 81 mph, with Fontana and Jurupa Valley each reporting 60-mph gusts.	
2.25.2021	After several offshore wind events during February, a particularly strong Santa Ana blew. Gusts of 80to 90 mph were measured in the foothills north of San Bernardino, with gusts of 75 mph at Fremont Canyon and 72 mph in Fontana and Jurupa Valley.	A few trees in Devore were knocked down and a big rig tipped over in the Fontana area. Wind spread a fire in Bloomington.
1.28 to 29.2021	A powerful winter storm produced strong southerly winds of up to 80 mph in the mountains of Los Angeles and Ventura Counties.	
1.19.2020	Very strong and gusty Santa Ana winds of up to 99 mph hit the coastal hills of Ventura and Los Angeles counties.	Numerous small trees and branches were downed.
10.26.2020	A strong offshore wind, a "cool" Santa Ana, produced many exceeding 70 mph and a top gust of 88 mph at Fremont Canyon.	The winds toppled big rig trucks and downed mature trees in the northern Inland Empire. The dry winds also contributed to spreading two fire starts, the Blue Ridge and Silverado fires in eastern Orange County.
6.8.2020	Strong and gusty northerly winds impacted the mountains of Santa Barbara, Ventura and Los Angeles counties. Wind gusts up to around 75 mph were reported in some areas.	
2.25 to 26.2020	Strong surface high pressure over the Great Basin brought intense east to northeast winds to Southern California. The strongest winds were in the foothills of San Diego County where a peak wind gust of 106 mph from a mountain wave was recorded at Sill Hill. This is believed to be the strongest wind gust ever measured in San Diego County. Many other mountain locations reported wind gusts of 65-75 mph.	Two tractor trailers were overturned on I-8 in San Diego County, and many trees fell due to high wind.
2.10 to 11.2020	A wind storm from the north produced peak wind gusts of 60-70 mph in the wind-prone passes and canyons.	Winds overturned tractor trailers and downed trees.
1.29 to 30.2020	Strong offshore winds struck the region, with gusts reaching 70 mph.	Many trees were downed on homes and cars, and one home caught fire when a tree fell on it.
12.26.2019	A severe squall struck the coast and valley areas during the morning. Some wind gusts exceeded 40 mph.	The winds damaged property and felled trees in Ventura and National City.
11.28.2019	A squall line of strong winds and thunderstorms came ashore in San Diego County with wind gusts 40 to 50 mph.	Roof and tree damage was incurred in Carlsbad.
10.30 to 31.2019	Cool Santa Ana winds impacted the region. Northeasterly wind gusts up to 68 mph were reported across the mountains and valleys of Ventura and Los Angeles counties.	The Maria Fire started near Santa Paula in the critically dry vegetation, and burned into early November, eventually burning 9,999 acres.

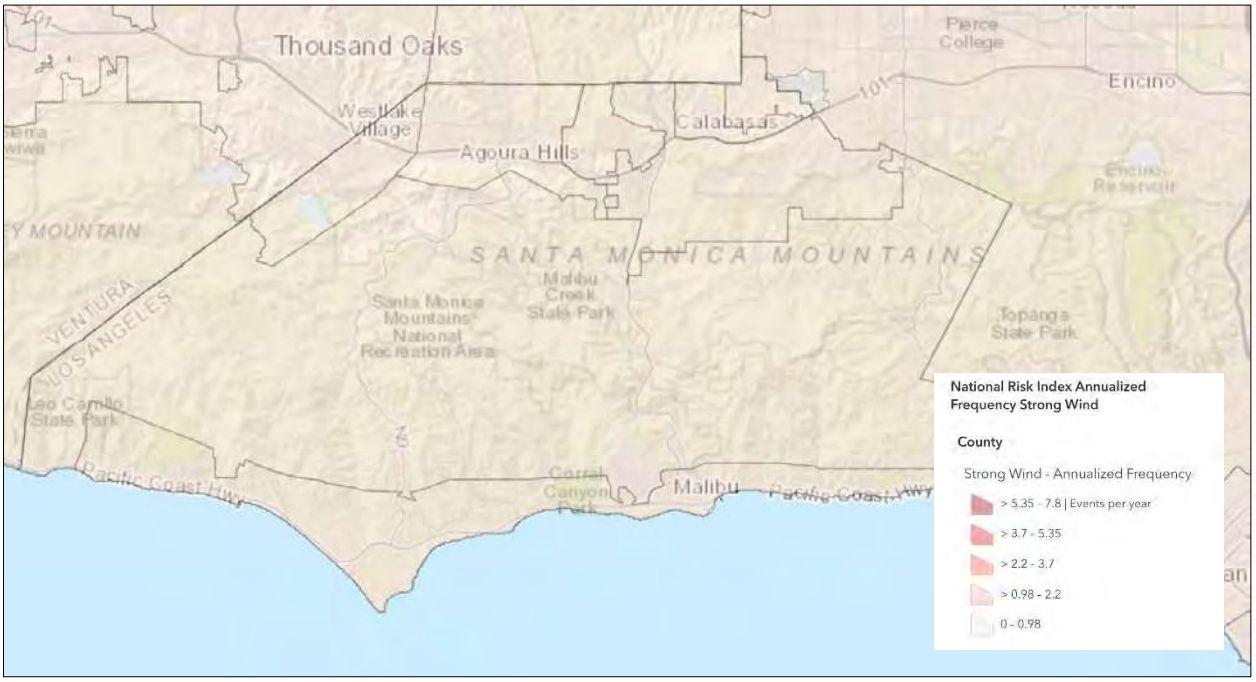
Date(s)	Weather	Adverse Impacts
10.10.2019	Several episodes of Santa Ana winds started on this day and continued through 10.24. Top wind gusts reached 60 to 80 mph. Relative humidity was near zero percent for several locations on several days during this period.	Numerous fires broke out across Southern California. The Saddleridge Fire would eventually burn over 8,700 acres in the foothills of the San Fernando Valley near Sylmar. Over 100 residences were either damaged or destroyed. There was one death due to cardiac arrest.
3.6.2019	A storm system brought strong winds to the mountains and deserts. A wind gust of 98 mph was clocked at Burns Canyon.	
1.21.2019	A period of Santa Ana winds immediately followed an inside slider, and brought strong winds to the region, especially the mountains. The peak observed wind gust was 84 mph at Burns Canyon.	Two people were killed when a large tree fell on their home in Point Loma.
10.15.2018	A deep low pressure axis extending across Southern California produced strong region-wide Santa Ana winds. The strongest gust reached 82 mph in Fremont Canyon, with widespread gusts above 40-50 mph reported in valley locations.	In Orange County, over 200 trees were downed and one person was killed when a tree fell onto their vehicle.
12.4.2017	Strong sundowner and Santa Ana winds persisted across Southern California for two weeks. Northerly wind gusts between 65 and 85 mph were reported at a few locations sometime during the two weeks.	On this day, the Thomas fire sparked to life just north of Santa Paula. Over the next few weeks it burned over southwest Ventura and southeast Santa Barbara Counties and became California's largest wildfire, burning 281,893 acres. It destroyed at least 1,063 structures and damaged 280 others. One firefighter and one civilian died.
3.30.2017	A trough of low pressure brought strong winds that produced mountain waves in the deserts. Numerous wind gusts in the 60-70 mph range were reported in Palm Springs and Borrego Springs.	Winds downed trees and power lines in Palm Springs, leaving more than 2,200 without power. Power line damage was also reported in Borrego Springs.
2.18.2017	A strong cold front swept into the coast, noteworthy for the strong prefrontal southerly winds. A gust of 67 mph was measured at Laguna Beach.	Significant tree damage was incurred near the coast and in the valleys.
1.9.2017	A strong mountain wave produced an impressive wind gust of 107 mph at Burns Canyon (east side of San Bernardino Mountains).	
8.16.2016	Gusty winds and low humidity swept through the Cajon Pass.	Winds fanned the Blue Cut Fire into a fury on this day. The fire spread rapidly forcing 84,000 mandatory evacuations and threatening 35,000 homes. Numerous roads were closed, including I-15 in both directions for two days. The fire destroyed 105 homes, and 313 smaller structures, and scorched 36,274 acres before it was extinguished.
3.28.2016	Mountain wave activity produced winds in excess of 50 mph that generated a dust storm with near zero visibility along Highway 247 in Lucerne Valley.	A multicar pileup ensued, involving more than a dozen vehicles and injuring 28 people.
1.31.2016	A powerful storm with a surface low that rapidly deepened in the Southern California Bight brought an exceptionally strong cold front with widespread damaging wind gusts of 40-70 mph from the coast to the mountains. A broken line of thunderstorms formed along the front and combined with post frontal winds.	Over 500 downed trees caused extensive damage. One woman was killed and two were injured when a pine tree eight feet in diameter crushed four cars in Pacific Beach.

Date(s)	Weather	Adverse Impacts
1.5 to 7.2016	A series of winter storms brought strong storm winds exceeding 60 mph across some coastal and valley areas.	Damage resulted mainly from thunderstorm wind gusts.
5.12 to 5.15.2014	A strong late-season Santa Ana wind event raked the region. Winds gusted to 40 to 45 mph in parts of the coast and valleys, and 60 to 80 mph in the foothills.	The winds knocked down many trees and power lines, and blew off some roof tiles. 14 fires erupted in San Diego County, killing one, burning over 27,000 acres and causing more than $50 million in property damage. The Poinsettia fire in Carlsbad and the Cocos Fire in San Marcos damaged homes.
4.30 to 5.1.2014	This strongest and most widespread offshore wind event in years occurred very late in the season. Gusts reached as high as 100 mph at Sill Hill near Cuyamaca Peak. Numerous other stations measured speeds that exceeded 60 mph.	Numerous trees and power lines were downed in the San Diego County interior. A Garden Grove school incurred roof damage. The Etiwanda fire near Rancho Cucamonga broke out.
2.28 to 3.1.2014	A strong storm hit Southern California with westerly winds. A report of a 102 mph wind gust came from the Bear Mountain ski resort weather equipment on 2.28. Thunderstorm wind gusts.	Numerous large trees and power poles toppled, as well as damage at John Wayne Airport. Thunderstorms on the 2.28 downed several trees and damaged power lines and other structures.

Table 150: A History of Significant Weather Events in Southern California - Organized by Weather Type (Feb 2023) – From 2014 to 2023

Windstorm Risk in the Las Virgenes-Malibu Region

Overall the risk of strong wind in the Las Virgenes-Malibu region is low with an annualized frequency less than one per the National Risk Index. Regardless, strong winds cannot be completely disregarded especially since annual Santa Ana winds result in local damage as well as an increase in the risk of severe wildfire.



Map 65: Annualized Frequency of Strong Wind National Risk Index

Disasters Declarations and Emergency Proclamations

FEMA disaster declarations allow state, tribal, and local governments to access federal aid for disaster response and recovery when overwhelmed. Similarly, the California Governor's Office of Emergency Services (Cal OES) issues proclamations to mobilize state resources and streamline procedures.

FEMA Disasters Declarations

No disaster declarations.

Cal OES Open State of Emergency Proclamations

Proclamation Date: 9/16/22 || Tropical Storm Kay

Tropical storm conditions brought heavy rainfall and strong winds across southern California, causing flooding and debris flows. The storm system, including debris flows, also damaged or destroyed roads in Imperial, Inyo, Los Angeles, and Riverside counties.

Proclamation Date: 1/4/23 || December 2022-January 2023 Storms

Severe winter storms struck California causing high winds, and expected flooding, and widespread power outages. This declaration was a hazard to the entire state of California.

STAKEHOLDER INPUT AND PARTICIPATION

To identify the threats, vulnerabilities, and consequences of a major windstorm on the Las Virgenes-Malibu Region, each member of the Planning Group which included representatives from the cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, and Westlake Village provided their input during planning meetings (see Annex B: Meeting Agendas and Attendees) and follow-up discussions. Specific topics of discussion included if any changes to the hazard priorities have changed since the previous HMP, how changes in the community have impacted the risk of each hazard, and what new mitigation actions can be taken. In addition, each member of the Planning Group as well as members of the public provided the input via online surveys (see Annex C: Community Disaster Preparedness and Risk Survey, Annex D: Planning Group HMP Risk Assessment Survey, and Annex E: Planning and Public Involvement).

CAUSES AND CHARACTERISTICS OF WINDSTORMS IN THE LAS VIRGENES-MALIBU REGION

Windstorm events in the Las Virgenes-Malibu Region can be caused by short term, topographically influenced, high wind gusts as well as extended duration Santa Ana wind conditions. "Santa Ana Winds" typically occur between October and February. Santa Ana winds are characterized by strong dry offshore winds originating from the Great Basin and Upper Mojave Desert. Wind temperatures can range from extremely hot to cold. Damage can occur directly from the high wind speeds generated or from the secondary effects of very low humidity, which increases the threat of wildfires, particularly in the fire-prone chaparral country.

WINDSTORM HAZARD IDENTIFICATION

Given the location and topography of the area, severe windstorms are a possibility. While the historic occurrence of these events on the Las Virgenes-Malibu Region has been minimal (when they occur) these events do pose a threat to life, property, utility delivery systems, infrastructure, and transportation. Furthermore, if a severe windstorm results in a prolonged utility disruption, it may be necessary to utilize private and public resources to aid in the care and sheltering of displaced residents. High winds also increase the threat posed by wildfires and can lead to major losses to the region. In addition, the economic impact of providing shelter, conducting repairs, and the disruption to local businesses can result in economic losses to the entire area. Finally, a severe windstorm can cause the loss of historic trees in the area and require the services of certified arborists.

The risk of trees falling is one of the more significant hazards resulting from high wind events. The leafy canopy and structural elements of a tree crown present a drag type barrier to winds. Trees naturally minimize wind drag through the re-orientation of leaves and through the independent motion of limbs and branches, thus reducing the transfer of uniform sway motion forces to the trunk. The Beaufort Wind Scale (BWS) specifically notes problems with trees as wind speeds increase. The BWS references the likelihood of whole tree motion as wind speeds exceed 32 miles per hour (MPH), twig breakage at 39 MPH and whole tree wind-throw as wind speeds exceed 55 MPH. The susceptibility of trees to wind-throw can be influenced by the general structural condition of the trees, the location of the trees in reference to wind patterns and the level and frequency of pruning maintenance.

The following chart depicts the Beaufort scale which is used to estimate wind strengths.

Beaufort Force	Speed (MPH)	Wind Description - State of Sea - Effects on Land
0	Less 1	Calm - Mirror-like - Smoke rises vertically
1	1-3	Light - Air Ripples look like scales; No crests of foam - Smoke drift shows direction of wind, but wind vanes do not
2	4-7	Light Breeze - Small but pronounced wavelets; Crests do not break - Wind vanes move; Leaves rustle; You can feel wind on the face
3	8-12	Gentle Breeze - Large Wavelets; Crests break; Glassy foam; A few whitecaps - Leaves and small twigs move constantly; Small, light flags are extended
4	13-18	Moderate Breeze - Longer waves; Whitecaps - Wind lifts dust and loose paper; Small branches move
5	19-24	Fresh Breeze - Moderate, long waves; Many whitecaps; Some spray - Small trees with leaves begin to move
6	25-31	Strong Breeze - Some large waves; Crests of white foam; Spray - Large branches move; Telegraph wires whistle; Hard to hold umbrellas
7	32-38	Near Gale - White foam from breaking waves blows in streaks with the wind - Whole trees move; Resistance felt walking into wind
8	39-46	Gale - Waves high and moderately long; Crests break into spin drift, blowing foam in well-marked streaks - Twigs and small branches break off trees; Difficult to walk
9	47-54	Strong Gale - High waves with wave crests that tumble; Dense streaks of foam in wind; Poor visibility from spray - Slight structural damage
10	55-63	Storm - Very high waves with long, curling crests; Sea surface appears white from blowing foam; Heavy tumbling of sea; Poor visibility - Trees broken or uprooted; Considerable structural damage
11	64-73	Violent Storm - Waves high enough to hide small and medium sized ships; Sea covered with patches of white foam; Edges of wave crests blown into froth; Poor visibility - Seldom experienced inland; Considerable structural damage
12	>74	Hurricane - Sea white with spray. Foam and spray render visibility almost non-existent – Widespread damage. Very rarely experienced on land.

Table 151: Beaufort Scale

Estimated Impact of an Event

If a severe windstorm were to occur, the consequences to local populations and housing could be significant. The table below provides the estimated impact of a disaster using a 1% loss baseline for the impact to the total population of the LVMCOG and to Owner-Occupied housing units.

Category	Agoura Hills	Calabasas	Hidden Hills	Malibu	Westlake Village	Impact if a 1% Loss Occurs
Population	20,362	23,410	2,182	10,915	8,081	640
Total Owner-Occupied Units	5,861	6,010	603	3,395	2,492	184
Median Home Value	$857,700	$1,141,600	$2,000,000+	$2,000,000+	$1,029,100	More than $258M (based on an average home value of $1,405,680 x Total Owner Occupied Units Impacted)

Table 152: Estimated Population and Economic Loss of Multiple Landslides

Source U.S. Census Bureau 2021 American Community Survey 5-Year Estimate

Based on a 1% loss projection, more than 640 people could be significantly impacted, and an estimated 184 homes damaged resulting in over $258 million in losses for owner-occupied housing units (see Community Profile section for population, housing, and economic data).

Las Virgenes-Malibu Windstorm Probability

According to the FEMA National Risk Index, the Los Angeles region records the chance of a windstorm as 0.2 events per year.

Impact of Climate Change

Climate change has a regional impact. As a result, all cities within the LVMCOG are subject to windstorms though wind patterns in Malibu may differ somewhat from Agoura Hills, Calabasas, Hidden Hills, and Westlake Village due to Malibu's coastal location. The impact of severe windstorms in the region will have a similar impact to all cities due to wind caused events such as power outages, property damage, and an increase in the intensity and length of wind driven wildfires (which are exasperated by sporadic high rainfall years leading to increased vegetation growth followed by lengthy periods of drought).

Impact of Land Use and Development

City	Impact of Land Use and Development
Agoura Hills	During severe windstorms, developed areas located in canyon areas and hillsides may be at greater risk of wind driven structural damage as well as wildfires. However, it is not anticipated that future development densities and/or local land use plans will change since building codes require minimum standards to mitigate the threat of wind driven damage. Nonetheless, a greater emphasis on regulations related to brush clearance to prevent catastrophic wildfires could occur.
Calabasas	Structures located in canyon areas and hillsides may be at greater risk of wind driven damage and wildfires though it is not anticipated that future development densities and/or local land use plans since local building standards and codes are designed to mitigate the threat of wind damage. Nevertheless, a greater emphasis on regulations related to brush clearance to prevent catastrophic wildfires could be implemented.
Hidden Hills	Severe windstorms are not expected to result in changes in residential patterns or land use in Hidden Hills. However, increased monitoring and control of tree management and brush clearance could be implemented. Additionally, structures experiencing roof damage may require retrofitting to meet the latest build code.
Malibu	During severe windstorms, developed areas located in canyon areas and hillsides may be at greater risk of wind driven structural damage as well as wildfires. In addition, coastal zones are subject to wind driven high surf causing erosion and flood inundation. Regardless, it is not anticipated that future development densities and/or local land use plans will change since building codes require minimum standards to mitigate the threat of wind driven damage and development along the coast is strictly managed. However, a greater emphasis on regulations related to brush clearance to prevent catastrophic wildfires could occur and additional coastal restrictions could be considered.
Westlake Village	Developed areas located in canyon areas and hillsides in Westlake Village may be at greater risk of wind driven structural damage as well as wildfires. However, it is not anticipated that future development densities and/or local land use plans will change since building codes require minimum standards to mitigate the threat of wind driven damage. Regardless, a greater emphasis on regulations related to brush clearance to prevent catastrophic wildfires could occur as well as additional monitoring of tree management programs.

Impact of Population Patterns

City	Impact of Population Patterns
Agoura Hills	Severe windstorms are sporadic and are not expected to cause significant changes to the population of Agoura Hills. The exception would be in the case of wind driven wildfires that could impact hillside areas of the city and downslope communities subject to mudflows - resulting in temporary changes to population patterns and densities.
Calabasas	Windstorms are not anticipated to significantly impact population patterns in the City of Calabasas . However, as with other local communities, the secondary effects of severe wind such as a major wildfire could temporarily change population densities in areas destroyed by fire or at risk of future mudflows.
Hidden Hills	Population patterns are expected to remain unchanged due to severe wind. Secondarily, if a wind driven wildfire were to occur in the City of Hidden Hills, a short term change in population may occur but it is anticipated that the rebuilt areas would return to current levels.
Malibu	Windstorms are not expected to change population patterns in the City of Malibu. However, severe windstorms could result in wind driven wildfires which could cause a temporary reduction of the population as structures are rebuilt. Additionally, wind driven high surf in coastal zones could cause damage but while these areas include some single family residences, large parts are open space beach and parking as well as commercial or short term rental properties.
Westlake Village	Severe windstorms are generally irregular events and are not expected to cause significant changes to the population of Westlake Village. However, short term effects could include wind driven flooding along the reservoir and an increased risk of wildfires. Though damaged areas can be expected to be repaired so population patterns should return to normal.

Risk of Future Severe Windstorm

For the LVMCOG Region, the risk of future climate change events was estimated by the Working Group using the following weighted formula:

Risk = (0.45 x Probability) + (0.30 x Magnitude/Severity) + (0.15 x Warning Time) + (0.10 x Duration)

Probability		Magnitude / Severity		Warning Time		Duration	
Level ID	Value	Level ID	Value	Level ID	Value	Level ID	Value
Unlikely	1	Negligible	1	Less than 6 hrs	4	Less than 6 hrs	1
Possibly	2	Limited	2	6 to 12 hrs	3	Less than 24 hrs	2
Likely	3	Critical	3	12 to 24 hrs	2	Less than one wk	3
Highly Likely	4	Catastrophic	4	More than 24 hrs	1	More than one wk	4

The result was a climate change risk rating of 3.93 (see Annex C Working Group HMP Risk Assessment Survey for additional details):

Hazard	Probability	Magnitude	Warning Time	Duration	Risk
Severe Windstorm	4.33	3.67	3	4.33	3.93

WINDSTORM VULNERABILITIES

Windstorms can result in damage to structures, disrupt utilities, and require emergency tree services (i.e. limb failures, clearance of private property trees fallen into roadways, etc.). With regards to wind related damage to structures; the Las Virgenes-Malibu Region has not experienced significant damage due to windstorms during the last decade. Nevertheless, the impact of a severe windstorm can be significant and mitigation planning can reduce losses if an event were to occur.

Windstorms can cause the failure of critical infrastructure such as wind-driven power outages, building damage. Such critical infrastructure failures may require days or weeks to repair. In addition, the impact to business and industry can result in immediate and long term economic loss and equipment may be damaged resulting in increased recovery costs to residents, businesses, commercial, and industrial organizations. Finally, vulnerable populations dependent on electrical power for medical devices and air conditioning or heating are at risk as are those dependent on local jobs for income. Areas especially vulnerable to severe wind include hillside and mountain areas as well as mountain passes in northern and southern Agoura Hills, southern and western areas of Calabasas, southern and western Hidden Hills, the Santa Monica Mountain areas of Malibu, and southern Westlake Village. Specific windstorm related issues are outlined below.

Life and Property

Detached tree limbs and building elements present a hazard to life and property as well as infrastructure. Furthermore, utility providers and emergency services can be overwhelmed during a major event. At risk populations include assisted care facilities and home-bound residents that are dependent on electrical power (see Utilities and Infrastructure section below). For example, in December 2011, the City of Pasadena, California experienced a severe windstorm with reported gusts near 100 MPH. The resulting power outages and debris impacted residents for weeks.

Utilities and Infrastructure

Windstorms can cause structural damage to buildings and other critical infrastructure. Overhead electrical and telephone lines are particularly vulnerable to damage from wind and debris as are microwave and satellite facilities. High winds commonly occur during winter storms and can cause trees to bend, sag, or fail (tree limbs or entire trees) which then come into contact with nearby power lines. Fallen trees can cause short-circuiting and conductor overloading. Wind-induced damage to the power system causes power outages to customers, incurs cost to make repairs, and in some cases can lead to ignitions that start wild land fires. In order to prepare for such events, Southern California Edison (SCE) has developed its own Hazard Mitigation Plan.

Transportation

Windblown debris, tree limbs and wind thrown trees can damage traffic control apparatus, block roadways, damage vehicles, and cause extreme traffic congestion - impeding emergency and vehicles and hampering repair efforts.

Increased Fire Threat

The Las Virgenes-Malibu Region is subject to Santa Ana Winds with regards to their impact on fire conditions. Winds can serve as a catalyst in the canyons to spread fire at a rapid rate. Prolonged winds during the warmer months of the year can decrease vegetation moisture levels and increase the ignition potential in dry underbrush. When urban/wildland interface fires occur, Santa Ana Wind conditions can drive flames and increase the spread speed and severity of the fire. This is a significant concern near homes, especially where brush clearance has been lax.

During high wind periods, there is also a threat of downed power lines causing wildfires. In response, SCE began a public notice campaign to reiterate its policy that utility power may be shut-off during high fire risk periods when extreme weather threatens the power lines.

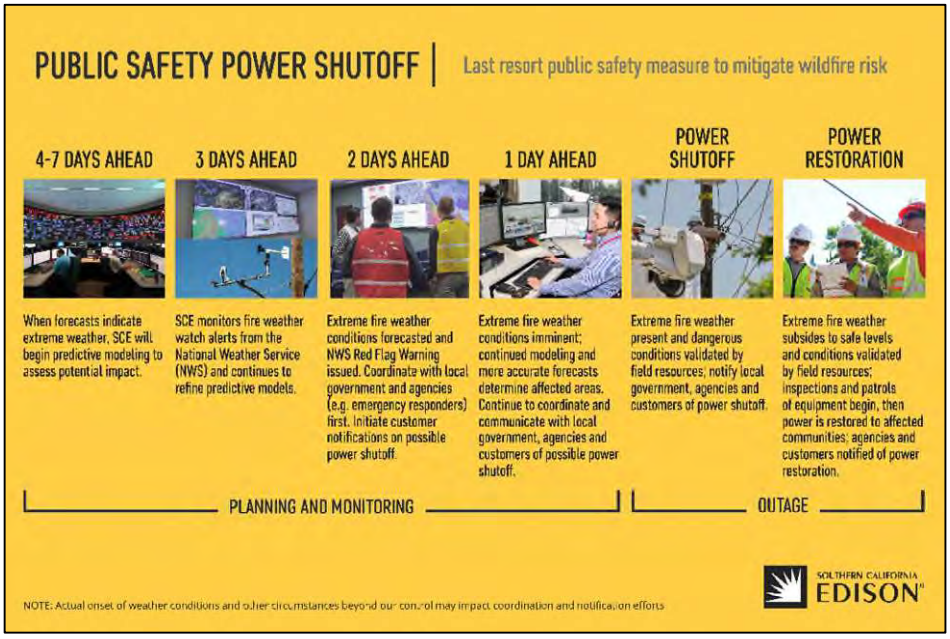


Figure 116: SCE Public Safety Power Shutoff Process

In addition, on April, 14,2021 Southern California Edison provided a presentation to the Agoura Hills Council meeting to provide an overview of its Vegetation Management Program. The purpose of the program is to reduce of wildfire due to downed power lines during severe weather events such as severe winds.

Santa Ana Winds

"Santa Ana Winds" are generally defined as warm, dry winds that blow from the east or northeast (offshore). Commonly, Santa Ana winds develop when a region of high pressure builds over the Great Basin (the high plateau east of the Sierra Mountains and west of the Rocky Mountains including most of Nevada and Utah). These regional winds typically occur from October to March and, according to most accounts, are named either for the Santa Ana River Valley where they originate or for the Santa Ana Canyon, southeast of Los Angeles, where they pick up speed. These winds occur below the passes and canyons of the coastal ranges of Southern California and in the Los Angeles basin.

Map 66: Santa Ana Wind Circulation Pattern

The complex topography of Southern California combined with various atmospheric conditions creates numerous scenarios that may cause widespread or isolated Santa Ana events. Santa Ana winds often blow with exceptional speed in the Santa Ana Canyon. Forecasters at the National Weather Service offices in Oxnard and San Diego usually place speed minimums on these winds and reserve the use of "Santa Ana" for winds greater than 25 knots 28.8 mph). These winds accelerate to speeds of 35 knots (40.3 mph) as they move through the canyons and passes, with gusts up to 50 to 60 knots (57.5 mph to 69.0 mph).

Figure 117: Santa Ana Wind Satellite Image

Source: NASA / JPL-Caltech, 2002

The Santa Ana Wind Circulation Map (Photojournal JPL NASA) shows the direction of the Santa Ana winds as they travel from the stable, high-pressure weather system called the Great Basin High through the canyons and towards the low-pressure system off the Pacific. Clearly, the City of Santa Clarita is in the direct path of the ocean-bound Santa Ana winds Clockwise circulation around the center of this high-pressure area forces air down slope from the high plateau. The air warms as it descends toward the California coast at the rate of 5 degrees Fahrenheit per 1000 feet due to compressional heating. Thus, compressional heating provides the primary source of warming. The air is dry since it originated in the desert and it dries out even more as it is heated. Resulting in low humidity and increase risk of wildfires.

VULNERABLE POPULATIONS

In Agoura Hills, the elderly and those speaking languages other than English are particularly vulnerable to windstorms. The elderly may face increased risk of injury from debris and falling objects and may have difficulty securing their homes against high winds. Non-English speakers may struggle with receiving timely warnings and understanding safety measures, increasing their risk of harm.

Calabasas residents, including those on fixed incomes, transitory workers, homeless individuals, and elderly or disabled residents, face heightened risks during windstorms. Fixed-income residents may lack the resources to invest in home fortifications or temporary relocation. Transitory workers and homeless individuals may not have access to reliable shelter, increasing their vulnerability. Elderly and disabled residents may experience significant difficulty in securing their homes and protecting themselves from debris and falling objects.

In Hidden Hills, the older population, households with disabilities, and those with limited transportation capabilities are at substantial risk from windstorms. Older adults and those with disabilities may find it challenging to secure their homes and protect themselves from flying debris. Limited transportation can hinder their ability to reach safer areas, potentially leading to prolonged exposure to hazardous conditions.

Malibu's transitory workers, elderly population, lower-income residents, and homeless individuals are particularly vulnerable during windstorms. Transitory workers and the homeless often lack stable housing, making it difficult to find safe, wind-resistant shelter. Elderly individuals may struggle with mobility issues that hinder securing their homes and protecting themselves, while lower-income residents may lack the financial means to fortify their homes against wind damage.

In Westlake Village, the elderly, disabled, homeless individuals, and residents speaking a language other than English face significant risks from windstorms. The elderly and disabled may find it difficult to secure their homes and protect themselves from flying debris due to mobility issues and health concerns. Homeless individuals are highly vulnerable due to lack of shelter and resources. Non-English speakers may miss critical warnings and safety instructions, increasing their risk during windstorms.

WINDSTORM MITIGATION STRATEGIES

Interagency Efforts

In the case of buildings and structures, the likelihood of structural element detachment is influenced by local building code requirements, the location of buildings in reference to wind patterns and in the level of maintenance and upkeep. In addition, one of the strongest and most widespread existing mitigation strategies pertains to tree clearance.

Currently, California State Law and LA County Fire Code requires utility companies to maintain specific clearances (depending on the type of voltage running through the line) between electric power lines and all vegetation (Fire Code section 325.1 Electrical Transmission Lines). Furthermore, homeowners are required to allow a utility company to comply with the law. Failure to provide access to utility power lines can result in liability to the homeowner for damages or injuries resulting from a vegetation hazard. Many insurance companies do not cover these types of damages if the policy owner has refused to allow the hazard to be eliminated.

Continuous upgrades to engineering design criteria based on the latest industrial progress, geotechnical findings, and Code revisions are being conducted. For instance, Dynamic Shake Table Tests were recently made mandatory for certain equipment in addition to analytical design.

LVMCOG Mitigation Activities

Agoura Hills

In order to mitigate the impact of windstorms, the City of Agoura Hills maintains an inventory that currently has 4,236 trees listed (as of 2023). The tree inventory is segmented into grids (1,2,3,4,5) and the goal is to maintain each grid every two years then the inventory is updated accordingly. The online inventory is updated whenever any tree trimming or maintenance is performed. The city utilizes this tree inventory to monitor when pruning is necessary to mitigate the risk of falling trees and large branches onto people, structures, electrical lines, vehicles, and roadways.

Additionally, keeping a tree inventory as well as their scheduled pruning to reduce damage from windstorms benefits at-risk populations in the area such as elderly and younger residents who require transportation and electrical power. The reason these activities are a benefit is that unmaintained tree branches could be blown off in a windstorm and cause damage harmful to at-risk individuals due to blocked roads limiting access to medical care, downed power lines, and damage to homes.

Local codes on tree pruning are reviewed and updated when new codes regarding tree maintenance were implemented. Per the Agoura Hills Planning Department there is a reduced fee for an oak tree trimming permit application for members of the community. This reduced fee program is especially beneficial to lower income and older populations on fixed incomes that cannot effort to prune trees on their properties to prevent future wind damage to structures.

Calabasas

The Environmental Commission of the City of Calabasas among other duties is responsible for maintaining the Urban Forestry Master Plan and making recommendations to carry out the policies and goals of that plan. The Urban Forestry Master Plan includes the monitoring and maintenance of the city's tree population. These efforts are intended to mitigate the threat of falling trees and

large branches from causing injuries, damaging homes and vehicles, blocking roadways, and downing electrical lines causing power outages. For example, tracking the city tree population and encouraging proper care of privately owned trees benefits vulnerable populations in Calabasas such as older residents and single parent households with younger residents who may be economically challenged. These activities benefits these populations because it mitigates the chances of weak or dead branches or trees toppling in a windstorm causing injuries, damaging homes, vehicles, or other property these individuals would struggle to finance repairs.

Additionally, the city has a program that grants free Healthy Oak Tree permits. The intent of this program is to encourage proper maintenance of privately owned oak trees in order to reduce safety hazards. This free program is especially beneficial for low income and fixed income residents who may not otherwise be incentivized to maintain the trees on their properties.

Hidden Hills

The City of Hidden Hills has had no incidents of loss of property or life due to windstorm activity therefore it does not take any steps with regards to current mitigation activities. Nevertheless, the city does issue seasonal bulletins to encourage wind related mitigation such as tree pruning, brush clearing, roof and landscape maintenance to reduce the risk of severe windstorm damage. These bulletins are important reminders to local vulnerable populations such as the elderly and single parent households. Further, as climate change driven windstorms increase, future mitigation strategies will be considered. Additionally, if a severe wind event occurs, the city has programs to address the needs of vulnerable populations (very young, elderly, disabled, etc.) to facilitate evacuation and/or in-place care.

Malibu

The City of Malibu has begun a citywide tree pruning program. In addition, the city is using aerial photographs to update their GIS and map every tree on public property. These efforts further the city's mitigation activities by reducing the risk of wind driven wildfire due to tree damaged power lines igniting a fire and limiting the amount of burnable fuel in the area. Additionally, this active tree program reduces the risk of wind damage to property and potential injury to individuals from falling tree limbs. Furthermore, tree pruning and mapping of trees on public property can benefit at risk populations such as older residents and transitory populations and the homeless. By properly maintaining its trees and pruning them, the chances of dead trees or branches falling off in a windstorm and damaging property or temporary shelters can be mitigated.

Westlake Village

The City of Westlake Village has completed a census and assessment of all trees on public property. Hazardous trees were removed. Further, the city has mapped all of its trees using a GIS program and prunes trees on a three-year cycle. By removing hazardous trees, trimming branches, and continually mapping tree locations, at risk populations such as elderly, disabled, young and financially underserved individuals benefit by reducing the risk of injury and property loss. Additionally, removing hazardous trees and pruning programs mitigates the potential for large or unstable branches coming loose during a windstorm and damaging residencies and critical infrastructure.

SECTION 12. FLOOD

THE NATURE OF THE FLOOD THREAT

The Las Virgenes-Malibu area is situated near the western portion of the Santa Monica Mountains and has experienced flooding in the past from major winter storm events. Flooding poses a threat to life and safety and can cause severe damage to public and private property. Due to the natural mountainous terrain as well as changes in the landscape (due to development) and natural disasters such as wildfire, flooding can be a factor in the area. In addition, the City of Malibu coastline is at risk of tsunami. Although the risk is relatively low, flooding due to tsunami can occur.

HISTORICAL RECORD OF FLOODING

History of Flooding in Southern California

Historically, the region has experienced extended periods (on the order of years) of either wet or dry weather. Additionally, in any given year the amount of precipitation can vary widely. The National Weather Service has documented the following significant flood and flash flood events in Southern California since 2014.

Date(s)	Weather	Adverse Impacts
8/20/2023 to 8/21/2023	Tropical storm Hilary made landfall in Southern California resulting in 4 to 5 inches of rain in the valley region that includes the LVMCOG though the most severe rain fell to the east and in the mountain regions.	Street and freeway flooding, fast moving storm channels, and cancelled flights at local airports.
12/31/2022 to 1/1/2023	A potent storm moved in late on 12.31.2022 and continued into 1.1.2023. The heaviest band of rain straddled the region just as the clock struck midnight. Many mountain locations recorded over 4" of precipitation, mostly rain. Lytle Creek took top honors with 5.85". Lower elevations generally got 1-2", but Coto de Caza overachieved with 3.62".	Street and stream flooding was observed in many areas and was particularly serious next to the Fairview burn scar south of Hemet.
12/11/2022 to 12/12/2022	An atmospheric river was steered into Southern California by a deep trough and brought heavy rain, ranging from 0.50-2" in the lowlands, generally 24" in the mountains (except outlier Lytle Creek with 5.03"), and 0.03" to about one-third inch in the deserts.	Areas of urban flooding developed, and swift-water rescues were made in Ontario and Anaheim.
11/8/2022 to 11/9/2022	A deep trough of low pressure with copious moisture brought heavy rain to the region. Total rainfall amounted to 1 to 2" coast and valleys, and 3 to 5" in the mountains. A peak of 9" was recorded in Lytle Creek.	Heavy rain resulted in urban flooding, including three fatalities in a channel in Cucamonga creek.

Date(s)	Weather	Adverse Impacts
9/12/2022	Moisture from remnants of Tropical Cyclone Kay brought precipitable water measured at 2.35" inches, a record level for September and the second wettest all-time in the sounding record back to 1956. Rainfall ranged from 2 to 6" from the Anza Borrego Desert to Mt. Laguna on 9.9. Thunderstorms erupted in the mountains and desert and Inland Empire from 9.10 to 9.12. Including one storm producing a rain rate of 2.44" in one hour at Raywood Flats on 9.12.	On 9.12, flash floods and debris flows flowed into Forest Falls and Oak Glen, where 30 homes and businesses were damaged. Search and rescue operations found all missing persons but one, a woman who was killed in Forest Falls. 14 evacuees spent at least one night at a Red Cross shelter. Several roads and highways in this area were blocked by debris and closed. Other massive debris flows, including large trees and boulders, flowed down Banning and Mias Canyons above Banning. Flash floods were also reported in Barona and Temescal Valley.
8/13/2022	Thunderstorms hit the San Bernardino Mountains. 2.28" at Yucaipa Ridge.	The rain came in a short time and triggered debris flows and flash floods into Forest Falls.
8/8/2022	Heavy thunderstorms struck Mt. San Jacinto. 1.98" fell. A heavy thunderstorm complex struck the southern Anza Borrego Desert. Its giant anvil plume with light rain spread all the way to the coast across much of the San Diego metro area.	A serious flash flood in Chino Canyon closed the Palm Springs Tram and stranded visitors for a time. Another flash flood took out part of Highway S2 in the Anza Borrego Desert.
7/31/2022	Numerous heavy thunderstorms struck the El Dorado burn scar (above Yucaipa). Rainfall intensities exceeded 1" in 1 hour and a couple approached 2" per hour. Some weakening thunderstorms managed to drift across southern Orange County to the coast.	Significant flash floods and debris flows that closed parts of highway 38 near Angelus Oaks for days. Storms in the high desert led to several flash floods.
12/28/2021 to 12/30/2021	A wet and powerful storm struck the region, with emphasis on Ventura and Los Angeles Counties, where rainfall ranged from 3 and 7 inches with local amounts up to 9 inches in the mountains. 2 to 5 inches fell in far western San Bernardino County.	Flooding of streets filled with water to the curbs in Seal Beach. Boulders fell onto Highway 138 in Crestline.
12/23/2021 to 12/24/2021	A series of storms paraded through the region, each bringing heavy rain during late December. Two-day totals for this storm reached 6" in the mountains, but Lytle Creek alone achieved just over 8". The northern Inland Empire got 2-5", while most other lower elevation stations received 0.75-3". Even parts of the lower deserts got more than one inch.	Several mountain roadways were washed out, including Highways 18 and 243. Flooding was observed in the Mojave River in Hesperia, along Indian Canyon Road near Palm Springs, in San Bernardino, in Cherry Valley just below the Apple Fire burn scar, and in nearby Oak Glen. Debris flows inundated parts of Silverado Canyon within the Bond Fire burn scar.
12/14/2021	A significant winter storm brought heavy rain to lower elevations. 5 to 6" of rain fell on the southwest slopes of the San Gabriel and San Bernardino Mountains, with Lytle Creek singularly achieving 7.06".	Several debris flows occurred, in the Bond Fire burn scar in eastern Orange County and below the Apple Fire burn scar near Beaumont. Localized flooding was common across the region. Rocks and debris closed some mountain highways.
10/21/2021 to 10/25/2021	A significant storm for October tapped into a weakening atmospheric river to bring over 2" of rain to the region including over 1.4 inches in Malibu. In the San Bernardino Mountains. 1-2" were common in the mountains, while 0.25- 1" was common at lower elevations, including the high desert.	The rain combined with vulnerable burn scars to produce rock slid mud and debris flows that closed es, off several highways in the mountains. These closures were near Big Bear Dam, Oak Glen and Forest Falls.

Date(s)	Weather	Adverse Impacts
8/10/2021	A mesoscale convective system (organized thunderstorms) produced heavy showers and thunderstorms in the desert, mountains and even to the coast near San Diego. San Felipe received 2.49", Ranchita 2.27", and Mason Valley 1.84".	Flash flooding occurred all around Borrego Valley, Desert Research Institute, Airport, Coyote Canyon and adjacent citrus tree fields.
7/30/2021	A surge of monsoon moisture produced numerous heavy thunderstorms across the mountains. Rain rates of 1.0 to 1.5 inches per hour were observed in the heavier storms.	Several flash floods and debris flows occurred, particularly on the El Dorado Fire burn scar along Highway 38 near Angelus Oaks.
7/26/2021	Widespread showers and thunderstorms hit the entire region, even to the coast. Many locations in mountains and deserts received over one inch of rainfall, with Lake Cuyamaca topping the list at 2.32", Indio 1.60" and Apple Valley 1.34". West of the mountains, amounts ranged from 0.01" to 0.83" inch at Rincon Springs. Distribution was not uniform in any respect.	A flash flood spread sand and rocks across Dillon Road and Ramon Road near Thousand Palms. Several Indio streets were flooded with water.
3/11/2021	A powerful storm contained a heavy burst of rain in eastern Orange County that struck the Bond Fire burn scar in Silverado Canyon. 0.20 inch of rain fell in 15 minutes.	A debris flow went over roads and into homes, damaging six homes and eight vehicles in Silverado. The flow also closed a stretch of Silverado Canyon Road.
1/28/2021 to 1/29/2021	A powerful winter storm and atmospheric river brought heavy rain. 4 to10 inches fell across San Luis Obispo and Santa Barbara Counties, 2 to 6 inches fell in Ventura County and 1 to 4 inches fell in Los Angeles County. 1.5 inches of rain fell across Santiago Canyon in eastern Orange County.	Many areas flooded, including Santiago Canyon where mud and debris flows covered roads and damaged homes. A vehicle got stuck in floodwaters in Perris, prompting a water rescue. 8 people were trapped in a flooding storm drain between Otay Mesa and San Ysidro. 7 were helped to safety, but one perished.
4/8/2020 to 4/10/2020	A warm front moved through the region on 4/8 and brought waves of showers from south to north. Following the warm front, an upper low moved into the California Bight and stalled on 4/9, bringing 3 to 5 inches of rain to Orange County and San Diego County through 4/10. Many locations recorded their highest daily rainfall record: San Diego (1.98"), Chula Vista (1.56"), and Vista (3.18"). Oceanside Harbor recorded their wettest 24-hours on record with 3.06". Six-day storm totals were 3 to 7 inches along the coast and valleys, 4 to 8 inches with locally 10 in the mountains, and 1 to 2 inches in the deserts. Rainfall in San Diego County was 3-4" inches in a 24 hour period. All-time daily rainfall records were broken on 4/10 in Oceanside and Vista, each recording over 3". Monthly rainfall records were broken for April at those locations, each receiving over 6" in just six days.	Numerous flash floods and floods resulted. Flood waters combined with mud, boulders and debris in Bonsall, Oceanside, Carlsbad, Encinitas, Vista, Pacific Beach, Del Mar, Valley Center, Rancho Penasquitos and several spots in Mission Valley. Highway 78, a major freeway corridor between Oceanside and Escondido, was closed in both directions from flooding on adjacent Buena Vista Creek. Numerous swift-water rescues were made all across San Diego County. The San Diego River at Fashion Valley reached a peak of 12.5 feet.
3/12/2020	An atmospheric river brought heavy rain and thunderstorms, especially to the deserts where 1 to 2 inches fell. 550 lightning strikes occurred.	Flash flooding was observed near Canebrake, Borrego Springs, Lakeview, Riverside, Corona, parts of the Coachella Valley, Apple Valley. A mudslide occurred near Pinyon Pines. A road was eroded near Mentone. Water rescues happened in Glen Avon and Corona.

Date(s)	Weather	Adverse Impacts
12/26/2019	A powerful winter storm brought intense rain and thunderstorms that measured 1 to 3.5 inches from the coast to the mountains.	Flooding of intersections and low lying areas were widely observed during the most intense rainfall, including in San Marcos and Mission Valley. Vehicle rescues were needed.
11/28/2019	A powerful storm struck the region on this Thanksgiving Day. Heavy rainfall of 1 to 3 inches fell at the coast and in the valleys.	Numerous roadways were damaged from flooding and erosion. There was a large boulder on Ortega highway and a sinkhole in Redlands. A swift-water rescue was needed in National City. An RV park in La Mesa was heavily damaged.
9/2/2019	Nocturnal thunderstorms migrated from the east and hit the Coachella Valley early in the morning this Labor Day. Other thunderstorms struck the mountains that afternoon. Sky Oaks was the standout, receiving 2.71 inches, while many other mountain locations received 0.50 to 1.50 inches.	Several flash floods impacted the Coachella Valley.
2/14/2019	A major atmospheric river pummeled Southern California with heavy rain. Many mountain locales recorded 8 to 10 inches of rain, with Palomar Mountain recording over 10 inches. Palm Springs recorded 3.69 inches, the third wettest day on record.	Flash flooding resulted with damage to roads. High snow levels resulted in flooding in the San Bernardino Mountains. Flash flooding and debris flows occurred at and below the Holy Fire burn scar near Lake Elsinore. Highways ripped out by water and debris on both sides of Mt. San Jacinto were closed for weeks for major repairs.
2/2/2019	A strong downpour across the burn scar of the 2017 Whittier Fire triggered a debris flow in Duval Canyon (Giorgi 2019).	The event clogged and damaged a culvert beneath Highway 154, shutting down the highway for a month between Highway 246 in Santa Ynez to Highway 192 in Santa Barbara for clearing, severing a key north-south arterial linking north county and south county.
1/15/2019	A winter storm brought a band of very heavy rain to northwest Orange County. Seal Beach, Huntington Beach and Fountain Valley each reported roughly 2 inches of rain in 2 hours.	The intense rain produced flash flooding. Water was up to doorways outside of homes, and the Pacific Coast Highway was closed for over a day in Huntington Beach.
9/30/2018	Remnant moisture from Tropical Storm Rosa advanced into Southern California, bringing rain and widespread thunderstorms to the region, particularly the mountains and deserts. In the Coachella Valley, a strong thunderstorm accumulated up to 3.5” of rain in 2 hours near Mecca.	One fatality resulted from the storm near Mecca. An individual was swept away on Box Canyon road.
1/19/2018	On Tuesday, January 9, 2018, following the 2017 Thomas Fire, which burned 281,893 acres in Ventura and Santa Barbara Counties, a reported 0.54 inches of rain fell within 5 minutes in the burn scars from the Thomas Fire in the foothills of Montecito. Over two days a total of four inches of rain fell in the area.	The heavy rains caused massive debris flows and flooding that damaged or destroyed 408 homes, killed 23 residents, and led to the closure of Highway 101 and the UPRR for more than 3 weeks, cutting off the county from communities to the south. California Geological Survey scientists estimated the Montecito debris flow as having speeds of 10-15 mph, being up to 25-30 feet deep, and capable of carrying boulders as large as a tow truck. (California Geological Survey 2019b).

Date(s)	Weather	Adverse Impacts
1/9/2018	A potent winter storm struck Southern California. Intense rainfall around Santa Barbara and Ventura measured as high as 0.54 inches in 5 minutes.	A 15 foot deadly mud and debris flow hit the community of Montecito, around the burn scar of the Thomas fire, where 23 lost their lives, 128 residences were destroyed, and 307 others were damaged. Highway 101 was closed for days due to the mud and debris.
9/9/2017	Thunderstorms struck the deserts with heavy rains, including a daily record of 1.20 inches at Palm Springs.	Intense flash flooding in Palm Springs and Cathedral City, where structures throughout the city were flooded and roads were covered in debris. At Palm Springs High School, 31 classrooms were inundated. Major flood damage also occurred at a mobile home park.
8/12/2017	Two giant supercell thunderstorms unleashed their fury on the Anza Borrego Desert.	Flash flooding and wind damage occurred around Agua Caliente Springs and Canebrake.
8/1/2017	Numerous monsoon thunderstorms struck the valleys. 1.56 inches fell in Alpine in a short period.	Flash flooding, downed trees and power outages were reported in Corona, Perris, San Bernardino, Temecula, and Alpine.
2/27/2017 to 2/28/2017	An atmospheric river storm struck mainly San Diego County with 2-9 inches of rainfall in 24 hours. The San Diego River in Mission Valley crested at 14.15 feet, the third highest stage all-time.	Numerous roadways were closed, the Fashion Valley Mall parking structure was closed and the Fashion Valley Transit Center was closed to bus traffic. Numerous water rescues were conducted along the San Diego River including 20 people rescued from hotels in Mission Valley. Many vehicles were also flooded and destroyed.
1/19/2017 to 1/23/2017	A series of three winter storms hit during five days. Total rainfall reached 10-13 inches along the coastal slopes from San Bernardino to San Diego County. Over the coast and valleys 2-7 inches of rain occurred with 0.5-3 inches in the deserts.	Widespread flooding, including damage to homes and businesses and numerous stranded vehicles in several feet of water. Dozens of high water rescues were made, 29 in San Diego County on 1.20 alone. One boy was swept away to his death in floodwaters in Rainbow. The governor declared a State of Emergency in San Diego County.
7/1/2016	Strong thunderstorms formed over the Mojave Desert and San Bernardino Mountains. Up to three inches of rain fell between Helendale and Victorville. This was the only significant round of thunderstorms during the 2016 monsoon season.	Significant flash flooding that forced closure of Highway 66 near Bryman.
1/5/2016 to 1/7/2016	A strong, low latitude jet stream brought a series of storms through Southern California with periods of moderate to heavy rain. Three-day rainfall totals were around 2-7” for the coast, valley and foothill areas, and 1- 3” for the deserts. After several years of drought, this was the only precipitation event of significance during an otherwise disappointing strong El Niño season.	Flooding resulted nearly everywhere, with southwestern San Diego County being hardest hit. Floods buried cars in Ocean Beach and Mission Valley. High water rescues occurred on 1.6 around San Diego. Small mudslides, including boulders on highways were reported near Ramona, Redlands, Crestline, Orange, Rancho San Diego and De Luz. Three debris flows in Silverado Canyon below a burn scar.
11/3/2015 to 11/4/2015	A wet winter storm brought locally heavy rain to Southern California. San Diego recorded a one-day total of 1.09” on 11.3, setting a daily rainfall record. 0.10” to 1.5” fell elsewhere, heaviest in southern San Diego County. Hail of one quarter inch was reported in Dana Point and southern San Diego County.	Urban flooding in Spring Valley and Lemon Grove with water up to the doors of some vehicles and several roads closed.

Date(s)	Weather	Adverse Impacts
10/18/2015	Thunderstorms dropped very heavy rainfall in Death Valley. Scotty's Castle measured 2.72 inches of rain in roughly five hours.	Major flash flooding hit the Grapevine Canyon area of Death Valley National Park. Mesquite Springs Campground and Grapevine Ranger Station were evacuated; eight vehicles full of visitors and three park rangers were stranded overnight near Ubehebe Crater. Trenches up to six feet deep were cut into Scotty's Castle Road. 24 power poles were downed. Mud and debris damaged or destroyed the water supply infrastructure, stables, visitors center, and the cookhouse.
10/16/2015	Strong thunderstorms hit northern Ventura and LA counties.	Flash flooding and mud and debris flows occurred in the San Gabriel Mountains, Cuyama, and the Antelope Valley.
9/15/2015	A Pacific trough tapped into remnant moisture from tropical cyclone Linda. 1-2” of rain was common across the entire region.	Major traffic jam during the morning commute in LA and Orange County, along with a debris flow in Silverado Canyon, and widespread urban flooding.
9/7/2015 to 9/8/2015	Subtropical moisture from remnants of Hurricane Linda brought thunderstorms to most of the region. Additional thunderstorms on 9.8 developed over the mountains and spread into the Inland Empire and Orange County, as well as near I-15 in San Diego County. Hail was mostly nickel-sized, but a few larger. A small dust storm hit Riverside.	Flash floods hit Victorville (which included a swift water rescue). Another flash flood in Forest Falls also had a swift water rescue, but also one drowning death. On 9.8 several trees and poles were downed in the Riverside area from the dust storm.
7/29/2015 to 7/30/2015	Scattered thunderstorms occurred mainly over the mountains and deserts with wide-ranging rainfall totals from a few tenths of an inch to locally over 2”.	Flash flooding occurred in Idyllwild, Timoteo Canyon, Calimesa and Moreno Valley.
7/18/2015 to 7/19/2015	Moisture from Hurricane Dolores, along with monsoon moisture resulted in showers and thunderstorms over most Southern California. Rainfall ranged from 0.5-4”, including a record 1.71” at San Diego on 7.18 (unprecedented rainfall: single-day and July monthly total). The San Diego River at Fashion Valley had 2 crests above monitor stage, 7.7 feet on the 18th and 8.8 feet on 7.19. On 7.19 over 6” of rain fell over several hours just west of Desert Center.	A debris flow hit the burn scar of Silverado Canyon. Flash floods hit Moreno Valley, Perris, and La Mesa on 7.19. A wet microburst struck Tierrasanta on 7.18, causing wind damage. A haboob caused wind damage in the Anza Borrego Park and in Palm Desert. The rain caused the first rain-out of a Los Angeles Angels baseball game since 1995, and a rare 2-hour rain delay at the San Diego Padres baseball game. Over 2000 lightning strikes were reported on 7.18, some starting small brush fires. Near Desert Center on 7.19 eastbound lanes of Interstate 10 collapsed where they crossed a heavily flowing wash. A vehicle drove into the hole in the collapsed bridge, trapping the driver and requiring rescue. I-10 was closed in both directions causing huge traffic backups.
7/6/2015	Monsoon thunderstorms hit the mountains and upper desert. A few spots received up to around one-third of an inch, including a portion of the Lake Fire burn area south of Big Bear Lake.	Several debris flows resulted, including one consisting mostly of ash and mud over portions of Highway 38, up to a foot deep in some areas.
5/14/2015	A strong late-season winter storm, along with some thunderstorms, hit the region. San Diego reported 1.30” of rain in one hour. A nine-minute period within that main hour, totaled 0.71”, which is near the 1/100 return interval.	Flooding in Mission Hills and Midway District of San Diego was up to 4 feet deep. Several swift water rescues.

Date(s)	Weather	Adverse Impacts
12/12/2014 to 12/13/2014	A strong Pacific storm brought heavy rain. Widespread rainfall amounts of 1 to 1.5" in the coast and valley areas. Mountain locations got up to 4".	River rises in the San Diego River resulted in a levee breach which flooded the parking lot of Qualcomm Stadium. Several other roadways in San Diego County were closed due to flooding with mud and debris in the road, especially near the Tijuana River Valley.
12/3/2014 to 12/4/2014	A Pacific storm brought moderate to heavy rain. Two-day rainfall totals of 1-2" were recorded west of the mountains, while the southern slopes of the San Bernardino County mountains saw up to 5" of rain (isolated amount of 14.5" at Yucaipa Ridge).	Flooding resulted, with mud, debris and water closing several roadways and stranding vehicles. Mud with debris 10 feet high piled up on Soboba Rd. north of San Jacinto. A swift water rescue was needed.
9/7/2014 to 9/8/2014	Weakening Hurricane Norbert brought moisture to produce thunderstorms mainly in Riverside and San Diego Counties. Rainfall amounts of 1 to 2 inches fell over the city of Riverside, San Bernardino and Hemet, while the mountains in that county saw up to 0.60" near Sky Valley. Early morning thunderstorms on 9.8 drenched parts of the Coachella Valley which received 0.33" up to just over 3 inches near the lower foothill in Thousand Palms and La Quinta.	Widespread flash flooding, most notably in the Coachella Valley on 9.8. Mud and water closed roads and stranded vehicles in La Quinta, Palm Desert, and Thousand Palms. Homes in La Quinta were surrounded by water. Moving water was 3 feet deep on roads and 4 to 5 feet of standing water submerged vehicles. Mud was several feet deep on Varner Road.
8/12/2014	A heavy thunderstorm struck east of Julian.	A debris flow blocked Hwy. 78 east of Julian on the Banner Grade that was one to two feet deep. The Banner Fire burn scar contributed to this flow.
8/3/2014	Heavy thunderstorms hit the Inland Empire, the mountains and the lower desert. Mt. Baldy Village got 4.40 inches, with four inches falling in 60 minutes.	Flash flooding and debris flows were common. Road closures and damage.
7/27/2014	Thunderstorms erupted in the mountains of San Diego County and even along the coast.	Flash flooding occurred in La Jolla Shores and near Warner Springs along Hwy 79.
7/5/2014	Thunderstorms erupted in the Inland Empire, San Bernardino Mountains, and the High Desert.	Flash flooding closed roads in the High Desert along I-15 and Hwy. 247 and required a swift water rescue in Yucaipa. On 7/5 flash flooding occurred along Hwy. 247 in Landers.
5/23/2014	Thunderstorms over the San Diego County mountains drifted over the adjacent deserts.	Flash flooding occurred along and north of Highway 78, south of Borrego Springs.
2/28/2014 to 3/1/2014	A very wet storm was the only significant storm of the 2013-14 wet season. Rainfall ranged from 1 inch at the coast to up to 8 inches in the mountains. Up to 1 inch fell in the desert. Yucaipa Ridge measured over 11 inches.	Urban and flash flooding with mud/debris flows, causing numerous road closures and swift water rescues in and around Anaheim, San Diego-Fashion Valley, Escondido, Fallbrook and Lake Elsinore. Mud slides closed Hwy. 74 (Ortega Highway) stemming from the Falls Fire burn scar. Many road closures in the Coachella Valley where rivers saw rises of 2 to 5 feet, in some instances within 12 hours. On 3.1, flooding resulted in Oceanside, Temecula, Sea World San Diego, as well as minor street flooding in Mission Viejo.

Table 153: Significant Flood Events in Southern California 2014 - 2022

Las Virgenes-Malibu Flood Probability

According to the FEMA National Risk Index, the Los Angeles region records the chance of riverine flooding as 4.4 events per year.

Disasters Declarations and Emergency Proclamations

FEMA disaster declarations allow state, tribal, and local governments to access federal aid for disaster response and recovery when overwhelmed. Similarly, the California Governor's Office of Emergency Services (Cal OES) issues proclamations to mobilize state resources and streamline procedures.

FEMA Disasters Declarations

No disaster declarations.

Cal OES Open State of Emergency Proclamations

Proclamation Date: 9/16/22 || Tropical Storm Kay

Tropical storm conditions brought heavy rainfall and strong winds across southern California, causing flooding and debris flows. The storm system, including debris flows, also damaged or destroyed roads in Imperial, Inyo, Los Angeles, and Riverside counties.

Proclamation Date: 1/4/23 || December 2022-January 2023 Storms

Severe winter storms struck California causing high winds, and expected flooding, and widespread power outages. This declaration was a hazard to the entire state of California.

Significant Floods in the Las Virgenes-Malibu Region

The National Flood Insurance Program tracks flood losses for the U.S. The following table lists the NFIP loss totals for the cities within the Las Virgenes-Malibu area from 1992 through 2019.

City and Year of Claim	Number of Claims	Amount Paid on Building Claims	Amount Paid on Contents Claims	Total NFIP Claim Payments
Agoura Hills	**34**	**$282,822**	**$34,754**	**$317,576**
1992	2	$11,152	$-	$11,152
1993	3	$7,844	$-	$7,844
1995	2	$2,563	$58	$2,621
1997	1			$-
1998	9	$29,530	$5,016	$34,546
2001	3			$-
2003	1			$-
2004	2	$11,242	$58	$11,300
2005	2	$7,146	$3,219	$10,364
2008	1			$-
2011	2	$5,190	$-	$5,190
2017	3	$180,681	$26,404	$207,085
2019	3	$27,474	$-	$27,474
Calabasas	**12**	**$48,032**	**$1,278**	**$49,310**
1998	3	$774	$-	$774
2004	2	$5,704	$-	$5,704
2005	2	$4,422	$1,278	$5,701
2011	1			$-
2017	3	$7,911	$-	$7,911
2019	1	$29,220	$-	$29,220
Hidden Hills	**13**	**$250,680**	**$15,972**	**$266,652**
1992	2	$10,322	$3,218	$13,540
1993	1	$1,261	$-	$1,261
1998	2	$3,932	$-	$3,932
2000	1			$-
2001	2	$31,085	$8,946	$40,031
2005	4	$204,079	$3,808	$207,888
2017	1			$-
Malibu	**113**	**$2,033,041**	**$258,818**	**$2,291,859**
1994	2	$51,612	$-	$51,612
1995	9	$227,170	$13,220	$240,390
1996	3			$-
1997	1			$-
1998	15	$282,741	$585	$283,326
2000	1	$39,384	$17,851	$57,235
2001	4			$-
2003	1			$-

City and Year of Claim	Number of Claims	Amount Paid on Building Claims	Amount Paid on Contents Claims	Total NFIP Claim Payments
2004	5	$57,837	$16,244	$74,081
2005	6	$126,283	$4,676	$130,959
2008	4	$67,842	$270	$68,112
2009	1	$33,034	$10,972	$44,006
2010	6	$26,476	$18,193	$44,669
2011	6	$500,000	$134,730	$634,730
2014	17	$307,629	$-	$307,629
2015	4	$35,400	$-	$35,400
2016	10	$56,790	$-	$56,790
2017	12	$133,427	$-	$133,427
2018	3			$-
2019	3	$87,415	$42,077	$129,493
Westlake Village	**2**			$-
1995	1			$-
2010	1			$-
Grand Total	**181**	**$2,687,355**	**$333,562**	**$3,020,917**

Table 154: Flood Loss Statistics for California (From January 1, 1992 to December 31, 2019)

SOURCE: NFIP https://nfipservices.floodsmart.gov/reports-flood-insurance-data

Severe Repetitive Losses

The Severe Repetitive Loss (SRL) grant program was authorized by the Bunning-Bereuter-Blumenauer Flood Insurance Reform Act of 2004, which amended the National Flood Insurance Act of 1968 to provide funding to reduce or eliminate the long-term risk of flood damage to severe repetitive loss (SRL) structures insured under the National Flood Insurance Program (NFIP). The definition of severe repetitive loss as applied to this program was established in section 1361A of the National Flood Insurance Act, as amended (NFIA), 42 U.S.C. 4102a. An SRL property is defined as a residential property that is covered under an NFIP flood insurance policy and:

(a) That has at least four NFIP claim payments (including building and contents) over $5,000 each, and the cumulative amount of such claims payments exceeds $20,000; or
(b) For which at least two separate claims payments (building payments only) have been made with the cumulative amount of the building portion of such claims exceeding the market value of the building.

For both (a) and (b) above, at least two of the referenced claims must have occurred within any ten-year period and must be greater than 10 days apart.

In terms of the Las Virgenes-Malibu area, while there have been losses from flooding within the five city Las Virgenes-Malibu Council of Governments region, there are no properties that have sustained severe repetitive losses.

Repetitive Losses

The Flood Mitigation Assistance (FMA) is authorized by Section 1366 of the National Flood Insurance Act of 1968, as amended (NFIA), 42 U.S.C. 4104c, with the goal of reducing or eliminating claims under the National Flood Insurance Program (NFIP).

FMA was created as part of the National Flood Insurance Reform Act (NFIRA) of 1994. The Biggert-Waters Flood Insurance Act of 2012 (Public Law 112-141) consolidated the Repetitive Flood Loss and Severe Repetitive Loss grant programs into FMA. FMA funding is available through the National Flood Insurance Fund (NFIF) for flood hazard mitigation projects as well as plan development and is appropriated by Congress.

Additionally, the Swift Current is a grant opportunity under the FMA grant program posted on Nov 14, 2023. The FMA grant program makes federal funds available to states, U.S. territories, federally recognized Tribal governments, and local governments to reduce or eliminate the risk of repetitive flood damage to buildings and structures insured under the National Flood Insurance Program (NFIP), and within NFIP-participating communities. Swift Current funds Individual Flood Mitigation Projects for Flood Mitigation Assistance and/or NFIP-defined Repetitive Loss (RL), Severe Repetitive Loss (SRL), or properties deemed Substantially Damaged after the applicant's disaster declaration incident period start date.

In terms of the Las Virgenes-Malibu area, while there have been losses from flooding within the five city Las Virgenes-Malibu Council of Governments region, there are no properties that have sustained severe repetitive losses.

City	(RL)
Agoura Hills	No repetitive losses within city boundaries.
Calabasas	No repetitive losses within city boundaries.
Hidden Hills	No repetitive losses within city boundaries.
Malibu	No repetitive losses within city boundaries.
Westlake Village	No repetitive losses within city boundaries.

CAUSES AND CHARACTERISTICS OF FLOODS

A flood, as defined by the National Flood Insurance Program 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 from: overflow of inland or tidal waters; unusual or rapid accumulation or runoff of surface waters from any source, or mudflow.

Flooding may occur as a result of sustained heavy rainfall, microbursts (short periods of large volumes of rain), large wave activity on the coast, or reservoir/dam failure. A "100-Year Recurrence Interval" is defined as a flood that according to historical data has a probability of occurrence once in 100 years. This benchmark used by FEMA to establish a regulatory baseline for all flooding events. Similar benchmarks are defined for 25, 50, 500-year events.

Annual Rainfall

Rainfall in the LVMCOG region averages nearly 18 inches per year. However, the term "average rainfall" is misleading because over the recorded history of rainfall in the region, rainfall amounts have ranged from no rain at all in some years to well over normal averages in very wet years. Furthermore, actual rainfall in Southern California tends to fall in large amounts during sporadic and often heavy storms rather than in consistent amounts throughout the year (*See Community Profile Section for additional details).* For example, the 2022 and 2023 years experienced greater than average rainfall including Tropical Storm Hilary in August 2023 which was the first severe storm of this type to reach Southern California since the 1930's.

Dam and Reservoir Failure

Loss of life and damage to structures, roads, and utilities may result from a reservoir or dam failure. Several factors influence the severity of a full or partial reservoir or dam failure: the amount of water released, topography, and the density of downstream populations and structures.

The Las Virgenes Municipal Water District (LVMWD) serves the cities of Agoura Hills, Calabasas, Hidden Hills and Westlake Village (the City of Malibu is served by Los Angeles County Water District 29). The LVMWD maintains two major facilities in Westlake Village:

- The Las Virgenes Reservoir is located at 2860 Three Springs Drive
- The Westlake Filtration Plant located at 32601 Torchwood Place (filters water from the Las Virgenes Reservoir prior to delivery to customers)

According to the Las Virgenes Water District, the Las Virgenes Reservoir has a surface area of approximately 160 acres and contains nearly 3 billion gallons of water. The reservoir was built from 1970 to 1972 and is comprised of two earthen dams built on a bedrock foundation. The main dam is 160 feet high, 2,000 feet long, 20 feet wide at the top, and 750 feet wide at the bottom. The saddle dam is 50 feet high, 750 feet long, 20 feet wide at the top, and 425 feet wide at the bottom.

Map 67: North Santa Monica Bay Watershed

SOURCE: Draft General National Pollutant Discharge Elimination System Permit Letter, City of Malibu (9/06/2011)

The Malibu Creek Watershed is made up of 60,760 acres and is comprised of 80 percent vacant undeveloped land. The Malibu Creek Watershed is part of the larger North Santa Monica Bay Watershed Management Area that drains into the Santa Monica Bay. The cities within the LVMCOG lie (either entirely or partially) within the North Santa Monica Bay Watershed.

STAKEHOLDER INPUT AND PARTICIPATION

To identify the threats, vulnerabilities, and consequences of a major flood on the Las Virgenes-Malibu Region, each member of the Planning Group which included representatives from the cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, and Westlake Village provided their input during planning meetings (see Annex B: Meeting Agendas and Attendees) and follow-up discussions. Specific topics of discussion included if any changes to the hazard priorities have changed since the previous HMP, how changes in the community have impacted the risk of each hazard, and what new mitigation actions can be taken. In addition, each member of the Planning Group as well as members of the public provided the input via online surveys (see Annex C: Community Disaster Preparedness and Risk Survey, Annex D: Planning Group HMP Risk Assessment Survey, and Annex E: Planning and Public Involvement).

FLOOD HAZARD IDENTIFICATION

Flooding occurs when climate, geology, and hydrology combine to create conditions where water flows outside of its usual course. As described earlier, due to the close proximity to the Santa Monica Mountain range and variations of topography, there is a potential for flood throughout the entire area. Furthermore, due to continued growth, economic development and an increase of impermeable areas, the region's storm water collection and conveyance system may become overwhelmed.

Geography and Geology

The Las Virgenes-Malibu Region geologic features mainly consist of un-consolidated and semi-consolidated alluvial materials underlain and bounded on the north and east by consolidated sediments and crystalline rocks. These deposits consist of a shallow layer of Quaternary fill that has been washed down from the Santa Monica Mountains.

The materials are generally poorly sorted sands and gravels, intermingled with silts and clays. This lack of open ground forces water to remain on the surface and rapidly accumulate. If it were not for the existing flood control system in the area with its concrete lined river and stream beds, flooding would be a much more common occurrence.

Urban Development

The trend towards development has resulted in less open land and greater flood potential. In-fill building is becoming a much more common practice in many areas. Developers tear down an older home which typically covers up to 40% of the lot size and replace it with a single massive home or multi-unit town homes or apartments which may cover 90-95% of the lot. The consequence is less surface area for water to seep into the ground causing excessive run-off.

Another potential source of flooding is "asphalt creep." The street space between the curbs of a street is a part of the flood control system. Water leaves property and accumulates in the streets, where it is directed towards the underground portion of the flood control system. The carrying capacity of the street is determined by the width of the street and the height of the curbs along the street. Often, when streets are being resurfaced, a one to two-inch layer of asphalt is laid down over the existing asphalt. This added layer of asphalt subtracts from the rated capacity of the street to carry water. Thus, the original engineered capacity of the entire storm drain system is marginally reduced over time. Subsequent re-paving of the street will further reduce the engineered capacity even more.

Dam Failure

There are four dams in the Westlake Village area that are listed with a downstream hazard as Extremely High or High:[31]

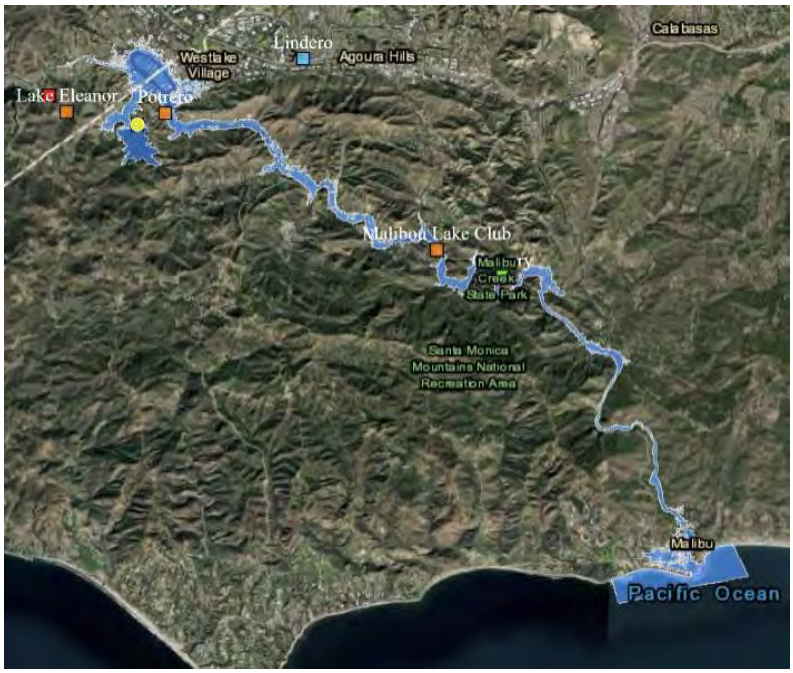
Map 68: LVMCOG Dams with Inundation Maps

Source: California Department of Water Resources https://fmds.water.ca.gov/maps/damim/

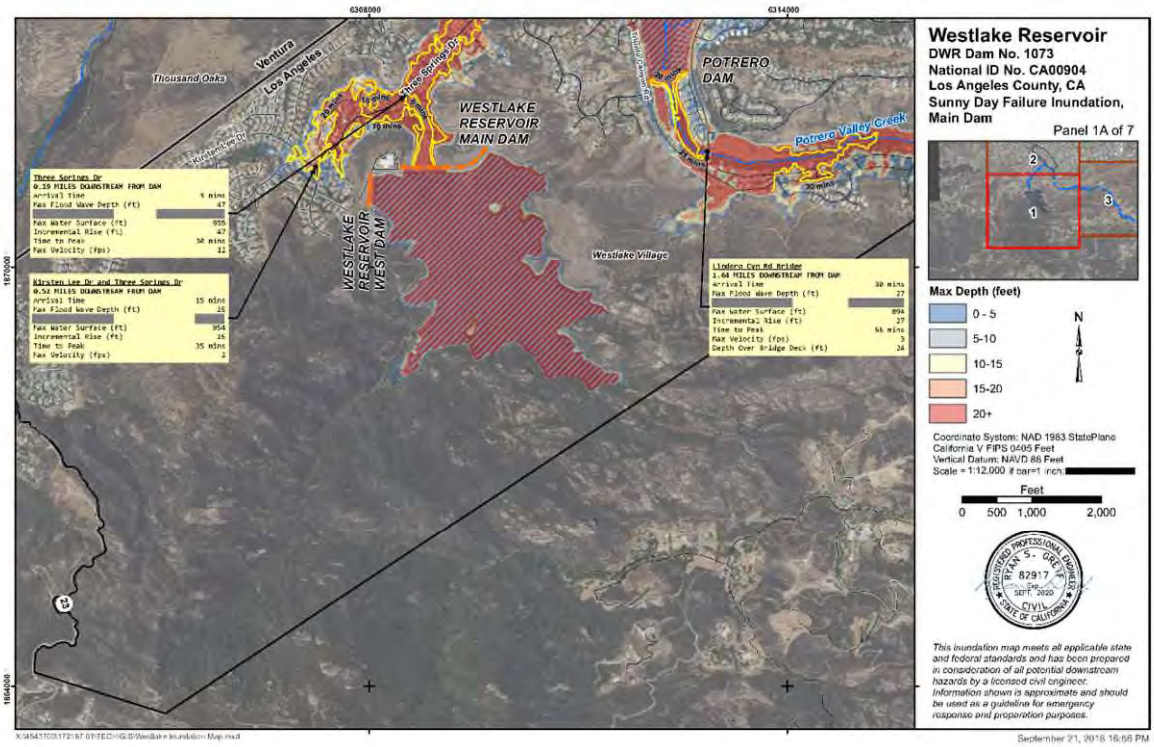
[31] The CA Department of Water Resources (DWR), Division of Safety of Dams (DSOD) reviews and approves inundation maps prepared by licensed civil engineers and submitted by dam owners for extremely high, high, and significant hazard dams and their critical appurtenant structures. Inundation maps approved by DSOD are a tool used to develop emergency action plans, and the maps are intended to provide general information for emergency planning. DWR assumes no legal responsibility resulting from the use of this information. Actual evacuation zones and timing will be determined by local emergency managers who are responsible for specific evacuation procedures in an emergency event.

Westlake Reservoir

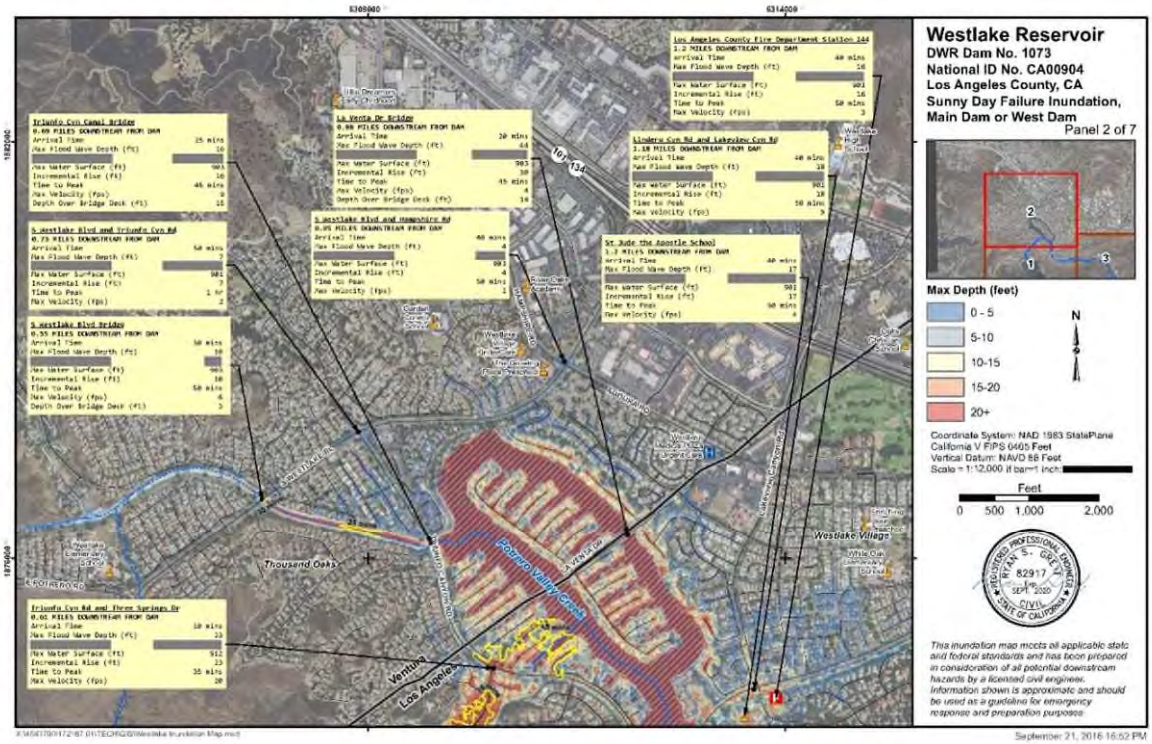
If the Westlake Reservoir were to fail, the projected inundation flow would move north to Three Springs Drive then east past Westlake Blvd. Bridge and down Westlake Blvd./Triunfo Canyon Road. Then flow past the Triunfo Canyon Canal Bridge to Westlake Village and down Potrero Valley Creek to Malibu Creek and Malibu Lake then eventually downstream to Malibu Lagoon (Source: CA Department of Water Resources (DWR), Division of Safety of Dams (DSOD) and the Las Virgenes Municipal Water District and Mead & Hunt).



Map 69: Westlake Reservoir Inundation Map Westlake Reservoir Inundation Map



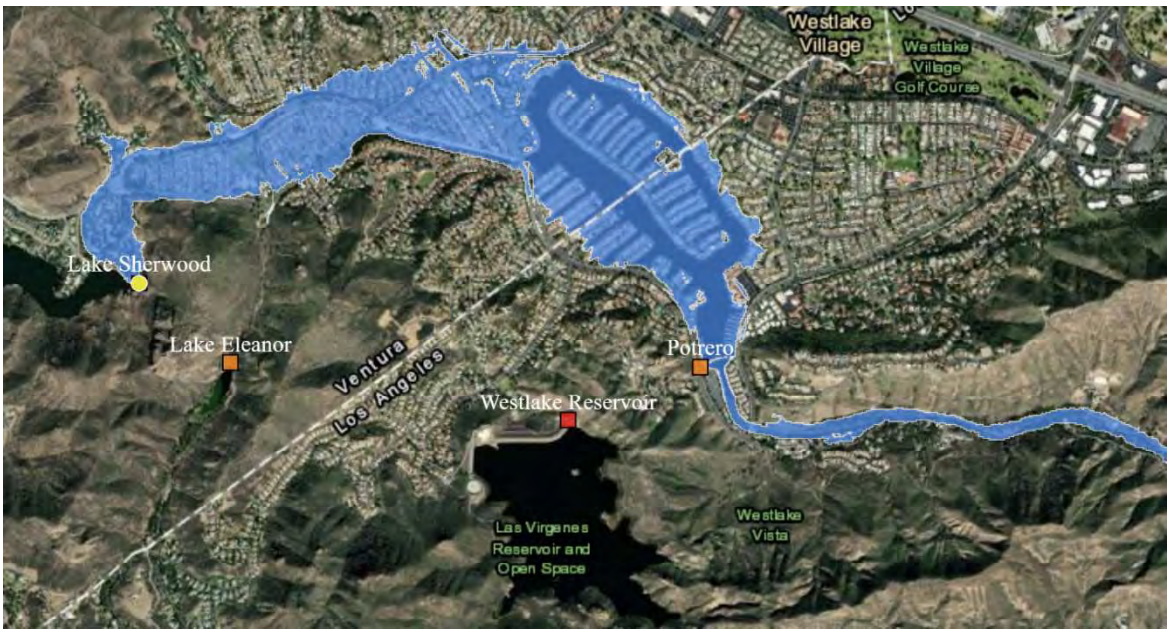
Map 70: Westlake Reservoir Inundation Timeline Map 1



Map 71: Westlake Reservoir Inundation Timeline Map 2

Lake Sherwood

In the event of a Lake Sherwood dam failure, the flow would travel down Potrero Creek from Thousand Oaks past Triunfo Canyon Road Bridge towards Westlake Lake. Then eventually flow down Malibu Creek Malibu Lake then down to Malibu Lagoon.



Map 72: Lake Sherwood Inundation Map

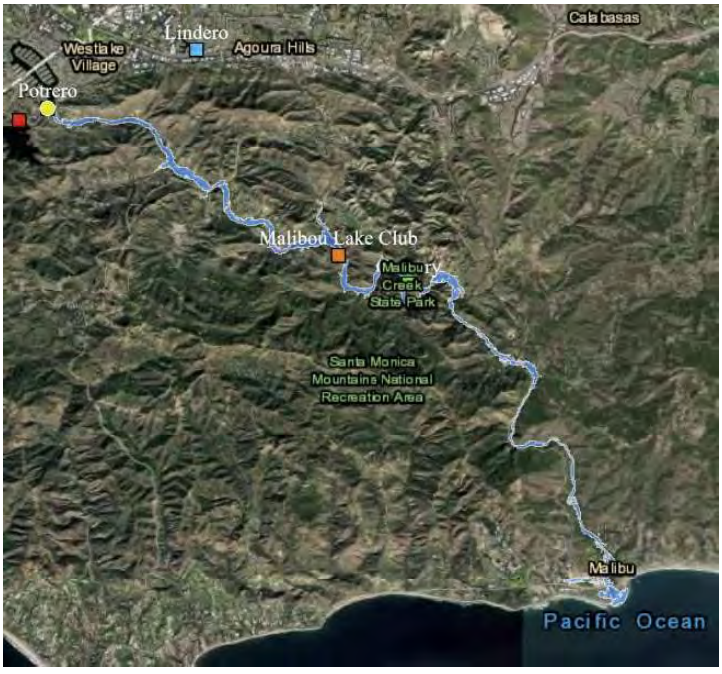
Map 73: Lake Sherwood Inundation Timeline Map

High

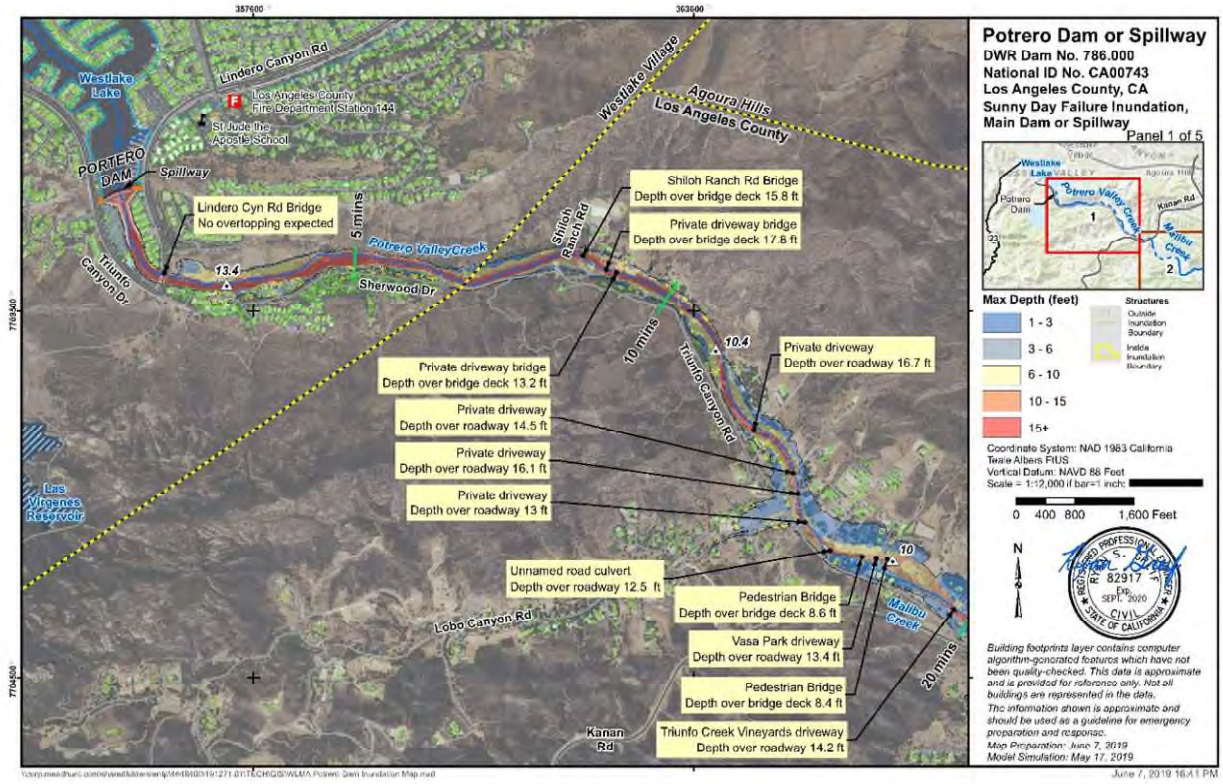
- Potrero (Dam ID CA00743)
- Lake Eleanor (Dam ID CA00737)

Potrero Dam

In the event of a Potrero Dam failure, the water flow would progress from Southeast Westlake Village down Potrero Valley Creek to Malibu Creek Malibu Lake then down to Malibu Lagoon.
(Source: CA Department of Water Resources (DWR), Division of Safety of Dams (DSOD) and the Westlake Village Management Association and Mead & Hunt).



Map 74: Potrero Dam Inundation Map

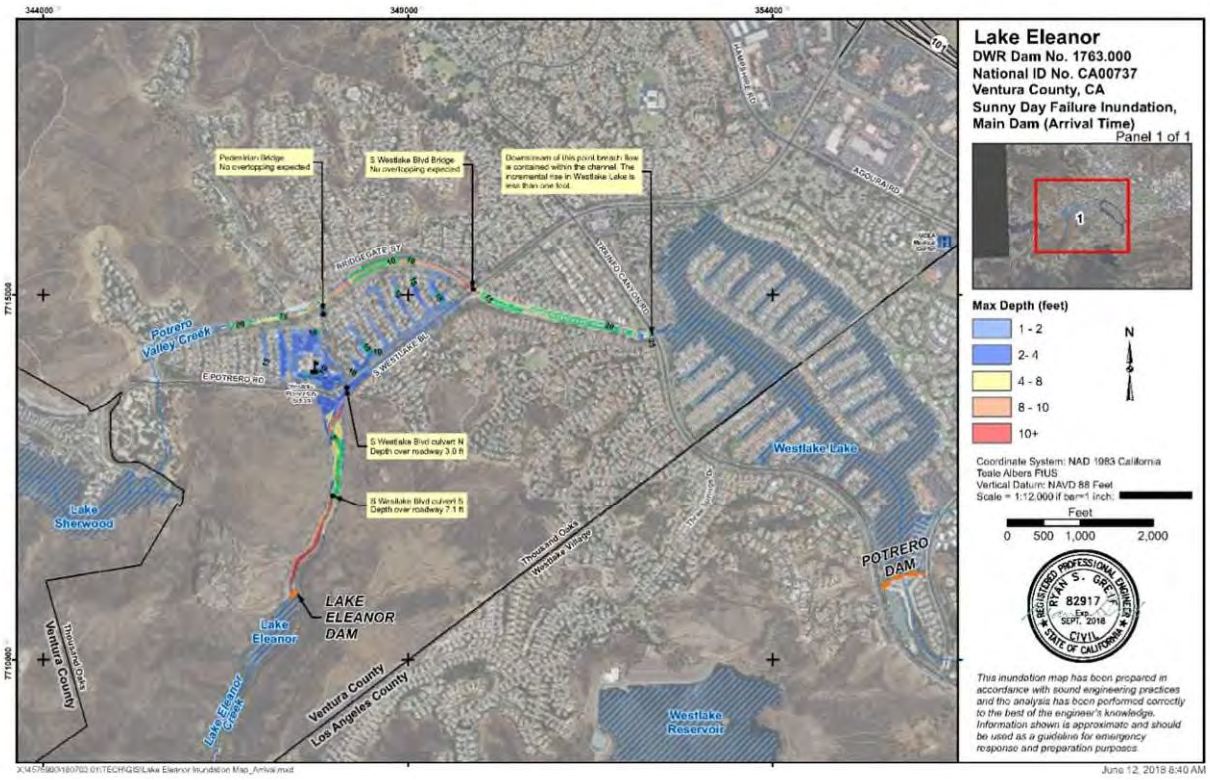


Map 75: Potrero Dam Inundation Timeline Map

Lake Eleanor

In the event of a Lake Eleanor Dam failure, the water flow would travel down the South Westlake Blvd. culvert north then east down Potrero Valley Creek towards Westlake Village Lake (Source: CA Department of Water Resources (DWR), Division of Safety of Dams (DSOD) and Conejo Recreation & Park District and Mead & Hunt).

Map 76: Lake Eleanor Inundation Map



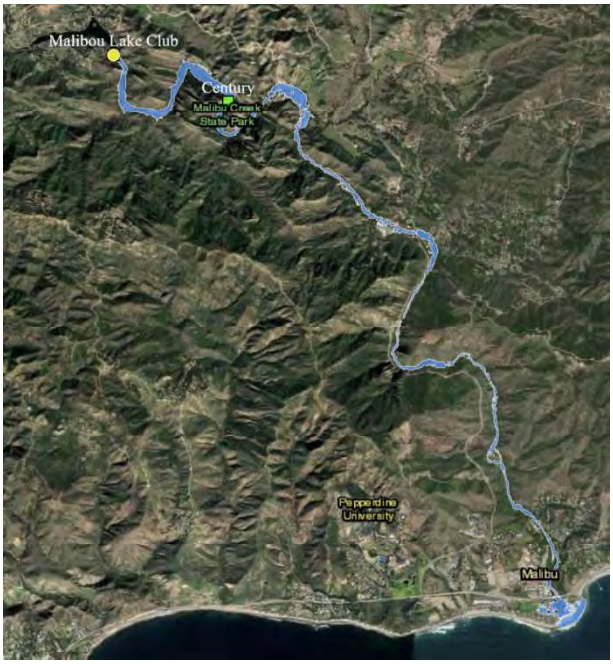
Map 77: Lake Eleanor Inundation Timeline Map

Malibu Lake

In addition to the four dams listed in the LVMCOG, Malibu Lake Club (Dam ID CA00739) located in the Santa Monica Mountain National Recreation Area.

Map 78: Malibu Lake

In the event of a Malibu Lake dam failure the water would flow down Malibu Creek down to Malibu Lagoon which could cause local flooding in the City of Malibu. Specifically it is projected that Cross Creek Road Bridge would be overflowed by 1.8 feet and areas of Malibu Lagoon would face rising water levels from 1 to 2 feet (Source: CA Department of Water Resources (DWR), Division of Safety of Dams (DSOD) and Malibu Lake Mountain Club and Mead & Hunt).

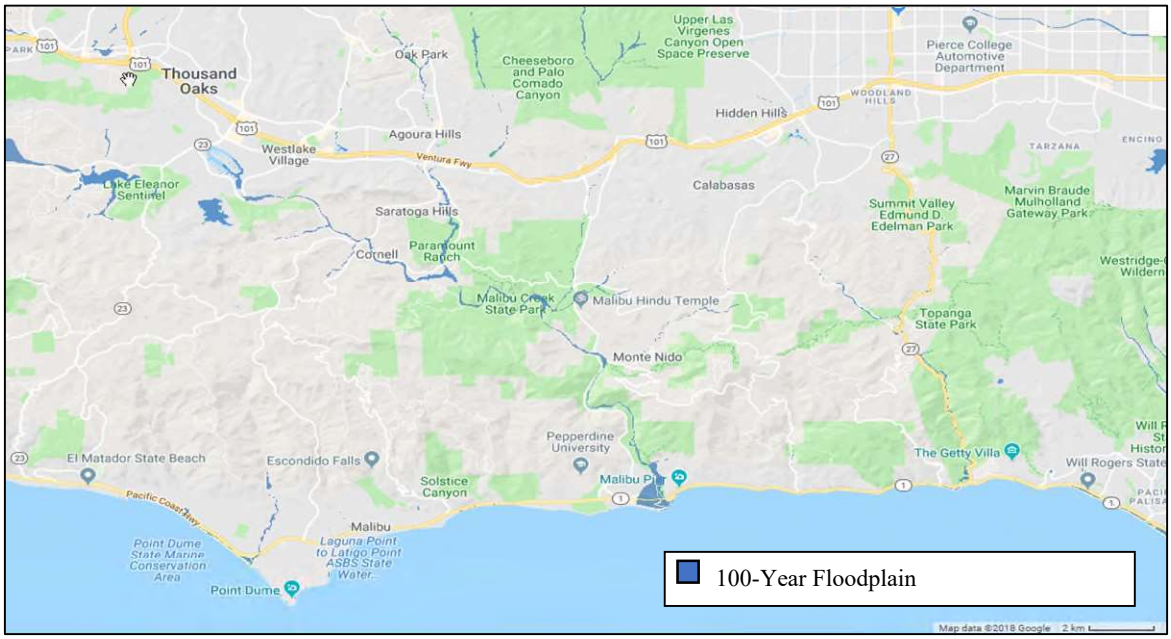


Map 79: Malibu Lake Inundation Map

Map 80: Malibu Lake Inundation Timeline Map of Malibu Lagoon

Flood Maps and Flood Insurance Studies

Flood maps and Flood Insurance Studies (FIS) are often used to identify flood-prone areas. The National Flood Insurance Program (NFIP) was established in 1968 as a means of providing low-cost flood insurance to the nation's flood-prone communities. The NFIP also reduces flood losses through regulations that focus on building codes and sound floodplain management. NFIP regulations (44 Code of Federal Regulations Chapter 1, Section 60, 3) require that all new construction in floodplains must be elevated at or above base flood level. Furthermore, the Las Virgenes-Malibu Council of Government cities have municipal codes that provide for the protection of residential and non-residential structures in Flood Hazard areas.



Map 81: FEMA 100-Year Floodplain Map

Source: CA.gov

Flood Insurance Rate Maps (FIRM)

A Flood Insurance Rate Map (FIRM) is an official map produced by FEMA which delineates communities where NFIP regulations apply. FIRMs are used by insurance agents and mortgage lenders to determine if flood insurance is required and what insurance rates should apply (see **Annex F Flood Insurance Rate Maps** section for maps of each city).

FIRMs combine water surface elevations with topographic data to illustrate areas that would be inundated during a 100-year flood, floodway areas, and elevations marking the 100-year-flood level. In some cases, they also include base flood elevations (BFEs) and areas located within the 500-year floodplain. Flood Insurance Studies and FIRMs produced for the NFIP provide assessments of the probability of flooding at a given location. However, it is important to note that these studies and maps represent flood risks at a point in time and do not incorporate subsequent floodplain changes due to new development or other changes in the geography of the area.

FIRM Revisions and Amendments

The following revisions and/or amendments were made to the FIRMs for the LVMCOG since 2018:

Agoura Hills

<table>
<tr><th>Reference No.</th><th>Date</th><th>FIRM Change Description</th></tr>
<tr><td>18-09-0469P-065072
FIRM 06037C1244F</td><td>5/18/2018</td><td>Medea Creek from approximately 640 feet downstream of Kanan Road to approximately 80 feet downstream of Kanan Road the following revisions were implemented:
<table>
<tr><th>Effective Flooding</th><th>Revised Flooding</th><th>Increases</th><th>Decreases</th></tr>
<tr><td>Zone A</td><td>Zone AE</td><td>YES</td><td>NO</td></tr>
<tr><td>No BFEs*</td><td>BFEs</td><td>YES</td><td>NO</td></tr>
<tr><td>Zone AE</td><td>Zone AE</td><td>YES</td><td>YES</td></tr>
<tr><td>BFEs*</td><td>BFEs</td><td>YES</td><td>YES</td></tr>
</table>
*Base Flood Elevations</td></tr>
<tr><td>18-09-0955P-065043
FIRM 06037C1244F</td><td>5/02/2018</td><td>Medea Creek from approximately 4,100 feet downstream of Silver Creek Road to approximately 1,100 feet upstream of Silver Creek Road Letter of Map Revision (LOMR) received to partially reissue the LOMR dated 9/30/2013which revised the Special Flood Hazard Area (SFHA) which incorporated an update to FIRM panel 06037C1244F.</td></tr>
</table>

Table 155: FEMA Flood Map Revisions - Agoura Hills

Calabasas and Hidden Hills

Due to their close proximity and downstream impacts, the revisions to the FIRMs for the cities of Calabasas and Hidden Hills have been combined.

<table>
<tr><th>Reference No.</th><th>Date</th><th>FIRM Change Description</th></tr>
<tr><td>21-09-0727P-060137
FIRM 06037C1267F</td><td>3/21/2022</td><td>Unnamed tributary to Arroyo Calabasas.
<table>
<tr><th>Effective Flooding</th><th>Revised Flooding</th><th>Increases</th><th>Decreases</th></tr>
<tr><td>No BFEs*</td><td>Depths</td><td>YES</td><td>NONE</td></tr>
<tr><td>Zone A</td><td>Zone X</td><td>NONE</td><td>YES</td></tr>
<tr><td>Zone X</td><td>Zone AO</td><td>YES</td><td>NONE</td></tr>
</table>
*Base Flood Elevations</td></tr>
<tr><td>21-09-0727P-060125
FIRM 06037C1267F</td><td>3/21/2022</td><td>Unnamed tributary to Arroyo Calabasas from approximately 850 feet downstream to approximately 2,600 feet upstream of Orville Avenue.
<table>
<tr><th>Effective Flooding</th><th>Revised Flooding</th><th>Increases</th><th>Decreases</th></tr>
<tr><td>No BFEs*</td><td>Depths</td><td>YES</td><td>NONE</td></tr>
<tr><td>Zone A</td><td>Zone AO</td><td>YES</td><td>YES</td></tr>
<tr><td>Zone X</td><td>Zone AO</td><td>YES</td><td>NONE</td></tr>
<tr><td>Zone A</td><td>Zone X</td><td>NONE</td><td>YES</td></tr>
</table>
*Base Flood Elevations</td></tr>
<tr><td>18-09-1642P-060125
FIRM 06037C1267F</td><td>3/18/2020</td><td>Unnamed tributary to Arroyo Calabasas an area approximately 580 feet north east of the intersection of Long Valley Road and Twin Oaks Road.
<table>
<tr><th>Effective Flooding</th><th>Revised Flooding</th><th>Increases</th><th>Decreases</th></tr>
<tr><td>Zone A</td><td>Zone AO</td><td>YES</td><td>YES</td></tr>
<tr><td>No BFEs*</td><td>Depths</td><td>YES</td><td>NONE</td></tr>
</table></td></tr>
</table>

<table>
<tr><th>Reference No.</th><th>Date</th><th>FIRM Change Description</th></tr>
<tr><td></td><td></td><td>*Base Flood Elevations</td></tr>
<tr><td>17-09-0821P-060749
FIRM 06037C1269F
FIRM 06037C1267F</td><td>2/05/2018</td><td>McCoy Canyon Creek from approximately 270 feet upstream of Calabasas Road to approximately 1,830 feet upstream of Calabasas Road.
<table>
<tr><th>Effective Flooding</th><th>Revised Flooding</th><th>Increases</th><th>Decreases</th></tr>
<tr><td>Zone X</td><td>Zone AE</td><td>YES</td><td>NONE</td></tr>
<tr><td>No BFEs</td><td>BFEs</td><td>YES</td><td>NONE</td></tr>
</table>
*Base Flood Elevations</td></tr>
</table>

Table 156: FEMA Flood Map Revisions - Calabasas and Hidden Hills

Malibu

<table>
<tr><th>Reference No.</th><th>Date</th><th>FIRM Change Description</th></tr>
<tr><td>23-09-0599P-060745
FIRMS :
06037C1511G
06037C1562G
06037C 1561G
06037C1543G
06037C1542G
06037C1541G
06037C1539G
06037C1538G
06037C1537G
06037C1536G
06037C1519G
06037C1513G
06037C1514G</td><td>04/21/2021</td><td>Pacific Ocean - From approximately 1,660 feet east of the intersection of Broad Beach Road and Victoria Point Road to approximately 670 feet east of the intersection of Broad Beach Road and State Route 1; From just west of to approximately 1,600 feet east of the intersection of Escondido Beach Road and State Route 1; From approximately 400 feet west to approximately 1,150 feet east of the intersection of Latigo Shore Place and Latigo Shore Drive; From approximately 560 feet west of the intersection of Corral Canyon Road and State Route 1 to approximately 440 feet east of the intersection of Puerco Canyon Road and State Route 1; From approximately 700 feet west of the intersection of Malibu Road and Malibu Colony Drive to just east of the intersection of Serra Road and State Route 1; From approximately 390 feet east of the intersection of Rambla Vis to approximately 1,290 feet west of the intersection of State Route 1 and Topanga Canyon Lane.
<table>
<tr><th>Effective Flooding</th><th>Revised Flooding</th><th>Increases</th><th>Decreases</th></tr>
<tr><td>BFEs*</td><td>BFEs</td><td>YES</td><td>YES</td></tr>
<tr><td>Zone VE</td><td>Zone VE</td><td>YES</td><td>YES</td></tr>
<tr><td>Zone VE</td><td>Zone VE</td><td>YES</td><td>YES</td></tr>
<tr><td>Zone VE</td><td>Zone VE</td><td>YES</td><td>YES</td></tr>
</table>
*Base Flood Elevations</td></tr>
</table>

Table 157: FEMA Flood Map Revisions – Malibu

On February 27, 2023 Malibu City staff presented the Council with an update on the New FEMA Floodplain maps that were approved by FEMA. The new FEMA floodplain maps will become effective 120 days after FEMA has notified the public through publication. The City completed a final analysis of 14 separate cross sections within the City and concluded that flood levels in the FEMA April 14, 2021 revised flood maps should be lower. FEMA preliminary approved the revisions and will create new revised maps.

Approximately Western Extent	Old Base Flood Elevation (BFE)	New BFE	Change (feet)
31340 Broad Beach Rd	31	25	-6
Escondido Canyon	23	21	-2
26770 Latigo Shore Dr	20	19	-1
26122 E Pacific Coast Hwy	20	13	-7

Approximately Western Extent	Old Base Flood Elevation (BFE)	New BFE	Change (feet)
25442 Malibu Rd	31	24	-7
25302 Malibu Rd	31	29	-2
23832 Malibu Rd	19	18	-1
21756 E Pacific Coast Hwy	19	18	-1
21200 E Pacific Coast Hwy	20	19	-1
20806 E Pacific Coast Hwy	21	19	-2
20624 E Pacific Coast Hwy	21	19	-2
19936 E Pacific Coast Hwy	25	22	-3
19600 E Pacific Coast Hwy	28	27	-1
19252 E Pacific Coast Hwy	24	23	-1

Table 158: FEMA Flood Map Revision Update - Malibu

Westlake Village

No revisions to the FIRMs were made since 2018 however several amendments were implemented.

<table>
<tr><th>Reference No.</th><th>Date</th><th>FIRM Change Description</th></tr>
<tr><td>21-09-1113A-060744
FIRM : 06037C1239G</td><td>05/19/2021</td><td>Amendment: Lot 16 Tract 46039
<table>
<tr><th>Outcome</th><th>Flood Zone</th><th>1% Annual Chance Flood Elevation</th><th>Lowest Adjacent Grade Elevation</th></tr>
<tr><td>Structure</td><td>X (unshaded)</td><td>-</td><td>851.1 feet</td></tr>
</table>
Structure removed from the SFHA. A portion of this property is located within the Special Flood Hazard Area and the National Flood Insurance Program (NFIP) regulatory floodway for the flooding source indicated on the Determination/Comment Document while the subject of this determination is not. Flooding Source: Triunfo Creek</td></tr>
<tr><td>20-09-2091A-060744
FIRM : 06037C1239G</td><td>12/07/2020</td><td>Amendment: Lot 17 Tract 46039
<table>
<tr><th>Outcome</th><th>Flood Zone</th><th>1% Annual Chance Flood Elevation</th><th>Lowest Adjacent Grade Elevation</th></tr>
<tr><td>Structure</td><td>X (unshaded)</td><td>-</td><td>849.0 feet</td></tr>
</table>
Using the information submitted and the effective National Flood Insurance Program (NFIP) map, we have determined that the structure(s) on the property(ies) is/are not located in the SFHA, an area inundated by the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood). This document amends the effective NFIP map to remove the subject property from the SFHA located on the effective NFIP map; therefore, the Federal mandatory flood insurance requirement does not apply. However, the lender has the option to continue the flood insurance requirement to protect its financial risk on the loan. A Preferred Risk Policy (PRP) is available for buildings located outside the SFHA. Information about the PRP and how one can apply is enclosed. Flooding Source: Triunfo Creek</td></tr>
</table>

<table>
<tr><th>Reference No.</th><th>Date</th><th>FIRM Change Description</th></tr>
<tr><td>20-09-2072A-060744
FIRM : 06037C1239G</td><td>10/26/2020</td><td>Amendment: Lot 57 Tract 46039
<table>
<tr><th>Outcome</th><th>Flood Zone</th><th>1% Annual Chance Flood Elevation</th><th>Lowest Adjacent Grade Elevation</th></tr>
<tr><td>Structure</td><td>X (shaded)</td><td>-</td><td>846.5 feet</td></tr>
</table>
This document revises the effective NFIP map to remove the subject property from the NFIP regulatory floodway and the SFHA located on the effective NFIP map; therefore, the Federal mandatory flood insurance requirement does not apply. However, the lender has the option to continue the flood insurance requirement to protect its financial risk on the loan. A Preferred Risk Policy (PRP) is available for buildings located outside the SFHA. Flooding Source: Triunfo Creek</td></tr>
<tr><td>19-09-0387A-060744
FIRM : 06037C1239G</td><td>02/25/2019</td><td>Amendment: Lot 56 Tract 46039
<table>
<tr><th>Outcome</th><th>Flood Zone</th><th>1% Annual Chance Flood Elevation</th><th>Lowest Adjacent Grade Elevation</th></tr>
<tr><td>Structure</td><td>AE</td><td>845.7 feet</td><td>844.8 feet</td></tr>
</table>
Using the information submitted and the effective National Flood Insurance Program (NFIP) map, we have determined that the structure(s) on the property(ies) is/are located in the SFHA, an area inundated by the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood). Therefore, flood insurance is required for the property described above. The lowest adjacent grade elevation to a structure must be at or above the Base Flood Elevation for a structure to be outside of the SFHA. This determination is based on the flood data presently available. Flooding Source: Triunfo Creek</td></tr>
<tr><td>19-09-0334A-060744
FIRM : 06037C1239G</td><td>12/28/2018</td><td>Amendment: Lot 69 Tract 26936
<table>
<tr><th>Outcome</th><th>Flood Zone</th><th>1% Annual Chance Flood Elevation</th><th>Lowest Adjacent Grade Elevation</th></tr>
<tr><td>Structure</td><td>AE</td><td>877.1 feet</td><td>876.0 feet</td></tr>
</table>
This document provides the Federal Emergency Management Agency's determination regarding a request for a Letter of Map Amendment for the property described above. Using the information submitted and the effective National Flood Insurance Program (NFIP) map, we have determined that the structure(s) on the property(ies) is/are located in the SFHA, an area inundated by the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood). Therefore, flood insurance is required for the property described above. The lowest adjacent grade elevation to a structure must be at or above the Base Flood Elevation for a structure to be outside of the SFHA. Flooding Source: Westlake Lake</td></tr>
</table>

Table 159: FEMA Flood Map Amendments - Westlake Village

Estimated Impact of an Event

If major flooding were to occur, the consequences to local populations, employment, and housing could be significant. The table below provides the estimated impact of a disaster using a 1% loss baseline (see Community Profile section for detailed demographic and economic data).

Category	Agoura Hills	Calabasas	Hidden Hills	Malibu	Westlake Village	Impact if a 1% Loss Occurs
Population*	20,362	23,410	2,182	10,915	8,081	650
Total City Employment	11,100	11,800	4.5	6,483	3,700	330
Economy** (in thousands)	$621,000	$1,011,348	N/A	$578,443	$576,306	$27,871
Total Owner-Occupied Units	5,861	6,010	603	3,395	2,492	184
Median Home Value	$857,700	$1,141,600	$2,000,000+	$2,000,000+	$1,029,100	More than $258M (based on an average home value of $1,405,680 x Total Owner Occupied Units Impacted)

Table 160: Estimated Population and Economic Loss of Floods

***Source U.S. Census Bureau 2021 American Community Survey 5-Year Estimate**

****2017 U.S. Economic Census (in thousands)**

Based on a 1% loss projection, approximately 650 people could be displaced or significantly impacted, and approximately 184 homes could be damaged or destroyed resulting in over $258 million in losses based on an average home value of $1,405,680 and damage to 184 owner occupied units (see Community Profile section for population, housing, and economic data).

Impact of Climate Change

Each city within the LVMCOG (Agoura Hills, Calabasas, Hidden Hills, Malibu, and Westlake Village) are subject to the regional impacts of climate change. Periods of extreme weather such as severe winter storms and flooding are expected to continue as weather patterns change. Specific areas of concern within the LVMCOG include hillside landslides and sink holes (all cities) as well as flooding near riverine zones (especially in Malibu, Westlake Village, Calabasas, and Agoura Hills) as well as the potential for an overflow of the reservoir dam in Westlake Village. Additionally, flooding will cause numerous transportation issues for all LVMCOG cities if freeways and major routes are inundated. In particular, smaller roads through the Santa Monica Mountains between Malibu and Agoura Hills, Calabasas, and Westlake Village can become blocked due to downed trees and power lines as well as road damage.

Impact of Land Use and Development

City	Impact of Land Use and Development
Agoura Hills	New development projects within Agoura Hills limited according to the city's development plan and other restrictions to mitigate the impact of floods. Developed commercial zones in low lying areas could be temporarily impacted by severe flood and residential properties located near hillsides and lower elevations may be at greater risk of mudslides and flood. If a flood were to occur, future development densities especially in hillside areas could be further limited to mitigate the impact of flooding.
Calabasas	New development in the city are restricted to areas according to the city's development plan. Furthermore, existing commercial and residential projects within Calabasas must comply with drainage and other flood control requirements to mitigate the impacts of water inundation. Nevertheless, residential areas are located in the Calabasas hillsides and are at greater risk of flooding and mudslides. Additionally, if a major flood occurs, future development plans may increase the number of restrictions on new development or redevelopment projects, particularly residential properties in hillside areas.
Hidden Hills	As a fully developed community there is little room for new construction projects in Hidden Hills so no changes in residential patterns are anticipated if a flood occurs. In addition, due to the geography of the area, severe flooding is not anticipated. Nevertheless, if a flood occurs or other secondary impacts such as landslides/mudslides, future building restrictions or requirements could be implemented to further mitigate the potential for future damage.
Malibu	New development within Malibu is significantly restricted due to coastal constraints. Areas along the shoreline are susceptible to flooding due to sea level rise (see Tsunami and Sea Level Rise section) as well as erosion. Additionally, several streams pass through the Santa Monica Mountains to the ocean in Malibu. These areas can experience damage due to flood inundation and extreme water flows. In addition, the hillside and mountain areas of Malibu are vulnerable to flood caused mudslides and landslides. Consequently, structures in these areas (especially cliff side development and those located in isolated roads) may face future restrictions or may be converted to wildland if reconstruction is not feasible.
Westlake Village	Westlake Village maintains regulations and requirements to mitigate the impact of flooding. Regardless, if extreme flooding in the area were to occur, there are several streams within Westlake Village subject to inundation and the reservoir may overflow resulting in downstream flooding which may result in changes to land use patterns due to additional development constraints especially those areas located in the hillsides and low lying streams in the city.

Impact of Population Patterns

City	Impact of Population Patterns
Agoura Hills	In recent years, the population of Agoura Hills has shown a slight decrease. Although construction in flood prone areas is managed by local regulations and development plans, as new development projects are completed within Agoura Hills, an increase in the population and population densities may be expected. As a consequence if a flood occurs, a larger number of residents can be expected to be impacted due to the direct impact of floods as well as secondary effects such as landslides, mudslides, and sink holes. Further, future flooding could result in additional restrictions on rebuilding efforts in flood prone areas resulting in a change in population patterns.
Calabasas	The population of Calabasas has shown a minor decrease since the previous HMP update. Consequently, it is not anticipated that an increase in the risk to local residents due to flooding will occur and population patterns are expected to remain unchanged.
Hidden Hills	Recently, the population of Hidden Hills has shown a slight decrease and residential neighborhoods are well established. However, as local residents age, there may be an increase in the number of vulnerable individuals in terms of age and disabilities which can require additional services following a flood as well as the secondary impacts of floods such as landslides, mudslides, sink holes, and power outages. Consequently, a shift in population patterns may occur following severe flooding in the area if older populations choose to relocate.
Malibu	The population of Malibu has shown a minor decrease since the last census. Reconstruction of areas damaged by flood or secondary impacts such as landslides or mudslides may result in a shift in local population densities and could even result in an increase in the amount of wildland areas where future development is prohibited leading to a slight reduction in the local population.
Westlake Village	The population of Westlake Village has slightly decreased since the previous HMP update. However as local area development / redevelopment projects occur, there is the potential for an increase in the number of people at risk of a flooding as well as an increase in the number of vulnerable individuals in terms of age and disabilities which can require additional services following a flood and the secondary impacts of floods such as landslides and mudslides. Consequently, if a severe flood were to occur, future population densities may shift due to additional limits to construction/reconstruction in flood prone areas especially downstream from the reservoir as well as in areas prone to landslide.

Risk of Future Severe Winter Storm (including Flood)

For the LVMCOG Region, the risk of future climate change events was estimated by the Working Group using the following weighted formula:

Risk = (0.45 x Probability) + (0.30 x Magnitude/Severity) + (0.15 x Warning Time) + (0.10 x Duration)

Probability		Magnitude / Severity		Warning Time		Duration	
Level ID	Value	Level ID	Value	Level ID	Value	Level ID	Value
Unlikely	1	Negligible	1	Less than 6 hrs	4	Less than 6 hrs	1
Possibly	2	Limited	2	6 to 12 hrs	3	Less than 24 hrs	2
Likely	3	Critical	3	12 to 24 hrs	2	Less than one wk	3
Highly Likely	4	Catastrophic	4	More than 24 hrs	1	More than one wk	4

The result was a climate change risk rating of 4.57 (see Annex C Working Group HMP Risk Assessment Survey for additional details):

Hazard	Probability	Magnitude	Warning Time	Duration	Risk
Severe Winter Storm (including Flood)	4.33	6	3	3.67	4.57

FLOOD VULNERABILITIES

The major concern regarding the impact on communities from flood events is the loss of life and property. Critical infrastructure failures are also a threat and may require days or weeks to repair. Similarly, the impact to business and industry can result in immediate and long term economic loss.

For the LVMCOG region, specific parts of each city vulnerable to flooding include areas below the local hillsides and mountain regions as well as riverine pathways and in northern and southern Agoura Hills, southern and western areas of Calabasas, southern and western Hidden Hills, the Santa Monica Mountain areas of Malibu and Malibu Lagoon, and southern Westlake Village especially downstream of the reservoir. In additional to the vulnerability of the local population in terms of life and safety, floods can have long term impacts to local businesses, commercial facilities, and industry from damage to facilities and equipment. Additionally, critical infrastructure can be significantly damaged from flooding. Examples of vulnerabilities include the following in terms of property loss, critical infrastructure, and business and industry.

Property Loss

Extensive damage can be caused by flooding and landslide damage related to soil saturation from flood events. The type of property damage caused by flood events depends on the location, depth, and velocity of flood waters. Flood waters can wash buildings off foundations and sweep personal property downstream. For the cities within the LVMCOG residential, commercial, and public properties are subject to flood (see Annex F: Flood Insurance Rate Maps for specific areas at higher risk).

In addition, as a coastal community multiple properties in the City of Malibu are at risk from flooding from tsunami, storm surge, and/or severe winter storms. For example, numerous beach front properties are sometimes located very close to the surf line.

Map 82: Malibu Flood Insurance Rate Map, Panel 1511

Properties along the coast include private homes, businesses, and recreational areas including Malibu Lagoon. High surf can have a significant impact on these locations. Furthermore, storm run-off areas where mountain streams travel to the ocean are at risk of flood during severe storms.

Critical Infrastructure

Critical infrastructure can be damaged during floods especially when high water levels combine with flood debris. Damage can occur to water and sewer systems, electrical supplies, pipelines, transportation networks, emergency facilities, communications networks, and other essential sites. Furthermore, contamination of underground wells and reservoirs can impact local water supplies. Finally, flood waters and debris can overflow local storm water systems causing traffic disruptions and pose a hazard to the health of the local community. Furthermore, Pacific Coast Highway is the major transportation route and means of ingress/egress for the City of Malibu and sections of the highway are located very close to the shoreline.

Map 83: Malibu Coastline Example

Business and Industry

Flood events impact businesses by damaging property and interrupting access by employees, suppliers, and customers. Furthermore, a loss of utilities caused by flooding can prevent businesses and industry from functioning. In addition, local or regional flooding can result in lower worker productivity, disrupt traffic, and increase commute times. Moreover, multiple businesses in the City of Malibu are located along the coastline and are at greater risk of flooding from tsunami, storm surge, and/or severe winter storms. Also, many of these businesses in Malibu are dependent on tourism (e.g., hotels/rental housing, attractions, gift shops, restaurants, etc.) as well as ocean recreation and commerce such as boating, fishing, kayaking/wind sailing, surfing, and beach traffic.

VULNERABLE POPULATIONS

In Agoura Hills, the elderly and those speaking languages other than English are particularly vulnerable during floods. The elderly may face increased risk of injury or drowning due to mobility issues and slower response times, making evacuation and accessing higher ground challenging. Non-English speakers may struggle with understanding flood warnings and evacuation orders, potentially leading to delays in response and higher danger levels.

Calabasas residents, including those on fixed incomes, transitory workers, homeless individuals, and elderly or disabled residents, face significant risks during floods. Fixed-income residents may lack the resources to repair flood damage or relocate. Transitory workers and homeless individuals often lack stable housing, making it difficult to find safe, dry shelter. Elderly and disabled residents may experience significant difficulty in evacuating quickly and safely, potentially leading to higher injury rates.

In Hidden Hills, the older population, households with disabilities, and those with limited transportation capabilities are at substantial risk from floods. Older adults and those with disabilities may find it challenging to evacuate swiftly and access higher ground, and limited transportation options can leave these individuals stranded in flood-prone areas. Additionally, floodwaters can pose serious health threats to these populations.

Malibu's transitory workers, elderly population, lower-income residents, and homeless individuals are particularly vulnerable during floods. Transitory workers and the homeless often lack stable housing, increasing their risk of exposure to floodwaters. Elderly individuals may struggle with mobility issues that hinder quick evacuation, and lower-income residents may lack the financial means to repair flood damage or relocate, increasing their vulnerability during floods.

In Westlake Village, the elderly, disabled, homeless individuals, and residents speaking a language other than English are highly vulnerable during floods. The elderly and disabled may face increased injury risks and difficulty evacuating and accessing higher ground. Homeless individuals may lack shelter and resources, making them extremely vulnerable. Non-English speakers may have difficulty understanding flood warnings and evacuation orders, leading to delayed responses and increased risk.

FLOOD, TSUNAMI, STORM SURGE, AND SEVERE WINTER STORM HAZARD IDENTIFICATION MITIGATION STRATEGIES

National Flood Insurance Program

The National Flood Insurance Program (NFIP) is a Federal program created by Congress to mitigate future flood losses nationwide through sound, community-enforced building and zoning ordinances and to provide access to affordable, federally backed flood insurance protection for property owners. The NFIP is designed to provide an insurance alternative to disaster assistance to meet the escalating costs of repairing damage to buildings and their contents caused by floods.

The U.S. Congress established the NFIP on August 1, 1968, with the passage of the National Flood Insurance Act (NFIA) of 1968. The NFIP was broadened and modified with the passage of the Flood Disaster Protection Act of 1973 and other legislative measures. It was further modified by the National Flood Insurance Reform Act (NFIRA) of 1994 and the Flood Insurance Reform Act (FIRA) of 2004.

The NFIP is administered by the Federal Emergency Management Agency (FEMA), a component of the U.S. Department of Homeland Security (DHS). In support of the NFIP, FEMA identifies flood hazard areas throughout the United States and its territories. Most areas of flood hazard are commonly identified on Flood Insurance Rate Maps (FIRMs). A FIRM is an official map of a community on which FEMA has delineated both the special hazard areas and the risk premium zones applicable to the community.

Areas not yet identified by a FIRM may be mapped on Flood Hazard Boundary Maps (FHBMs). Several areas of flood hazards are identified on these maps. One of these areas is the Special Flood Hazard Area (SFHA).

The SFHA is a high-risk area defined as any land that would be inundated by a flood having a 1-percent chance of occurring in a given year (also referred to as the base flood). The high-risk-area standard constitutes a reasonable compromise between the need for building restrictions to minimize potential loss of life and property and the economic benefits to be derived from floodplain development. Development may take place within an SFHA, provided that development complies with local floodplain management ordinances, which must meet the minimum Federal requirements. Flood insurance is required for insurable structures within high-risk areas to protect Federal financial investments and assistance used for acquisition and/or construction purposes within communities participating in the NFIP.

Flood is defined in the Standard Flood Insurance Policy (SFIP), in part, as: 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 your property) from overflow of inland or tidal waters, from unusual and rapid accumulation or runoff of surface waters from any source, or from mudflow.

The National Flood Insurance Act of 1968 allows FEMA to make flood insurance available only in those areas where the appropriate public body has adopted adequate floodplain management regulations for its flood-prone areas. Individual citizens cannot regulate building or establish construction priorities for communities. Without community oversight of building activities in the floodplain, the best efforts of some to reduce future flood losses could be undermined or nullified

by the careless building of others. Unless the community as a whole is practicing adequate flood hazard mitigation, the potential for loss will not be reduced sufficiently to affect disaster relief costs. Insurance rates also would reflect the probable higher losses that would result without local floodplain management enforcement activities.

Participation in the NFIP is based on an agreement between local communities and the Federal Government that states that if a community will adopt and enforce a floodplain management ordinance to reduce future flood risks to new construction in Special Flood Hazard Areas (SFHAs), the Federal Government will make flood insurance available within the community as a financial protection against flood losses.

Each city within the Las Virgenes-Malibu Council of Governments participates in the National Flood Insurance Program (see FEMA Community Status Book Report: California table following) and the ongoing eligibility requirements are specified under 44CFR§59.21. Copies of current FIRMs are provided in **Annex F: Flood Insurance Rate Maps**.

CID	Community Name	County	Init FHBM Identified	Init FIRM Identified	Curr Eff Map Date	Reg-Emer Date	Tribal
065072C	AGOURA HILLS	LOS ANGELES		03/04/86	04/04/18	03/04/86	No
060749#	CALABASAS	LOS ANGELES		12/2/80	12/21/18	03/10/93	No
060125#	HIDDEN HILLS	LOS ANGELES	04/23/76	09/07/84	(NSFHA)	09/07/84	No
060745#	MALIBU	LOS ANGELES		09/26/08	04/21/21	10/01/92	No
060744C	WESTLAKE VILLAGE	LOS ANGELES		09/26/08	04/04/18	10/1/92	No

Table 161: FEMA Community Status Book Report: California

Source: https://www.fema.gov/flood-insurance/work-with-nfip/community-status-book

Note: A Non-Special Flood Hazard Area (NSFHA) is an area that is in a moderate-to-low risk flood zone (Zones B, C, X Pre- and Post-FIRM). An NSFHA is not in any immediate danger from flooding caused by overflowing rivers or hard rains. However, it's important to note that structures within a NSFHA are still at risk

LVMCOG Mitigation Activities

Flooding is often a regional problem that crosses multiple jurisdictional boundaries. Flood risks are greatest and flood hazards most severe during the winter "wet season" when water bodies may become full and soils saturated. Although flooding is primarily a natural process and is therefore difficult to prevent, urbanization, land use, and development decisions have a significant effect on the frequency and severity of floods.

Flood mitigation activities include enforcement of building codes, zoning codes, and various planning strategies to address development in areas of known hazards and applying the appropriate safeguards. Furthermore, all cities within the Las Virgenes Malibu Council of Governments have assessed their flood hazards and participate in the National Flood Insurance Program (NFIP). The Los Angeles County Department of Public Works (LACDPW) is responsible for regional flood control within the County. Flood mitigation measures include an extensive storm drain and flood control system.

Agoura Hills

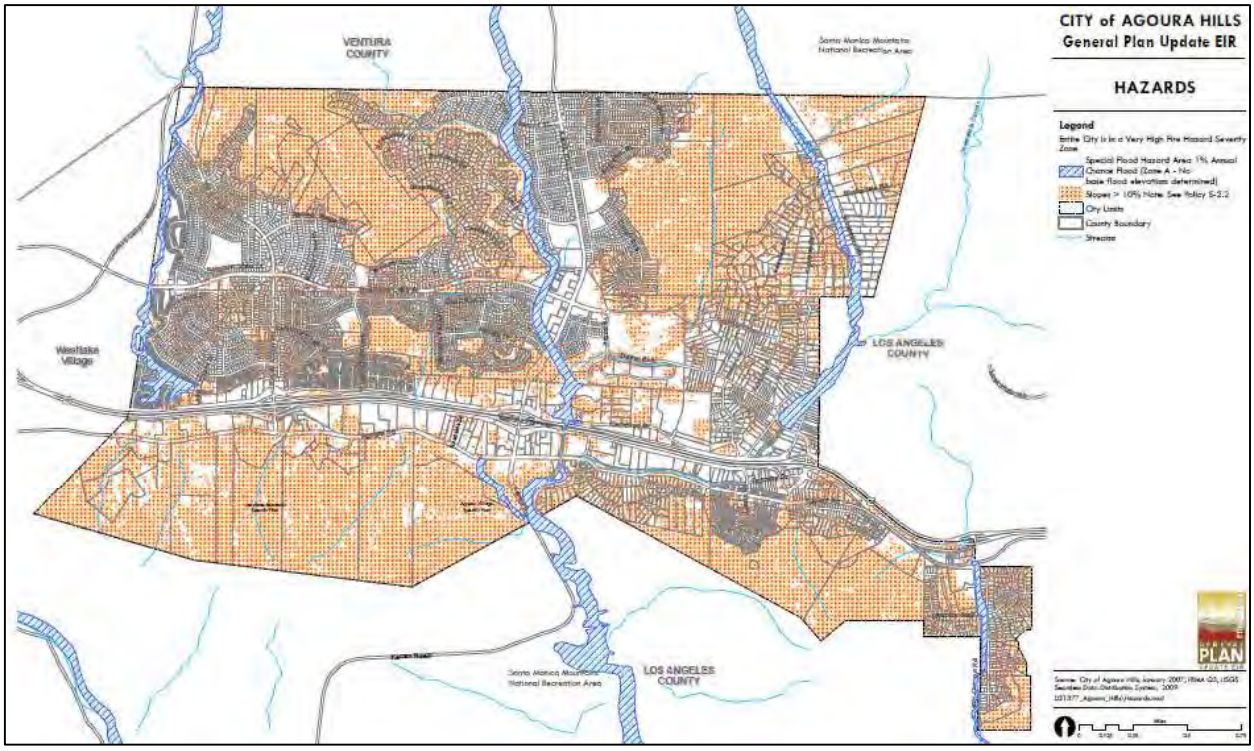
The City of Agoura Hills provides residents with flood facts via its web site. This includes general information and response guidance.

Further, the Los Angeles County Department of Public Works (LACDPW) presently owns and maintains three major flood control facilities in Agoura Hills. These facilities are the Lindero Canyon Channel, the Chesebro Canyon Channel, and parts of Medea Creek. Two major drainage channels not maintained by the LACDPW are the Palo Comado Canyon and Liberty Canyon. With the exception of the Palo Comado Canyon, these drainages are unchannelized or are maintained as semi-natural and are located in open space corridors.

- The Lindero Canyon Channel provides flood protection for the west drainage flow from Lindero Canyon. This canyon extends into Ventura Canyon, well beyond the City of Agoura Hills northerly boundary.
- The Chesebro Canyon Channel provides controlled drainage for the east drainage area of the City. Chesebro Canyon Channel intercepts the flows from Chesebro Canyon, and Palo Comado Canyon. Both canyons extend into Ventura Canyon, beyond the City of Agoura Hills northern boundary line.
- Medea Creek is partially improved between the Ventura Freeway and north to the Ventura County line. Medea Creek provides flood control protection for the central drainage area of the City. Medea Creek intercepts flow from Medea Creek Canyon, extending into Ventura County.

FEMA has identified several Special Flood Hazard Areas (SFHA) within Agoura Hills. Within these zones, the City of Agoura Hills enforces floodplain management standards as issued by FEMA. These standards are designed to prevent new development from increasing the flood threat and protect new and existing buildings from anticipated flood events.

Per FEMA, a SFHA is an area having special flood, mudflow or flood-related erosion hazards and shown on a Flood Hazard Boundary Map (FHBM) or a Flood Insurance Rate Map (FIRM) Zone A, AO, A1-A30, AE, A99, AH, AR, AR/A, AR/AE, AR/AH, AR/AO, AR/A1-A30, V1-V30, VE or V. The SFHA is the area where the National Flood Insurance Program's (NFIP's) floodplain management regulations must be enforced and the area where the mandatory purchase of flood insurance applies. For the purpose of determining Community Rating System (CRS) premium discounts, all AR and A99 zones are treated as non-SFHAs.



Map 84: City of Agoura Hills Flood Areas

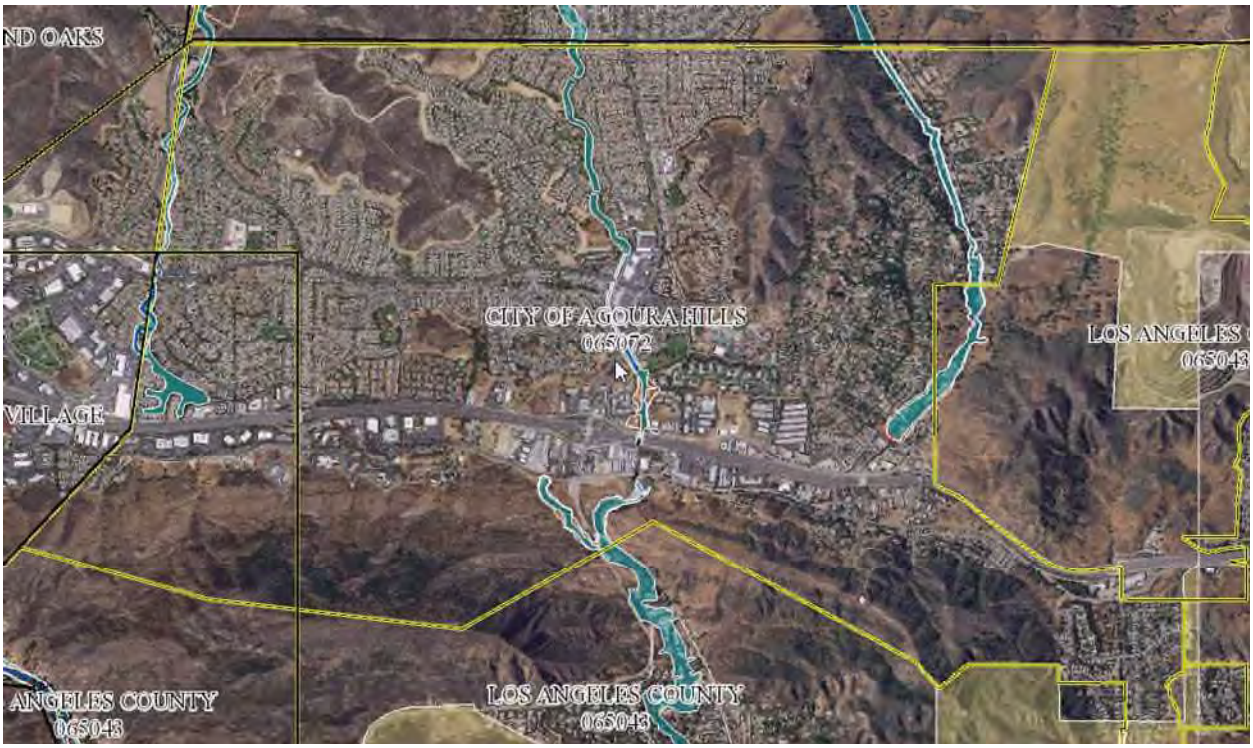
Source: City of Agoura Hills, General Plan 2035 EIR

Development under the City's General Plan could place structures within the SFHA, but not in a manner that would substantially impede or redirect flows. Adherence to development policies as well as state and federal regulations reduces the flood threat. Furthermore, as part of development project reviews, the City requires that a drainage plan and study be submitted, as appropriate. The following policies have been implemented in Agoura Hills. These policies guide the City in its continued compliance with NFIP guidelines and in reducing present and future flood hazards.

Policy	Description
S-1.1	**Coordination of Drainage Improvements**. Locate and improve deficiencies in the storm drain system to prevent local flooding problems in the City.
S-1.2	**New Development.** Require new development to upgrade storm drains to handle the increased runoff generated from the development sites.
S-1.3	**Facility Use or Storage of Hazardous Materials.** Require that all facilities storing, using, or otherwise involved with substantial quantities of on-site hazardous materials within flood zones comply with applicable standards of elevation, anchoring, and flood proofing, and that hazardous materials be stored in watertight containers.
S-1.4	**SEMS Plan.** Ensure that the City's Standardized Emergency Management System (SEMS) Plan is evaluated annually and revised as required, that the current mitigation strategies addressing flood hazards are implemented, and that effective public outreach and education are included.
S-1.5	**Preservation of the Flood Plains.** Preservation of the flood plains as open space shall be considered, as feasible, as an alternative to channelization.

Policy	Description
S-1.6	**Floodplain Requirements.** Regulate development within floodplains in accordance with the County, state, and federal requirements, and maintain the City's eligibility under the National Flood Insurance Program.
S-1.7	**Flood Mitigation Design.** Require that new development incorporates sufficient measures to mitigate flood hazards, including the design of on-site drainage systems linking with citywide storm drainage, grading of the site so that runoff does not impact adjacent properties or structures on the site, and elevation of any structures above any flooding elevation.

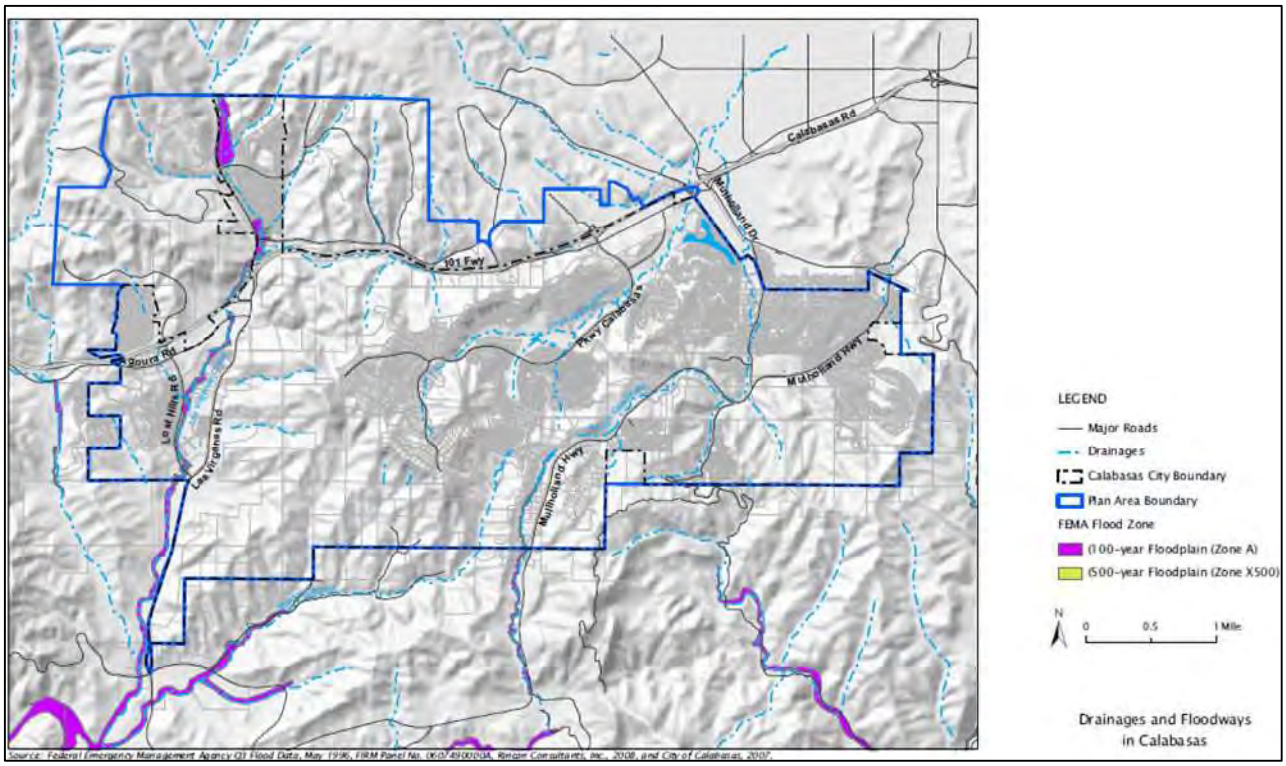
The map below provides a view of the Flood Insurance Rate Map area for the City of Agoura Hills. Flood Insurance Rate Maps (FIRM) are located in **Annex F**.



Map 85: City of Agoura Hills Flood Insurance Rate Map

Calabasas

Calabasas facilitates efforts with local, state, and federal agencies, including special districts to address flooding issues. Development is generally discouraged in flood-prone areas and individual developers in Calabasas are required to mitigate their potential contributions to downstream flooding problems. Any structures placed within the SFHA, will not be built in a manner that would substantially impede or redirect flows. Adherence to development policies as well as state and federal regulations reduces impacts from flooding in Calabasas to less than significant levels. The map below depicts FEMA designated flood zones in Calabasas. Small portions of western Calabasas (purple shaded areas) is within the 100-year floodplain; however, the majority of the City is not located within any designated Special Flood Hazard Areas.



Map 86: Drainages and Floodways in Calabasas

The following policies are outlined in the 2030 City of Calabasas General Plan Safety Element. These policies guide the City in its continued compliance with NFIP guidelines and in reducing present and future flood hazards.

Policy	Description
VII-11	Incorporate adequate mitigation measures into proposed development projects to achieve an acceptable level of risk from potential flooding hazards. Mitigation measures should also address projected flooding impacts from climate change.
VII-12	Strongly discourage development within flood hazard areas and encourage retention of natural drainage as the City's preferred management strategy, and as a higher priority than attempting to implement engineering solutions.
VII-13	Ensure that new flood control and drainage facilities as well as improvements to existing facilities are consistent with the General Plan's environmental protection standards.

Policy	Description
VII-14	For discretionary development projects, limit new impervious surfaces to those that will not individually or cumulatively increase harmful runoff into natural stream channels downstream.
VII-15	Setbacks from stream beds should be sufficient to avoid possible adverse effects associated with future stream bank erosion.
VII-16	Whenever feasible, locate essential public facilities, including health care facilities, emergency shelters, fire stations, emergency command centers, and emergency communications facilities, outside flood hazard zones.

The map below provides a view of the Flood Insurance Rate Map area for the City of Calabasas. Flood Insurance Rate Maps (FIRM) are located in **Annex F**.

Map 87: City of Calabasas Flood Insurance Rate Map ID

Hidden Hills

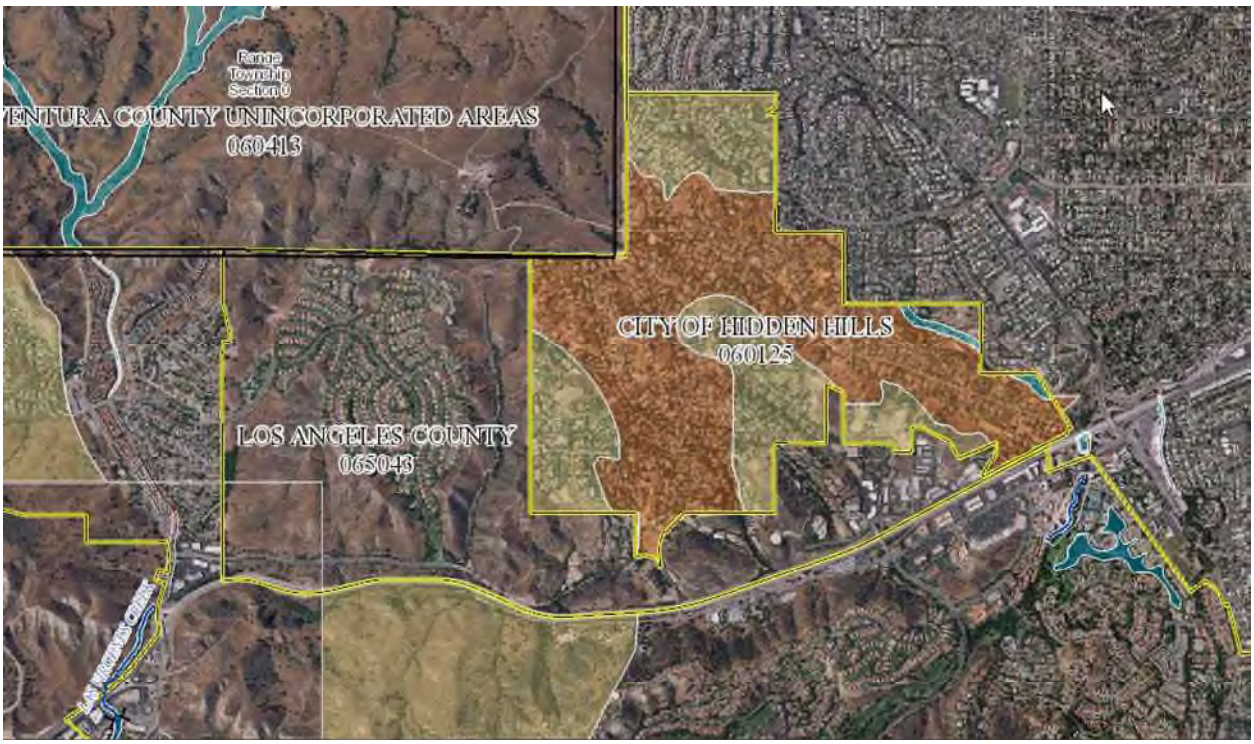
There are no year-round streams or ponds within the city. Surface water runoff only occurs during and after periods of intense rainfall. The City's topography and soil conditions subject Hidden Hills to flood hazards from storm drain overflow, erosion, mudflows, and debris deposits. There are no Special Flood Hazard Areas (SFHA) in the city of Hidden Hills. For this reason, there are no FEMA mandated floodplain management requirements to which Hidden Hills must adhere in order to participate in the NFIP.

Hidden Hills has implemented building code 3319.1 as a preventative measure for loss of life and property due to a flood event. Key Provisions of section 3319.1 include:

Category	Description
Building Limitations	Buildings are not permitted in an area determined by the City Engineer to be subject to flood hazard by reason of inundation, overflow or erosion, or where the placement of a building or other structures on the site is such that water or mud flows will be a hazard to buildings on adjacent property. The building official, in application of this subsection shall enforce, as a minimum, the current Federal Flood Plain Management Regulations defined in Title 44, Code of Federal Regulations, Section 60.3.
Site Restrictions	A person shall not perform work for which a building or grading permit is required within the boundaries of an established floodway, as determined by the City Engineer, if such work increases the flood hazard to adjacent properties by either increasing the capital flood water surface elevation, deflecting flows or increasing bank erosion. Such work may be performed within an established floodway and a building or grading permit therefore may be issued, where provisions are made to the satisfaction of the City Engineer to avoid such as increase in the flood hazard.
Los Angeles County Flood Control District	The Los Angeles County Flood Control District shall act as a consultant to the City Engineer in permit matters relating to flood control and flood hazard identification, avoidance and mitigation in all areas defined on maps furnished to the Engineer.

These standards are designed to prevent new development and site modifications from increasing the threat of flood and to protect new and existing buildings from future flood events.

The map below provides a view of the Flood Insurance Rate Map area for the City of Hidden Hills. Flood Insurance Rate Maps (FIRM) are located in **Annex F**



Map 88: City of Hidden Hills Flood Insurance Rate Map ID

Malibu

The City of Malibu is the only coastal community within the Las Virgenes-Malibu Council of Governments. The City extends 21 miles along the Pacific coast. In addition to its proximity to the Pacific Ocean, the City also contains multiple riparian zones that are subject to flood. Development under the City's General Plan could place structures within the SFHA, but not in a manner that would substantially impede or redirect flows. Adherence to development policies as well as state and federal regulations reduces impacts from flooding to less than significant levels.

FEMA has identified areas within Malibu as Special Flood Hazard Areas (SFHA). The map below provides a view of the Flood Insurance Rate Map zones for the City of Malibu. Flood Insurance Rate Maps (FIRM) are located in the **Annex F.**

Map 89: City of Malibu Flood Insurance Rate Map ID and Zones

All development, redevelopment, remodels and repairs in a mapped FEMA Flood Zone must meet FEMA and City of Malibu Floodplain Ordinance. All development projects submitted to the Planning Department will be reviewed by the Public Works Department to verify that the project will meet the FEMA Regulations and the City's Floodplain Ordinance. Some projects may be required to elevate the structure above the flood base flood elevation and execute a FEMA Elevation Certificate.

The following policies are outlined in the City of Malibu General Plan. These policies guide the City in its continued compliance with NFIP guidelines and in reducing present and future flood hazards.

General Plan Section	Description
Objective 1.2	Risks to residents and businesses from development in hazardous areas are minimized.
Policy 1.2.3	The City shall require development to provide for safety from coastal storm flooding, coastal erosion, surfacing septic effluent, and tsunami.
Policy 1.2.4	The City shall require development to be consistent with minimum Federal Management Agency (FEMA) guidelines for flood plain management.
Implementation Measure 40	Adopt and update as appropriate maps of extreme fire danger areas, 100-year flood plains, landslide and debris flow danger, active and potentially active faults, tsunami, and any other hazard areas; and inform residents of those areas of risks and possible mitigation measures.
Implementation Measure 43	Encourage area residents to participate in the National Flood Insurance Program.
Implementation Measure 44	Design coastal development, except supporting structure, to be above the wave uprush level for storms within the past 100-Years, and above the 100-year flood plain.
Implementation Measure 51	Evaluate proposed development for its impact on and from, geologic hazards, flood and mud flow hazard, and fire hazard.

In 2008 the City of Malibu received the Nation Weather Service "Storm Ready" Award. As a consequence, the City is eligible for NFIP premium reductions.

Westlake Village

Flood hazard areas within the City of Westlake Village are focused on the Triunfo Canyon drainage below Westlake Lake and the banks of the lake itself. A storm drain system has been constructed in the vicinity of the canyon to moderate the effects of storm runoff.

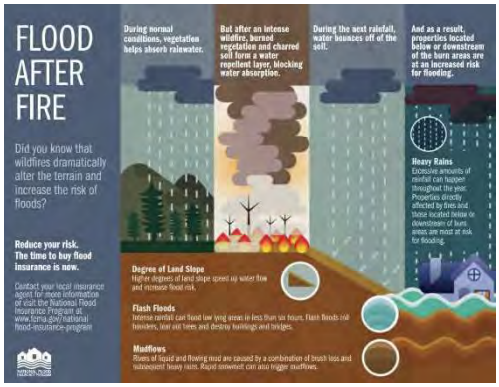
The Los Angeles County Flood Control District has prepared a Triunfo Creek Floodway Map (LACFCD 154-ML2, Ord. 81-0021), which defines the physical limits of the flood hazard and the minimum floor elevations required for structures outside the hazard area. Any development within the canyon will be subject to the review and approval of the District.

Development on the shores of Westlake Lake has been set back several feet from the highest water level which could be expected to occur. This setback is recognized as a flood hazard area and is maintained as open space. The "spillover" design of the Westlake Lake dam ensures that flooding beyond the lake's banks cannot occur.

Urban flooding can sometimes be possible due to debris accumulation on storm drains and in flood control channels and basins, over-burdened pumping stations and aged drainage systems. Low-lying areas are particularly susceptible to urban flooding.

There are no specific areas identified as frequent drainage problems. However, the general areas most susceptible are those around the Westlake Lake since this is the lowest elevation level in the City. These areas include First Neighborhood, Lakeshore, and Southshore.

In addition, the City of Westlake Village web site provides flood and mudflow preparation and mitigation guidance to residents following wildfires (such as post Woolsey Fire preparation). This information includes where to obtain sandbags; precautions for areas around flood control channels, catch basins, canyons and natural waterways; road hazards; burn debris removal; utilities (electrical and gas shutoffs); and flood insurance.



Further, the site provides links to social media sources for alerts and information:

Los Angeles County Fire Department (on "X")	Twitter @LACoFDPIO
Los Angeles County Sheriff Department (on "X")	Twitter @LASDHQ
Los Angeles County Public Works (on "X")	Twitter @LACoPublicWorks
City of Westlake Village	Facebook @CityofWestlakeVillage

The City complies with program requirements through the adoption and implementation of a flood plain management ordinance, which is coordinated by the City Engineer. This ordinance requires new development to meet certain standards to reduce the risk of future flood damage. Implementation of the program on the local level ensures that flood insurance will be available to local residents.

The following goals, policies, and programs are outlined in the City of Westlake Village General Plan Hazards Section. The goals and policies described guide the City in its continued compliance with NFIP guidelines and in reducing present and future flood hazards.

General Plan Section	Description
Goal	It shall be the goal of the City of Westlake Village to: Minimize hazards to public health, safety, and welfare which may result from geologic conditions, seismic activity, and flooding.
Objective 1 and Policy	It shall be the objective of the City of Westlake Village to: Provide for an efficient and safe evacuation of the community in the event of a major disaster. It shall be the policy of the City of Westlake Village to: 1-1 Maintain an effective Citywide Emergency Preparedness Plan. 1-2 Encourage community volunteers to assist police, fire, and civil defense personnel during and after a major earthquake, fire, or flood.
Objective 2 and Policy	It shall be the objective of the city of Westlake Village to: Ensure that construction and development activities within the community do not expose residents to avoidable natural hazards. It shall be the policy of the City of Westlake Village to: 2-1 Require the preparation of a detailed geologic and soils report to accompany each grading permit application in all hillside management areas. 2-2 Prohibit the placement of structures for human habitation within flood prone areas unless the flood hazard is eliminated by measures that do not impair the carrying capacity of the watercourse. 2-3 Enforce the provisions of the Uniform Building Code, specifically Chapters 23 and 70 as they related to earthquake-resistant design and excavation and grading.
Implementation Programs	I-1 Continue to update the Citywide Emergency Preparedness Plan as new information becomes available. I-2 Periodically distribute an updated pamphlet which informs individual residents of their responsibilities for emergency preparedness. I-3 Support training programs to train volunteers to assist police, fire protection and civil defense personnel during and after a seismic, fire or flooding event. I-4 Continue to implement the provisions of the Hillside Management ordinance and coordinate with the Los Angeles County Building and Safety Department so all applicable grading and development standards are implemented. I-5 Coordinate with the Los Angeles County Flood Control district to ensure that potential flooding hazards associated with proposed new development are fully mitigated. I-6 Coordinate with the Los Angeles County Building and Safety Department in the review of all development proposals, ensuring Chapters 23 and 70 of the Uniform Building Code are enforced.

FEMA has identified areas within Westlake Village as Special Flood Hazard Areas (SFHA), including Lindero Canyon which mostly lies within Agoura Hills. Within these zones Westlake Village has chosen to adopt and enforce minimum floodplain management standards as dictated by FEMA. These standards are designed to prevent new development from increasing the flood threat and to protect new and existing buildings from anticipated flood events.

The map below provides a view of the Flood Insurance Rate Map area for the City of Westlake Village. Flood Insurance Rate Maps (FIRM) are located in **Annex F**.

Map 90: City of Westlake Village Flood Insurance Rate Map ID

SECTION 13. TSUNAMI

THE NATURE OF THE FLOOD, TSUNAMI THREAT

The Las Virgenes-Malibu area is situated near the western portion of the Santa Monica Mountains and has experienced flooding in the past from major winter storm events. Flooding poses a threat to life and safety and can cause severe damage to public and private property. Due to the natural mountainous terrain as well as changes in the landscape (due to development) and natural disasters such as wildfire, flooding can be a factor in the area. In addition, the City of Malibu coastline is at risk of tsunami. Although the risk is relatively low, flooding due to tsunami can occur.

HISTORICAL RECORD OF TSUNAMI EVENTS

History of Tsunami in Southern California

Historically, the region has not experienced a large number of Tsunami events. The NBC Los Angeles article "List: Historic Tsunamis on California's Coast" and The Mercury News article: "California's 5 most deadly, devastating tsunamis" has documented the following Tsunami events in Southern California since 1812.

Date(s)	Weather	Adverse Impacts
12/21/1812	A magnitude-7.2 earthquake in the Santa Barbara channel generated a tsunami.	Low lying areas of Santa Barbara and Ventura were flooded, the temblor itself damaged several missions and Native American villages, while the tsunami was reported as far north as San Francisco. The waves also lifted up a 283-ton ship, which had been searching the coast for otter pelts, pushing up a half mile inland then carrying it back out to sea
4/1/1946	An undersea magnitude-7.4-magnitude earthquake off Alaska triggered a massive tsunami	It hit the California Coast, with nearly 15-foot-high waves hitting areas near Half Moon Bay. The waves caused flooding, toppled beachside buildings near Half Moon Bay tossed fishing boats as far as a quarter mile inland.
3/28/1964	A magnitude-9.2 earthquake off Alaska's produced a powerful wave, cresting at nearly 21 feet.	Powerful waves hit coastal areas, including the Northern California community of Crescent City, where 11 people were killed. A surge about 20-feet high flooded nearly 30 city blocks, according to the Department of Conservation. A total of more than 100 people in the tsunami zone, from Alaska and down the Pacific coasts of Canada and the United States, were killed.
3/11/2011	A magnitude-9.0 earthquake in the Tohoku region of Japan led strong tsunami currents.	Powerful waves crossed the Pacific Ocean and caused $100 million worth of damage to California ports and harbors, including those in Crescent City and Santa Cruz, more than 400 miles to the south.

Table 162: Tsunami Events in Southern California 1812 - 2011

SOURCES: List: Historic Tsunamis on California's Coast – NBC Los Angeles, California's 5 most deadly, devastating tsunamis (mercurynews.com), 1812 California Tsunami Carried a Ship Inland - Los Angeles Times (latimes.com), Tsunami: Santa Cruz harbor dock destroyed, man swept out to sea near Klamath River – The Mercury News

Disasters Declarations and Emergency Proclamations

FEMA disaster declarations allow state, tribal, and local governments to access federal aid for disaster response and recovery when overwhelmed. Similarly, the California Governor's Office of Emergency Services (Cal OES) issues proclamations to mobilize state resources and streamline procedures.

FEMA Disasters Declarations

No disaster declarations.

Cal OES Open State of Emergency Proclamations

No open emergency proclamations declared.

CAUSES AND CHARACTERISTICS OF TSUNAMI

A tsunami is a series of ocean waves with very long wavelengths (often hundreds of kilometers) caused by large-scale disturbances of the ocean, such as earthquakes, volcanic eruptions, underwater landslides, or even meteorite impacts. According to FEMA, they can be unpredictable, continue for hours and cause severe damage along coastal communities. Most of the damage found in the aftermath of a tsunami is due to the surge of water, wave impacts, strong currents, erosion, and debris.

Causes

The most common cause of tsunamis is underwater earthquakes, particularly those that occur along tectonic plate boundaries, where one plate subducts beneath another or where plates slide past each other horizontally. Volcanic activity, especially if it occurs underwater, can displace large volumes of water and generate tsunamis. Sudden shifts of underwater sediment or rock can displace water and create tsunamis.

Characteristics

Tsunamis have very long wavelengths compared to ordinary ocean waves. This means they can travel across entire ocean basins with relatively little loss of energy. In deep ocean water, tsunamis can travel at speeds of up to 500-800 kilometers per hour (310-500 miles per hour). However, as they approach shallow coastal waters, their speed decreases, and their height increases. Despite their high speed, tsunamis may not be noticeable in deep water because their height is often only a few centimeters to a meter or so. As tsunamis approach shallow coastal areas, their energy becomes concentrated, causing them to rise into towering waves that can travel far inland, flooding coastal regions and causing widespread destruction. Before the arrival of a tsunami, coastal waters may recede significantly, exposing the ocean floor.

STAKEHOLDER INPUT AND PARTICIPATION

To identify the threats, vulnerabilities, and consequences of a major tsunami on the Las Virgenes-Malibu Region, each member of the Planning Group which included representatives from the cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, and Westlake Village provided their input during planning meetings (see Annex B: Meeting Agendas and Attendees) and follow-up discussions. Specific topics of discussion included if any changes to the hazard priorities have changed since the previous HMP, how changes in the community have impacted the risk of each hazard, and what new mitigation actions can be taken. In addition, each member of the Planning Group as well as members of the public provided the input via online surveys (see Annex C: Community Disaster Preparedness and Risk Survey, Annex D: Planning Group HMP Risk Assessment Survey, and Annex E: Planning and Public Involvement).

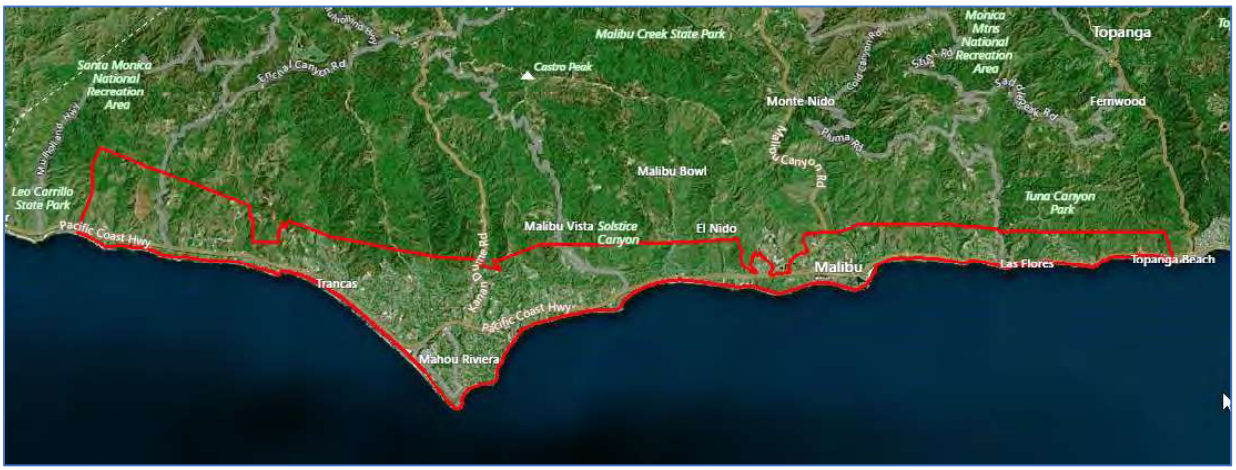
TSUNAMI HAZARD IDENTIFICATION

Las Virgenes-Malibu Tsunami Probability

According to the FEMA National Risk Index, the Los Angeles region records the chance of a tsunami at 0 events per year. While this measure is for the Los Angeles region, the City of Malibu may be more at risk. The FEMA National Risk Index also records 53 tsunami events in the region from 1800-2021.

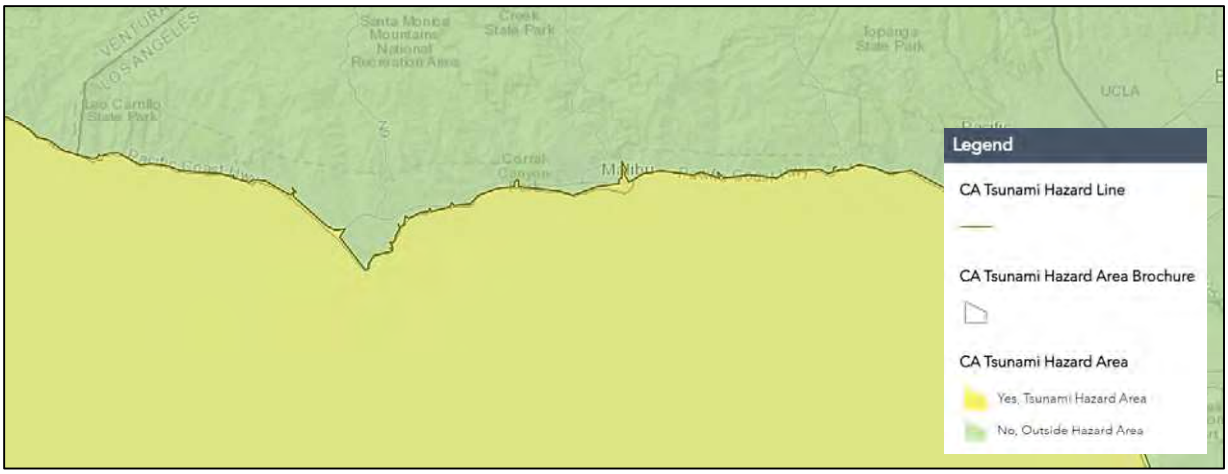
Tsunami

The City of Malibu is the only city within the LVMCOG that is adjacent to the Pacific Ocean and does not have a record of a tsunami in the past, however the risk cannot be fully eliminated.



Map 91: City of Malibu Boundaries and Coastline

In 2021, Los Angeles County updated its Tsunami Hazard Maps to include a 1,000-year event an d a presentation given to the community on April 13, 2021. The California Geological Survey mapped the areas of tsunami risk in the state which included the entire Malibu coastline.

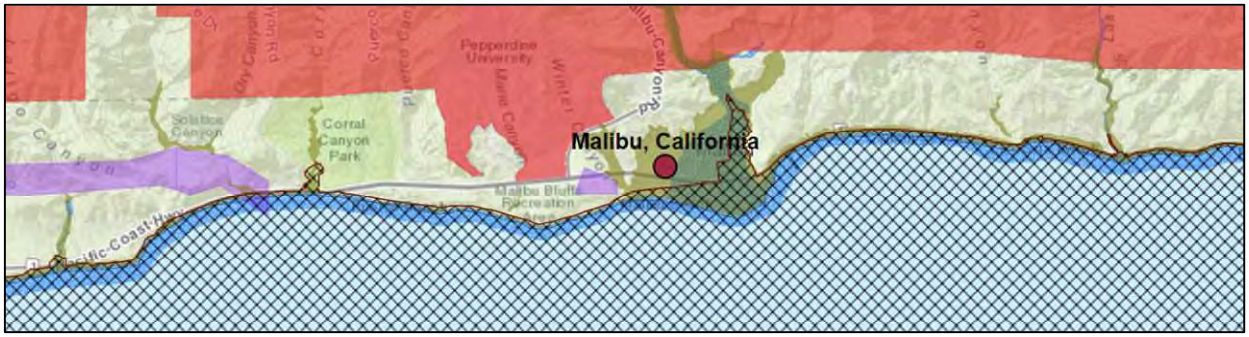


Map 92: Malibu Tsunami Risk

Source: California Geological

A 2013, a USGS study[32] developed a hypothetical but plausible tsunami scenario created by an earthquake of magnitude 9.1 along a fault length of 360 km in the Semidi subduction sector off the coast of Alaska. Based on this scenario, the study stated that, *"The SAFRR tsunami scenario demonstrates that many of the currently eroding beaches will have severe tsunami impacts and are at risk of beach loss. Malibu Beach will experience tsunami amplitudes of up to 2.5 m. Current velocities will average 2–3 m/s with some shoreline velocities of 5–8 m/s. The results show that much of the beach will be repeatedly inundated, as will several beach-front properties, including many high value homes."*

Additionally, Cal OES provides a map outlining the tsunami hazard areas as well as the risk associated with the hazard.



Map 93: Malibu Tsunami Hazard Area

Source: Cal OES

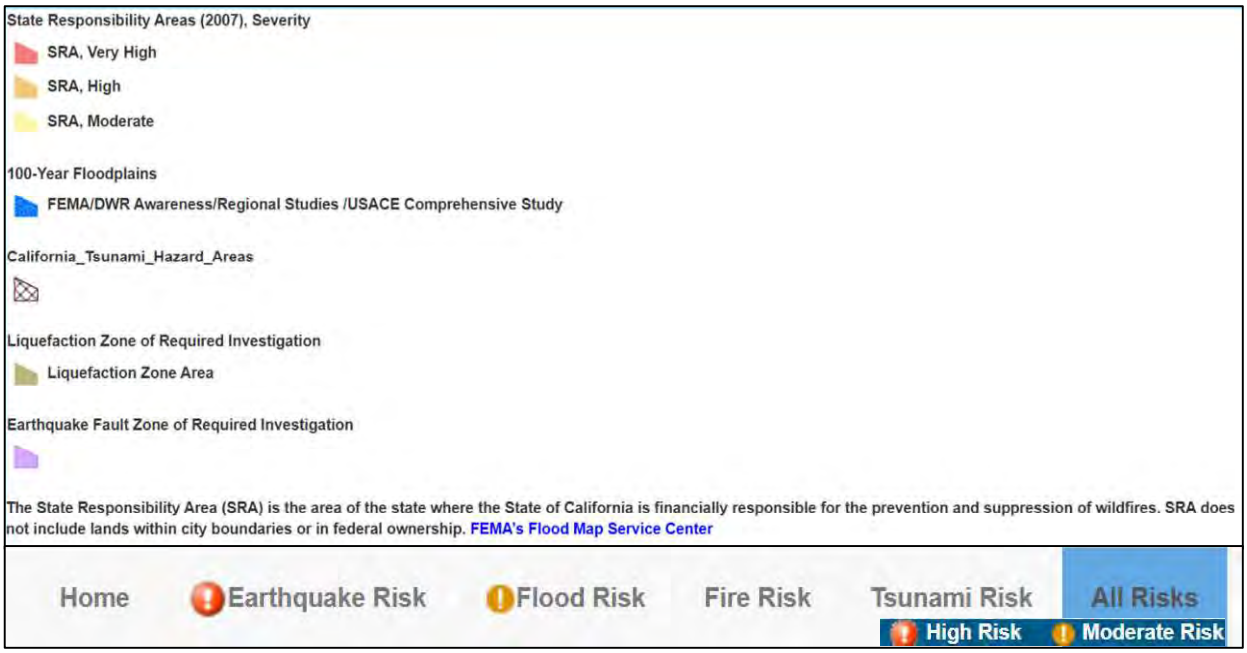


Figure 118: Cal OES Tsunami Hazard Area and Risk

[32] Brosnan, Wein, and Wilson, SAFRR Tsunami Scenario – Impacts on California Ecosystems, Species, Marine Natural Resources, and Fisheries, 2013 (USGS Open File Report 2013-1170-G).

Specific parts of Malibu most at tsunami risk include lower lying stream run-off / canyon areas and Malibu Lagoon (Source: Los Angeles, Bureau of Land Management, Esri, HERE, Garmin, INCREMENT P, USGS, METI/NASA, EPA, and USDA).

Map 94: Malibu Lagoon Tsunami Risk

Map 95: Corral Canyon Tsunami Risk

Map 96: Escondido Beach Tsunami Risk

Map 97: Zuma Beach Tsunami Risk

Storm Surge

As a coastal community, the City of Malibu is vulnerable to high waves and storm surge. For example, in August 2014, Hurricane Marie caused extremely high surf in the region which resulted in the closure of several beaches in Los Angeles County and damage to the Malibu Pier. During this event, wave heights peaked from 10 to 15 feet. The damage to the pier took more than 2 years to completed at an estimated cost of $4.6 million which included the replacement of at least 59 pilings.[33]

Figure 119: Topanga State Beach

Source: Source: California Department of Parks & Recreation

Figure 120: Malibu Pier

Source: California Department of Parks & Recreation

This risk of storm surge is related to the continued impact of sea-level rise and will continue to escalate as a risk in terms of life, safety, and economic impact into the future. In order to mitigate the threat of sea-level rise, the City of Malibu regulates development activities along the coast in conjunction with the regulatory authority of the State of California.

Sea-Level Rise

According to the City of Malibu General Plan, *"Elevations within the City range from sea level to approximately 1,700 feet above sea level. Most of the developed areas along the coast lie below 100 feet with the exception of the Point Dume and Malibu Park areas which reach an elevation of 500 feet. The hillsides and coastal mesas such as Big Rock and Las Flores have elevations ranging from 300 to 400 feet above sea level."* As a consequence, the threat of sea level rise is a concern. According to a 2016 report on the risk of sea-level rise prepared for the County of Los Angeles[34], the City of Malibu is at risk of sea-level rise due to the close proximity of assets and infrastructure to the shoreline and the anticipated reduction of beach width (sand front) along the coast due to wave runup and inundation. Further, continued sea-level rise will leave the City of Malibu more vulnerable to future storm events. Finally, if the situation continues, the erosion and loss of beaches can have a significant economic impact to the City.

[33] Tallal, The Malibu Times, Phase II of Malibu Pier Repairs to Being This Week, December 21, 2016.

[34] Noble Consultants-G.E.C., Inc., Final Report Los Angeles County Public Beach Facilities Sea-Level Rise Vulnerability Assessment, 2016.

As with the risk of storm surge, the City of Malibu regulates development activities along the coast in conjunction with the regulatory authority of the State of California. Other mitigation strategies in the future that may be undertaken by the State or County of Los Angeles may include beach sand replacement, sand dune maintenance, and shorefront protection strategies. These strategies were summarized in the 2016 report in the table, "Suggested Adaptive Management Strategy for Los Angeles County Public Beach Assets"[34] as follows:

Region	Malibu									Santa Monica Bay							Palos Verdes		
Potential strategy for existing or future asset on beach	Nicholas Canyon County Beach	El Sol County Beach	Zuma County Beach	Point Dume County Beach	Latigo Shores County Beach	Dan Blocker County Beach	Malibu Surfrider County Beach	Las Tunas County Beach	Topanga County Beach	Will Rogers State Beach	Venice Beach	Dockweiler State Beach	Manhattan Beach	Hermosa Beach	Redondo Beach	Torrance Beach	Royal Palms County Beach	White Point County Beach	Point Fermin Beach
Temporary winter berm protection			1							2	1	1	2	1	2	2			
Dune building and maintenance	2											2							
Maintain existing sand retention devices										2	2	2			2				
Beach nourishment			3	3					3	3	3	3	3	3	3	3			
Natural dunes and retreat	3	3			3	3	3	3									3	3	3

Adaptive management strategy key

1 = Short term period when sea-level rise is less than than 1 foot
2 = Transitional period when sea-level rise is between 1 and 2 feet
3 = Long term period when sea-level rise exceeeds 2 feet

Table 163: Suggested Adaptive Management Strategy for Los Angeles County Public Beach Assets

Estimated Impact of an Event

If major Tsunami were to occur, the consequences to local populations, employment, and housing could be significant. The table below provides the estimated impact of a disaster using a 1% loss baseline (see Community Profile section for detailed demographic and economic data).

Category	Malibu	Impact if a 1% Loss Occurs
Population*	10,915	109
Total City Employment	6,483	64.83
Economy** (in thousands)	$578,443	$109
Total Owner-Occupied Units	3,395	34
Median Home Value	$2,000,000+	More than $67.9M (based on an average home value of $1,405,680 x Total Owner Occupied Units Impacted)

Table 164: Estimated Population and Economic Loss of a Tsunami

***Source U.S. Census Bureau 2021 American Community Survey 5-Year Estimate**

****2017 U.S. Economic Census (in thousands)**

Based on a 1% loss projection for the City of Malibu, approximately 109 people could be displaced or significantly impacted, and approximately 34 homes could be damaged or destroyed resulting in over $67.9 million in losses based on an average home value of $2,000,0000 (see Community Profile section for population, housing, and economic data).

Impact of Climate Change

Tsunami and storm surge are only applicable to the City of Malibu. Climate change is expected to increase the risk of storm surge and increase the amount of damage due to erosion and future tsunami levels due to sea level rise.

Impact of Land Use and Development

A tsunami or storm surge would only impact the City of Malibu. If such an event were to occur, the result could be a loss of land available for use or development due to erosion of the coastline. Additionally, land loss of coastal hillsides where erosion undermines sea cliffs. As a consequence, land use patterns could be expected to shift to areas further away from the shoreline. Additionally, new land use restrictions may be implemented to further mitigate against future loss.

Impact of Population Patterns

A tsunami or storm surge would only impact the City of Malibu. If such an event were to occur, a decrease in the local population in the areas impacted may occur due to the loss of available land due to sea inundation/flooding, loss of buildable land (along the sea and hillsides), and a general reluctance of local populations to live close to the shoreline.

Risk of Future Tsunami

For the LVMCOG Region, the risk of future climate change events was estimated by the Working Group using the following weighted formula:

Risk = (0.45 x Probability) + (0.30 x Magnitude/Severity) + (0.15 x Warning Time) + (0.10 x Duration)

Probability		Magnitude / Severity		Warning Time		Duration	
Level ID	Value	Level ID	Value	Level ID	Value	Level ID	Value
Unlikely	1	Negligible	1	Less than 6 hrs	4	Less than 6 hrs	1
Possibly	2	Limited	2	6 to 12 hrs	3	Less than 24 hrs	2
Likely	3	Critical	3	12 to 24 hrs	2	Less than one wk	3
Highly Likely	4	Catastrophic	4	More than 24 hrs	1	More than one wk	4

The result was a climate change risk rating of 1.95 (see Annex C Working Group HMP Risk Assessment Survey for additional details):

Hazard	Probability	Magnitude	Warning Time	Duration	Risk
Tsunami	1.67	1.67	2.25	3.67	1.95

TSUNAMI VULNERABILITIES

The major concern regarding the impact on communities from tsunami events is the loss of life and property. Critical infrastructure failures are also a threat and may require days or weeks to repair. Similarly, the impact to business and industry can result in immediate and long term economic loss. Furthermore, sea level rise due to climate change further increases the risk of storm surge and the potential magnitude of tsunamis.

For the LVMCOG region, Malibu is the only city vulnerable to tsunami. As shown in the Tsunami Hazard Identification section, all coastal areas of Malibu are at risk. The primary concern is loss of life and injuries. Other specific vulnerabilities are listed below in terms of:

- Property Loss
- Critical Infrastructure
- Business and Industry

Property Loss

In Malibu, California, various populations are vulnerable to tsunamis: Permanent residents in low-lying coastal areas or near beaches face direct risk. Many residential areas line the coast, increasing susceptibility to tsunami waves. Tourists, especially during summer, may lack knowledge of evacuation routes, heightening vulnerability. The elderly, disabled, and those with mobility issues may struggle to evacuate quickly, requiring special attention for safety.

Critical Infrastructure

Homes in low-lying coastal areas, on beaches, or near shoreline cliffs face significant risk of tsunami damage or destruction, including single-family residences, beachfront estates, and multi-story condominiums. Malibu's hotels and resorts along the coastline are also vulnerable, with potential impacts on employees and tourism. Coastal businesses like restaurants, shops, and entertainment venues face damage and economic losses from tsunami waves, as do critical infrastructure facilities such as power plants, hospitals, and transportation hubs, affecting public safety, health, and the economy. Public amenities like parks, marinas, and coastal infrastructure are also at risk of erosion and disruption.

Business and Industry

Tsunami events pose considerable threats to businesses, especially those situated along coastlines near Malibu. These businesses are susceptible to property damage and face challenges in maintaining access for employees, suppliers, and customers. Disruptions in utilities resulting from tsunami flooding can further hinder business operations. Additionally, local or regional tsunami flooding can lead to decreased worker productivity, traffic disruptions, and longer commute times. In Malibu, numerous businesses reliant on tourism and ocean-related activities, such as hotels, attractions, restaurants, and beach commerce, confront heightened vulnerability to tsunamis, intensifying the economic repercussions.

VULNERABLE POPULATIONS

In Agoura Hills, while the risk of direct impact from a tsunami is low due to its inland location, secondary effects such as disrupted transportation routes can affect the elderly and those speaking languages other than English. The elderly may face difficulties in accessing essential services and medical care if transportation routes are compromised. Non-English speakers may struggle to understand and access information about indirect impacts and emergency measures.

Calabasas residents, including those on fixed incomes, transitory workers, homeless individuals, and elderly or disabled residents, might experience indirect impacts from a tsunami, such as disrupted access to services. Fixed-income residents may find it difficult to adjust to the economic repercussions and increased demand for goods and services following a tsunami. Transitory workers and the homeless may face additional hardships due to displacement and lack of access to essential services. Elderly and disabled residents may have difficulty accessing medical care and support services if transportation and infrastructure are affected.

In Hidden Hills, the older population, households with disabilities, and those with limited transportation capabilities are vulnerable to the indirect effects of a tsunami. Older adults and those with disabilities may struggle with disrupted access to medical care and essential supplies if transportation routes are affected. Limited transportation capabilities can further exacerbate these challenges, leaving them isolated and in need of assistance.

In Malibu, the transitory workers, elderly population, lower-income residents, and homeless individuals are particularly vulnerable to tsunamis. Transitory workers and the homeless often lack stable housing, increasing their risk of exposure to tsunami waves and debris. Elderly individuals may struggle with mobility issues that hinder quick evacuation to higher ground. Lower-income residents may lack the financial means to relocate or access temporary shelter, significantly increasing their risk of harm during a tsunami.

In Westlake Village, the elderly, disabled, homeless individuals, and residents speaking a language other than English are vulnerable to the indirect impacts of a tsunami. The elderly and disabled may face increased difficulty in accessing medical care and essential services if transportation are disrupted. Homeless individuals are particularly at risk due to their lack of stable shelter and resources. Non-English speakers may have difficulty understanding information about emergency measures, increasing their vulnerability.

TSUNAMI HAZARD IDENTIFICATION MITIGATION STRATEGIES

National Tsunami Information Guide

The National Tsunami Information Guide serves as a comprehensive resource providing guidance and information on tsunamis. It offers details on tsunami warning systems, evacuation procedures, and safety measures for individuals, communities, and businesses. The guide outlines steps for preparedness, response, and recovery in the event of a tsunami, aiming to minimize loss of life and property damage. It also educates the public about tsunami risk factors, warning signs, and how to recognize and respond to a tsunami threat effectively. Additionally, the guide may include information on government agencies responsible for tsunami monitoring and coordination, as well as resources for further assistance and support. Overall, the National Tsunami Information Guide plays a crucial role in promoting awareness, readiness, and resilience against tsunami hazards at the national level.

National Flood Insurance Program (NFIP)

While the National Flood Insurance Program (NFIP) primarily focuses on flood risk management, its principles and mechanisms can also be relevant in the context of tsunamis. Tsunamis, unlike typical river or rainfall-induced floods, are large ocean waves typically caused by underwater earthquakes, volcanic eruptions, or landslides. Therefore, the NFIP's approach to floodplain management and insurance coverage needs to be adapted to address the specific challenges posed by tsunamis.

Although NFIP policies explicitly exclude coverage for tsunamis, many of the program's principles and practices can still be applied to tsunami risk management. For example, FEMA's floodplain mapping and risk assessment methodologies can be utilized to identify coastal areas prone to tsunamis and inform land-use planning and development regulations aimed at reducing exposure and vulnerability.

Additionally, the NFIP's emphasis on building codes, land-use zoning, and elevation standards can be instrumental in mitigating the impact of tsunamis by promoting resilient construction practices, establishing setback requirements for coastal development, and encouraging the relocation of critical infrastructure and vulnerable populations away from high-risk areas.

While NFIP policies do not cover tsunami-related damage, they can complement other insurance options specifically designed to address tsunami risk, such as earthquake and tsunami insurance policies offered by private insurers in certain coastal regions. By integrating tsunami risk considerations into broader floodplain management efforts and leveraging the expertise and resources of NFIP, coastal communities can enhance their overall resilience to tsunamis and other coastal hazards, ultimately reducing the potential for loss of life and property damage in the event of a tsunami.

LVMCOG Mitigation Activities

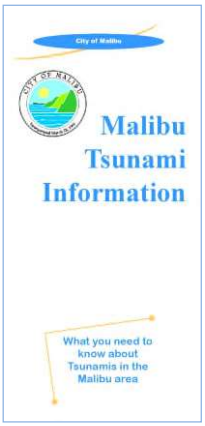
Malibu

Tsunami Planning

To plan for and mitigate the impact of a tsunami to the general public, the City of Malibu has developed a tsunami information brochure and has designated several Tsunami Safe Areas and evacuation routes.

Tsunami Safe Areas
• Malibu Bluffs Park • Hughes Research Labs parking lot • Malibu Creek State Park • Salvation Army Camps (behind Tapia Park)
Evacuation Routes
• Topanga Canyon Blvd. • Malibu Canyon Road • Kanan Road • Encinal Canyon Road • Mulholland Highway

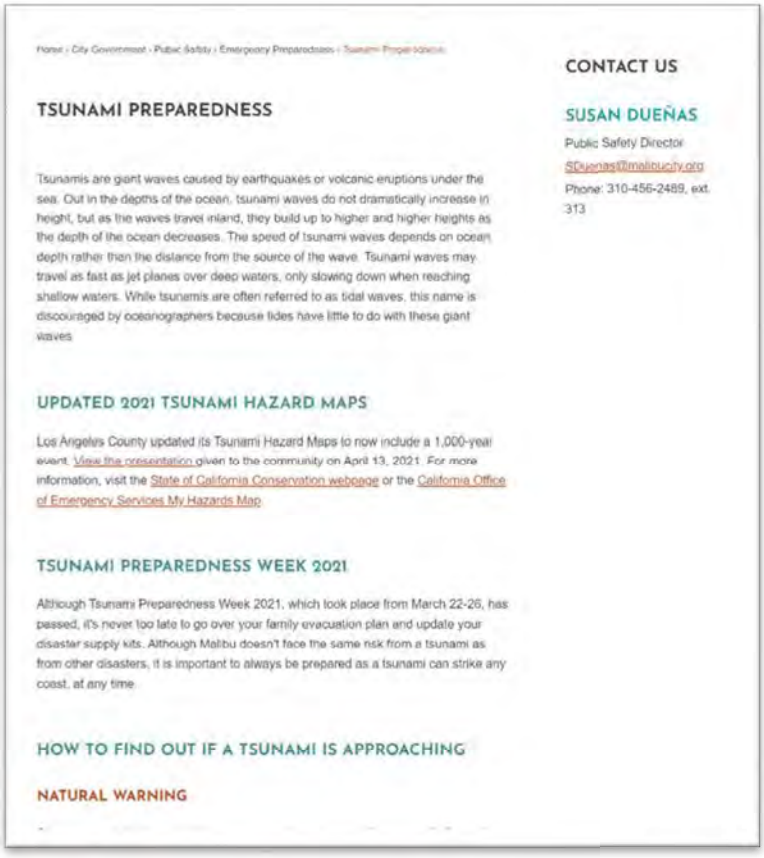
Table 165: City of Malibu Tsunami Safe Areas and Evacuation Routes



Tsunami Preparedness

Additionally, the City of Malibu provides Tsunami Preparedness information, including updated 2021 Tsunami Hazard Maps, Tsunami Preparedness Week 2021, as well as other resources for residents.

The updated 2021 Tsunami Hazard Maps, which provide detailed visual representations of areas within Malibu that may be at risk of tsunami inundation, help residents better understand their individual exposure to tsunami hazards.



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TSUNAMI PREPAREDNESS

Tsunamis are giant waves caused by earthquakes or volcanic eruptions under the sea. Out in the depths of the ocean, tsunami waves do not dramatically increase in height, but as the waves travel inland, they build up to higher and higher heights as the depth of the ocean decreases. The speed of tsunami waves depends on ocean depth rather than the distance from the source of the wave. Tsunami waves may travel as fast as jet planes over deep waters, only slowing down when reaching shallow waters. While tsunamis are often referred to as tidal waves, this name is discouraged by oceanographers because tides have little to do with these giant waves.

UPDATED 2021 TSUNAMI HAZARD MAPS

Los Angeles County updated its Tsunami Hazard Maps to now include a 1,000-year event. View the presentation given to the community on April 13, 2021. For more information, visit the State of California Conservation webpage or the California Office of Emergency Services My Hazards Map.

TSUNAMI PREPAREDNESS WEEK 2021

Although Tsunami Preparedness Week 2021, which took place from March 22-26, has passed, it's never too late to go over your family evacuation plan and update your disaster supply kits. Although Malibu doesn't face the same risk from a tsunami as from other disasters, it is important to always be prepared as a tsunami can strike any coast, at any time.

HOW TO FIND OUT IF A TSUNAMI IS APPROACHING

NATURAL WARNING

CONTACT US

SUSAN DUEÑAS
Public Safety Director
SDuenas@malibucity.org
Phone: 310-456-2489, ext. 313

In 2021, the City of Malibu hosted a Tsunami Preparedness Week from March 22 to 26. In addition, on April 13, 2021 a presentation Los Angeles County was provided with update Tsunami Hazard Maps which included a 1,000 year event.

Finally, the City of Malibu web site provides the community with links to mitigation information including The Tsunami Zone California website or download the National Tsunami Hazard Mitigation Program (NTHMP) Tsunami Information Guide offered by the National Weather Service.

Figure 121: National Weather Service Tsunami Alert Categories

SECTION 14. SEVERE WINTER STORM

THE NATURE OF SEVERE WINTER STORM THREAT

The Las Virgenes-Malibu area is susceptible to the impacts of severe winter storms, characterized by heavy rainfall and strong winds. These storms disrupt daily life, pose threats to property, and can cause significant damage to infrastructure and homes. The region's topography, coupled with urban development and the aftermath of wildfires, can heighten the risks of erosion and mudslides.

HISTORICAL RECORD OF SEVERE WINTER STORMS

History of Severe Winter Storms in Southern California

Historically, the region has experienced extended periods (on the order of years) of either wet or dry weather. Additionally, in any given year the amount of precipitation can vary widely. The NOAA has recorded storm data in Southern California since 2019.

Date(s)	Weather	Adverse Impacts
3/29/2023 to 3/30/2023	Winter storm conditions developed across the eastern range of the San Gabriel Mountains. Above 5000 feet, snowfall totals of 6 to 12 inches were reported. Additionally, southerly winds, gusting up to 67 MPH, were reported.	Rainfall totals across the area ranged between 1 and 3 inches which produced numerous reports of nuisance urban flooding. In the mountains of Los Angeles County, snowfall totals up to 12 inches, combined with wind gusting to 67 MPH
3/21/2023	Winter storm conditions developed across the western range of the San Gabriel Mountains. The storm brought winter storm conditions the local mountains with snowfall totals of 2 to 4 feet and southerly winds gusting in excess of 80 MPH.	Vvery strong southerly winds. Snowfall totals of 2 to 4 feet were reported above 6000 feet elevation with 10 to 20 inches between 5000 and 6000 feet. Additionally, there were some very strong southerly winds.
3/1/2023	Winter storm conditions developed across the mountains of Los Angeles County. Rainfall totals ranged from 0.50 to 1.50 inches across coastal and valley areas with 1 to 3 inches across the mountains. Cold air, associated with the storm, dropped snow levels to around 3000 feet. Strong winds were also reported.	significant snowfall accumulations in the local mountains were reported. Thunderstorms developed throughout the area, causing wind damage.
1/4/2023 to 1/6/2023	A winter storm brought strong winds, moderate to heavy rainfall and high elevation snowfall to the area. Overall, rainfall totals ranged from 2 to 4 inches across coastal and valley areas with 4 to 8 inches across the foothills and mountains.	Rainfall intensities were moderate, resulting in widespread nuisance urban flooding. Snow levels remained very high, above 6000 feet, with the resort level receiving 8-16 inches of snowfall. Along with the rain and snow, gusty southerly winds were reported with gusts up to 87 MPH.
12/26/2019	A powerful winter storm brought significant rain, snow, and wind to the area. Rainfall totals ranged from 1 to 2 inches across coastal and valleys areas with 2 to 4 inches in the foothills and mountains.	Numerous road closures due to winter storm conditions were reported, including Interstate 5 through the Grapevine as well as Highways 14 and 138. Additionally, thunderstorms generated a waterspout over the coastal waters as well as a very weak tornado over Ventura Harbor
11/28/2019 to 11/29/2019	A cold and powerful winter storm brought significant winter storm conditions to the Antelope Valley as well as the mountains of Santa Barbara, Ventura and Los Angeles counties. Snow levels bottomed out to between 2000 and 3000 feet.	winter storm conditions resulted in significant travel issues, including closure of parts of interstate 5, Highway 14 and Highway 138.

Table 166: Significant Winter Storm Events in Southern California 2019 - 2023

Disasters Declarations and Emergency Proclamations

FEMA disaster declarations allow state, tribal, and local governments to access federal aid for disaster response and recovery when overwhelmed. Similarly, the California Governor's Office of Emergency Services (Cal OES) issues proclamations to mobilize state resources and streamline procedures.

FEMA Disasters Declarations

Declaration Date: 1/9/23 || California Severe Winter Storms, Flooding, and Mudslides || DD# em-3591-CA

Intense winter storm conditions caused flooding, debris flows and mudslides across most of California, though most damage was sustained outside the LVMCOG region.

Declaration Date: 3/10/23 || California Severe Winter Storms, Flooding, Landslides, and Mudslides || DD# EM-3592-CA

Landslides and mudslides occurred during a severe winter storm, despite heavy damage reported across the state coast, the LVMCOG region was not as heavily affected.

Cal OES Open State of Emergency Proclamations

Proclamation Date: 1/29/21 || Winter storms

The winter storm proclamation was a hazard to Los Angeles as well as the LVMCOG region.

Proclamation Date: 1/4/23

Severe winter storms struck California causing high winds, and expected flooding, and widespread power outages. This declaration was a hazard to the entire state of California.

CAUSES AND CHARACTERISTICS OF SEVERE WINTER STORMS

Severe winter storms can arise from a combination of various atmospheric conditions. Winter storms often occur when a cold air mass collides with a warm air mass. The cold air mass, typically originating from polar regions, is denser and forces the warm air to rise rapidly, leading to the formation of storm clouds. Winter storms require a moisture source. In many cases, this moisture is provided by bodies of water, such as the Great Lakes in the United States. Cyclogenesis refers to the process of cyclone formation, which can occur along frontal boundaries where temperature gradients are steep. As the low-pressure system intensifies, it can bring together the necessary ingredients for a severe winter storm, including strong winds and heavy precipitation.

Annual Rainfall

Rainfall in the LVMCOG region averages nearly 18 inches per year. However, the term "average rainfall" is misleading because over the recorded history of rainfall in the region, rainfall amounts have ranged from no rain at all in some years to well over normal averages in very wet years. Furthermore, actual rainfall in Southern California tends to fall in large amounts during sporadic and often heavy storms rather than in consistent amounts throughout the year (*See Community Profile Section for additional details).* For example, the 2022 and 2023 years experienced greater than average rainfall including Tropical Storm Hilary in August 2023 which was the first severe storm of this type to reach Southern California since the 1930's.

Strong Winds and Gusts:

Severe winter storms in the LVMCOG region are distinguished by powerful winds and gusts. These storms can bring sustained high winds and gusts that pose risks to infrastructure, including buildings, trees, and power lines. The strong winds can lead to property damage, downed trees, and power outages, disrupting daily life.

STAKEHOLDER INPUT AND PARTICIPATION

To identify the threats, vulnerabilities, and consequences of a severe winter storm on the Las Virgenes-Malibu Region, each member of the Planning Group which included representatives from the cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, and Westlake Village provided their input during planning meetings (see Annex B: Meeting Agendas and Attendees) and follow-up discussions. Specific topics of discussion included if any changes to the hazard priorities have changed since the previous HMP, how changes in the community have impacted the risk of each hazard, and what new mitigation actions can be taken. In addition, each member of the Planning Group as well as members of the public provided the input via online surveys (see Annex C: Community Disaster Preparedness and Risk Survey, Annex D: Planning Group HMP Risk Assessment Survey, and Annex E: Planning and Public Involvement).

SEVERE WINTER STORM HAZARD IDENTIFICATION

Severe winter storms occur when a combination of atmospheric conditions, including cold temperatures, moisture, and wind, result in heavy precipitation and high winds. In the LVMCOG region, the proximity to colder air masses from the north and moisture from the Pacific Ocean increases the likelihood of severe winter weather events. Additionally, variations in topography and elevation contribute to localized differences in rainfall and wind patterns. With continued growth, urban development, and expansion of impermeable surfaces, such as roads and buildings, the region's susceptibility to severe winter storms is heightened. These factors can lead to challenges in managing floods, maintaining roadways, and ensuring public safety during extreme winter weather conditions.

Tropical Storms and El Nino Conditions

Another source of heavy rainfall is from summer tropical storms. These tropical storms usually coincide with El Nino years. El Nino is a disruption of the ocean-atmosphere system in the tropical Pacific Ocean having important consequences for weather in California. Among these consequences is increased rainfall across the southern tier of the U.S. and Peru.

During El Nino periods, trade winds begin to relax in the central and western Pacific Ocean leading to a depression of the thermocline in the eastern Pacific Ocean and an elevation of the thermocline in the west. The result is a rise in sea surface temperature and heavier than normal rainfall in Southern California. In the past, El Nino conditions have caused damage to the Las Virgenes-Malibu area, particularly in the City of Malibu.

Storm Surge

As a coastal community, the City of Malibu is vulnerable to high waves and storm surge. For example, in August 2023 the entire region was threatened by Tropical Storm Hilary a Category 4 event which resulted in heavy rains and a potential for storm surge.

In December 2021, an atmospheric river brought heavy rain to Southern California and produced a high threat of storm surge in Malibu. Also in August 2014, Hurricane Marie caused extremely high surf in the region which resulted in the closure of several beaches in Los Angeles County and damage to the Malibu Pier. During this event, wave heights peaked from 10 to 15 feet. The damage to the pier took more than 2 years to completed at an estimated cost of $4.6 million which included the replacement of at least 59 pilings.[35]

Figure 122: Topanga State Beach

Source: Source: California Department of Parks & Recreation

Figure 123: Malibu Pier

Source: California Department of Parks & Recreation

[35] Tallal, The Malibu Times, Phase II of Malibu Pier Repairs to Being This Week, December 21, 2016.

This risk of storm surge is related to the continued impact of sea-level rise (see Climate Change section) and will continue to escalate as a risk in terms of life, safety, and economic impact into the future. In order to mitigate the threat of sea-level rise, the City of Malibu regulates development activities along the coast in conjunction with the regulatory authority of the State of California.

Estimated Impact of an Event

If a major Storm were to occur, the consequences to local populations, employment, and housing could be significant. The table below provides the estimated impact of a disaster using a 1% loss baseline (see Community Profile section for detailed demographic and economic data).

Category	Agoura Hills	Calabasas	Hidden Hills	Malibu	Westlake Village	Impact if a 1% Loss Occurs
Population*	20,362	23,410	2,182	10,915	8,081	650
Total City Employment	11,100	11,800	4.5	6,483	3,700	330
Economy** (in thousands)	$621,000	$1,011,348	N/A	$578,443	$576,306	$27,871
Total Owner-Occupied Units	5,861	6,010	603	3,395	2,492	184
Median Home Value	$857,700	$1,141,600	$2,000,000+	$2,000,000+	$1,029,100	More than $258M (based on an average home value of $1,405,680 x Total Owner Occupied Units Impacted)

Table 167: Estimated Population and Economic Loss of Storms

***Source U.S. Census Bureau 2021 American Community Survey 5-Year Estimate**

****2017 U.S. Economic Census (in thousands)**

Based on a 1% loss projection, approximately 650 people could be displaced or significantly impacted, and approximately 184 homes could be damaged or destroyed resulting in over $258 million in losses based on an average home value of $1,405,680 and damage to 184 owner occupied units (see Community Profile section for population, housing, and economic data).

Las Virgenes-Malibu Severe Winter Storm Probability

According to the FEMA National Risk Index, the Los Angeles region records the chance of winter weather as 2.6 events per year.

Impact of Climate Change

Each city within the LVMCOG (Agoura Hills, Calabasas, Hidden Hills, Malibu, and Westlake Village) is subject to the impact of severe winter storms. Climate change has increased the frequency and intensity of storms so each city may expect to experience future events resulting in localized damage due to high winds, flooding, landslides debris flows, and mudflows. Additionally, the City of Malibu is susceptible to coastal flooding due to high surf and elevated sea levels.

Impact of Land Use and Development

City	Impact of Land Use and Development
Agoura Hills	During severe weather such as winter storms, developed areas located on hillsides may be impacted by landslides and areas in lower elevations may be at greater risk of flooding, mudslides, and debris flows which may reduce future development densities and/or cause changes to local land use plans.
Calabasas	Severe winter storms put residential areas are located in the Calabasas hillsides at greater risk of landslides and low lying areas are subject to flooding, debris flows, and mudslides. Consequently, future development plans may increase the number of restrictions on new development or redevelopment projects, particularly residential properties in hillside areas and in low lying regions below hillside slopes.
Hidden Hills	Severe winter storms are not expected to result in changes in residential land use patterns in Hidden Hills. Nevertheless, during severe winter storms the risk of local flooding, landslides, debris flows, and mudflows may increase which could result in the loss of structures and buildable land – changing land use patterns.
Malibu	Severe winter storms may cause coastal flooding due to sea level rise as well as inland flooding in low lying areas and those along riverine zones. Further, debris flows and mudflows could increase while cliffside developments and mountain residential areas are susceptible to landslides. Consequently, structures in coastal areas, riverine zones, cliff sides, and those located along isolated roads may face future restrictions or may be converted to public areas or wildland if reconstruction is not feasible. The result would be a change in land use patterns in Malibu.
Westlake Village	Severe winter storms causing flooding, debris flows and mudflows in riverine areas within Westlake Village and below the reservoir may occur. Additionally, hillside areas may be undermined causing landslides. The result could cause changes in land use patterns due to additional development constraints especially those areas located in the hillsides and low lying streams in the city.

Impact of Population Patterns

City	Impact of Population Patterns
Agoura Hills	Ongoing extreme weather caused by severe winter storms is not expected to cause significant changes to the population of Agoura Hills as the demand for housing in the area continues to remain high. However, construction in flood, landslide, debris flow, and mudflow prone areas could limit population densities in these areas.
Calabasas	It is not anticipated that severe winter storms will significantly impact population patterns in the City of Calabasas due to the area's desirable location and local demand for housing. However, as with other cities in the area, construction in flood, landslide, debris flow, and mudflow prone areas could limit population densities in these areas.
Hidden Hills	Population patterns are expected to remain unchanged due to severe winter storms unless areas of the city are deemed to be unusable due to a major flooding, landslide, debris flow, or mudflow.
Malibu	Severe winter storms could lead to flooding, landslides, debris flows, and mudflows in the area which may cause a shift in local population densities and could even result in an increase in the amount of wildland areas where future development is prohibited leading to a slight reduction in the local population.

City	Impact of Population Patterns
Westlake Village	Severe winter storms can cause flooding, landslides, debris flows, or mudflows in the City of Westlake Village especially in areas along hillsides and low lying riverine zones. Consequently, if a severe event occurs, future population densities may shift due to additional limits to construction/reconstruction in hazard prone areas.

Risk of Future Severe Winter Storm

For the LVMCOG Region, the risk of future storm events was estimated by the Working Group using the following weighted formula:

Risk = (0.45 x Probability) + (0.30 x Magnitude/Severity) + (0.15 x Warning Time) + (0.10 x Duration)

Probability		Magnitude / Severity		Warning Time		Duration	
Level ID	Value	Level ID	Value	Level ID	Value	Level ID	Value
Unlikely	1	Negligible	1	Less than 6 hrs	4	Less than 6 hrs	1
Possibly	2	Limited	2	6 to 12 hrs	3	Less than 24 hrs	2
Likely	3	Critical	3	12 to 24 hrs	2	Less than one wk	3
Highly Likely	4	Catastrophic	4	More than 24 hrs	1	More than one wk	4

The result was a severe winter storm risk rating of 4.57 (see Annex C Working Group HMP Risk Assessment Survey for additional details):

Hazard	Probability	Magnitude	Warning Time	Duration	Risk
Severe Winter Storm (including Flood)	4.33	6	3	3.67	4.57

SEVERE WINTER STORM VULNERABILITIES

The major concern regarding the impact on communities from severe winter storm events is the loss of life and property. Critical infrastructure failures are also a threat and may require days or weeks to repair. Similarly, the impact to business and industry can result in immediate and long term economic loss.

For the LVMCOG region, specific parts of each city vulnerable to the impact of severe winter storms including flooding and severe winds consist of areas below the local hillsides and mountain regions as well as riverine pathways and in northern and southern Agoura Hills, southern and western areas of Calabasas, southern and western Hidden Hills, the Santa Monica Mountain areas of Malibu and Malibu Lagoon, and southern Westlake Village especially downstream of the reservoir. Although the primary concern is loss of life and injuries, other specific vulnerabilities are listed below in terms of:

- Property Loss
- Critical Infrastructure
- Business and Industry

Property Loss

Severe winter storms in the LVMCOG region typically involve heavy rainfall, strong winds, and potential flooding. These storms can still cause significant damage to infrastructure and property, including flooding of roads, buildings, and utilities. High winds during winter storms can also lead to downed trees and power lines, causing power outages and property damage. Residential, commercial, and public properties are vulnerable to these impacts, particularly in low-lying areas and areas prone to flooding.

Critical Infrastructure

During severe winter storms, critical infrastructure faces various threats, particularly when heavy rainfall and strong winds combine to create hazardous conditions. Infrastructure such as water and sewer systems, electrical supplies, pipelines, transportation networks, emergency facilities, and communications networks are vulnerable to damage. Heavy rainfall can lead to flooding of roads, bridges, and tunnels, causing disruptions to transportation networks and posing risks to public safety. Additionally, strong winds during severe winter storms can result in downed trees and power lines, further impacting electrical supplies and transportation routes. Contamination of underground wells and reservoirs may also occur, affecting local water supplies. In coastal areas like Malibu, the Pacific Coast Highway, a major transportation route, is particularly susceptible to erosion and damage from coastal flooding and storm surges.

Map 98: Malibu Coastline Example

Business and Industry

Severe winter storms can have significant impacts on businesses, disrupting operations and causing damage to property and infrastructure. Heavy rainfall and strong winds can lead to flooding of commercial properties, resulting in property damage and interruptions to business activities. Access to businesses may also be hindered by flooded roads and transportation disruptions, affecting employees, suppliers, and customers. Additionally, loss of utilities such as electricity and water due to flooding can prevent businesses from functioning, further exacerbating the economic impact of severe winter storms. In coastal areas like Malibu, businesses located along the coastline are particularly vulnerable to flooding from storm surges and coastal erosion during severe weather events. Moreover, businesses in Malibu reliant on tourism and ocean-related activities, such as hotels, attractions, restaurants, and recreational facilities, may experience significant losses in revenue during severe winter storms.

Winter Storm Risk in the Las Virgenes-Malibu Region

Overall the risk of winter weather in the Las Virgenes-Malibu region is "relatively low" per the National Risk Index. Regardless, severe winter storm cannot be completely disregarded especially due to the regions topography and winds that accompany these storms.

Map 99: Winter Weather National Risk Index

VULNERABLE POPULATIONS

In Agoura Hills, the elderly and those speaking languages other than English are particularly vulnerable during severe winter storms. The elderly may face increased risk of hypothermia and injury from slips and falls, and may have difficulty accessing necessary supplies and medical care. Non-English speakers may struggle with receiving timely warnings and understanding safety measures, increasing their risk of harm.

Calabasas residents, including those on fixed incomes, transitory workers, homeless individuals, and elderly or disabled residents, face heightened risks during severe winter storms. Fixed-income residents may lack the resources to invest in proper heating and insulation. Transitory workers and homeless individuals may not have access to reliable shelter, increasing their vulnerability to cold temperatures and exposure. Elderly and disabled residents may experience significant difficulty in securing their homes and protecting themselves from cold weather and related hazards.

In Hidden Hills, the older population, households with disabilities, and those with limited transportation capabilities are at substantial risk from severe winter storms. Older adults and those with disabilities may find it challenging to secure their homes and protect themselves from cold weather. Limited transportation can hinder their ability to reach safer, warmer areas, in the rare event that a prolonged severe winter storm was to occur. Additionally, those with limited transportation may lack the ability to gather the necessary resources during a storm.

Malibu's transitory workers, elderly population, lower-income residents, and homeless individuals are particularly vulnerable during severe winter storms. Transitory workers and the homeless often lack stable housing, making it difficult to find safe, warm shelter. Elderly individuals may struggle with mobility issues that hinder securing their homes and protecting themselves from cold weather, while lower-income residents may lack the financial means to invest in proper heating and insulation.

In Westlake Village, the elderly, disabled, homeless individuals, and residents speaking a language other than English face significant risks during severe winter storms. The elderly and disabled may find it difficult to secure their homes and protect themselves from cold weather due to mobility issues and health concerns. Homeless individuals are highly vulnerable due to lack of shelter and resources. Non-English speakers may miss critical warnings and safety instructions, increasing their risk during severe winter storms.

SEVERE WINTER STORM HAZARD IDENTIFICATION MITIGATION STRATEGIES

LVMCOG Mitigation Activities

Due to the prevalence of flooding as a consequence of severe storms, this section retains similar mitigation actions as those addressed in the Flood hazard section. These measures include enforcing building codes, implementing home hardening strategies, and other resilience-building initiatives.

Flooding is often a regional problem that crosses multiple jurisdictional boundaries. Flood risks are greatest and flood hazards most severe during the winter “wet season” when water bodies may become full and soils saturated. Although flooding is primarily a natural process and is therefore difficult to prevent, urbanization, land use, and development decisions have a significant effect on the frequency and severity of floods. Flood mitigation activities include enforcement of building codes, zoning codes, and various planning strategies to address development in areas of known hazards and applying the appropriate safeguards. Furthermore, all cities within the Las Virgenes Malibu Council of Governments have assessed their flood hazards and participate in the National Flood Insurance Program (NFIP). The Los Angeles County Department of Public Works (LACDPW) is responsible for regional flood control within the County. Flood mitigation measures include an extensive storm drain and flood control system.

Agoura Hills

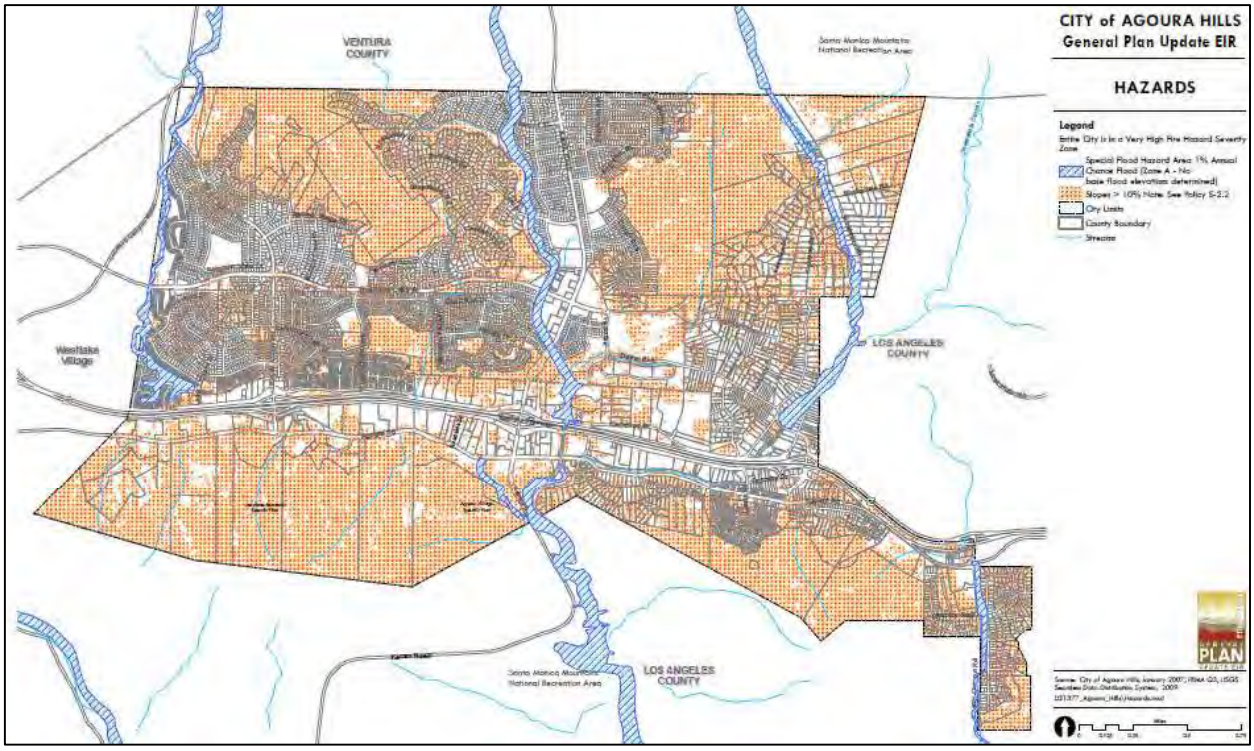
To address the consequences of severe winter storms – which includes a heightened risk of flooding, the City of Agoura Hills provides residents with flood facts via its web site. This includes general information and response guidance.

Further, the Los Angeles County Department of Public Works (LACDPW) presently owns and maintains three major flood control facilities in Agoura Hills. These facilities are the Lindero Canyon Channel, the Chesebro Canyon Channel, and parts of Medea Creek. Two major drainage channels not maintained by the LACDPW are the Palo Comado Canyon and Liberty Canyon. With the exception of the Palo Comado Canyon, these drainages are unchannelized or are maintained as semi-natural and are located in open space corridors.

- The Lindero Canyon Channel provides flood protection for the west drainage flow from Lindero Canyon. This canyon extends into Ventura Canyon, well beyond the City of Agoura Hills northerly boundary.
- The Chesebro Canyon Channel provides controlled drainage for the east drainage area of the City. Chesebro Canyon Channel intercepts the flows from Chesebro Canyon, and Palo Comado Canyon. Both canyons extend into Ventura Canyon, beyond the City of Agoura Hills northern boundary line.
- Medea Creek is partially improved between the Ventura Freeway and north to the Ventura County line. Medea Creek provides flood control protection for the central drainage area of the City. Medea Creek intercepts flow from Medea Creek Canyon, extending into Ventura County.

FEMA has identified several Special Flood Hazard Areas (SFHA) within Agoura Hills. Within these zones, the City of Agoura Hills enforces floodplain management standards as issued by FEMA. These standards are designed to prevent new development from increasing the flood threat and protect new and existing buildings from anticipated flood events.

Per FEMA, a SFHA is an area having special flood, mudflow or flood-related erosion hazards and shown on a Flood Hazard Boundary Map (FHBM) or a Flood Insurance Rate Map (FIRM) Zone A, AO, A1-A30, AE, A99, AH, AR, AR/A, AR/AE, AR/AH, AR/AO, AR/A1-A30, V1-V30, VE or V. The SFHA is the area where the National Flood Insurance Program's (NFIP's) floodplain management regulations must be enforced and the area where the mandatory purchase of flood insurance applies. For the purpose of determining Community Rating System (CRS) premium discounts, all AR and A99 zones are treated as non-SFHAs.



Map 100: City of Agoura Hills Flood Areas

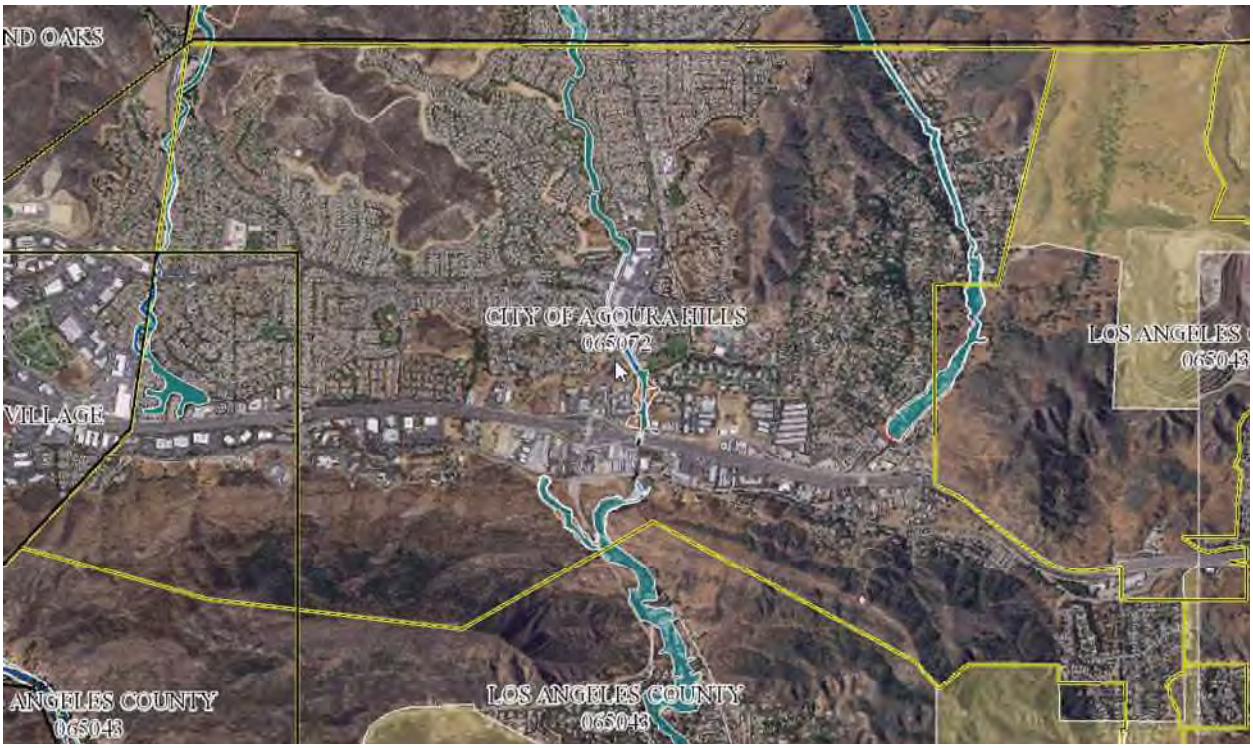
Source: City of Agoura Hills, General Plan 2035 EIR

Development under the City's General Plan could place structures within the SFHA, but not in a manner that would substantially impede or redirect flows. Adherence to development policies as well as state and federal regulations reduces the flood threat. Furthermore, as part of development project reviews, the City requires that a drainage plan and study be submitted, as appropriate. The following policies have been implemented in Agoura Hills. These policies guide the City in its continued compliance with NFIP guidelines and in reducing present and future flood hazards.

Policy	Description
S-1.1	**Coordination of Drainage Improvements**. Locate and improve deficiencies in the storm drain system to prevent local flooding problems in the City.
S-1.2	**New Development.** Require new development to upgrade storm drains to handle the increased runoff generated from the development sites.
S-1.3	**Facility Use or Storage of Hazardous Materials.** Require that all facilities storing, using, or otherwise involved with substantial quantities of on-site hazardous materials within flood zones comply with applicable standards of elevation, anchoring, and flood proofing, and that hazardous materials be stored in watertight containers.
S-1.4	**SEMS Plan.** Ensure that the City's Standardized Emergency Management System (SEMS) Plan is evaluated annually and revised as required, that the current mitigation strategies addressing flood hazards are implemented, and that effective public outreach and education are included.
S-1.5	**Preservation of the Flood Plains.** Preservation of the flood plains as open space shall be considered, as feasible, as an alternative to channelization.

Policy	Description
S-1.6	**Floodplain Requirements.** Regulate development within floodplains in accordance with the County, state, and federal requirements, and maintain the City's eligibility under the National Flood Insurance Program.
S-1.7	**Flood Mitigation Design.** Require that new development incorporates sufficient measures to mitigate flood hazards, including the design of on-site drainage systems linking with citywide storm drainage, grading of the site so that runoff does not impact adjacent properties or structures on the site, and elevation of any structures above any flooding elevation.

The map below provides a view of the Flood Insurance Rate Map area for the City of Agoura Hills. Flood Insurance Rate Maps (FIRM) are located in **Annex F**.

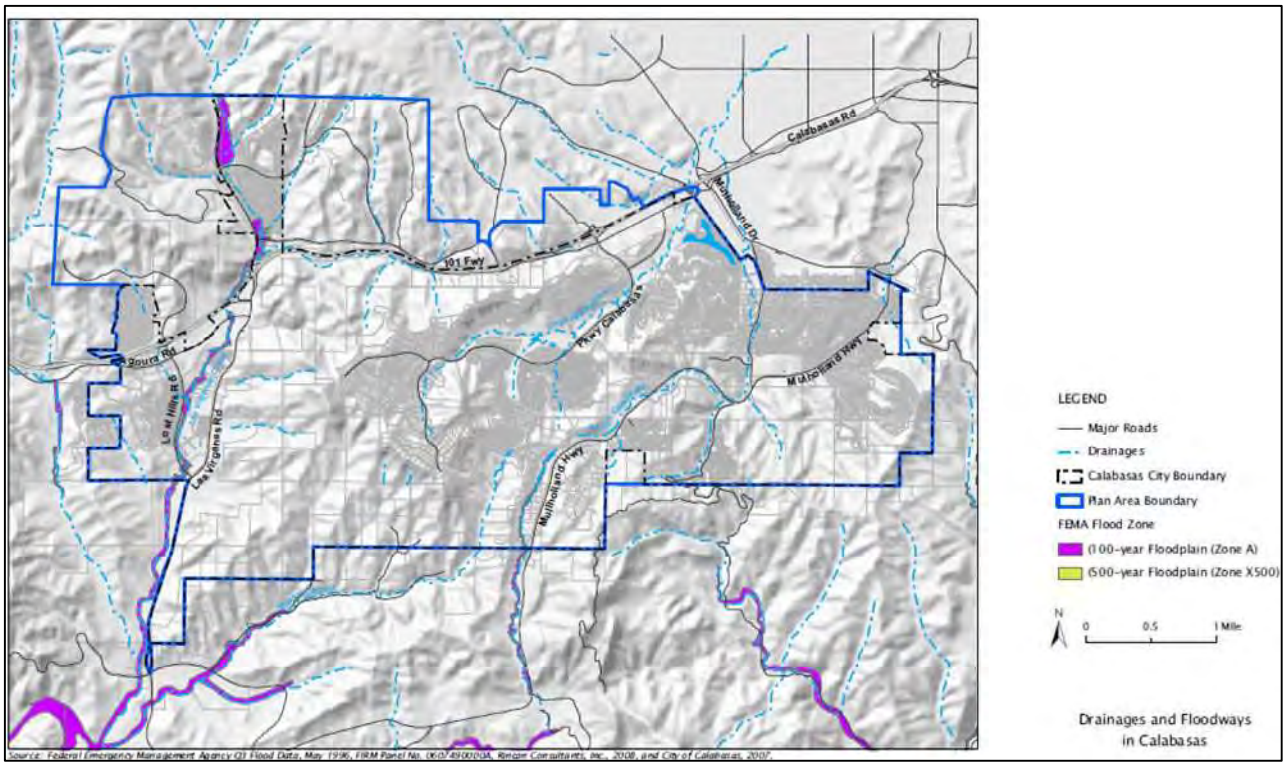


Map 101: City of Agoura Hills Flood Insurance Rate Map

Since severe winter storms generally involve flooding and high winds the City of Agoura Hill's flood and severe wind policies and goals support mitigation by reducing the threat of flooding as well as falling trees and large branches from causing injuries, damaging homes and vehicles, blocking roadways, and downing electrical lines causing power outages (see Flood and Severe Wind sections for additional details). Additionally, the city continually manages the risk of winter storm caused flooding and wind damage by enforcing building and construction standards as well as via its General Plan and Development Plan. Consequently, all residents benefit including vulnerable populations such as low income, elderly, and handicapped individuals since there is a reduction of the risk of severe winter storms causing transportation disruptions, injuries, damaging homes, vehicles, and other property.

Calabasas

Calabasas facilitates efforts with local, state, and federal agencies, including special districts to address flooding issues. Development is generally discouraged in flood-prone areas and individual developers in Calabasas are required to mitigate their potential contributions to downstream flooding problems. Any structures placed within the SFHA, will not be built in a manner that would substantially impede or redirect flows. Adherence to development policies as well as state and federal regulations reduces impacts from flooding in Calabasas to less than significant levels. The map below depicts FEMA designated flood zones in Calabasas. Small portions of western Calabasas (purple shaded areas) is within the 100-year floodplain; however, the majority of the City is not located within any designated Special Flood Hazard Areas.



Map 102: Drainages and Floodways in Calabasas

The following policies are outlined in the 2030 City of Calabasas General Plan Safety Element. These policies guide the City in its continued compliance with NFIP guidelines and in reducing present and future flood hazards.

Policy	Description
VII-11	Incorporate adequate mitigation measures into proposed development projects to achieve an acceptable level of risk from potential flooding hazards. Mitigation measures should also address projected flooding impacts from climate change.
VII-12	Strongly discourage development within flood hazard areas and encourage retention of natural drainage as the City's preferred management strategy, and as a higher priority than attempting to implement engineering solutions.
VII-13	Ensure that new flood control and drainage facilities as well as improvements to existing facilities are consistent with the General Plan's environmental protection standards.

Policy	Description
VII-14	For discretionary development projects, limit new impervious surfaces to those that will not individually or cumulatively increase harmful runoff into natural stream channels downstream.
VII-15	Setbacks from stream beds should be sufficient to avoid possible adverse effects associated with future stream bank erosion.
VII-16	Whenever feasible, locate essential public facilities, including health care facilities, emergency shelters, fire stations, emergency command centers, and emergency communications facilities, outside flood hazard zones.

The map below provides a view of the Flood Insurance Rate Map area for the City of Calabasas. Flood Insurance Rate Maps (FIRM) are located in **Annex F**.

Map 103: City of Calabasas Flood Insurance Rate Map ID

Severe winter storms generally involve flooding and high winds. Consequently the City of Calabasas's policies and goals support mitigation by reducing the threat of falling trees and large branches from causing injuries, damaging homes and vehicles, blocking roadways, and downing electrical lines causing power outages (see Severe Wind section for additional details). Further, the city proactively manages the risk of winter storm caused flooding by enforcing building standards and via its development plan. These activities benefit residents as a whole as well as vulnerable populations since they reduce the risk of severe winter storms causing injuries, damaging homes, vehicles, or other property, especially for families that struggle to finance repairs.

Hidden Hills

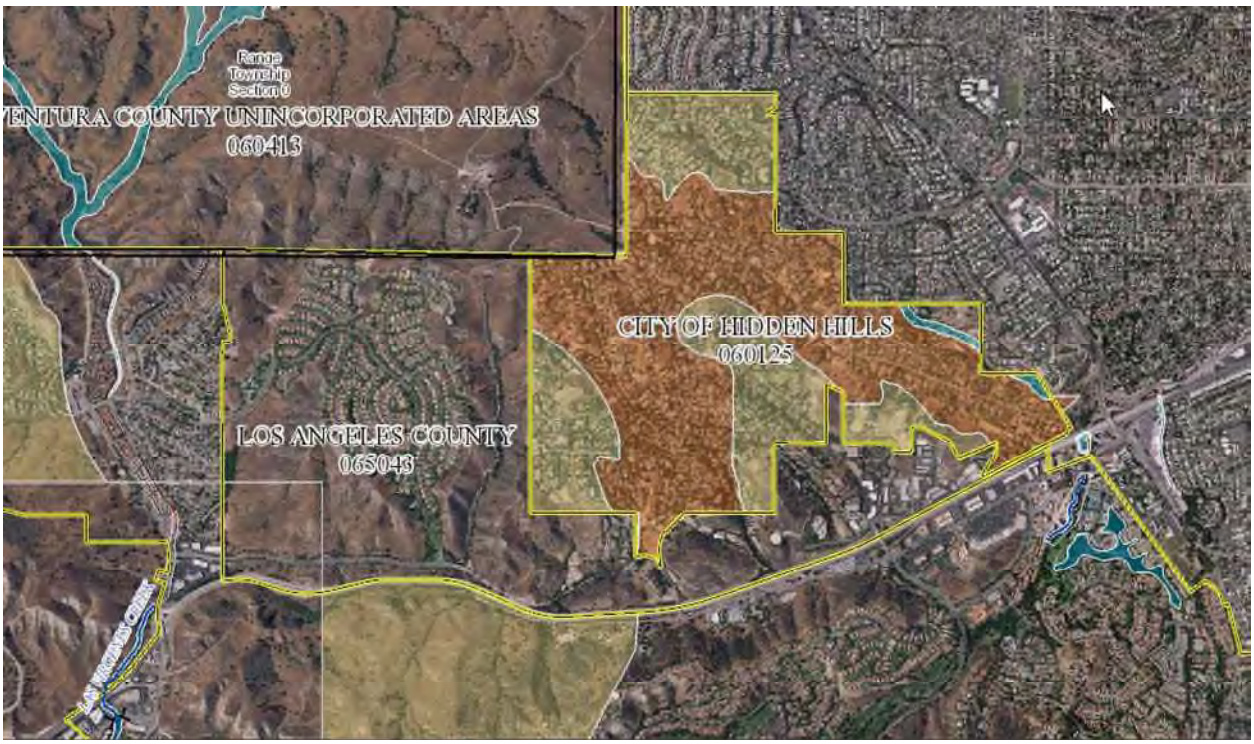
There are no year-round streams or ponds within the city. Surface water runoff only occurs during and after periods of intense rainfall. The City's topography and soil conditions subject Hidden Hills to flood hazards from storm drain overflow, erosion, mudflows, and debris deposits. There are no Special Flood Hazard Areas (SFHA) in the city of Hidden Hills. For this reason, there are no FEMA mandated floodplain management requirements to which Hidden Hills must adhere in order to participate in the NFIP.

Hidden Hills has implemented building code 3319.1 as a preventative measure for loss of life and property due to a flood event. Key Provisions of section 3319.1 include:

Category	Description
Building Limitations	Buildings are not permitted in an area determined by the City Engineer to be subject to flood hazard by reason of inundation, overflow or erosion, or where the placement of a building or other structures on the site is such that water or mud flows will be a hazard to buildings on adjacent property. The building official, in application of this subsection shall enforce, as a minimum, the current Federal Flood Plain Management Regulations defined in Title 44, Code of Federal Regulations, Section 60.3.
Site Restrictions	A person shall not perform work for which a building or grading permit is required within the boundaries of an established floodway, as determined by the City Engineer, if such work increases the flood hazard to adjacent properties by either increasing the capital flood water surface elevation, deflecting flows or increasing bank erosion. Such work may be performed within an established floodway and a building or grading permit therefore may be issued, where provisions are made to the satisfaction of the City Engineer to avoid such as increase in the flood hazard.
Los Angeles County Flood Control District	The Los Angeles County Flood Control District shall act as a consultant to the City Engineer in permit matters relating to flood control and flood hazard identification, avoidance and mitigation in all areas defined on maps furnished to the Engineer.

These standards are designed to prevent new development and site modifications from increasing the threat of flood and to protect new and existing buildings from future flood events including the impact of severe winter storms which generally involve flooding and high winds. By enacting these requirements, Hidden Hills has reduced the potential for loss of life, injuries, and property damage (including critical infrastructure and utilities) by mandating minimum standards for building and construction as well as ongoing maintenance of responsible planning. These standards are particularly important for at risk populations such as elderly, disabled, young and fixed income individuals who may not be able to afford repairs as well as by a reduction of the risk of injury and property loss.

The map below provides a view of the Flood Insurance Rate Map area for the City of Hidden Hills. Flood Insurance Rate Maps (FIRM) are located in **Annex F**



Map 104: City of Hidden Hills Flood Insurance Rate Map ID

Malibu

The City of Malibu is the only coastal community within the Las Virgenes-Malibu Council of Governments. The City extends 21 miles along the Pacific coast. In addition to its proximity to the Pacific Ocean, the City also contains multiple riparian zones that are subject to flood. Development under the City's General Plan could place structures within the SFHA, but not in a manner that would substantially impede or redirect flows. Adherence to development policies as well as state and federal regulations reduces impacts from flooding to less than significant levels.

FEMA has identified areas within Malibu as Special Flood Hazard Areas (SFHA). The map below provides a view of the Flood Insurance Rate Map zones for the City of Malibu. Flood Insurance Rate Maps (FIRM) are located in the **Annex F.**

Map 105: City of Malibu Flood Insurance Rate Map ID and Zones

All development, redevelopment, remodels and repairs in a mapped FEMA Flood Zone must meet FEMA and City of Malibu Floodplain Ordinance. All development projects submitted to the Planning Department will be reviewed by the Public Works Department to verify that the project will meet the FEMA Regulations and the City's Floodplain Ordinance. Some projects may be required to elevate the structure above the flood base flood elevation and execute a FEMA Elevation Certificate.

The following policies are outlined in the City of Malibu General Plan. These policies guide the City in its continued compliance with NFIP guidelines and in reducing present and future flood hazards.

General Plan Section	Description
Objective 1.2	Risks to residents and businesses from development in hazardous areas are minimized.
Policy 1.2.3	The City shall require development to provide for safety from coastal storm flooding, coastal erosion, surfacing septic effluent, and tsunami.
Policy 1.2.4	The City shall require development to be consistent with minimum Federal Management Agency (FEMA) guidelines for flood plain management.
Implementation Measure 40	Adopt and update as appropriate maps of extreme fire danger areas, 100-year flood plains, landslide and debris flow danger, active and potentially active faults, tsunami, and any other hazard areas; and inform residents of those areas of risks and possible mitigation measures.
Implementation Measure 43	Encourage area residents to participate in the National Flood Insurance Program.
Implementation Measure 44	Design coastal development, except supporting structure, to be above the wave uprush level for storms within the past 100-Years, and above the 100-year flood plain.
Implementation Measure 51	Evaluate proposed development for its impact on and from, geologic hazards, flood and mud flow hazard, and fire hazard.

In 2008 the City of Malibu received the Nation Weather Service "Storm Ready" Award. As a consequence, the City is eligible for NFIP premium reductions.

Severe winter storms typically involve flooding, extreme waves resulting in coastal inundation, and high winds along with the potential for landslides. The City of Malibu's measures, objectives, and policies mitigate the impact of severe winter storms by reducing the potential for loss of life, injuries, and property damage (including critical infrastructure and utilities) by managing development projects and mandating minimum standards for building and construction. These measures, objectives, and policies are especially important for at risk populations such as elderly, disabled, young and financially underserved individuals who may be at greater risk of injury and property loss. Further, by qualifying for premium reductions and encouraging participation in the NFIP, all residents including the socially vulnerable are provided with an opportunity to mitigate their financial risks.

Westlake Village

Severe winter storm flood hazard areas within the City of Westlake Village are focused on the Triunfo Canyon drainage below Westlake Lake and the banks of the lake itself. A storm drain system has been constructed in the vicinity of the canyon to moderate the effects of storm runoff.

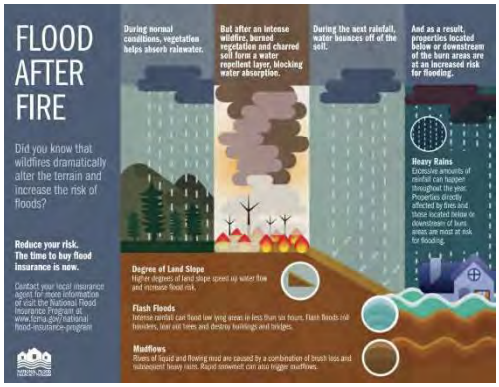
The Los Angeles County Flood Control District has prepared a Triunfo Creek Floodway Map (LACFCD 154-ML2, Ord. 81-0021), which defines the physical limits of the flood hazard and the minimum floor elevations required for structures outside the hazard area. Any development within the canyon will be subject to the review and approval of the District.

Development on the shores of Westlake Lake has been set back several feet from the highest water level which could be expected to occur. This setback is recognized as a flood hazard area and is maintained as open space. The "spillover" design of the Westlake Lake dam ensures that flooding beyond the lake's banks cannot occur.

Urban flooding caused by severe winter storms can sometimes be possible due to debris accumulation on storm drains and in flood control channels and basins, over-burdened pumping stations and aged drainage systems. Low-lying areas are particularly susceptible to urban flooding.

There are no specific areas identified as frequent drainage problems. However, the general areas most susceptible are those around the Westlake Lake since this is the lowest elevation level in the City. These areas include First Neighborhood, Lakeshore, and Southshore.

In addition, the City of Westlake Village web site provides flood and mudflow preparation and mitigation guidance to residents following wildfires (such as post Woolsey Fire preparation). This information includes where to obtain sandbags; precautions for areas around flood control channels, catch basins, canyons and natural waterways; road hazards; burn debris removal; utilities (electrical and gas shutoffs); and flood insurance.



Further, the site provides links to social media sources for alerts and information:

Los Angeles County Fire Department (on "X")	Twitter @LACoFDPIO
Los Angeles County Sheriff Department (on "X")	Twitter @LASDHQ
Los Angeles County Public Works (on "X")	Twitter @LACoPublicWorks
City of Westlake Village	Facebook @CityofWestlakeVillage

The City complies with program requirements through the adoption and implementation of a flood plain management ordinance, which is coordinated by the City Engineer. This ordinance requires new development to meet certain standards to reduce the risk of future flood damage. Implementation of the program on the local level ensures that flood insurance will be available to local residents.

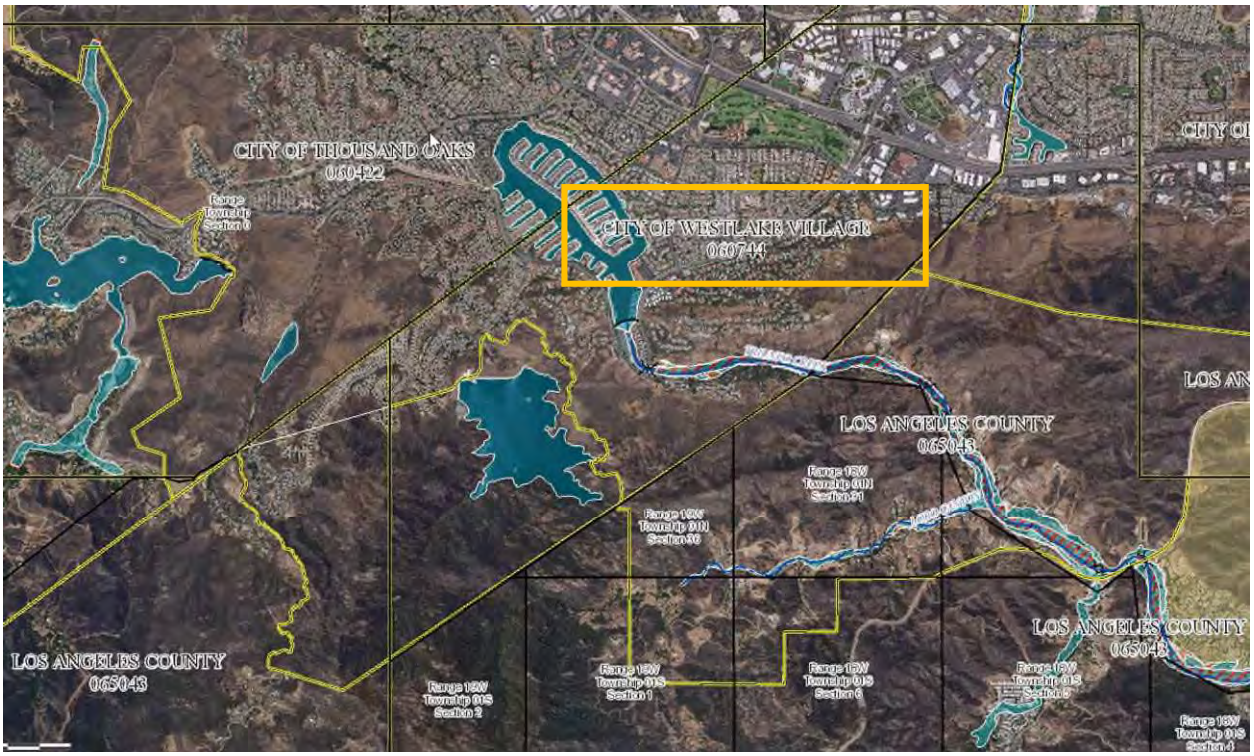
The following goals, policies, and programs are outlined in the City of Westlake Village General Plan Hazards Section. The goals and policies described guide the City in its continued compliance with NFIP guidelines and in reducing present and future severe winter storm driven flood hazards.

General Plan Section	Description
Goal	It shall be the goal of the City of Westlake Village to: Minimize hazards to public health, safety, and welfare which may result from geologic conditions, seismic activity, and flooding.
Objective 1 and Policy	It shall be the objective of the City of Westlake Village to: Provide for an efficient and safe evacuation of the community in the event of a major disaster. It shall be the policy of the City of Westlake Village to: 1-3 Maintain an effective Citywide Emergency Preparedness Plan. 1-4 Encourage community volunteers to assist police, fire, and civil defense personnel during and after a major earthquake, fire, or flood.
Objective 2 and Policy	It shall be the objective of the city of Westlake Village to: Ensure that construction and development activities within the community do not expose residents to avoidable natural hazards. It shall be the policy of the City of Westlake Village to: 2-4 Require the preparation of a detailed geologic and soils report to accompany each grading permit application in all hillside management areas. 2-5 Prohibit the placement of structures for human habitation within flood prone areas unless the flood hazard is eliminated by measures that do not impair the carrying capacity of the watercourse. 2-6 Enforce the provisions of the Uniform Building Code, specifically Chapters 23 and 70 as they related to earthquake-resistant design and excavation and grading.
Implementation Programs	I-1 Continue to update the Citywide Emergency Preparedness Plan as new information becomes available. I-2 Periodically distribute an updated pamphlet which informs individual residents of their responsibilities for emergency preparedness. I-3 Support training programs to train volunteers to assist police, fire protection and civil defense personnel during and after a seismic, fire or flooding event. I-4 Continue to implement the provisions of the Hillside Management ordinance and coordinate with the Los Angeles County Building and Safety Department so all applicable grading and development standards are implemented. I-5 Coordinate with the Los Angeles County Flood Control district to ensure that potential flooding hazards associated with proposed new development are fully mitigated. I-6 Coordinate with the Los Angeles County Building and Safety Department in the review of all development proposals, ensuring Chapters 23 and 70 of the Uniform Building Code are enforced.

The City of Westlake Village's goals and policies are designed to mitigate the impact of severe winter storms which includes flooding and high winds by reducing the potential for loss of life, injuries, and property damage (including critical infrastructure and utilities) by mandating minimum standards for building and construction as well as ongoing maintenance of responsible planning. These goals and policies are especially important for at risk populations such as elderly, disabled, young and financially underserved individuals who benefit by reducing the risk of injury and property loss. Additionally, the city's mitigation efforts reduces the risk of severe winter storm flooding and winds from damaging residencies and critical infrastructure.

FEMA has identified areas within Westlake Village as Special Flood Hazard Areas (SFHA), including Lindero Canyon which mostly lies within Agoura Hills. Within these zones Westlake Village has chosen to adopt and enforce minimum floodplain management standards as dictated by FEMA. These standards are designed to prevent new development from increasing the flood threat and to protect new and existing buildings from anticipated flood events.

The map below provides a view of the Flood Insurance Rate Map area for the City of Westlake Village. Flood Insurance Rate Maps (FIRM) are located in **Annex F**.



Map 106: City of Westlake Village Flood Insurance Rate Map ID and Zones

SECTION 15. PANDEMIC

THE NATURE OF THE PANDEMIC THREAT

Oxford Languages defines a pandemic as a "widespread occurrence of an infectious disease over a whole country or the world at a particular time." According to Duke Global Health Institute, in any given year, there is a 2% chance of a major pandemic with effects similar to COVID-19 occurring.

Major Factors

While there have been significant advancements in health and medical technologies, according to the National Library of Medicine, major factors such as the frequency of international travel, climate change, ongoing human to animal contact, and urbanization contribute to an increased risk of pandemics happening in the future.

The Continuum of Pandemic Phases

The emergence of a pandemic can lead to various consequences, including higher healthcare demands, strained medical resources, economic disruptions, social impacts, loss of life and long-term disability. Given the continuing risk of a pandemic, the Centers for Disease Control and Prevention (CDC) have identified four phases of the pandemic continuum. In the risk assessment continuum below, there are three stages: "preparedness," "response," and "recovery." During the "preparedness" stage, global cases are lowest, representing the interpandemic phase. Cases rise significantly during the "alert" and "pandemic" phases. These phases overlap with the "response" stage. Subsequently, in the "transition" phase, cases decrease, coinciding with the "recovery" stage. A slight increase in cases during the "transition" phase suggests a potential second wave. Eventually, cases return to the original interpandemic levels, aligning with the "preparedness" stage.

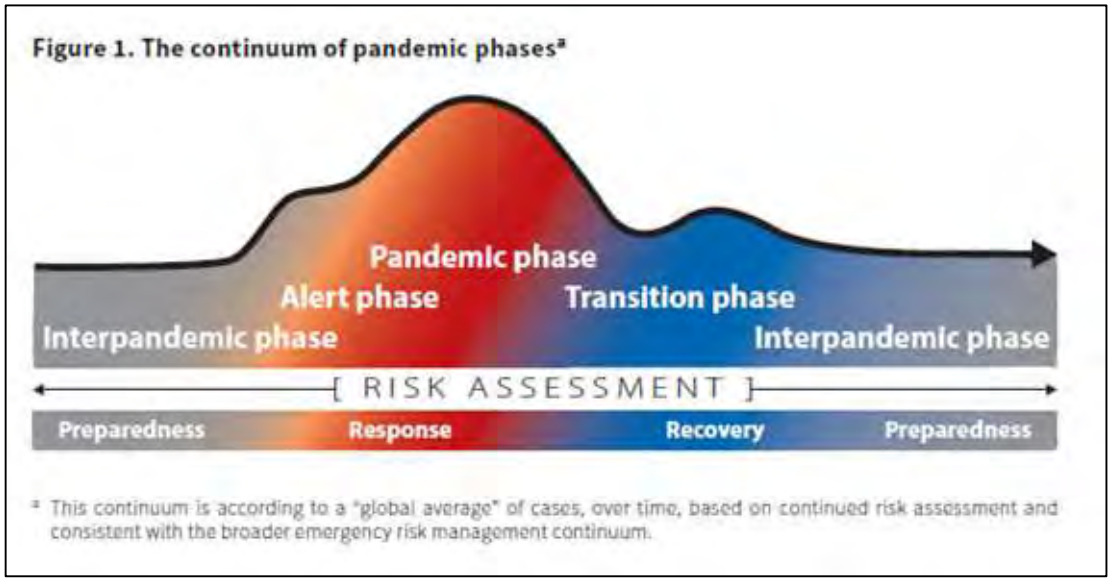


Figure 124: The Continuum of Pandemic Phases
Source: CDC (https://www.cdc.gov/flu/pandemic-resources/planning-preparedness/global-planning-508.html)

Phases of a Pandemic

Pandemics are comprised of 6 phases, according to the World Health Organization (WHO). The pandemic phases progress as follows: Phase 1 has no reported animal-to-human virus infections. In Phase 2, animal viruses infect humans, raising concerns. Phase 3 involves sporadic human cases but no widespread transmission. Phase 4 sees confirmed human-to-human transmission with community outbreaks. Phase 5 includes human-to-human spread in two countries in one WHO region. Finally, Phase 6 is the pandemic phase, which signifies global community-level outbreaks.

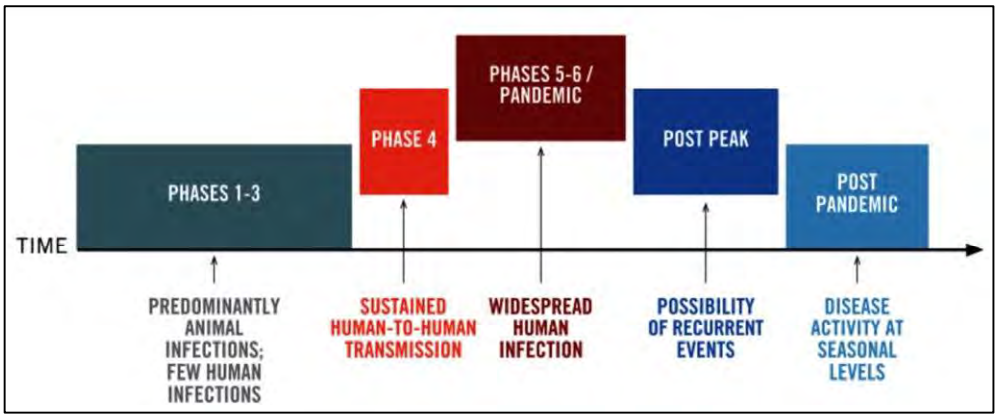


Figure 125: Phases of a Pandemic
Source: National Library of Medicine (https://www.ncbi.nlm.nih.gov/books/NBK143061/)

HISTORICAL RECORD OF WORLDWIDE PANDEMIC EVENTS

Numerous pandemics have occurred throughout history. The table below provides a summary of major worldwide pandemics.

Years	Pandemics	Pathogens	Vectors
2019-ongoing	COVID-19	SARS-CoV-2	Bats, pangolins?
2015-ongoing	Middle East Respiratory Syndrome (MERS)	MERS-CoV	Bats, dromedary camels
2009–2010	Swine Flu	Influenza A/H1N1	Pigs
2002–2003	Severe Acute Respiratory Syndrome SARS)	SARS-CoV	Bats, palm civets
1968–1970	Hong Kong Flu	Influenza A/H3N2	Avian
1961-ongoing	Seventh Cholera Pandemic	Vibrio cholerae	Contaminated water
1957–1959	Asian Flu	Influenza A/H2N2	Avian
1918–1919	Spanish Flu	Influenza A/H1N1	Avian
1899–1923	Sixth Cholera Pandemic	Vibrio cholerae	Contaminated water
1889–1893	Russian Flu	Influenza A/H3N8?	Avian?
1885–ongoing	Third Plague	Yersinia pestis	Fleas associated to wild rodents
1881–1886	Fifth Cholera Pandemic	Vibrio cholerae	Contaminated water
1863–1875	Fourth Cholera Pandemic	Vibrio cholerae	Contaminated water
1839–1856	Third Cholera Pandemic	Vibrio cholerae	Contaminated water
1827–1835	Second Cholera Pandemic	Vibrio cholerae	Contaminated water
1817–1824	First Cholera Pandemic	Vibrio cholerae	Contaminated water
1347–1351	Black Death	Yersinia pestis	Fleas associated to wild rodents
541–543	Plague of Justinian	Yersinia pestis	Fleas associated to wild rodents

Table 168: Pandemics Throughout History
Source: Pandemics Throughout History, Piret and Bolvin, 2021

CAUSES AND CHARACTERISTICS OF COVID-19

The Coronavirus disease (COVID-19), as defined by the World Health Organization (WHO), "is an infectious disease caused by the SARS-CoV-2 virus" which originated in China in 2019, spreading around the globe rapidly.

The virus primarily spreads through respiratory droplets, making close person-to-person contact a significant mode of transmission. It is characterized by a range of symptoms, including fever, cough, and difficulty breathing, with some cases progressing to severe respiratory distress. Additionally, COVID-19 exhibits a wide range of severity, from asymptomatic carriers to severe cases requiring intensive medical intervention.

Additionally, the COVID-19 pandemic has resulted in substantial disruptions worldwide due to the significant number of cases and associated fatalities. The table below provides the estimated number of cases and fatalities within the Las Virgenes-Malibu region. In comparison to the United States fatality rate (1.1%)[36], the LVMCOG Region has a lower fatality rate (-0.5%), suggesting variations in healthcare infrastructure, public health measures, or demographics.

City	Confirmed Cases	Reported Fatalities	% of Fatalities
Agoura Hills	6,429	29	0.5%
Calabasas	5,956	47	0.8%
Hidden Hills	390	2	0.5%
Malibu	2,927	15	0.5%
Westlake Village	457	3	0.7%
Total	**16,159**	**96**	**0.6%**

Table 169: Estimated COVID-19 Cases and Deaths within LVMCOG Region

** Source: City of Los Angeles Public Health (http://publichealth.lacounty.gov/media/coronavirus/locations.htm) (as of 9/7/23)

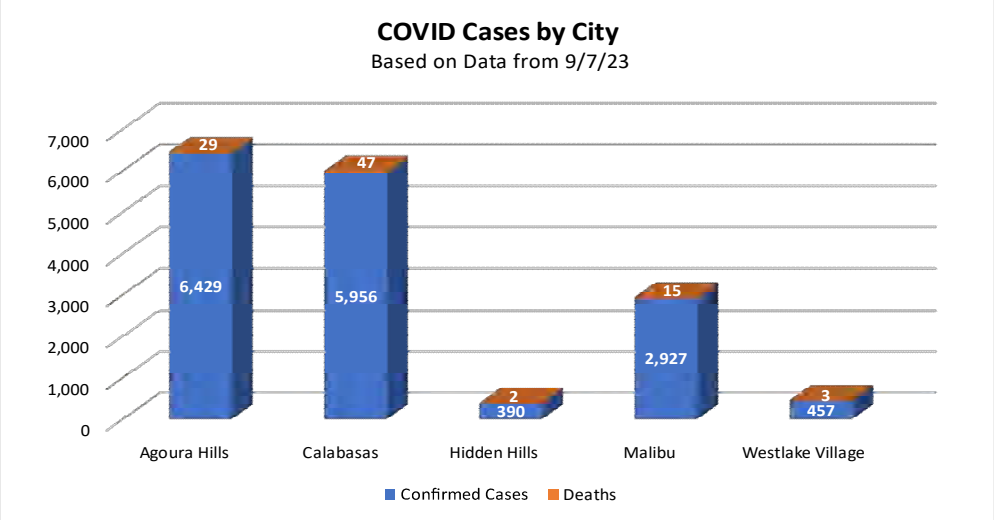


Figure 126: Covid-19 Cases by City

[36] WHO (https://covid19.who.int/) (as of 9/6/23)

Disasters Declarations and Emergency Proclamations

FEMA disaster declarations allow state, tribal, and local governments to access federal aid for disaster response and recovery when overwhelmed. Similarly, the California Governor's Office of Emergency Services (Cal OES) issues proclamations to mobilize state resources and streamline procedures.

FEMA Disasters Declarations

Declaration Date: 3/13/20 || California Covid-19 || DD# EM-3428-CA

The Covid-19 Pandemic remained a hazard to the LVMCOG region until the incident period ended on May 11, 2023.

Cal OES Open State of Emergency Proclamations

No open emergency proclamations declared.

STAKEHOLDER INPUT AND PARTICIPATION

To identify the threats, vulnerabilities, and consequences of a pandemic on the Las Virgenes-Malibu Region, each member of the Planning Group which included representatives from the cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, and Westlake Village provided their input during planning meetings (see Annex B: Meeting Agendas and Attendees) and follow-up discussions. Specific topics of discussion included if any changes to the hazard priorities have changed since the previous HMP, how changes in the community have impacted the risk of each hazard, and what new mitigation actions can be taken. In addition, each member of the Planning Group as well as members of the public provided the input via online surveys (see Annex C: Community Disaster Preparedness and Risk Survey, Annex D: Planning Group HMP Risk Assessment Survey, and Annex E: Planning and Public Involvement).

PANDEMIC HAZARD IDENTIFICATION

World Health Organization (WHO) Declaration

The declaration of the beginning and end of a pandemic is typically made by the World Health Organization (WHO). The WHO assesses global health situations and provides recommendations based on epidemiological data and expert analysis. When a new infectious disease spreads internationally and poses a significant threat, the WHO may declare a pandemic. The declaration is based on criteria related to the geographic spread and severity of the disease.

White House Emergency Declaration

The President of the United States has the authority to declare a federal state of emergency. This declaration grants the President certain powers and allows for the allocation of federal resources and assistance to affected states or regions. It facilitates a coordinated response across federal, state, and local agencies to address the emergency effectively.

Centers for Disease Control and Prevention (CDC) Pandemic Declaration

The Centers for Disease Control and Prevention (CDC) is a key agency within the U.S. Department of Health and Human Services responsible for protecting public health and safety through the control and prevention of diseases, injuries, and disabilities. The CDC may issue a pandemic declaration based on its assessment of the global spread and severity of a disease. This declaration serves as a significant public health alert, triggering coordinated efforts at the national and international levels to combat the spread of the infectious disease. It often leads to the implementation of various containment and mitigation strategies to protect public health.

Federal Emergency Management Agency (FEMA)

FEMA, the Federal Emergency Management Agency, plays a critical role in pandemics by coordinating and supporting the federal government's response efforts. This includes allocating and distributing essential resources, issuing emergency declarations to unlock federal resources, and providing logistical support. They also facilitate communication and information sharing, conduct training and exercises, participate in strategic planning, and engage in community outreach and education. FEMA's overarching goal is to ensure a unified and efficient response to pandemics, working closely with federal, state, and local partners to safeguard public health and safety.

Governor Emergency Declaration

In California, the Governor is responsible for declaring a state of emergency in the state. This declaration grants the Governor certain powers to respond effectively to emergencies, such as natural disasters or public health crises. It allows for the mobilization of resources, coordination of agencies, and implementation of emergency measures to protect public safety and well-being. The decision to declare an emergency is based on an assessment of the situation's severity and the need for an organized and coordinated response.

Stay at Home Order

A stay-at-home order is typically issued by relevant public health authorities such as the Los Angeles County Department of Public Health, often in consultation with government officials. It is a directive aimed at limiting non-essential activities and movement of individuals within a specific region or jurisdiction. The goal is to reduce the spread of a contagious disease, such as a pandemic. This order may specify exceptions for essential activities like obtaining food, seeking medical care, or engaging in essential work. Compliance with the order is crucial in minimizing the impact of the public health crisis.

Estimated Impact of an Event

The consequences to local populations and employment of a pandemic is difficult to measure. However, it is anticipated that a severe pandemic will cause health problems, reduce economic output, and lead to unemployment. The table below provides the estimated impact of a disaster using an overall 20% loss baseline.

Category	Agoura Hills	Calabasas	Hidden Hills	Malibu	Westlake Village	Impact if a 20% Loss Occurs
Population*	20,362	23,410	2,182	10,915	8,081	12,990
65 Years and Older*	3,164	3,873	326	3,149	2,103	2,523
Total City Employment	11,100	11,800	4.5	6,483	3,700	6,618
Economy** (in thousands)	$621,000	$1,011,348	N/A	$578,443	$576,306	557,419

Table 170: Estimated Population and Economic Loss of a Pandemic

*U.S. Census – American Community Survey 2021
**2017 U.S. Economic Census (in thousands)

Based on a 20% loss projection, nearly 12,990 people could be impacted (either directly or indirectly) including over 2,500 people aged 65 years and older (high risk group) with potentially more than 6,600 jobs lost, either temporarily or permanently resulting in a negative economic impact of more than $557M.

Impact of Climate Change

Each city within the LVMCOG (Agoura Hills, Calabasas, Hidden Hills, Malibu, and Westlake Village) is subject to the regional impact of future pandemics. Although there is no clear relationship between climate change and pandemics, certain weather patterns can cause people to congregate which can lead to greater disease spread. Furthermore, historical influenza patterns indicate a higher risk of disease spread during winter months.

Impact of Land Use and Development

There is no known relationship between pandemics and long term land use or development patterns. However a pandemic could result in the temporary alternate use of properties for expanded health care facilities

Impact of Population Patterns

A pandemic could result in the loss of populations in each city within the LVMCOG (Agoura Hills, Calabasas, Hidden Hills, Malibu, and Westlake Village). At risk populations include the very young, the elderly, and the socially disadvantaged as well as those with limited to healthcare. Nevertheless, overall population patterns are not expected to significantly change.

Risk of Future Pandemic

For the LVMCOG Region, the risk of future climate change events was estimated by the Working Group using the following weighted formula:

Risk = (0.45 x Probability) + (0.30 x Magnitude/Severity) + (0.15 x Warning Time) + (0.10 x Duration)

Probability		Magnitude / Severity		Warning Time		Duration	
Level ID	Value	Level ID	Value	Level ID	Value	Level ID	Value
Unlikely	1	Negligible	1	Less than 6 hrs	4	Less than 6 hrs	1
Possibly	2	Limited	2	6 to 12 hrs	3	Less than 24 hrs	2
Likely	3	Critical	3	12 to 24 hrs	2	Less than one wk	3
Highly Likely	4	Catastrophic	4	More than 24 hrs	1	More than one wk	4

The result was a climate change risk rating of 7.18 (see Annex C Working Group HMP Risk Assessment Survey for additional details):

Hazard	Probability	Magnitude	Warning Time	Duration	Risk
Pandemic	6	5.5	5.5	20	7.18

PANDEMIC VULNERABILITIES

All cities within the LVMCOG (Agoura Hills, Calabasas, Hidden Hills, Malibu, and Westlake Village) as well as the entire State of California is vulnerable to pandemics. The major concern regarding the impact on communities from loss of life, long term health problems, business and industry closures leading to severe economic loss, the closure of schools, overcrowded hospitals, and the long term impact to mental health and development. Examples of the various vulnerabilities to pandemic include:

- Age
- Business and Industry
- Healthcare Systems
- Public Gatherings
- Underlying Diseases

Age

Over Age 65

Age represents a significant vulnerability in a pandemic. Older individuals, particularly those over the age of 65, are at higher risk of severe illness or death from infectious diseases. This demographic vulnerability necessitates targeted protective measures and healthcare resources. Long-term care facilities and nursing homes, where older populations often reside, require special attention to prevent outbreaks and ensure adequate care. Vaccination efforts should prioritize this demographic to reduce their vulnerability.

Children

In the case of influenza, according to the CDC[37], "Children younger than 5 years old–especially those younger than 2–are at higher risk of developing serious flu-related complications. Children of any age with certain chronic health conditions are also at higher risk; during the 2022-2023 flu season, 66 percent of children 0 to 17 years old hospitalized with flu had at least one underlying health condition, such as asthma, neurologic disease, obesity, or immune suppression."

Pregnancy

The CDC further notes that, "influenza is more likely to cause illness that results in hospitalization in pregnant people than in people of reproductive age who are not pregnant. Flu also may be harmful for a pregnant person's developing baby. A common flu symptom is fever, which has been associated in some studies with neural tube defects and other adverse outcomes for a developing baby."

Any Age Group - Spanish Flu Example

As stated by the Cleveland Clinic, "from 1918 to 1919, the Spanish flu infected an estimated 500 million people globally. This amounted to about 33% of the world's population at the time. In addition, the Spanish flu killed about 50 million people. About 675,000 of the deaths were in the U.S. Just like the flu we get today, the Spanish flu was particularly harmful to infants under age 5 and people over the age of 65. One thing that was different about the Spanish flu was that it also killed a large number of healthy adults, aged 20 to 40 years."[38]

[37] https://www.cdc.gov/flu/highrisk/children.htm
[38] https://my.clevelandclinic.org/health/diseases/21777-spanish-flu

Business and Industry

A pandemic exposes vulnerabilities within the business and industrial sectors. Disruptions in supply chains, reduced consumer demand, and workforce (due to illness or quarantine measures) can significantly impact economic stability. Although business of any size are likely to be impacted, small businesses may face additional challenges. Industries reliant on physical presence, such as manufacturing, hospitality, and entertainment, are particularly vulnerable.

Healthcare System

The healthcare system faces extreme vulnerabilities during a pandemic. Sudden surges in patients can strain resources, leading to shortages of critical supplies, beds, and healthcare professionals. This can hinder the ability to provide optimal care, not only for COVID-19 patients but also for individuals with other medical needs. Moreover, healthcare workers themselves are at heightened risk of exposure.

Public Gatherings

Large gatherings present a significant vulnerability during a pandemic. Events such as conferences, concerts, and sports gatherings can serve as hotspots for viral transmission. Inadequate social distancing and limited adherence to preventive measures can increase the spread of a viral infection. Balancing societal and economic needs with public health measures becomes a critical challenge. Implementing restrictions on gatherings, promoting virtual alternatives, and enforcing safety protocols are vital strategies to mitigate this vulnerability.

Underlying Disease

Individuals with underlying health conditions, such as heart disease, diabetes, or respiratory conditions, are more susceptible to severe outcomes from a pandemic. These conditions can exacerbate the impact of the virus and increase mortality rates. Adequate healthcare support and targeted public health messaging are essential in protecting this vulnerable population. Additionally, vaccination campaigns and early detection and management of underlying conditions are crucial preventive measures.

VULNERABLE POPULATIONS

In Agoura Hills, the elderly and those speaking languages other than English are particularly vulnerable during pandemics. The elderly may face increased risk of severe illness and complications due to pre-existing health conditions and weakened immune systems. Non-English speakers may struggle with accessing accurate health information and resources, potentially leading to delays in seeking medical care and following public health guidelines.

Calabasas residents, including those on fixed incomes, transitory workers, homeless individuals, and elderly or disabled residents, face heightened risks during pandemics. Fixed-income residents may lack the financial means to afford necessary healthcare and preventive measures. Transitory workers and homeless individuals often lack stable housing, making it difficult to maintain hygiene and access healthcare. Elderly and disabled residents may experience significant difficulty in accessing medical care and support services, increasing their risk of severe illness.

In Hidden Hills, the older population, households with disabilities, and those with limited transportation capabilities are at substantial risk during pandemics. Older adults and those with disabilities may find it challenging to access healthcare and support services, and limited transportation can hinder their ability to reach medical facilities. Additionally, their pre-existing health conditions may make them more susceptible to severe illness.

Malibu's transitory workers, elderly population, lower-income residents, and homeless individuals are particularly vulnerable during pandemics. Transitory workers and the homeless often lack stable housing and access to healthcare, increasing their risk of infection and complications. Elderly individuals may struggle with pre-existing health conditions and limited access to medical care, while lower-income residents may lack the financial means to afford necessary healthcare and preventive measures.

In Westlake Village, the elderly, disabled, homeless individuals, and residents speaking a language other than English face significant risks during pandemics. The elderly and disabled may find it difficult to access healthcare and support services due to mobility issues and health concerns. Homeless individuals are highly vulnerable due to lack of shelter and resources. Non-English speakers may miss critical health information and guidelines, increasing their risk during pandemics.

PANDEMIC HAZARD IDENTIFICATION MITIGATION STRATEGIES

National COVID-19 Preparedness Plan

The COVID-19 Preparedness Plan created by The White House aims to address the COVID-19 Pandemic, which includes measures for testing, vaccination, healthcare infrastructure, and public health initiatives.

Protect Against and Treat COVID-19

The first category, "Protect Against and Treat COVID-19," emphasizes the critical importance of vaccination. It prioritizes the administration of vaccines to all eligible individuals, with a specific focus on providing booster shots. Additionally, the plan calls for the widespread availability and accessibility of testing to facilitate early detection and containment of the virus. Equitable access to high-quality treatments for COVID-19 is also highlighted, ensuring that individuals receive the necessary care and support. The category underscores the need to equip hospitals and healthcare facilities with the resources and personnel required to effectively manage and treat COVID-19 cases.

Prepare for New Variants

The second category, "Prepare for New Variants," addresses the dynamic nature of the virus. It places a strong emphasis on genomic sequencing and surveillance to detect and monitor emerging variants. In the event of new variants, the plan calls for the development and deployment of targeted vaccines and treatments to effectively respond. International collaboration and coordination are crucial in this regard, with a focus on strengthening partnerships to collectively address challenges posed by global variants.

Prevent Economic and Educational Shutdowns

The third category, "Prevent Economic and Educational Shutdowns," emphasizes a balanced approach to public health measures. It aims to control outbreaks without resorting to widespread shutdowns of businesses and educational institutions. The plan provides support to these sectors, offering resources and guidance to ensure safe operations. Furthermore, economic relief measures are implemented to assist individuals and families facing challenges due to the pandemic, helping to maintain stability and resilience in the face of economic uncertainties.

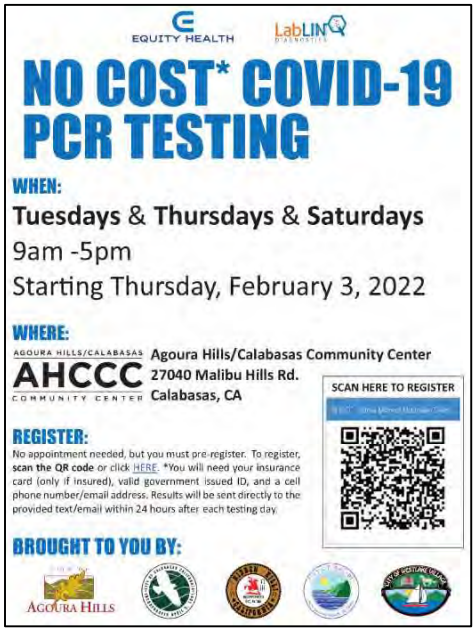
Continue to Vaccinate the World

The fourth category, "Continue to Vaccinate the World," highlights the significance of global vaccination efforts. It involves the acceleration of initiatives to share vaccine doses and support vaccine production on a global scale. The plan places an emphasis on building international partnerships and cooperation to address issues related to vaccine access and distribution. Additionally, efforts are directed towards strengthening vaccine manufacturing capacity in low- and middle-income countries, ensuring equitable access to vaccines for all populations worldwide.

LVMCOG Mitigation Activities

Las Virgenes-Malibu Council of Governments

In addition to the actions taken by individual cities, in 2022, the LVMCOG co-sponsored no cost COVID-19 testing for the community. Furthermore, as part of Los Angeles County, each city implemented the guidance issued by the Los Angeles County Department of Health as well as the mandates issued by the State of California.



Agoura Hills

The Agoura Hills website offers essential COVID-19 information. This encompasses details on getting fully vaccinated or receiving a booster, executive directives, rent relief information, following mask mandates, testing guidelines, obtaining complimentary rapid testing kits, and providing instructions for isolation in case of infection.

Calabasas

The Calabasas city website provides a range of COVID-19 information. This includes general details about the virus, statistics on cases and fatalities, vaccination guidance, executive directives, outreach initiatives, support for employees and businesses, as well as resources regarding eviction. Additionally, the city provides information about the L.A. County Great Plates Delivered Program, specifically tailored for senior residents.

Calabasas

The Hidden Hills city website includes a comprehensive array of COVID-19 resources. This includes links for: Vaccine Eligibility and Guidance, Testing Information, Details about the Tenant Relief Act, Health Resources, Reopening Guidelines, and Other Relevant General Information Regarding COVID-19.

Malibu

The City of Malibu is equipped and able to operate both a testing and vaccination site for future pandemics. During 2020 and 2021, the City partnered with local Urgent Care Centers and community volunteers to operate a regular testing site and a vaccination site. The relationships and capabilities that were created during that time remain intact and can be activated very quickly.

Westlake Village

The City of Westlake Village website provides a variety of COVID-19 information and vital resources about the virus, along with crucial resources like vaccination and testing information, local ordinances, support for businesses and workers, rental assistance, job loss aid, CDC travel advisories, and additional pertinent information. In addition, the city's ReadyWLV.org website provides ongoing news and information.

SECTION 16. TERRORISM AND MASS VIOLENCE

THE NATURE OF THE TERRORISM AND MASS VIOLENCE THREAT

Terrorism is a continuing threat throughout the world and within the United States. There is no history of terrorist acts or terrorist groups operating in the Las Virgenes Malibu Region. Consequently, the probability of a terrorist attack is considered low. Nevertheless, it is still important to consider the potential for terrorist activities especially since there are a variety of political, social, religious, cultural, and economic factors that underlie the broad term "terrorist". In addition, since terrorists often focus on high visibility targets and civilian populations, the potential consequences of an attack underscore the need to consider terrorism as part of this mitigation plan.

Furthermore, while Mass Violence events such as "Active Shooter" incidents are generally considered workplace or school focused and are criminal acts, they can also be considered forms of terrorism. There are specific characteristics that can link some Active Shooter cases to terrorism. Namely the targeting of vulnerable populations resulting in loss of life and an intent to intimidate. While the risk of Mass Violence events such as Active Shooter incidents is still considered low, including all forms of terrorism is an important component of a comprehensive mitigation plan.

HISTORY OF TERRORIST AND MASS VIOLENCE EVENTS IN THE LAS VIRGENES-MALIBU REGION

The Las Virgenes-Malibu Region has not experienced a terrorist act or incidence of mass violence; however, it does include a variety of important businesses, public sites, pipelines, electrical infrastructure, and high-profile individuals which could attract the attention of terrorists. In addition, there are multiple schools, shopping areas, public venues, and private businesses that could experience mass violence attacks. The consequences of a terrorist act or mass violence incident in the region could also impact the local area, e.g., disruption of CA 101, Pacific Coast Highway, local streets, etc. Furthermore, there is a possibility that extremist groups or lone attackers could operate from the area and use it as a base of operations for attacks elsewhere.

Specific Threats

Recent trends toward large scale incidents generating significant casualties make preparedness and the mechanisms for effective response essential. In addition to large scale attacks, a full range of assault styles must be considered. Terrorists or mass violence perpetrators may include a variety of methods including letter bombs, large-scale bombs, active shooter incidents, car or truck attacks, knife assaults, bio-chemical attacks, car bombs, suicide attacks, or hostage taking.

Venues likely to suffer the impact of terrorism or mass violence include government facilities, military facilities and recruiting offices, military suppliers, hospitals, entertainment and cultural facilities, religious centers, shopping malls, business complexes, movie theaters, public arenas, colleges, schools, and research centers.

Motivation

Conventional political motivation for terrorism continue, however issues involving organized crime, narcotics trafficking, ecological/animal rights, abortion/right-to-life groups, and perceived economic injustice can also involve terrorist groups or lone individual "Lone Wolf" planning, and operations. In addition, increased motivation may be attributed to the growing use of the Internet for terrorist recruitment, training, and communications as well as social media as outlets for mass violence perpetrators to publicize their activities and motivation.

Disasters Declarations and Emergency Proclamations

FEMA disaster declarations allow state, tribal, and local governments to access federal aid for disaster response and recovery when overwhelmed. Similarly, the California Governor's Office of Emergency Services (Cal OES) issues proclamations to mobilize state resources and streamline procedures.

FEMA Disasters Declarations

No disaster declarations.

Cal OES Open State of Emergency Proclamations

No open emergency proclamations declared.

CAUSES AND CHARACTERISTICS OF TERRORISM AND MASS VIOLENCE INCIDENTS

Terrorism

Defining Terrorism

There are multiple definitions of terrorism in common use. The United States Code defines terrorism as premeditated, politically motivated violence perpetrated against noncombatant targets by sub-national groups or clandestine agents usually intended to influence an audience. The United States Department of Justice defines terrorism as a violent act dangerous to human life, in violation of the criminal laws of the U.S. or any segment to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives. The FBI defines terrorism as the unlawful use of force or violence against persons or property to intimidate or coerce government, the civilian population, or any segment thereof, in furtherance of political or social objectives.

All three of these definitions share important components:

1. Criminal action
2. The action must include violence against civilians
3. The action is carried out in order to further political or social objectives
4. The action is intended to coerce a government or civilian population

Terrorism Hazard Identification

The categories below serve to differentiate terrorist organizations or individuals according to common goals and motivation. It should be noted that these categories of terrorism and terrorist groups are constantly changing. In addition, the "Lone Wolf" terrorism (individuals not connected to a terror cell or larger group, but who commit acts of public violence, often on behalf of a personal grievance) has added another dimension.

Category	Description
Separatist	Separatist groups are those with the goal of separation from existing entities through independence, political autonomy, or religious freedom or domination. The ideologies separatists subscribe to include social justice or equity, anti-imperialism, as well as the resistance to conquest or occupation by a foreign power.
Ethnocentric	Groups of this persuasion see race as the defining characteristic of a society, and therefore a basis of cohesion. There is usually the attitude that a particular group is superior because of their inherent racial characteristics.
Nationalistic	The loyalty and devotion to a nation, and the national consciousness derived from placing one nation's culture and interests above those of other nations or groups. This can find expression in the creation of a new nation or in splitting away part of an existing state to join with another that shares the perceived "national" identity.
Revolutionary	Dedicated to the overthrow of an established order and replacing it with a new political or social structure. Although often associated with communist political ideologies, this is not always the case, and other political movements can advocate revolutionary methods to achieve their goals
Political	Political ideologies are concerned with the structure and organization of the forms of government and communities. While observers outside terrorist organizations may stress differences in political ideology, the activities of groups that are diametrically opposed on the political spectrum are similar to each other in practice.
Religious	Religiously inspired terrorism is on the rise. While Islamic terrorists and organizations have been the most publicized, all of the major world religions have extremists that have taken up violence to further their perceived religious goals. Religiously motivated terrorists see their objectives as holy writ, and therefore infallible and non-negotiable
Social	Often particular social policies or issues will be so contentious that they will incite extremist behavior and terrorism. Frequently this is referred to as "single issue" or "special interest" terrorism. Some issues that have produced terrorist activities in the United States and other countries include animal rights, abortion, ecology/environment, and minority rights.
Domestic	These terrorists are "home-grown" and operate within and against their home country. They are frequently tied to extreme social or political factions within a particular society and focus their efforts specifically on their nation's socio-political arena.
International or Transnational	Often describing the support and operational reach of a group, these terms are often loosely defined, and can be applied to widely different capabilities. *International groups* typically operate in multiple countries but retain a geographic focus for their activities. Hezbollah has cells worldwide, and has conducted operations in multiple countries, but is primarily concerned with events in Lebanon and Israel. *Transnational groups* operate internationally, but are not tied to a particular country, or even region. Al Qaeda is transnational; being made up of many nationalities, having been based out of multiple countries simultaneously, and conducting operations throughout the world. Their objectives affect dozens of countries with differing political systems, religions, ethnic compositions, and national interests

Table 171: Terrorist Group Categories
Source: http://www.terrorism-research.com/groups/categories.php

International Terrorist Groups

International terrorist groups can operate anywhere and act without regard to national borders. U.S. Code Title 18 Part I, Chapter 113b § 2331 defines international terrorism as activities that:

(A) involve violent acts or acts dangerous to human life that are a violation of the criminal laws of the United States or of any State, or that would be a criminal violation if committed within the jurisdiction of the United States or of any State;

(B) appear to be intended:
  (i) to intimidate or coerce a civilian population;
  (ii) to influence the policy of a government by intimidation or coercion; or
  (iii) to affect the conduct of a government by mass destruction, assassination, or kidnapping; and

(C) occur primarily outside the territorial jurisdiction of the United States, or transcend national boundaries in terms of the means by which they are accomplished, the persons they appear intended to intimidate or coerce, or the locale in which their perpetrators operate or seek asylum

The U.S. State Department issues and maintains the Foreign Terrorist Organization (FTO) List which documents current threat groups. The current FTO is listed below:

1. Segunda Marquetalia
2. Revolutionary Armed Forces of Colombia – People's Army (FARC-EP)
3. ISIS-DRC
4. ISIS-Mozambique
5. Harakat Sawa'd Misr (HASM)
6. Asa'ib Ahl al-Haq (AAH)
7. Islamic Revolutionary Guard Corps (IRGC)
8. Jama'at Nusrat al-Islam wal-Muslimin (JNIM)
9. al-Ashtar Brigades
10. ISIS in the Greater Sahara (ISIS-GS)
11. ISIS-West Africa
12. ISIS-Philippines
13. ISIS-Bangladesh
14. Hizbul Mujahideen (HM)
15. al-Qa'ida in the Indian Subcontinent (AQIS)
16. ISIS-Libya
17. Islamic State's Khorasan Province (ISIS-K)
18. Jaysh Rijal al-Tariq al Naqshabandi (JRTN)
19. al-Nusrah Front, aka Hay'at Tahrir al-Sham (ANF/HTS)
    — Jabhat Fath al-Sham Amendment (November 14, 2016)
    — Hay'at Tahrir al-Sham Amendment (June 1, 2018)
20. ISIS-Sinai Province (formerly Ansar Bayt al-Maqdis)
    — ISIL Sinai Province Amendment (September 30, 2015)
21. Ansar al-Shari'a in Benghazi
22. Ansar al-Shari'a in Darnah
23. Ansar al-Shari'a in Tunisia
24. al-Mulathamun Battalion, aka al-Murabitoun
25. Ansaru
26. Boko Haram
27. Ansar al-Dine (AAD)
28. Haqqani Network (HQN)
29. Abdallah Azzam Brigades
    — Marwan Hadid Brigades Amendment (November 2, 2017)
30. Jemaah Anshorut Tauhid (JAT)
31. Indian Mujahedeen (IM)
39. al-Shabaab
    — al-Hijra Amendment (August 1, 2018)
40. Harakat ul-Jihad-i-Islami/Bangladesh (HUJI-B)
41. Islamic Jihad Union (IJU)
42. ISIS (formerly al-Qa'ida in Iraq)
    — Islamic State of Iraq Amendment (January 26, 2012)
    — al-Hayat Media Center and Amaq News Agency Amendments (March 22, 2019)
43. Continuity Irish Republican Army (CIRA)
44. Ansar al-Islam (AAI)
45. Lashkar i Jhangvi (LJ)
46. Jemaah Islamiya (JI)
47. Communist Party of the Philippines/New People's Army (CPP/NPA)
48. al-Qa'ida in the Islamic Maghreb (formerly Salafist Group for Call and Combat)
    — AQIM Amendment (February 20, 2008)
49. Asbat al-Ansar (AAA)
50. Al-Aqsa Martyrs Brigade (AAMB)
51. Lashkar-e-Tayyiba (LeT)
    — Tehrik-e-Tahafuz Qibla Awwal, Tehrik-e-Hurmat-e-Rasool, and Al-Anfal Trust Amendments (June 26, 2014)
    — Al Muhammadia Students Amendment (December 30, 2016)
    — Tehreek-e-Azadi-e-Kashmir and Milli Muslim League Amendments (April 4, 2018)
52. Jaish-e-Mohammed (JEM)
53. New Irish Republican Army (formerly Real IRA)
    — New IRA Amendment (June 30, 2023)
54. Islamic Movement of Uzbekistan (IMU)
55. al-Qa'ida (AQ)
56. Abu Sayyaf Group (ASG)
57. HAMAS
58. Harakat ul-Mujahidin (HUM)
    — Ansar ul-Ummah Amendment (August 8, 2014)
59. Hizballah
60. Kurdistan Workers Party (PKK)
61. Liberation Tigers of Tamil Eelam (LTTE)
62. National Liberation Army (ELN)

32. Army of Islam (AOI) 33. Jaysh al-Adl (formerly Jundallah) — Jaysh al-Adl Amendment (July 2, 2019) 34. Tehrik-e Taliban Pakistan (TTP) 35. Harakat ul-Jihad-i-Islami (HUJI) 36. al-Qa'ida in the Arabian Peninsula (AQAP) — Ansar al-Shari'a Amendment (October 5, 2012) 37. Kata'ib Hizballah (KH) 38. Revolutionary Struggle (RS)	63. Palestine Liberation Front (PLF) 64. Palestine Islamic Jihad (PIJ) 65. Popular Front for the Liberation of Palestine (PFLP) 66. PFLP-General Command (PFLP-GC) 67. Revolutionary People's Liberation Party/Front (DHKP/C) 68. Shining Path (Sendero Luminoso, SL)

Table 172: Foreign Terrorist Organizations

SOURCE: https://www.state.gov/foreign-terrorist-organizations/

International terrorist groups often have state sponsors who view terrorism as a tool of foreign policy. State sponsors of terrorism engage in anti-Western terrorist activities by funding, organizing, networking, and providing other support to many extremists.

Country	Designation Date
Cuba	January 12, 2021
Democratic People's Republic of Korea (North Korea)	November 20, 2017
Iran	January 19, 1984
Syria	December 29, 1979

Table 173: State Sponsors of Terrorism

Source: U.S. State Department

Domestic Terrorism in the United States

Domestic terrorism involves attacks within the United States perpetrated by homegrown groups or individuals. U.S. Code Title 18 Part I, Chapter 113b § 2331 defines domestic terrorism as activities that:

(A) involve acts dangerous to human life that are a violation of the criminal laws of the United States or of any State;
(B) appear to be intended—
  i. to intimidate or coerce a civilian population;
  ii. to influence the policy of a government by intimidation or coercion; or
  iii. to affect the conduct of a government by mass destruction, assassination, or kidnapping; and
(C) occur primarily within the territorial jurisdiction of the United States.

Domestic Extremist and Hate Groups

The U.S. Government Accountability Office (GAO) conducted an analysis of the Federal Bureau of Investigation (FBI) and Department of Homeland Security (DHS) documentation related to domestic terrorism and developed the following categories for the various threat groups currently operating in the U.S.

Threat Group Category	Definition
Racially or Ethnically Motivated Violent Extremism	Potentially unlawful use or threat of force or violence in furtherance of ideological agendas derived from bias, often related to race or ethnicity, held by the actor against others or a given population group. Such extremists purport to use both political and religious justifications to support their racially or ethnically-based ideological objectives and criminal activities.

Threat Group Category	Definition
Anti-Government Or Anti-Authority Violent Extremism	Potentially unlawful use or threat of force or violence in furtherance of ideological agendas derived from anti-government or anti-authority sentiment, including opposition to perceived economic, social, or racial hierarchies, or perceived government overreach, negligence, or illegitimacy.
Animal Rights/Environmental Violent Extremism	Potentially unlawful use or threat of force or violence in furtherance of ideological agendas by those seeking to end or mitigate perceived cruelty, harm, or exploitation of animals and/or the perceived exploitation or destruction of natural resources and the environment.
Abortion-Related Violent Extremism	Potentially unlawful use or threat of force or violence in furtherance of ideological agendas relating to abortion, including individuals who advocate for violence in support of either pro-life or pro-choice beliefs.
All Other Domestic Terrorism Threats	Potentially unlawful use or threat of force or violence in furtherance of ideological agendas which are not otherwise defined under or primarily motivated by one of the other domestic terrorism threat categories. Such agendas could flow from, but are not limited to, a combination of personal grievances and beliefs, including those described in the other domestic terrorism categories. Some actors in this category may also carry bias related to religion, gender, or sexual orientation.

Domestic Terrorist Incidents

According to the U.S. Government Accountability Office, "There were 231 incidents (meaning attacks or plots) that met the definition of domestic terrorism between 2010 and 2021, according to DHS. They occurred across the United States, but the greatest number of incidents occurred in states with major metropolitan areas such as California (Los Angeles, San Diego, and San Francisco), New York (New York City), and Washington, DC."

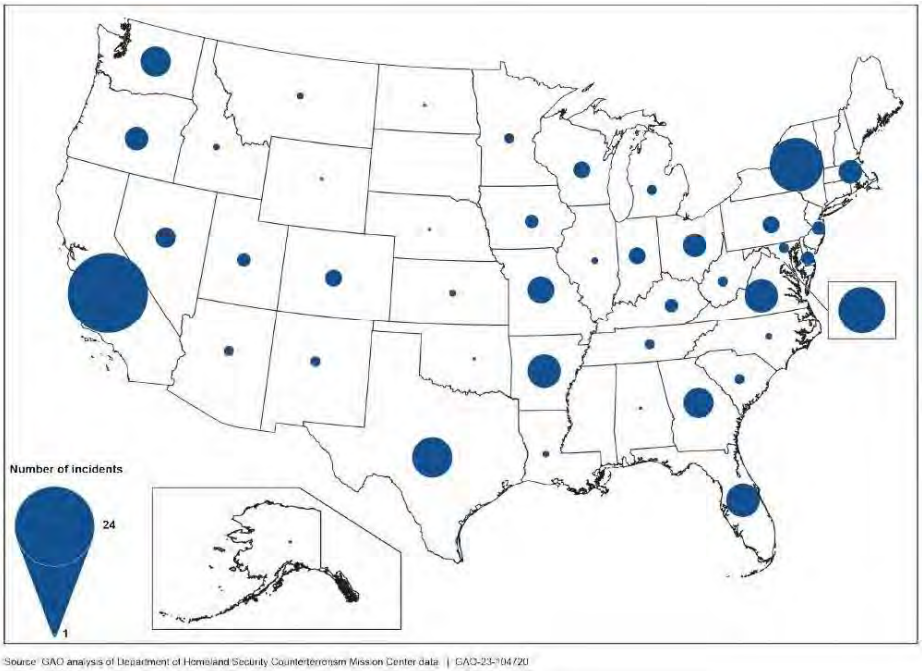


Figure 127: U.S. GAO - Domestic Terrorism Incidents by State, 2010 through 2021

The categories of incidents from 2010 to 2021 were led by Racially or Ethnically Motivated and Anti-Government / Anti-Authority Violent Extremists (RMVE).

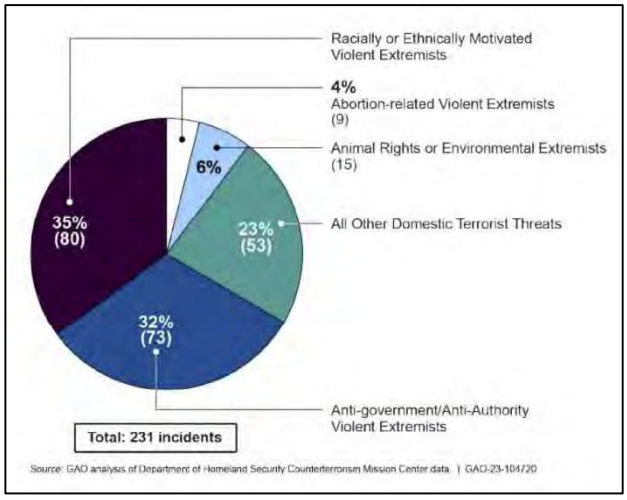


Figure 128: U.S. GAO - Domestic Terrorism-Related Incidents by Category, from 2010 through 2021

Domestic Terrorism / Hate Group Examples

Examples of domestic terrorist / hate group incidents include the following cases as reported by DHS:

- In March 2023, a RMVE driven by a belief in the superiority of the white race was arrested and charged with allegedly attempting to use an improvised incendiary device to burn down a church in Ohio that was planning to host a drag-themed event.
- In February 2023, two RMVEs driven by a belief in the superiority of the white race were arrested and are now awaiting trial for plotting an attack against electrical substations in Maryland. These arrests followed a series of recent attacks against electrical infrastructure, which some DVEs have praised and leveraged to call for more attacks on critical infrastructure.
- Since spring of 2022, alleged DVEs in Georgia have cited anarchist violent extremism, animal rights/environmental violent extremism, and anti-law enforcement sentiment to justify criminal activity in opposition to a planned public safety training facility in Atlanta. Criminal acts have included an alleged shooting and assaults targeting law enforcement and property damage targeting the facility, construction companies, and financial institutions for their perceived involvement with the planned facility.
- Meanwhile, foreign terrorists continue to use media to call for lone offender attacks in the West, condemn US foreign policy, and attempt to expand their reach and grow global support networks. Most recently, in January 2023, an individual from Maine who was inspired by a variety of foreign terrorist content was charged with federal crimes for an attack on New York City Police Department (NYPD) officers during New Year's Eve celebrations in Times Square.

Other examples of domestic terrorism events include:

Year	Event	Description
2013, April 15	Boston Marathon Bombing	Bombing at the Boston Marathon resulting in 3 deaths and several hundred injuries.
2010, February 18	Austin, Texas IRS Airplane Attack	Aircraft attack on an IRS office building by a believed anti-government / anti-corporate business extremist resulting in 1 death
2009, November 5	Fort Hood Shootings	Shooting attack of a believed Islamic extremist resulting in 13 deaths and 30 wounded
2009, May 31	Assassination of Dr. George Tiller	Murder of a nationally known physician that performed late-term abortions
2001 September 18 (start)	U.S. Anthrax Attacks	A series of letters containing anthrax spores lasting several weeks resulting in 5 deaths and 17 infections
1996, July 27	Centennial Olympic Park Bombing	1996 Summer Olympic bombing in Atlanta, GA resulting in 2 deaths and 111 injuries
1995, April 19	Oklahoma City Bombing	Truck bomb resulting in 168 people killed

Table 174: Domestic Terrorism Examples

Post 9/11

After September 11, 2001, the United States has increased its security policies and procedures at the national and local level. Since then, Federal Grants for counterterrorism have increased to approximately seventy-five billion dollars per year from federal and state governments according to Kim Murphy of Los Angeles Times in an article dated August 2011. These grants have provided local counties and cities funds to strengthen their security procedures, implement needed mitigation actions, or provide first responders with specialized training and equipment.

Weapons of Mass Destruction (WMD)

Weapons of Mass Destruction are a specific type of threat that must be considered by any community. For the Las Virgenes-Malibu Region, this may involve the activation of a WMD within the area or a large-scale attack in a nearby location. Consequently, ongoing awareness and training of local emergency responders, government, and healthcare providers is important to ensure that such events are quickly identified and managed.

Five Types of WMD That Could be Used by Terrorists

WMD can be segregated into five categories using the acronym B-NICE: Biological, Nuclear, Incendiary, Chemical and Explosive.

1. Four common types of biological agents are bacteria, viruses, rickettsia, and toxins.
2. Nuclear terrorism can occur in two different ways.
    a. Detonation or threat of detonation of a nuclear bomb
    b. Dispersion of radiological material using a conventional explosive or other dispersal device
3. An incendiary device is any mechanical, electrical, or chemical device used to intentionally initiate combustion and start a fire.
4. Chemical agents can be classified into five categories: nerve agents, blister agents, blood agents, choking agents, and irritating agents.
5. Explosive devices are the most common WMD (70% of all terrorist attacks).

While explosives are the most common method, any of the WMDs listed can be deployed at any time. Consequently, threat awareness and vigilance are critical to prevent future attacks.

In one well-known case a plot to detonate a car bomb at the Los Angeles International Airport was uncovered by an alert U.S. Customers inspector. On December 14, 1999, Ahmed Ressam (aka the Millennium Bomber) was arrested after a U.S. Customs inspector had his vehicle searched after he had successfully boarded a ferry from Canada to Port Angeles, Washington. The inspector is credited for noticing Ressam's behavior as unusual and ordering a secondary customs search and a check of his passport. As a result, chemicals and explosive timing devices were found in the trunk of his vehicle and his passport was identified as counterfeit. Ressam was subsequently jailed and convicted on multiple counts.

Mass Violence

Defining Mass Violence

Mass violence involves shootings, car or truck attacks against pedestrians, and other targeting that results in harm to multiple victims. As defined by the Federal Bureau of Investigation (FBI), an active shooter is an individual actively engaged in killing or attempting to kill people in a populated area. The federal definition of "mass killings," according to the Investigative Assistance for Violent Crimes Act is, "three or more killings in a single incident." (not including the shooter).

Mass Violence Incidents in the United States

In 2022, the FBI designated 50 shootings as active shooter incidents. Although incidents decreased by 18% from 2021 (61 incidents), the number of active shooter incidents increased by 66.7% compared to 2018 (30 incidents).[39] The 50 active shooter incidents in 2022 occurred in 25 states and the District of Columbia and represent seven location categories, including open spaces, commerce, residences, education, government, houses of worship, and a health care facility.

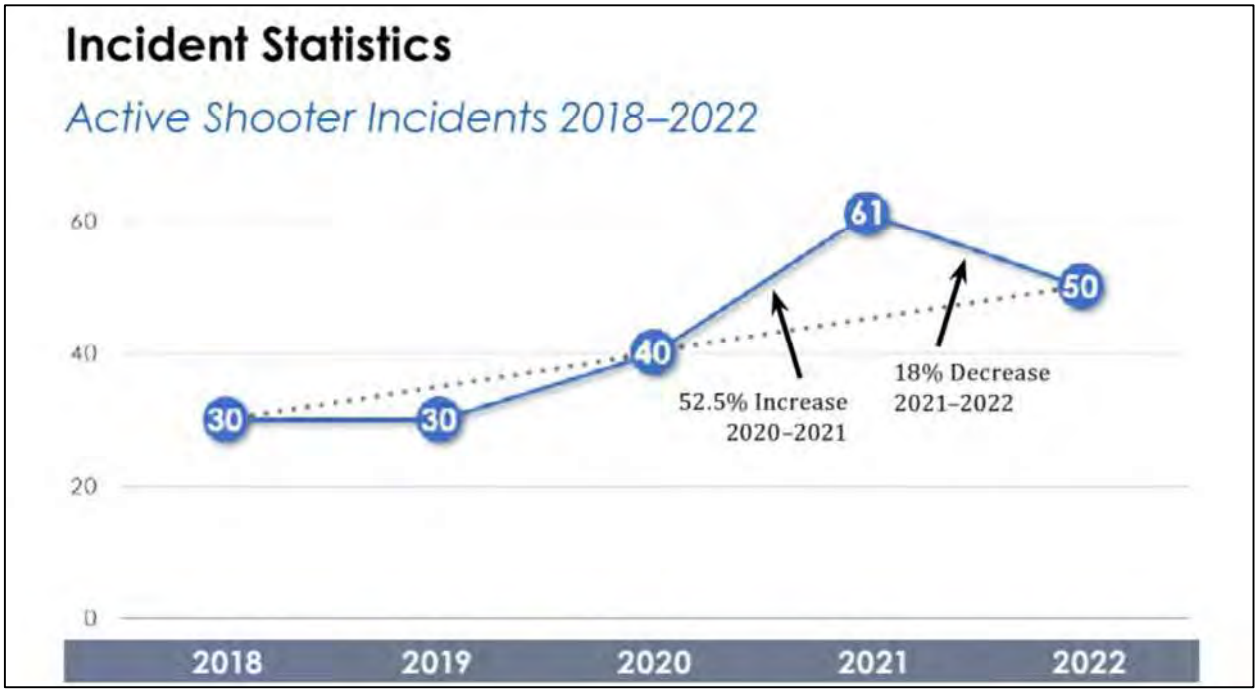


Figure 129: Active Shooter Incidents 2018 -2022

Source: Federal Bureau of Investigations

[39] Active Shooting Incidents in the U.S. in 2022, FBI April 2023

Mass Shooting Events

Mass shooting events include the following examples since 2018:

Year	Event	Description
2023, May 6	Allen Texas Premium Outlets Mall Shooting	A gunman killed 8 and injured 7 others at an outlet mall in Allen, Texas in a possible racially or ethnically motivated violent extremist (RMVE) attack
2023, March 27	Nashville School Shooting	A mass shooting killed 3 children and 3 adults at The Covenant School in Nashville, Tennessee
2023, August 26	Jacksonville Shooting / Hate Crime	An attack inside a Dollar General store in Jacksonville, Florida resulted in the deaths of 3 adults before the shooter committed suicide. The incident was believed to be a racially motivated hate crime.
2023, August 23	Trabuco Canyon Shooting	A mass shooting occurred at the Cook's Corner Bar in Trabuco Canyon, California killing 4 people and injuring 6 others before the shooter was shot and killed by law enforcement
2022, November 19	Colorado Springs Nightclub Shooting	A shooting inside the Club Q nightclub in Colorado Springs, Colorado resulting in 5 deaths and 25 injuries
2022, July 4	Highland Park Parade Shooting	A gunman opened fire on a July 4th parade in Highland Park, Illinois killing 7 and wounding 48 people before his capture
2022, June 5	Chattanooga Shooting	A shooting occurred inside a nightclub in Chattanooga, Tennessee resulting in 2 fatalities and 12 wounded
2022, May 15	Laguna Woods Shooting	A gunman inside a church in Laguna Woods, California killing 1 person and wounded 5 others in what is believed to be a racially motivated anti-Taiwanese hate crime
2022, May 14	Buffalo Tops Market Shooting	A white supremacist shooter opened fire inside a Tops Market in Buffalo, New York killing 10 and wounding 3
2021, November 30	Oxford High School Shooting	A student at Oxford High School in Oxford, Michigan shot and killed 4 while wounding 6 before being arrested
2021, May 26	Santa Clara VTA Shooting	An employee at the Santa Clara Valley Transportation Authority in San Jose, California opened fire, killing 9 before committing suicide
2021, April 15	Indianapolis FedEx Shooting	A former employee at the FedEx facility near the Indianapolis Airport shot and killed 8 people before committing suicide
2019, December 10	New Jersey Shooting	A man and a woman ambushed and killed 4 people and injured 3 at a kosher grocery store in New Jersey
2019, December 6	Naval Air Station Pensacola Shooting	A man killed 3 and injured 8 in a possible terrorist attack on the Naval Air Station in Pensacola, Florida
2019, November 14	Saugus High School Shooting	A student shot and killed 2 other students and wounded 3 others at Saugus High School in Santa Clarita, California
2019, August 3	El Paso Shooting	A gunman shot and killed 23 people and injured 23 at a Walmart in El Paso, Texas in a suspected racially motivated attack
2019, July 28	Gilroy Garlic Festival Shooting	A gunman shot 16 people and killed 4 at the Gilroy Garlic Festival in Gilroy, California
2019, April 30	University of North Carolina at Charlotte Shooting	A student shot and killed 2 people and wounded 4 at the University of North Carolina before being taken into custody
2018, November 7	Thousand Oaks Shooting	A gunman shot and killed 12 people and injured 16 at a bar at a student event in Thousand Oaks, California
2018, October 27	Tree of Life Synagogue Shooting	A man shot and killed 11 people and wounded 6 at the Tree of Life Synagogue in Pittsburgh, Pennsylvania in an antisemitic attack before being taken into custody by police
2018, May 18	Santa Fe High School Shooting	A student at Santa Fe High School in Santa Fe, Texas shot and killed 10 people and wounded 14 others before being arrested by police
2018, February 14	Parkland High School Shooting	A former student at the Marjory Stoneman Douglas High School in Parkland, Florida opened fire, killing 17 and wounding 17 others before being taken into custody by police

Table 175: Mass Shooting Examples: 2018 to 2023

Estimated Impact of a Terrorist Event or Mass Violence Incident

If a terrorist event or mass casualty incident were to occur, the consequences to local populations and employment may be significant depending on the site or sites targeted. The table below provides the estimated impact of a disaster using a 0.1% loss baseline.

Category	Agoura Hills	Calabasas	Hidden Hills	Malibu	Westlake Village	Impact if a 0.1% Loss Occurs
Population	20,362	23,410	2,182	10,915	8,081	65
Total City Employment	11,100	11,800	4.5	6,483	3,700	33
Economy (in thousands)	$621,000	$1,011,348	$-	$578,443	$576,306	$2,787

Table 176: Estimated Population and Economic Loss of Terrorist Events
Source U.S. Census Bureau 2021 American Community Survey 5-Year Estimate

Based on a 0.1% loss projection, an estimated 65 people could be impacted (either directly or indirectly), 33 jobs lost (either temporarily or permanently), and more than $2.7M in economic losses. Since a terrorist or mass violence target will likely focus on public meeting venues, commercial structures, or transportation routes, the projected impact is focused on population and employment (see individual city Community Profile sections for population and economic data).

Impact of Climate Change

Each city within the LVMCOG (Agoura Hills, Calabasas, Hidden Hills, Malibu, and Westlake Village) is subject to the terrorism and mass violence but there is no direct evidence of climate change impacting the occurrence of either event. Except that protests around climate change can escalate into violence and occur anywhere in the region.

Impact of Land Use and Development

There is no anticipated relationship between terrorism or mass violence in terms of land use or development.

Impact of Population Patterns

If a terrorism event or mass violence situation occurs in any LVMCOG city, overall population patterns are not expected to change.

Risk of Future Terrorism / Mass Casualty

For the LVMCOG Region, the risk of future climate change events was estimated by the Working Group using the following weighted formula:

Risk = (0.45 x Probability) + (0.30 x Magnitude/Severity) + (0.15 x Warning Time) + (0.10 x Duration)

Probability		Magnitude / Severity		Warning Time		Duration	
Level ID	Value	Level ID	Value	Level ID	Value	Level ID	Value
Unlikely	1	Negligible	1	Less than 6 hrs	4	Less than 6 hrs	1
Possibly	2	Limited	2	6 to 12 hrs	3	Less than 24 hrs	2
Likely	3	Critical	3	12 to 24 hrs	2	Less than one wk	3
Highly Likely	4	Catastrophic	4	More than 24 hrs	1	More than one wk	4

The result was a climate change risk rating of 9.85 (see Annex C Working Group HMP Risk Assessment Survey for additional details):

Hazard	Probability	Magnitude	Warning Time	Duration	Risk
Terrorism / Mass Casualty	10	4.67	20	9.5	9.85

TERRORISM AND MASS VIOLENCE VULNERABILITIES

The probability that an individual or location will be targeted by a terrorist or mass violence perpetrator is a function of several factors including the attractiveness of target, the potential for success of the event and the potential for avoiding identification and capture. Categories of potential targets include:

Terrorism Targets	Mass Violence Targets
• Symbolic buildings • Federal, state, and local government buildings including military sites and recruiting stations • Mass-transit facilities • Public buildings and assembly areas • Controversial businesses and defense industry companies • Communications hubs • Utility production facilities and substations • Water supply locations • Research laboratories • Clinics and hospitals • Religious sites • Places where large groups of people congregate	• Universities and college campuses • Schools • Businesses (any size or type) • Government offices • Military installations (including recruiting offices) • Bars and night clubs • Theaters • Public parks • Shopping areas and malls • Stadiums and public arenas • Other places where large groups of people congregate (e.g., public events such as fairs, marathons, etc.)

Table 177: Terrorism and Mass Violence Targets

All cities within the LVMCOG (Agoura Hills, Calabasas, Hidden Hills, Malibu, and Westlake Village) as well as the entire country is vulnerable to the threat of terrorism and mass violence. While the major concern is the loss of life and injuries, other areas of vulnerability include damage to critical infrastructure, business and industry closures leading to severe economic loss, the closure of schools, overcrowded hospitals, panicked citizens, and the long term impact to mental health and development. Other concerns are outlined in terms of the impact to the overall community below.

Impact on the Community

Following a terrorist attack or mass violence incident, panic, intense media interest, and the convergence of injured and possibly contaminated persons at local hospitals and urgent care centers can be expected. While local, state, and federal agencies will be mobilized to respond, it will take time for assistance to arrive. Many specialized resources (such as military or law enforcement agency response teams) may be needed, requiring local resources to manage the initial phases of an emergency – especially in the case of a mass casualty event. This initial response phase may range from hours to a day or more. Consequently, a rapid assessment of the scope of the incident and activation of local emergency response resources will be critical to manage the situation.

Key issues include:

- Activation of local and regional Emergency Operations Centers (EOCs)
- Designation of casualty collection points and field triage/treatment sites
- Transportation (for personnel, equipment, and supplies to the impact location as well as casualty and public evacuation)
- Isolation (if needed to prevent further contamination)
- Use of personal protection equipment (PPEs)
- Communications (including internal communication, media response, and public bulletins)
- Decontamination points (if required)
- Establishing a secure perimeter
- Post event site and public relations management

Efforts to assess the situation and provide clear, easy to follow emergency management instructions to the public are essential.

STAKEHOLDER INPUT AND PARTICIPATION

To identify the threats, vulnerabilities, and consequences of a major terrorism / mass violence event on the Las Virgenes-Malibu Region, each member of the Planning Group which included representatives from the cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, and Westlake Village provided their input during planning meetings (see Annex B: Meeting Agendas and Attendees) and follow-up discussions. Specific topics of discussion included if any changes to the hazard priorities have changed since the previous HMP, how changes in the community have impacted the risk of each hazard, and what new mitigation actions can be taken. In addition, each member of the Planning Group as well as members of the public provided the input via online surveys (see Annex C: Community Disaster Preparedness and Risk Survey, Annex D: Planning Group HMP Risk Assessment Survey, and Annex E: Planning and Public Involvement).

The following table describes examples of the considerations expected during the initial stages of a terrorist event or mass casualty incident.

Condition	Description
Down Wind Evacuation	A large chemical or biological release may result in a lethal plume that may travel for miles. Emergency agencies in neighboring jurisdictions must be advised of the release and included in incident management activities.
Traffic Restrictions and Congestion	Roads, freeways and transit systems may need to be closed to contain the incident. Regardless of the need, panic may cause some persons to self-evacuate, Traffic congestion and gridlock conditions and confusion may result. These factors will slow response by emergency agencies and specialized resources to affected areas. Detailed traffic management plans will need to be developed.
Self-Transport to Medical Providers	Following a WMD incident, injured and contaminated victims may leave the immediate site of the incident and then go to hospitals. In most cases, the care provider will not be equipped to decontaminate victims or treat terrorist attack related casualties. This can extend the scope of the incident, potentially lead to secondary contamination and strain local medical and emergency response resources. Local hospitals impacted by an influx of casualties who have not been decontaminated will have to establish decontamination area and may not be able to continue providing treatment. For either a terrorist event or mass casualty incident, local hospitals may become overwhelmed with patients and be able to fully provide immediate care.
Public Panic	In the immediate aftermath of a terrorist event involving a chemical or biologic agent, responders should anticipate people who think they have been exposed to or contaminated by the agent(s) even though there has been no actual exposure. Provisions must be made to manage these persons and provide supportive care as necessary. Similarly, during and after a terrorist event or mass casualty incident may become panicked regarding the status of family members and be traumatized. As a result, responders must consider how to appropriately manage concerned family while maintaining site security.
Scarce Supplies	Equipment and supplies needed to manage the consequences of a terrorist event will be scarce. Sufficient pharmacological supplies may not be available. Antidotes and other drugs used to treat WMD victims are usually not stockpiled in sufficient quantities for use in a mass casualty incident. Efforts to secure additional supplies will be an immediate need. Personnel involved in managing potential terrorist event must be aware of these concerns. Measures to address these issues must be incorporated into the Incident Action Plan and should be considered and assessed throughout the management of the WMD incident.

Table 178: Terrorist Event and Mass Casualty Incident Considerations

LAW ENFORCEMENT ROLE IN COMBATING TERRORISM AND MASS CASUALTY INCIDENTS

The following are steps and efforts that various law enforcement agencies are taking to combat the activities of terrorists and mass casualty perpetrators:

1. On-going attention to known potential targets within the area
2. Identification of new potential targets within the area
3. Identification of suspicious persons, places, or things which may be related to potential terrorist or mass casualty incident activity
4. Recognition of potential surveillance and intelligence-gathering activities
5. Recognition of potential terrorist involvement in routine crimes (ID theft, shoplifting, credit card fraud, forgeries, etc.)
6. Organizing and informing community resources regarding anti- terrorism and the prevention of mass casualty incidents
7. Ability to respond safely and effectively to an incident including the use of a WMD
8. Identification of local terrorist groups or others that may be involved in mass casualty attacks
9. Monitoring illegal weapons traffic in the area or volatile materials purchases
10. Conducting Threat/Vulnerability assessments
11. Implementing counter-surveillance activities
12. Target hardening
13. Working with the public to promote awareness of suspicious behavior at potential target sites

VULNERABLE POPULATIONS

In Agoura Hills, the elderly and those speaking languages other than English are particularly vulnerable to terrorism and mass violence. The elderly may face increased risk due to slower response times and mobility issues, making it difficult to evacuate quickly and access safe areas. Non-English speakers may struggle with receiving timely warnings and understanding safety measures, increasing their risk of harm.

Calabasas residents, including those on fixed incomes, transitory workers, homeless individuals, and elderly or disabled residents, face heightened risks during incidents of terrorism and mass violence. Fixed-income residents may lack the financial means to relocate or access secure locations. Transitory workers and homeless individuals often lack stable housing, making it difficult to find safe shelter. Elderly and disabled residents may experience significant difficulty in evacuating quickly and accessing safe areas, potentially leading to higher injury rates.

In Hidden Hills, the older population, households with disabilities, and those with limited transportation capabilities are at substantial risk from terrorism and mass violence. Older adults and those with disabilities may find it challenging to evacuate swiftly and reach safe areas. Limited transportation options can leave these individuals stranded in dangerous situations, increasing their vulnerability.

Malibu's transitory workers, elderly population, lower-income residents, and homeless individuals are particularly vulnerable to terrorism and mass violence. Transitory workers and the homeless often lack stable housing, increasing their risk of exposure to dangerous situations. Elderly individuals may struggle with mobility issues that hinder quick evacuation and access to safe areas, while lower-income residents may lack the financial means to secure temporary housing or relocate during threats.

In Westlake Village, the elderly, disabled, homeless individuals, and residents speaking a language other than English face significant risks during incidents of terrorism and mass violence. The elderly and disabled may have difficulty evacuating and accessing safe areas due to mobility issues and health concerns. Homeless individuals are highly vulnerable due to lack of shelter and resources. Non-English speakers may miss critical warnings and safety instructions, increasing their risk during incidents of terrorism and mass violence.

Regional Response, Mitigation, and Prevention Activities

The Los Angeles County Sheriff's Department is the lead law enforcement agency for the region regarding terrorist events and mass casualty incidents. Individual cities will be responsible for consequence management. Currently the Malibu/Lost Hills Sheriff's station and individual cities implement projects and or programs to help prevent a terrorist or mass casualty situation or be prepared if one were to occur. The following are practices or projects that are currently active in the Region.

Emergency Response Actions

The Los Angeles County Sheriff's Department acts as the lead agency for crisis management, perimeter security, access control, traffic/crowd control, evacuations, notifications, and safeguarding evidence. Crisis management activities may include:

- Investigation, tracking, and maintaining scene integrity.
- Coordinating coroner issues with the Los Angeles County Coroner's Department.
- Use of Special Weapons and Tactics (SWAT) or Rapid Deployment Force (RDF) units
- Assisting with damage assessment and fatalities management.

The Los Angeles County Fire Department is the lead agency for fire response, hazardous materials events, and medical/rescue operations. The County Fire Department provides support as necessary to the Sheriff for Crisis Management activities. Existing procedures, such as the Fire Department's Hazardous Materials Response procedures and NBC Response Protocols are used as necessary. The Fire Department assists with:

- Fire and rescue operations
- Emergency medical services coordination
- Perimeter and access control
- Evacuation operations
- Notifications
- Safeguarding evidence
- Damage assessment
- Fatalities management
- Addressing environmental needs
- Obtaining personnel with radiological training
- Ensuring decontamination procedures (radiological and chemical) are in place
- Ensuring biological agents are contained

Mitigation and Prevention

The following examples provide a summary of mitigation and prevention activities related to terrorism and mass casualty incidents in the Las Virgenes-Malibu Region.

Canine Unit

The Los Angeles County Sheriff maintains 5 specially trained canines to detect explosives as part of the Arson/Explosive Detail and one chemical/biological threat K-9 as part of the Hazardous Materials Detail.

Equipment and JRIC

In September 2011, Los Angeles County received an $8.9 million grant from the Department of Homeland Security. The funds were a part of a 2010 federal grant of $69.9 million to the Los Angeles-Long Beach Urban Area. The grant was intended to address the unique equipment, training and planning needs of large urban areas in managing terrorism threats.[40] The Los Angeles County Sheriff's Department received the bulk of the $8.9 million grant and will use $6.2 million for equipment, such as an aerial video downlink technology, mobile surveillance cameras, tactical robots, radiation detection devices and bomb suits.

Nearly 70 percent of the total Los Angeles-Long Beach Urban Area funds were spent on the region's Joint Regional Intelligence Center (JRIC). The JRIC is staffed by federal, state and local intelligence analysts and investigators responsible for the 44,000-square-mile territory surrounding Los Angeles. The JRIC opened in 2006 and is the largest of approximately 40 facilities nationwide and is used to coordinate data from 200 agencies in seven counties.

Terrorism Early Warning Group

In 1996, the Los Angeles County Sheriff Department established the Terrorism Early Warning (TEW) Group.[41] The purpose of the TEW Group is to act as an interdisciplinary group in which local, state, and federal agencies work together to share information and combine resources, and to enhance the ability to identify and respond to acts and threats of terrorism. This interagency approach allows for early response and enforcement by clearing the communication channels between agencies and creating an environment that facilitates information and intelligence sharing. The result is an effective network that has the ability to identify information which might indicate impending terrorist activity. This group is a significant resource for identifying and assessing potential threats, making appropriate notifications and recommendations, and aiding in mission planning and the efficient allocation of resources.

[40] http://ourweekly.com/los-angeles/sheriff%E2%80%99s-department-spend-89-million-anti-terror-equipment-training-and-intelligence

[41] http://file.lacounty.gov/lasd/cms1_144939.pdf

TERRORISM AND MASS CASUALTY INCIDENT MITIGATION STRATEGIES

LVMCOG Mitigation Activities

The LVMCOG member cities continue to work with local law enforcement agencies such as the Los Angeles County Sheriff on planning efforts to prevent and/or mitigate the impact of terrorism and mass casualty incidents. Additionally, mitigation strategies that support multi-hazard events will also address terrorist response issues, e.g., increasing the effectiveness of communications and response. Finally, each city has active C.E.R.T. programs with volunteers trained to assist in disasters.

Agoura Hills

The City of Agoura Hills website provides emergency information for residents regarding different events. Further, the City web site provides Public Safety Resource links to essential information for a variety of situations, links to the Agoura Hills Ready-Know Your Zone, and the Go-To Evacuation Platform.

Calabasas

The City of Calabasas website provides numerous emergency preparedness information bulletins including an Emergency Preparedness Guide with information regarding Terrorism. Emergency warnings and information will be provided to the public in the event of a terrorist incident. This will be accomplished via the Calabasas website, CTV Channel-3, the City's 1630 AM radio station.

Malibu

The City of Malibu maintains an ongoing Public Information Program that includes:

- A monthly series on the City website that features a different theme each month. These are adapted from the monthly Emergency Survival Program bulletins on preparing for and responding to a variety of disasters including terrorism incidents.
- A series of messages on the City's cable TV channel urge viewers to take emergency response training, to write a family emergency plan, and to contact the Emergency Preparedness Coordinator for further information.
- Ongoing meetings and presentations about emergency preparedness are made to the public at meetings of Homeowner's Associations and Emergency Preparedness Fairs.

Emergency warnings and information will be provided to the public in the event of a terrorist incident. This will be accomplished via the City of Malibu website, Cable TV Channel-3, the City's AM Radio Station (1620 AM), a telephone Hotline service (456-9982), a call center located at City's Emergency Operations Center, and an email subscription service which notifies subscribers whenever emergency information is updated on the City website

Westlake Village

The City of Westlake Village website provides numerous emergency preparedness information bulletins including the Los Angeles County Emergency Survival Guide with information regarding Terrorism. In addition, the City has an active C.E.R.T. program with volunteers trained to assist in disasters.

SECTION 17. ANNEX A: RESOURCES

The following resources were used in the development and update of the Las Virgenes-Malibu Council of Governments Multi-Jurisdictional Hazard Mitigation Plan. In addition to the resources listed, information sources included city documents such as General Plans, Master Plans, Comprehensive Financial Reports, studies, and reports.

Name	Category	Web Site Address or Reference	Description
2018 Defining Vulnerable Communities in the Context of Climate Adaptation	State Government	http://opr.ca.gov/planning/icarp/	Climate Change Program and Data
A History of Significant Weather Events in Southern California - Organized by Weather Type (Feb 2023)	Research, Educational, and Standards Organizations	www.weather.gov/media/sgx/documents/weatherhistory.pdf	Flood and Landslide Data
Adapting to Rising Tides, Bay Conservation and Development Commission (BCDC) and Metropolitan Transportation Commission/Association of Bay Area Governments (MTC/ABAG)	Research, Educational, and Standards Organizations	https://www.adaptingtorisingtides.org/wp-content/uploads/2020/03/ARTBayArea_Short_Report_Final_March2020_ADA.pdf	Sea Level Rise Vulnerability
American Geosciences Institute	Research, Educational, and Standards Organizations	https://www.americangeosciences.org/critical-issues/faq/how-much-do-landslides-cost-terms-monetary-losses	Landslide Losses
Army Corps of Engineers	Federal Government	www.usace.army.mil	Flood and Dam Information
Associated Press	News	Weber, Christopher (March 14, 2019). "Report: Power lines sparked massive Southern California fire". AP NEWS. Retrieved March 14, 2019	Power Outage
Association of State Floodplain Managers	Research, Educational, and Standards Organizations	www.floods.org	Flood Mitigation and Planning Information
Building Seismic Safety Council (BSSC)	Research, Educational, and Standards Organizations	www.bssconline.org	Earthquake and Seismic code Information
California Climate Change Assessment	State Government	https://www.climateassessment.ca.gov/state/overview/	Climate Change Data
California Coastal Commission	Regulatory Agency	https://www.coastal.ca.gov/climate/slr/ https://documents.coastal.ca.gov/assets/climate/slr/vulnerability/13_LosAngeles.pdf	Sea Level Rise Data
California Department of Conservation	State Government	https://cadoc.maps.arcgis.com/apps/webappviewer/index.html?id=bc48ad40e3504134a1fc8f3909659041	ArcGIS Landslide Map

Name	Category	Web Site Address or Reference	Description
California Department of Conservation: Southern California Regional Office	State Government	www.consrv.ca.gov	Earthquake and Flood Information
California Department of Transportation (Caltrans)	State Government	www.dot.ca.gov	Transportation and Traffic Information
California Department of Water Resources (DWR)	State Government	www.water.ca.gov	Flood Information
California Division of Forestry & Fire Protection	State Government	www.fire.ca.gov	Fire Codes, Landslide, Wildfire Mitigation and Programs
California Division of Mines and Geology (DMG)	State Government	www.consrv.ca.gov	Earthquake Information
California Environmental Protection Agency	State Government	https://oehha.ca.gov/media/downloads/climate-change/document/2022caindicatorsreport.pdf	Climate Change Data
California Geological Survey, Department of Conservation	State Government	www.consrv.ca.gov https://www.conservation.ca.gov/cgs/tsunami/maps#counties	Earthquake Information Tsunami Maps
California Governor's Office of Emergency Services (Cal OES)	State Government	www.oes.ca.gov	State Hazard Mitigation Guidance
California in 2050: Some Sizzling Predictions	State Government	www.cpuc.ca.gov	Temperature Rise Prediction for California
California Legislative Analyst's Office	State Government	https://lao.ca.gov/reports/2020/4261/sea-level-rise-081020.pdf	Sea Level Rise Data
California Nevada Climate Applications Program (CNAP)	Research, Educational, and Standards Organizations	https://scripps.ucsd.edu/programs/cnap/	Climate Change and Santa Ana Wind Information and Map
California Number of Extreme Heat Days by Year	Research, Educational, and Standards Organizations	http://cal-adapt.org/tools/extreme-heat/	Temperature Rise Prediction for California
California Public Utilities Commission	Regulatory	https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/infrastructure/electric-reliability/electric-system-reliability-annual-reports	Power Outage Data
California Resources Agency	State Government	www.resources.ca.gov	Earthquake information
California State Controller's Office	State Government	www.sco.ca.gov/and_state_cafr.html	City Comprehensive Financial Reports
California-Nevada Climate Applications Program	Research, Educational, and Standards Organizations	https://wrcc.dri.edu/Climate/Tracker/CA/index.html	Climate Change Data
Center for Disease Control and Prevention (CDC)	Federal Government	https://www.cdc.gov/flu/pandemic-resources/planning-preparedness/global-planning-508.html	Pandemic Continuum
Center for the Blue Economy, Middlebury Institute of International Studies at Monterey	Research, Educational, and Standards Organizations	https://www.middlebury.edu/institute/sites/www.middlebury.edu.institute/files/2018-07/4.4.18.Final%20San%20Diego%20Vulnerability%20Report.pdf	Sea Level Rise Economic Vulnerability

Name	Category	Web Site Address or Reference	Description
City of Agoura Hills	Local Government	www.ci.agoura-hills.ca.us	Local Profile, Planning, Hazard, Mitigation Information, and General Plan
City of Agoura Hills, Commercial and Residential Projects Second Quarter 2018 Quarterly Report	City of Agoura Hills	www.ci.agoura-hills.ca.us/government/departments/planning-community-development/development-summaries	Commercial and Residential Development Projects, 2018
City of Calabasas	Local Government	www.ci.calabasas.ca.us	Local Profile, Planning, Hazard, Mitigation Information, and General Plan
City of Hidden Hills	Local Government	www.hiddenhillscity.org	Local Profile, Planning, Hazard, Mitigation Information, and General Plan
City of Malibu	Local Government	www.malibucity.org	Local Profile, Planning, Hazard, Mitigation Information, and General Plan
City of Westlake Village	Local Government	www.wlv.org	Local Profile, Planning, Hazard, Mitigation Information, and General Plan
Comprehensive Annual Financial Report for the City of Agoura Hills	City Data	www.ci.agoura-hills.ca.us/government/departments/finance/comprehensive-annual-finance-report	City Data (including employer and revenue data)
Comprehensive Annual Financial Report for the City of Calabasas	City Data	www.cityofcalabasas.com/pdf/documents/finance/cafrs/cafr-2017.pdf	City Data (including employer and revenue data)
Comprehensive Annual Financial Report for the City of Malibu	City Data	www.malibucity.org/317/Financial-Reports	City Data (including employer and revenue data)
Comprehensive Annual Financial Report for the City of Westlake Village	City Data	www.wlv.org/158/Administrative-Services-Financial-Manage	City Data (including employer and revenue data)
Data Commons	Federal Government	https://datacommons.org	City and Regional Demographic data
Department of Homeland Security	Federal Government	www.dhs.gov	Terrorism Response, Preparedness, and Threats
ESRI	Research, Educational, and Standards Organizations	ArcGIS	Hazard Mapping
Federal Bureau of Investigation	Federal Law Enforcement	www.fbi.gov	Terrorism Response, Active Shooter Incidents, Preparedness, and Threats
Federal Emergency Management Agency (FEMA)	Federal Government	www.fema.gov	Federal Disaster Information, Flood Information Rate Maps (FIRM), and Landslide Information

Name	Category	Web Site Address or Reference	Description
FEMA 100-Year Floodplain Map	Federal Government	http://gis.bam.water.ca.gov/bam/	FEMA Effective 100-Year Floodplain Map for the LVMCOG Region
FEMA National Flood Hazard Layer (Official)	Research, Educational, and Standards Organizations	www.arcgis.com	FIRM Data
Firewise	Research, Educational, and Standards Organizations	www.firewise.org	Fire / Wildfire Mitigation and Programs
Fresno Bee	News Organization	www.fresnobee.com	History of Wildfires in California
Global Health Institute Duke	Research, Educational, and Standards Organizations	https://globalhealth.duke.edu/news/statistics-say-large-pandemics-are-more-likely-we-thought#:~:text=It%20found%20the%20probability%20of,of%20experiencing%20one%20by%20now	Pandemic Likelihood
Google Maps	Public Resource	www.maps.google.com	Maps and Satellite Images
Indicators of Climate Change in California, Office of Environmental Health Hazard Assessment (OEHHA)	Research, Educational, and Standards Organizations	https://oehha.ca.gov	Climate and Sea Level Rise Data
Intellicast	Public Resource	www.intellicast.com	Weather and Climate Data
International Code Council, Los Angele s Basin Chapter	Research, Educational, and Standards Organizations	www.icclabc.org	Building Code information
Las Virgenes Municipal Water District	Utility	www.lvmwd.com	Water and Dam information
Los Angeles County Code of Ordinances	Local and Regional Government	https://library.municode.com/ca/los_angeles_county/codes/code_of_ordinances?nodeId=LOS_ANGELES_CO_CODE	Building Codes, Permits, and Grading
Los Angeles County Department of Beaches and Harbors	Local and Regional Government	http://file.lacounty.gov/dbh/cms1_145176.jpg	Zuma Beach Information
Los Angeles County Fire Department	Local and Regional Government	www.lacofd.org	Fire Codes and Wildfire mitigation and programs
Los Angeles County Office of Emergency Services	Local and Regional Government	www.lacoa.org	Disaster and Mitigation Information. Disaster Management Areas.
Los Angeles County Office of the Assessor	Local and Regional Government	www.assessor.lacounty.gov	Property Tax Information
Los Angeles County Public Health Department	Local and Regional Government	http://publichealth.lacounty.gov/media/coronavirus/locations.htm	Pandemic Data
Los Angeles County Public Works Department	Local and Regional Government	www.ladpw.org	Earthquake and Debris Removal Information

Name	Category	Web Site Address or Reference	Description
Los Angeles Safety and Enforcement Division, Electric Safety and Reliability Branch	Local and Regional Government	https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/safety-and-enforcement-division/investigations-wildfires/sed-investigation-report---woolsey-fire---redacted.pdf	Investigation Report of the Woolsey Fire
Los Angeles Sheriff's Department	Local Law Enforcement	www.sheriff.lacounty.gov	Terrorism Response, Preparedness, and Threats
Malibu Road Landslide Assessment District Annual Report	Private Contractor	www.malibucity.org/DocumentCenter/View/16867/Malibu-Road-Annual-Report-2016-2017	Fugro, Annual Report July 2016 through June 2017 Malibu Road Landslide Assessment District, June 2017
NASA / JPL-Caltech	Research, Educational, and Standards Organizations	http://photojournal.jpl.nasa.gov/catalog/PIA03445	Santa Ana Wind Information and Map
National Center for Biotechnology Information (NCBI)	Federal Government	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9175207/ https://www.ncbi.nlm.nih.gov/books/NBK143061/	Pandemic Contributing Factors and Phases
National Drought Mitigation Center	Research, Educational, and Standards Organizations	University of Nebraska-Lincon	Climate Change Data
National Environmental Modeling and Analysis Center (NEMAC) University of North Carolina, Ashville	Research, Educational, and Standards Organizations	https://climate-explorer.nemac.org	Sea Level Rise Map
National Flood Insurance Program (NFIP)	Federal Government	www.fema.gov/nfip https://www.fema.gov/openfema-data-page/fima-nfip-redacted-claims-v2 https://nfipservices.floodsmart.gov/reports-flood-insurance-data https://msc.fema.gov/portal/home	Flood Information, Maps, and Flood Claim Status
National Integrated Drought Information System	Federal Government	www.drought.gov/drought/states/california www.drought.gov/drought/california-no-stranger-dry-conditions-drought-2011-2017-was-exceptional	California Drought Information
National Interagency Fire Center (NIFC)	Federal Government	www.nifc.gov	Fire Codes and Wildfire Mitigation and Programs
National Oceanic and Atmospheric Administration (NOAA)	Federal Government	www.noaa.gov https://coast.noaa.gov/slr/#/layer/vulsoc/0/-13212283.270492423/4033715.0625395617/15/satellite/none/0.8/2050/interHigh/midAccretion https://www.climate.gov/maps-data/dataset/sea-level-rise-map-viewer	Weather and Climate Data Sea Level Rise Data
National Park Services (NPS)	Federal Government	https://www.nps.gov/samo/learn/management/2018-woolsey-fire.htm	Woolsey Fire Burn Area

Name	Category	Web Site Address or Reference	Description
National Resources Conservation Service (NRCS), US Department of Agriculture	Federal Government	www.nrcs.gov	Flood Mitigation, Landslide, and Watershed Projects
National Transportation Safety Board (NTSB)	Federal Government	www.ntsb.gov	San Bruno Pipeline Explosion Information
National Weather Service	Federal Government	www.weather.gov www.weather.gov/media/sgx/documents/weatherhistory.pdf	Weather and Climate Data
National Weather Service Climate Prediction Center	Federal Government	www.cpc.ncep.noaa.gov/products/expert_assessment/sdo_summary.php	Drought Outlook Data and Map
NOAA – National Centers for Environmental Information (NCEI)	Federal Government	www.ncei.noaa.gov/access/monitoring/us-trends/tmax/jun www.climate.gov/news-features/understanding-climate/climate-change-global-temperature-projections https://toolkit.climate.gov/	Climate Change Data
NOAA – National Climate Data Center (NCDC)	Federal Government	https://www.ncdc.noaa.gov/IPS/lcd/lcd.html?_page=0&state=CA&_target1=Next+%3E	Climate Change Data
NOAA Office for Coastal Management	Federal Government	https://coast.noaa.gov/slr/#/layer/fld/0/-13215206.258759653/4033933.377858944/13/satellite/none/0.8/2050/interHigh/midAccretion	Climate Change Data
Office of the Attorney General (OAG)	Federal Government	https://oag.ca.gov/news/press-releases/california-department-justice-closes-criminal-investigation-woolsey-fire	Woolsey Fire Evacuation Data
Office of the State Fire Marshal (OSFM)	State Government	www.osfm.fire.ca.gov	Fire Codes and Wildfire Mitigation and Programs
Pipelines and Hazards Materials Safety Division	Federal Government	www.phmsa.dot.gov	Pipeline Data
Robert D. Niehaus, Inc.	The Economic Impacts of the Montecito Mudslides	http://www.rdniehaus.com/rdn/wp-content/uploads/2018/03/RDN_Montecito_Mudslides_Impacts-1.pdf	Montecito Mudslide Report
Sea Level Rise Map for Malibu Coast	Research, Educational, and Standards Organizations	www.cal-adapt.org	Climate and Sea Level Rise Data
Southern California Area Governments	Local and Regional Government	www.scag.ca.gov	Principal Property Tax Payers and Employers
Southern California Association of Governments (SCAG)	Local Government	www.scag.ca.gov	City Profiles, Data, and Maps
Southern California Earthquake Center (SCEC)	Research, Educational, and Standards Organizations	www.scec.org	Earthquake and Fault Information

Name	Category	Web Site Address or Reference	Description
Southern California Edison Annual Electric Reliability Report	Utility	SCE Annual Electric Reliability Report 2022	Power Outage Data
Southern California Edison Public Safety Power Shutoff Process	Utility	www.sce.com/wps/wcm/connect/9ef7f86a-ca79-41c8-b34f-b0dd449baf39/PSPS_Timeline.pdf?MOD=AJPERES	Electric Utility Emergency Power Shutoff Process Timeline
Southern California Seismic Network	Research, Educational, and Standards Organizations	http://www.scsn.org	Earthquake and Fault Information
Terrorism Research	Research, Educational, and Standards Organizations	www.terrorism-research.com	Terrorism Information
The National Drought Mitigation Center University of Nebraska-Lincoln	Research, Educational, and Standards Organizations	https://droughtmonitor.unl.edu/CurrentMap/StateDroughtMonitor.aspx?West	Drought Maps
The White House	Federal Government	https://www.whitehouse.gov/covidplan/#prepare	National COVID-19 Preparedness Plan
U.S. Census Bureau	Federal Government	www.census.gov www.census.gov/quickfacts https://www.census.gov/cgi-bin/geo/shapefiles/index.php	City and Regional Demographic Data
U.S. Census, American Fact Finder	Federal Government	https://factfinder.census.gov	City and Regional Demographic Data
U.S. Department of Health & Human Services	Federal Government	https://aspe.hhs.gov/poverty-guidelines	Average U.S. Poverty Level
U.S. Department of the Interior, Bureau of Reclamation	Federal Government	www.usbr.gov	Flood Information
U.S. Fire Administration (USFA) of the Federal Emergency Management Agency	Federal Government	www.usfa.fema.gov	Fire Codes and Wildfire Mitigation and Programs
U.S. Geological Survey	Federal Government	www.usgs.gov https://pubs.usgs.gov/of/2013/1170/g/pdf/ofr2013-1170g.pdf https://www.usgs.gov/programs/landslide-hazards/science/hazard-and-risk-assessments	Earthquake Information and SAFRR Tsunami Scenario Study (2013) Landslide Data
U.S. Geological Survey (USGS) Sea Level Rise Presentation	Federal Government	www.malibucity.org/DocumentCenter/View/14656/Sea-Level-Rise-From-Global-to-Local	Sea Level Rise Presentation for the City of Malibu
U.S. Geological Survey-Woolsey Fire	Federal Government	https://landslides.usgs.gov/static/landslides-realtime/fires/20181108_woolsey/image.pdf	Woolsey Fire Map (2018)
U.S. State Department	Federal Government	www.state.gov/j/ct/list/c14151.htm	Terrorism Information

Name	Category	Web Site Address or Reference	Description
USC Geospatial Institute	Research, Educational, and Standards Organizations	www.spatial.usc.edu	Area and Hazard Mapping, Loss Estimates, and HAZUS
USGS National Landslide Information Center	Federal Government	www.landslides.usgs/nlic	Landslide Information
USGS Water Resources	Federal Government	www.water.usgs.gov	Flood Information
Western Regional Climate Center	Research, Educational, and Standards Organizations	https://wrcc.dri.edu/my/climate/tracker/CA https://wrcc.dri.edu/Climate/comp_tables.php https://www.dri.edu/updated-california-climate-tracker-tool-provides-more-than-120-years-of-climate-data/	Climate Data
Western States Seismic Policy Council (WSSPC)	Research, Educational, and Standards Organizations	www.wsspc.org	Earthquake Information
World Health Organization (WHO)	Research, Education, and Standards Organizations	https://covid19.who.int/	Pandemic Data

SECTION 18. ANNEX B: MEETING AGENDAS AND ATTENDEES

The following pages provide agendas and attendee information for meetings involving hazard mitigation or the LVMCOG Hazard Mitigation Plan update.

DISASTER MANAGEMENT AREA B MEETING

BOARD ONLY MEETING

MINUTES MAY 25, 2023 9:00 AM TO 10:30 AM CITY OF WESTLAKE VILLAGE

MEETING CALLED BY	Standing Area B Meeting
TYPE OF MEETING	Board Meeting Only
CHAIR/FACILITATOR	Roger Willcox, City of Santa Clarita
TREASURER/FISCAL AGENT REP	Debbie Larson, City of Calabasas
NOTE TAKER	Deb Pedrazzoli
ATTENDEES	**BOARD MEMBERS (Voting) PRESENT:** Caleb Mott – City of Westlake Village, Administrative Analyst (Alternate) Chantelle Limon – City of Hidden Hills, Administrative Analyst Debbie Larson - City of Calabasas, Public Safety Coordinator John (JT) Treichler - City of Agoura Hills, Administrative Analyst Roger Willcox – City of Santa Clarita, Emergency Services Analyst Sarah Flores – City of Malibu, Emergency Services Coordinator **BOARD ALTERNATES (Non-Voting) PRESENT:** Mike Dyer – City of Calabasas, Public Safety and Emergency Preparedness Manager (Alternate) **DMAC PRESENT:** Deb Pedrazzoli – Area B Disaster Management Area Coordinator (DMAC) **AGENCY PARTNERS or other MEMBER CITY STAFF PRESENT:** N/A **GUESTS PRESENT:** N/A **BOARD MEMBERS NOT PRESENT:**
	Arpen (Amy) Shadkamyan – City of Palmdale, Emergency Services Administrator Andrew Noga - City of Lancaster, Manager of Code Enforce and Emergency Services (Alternate) Ashu Palta – LACo Office of Emergency Management (OEM), Program Manager John Felkins – City of Lancaster, EOC Coordinator III Kerry Kallman – City of Hidden Hills, City Manager (Alternate) Leslie Luke – LACo Office of Emergency Management (OEM) Deputy Director (Alternate) Louis Celaya - City of Agoura Hills, Deputy City Manager (Alternate) Matthew Harris – City of Palmdale, Buyer (Alternate) Mike Woodard – City of Hidden Hills, Emergency Services Coordinator (Alternate) Philippe Eskandar – City of Westlake Village, Deputy City Manager Susan Duenas – City of Malibu, Public Safety Director (Alternate) TBD – City of Santa Clarita (Alternate) □ Indicates - Remote Board Member - Participation via On-Line Conference Capability □ Indicates – Remote Board Member – Participation via Telephone Conference Call □ Indicates – Remote Board Member – Participation via E-Mail

Agenda topics

INTRODUCTIONS DEB P

DISCUSSION	The Board Meeting was called to order at 9:12am.		
CONCLUSIONS	The meeting had been rescheduled to today May 25th due to training conflicts on the 18th. First in-person board meeting since March 2020 due to Covid pandemic.		
ACTION ITEMS		**PERSON RESPONSIBLE**	**DEADLINE**
N/A		N/A	N/A

CONSENT CALENDAR DEB P

DISCUSSION	**Minutes:** • Approval of the April 20, 2023 meeting minutes. **Bank Statements:** • Acceptance of the Apr reconciled Bank of America-0100 Checking Account Statements. • Acceptance of the Apr reconciled Wells Fargo-5927 Savings Account Statements. **Expenditure Report:** • Approval of the Expenditure Report. Copies of expenditures were submitted for the file. o DMAC Invoice and Activity Log for Apr. **FY2022-2023 Financial Statement:** • Approval of the FY 2022-2023 Financial Statement as of 5-25-23. **EMPG FY22 Grant:** • Acceptance of the EMPG FY22 Monthly Budget Report as of 5-25-23. • EMPG FY22 Monthly Cities EM Activities Report not included. Needs reworking due to the required Pay Rate report for match. **Meeting Attendance:** • Acceptance of meeting roster from Apr 20, 2023 meeting. **DRAFT 2023-2024 Budget (approval deadline Jun):** • Acceptance of Draft-3 for review purposes only. **Guzman and Gray CPAs Year Ending Jun 2023 Audit:** • Approval of Engagement letter.
CONCLUSIONS	Motion to approve the Consent Calendar items was made by Chantelle L., seconded by JT., and unanimously approved.

ACTION ITEMS	**PERSON RESPONSIBLE**	**DEADLINE**
N/A	N/A	N/A

BOARD OPEN ITEMS BOARD

DISCUSSION

Expenditure Report – Check(s) execution:
- Distribution of one (1) check: DMAC; Debbie L. will mail.

Treasurer check reserves (two checks) single signature check signing: no further action. **Treasurer Bank Signature Card Review:** Debbie L. to review listed signatures for possible update. **Minutes Signing by Board Chair:** Roger W. signed minutes during meeting.

Annual Area B Financial Audit Year Ending 6-2023 (Guzman & Gray):
- Engagement letter approved in today's consent calendar items.
- Debbie L. executed letter for EMPG FY23 expense.

2023-24 DRAFT Budget (approval due in Jun):
- Draft-3 for review only was in today's consent calendar items per the By-Laws.

EMPG FY17, FY18, FY19 County Audit of Areas 3-24-22:
- EMPG FY17-19 Exit Conference Call with Auditor – completed 4-18-23.
  - Monthly Timesheets and Pay Rate Reports are required for the match.
  - Area B corrective action is to begin collecting payroll docs July 2022.
- Awaiting final reports.

EMPG FY22 (7-1-22 to 6-30-24; Area performance ends March 1, 2024)
- Allocation – received 10-27-22 $129,599.
- Application/Workbook – submitted 11-29-22.
  - Initial - allocation to Project A – Operating Expenses until modified.
- Sub-Recipient Agreement – received 4-6-23; Area B executed 4-17-23
  - Awaiting county council execution.
- Performance Reports – Q1-3 submitted. Q4 due Jul.
- Projects –
  - Project A – Operating Expenses from Jul 2022 through Jun 2023.
  - Project TBD? – not yet determined; estimated amount remaining $49K.
    - CERT Instructor Training (JT)
      - Action Item: Deb P. to inquire who offers the T2.
    - CSTI Outreach Instructor (EMIC) Cert/Re-Cert Training (DMAC)
      - Deb P. reported there is an opportunity to partner with the other DMAs on this project. The four-day course is approximately $40K for 25 seats, which is $1,600.00 per person.
        - Action Item: Deb P. awaiting registration info.
    - Previously suggested
      - LA RICS Subscriptions (Susan D.)
        - Deb P. reported that as of 4-18-23 LA RICS is not currently set up to offer subscriptions – maybe Jul 203. Could be a good project for EMPG FY23.
      - Hand-held Radios (Philippe E.)
        - No further information.
      - Owl Labs WFA products (Area D)
      - Studio Spectrum Teleconferencing carts approx. $3,800 (Area E)
      - SEMS Exec Mgmt. Course includes ICS 402 approx. $12,250 (Debbie L.)
      - Emergency Management Concepts approx. $49,000 (DMAC)
- Match – starts 7-1-22 (HSGA recommends 15-20% overage).
  - Status - refer to Cities EM Activity Monthly Report to review status.
  - Action Item: Cities to provide monthly Pay Rate report starting from July 2022 through present and each month thereafter to be eligible for match.
- Reimbursement – Q1-3 on hold pending eligible dollar-for-dollar match.

Equipment:
- Area B 2022 Equip Audit – Federal/State/County 2-year requirement.
  - Area B/City Ledgers dated/sent 9-7-22 supersedes any previously sent
  - Self-certifying 2-year audit due back from cities by 10-12-22. Include Supply Inventory Sheets for consumable items (ex. PPE).
    - Completed: AH, Cal, Lan
    - Incomplete: HH, Mal; please contact Deb P. for details.
    - Missing: Palm, SC, WLV
- County Audit date TBD.
- EMPG FY20 GZ – distribution of Area B Asset Tags - TBD

CONCLUSIONS	N/A

ACTION ITEMS		**PERSON RESPONSIBLE**	**DEADLINE**
N/A		N/A	N/A

May 25, 2023 Area B continued ALL

GENERAL MEETING

DISCUSSION	**Welcome and Introductions:** • N/A. Board meeting only.
	Presenter/Speaker: • N/A
	Topic of Interest: **Next General Meeting's Presenter/Speaker/Topic of Interest:** • N/A **DMAC Report:** • Reminder to return LACo DHS Expired/Expiring Prepositioned Antibiotics by deadlines. • List of upcoming training/exercise dates in agenda. • List of Cities with their Form 130 status – awaiting response from Cal OES • DLAN Interest to date – Lancaster, Malibu, Palmdale, Santa Clarita
CONCLUSIONS N/A	

ACTION ITEMS	**PERSON RESPONSIBLE**	**DEADLINE**
Deb P. to reinstate Area B Quarterly LHMP Meetings starting Sep 2023.	Deb P.	Sep 2023

ROUNDTABLE ALL

	JT., City of Agoura Hills reported • Planning – Pre-positioned antibiotics return to DHS/EMS Jun 1 • Planning – Multi-Jurisdictional (COG) LHMP update • Planning – CERT training by LACo FD starting in July for 7 weeks • Preparedness – Kick Off of Home Hardening Enhanced Program Debbie L., City of Calabasas reported • Planning – COOP • Planning – EOC TTX in Jun • Preparedness – conducted/completed EOC Ops/Logs training • Preparedness – attended Alert/Warning training • Mitigation – Santa Monica Mountains grant for dead tree removal • Recovery – Jan Storms Chantelle L., City of Hidden Hills reported • Planning – goats brush clearance for Jul • Planning – First Responder Appreciation Day for Jul • Preparedness – conducted/hosted CERT training program • Preparedness – conducted CERT team meeting with CPR/First Aid drill/exercise • Preparedness – conducted CERT team radio training Sarah F., City of Malibu • Planning – Public Safety Expo for Jun 10 • Planning – EOP update Roger W., City of Santa Clarita • Planning – EOC position job aids • Planning – DLAN as a possible EOC incident management software solution • Planning – SLACK as an instant messaging platform for leadership team • Planning – awarded LHMP grant; Haggarty Consulting Group • Planning – comprehensive facility maps for approximately 20 sites • Planning – CERT training program starting Jun7 for 26 attendees Caleb M., City of Westlake Village reported • Planning – EOP update • Planning – CERT team meeting on Jun21 • Planning – radio equipment inventory • Planning – radios new battery procurement
CONCLUSIONS	Motion to adjourn was made by Caleb M., seconded by Debbie L., and unanimously approved.

May 25, 2023 Area B continued

ACTION ITEMS	PERSON RESPONSIBLE	DEADLINE
N/A	N/A	N/A

OBSERVERS	N/A
RESOURCE PERSONS	N/A
SPECIAL NOTES	11:15 AM MEETING ADJOURNED. Per Area B Meeting Schedule, o Next Area B Meeting is a Board Only Go-To Meeting on June 15, 2023 9am-10:30am. o A quorum needs to be confirmed. o Board Members please notify Deb P. as soon as possible regarding availability. o No Area B Meetings are scheduled in July and August. o Next "In-person" Board Meeting followed by a City/Partner Agency Meeting – Thurs, Sep 21, 2023 • City of Malibu City Hall • Board Meeting 9am to 10:15am. • City/Partner Agency Meeting 10:15am to 12noon. Next Area B CWIRS Drill – Thursday, June 22, 2023, at 8:45am on Cities/CITY-ALL talk-group. • Due to programming, City-All is only available on P5100 Hand-held.

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LVMCOG Hazard Mitigation Planning Group Meetings

Project Kick-off Meeting

Date: June 1, 2023 3:15PM to 4:00 PM
Location: Zoom Meeting

SIGN IN

Name	City / Agency
JT Manwell	City of Agoura Hills
John Treichler	City of Agoura Hills
Michael Dyer	City of Calabasas
Debbie Larson	City of Calabasas
Michael Woodard	City of Hidden Hills
Susan Duenas	City of Malibu
Caleb Mott	City of Westlake Village
Terry Dipple	LVMCOG

Optional

Name	City / Agency
Louis Celaya	City of Agoura Hills
Nate Hamburger	City of Agoura Hills
Kindon Meik	City of Calabasas
Kerry Kallman	City of Hidden Hills
Steven McClary	City of Malibu
Rob de Geus	City of Westlake Village

MLC Team:

Name	Email
Bob Takemura	bob.takemura@mlchq.com
Shervin Ebrahimi	shervin.ebrahimi@mlchq.com
Jagger Raymondo	jagger.raymondo@mlchq.com
Odalis Tannehill	odalis.tannehill@mlchq.com

MEETING AGENDA

Purpose: The purpose of this project is to update the Multi-Jurisdictional Hazard Mitigation Plan (HMP) as per the 5-year requirement to maintain grant funding eligibility and comply with federal regulatory requirements:

- Stafford Act
- Disaster Mitigation Act
- Disaster Recovery Reform Act

To promote:

- Repetitive Loss Reduction
- Protection of Life and Safety
- Coordination of Mitigation Activities with Other Jurisdictions / Agencies
- Increased Public Awareness
- Improved Emergency Management (through mitigation efforts, planning, and coordination)

Topic	Time
Project Purpose	5 minutes
MLC Introduction and Project Team	5 minutes
Key Components of the HMP • Approach • HMP Update Process • Project Timeline • SME Roles & Responsibilities • Focus on Mitigation	30 minutes
Q&A	5 minutes

Planning Group Meeting I

Date: July 13, 2023 11:00 AM to 12:00 PM
Location: Zoom Meeting

SIGN IN

Name	City / Agency
John Treichler	City of Agoura Hills
Louis Celaya	City of Agoura Hills
Michael Dyer	City of Calabasas
Debbie Larson	City of Calabasas
Kerry Kallman	City of Hidden Hills
Michael Woodard	City of Hidden Hills
Susan Duenas	City of Malibu
Caleb Mott	City of Westlake Village
Terry Dipple	LVMCOG

MLC Team:

Name	Email
Bob Takemura	bob.takemura@mlchq.com
Shervin Ebrahimi	shervin.ebrahimi@mlchq.com

MEETING AGENDA

Purpose: The purpose of the meeting is to provide an update on the current status of the project, discuss additional information required as well as obtain input and information from the Planning Group.

opic	Time
Project Status • Community Profile Updates • General Plan Reviews for Cal-OES Required HMP References • Risk Assessment Updates • Mitigation Project Updates • Hazard Survey	25 minutes
Discussion • Strategies for New Mitigation Projects, including: o Climate Change (e.g., drought, flood, power outage, high heat, wildfire, etc.) o Socially Underserved Communities o Pandemic o Mass Casualty Events • Key City Contacts to Support the HMP Update and Mitigation Projects o Planning Departments o Building and Safety o Community Development o IT and GIS Mapping o Finance	30 minutes
Recap	5 minutes

Planning Group Meeting II

Date: September 14, 2023 1:00 PM to 2:00 PM
Location: Zoom Meeting

SIGN IN

Name	City / Agency
John Treichler	City of Agoura Hills
Louis Celaya	City of Agoura Hills
Michael Dyer	City of Calabasas
Debbie Larson	City of Calabasas
City of Hidden Hills	City of Hidden Hills
Kerry Kallman	City of Hidden Hills
Susan Duenas	City of Malibu
Caleb Mott	City of Westlake Village
Terry Dipple	LVMCOG

MLC Team:

Name	Email
Bob Takemura	bob.takemura@mlchq.com
Shervin Ebrahimi	shervin.ebrahimi@mlchq.com

MEETING AGENDA

Purpose: To review progress on the HMP update including the HMP Survey, Community Profiles, and Previous Mitigation Projects. Also need to start planning for the public meeting tentatively scheduled for October.

opic	Time

Project Status and Discussion
• Hazard Survey
  o Number of Responses
  o Survey Results
• Community Profile Updates
  o Updates and Revisions
• Risk Assessment Updates
  o Completed Drafts
  ▪ Climate Change
  ▪ Energy Disruption
  ▪ Landslide / Debris Flow (e.g., Montecito)
  o 80% - 90% Complete
  ▪ Flood / Tsunami and Severe Winter Storm
  ▪ Severe Wind
  ▪ Terrorism / Mass Casualty Events
  o In Progress
  ▪ Pandemic
  ▪ Earthquake
  ▪ Wildfire
• Mitigation Project Updates
  o Previous Projects – Feedback Received
  o New Projects (including Benefit / Cost Analyses)
	55 minutes

Recap	5 minutes

SECTION 19. ANNEX C: COMMUNITY DISASTER PREPAREDNESS AND RISK SURVEY

DISASTER PREPAREDNESS AND RISK SURVEY RESULTS

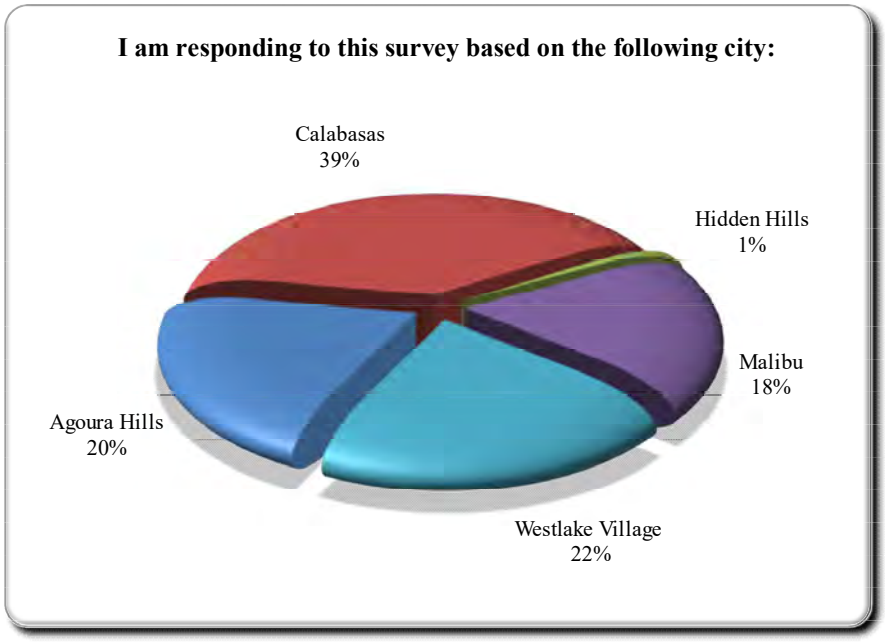
A Disaster Preparedness Risk Survey was used to encourage public participation in mitigation planning and provide input into the Hazard Mitigation Planning process. The survey included questions regarding perceived risks, actual losses, and mitigation activities.

The survey also provided a forum for the public to provide their input on future planning efforts and enables emergency management personnel to better focus their mitigation efforts. The following tables provide the survey results. Surveys were made available online via each city's website and social media platforms.

The data gathered was used to help local officials better plan for disasters as well as communicate with citizens and educate residents on mitigation steps to reduce the risk of loss. The survey was administered and maintained by MLC and Associates. A total of 116 completed surveys were received. The results of the survey are provided below. In some cases, comments were summarized, consolidated, and edited for clarity.

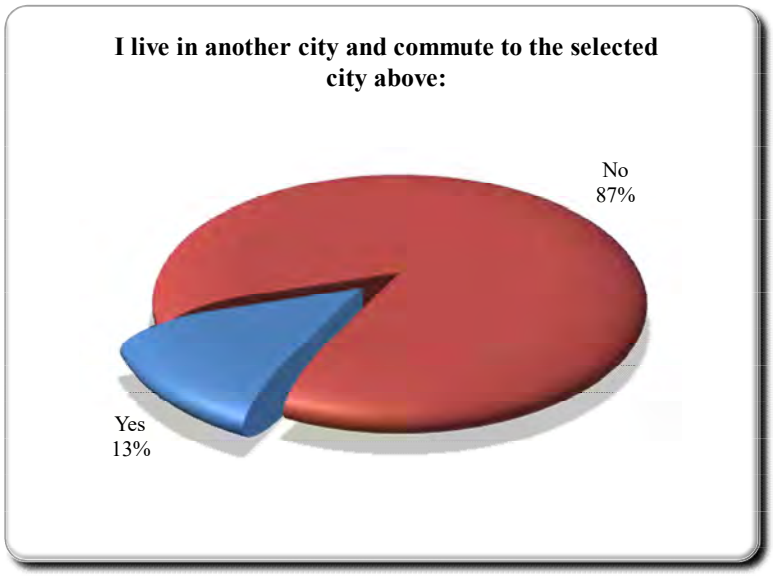
1. I am responding to this survey based on the following city:

Value	Count	Percent
Agoura Hills	23	20.2%
Calabasas	44	38.6%
Hidden Hills	1	0.9%
Malibu	21	18.4%
Westlake Village	25	21.9%



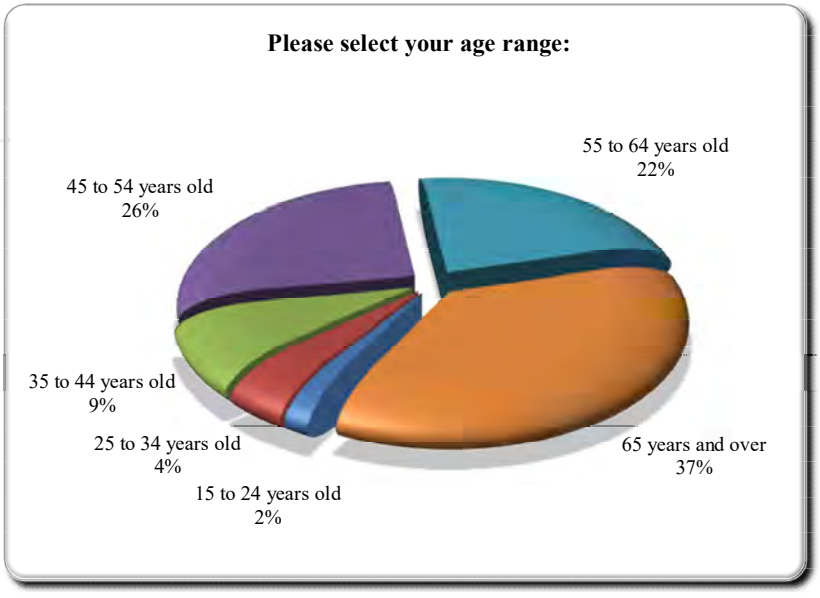
2. I live in another city and commute to the selected city above:

Value	Count	Percent
Yes	14	12.6%
No	97	87.4%



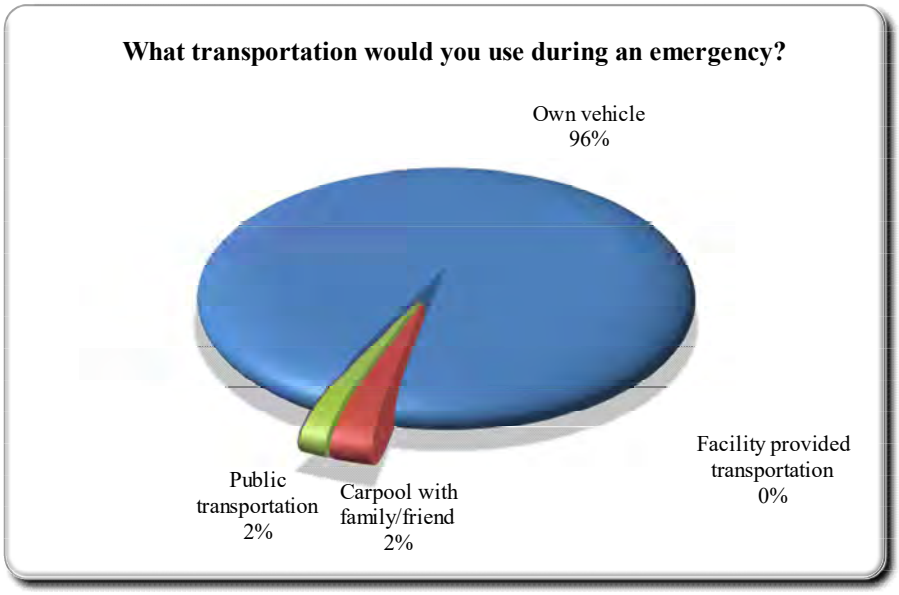
3. Please select your age range:

Value	Count	Percent
15 to 24 years old	2	1.7%
25 to 34 years old	5	4.3%
35 to 44 years old	10	8.6%
45 to 54 years old	30	25.9%
55 to 64 years old	26	22.4%
65 years and over	43	37.1%



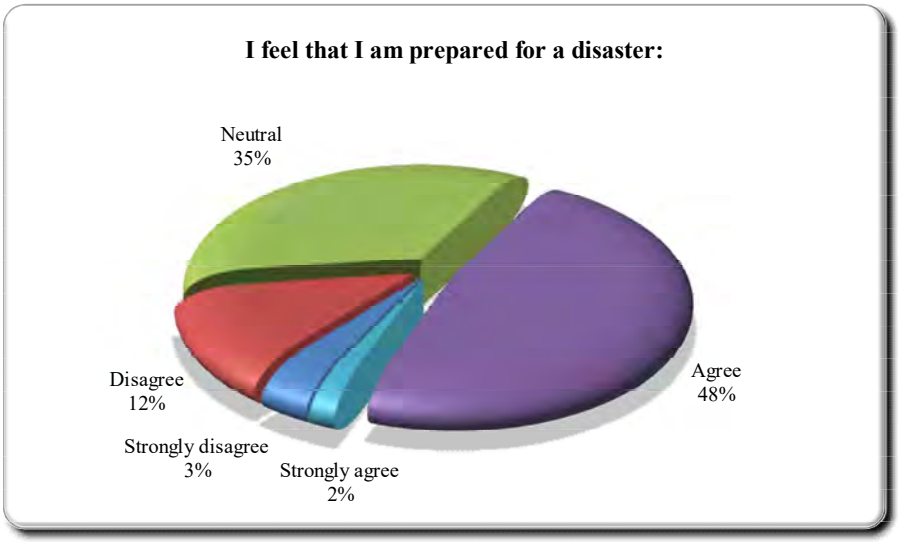
4. What transportation would you use during an emergency?

Value	Count	Percent
Own vehicle	111	95.7%
Carpool with family/friend	3	2.6%
Public transportation	2	1.7%
Facility provided transportation	0	0.0%



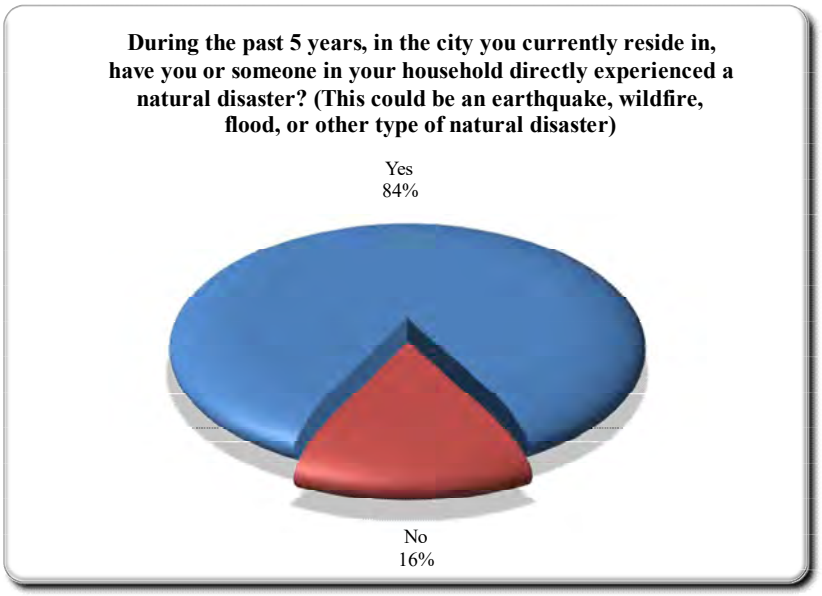
5. I feel that I am prepared for a disaster:

Value	Count	Percent
Strongly disagree	4	3.5%
Disagree	14	12.2%
Neutral	40	34.8%
Agree	55	47.8%
Strongly agree	2	1.7%



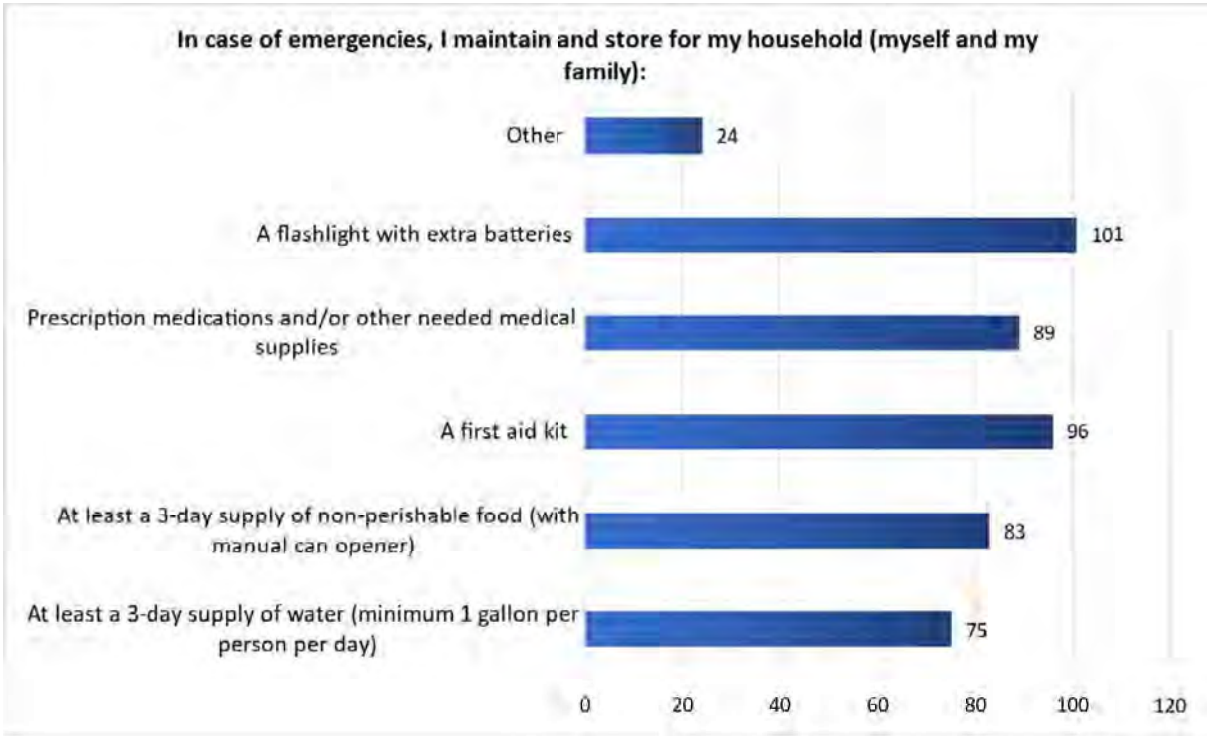
6. During the past 5 years, in the city you currently reside in, have you or someone in your household directly experienced a natural disaster? (This could be an earthquake, wildfire, flood, or other type of natural disaster)

Value	Count	Percent
Yes	97	84.3%
No	18	15.7%



7. In case of emergencies, I maintain and store for my household (myself and my family):

Value	Count	Percent
At least a 3-day supply of water (minimum 1 gallon per person per day)	75	64.7%
At least a 3-day supply of non-perishable food (with manual can opener)	83	71.6%
A first aid kit	96	82.8%
Prescription medications and/or other needed medical supplies	89	76.7%
A flashlight with extra batteries	101	87.1%
Other	24	20.7%

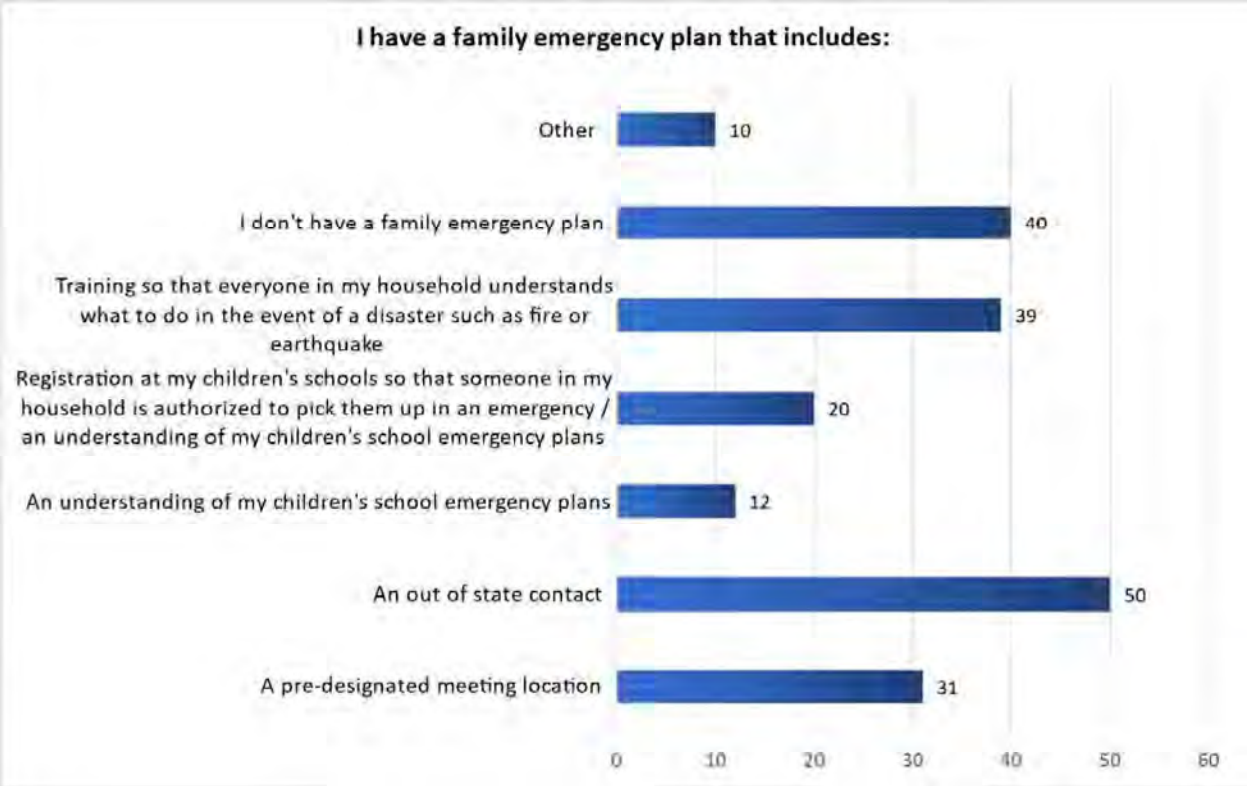


Other emergency items include:

- Bins with Emergency Equipment
- Batteries
- Blankets
- Candles
- Camping gear
- Clothes
- Fire hose
- Generator (various sizes)
- Grab and Go Bag
- Items that don't use electricity or gas that help with food prep and water cleanliness
- Liquid Supplies (other than water)
- List of Items to Grab
- Pet Supplies
- Portable Charger
- Portable Stove
- Pool Pump
- Radio (solar or crank)
- Shelter-in-Place Kit (based on CERT class)
- Whistle

8. I have a family emergency plan that includes:

Value	Count	Percent
A pre-designated meeting location	31	27.2%
An out of state contact	50	43.9%
An understanding of my children's school emergency plans	12	10.5%
Registration at my children's schools so that someone in my household is authorized to pick them up in an emergency / an understanding of my children's school emergency plans	20	17.5%
Training so that everyone in my household understands what to do in the event of a disaster such as fire or earthquake	39	34.2%
I don't have a family emergency plan	40	35.1%
Other	10	8.8%

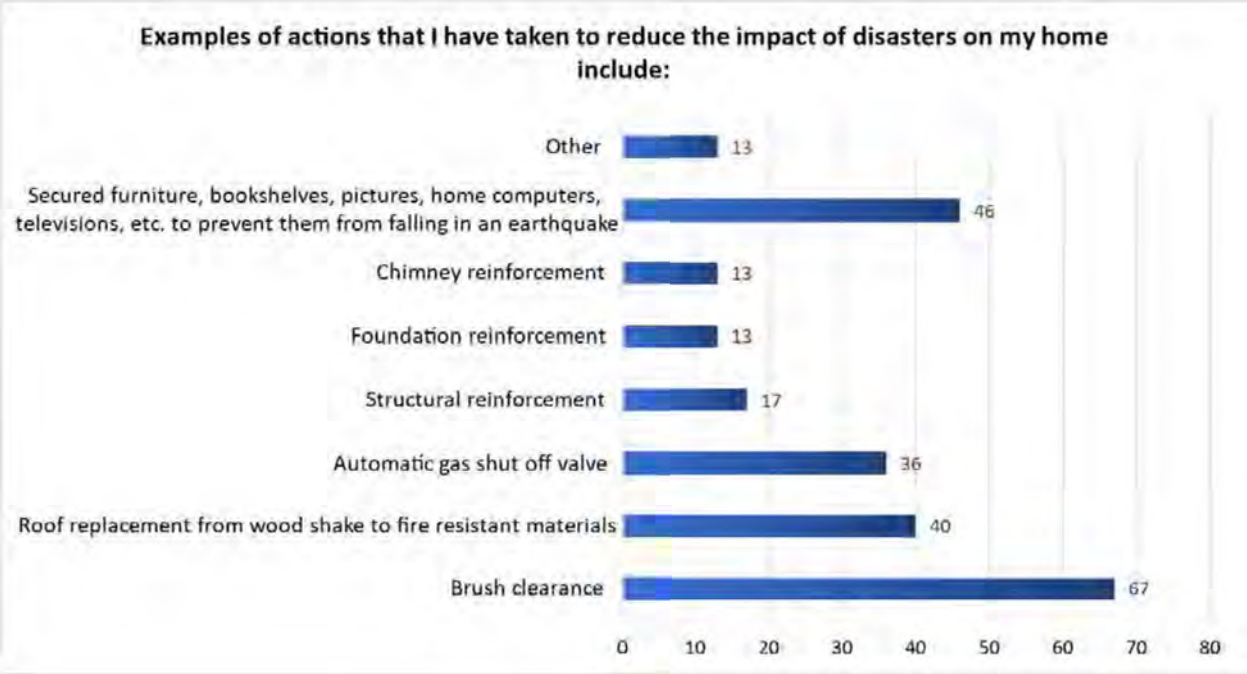


Other emergency plans include:

- Extinguishing home during a fire

9. Examples of actions that I have taken to reduce the impact of disasters on my home include:

Value	Count	Percent
Brush clearance	67	69.8%
Roof replacement from wood shake to fire resistant materials	40	41.7%
Automatic gas shut off valve	36	37.5%
Structural reinforcement	17	17.7%
Foundation reinforcement	13	13.5%
Chimney reinforcement	13	13.5%
Secured furniture, bookshelves, pictures, home computers, televisions, etc. to prevent them from falling in an earthquake.	46	47.9%
Other	13	13.5%

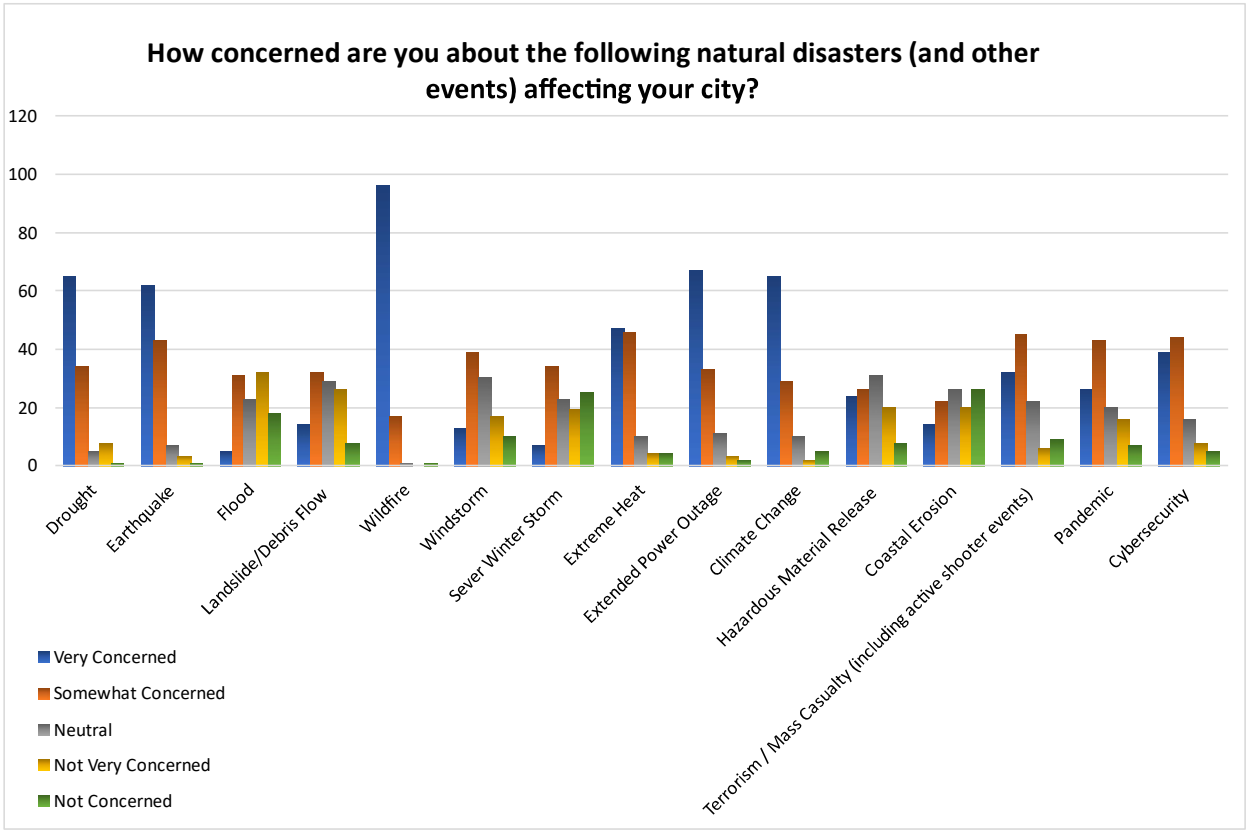


Other home mitigation examples include:

- Ember resistant vents
- Ember screens
- Extra water hoses
- Trimmed trees

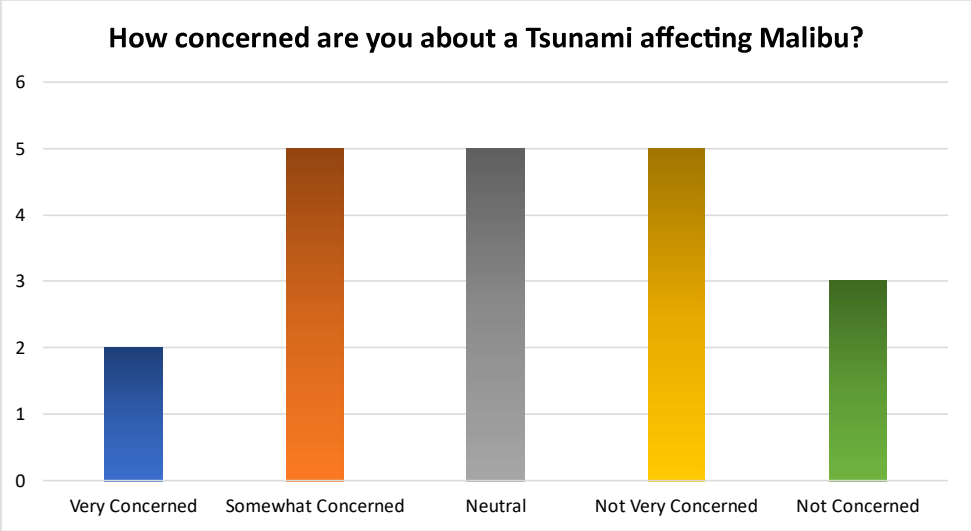
10. How concerned are you about the following natural disasters (and other events) affecting your city?

Value	Very Concerned	Somewhat Concerned	Neutral	Not Very Concerned	Not Concerned
Drought	65	34	5	8	1
Earthquake	62	43	7	3	1
Flood	5	31	23	32	18
Landslide/Debris Flow	14	32	29	26	8
Wildfire	96	17	1	0	1
Windstorm	13	39	30	17	10
Sever Winter Storm	7	34	23	19	25
Extreme Heat	47	46	10	4	4
Extended Power Outage	67	33	11	3	2
Climate Change	65	29	10	2	5
Hazardous Material Release	24	26	31	20	8
Coastal Erosion	14	22	26	20	26
Terrorism / Mass Casualty (including active shooter events)	32	45	22	6	9
Pandemic	26	43	20	16	7
Cybersecurity	39	44	16	8	5



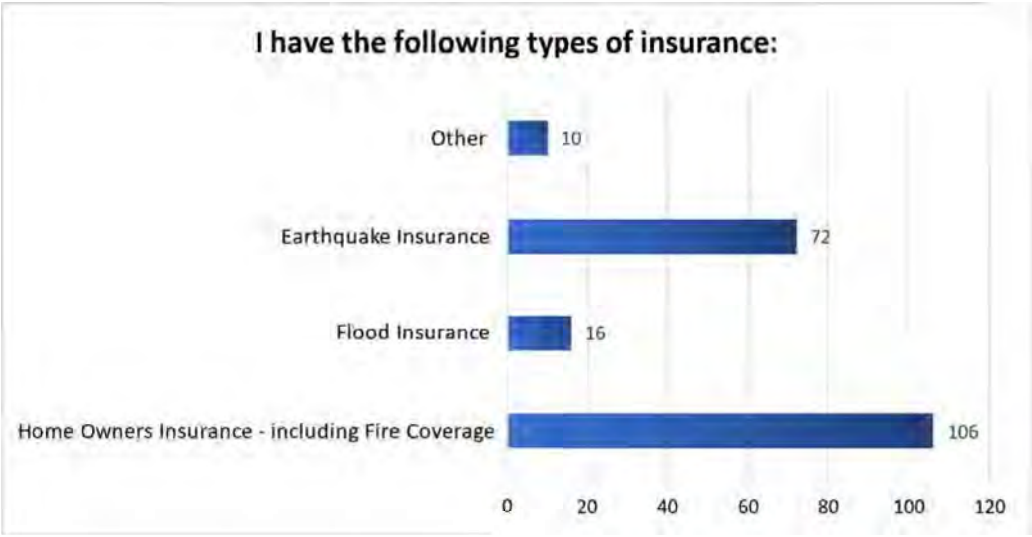
11. How concerned are you about a Tsunami affecting Malibu?

Value	Very Concerned	Somewhat Concerned	Neutral	Not Very Concerned	Not Concerned
Tsunami	2	5	5	5	3



12. I have the following types of insurance: (check all that apply)

Value	Count	Percent
Home Owners Insurance - including Fire Coverage	106	93.0%
Flood Insurance	16	14.0%
Earthquake Insurance	72	63.2%
Other	10	8.8%

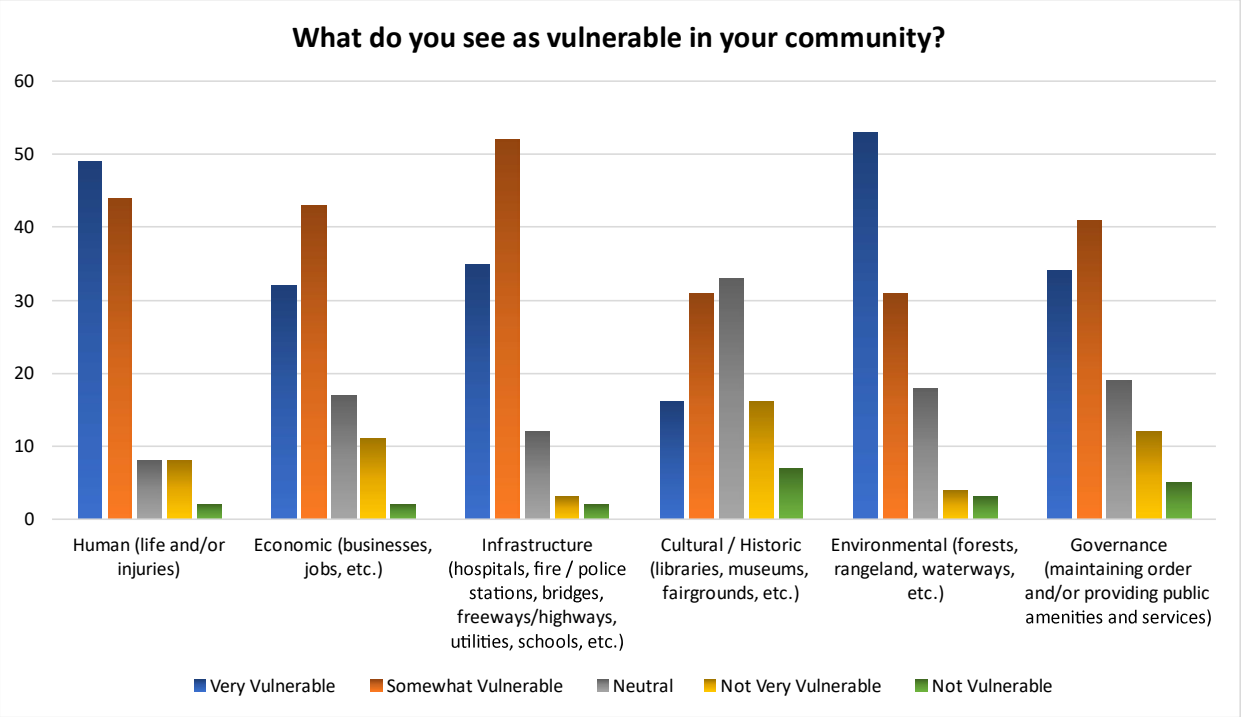


Other types of insurance include:

- HOA Insurance Coverage
- Renters Insurance
- State Insurance
- Umbrella Policy Insurance

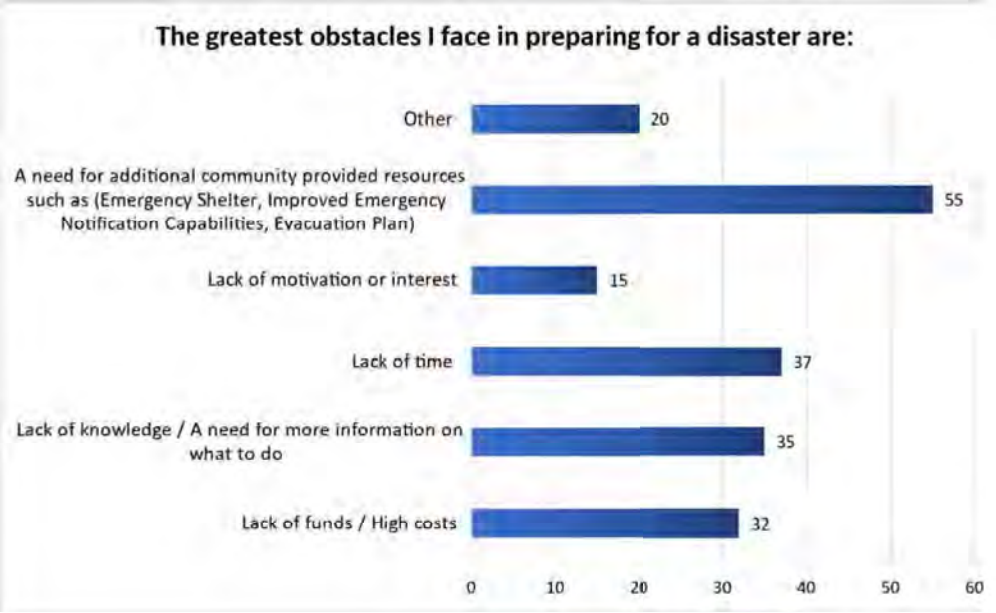
13. What do you see as vulnerable in your community?

Value	Very Vulnerable	Somewhat Vulnerable	Neutral	Not Very Vulnerable	Not Vulnerable
Human (life and/or injuries)	49	44	8	8	2
Economic (businesses, jobs, etc.)	32	43	17	11	2
Infrastructure (hospitals, fire / police stations, bridges, freeways/highways, utilities, schools, etc.)	35	52	12	3	2
Cultural / Historic (libraries, museums, fairgrounds, etc.)	16	31	33	16	7
Environmental (forests, rangeland, waterways, etc.)	53	31	18	4	3
Governance (maintaining order and/or providing public amenities and services)	34	41	19	12	5



14. The greatest obstacles I face in preparing for a disaster are:

Value	Count	Percent
Lack of funds / High costs	32	31.4%
Lack of knowledge / A need for more information on what to do	35	34.3%
Lack of time	37	36.3%
Lack of motivation or interest	15	15.7%
A need for additional community provided resources such as (Emergency Shelter, Improved Emergency Notification Capabilities, Evacuation Plan)	55	55.9%
Other	20	19.6%



Other obstacles include:

- Being a renter, I cannot damage walls by securing furniture
- Blocked evacuation routes
- Community provided power source for MBC power outages
- Emergency shelter
- Evacuation plan
- It's not that I'm not motivated or interested… it's that it's overwhelming so it's just not something I am 100% up on.
- Lack of interest by local elected officials
- Lack of roads to get out of our community
- Limited home space
- Panic caused by fire evacuation and obligation to save properties from fire
- Pet inclusive locations for shelter and housing
- Physical limitations
- Procrastination
- Retaining the survivor mentality

Other resources needed include:

- CERT class was hugely helpful, and should be better advertised
- City of Malibu needs to provide more up-to-the-minute notification of natural disasters (as well as car-related accidents)
- Enforcement of removal of target trees from landscape in high fire areas by LAFD
- Most concerned that the community has the day 5+ resources

15. List other significant hazards or events that you are concerned about. Note: Responses were edited and summarized to consolidate similar comments.

Air Quality

- All the gases and toxic fumes coming from synthetic lawns!
- Landfill fine particulate matter/off gassing/etc., for air quality and children's development

Corruption

- Corruption compromising the emergency responders

Communication

- Breakdowns in emergency communications
- Lack of cell service in our neighborhood

Crime

- Crime in Calabasas. I have lived here for 40 years, and the world changed a lot.
- Crime unchecked by laws and DA
- Domestic violence extremism
- Escalation of unchecked crime and immigration of tax base out of the area / California
- Home invasion

Debris

- I also feel that too much debris on Kanan needs to be trimmed now as well as on Electric poles need to be removed. It's just so frustrating.

Evacuation

- Can't get out of the area in case of a fire
- Evacuation routes in a disaster
- Evacuation - clear streets and paths are needed with no restriction by reduction in lanes for traffic calming in Westlake Village. Just look at Woolsey Fire, Paradise and Lahaina and the deaths to people evacuating. Understanding that in addition to the fact that non-residents will use our streets for evacuation as well as us and we need clear paths to evacuate.
- Panic caused by fire evacuations. There are many exists on Fountainwood and Morrison ranch.

Fire

- Another fire like Woolsey
- Concerned that those living near me don't do their fire clearance and officials don't hold them accountable for the safety of the community.
- Fire evacuation
- Lack of fire hydrant access to our location in our community

Home Insurance

- A lack of organization or a strategy for ensuring adequate homeowners insurance including fire. This needs to be a priority.
- Inability to secure adequate fire insurance

Homelessness

- Homeless issues involving safety and sanitation
- The hazards that concern me are allowing the homeless and campers to live on the side of road on Kanan near Ladyface Mountain. I found it very challenging to deal with Lost Hills Sheriff who didn't want to cooperate making it a political issue and deferring to other agencies such as the Rangers or Highway Patrol. I kept saying, we do not need another Woolsey fire. BTW, I live in Agoura Hills in the unincorporated area of LA County. We should be included as part of this survey for the future. We are just as concerned as your neighbors. I live in Malibu View Estates at the top of Kanan south.

Infrastructure

- Infrastructure in place to allow timely rebuild
- Structural collapse of retaining wall due to a natural or even a man-made disaster

Overpopulation

- Growing & overpopulation of areas that don't have ample escape routes

Senior population

- Our communities have senior citizens who live alone who should be accounted for ahead of any disaster so that help can be on the lookout to assist in case of an emergency. LA county agencies and city agencies should work together with all hands on deck?

Water Supply

- Loss of municipal water supply/long term
- Water supply reduction

Weather

- Carrington event
- Severe thunderstorms causing major leaks

Other

- Financial meltdown
- Per Woolsey Fire after action report, Law Enforcement and Fire Fighters will not be available to assist us in initial stages of the incident. We further need a Warning System other than by cell or e mail. What about AM radio? What if we lose power and battery backups are depleted? How does City manage incident if City Hall is evacuated? More preparedness on the part of our City is needed.
- Poisoned animals in the food chain due to use of non organic chemicals!
- Political Instability
- Secondary disaster due to lack of preparedness

16. What actions can local government take to help you become better prepared for disasters? Note: Responses were edited and summarized to consolidate similar comments.

Communication

- 24-hour prompt notifications of natural disasters, car accidents, and street closures
- Better and more coordinated communication and plans
- Better communication. Improved access to public officials. Improved social media and television alerts.
- Better outreach and communication with all residents in every part of the city. The most vulnerable in Calabasas are on the west side and no outreach here at all.
- Clear idea where emergency shelters would be
- Communication means that are effective during power and internet outages
- Coordinated efforts between city and county; communication on who has the most reliable information and resources.
- Find ways to get more people signed up for mass notification systems for their respective local jurisdiction.
- Get us the most recent information
- Hold meetings for residents to attend showing us how to get prepared
- Improved Web GIS Apps that could be used in a cellular network in an emergency, similar to VC Emergency in Ventura County.
- Learn how to receive communication when power is unavailable
- Make sure we get as much advance notice as possible
- More clarity from Cal Fire and LACOFD about brush clearance rules, especially Zone 0
- Provide clarity on the day 5 plan and how we will have medical services here
- Provide more information during and after an event
- Providing evacuation and shelter information when phone service is disrupted
- Send out more info on the subjects!

Community Engagement and Support

- Help senior citizens and include both unincorporated areas of LA county as well as city government in the plans. It would be much more cohesive.
- Keep public awareness up front

Evacuation and Shelter

- Appropriate evacuation plan
- Earlier requirement for mandatory evacuations
- Evacuation plans, brush removal, more streamlined services, water access
- Have a designated public shelter in open air
- More escape routes during a disaster
- Well coordinated evacuation plans that are executed earlier in an emergency. Too often left until last minute.

Infrastructure

- Add more infrastructure to relieve the traffic during an event
- Focus on our community infrastructure
- Invest in the infrastructure. Agoura Hills takes very little care of everything having to do with the building and walls. Walls will come down during an earthquake.

Resources and Supplies

- Assist with power generation- That's a BIG issue!
- Community supplies and shelter
- Continuously publish lists of what to do and items to keep on hand. Don't make us go to a different source to find that.
- Easily accessible resources for the public
- Give each home a check list and provide online education on how to obtain items cost effectively
- Help with understanding their disaster plan.
- Information on where our evacuation plans are
- Offer resource lists (or magnets) for home
- Pass out check-lists of what should be done in our homes prior to a disaster to ensure more safety during a disaster
- Provide some supplies to people who are financially insecure, and also provide handyman services for tasks such as securing furniture for those who cannot do it themselves and cannot afford to have someone else do it. Maybe do an outreach by neighborhood.
- Repeated Community rollout of Emergency plans and guidelines.
- Sell packages for emergencies at a reasonable price
- Send out an information pamphlet with important tips and info
- We have just been told by our homeowner insurance (Allstate) that we must box our eaves or they will not renew our policy. It would be great if Calabasas could provide helpful info about getting this work done (for example trusted local contractors; if permits are needed, expected costs). Also if there are things that the community is doing to earn a Firewise or shelter in place designation. The ability to get homeowner insurance is at a crisis. With the resources of Calabasas could more be done to advocate and educate on this topic? I appreciate the fire and emergency education already in place but it might be time to take it up a notch.

Safety Measures

- Actually implement the supposed preparedness. Could hire agencies that can assist with this. Help residents and don’t forget about them in the aftermath.
- Curtail building of high density developments along Las Virgenes Rd
- Get a group fire insurance policy for city residents to opt into that's better than the California FAIR Plan or offers discounts
- Have a realistic plan and help people. We were left alone and on our own in last fire. City, police and government failed us.
- Help identify senior citizen residents by giving flags to place outside their homes if needed
- Improve cell service in our neighborhood
- Require resilient materials for building and enforce target species removal from yards

Training and Education

- CERT classes (i.e., First Aid, rescue from structures, emergency food supplies)
- CERT/Disaster training should include formation and ongoing training of neighborhood emergency teams based on location of residence. Portland, OR, is a great example to follow in this area.
- City needs to publicize the CERT program as a way to help individuals/families prepare themselves. I've taken it but the marketing seems geared towards being a CERT volunteer not just becoming a CERT savvy individual/family member/neighbor.
- Classes on preparedness
- Have more CERT trainings and even single day trainings that just review all the important aspects of disaster preparedness. Not everyone has the time to commit to a multiple week CERT program.
- Hold meetings to prepare our community
- Set up groups to teach what to prepare and how to use certain tools (i.e., gas shut off valve)

Wildfire Mitigation

- Bring goats in to eat and clear the brush around our neighborhood
- Brush clearance of open space around DeAnza Park and the LVMWD site
- Fining property owners who don't do brush clearance
- Removal of wood and plastic fencing that act as fire corridors during a wildfire. Our city has shelter and evacuation plans already.

Other

- Alert systems are most important, don’t over populate with mass housing, if you do, it becomes very difficult for people to evacuate without complete chaos, this will then result in deaths
- Encourage other community members to be prepared so that together we are a resilient community
- Funding of staff and training
- How do local governments make the public utilities especially Edison, more accountable for providing a reliable service that is not responsible for starting major fires?
- I want more police patrols of the ralphs and vons shopping center. A lot of people are stealing from our local stores!
- More focus and interest
- One stop shop for disaster communications to citizens with access via call-in/messages/radio station/website etc that links all relevant departments filtering into a singular "voice" that gives clear actionable communication, isn't sugar coated, runs real-time, and uses A.I. for answering follow up questions, enables filtering user reports to appropriate leadership, monitoring of resources/personnel movements/traffic flow/weather/etc. Could be great to use A.I. predictive modeling hand in hand with training to stress test and explore different probabilities of outcomes for different disasters using relevant data of that community. Discover and address the bottlenecks and provide local responders feedback for efficacy. Maybe a know your neighbor and know the needs for different disaster PSA for civilians. There seemed to be a disconnect with appropriate

actions en masse with for example, the toilet paper hoarding and actual beneficial actions in times of uncertainty like Covid lockdown. Education/re-education isn't always bad. Easy to access information and even an online pick your disaster (morbid I know) and check list and make an action plan app would be cool. That way you can revisit your tailored action plan if something comes up. That's all I got!

- Westlake Village did an excellent job of keeping residents informed during the 2018 Woolsey fire. They kept us informed about the hurriquake. I trust if there's another danger they will do the same.
- Work closely with the county Voluntary Organizations Active in Disaster (VOAD). Become familiar with grants that will be available and disaster housing needs. Each city should be receptive to a presentation and becoming familiar with the VOAD and the LA Community Recovery Organization (LARCRO) which establishes and mentors community long term recovery groups. Ensure each city has a strong relationship to their LOCAL Community Foundation. These non-government organizations are the key to empowering the community to own its recovery sustainably.

17. Prior to receiving this survey, were you aware of your city's hazard mitigation plan?

Value	Count	Percent
Yes	37	32.2%
No	78	67.8%

OVERALL CHANGES IN PRIORITY

The priority of individual mitigation actions for specific hazards has remained consistent across cities since the 2018 Multi-Jurisdictional Hazard Mitigation Plan (MJHMP). Although Pandemic was included as a potential hazard in the updated plan, it does not alter the priority mitigation actions identified by the cities.

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SECTION 20. ANNEX D: PLANNING GROUP HMP RISK ASSESSMENT SURVEY

The following Risk Assessment Survey was distributed to the Planning Group to determine the relative risks associated with the major hazards identified in the LVMCOG region. The information was used to prioritize the threats to the region. Each hazard was rated in terms of probability (i.e. likelihood of occurrence), magnitude / severity, warning time, and duration. Ratings range from 1 (low) to 4 (high). The components of the formula are:

Category	Level ID	Description	Value	Weighting Factor
Probability	Unlikely	Extremely rare with no documented history of occurrences or events. Annual probability of less than 0.001.	1	45%
	Possibly	Rare occurrences with at least one documented or anecdotal historic event. Annual probability that is between 0.01 and 0.001.	2	
	Likely	Occasional occurrences with at least two or more documented historic events. Annual probability that is between 0.1 and 0.01.	3	
	Highly Likely	Frequent events with a well-documented history of occurrence. Annual probability that is greater than 0.1.	4	
Magnitude/ Severity	Negligible	Negligible property damages (less than 5% of critical and non-critical facilities and infrastructure). Injuries or illnesses are treatable with first aid and there are no deaths. Negligible quality of life lost. Shut down of critical facilities for less than 24 hours.	1	30%
	Limited	Slight property damages (greater than 5% and less than 25% of critical and non-critical facilities and infrastructure). Injuries or illnesses do not result in permanent disability and there are no deaths. Moderate quality of life lost. Shut down of critical facilities for more than 1 day and less than 1 week.	2	
	Critical	Moderate property damages (greater than 25% and less than 50% of critical and non-critical facilities and infrastructure). Injuries or illnesses result in permanent disability and at least one death. Shut down of critical facilities for more than 1 week and less than 1 month.	3	
	Catastrophic	Severe property damages (greater than 50% of critical and non-critical facilities and infrastructure). Injuries or illnesses result in permanent disability and multiple deaths. Shut down of critical facilities for more than 1 month.	4	
Warning Time	Less than 6 hrs	Self-explanatory.	4	15%
	6 to 12 hrs	Self-explanatory.	3	
	12 to 24 hrs	Self-explanatory.	2	
	More than 24 hrs	Self-explanatory.	1	
Duration	Less than 6 hrs	Self-explanatory.	1	10%
	Less than 24 hrs	Self-explanatory.	2	
	Less than one wk	Self-explanatory.	3	
	More than one wk	Self-explanatory.	4	

PLANNING GROUP RISK RATINGS

The final risk levels were estimated using the following equation and weighting scale.
Risk = (0.45 x Probability) + (0.30 x Magnitude/Severity) + (0.15 x Warning Time) + (0.10 x Duration)

For the LVMCOG region, the following estimates were developed.

Hazard	Average Probability	Weighted Probability	Average Magnitude	Weighted Magnitude	Average Warning Time	Weighted Warning Time	Average Duration	Weighted Duration	2023 Risk Rating
Terrorism / Mass Casualty	10	4.50	4.67	1.4	20	3	9.5	0.95	9.85
Wildfire	9.5	4.28	9	2.7	3	0.45	20	2	9.43
Earthquake (>6M)	8.5	3.83	5	1.5	20	3	9.5	0.95	9.28
Energy Disruption	5.67	2.55	15	4.5	3.33	0.5	6.5	0.65	8.20
Climate Change	9	4.05	6	1.8	3	0.45	9.5	0.95	7.25
Pandemic	6	2.70	5.5	1.65	5.5	0.83	20	2	7.18
Landslide	3	1.35	3.67	1.1	20	3	9.5	0.95	6.40
Severe Winter Storm	4.33	1.95	6	1.8	3	0.45	3.67	0.37	4.57
Severe Windstorm	4.33	1.95	3.67	1.1	3	0.45	4.33	0.43	3.93
Tsunami (all responses)	1.67	0.75	1.67	0.5	2.25	0.34	3.67	0.37	1.95

Table 179: LVMCOG Planning Group Risk Ratings

The Tsunami Risk Rating is further broken up to specifically highlight responses from the City of Malibu (only) as the impact and threat of a tsunami is a key consideration due to the City's coastal location.

Hazard	Average Probability	Weighted Probability	Average Magnitude	Weighted Magnitude	Average Warning Time	Weighted Warning Time	Average Duration	Weighted Duration	2023 Risk Rating
Tsunami	2	0.9	2	0.6	2	0.3	4	0.4	2.20

Table 180: Risk Ratings for Tsunami in Malibu

RISK ASSESSMENT SURVEY RESULTS

The following tables provide the results from the Risk Assessment Survey for the LVMCOG Region. Each section of the survey describes a hazard, risks, consequences and raging summary (Note: Zero values are omitted).

Overall, the risk of a Terrorism or Mass Casualty event was the highest rated event followed by Wildfire and Earthquake (top 3) followed by Energy Disruption, Climate Change, Pandemic, Landslide/Mudslide/Debris Flows, Severe Winter Storm, Severe Windstorm, and Tsunami (overall rating). However within the City of Malibu, the risk of tsunami was rated somewhat higher at 2.20. The remainder of this section provides a summary of the ratings for each hazard category.

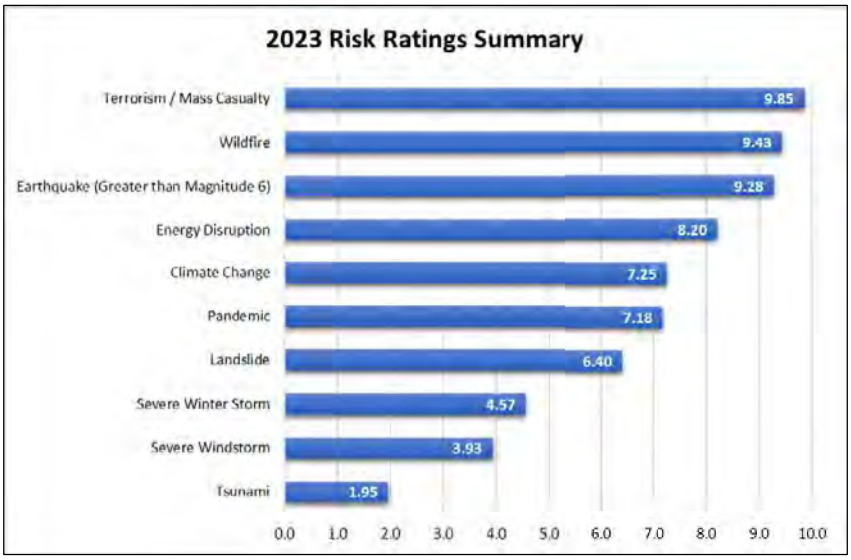


Figure 130: LVMCOG Planning Group Risk Assessment Results

Terrorism and Mass Casualty Events

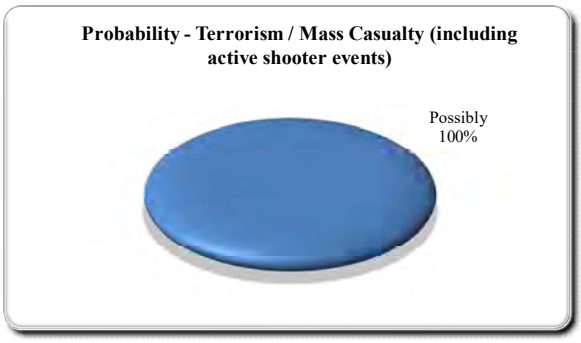
Probability – Rate the probability based on historical events

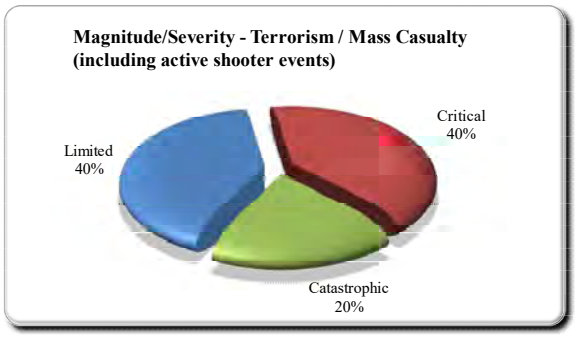
Rating	Description
N/A	Not Applicable
Unlikely	Unlikely: Extremely rare with no documented history of occurrence or events OR an annual probability less than .1%.
Possible	Possible: Rare occurrences with at least one documented or anecdotal historic event OR an annual probability between 1% and .1%.
Likely	Likely: Occasional occurrences with at least two or more documented historic events OR an annual probability that is between 10% and 1%.
Highly Likely	Highly Likely: Frequent events with a well-documented history of occurrence OR an annual probability that is greater than 10%.

Magnitude and Severity – How severe was the impact to lives, property, and infrastructure?

Rating	Description
N/A	Not Applicable
Negligible	Negligible property damages (less than 5% of critical and non-critical facilities and infrastructure). Injuries or illnesses are treatable with first aid and there are no deaths. Negligible quality of life lost. Shut down of critical facilities for less than 24 hours.
Limited	Slight property damages (greater than 5% and less than 25% of critical and non-critical facilities and infrastructure). Injuries or illnesses do not result in permanent disability and there are no deaths. Moderate quality of life lost. Shut down of critical facilities for more than 1 day and less than 1 week.

Rating	Description
Critical	Moderate property damages (greater than 25% and less than 50% of critical and non-critical facilities and infrastructure). Injuries or illnesses result in permanent disability and at least one death. Shut down of critical facilities for more than 1 week and less than 1 month.
Catastrophic	Severe property damages (greater than 50% of critical and non-critical facilities and infrastructure). Injuries or illnesses result in permanent disability and multiple deaths. Shut down of critical facilities for more than 1 month.



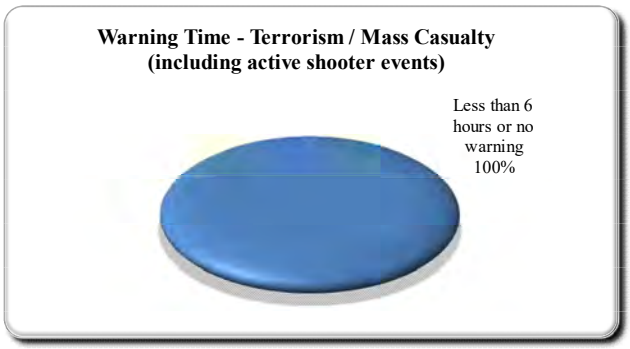


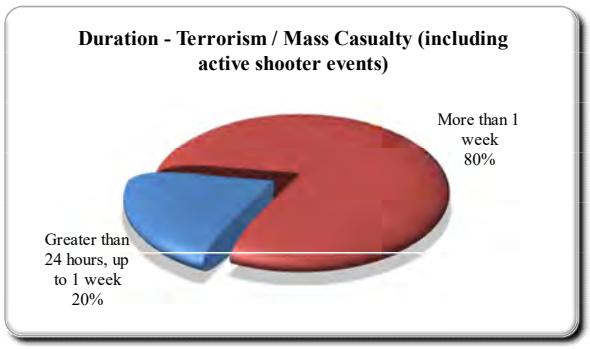
Warning Time – How much advance warning have you received for the type of event described?

Rating
N/A
More than 24 hours
12 to 24 hours
6 to 12 hours
Less than 6 hours or no warning

Duration – How long will the event last including the time the area will be impacted if the event described above occurs?

Rating
N/A
Less than 6 hours
Greater than 6 hours, up to 24 hours
Greater than 24 hours, up to 1 week
More than 1 week





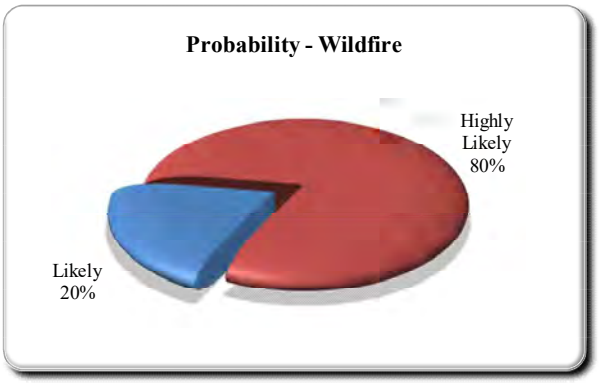
Wildfire

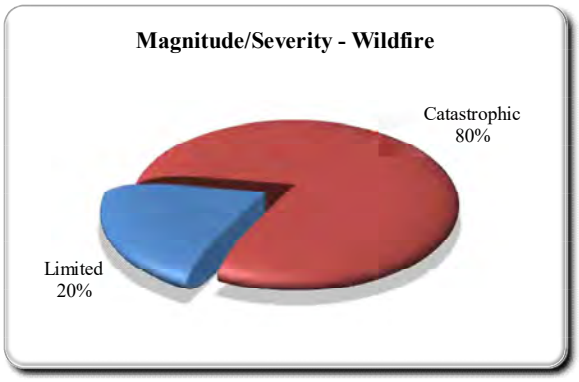
Probability – Rate the probability based on historical events

Rating	Description
N/A	Not Applicable
Unlikely	Unlikely: Extremely rare with no documented history of occurrence or events OR an annual probability less than .1%.
Possible	Possible: Rare occurrences with at least one documented or anecdotal historic event OR an annual probability between 1% and .1%.
Likely	Likely: Occasional occurrences with at least two or more documented historic events OR an annual probability that is between 10% and 1%.
Highly Likely	Highly Likely: Frequent events with a well-documented history of occurrence OR an annual probability that is greater than 10%.

Magnitude and Severity – How severe was the impact to lives, property, and infrastructure?

Rating	Description
N/A	Not Applicable
Negligible	Negligible property damages (less than 5% of critical and non-critical facilities and infrastructure). Injuries or illnesses are treatable with first aid and there are no deaths. Negligible quality of life lost. Shut down of critical facilities for less than 24 hours.
Limited	Slight property damages (greater than 5% and less than 25% of critical and non-critical facilities and infrastructure). Injuries or illnesses do not result in permanent disability and there are no deaths. Moderate quality of life lost. Shut down of critical facilities for more than 1 day and less than 1 week.
Critical	Moderate property damages (greater than 25% and less than 50% of critical and non-critical facilities and infrastructure). Injuries or illnesses result in permanent disability and at least one death. Shut down of critical facilities for more than 1 week and less than 1 month.
Catastrophic	Severe property damages (greater than 50% of critical and non-critical facilities and infrastructure). Injuries or illnesses result in permanent disability and multiple deaths. Shut down of critical facilities for more than 1 month.



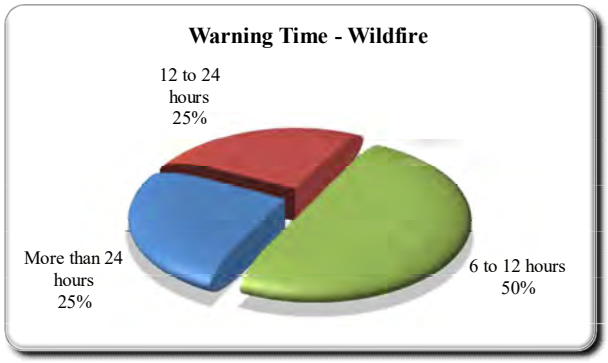


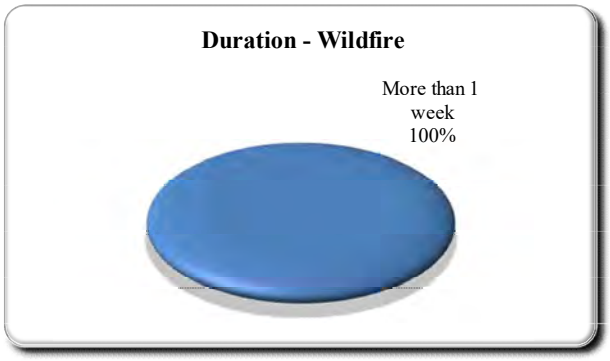
Warning Time – How much advance warning have you received for the type of event described?

Rating
N/A
More than 24 hours
12 to 24 hours
6 to 12 hours
Less than 6 hours or no warning

Duration – How long will the event last including the time the area will be impacted if the event described above occurs?

Rating
N/A
Less than 6 hours
Greater than 6 hours, up to 24 hours
Greater than 24 hours, up to 1 week
More than 1 week





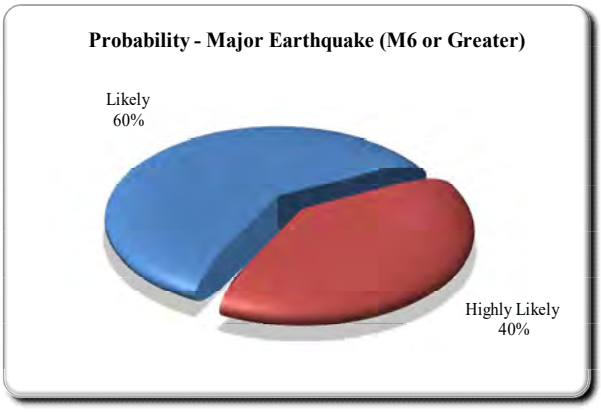
Earthquake (Greater that Magnitude 6.0)

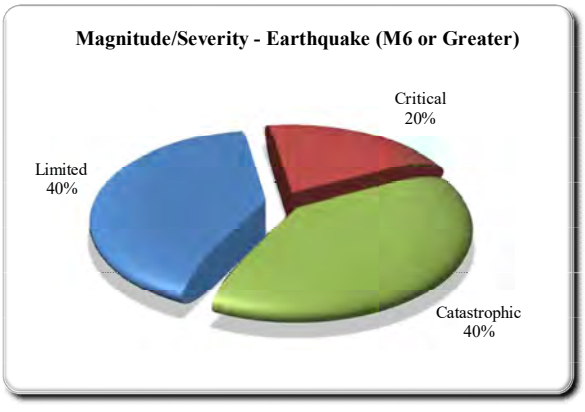
Probability – Rate the probability based on historical events

Rating	Description
N/A	Not Applicable
Unlikely	Unlikely: Extremely rare with no documented history of occurrence or events OR an annual probability less than .1%.
Possible	Possible: Rare occurrences with at least one documented or anecdotal historic event OR an annual probability between 1% and .1%.
Likely	Likely: Occasional occurrences with at least two or more documented historic events OR an annual probability that is between 10% and 1%.
Highly Likely	Highly Likely: Frequent events with a well-documented history of occurrence OR an annual probability that is greater than 10%.

Magnitude and Severity – How severe was the impact to lives, property, and infrastructure?

Rating	Description
N/A	Not Applicable
Negligible	Negligible property damages (less than 5% of critical and non-critical facilities and infrastructure). Injuries or illnesses are treatable with first aid and there are no deaths. Negligible quality of life lost. Shut down of critical facilities for less than 24 hours.
Limited	Slight property damages (greater than 5% and less than 25% of critical and non-critical facilities and infrastructure). Injuries or illnesses do not result in permanent disability and there are no deaths. Moderate quality of life lost. Shut down of critical facilities for more than 1 day and less than 1 week.
Critical	Moderate property damages (greater than 25% and less than 50% of critical and non-critical facilities and infrastructure). Injuries or illnesses result in permanent disability and at least one death. Shut down of critical facilities for more than 1 week and less than 1 month.
Catastrophic	Severe property damages (greater than 50% of critical and non-critical facilities and infrastructure). Injuries or illnesses result in permanent disability and multiple deaths. Shut down of critical facilities for more than 1 month.



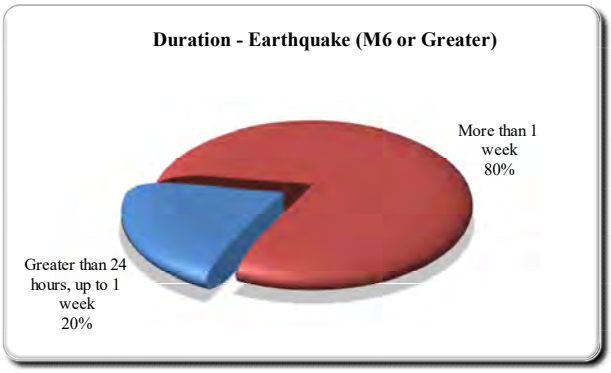


Warning Time – How much advance warning have you received for the type of event described?

Rating
N/A
More than 24 hours
12 to 24 hours
6 to 12 hours
Less than 6 hours or no warning

Duration – How long will the event last including the time the area will be impacted if the event described above occurs?

Rating
N/A
Less than 6 hours
Greater than 6 hours, up to 24 hours
Greater than 24 hours, up to 1 week
More than 1 week



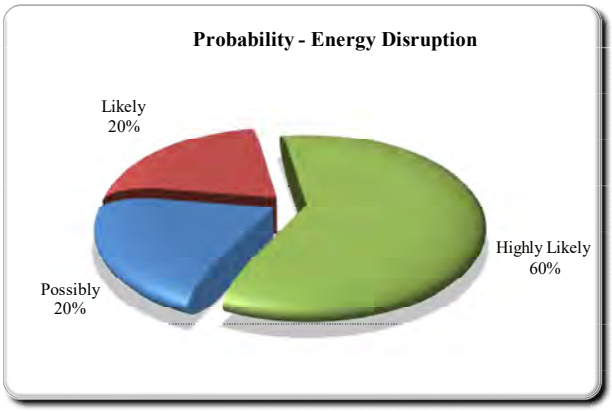
Energy Disruption

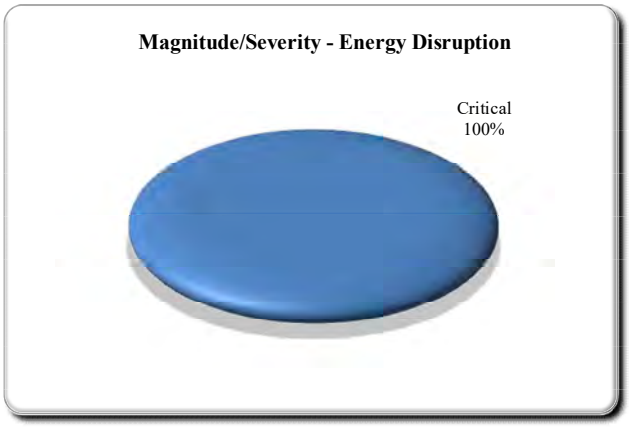
Probability – Rate the probability based on historical events

Rating	Description
N/A	Not Applicable
Unlikely	Unlikely: Extremely rare with no documented history of occurrence or events OR an annual probability less than .1%.
Possible	Possible: Rare occurrences with at least one documented or anecdotal historic event OR an annual probability between 1% and .1%.
Likely	Likely: Occasional occurrences with at least two or more documented historic events OR an annual probability that is between 10% and 1%.
Highly Likely	Highly Likely: Frequent events with a well-documented history of occurrence OR an annual probability that is greater than 10%.

Magnitude and Severity – How severe was the impact to lives, property, and infrastructure?

Rating	Description
N/A	Not Applicable
Negligible	Negligible property damages (less than 5% of critical and non-critical facilities and infrastructure). Injuries or illnesses are treatable with first aid and there are no deaths. Negligible quality of life lost. Shut down of critical facilities for less than 24 hours.
Limited	Slight property damages (greater than 5% and less than 25% of critical and non-critical facilities and infrastructure). Injuries or illnesses do not result in permanent disability and there are no deaths. Moderate quality of life lost. Shut down of critical facilities for more than 1 day and less than 1 week.
Critical	Moderate property damages (greater than 25% and less than 50% of critical and non-critical facilities and infrastructure). Injuries or illnesses result in permanent disability and at least one death. Shut down of critical facilities for more than 1 week and less than 1 month.
Catastrophic	Severe property damages (greater than 50% of critical and non-critical facilities and infrastructure). Injuries or illnesses result in permanent disability and multiple deaths. Shut down of critical facilities for more than 1 month.



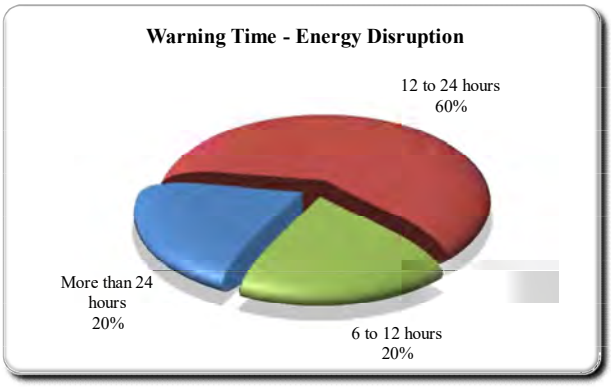


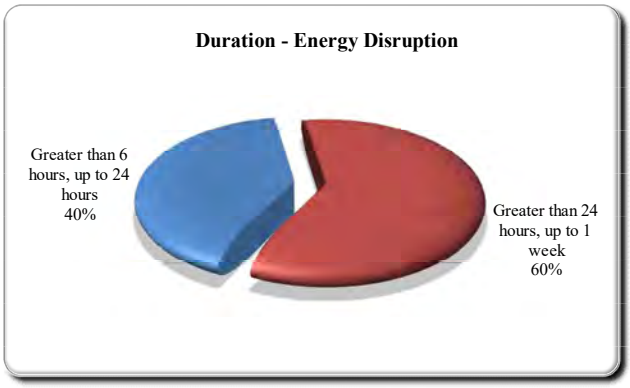
Warning Time – How much advance warning have you received for the type of event described?

Rating
N/A
More than 24 hours
12 to 24 hours
6 to 12 hours
Less than 6 hours or no warning

Duration – How long will the event last including the time the area will be impacted if the event described above occurs?

Rating
N/A
Less than 6 hours
Greater than 6 hours, up to 24 hours
Greater than 24 hours, up to 1 week
More than 1 week





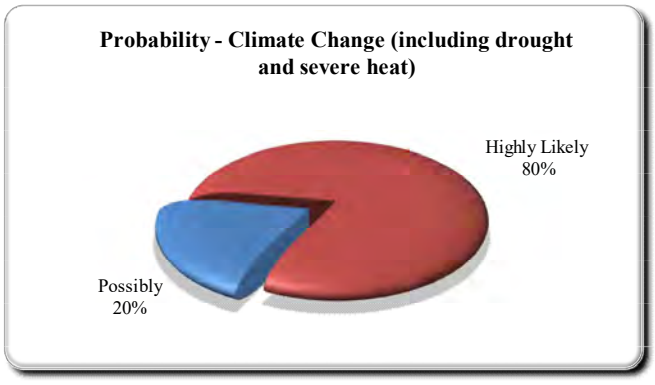
Climate Change (including Major Drought / Severe Heat)

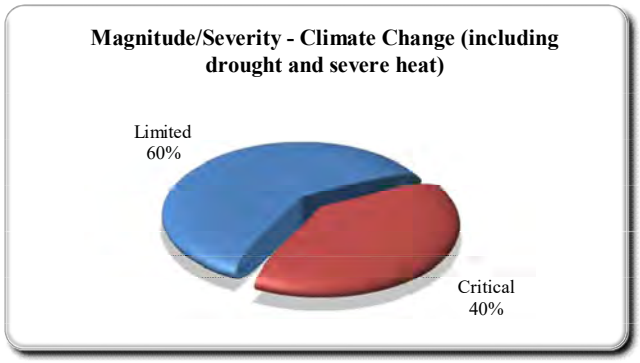
Probability – Rate the probability based on historical events

Rating	Description
N/A	Not Applicable
Unlikely	Unlikely: Extremely rare with no documented history of occurrence or events OR an annual probability less than .1%.
Possible	Possible: Rare occurrences with at least one documented or anecdotal historic event OR an annual probability between 1% and .1%.
Likely	Likely: Occasional occurrences with at least two or more documented historic events OR an annual probability that is between 10% and 1%.
Highly Likely	Highly Likely: Frequent events with a well-documented history of occurrence OR an annual probability that is greater than 10%.

Magnitude and Severity – How severe was the impact to lives, property, and infrastructure?

Rating	Description
N/A	Not Applicable
Negligible	Negligible property damages (less than 5% of critical and non-critical facilities and infrastructure). Injuries or illnesses are treatable with first aid and there are no deaths. Negligible quality of life lost. Shut down of critical facilities for less than 24 hours.
Limited	Slight property damages (greater than 5% and less than 25% of critical and non-critical facilities and infrastructure). Injuries or illnesses do not result in permanent disability and there are no deaths. Moderate quality of life lost. Shut down of critical facilities for more than 1 day and less than 1 week.
Critical	Moderate property damages (greater than 25% and less than 50% of critical and non-critical facilities and infrastructure). Injuries or illnesses result in permanent disability and at least one death. Shut down of critical facilities for more than 1 week and less than 1 month.
Catastrophic	Severe property damages (greater than 50% of critical and non-critical facilities and infrastructure). Injuries or illnesses result in permanent disability and multiple deaths. Shut down of critical facilities for more than 1 month.



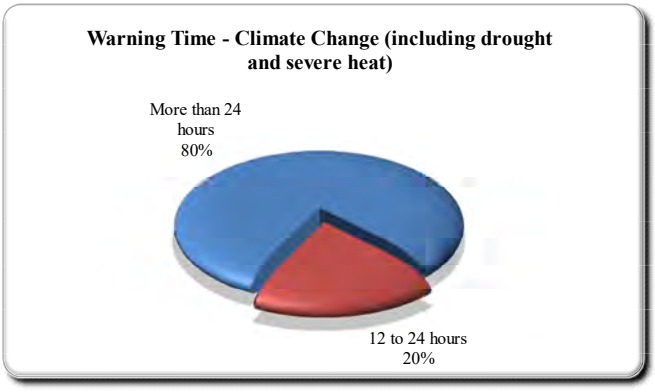


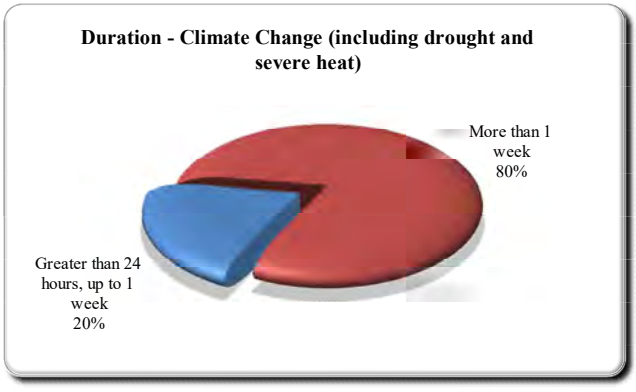
Warning Time – How much advance warning have you received for the type of event described?

Rating
N/A
More than 24 hours
12 to 24 hours
6 to 12 hours
Less than 6 hours or no warning

Duration – How long will the event last including the time the area will be impacted if the event described above occurs?

Rating
N/A
Less than 6 hours
Greater than 6 hours, up to 24 hours
Greater than 24 hours, up to 1 week
More than 1 week





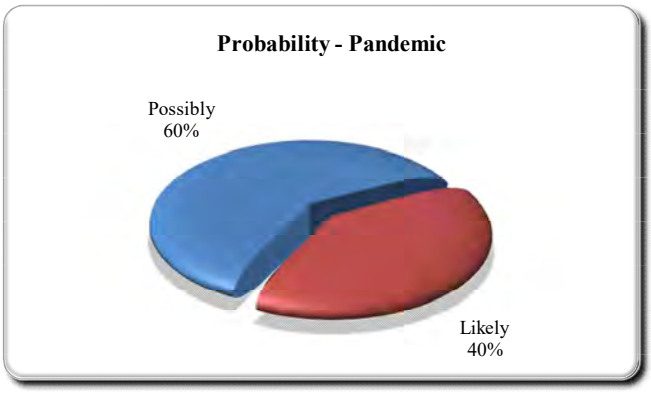
Pandemic

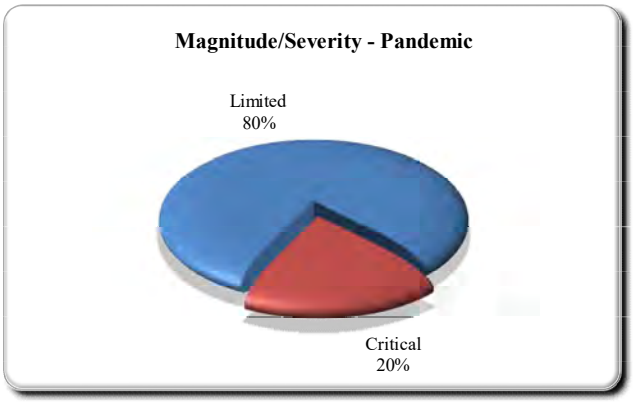
Probability – Rate the probability based on historical events

Rating	Description
N/A	Not Applicable
Unlikely	Unlikely: Extremely rare with no documented history of occurrence or events OR an annual probability less than .1%.
Possible	Possible: Rare occurrences with at least one documented or anecdotal historic event OR an annual probability between 1% and .1%.
Likely	Likely: Occasional occurrences with at least two or more documented historic events OR an annual probability that is between 10% and 1%.
Highly Likely	Highly Likely: Frequent events with a well-documented history of occurrence OR an annual probability that is greater than 10%.

Magnitude and Severity – How severe was the impact to lives, property, and infrastructure?

Rating	Description
N/A	Not Applicable
Negligible	Negligible property damages (less than 5% of critical and non-critical facilities and infrastructure). Injuries or illnesses are treatable with first aid and there are no deaths. Negligible quality of life lost. Shut down of critical facilities for less than 24 hours.
Limited	Slight property damages (greater than 5% and less than 25% of critical and non-critical facilities and infrastructure). Injuries or illnesses do not result in permanent disability and there are no deaths. Moderate quality of life lost. Shut down of critical facilities for more than 1 day and less than 1 week.
Critical	Moderate property damages (greater than 25% and less than 50% of critical and non-critical facilities and infrastructure). Injuries or illnesses result in permanent disability and at least one death. Shut down of critical facilities for more than 1 week and less than 1 month.
Catastrophic	Severe property damages (greater than 50% of critical and non-critical facilities and infrastructure). Injuries or illnesses result in permanent disability and multiple deaths. Shut down of critical facilities for more than 1 month.



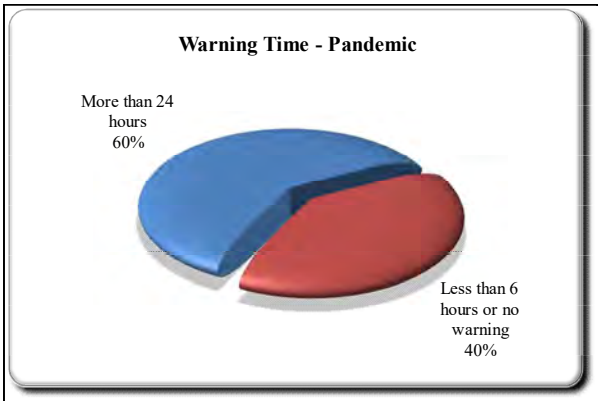


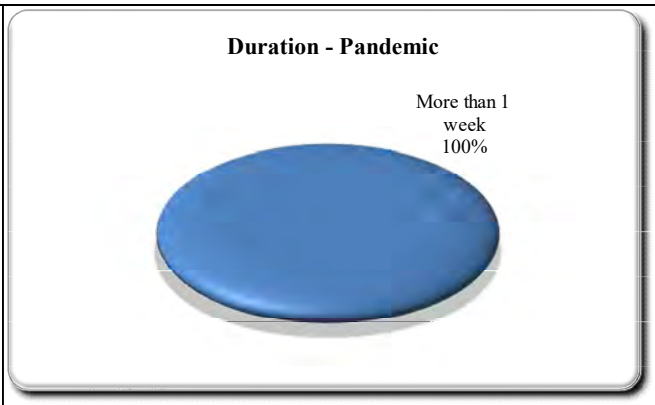
Warning Time – How much advance warning have you received for the type of event described?

Rating
N/A
More than 24 hours
12 to 24 hours
6 to 12 hours
Less than 6 hours or no warning

Duration – How long will the event last including the time the area will be impacted if the event described above occurs?

Rating
N/A
Less than 6 hours
Greater than 6 hours, up to 24 hours
Greater than 24 hours, up to 1 week
More than 1 week





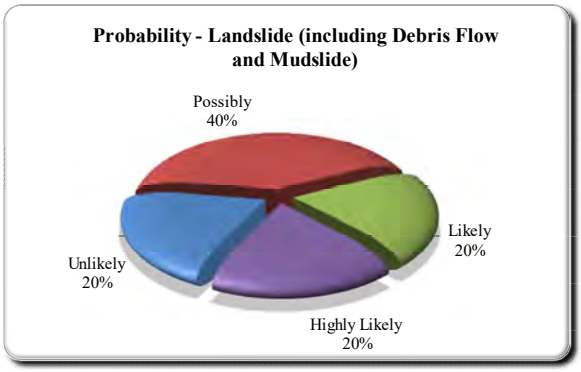
Landslide, Mudslide, and Debris Flows

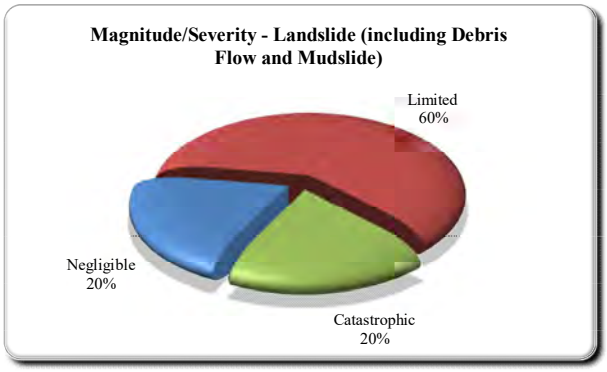
Probability – Rate the probability based on historical events

Rating	Description
N/A	Not Applicable
Unlikely	Unlikely: Extremely rare with no documented history of occurrence or events OR an annual probability less than .1%.
Possible	Possible: Rare occurrences with at least one documented or anecdotal historic event OR an annual probability between 1% and .1%.
Likely	Likely: Occasional occurrences with at least two or more documented historic events OR an annual probability that is between 10% and 1%.
Highly Likely	Highly Likely: Frequent events with a well-documented history of occurrence OR an annual probability that is greater than 10%.

Magnitude and Severity – How severe was the impact to lives, property, and infrastructure?

Rating	Description
N/A	Not Applicable
Negligible	Negligible property damages (less than 5% of critical and non-critical facilities and infrastructure). Injuries or illnesses are treatable with first aid and there are no deaths. Negligible quality of life lost. Shut down of critical facilities for less than 24 hours.
Limited	Slight property damages (greater than 5% and less than 25% of critical and non-critical facilities and infrastructure). Injuries or illnesses do not result in permanent disability and there are no deaths. Moderate quality of life lost. Shut down of critical facilities for more than 1 day and less than 1 week.
Critical	Moderate property damages (greater than 25% and less than 50% of critical and non-critical facilities and infrastructure). Injuries or illnesses result in permanent disability and at least one death. Shut down of critical facilities for more than 1 week and less than 1 month.
Catastrophic	Severe property damages (greater than 50% of critical and non-critical facilities and infrastructure). Injuries or illnesses result in permanent disability and multiple deaths. Shut down of critical facilities for more than 1 month.



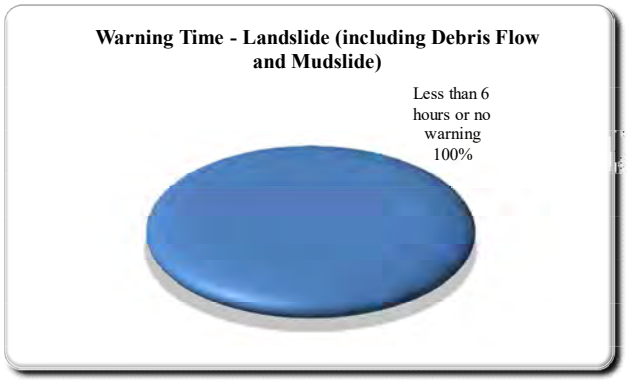


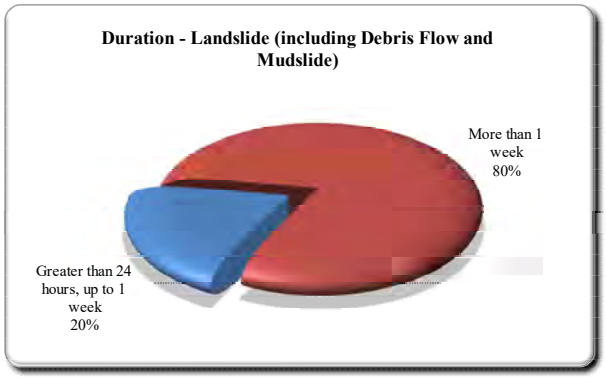
Warning Time – How much advance warning have you received for the type of event described?

Rating
N/A
More than 24 hours
12 to 24 hours
6 to 12 hours
Less than 6 hours or no warning

Duration – How long will the event last including the time the area will be impacted if the event described above occurs?

Rating
N/A
Less than 6 hours
Greater than 6 hours, up to 24 hours
Greater than 24 hours, up to 1 week
More than 1 week





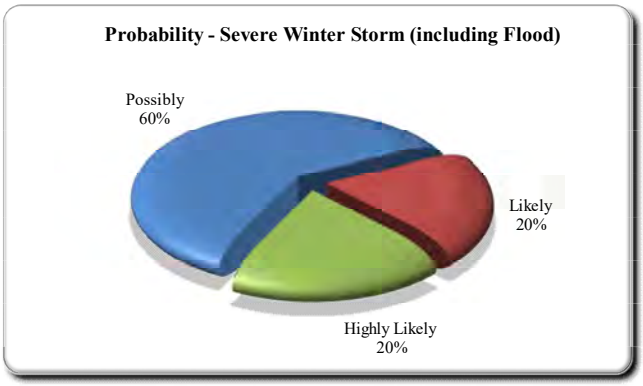
Severe Winter Storm

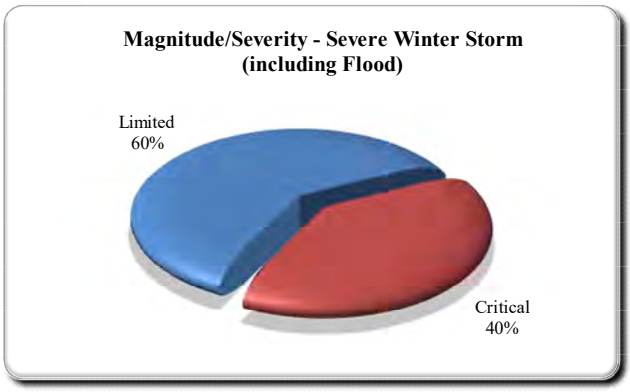
Probability – Rate the probability based on historical events

Rating	Description
N/A	Not Applicable
Unlikely	Unlikely: Extremely rare with no documented history of occurrence or events OR an annual probability less than .1%.
Possible	Possible: Rare occurrences with at least one documented or anecdotal historic event OR an annual probability between 1% and .1%.
Likely	Likely: Occasional occurrences with at least two or more documented historic events OR an annual probability that is between 10% and 1%.
Highly Likely	Highly Likely: Frequent events with a well-documented history of occurrence OR an annual probability that is greater than 10%.

Magnitude and Severity – How severe was the impact to lives, property, and infrastructure?

Rating	Description
N/A	Not Applicable
Negligible	Negligible property damages (less than 5% of critical and non-critical facilities and infrastructure). Injuries or illnesses are treatable with first aid and there are no deaths. Negligible quality of life lost. Shut down of critical facilities for less than 24 hours.
Limited	Slight property damages (greater than 5% and less than 25% of critical and non-critical facilities and infrastructure). Injuries or illnesses do not result in permanent disability and there are no deaths. Moderate quality of life lost. Shut down of critical facilities for more than 1 day and less than 1 week.
Critical	Moderate property damages (greater than 25% and less than 50% of critical and non-critical facilities and infrastructure). Injuries or illnesses result in permanent disability and at least one death. Shut down of critical facilities for more than 1 week and less than 1 month.
Catastrophic	Severe property damages (greater than 50% of critical and non-critical facilities and infrastructure). Injuries or illnesses result in permanent disability and multiple deaths. Shut down of critical facilities for more than 1 month.



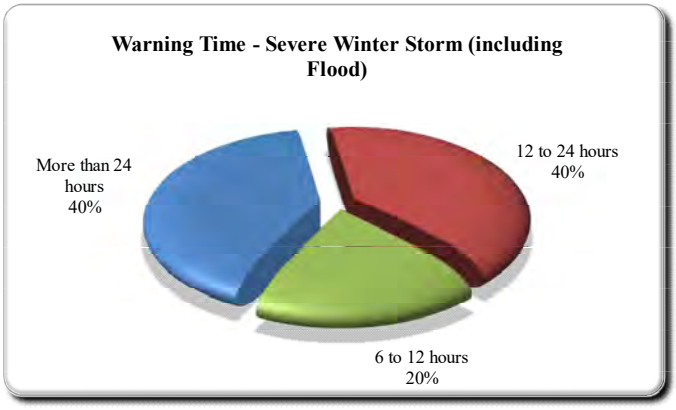


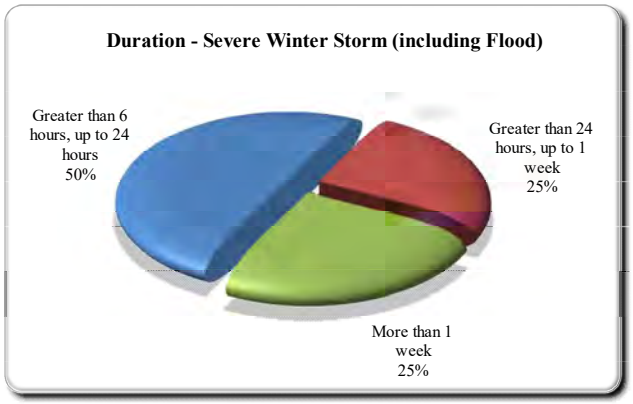
Warning Time – How much advance warning have you received for the type of event described?

Rating
N/A
More than 24 hours
12 to 24 hours
6 to 12 hours
Less than 6 hours or no warning

Duration – How long will the event last including the time the area will be impacted if the event described above occurs?

Rating
N/A
Less than 6 hours
Greater than 6 hours, up to 24 hours
Greater than 24 hours, up to 1 week
More than 1 week





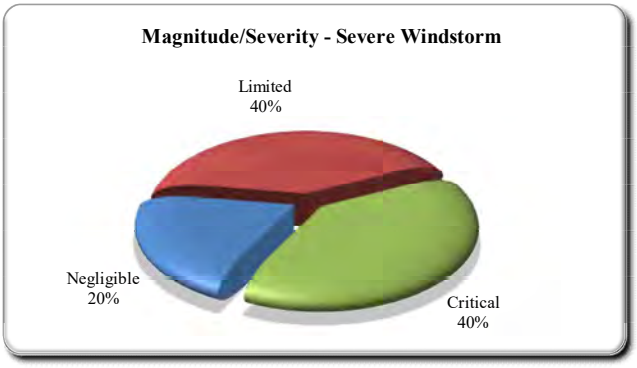
Severe Windstorm

Probability – Rate the probability based on historical events.

Rating	Description
N/A	Not Applicable
Unlikely	Unlikely: Extremely rare with no documented history of occurrence or events OR an annual probability less than .1%.
Possible	Possible: Rare occurrences with at least one documented or anecdotal historic event OR an annual probability between 1% and .1%.
Likely	Likely: Occasional occurrences with at least two or more documented historic events OR an annual probability that is between 10% and 1%.
Highly Likely	Highly Likely: Frequent events with a well-documented history of occurrence OR an annual probability that is greater than 10%.

Magnitude and Severity – How severe was the impact to lives, property, and infrastructure?

Rating	Description
N/A	Not Applicable
Negligible	Negligible property damages (less than 5% of critical and non-critical facilities and infrastructure). Injuries or illnesses are treatable with first aid and there are no deaths. Negligible quality of life lost. Shut down of critical facilities for less than 24 hours.
Limited	Slight property damages (greater than 5% and less than 25% of critical and non-critical facilities and infrastructure). Injuries or illnesses do not result in permanent disability and there are no deaths. Moderate quality of life lost. Shut down of critical facilities for more than 1 day and less than 1 week.
Critical	Moderate property damages (greater than 25% and less than 50% of critical and non-critical facilities and infrastructure). Injuries or illnesses result in permanent disability and at least one death. Shut down of critical facilities for more than 1 week and less than 1 month.
Catastrophic	Severe property damages (greater than 50% of critical and non-critical facilities and infrastructure). Injuries or illnesses result in permanent disability and multiple deaths. Shut down of critical facilities for more than 1 month.

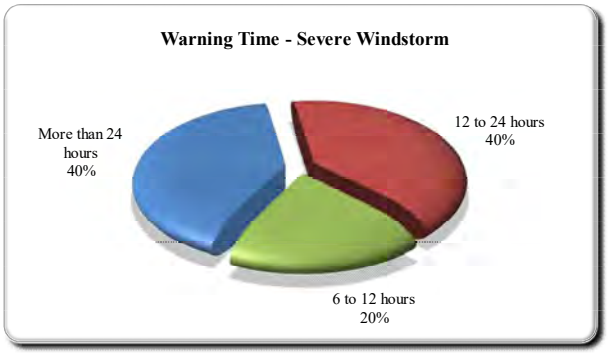


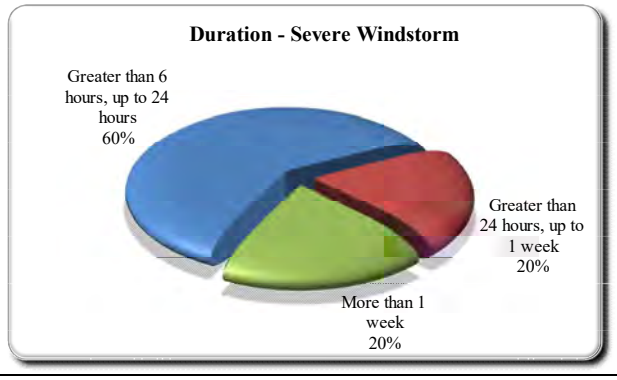
Warning Time – How much advance warning have you received for the type of event described?

Rating
N/A
More than 24 hours
12 to 24 hours
6 to 12 hours
Less than 6 hours or no warning

Duration – How long will the event last including the time the area will be impacted if the event described above occurs?

Rating
N/A
Less than 6 hours
Greater than 6 hours, up to 24 hours
Greater than 24 hours, up to 1 week
More than 1 week





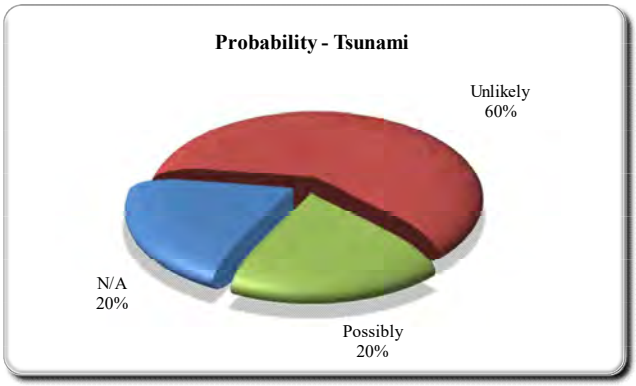
Tsunami

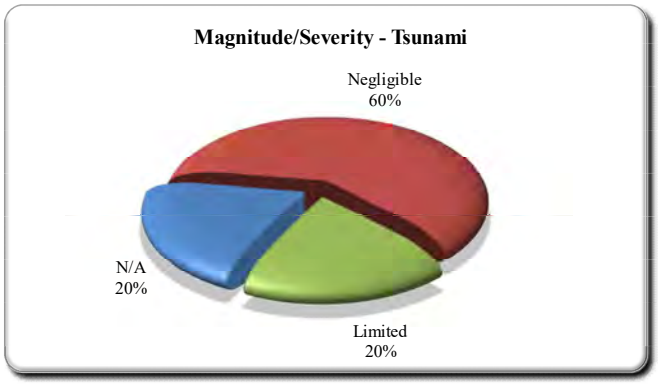
Probability – Rate the probability based on historical events

Rating	Description
N/A	Not Applicable
Unlikely	Unlikely: Extremely rare with no documented history of occurrence or events OR an annual probability less than .1%.
Possible	Possible: Rare occurrences with at least one documented or anecdotal historic event OR an annual probability between 1% and .1%.
Likely	Likely: Occasional occurrences with at least two or more documented historic events OR an annual probability that is between 10% and 1%.
Highly Likely	Highly Likely: Frequent events with a well-documented history of occurrence OR an annual probability that is greater than 10%.

Magnitude and Severity – How severe was the impact to lives, property, and infrastructure?

Rating	Description
N/A	Not Applicable
Negligible	Negligible property damages (less than 5% of critical and non-critical facilities and infrastructure). Injuries or illnesses are treatable with first aid and there are no deaths. Negligible quality of life lost. Shut down of critical facilities for less than 24 hours.
Limited	Slight property damages (greater than 5% and less than 25% of critical and non-critical facilities and infrastructure). Injuries or illnesses do not result in permanent disability and there are no deaths. Moderate quality of life lost. Shut down of critical facilities for more than 1 day and less than 1 week.
Critical	Moderate property damages (greater than 25% and less than 50% of critical and non-critical facilities and infrastructure). Injuries or illnesses result in permanent disability and at least one death. Shut down of critical facilities for more than 1 week and less than 1 month.
Catastrophic	Severe property damages (greater than 50% of critical and non-critical facilities and infrastructure). Injuries or illnesses result in permanent disability and multiple deaths. Shut down of critical facilities for more than 1 month.



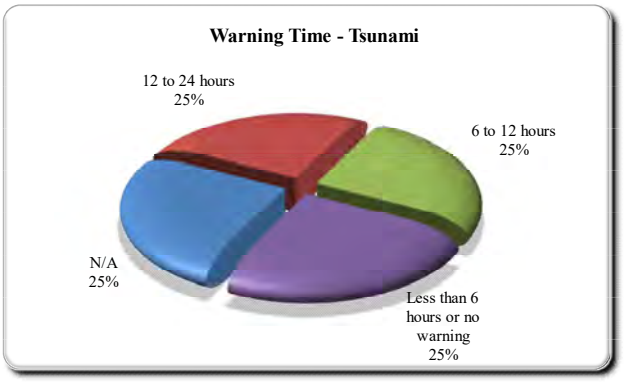


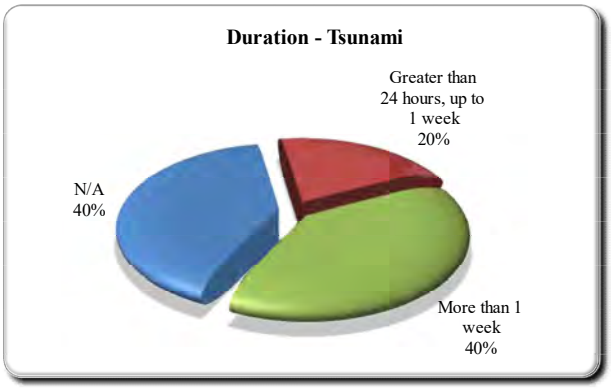
Warning Time – How much advance warning have you received for the type of event described?

Rating
N/A
More than 24 hours
12 to 24 hours
6 to 12 hours
Less than 6 hours or no warning

Duration – How long will the event last including the time the area will be impacted if the event described above occurs?

Rating
N/A
Less than 6 hours
Greater than 6 hours, up to 24 hours
Greater than 24 hours, up to 1 week
More than 1 week





Other Hazards

List other significant hazards or events that you are concerned about (if any):

- Cyber Attack
- Hazard Waste / Material Release
- Terrorism Based on Hate Crime

OVERALL CHANGES IN PRIORITY

The priority of individual mitigation actions for specific hazards has remained consistent across cities since the 2018 Multi-Jurisdictional Hazard Mitigation Plan (MJHMP). Although Pandemic was included as a potential hazard in the updated plan, it does not alter the priority mitigation actions identified by the cities.

SECTION 21. ANNEX E: PLANNING AND PUBLIC INVOLVEMENT

MITIGATION PLANNING

Representatives from each city within the Las Virgenes-Malibu Council of Governments regularly meet to discuss mitigation efforts and plan future activities. As members of Disaster Management Area B, each city participates in quarterly planning meetings as well as post-DMA meetings with LVMCOG member cities (**see Annex B: Meeting Agendas and Attendees** section for details).

PUBLIC PARTICIPATION AND INVOLVEMENT

The public participated in the original Multi-Jurisdictional Hazard Mitigation Plan (HMP) and each subsequent update. Public participation was enabled through a variety of means that included:

- An online Community Disaster Preparedness Risk Survey
- Public Bulletins including Public Service Announcements (PSAs), City Web Pages, City Social Media, and Local News as well as Ongoing Preparedness and Mitigation Events
- Public Workshops
- City Council and Safety Committee Meetings

Community Disaster Preparedness and Risk Survey

A survey was published via city websites, social media platforms, public workshops, and during community training events to allow members of the community to provide their input on local area hazards, preparedness efforts, suggestions for mitigation and improvement, and the historic consequences of disasters. The data gathered was used to help local officials better plan for disasters and was a vital component in further developing local mitigation efforts that are designed to help reduce the risk of loss to lives and property. A total of 116 completed surveys were received. The results of the survey are provided in **Annex C Community Disaster Preparedness and Risk Survey**.

Public Service Bulletins, City Web Pages, City Social Media, and Local News

In addition to the Community Disaster Preparedness and Risk Survey, each city distributes Emergency and Disaster Mitigation information via their websites, city-operated television channels, and social media platforms. Copies of the Multi-Jurisdictional Hazard Mitigation Plan are made available on each City's website. The public is invited to download and review the plans and provide their comments. Furthermore, the public is invited to participate in mitigation and training events (as applicable) during the year (see **Public Emergency Preparedness and Mitigation Workshops** section below) which are advertised via local news, City web sites, and social media.

Public Emergency Preparedness and Mitigation Events

National Preparedness Month

The annual National Preparedness Month is held every September. The cities within the LVMCOG utilize this month to further promote public awareness, disaster preparedness, and mitigation planning in the community.

For example, the City of Malibu conducts a speakers series during National Preparedness Month which that includes programs to educate the public, obtain public participation, and further promote mitigation efforts.

Figure 131: National Preparedness Month 2023 Speaker Series- City of Malibu

Likewise, the other cities within the LVMCOG conduct similar public outreach events to promote preparedness and mitigation.

Figure 132: Preparedness Saturday - Agoura Hills

Figure 133: Fire Season Briefing - Calabasas

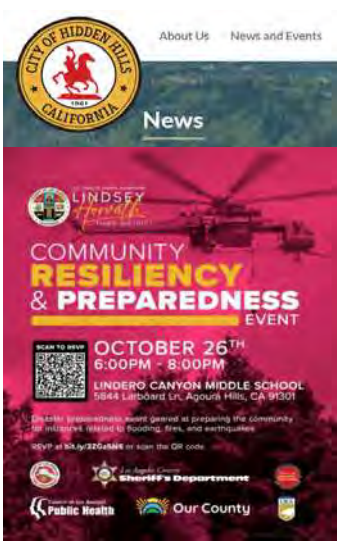


Figure 134: Community Resiliency & Preparedness Event - Hidden Hills

Figure 135: Emergency Preparedness Month Bulletin – Westlake Village

Disaster Preparedness and Mitigation Information

Each city within the LVMCOG provides their communities with ongoing preparedness and mitigation alerts and information. These sources of information are intended to further involve and educate the public – further promoting hazard mitigation in the local area.

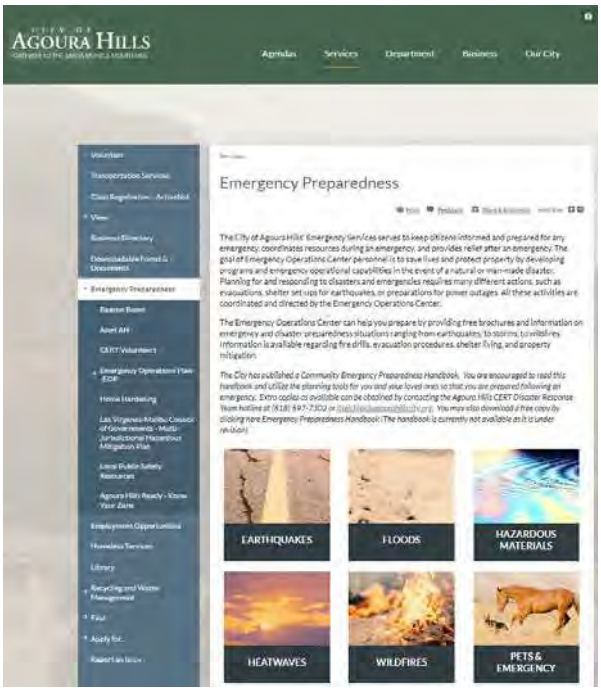


Figure 136: Agoura Hills Emergency Preparedness Web Page

Figure 137: Calabasas Public Safety & Emergency Preparedness Web Page

Figure 138: Hidden Hills Emergency Preparedness Web Page

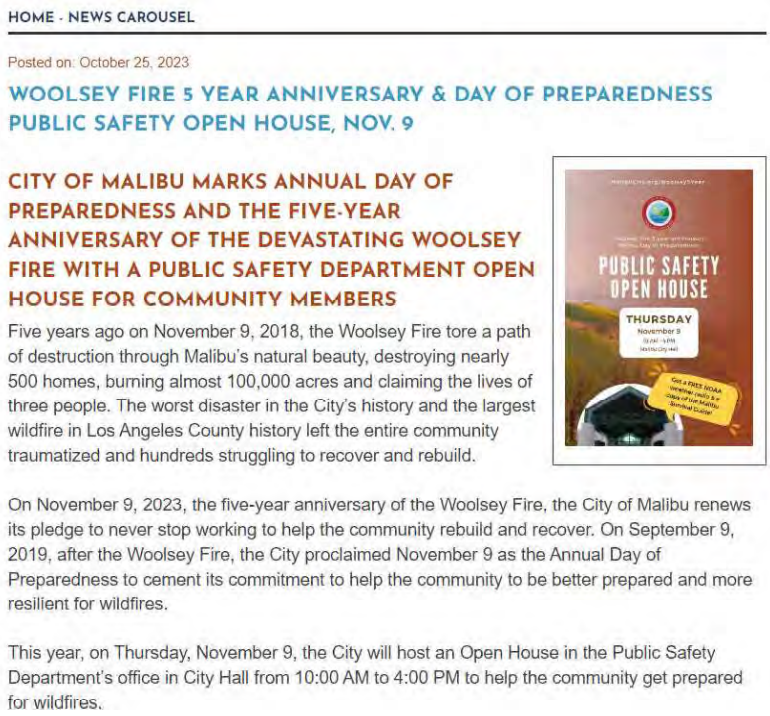


Figure 139: Malibu Public Safety Open House

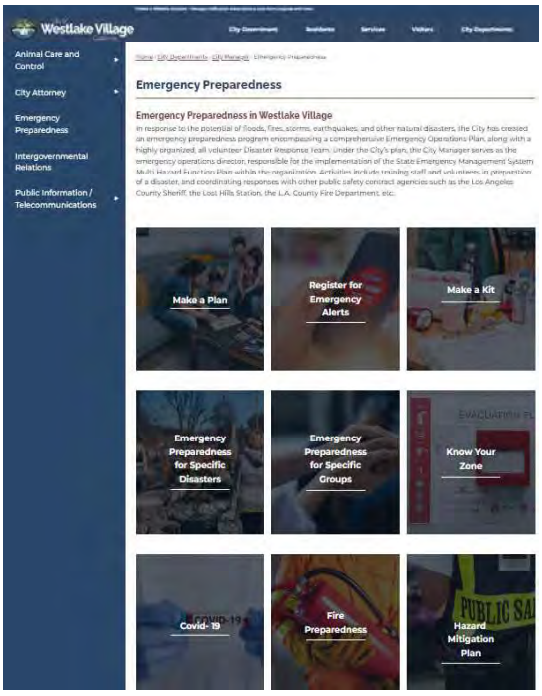


Figure 140: Westlake Village Emergency Preparedness Web Page

CERT Programs

Each city has established Community Emergency Response Team programs that encourage preparedness, planning, and mitigation. These teams meet on a regular basis at the neighborhood level. The CERT training program was developed by the Federal Emergency Management Agency (FEMA) and modeled after the original 1985 programs used by the City of Los Angeles Fire Department. The purpose of the CERT program is to create a well-trained citizen emergency work force which is vital in the immediate aftermath of disaster situations when the number and scope of incidents overwhelm conventional emergency services. During CERT meetings, local residents are trained in various skills to better respond to disasters. These meetings are also used to share information on preparedness and mitigation planning.

Figure 141: Agoura Hills CERT

Figure 142: Calabasas CERT

Figure 143: Hidden Hills CERT

Figure 144: Malibu CERT

Figure 145: Westlake Village CERT

Preparedness and Mitigation Planning Workshops

As part of the Multi-Jurisdictional HMP update process, a series of Public Workshops were conducted. One online workshop meeting was held for each city. All meetings were promoted by each city via their web sites, local news publications, and social media.

Agoura Residents' Input Sought For Local Hazard Mitigation Plan

The regional plan to prepare for natural and manmade hazards is getting an update and officials are requesting residents' input.

The Las Virgenes-Malibu Council of Governments is working to update its Hazard Mitigation Plan. (Shutterstock)

AGOURA HILLS, CA — The Las Virgenes-Malibu Council of Governments is seeking Agoura Hills residents' input as it updates its plan to for natural and manmade hazards.

The multi-jurisdictional Hazard Mitigation Plan is meant to promote sound public policy and programs that protect residents, infrastructure, property and the environment from hazards that may arise.

The Las Virgenes-Malibu Council of Governments, the regional government that covers Agoura Hills, Calabasas, Hidden Hills, Malibu and Westlake Village, is inviting the public to offer input as it updates the area's plan.

The COG meets virtually on Oct. 26 at 6 p.m. You can find out more information about how to join the Zoom meeting here.

Canyon News

HOLLYWOOD HILLS · LOS FELIZ · MALIBU · PACIFIC PALISADES · SANTA MONICA · SHERMAN OAKS · STUDIO CITY · TOPANGA CANYON

MALIBU - Community members are invited to give their input on the update of the regional Hazard Mitigation Plan at the Las Virgenes-Malibu Council of Governments (LVMCOG) virtual meeting on Thursday, October 26. The meeting will take place from 6 p.m. to 7 p.m. via Zoom.

The city of Malibu reported on its website, the LVMCOG includes the cities of Malibu, Agoura Hills, Calabasas, Hidden Hills, and Westlake Village. Hazard Mitigation Plans are developed as a regional plan since some hazards cross jurisdictional boundaries.

The goal of the meeting is to gather input from the community on how to decrease the impacts of natural disasters and other hazards in the area.

During the meeting, results of a recent Risk Survey will be shared and used for discussion to review the top hazards that are issues for residents, what preparedness actions they have taken, and additional hazard reduction efforts that are needed to better protect the community.

ZOOM LINK TO JOIN THE MEETING

Calabasas Residents' Input Sought For Local Hazard Mitigation Plan

The regional plan to prepare for natural and manmade hazards is getting an update and officials are requesting residents' input.

The Las Virgenes-Malibu Council of Governments is working to update its Hazard Mitigation Plan. (Shutterstock)

CALABASAS, CA — The Las Virgenes-Malibu Council of Governments is seeking Calabasas residents' input as it updates its plan to for natural and manmade hazards.

The multi-jurisdictional Hazard Mitigation Plan is meant to promote sound public policy and programs that protect residents, infrastructure, property and the environment from hazards that may arise.

The Las Virgenes-Malibu Council of Governments, the regional government that covers Agoura Hills, Calabasas, Hidden Hills, Malibu and Westlake Village, is inviting the public to offer input as it updates the area's plan.

The COG meets virtually on Oct. 26 at 6 p.m. You can find out more information about how to join the Zoom meeting here.

Westlake Village, CA

Westlake Village Residents Invited to Discuss Hazard Mitigation Plan Update

California Insights · 28 days ago

Public Safety Committee Meeting

Thursday, Oct 19
3:30 PM

Join our Zoom meeting and give input on what hazards you think the community faces and how the City can better prepare and mitigate the impact of disasters

Visit WLV.org to learn more.

Meeting Schedule

Pubic HMP Workshop City	Workshop Date
Malibu	October 26, 2023
Agoura Hills	November 1, 2023
Calabasas	November 7, 2023
Westlake Village	November 8, 2023
Hidden Hills	November 9, 2023

Agenda

- Provide an overview of the Multi-Jurisdictional Hazard Mitigation Plan.
- Discuss the results of the recent Public Risk Survey, local hazards, issues, and concerns including issues related to the socially vulnerable.
- Obtain ideas for improvement.
- Q&A

Purpose of the Workshop:
To review disaster preparedness and mitigation issues in the local community and the updated Multi-Jurisdictional Hazard Mitigation Plan

Workshop Results
The main feedback and results received during the meeting included:

- In general, the attendees agreed with the results of the Public Risk Survey:
    - Wildfire is the primary concern especially since all the communities within the LVMCOG have a high potential for wildfire.
    - Next, the following hazards concerns were ranked (in order) Earthquake, Extended Powe Outage, Drought/Climate Change/Extreme Heat, Cyber Security, Terrorism/Mass Casualty Event, Pandemic, Windstorm, Hazardous Materials Release, Landslide/Debris Flow/Mudslide, Severe Winter Storm, Flood, and Coastal Erosion.
- Overall, attendees were concerned about the availability of homeowners insurance and the high cost of insurance. In fact, it was noted that several large insurance carriers have left the state and that the cost of homeowners insurance has risen geometrically over the past several years. Consequently, attendees suggested developing efforts to assist in securing reliable homeowners insurance for residents
- Other common concerns by the workshop attendees included the local homeless population which included the increased risk of wildfires starting at homeless encampments as well as the increase in crime throughout the region.
- Finally, several attendees mentioned their concerns about the adequacy of evacuation routes and planning, especially if another major wildfire occurs in the area (similar to the Woolsey Fire). While each city has established evacuation routes, additional focus was suggested to ensure that traffic management strategies are in place as well as debris removal plans to clear roads and facilitate the evacuation process.

Integration of Public Input into the Hazard Mitigation Plan

The input received from the public at the Preparedness and Mitigation Planning Workshops was integrated into this Hazard Mitigation Plan update including the Risk Assessment (see **Section 3**) and Hazard Mitigation Strategies and Projects (see **Section 4**).

- The Risk Assessment hazards list was updated and the public's concerns were used to confirm the priorities developed by the LVMCOG Governing Board and Planning Group. Furthermore, additional risk sections were developed to address the risk of Energy Disruption (e.g., utility outages) and Climate Change.
- The Hazard Mitigation Strategies and Projects were reviewed and when feasible those ideas that related to hazard mitigation were integrated into the existing mitigation project strategies. Specific issues included were:
  - Improved Public Awareness Programs.
  - Further development of CERT programs.
  - Working with SCE to address concerns related to Energy Disruptions and Wildfire risk.

OVERALL CHANGES IN PRIORITY

The priority of individual mitigation actions for specific hazards has remained consistent across cities since the 2018 Multi-Jurisdictional Hazard Mitigation Plan (MJHMP). Although Pandemic was included as a potential hazard in the updated plan, it does not alter the priority mitigation actions identified by the cities.

SECTION 22. ANNEX F: FLOOD INSURANCE RATE MAPS

This section provides selected Flood Insurance Rate Maps (FIRM) for the cities within the Las Virgenes-Malibu Council of Governments. This information is provided for planning purposes and is not a predictor of future events. The following FIRM notes apply to the maps included.

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply on landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements for the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures.** Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 11. The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum.** For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, MD 20910-3282

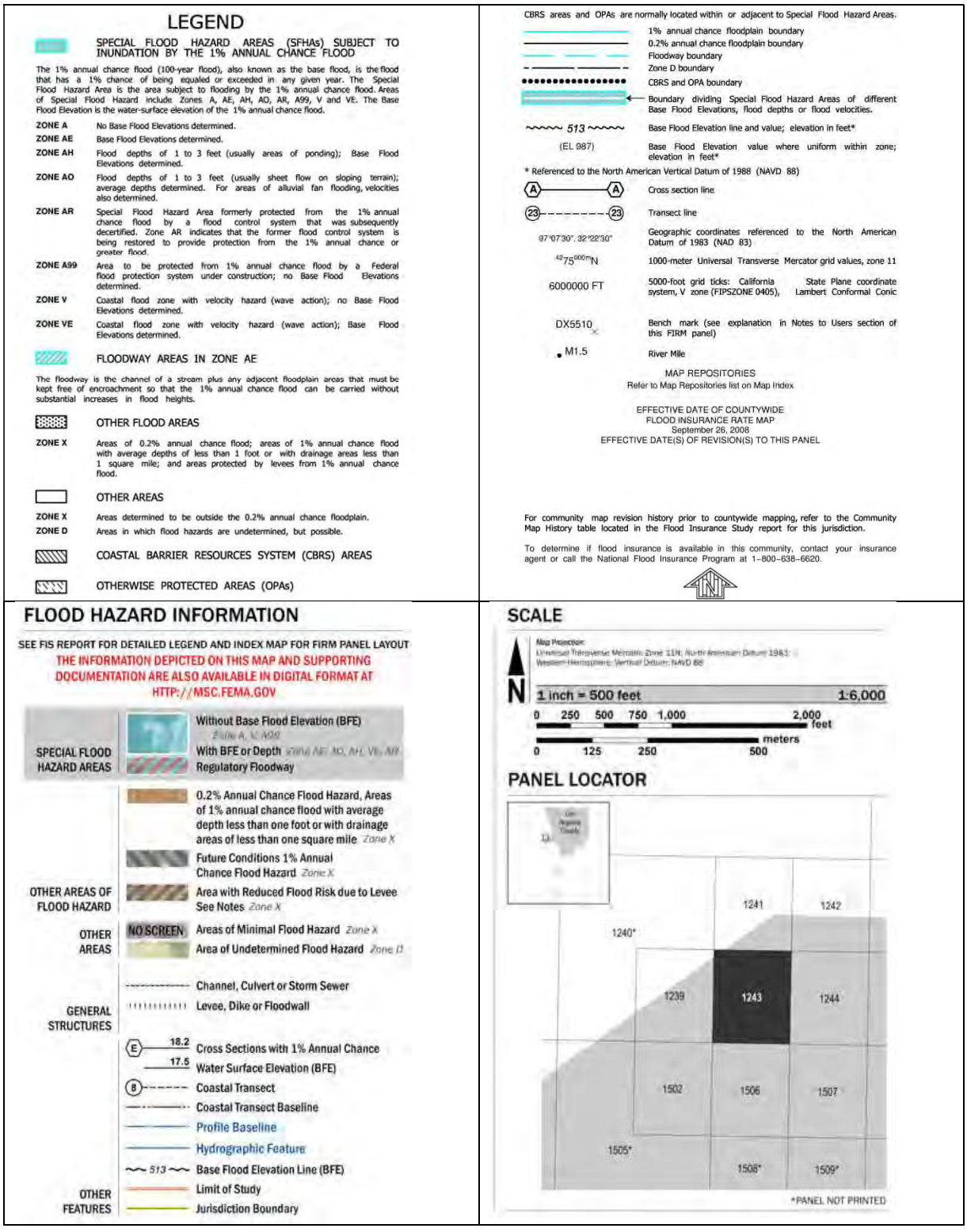
To obtain current elevation description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit its website at http://www.ngs.noaa.gov/.

Base map information shown on this FIRM was derived from U.S. Geological Survey Digital Orthophoto Quadrangles produced at a scale of 1:12,000 from photography dated 1994 or later and from National Geospatial Intelligence Agency imagery produced at a scale of 1:4,000 from photography dated 2003 or later.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables *in the Flood Insurance Study report (which contains authoritative hydraulic data)* may reflect stream channel distances that differ from what is shown on this map.
Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Pease refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, *a Flood insurance Study report,* and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://www.msc.fema.gov/.
If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 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 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary
0.2% annual chance floodplain boundary
Floodway boundary
Zone D boundary
CBRS and OPA boundary
Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513 — Base Flood Elevation line and value; elevation in feet*
(EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

A — A — Cross section line
23 — 23 — Transect line
97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4275000mN — 1000-meter Universal Transverse Mercator grid values, zone 11
6000000 FT — 5000-foot grid ticks: California State Plane coordinate system, V zone (FIPSZONE 0405), Lambert Conformal Conic
DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
September 26, 2008
EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) Zone A, V, A99
- With BFE or Depth Zone AE, AO, AH, VE, AR
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
- Future Conditions 1% Annual Chance Flood Hazard Zone X
- Area with Reduced Flood Risk due to Levee See Notes Zone X

OTHER AREAS
- NO SCREEN Areas of Minimal Flood Hazard Zone X
- Area of Undetermined Flood Hazard Zone D

GENERAL STRUCTURES
- Channel, Culvert or Storm Sewer
- Levee, Dike or Floodwall

OTHER FEATURES
- 18.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation (BFE)
- Coastal Transect
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary

SCALE

N

Map Projection:
Universal Transverse Mercator Zone 11N; North American Datum 1983;
Western Hemisphere; Vertical Datum: NAVD 88

1 inch = 500 feet 1:6,000

0 250 500 750 1,000 2,000 feet

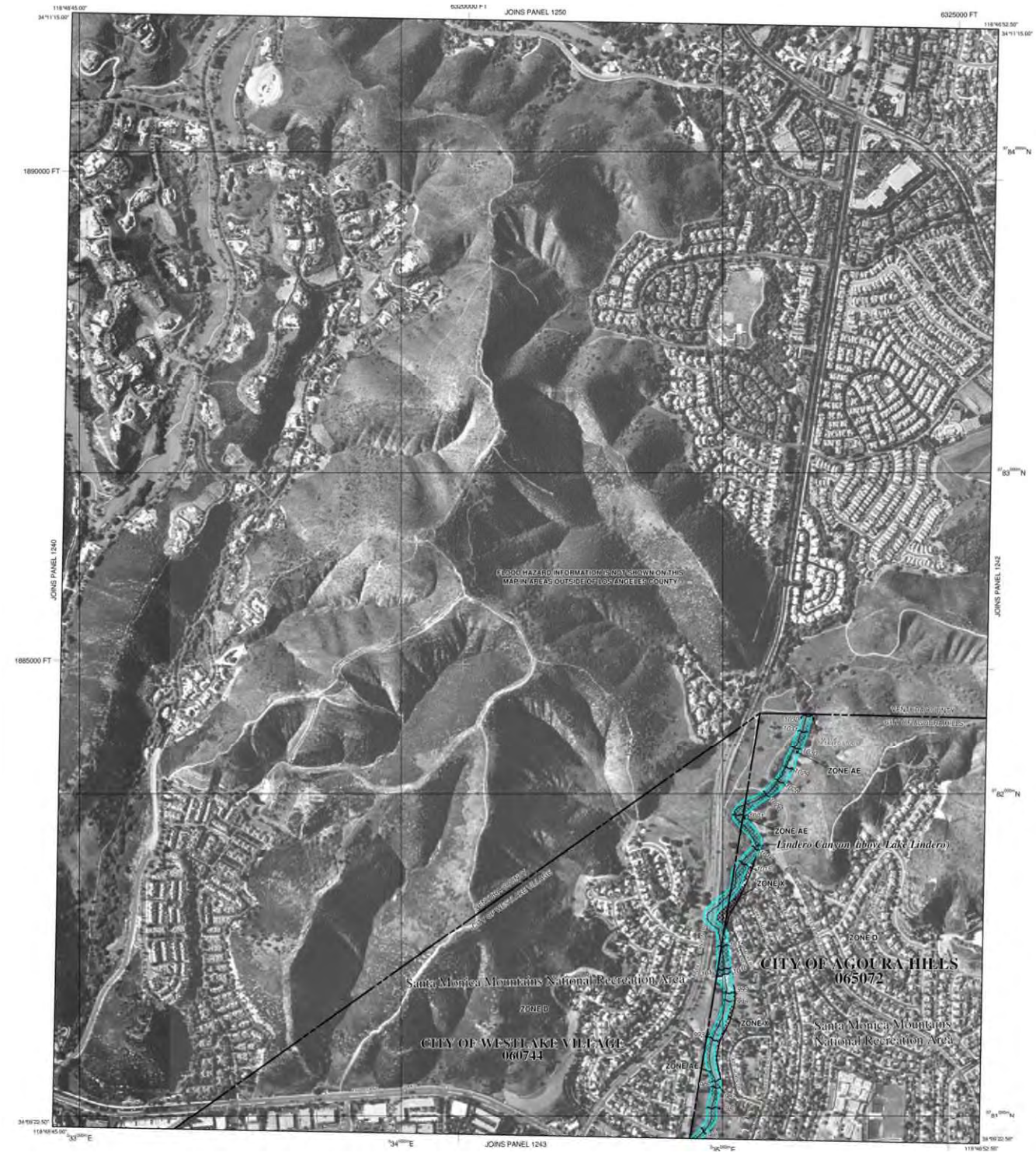
0 125 250 500 meters

PANEL LOCATOR

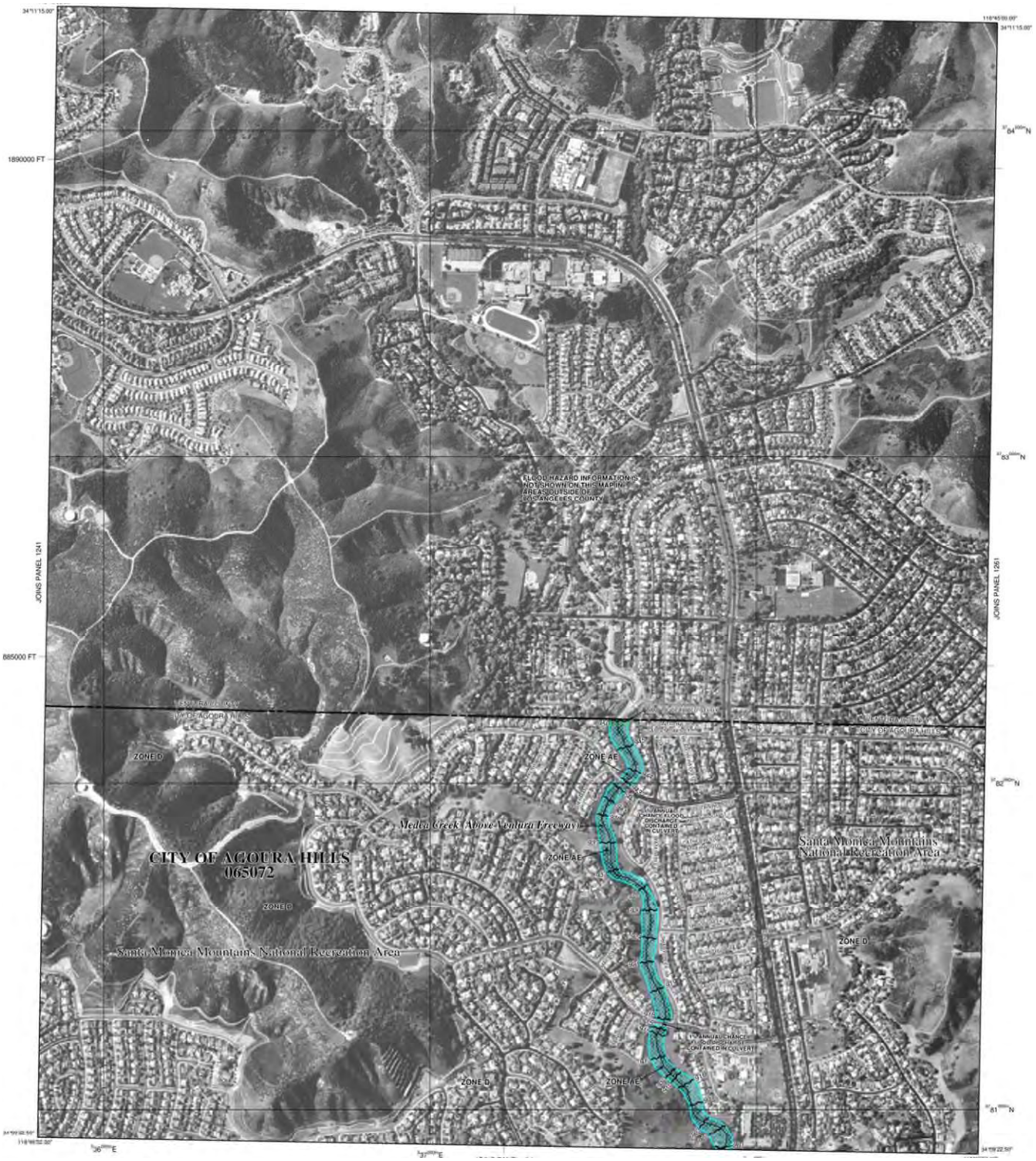
1241 1242
1240*
1239 1243 1244
1502 1506 1507
1505* 1508* 1509*

*PANEL NOT PRINTED

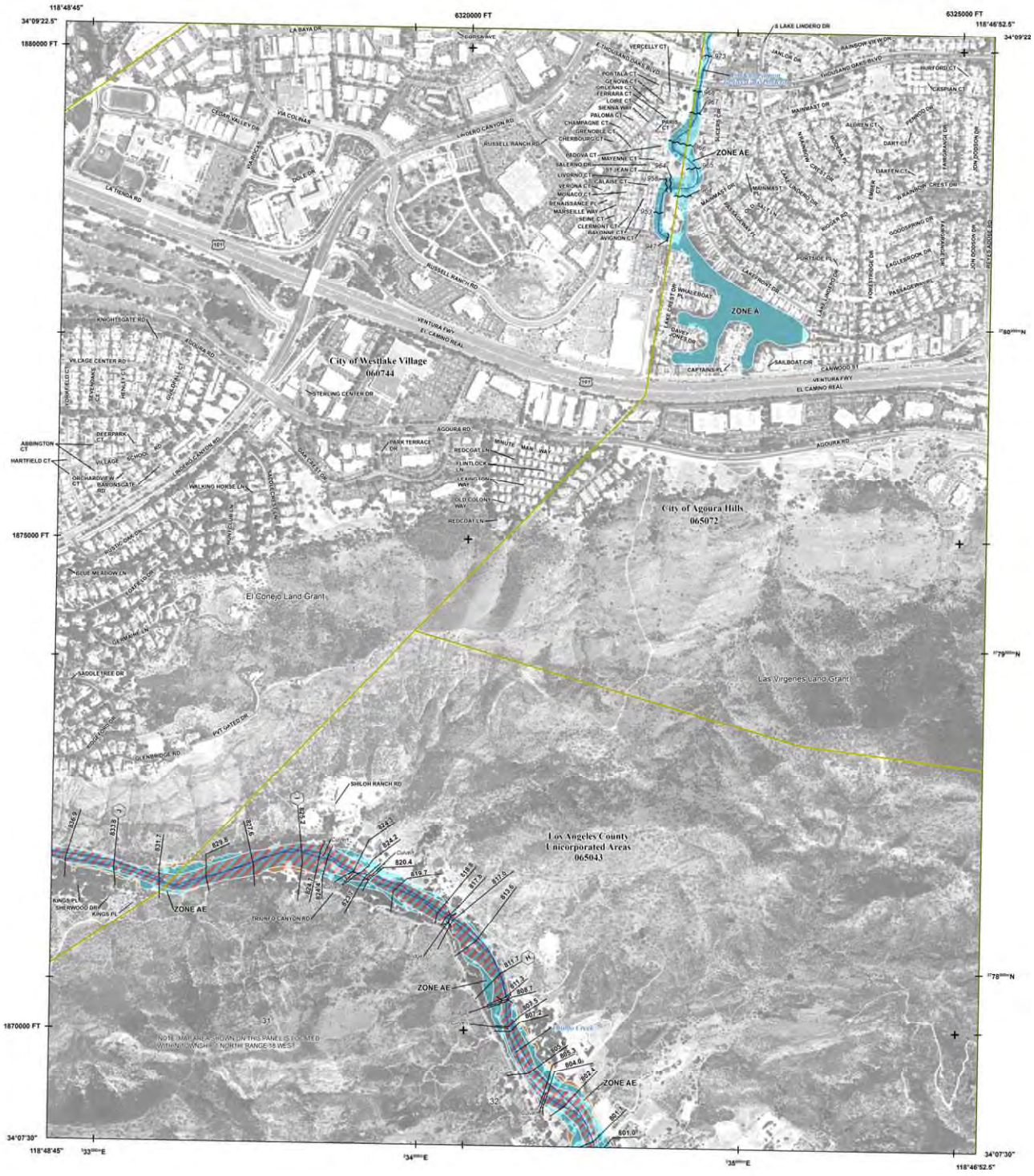
CITY OF AGOURA HILLS FIRMS



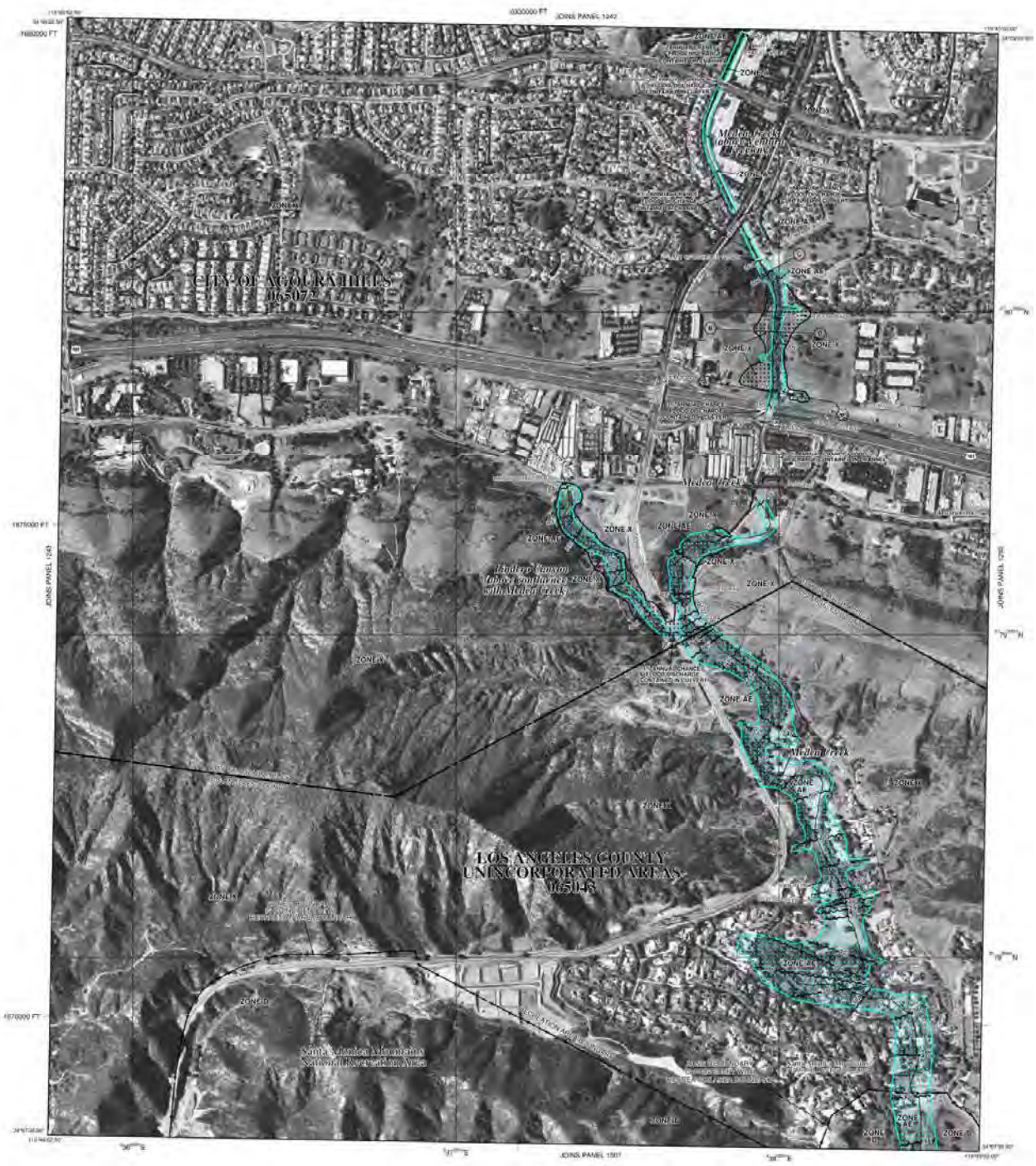
Map 107: Agoura Hills and Westlake Village FIRM Panel 1241



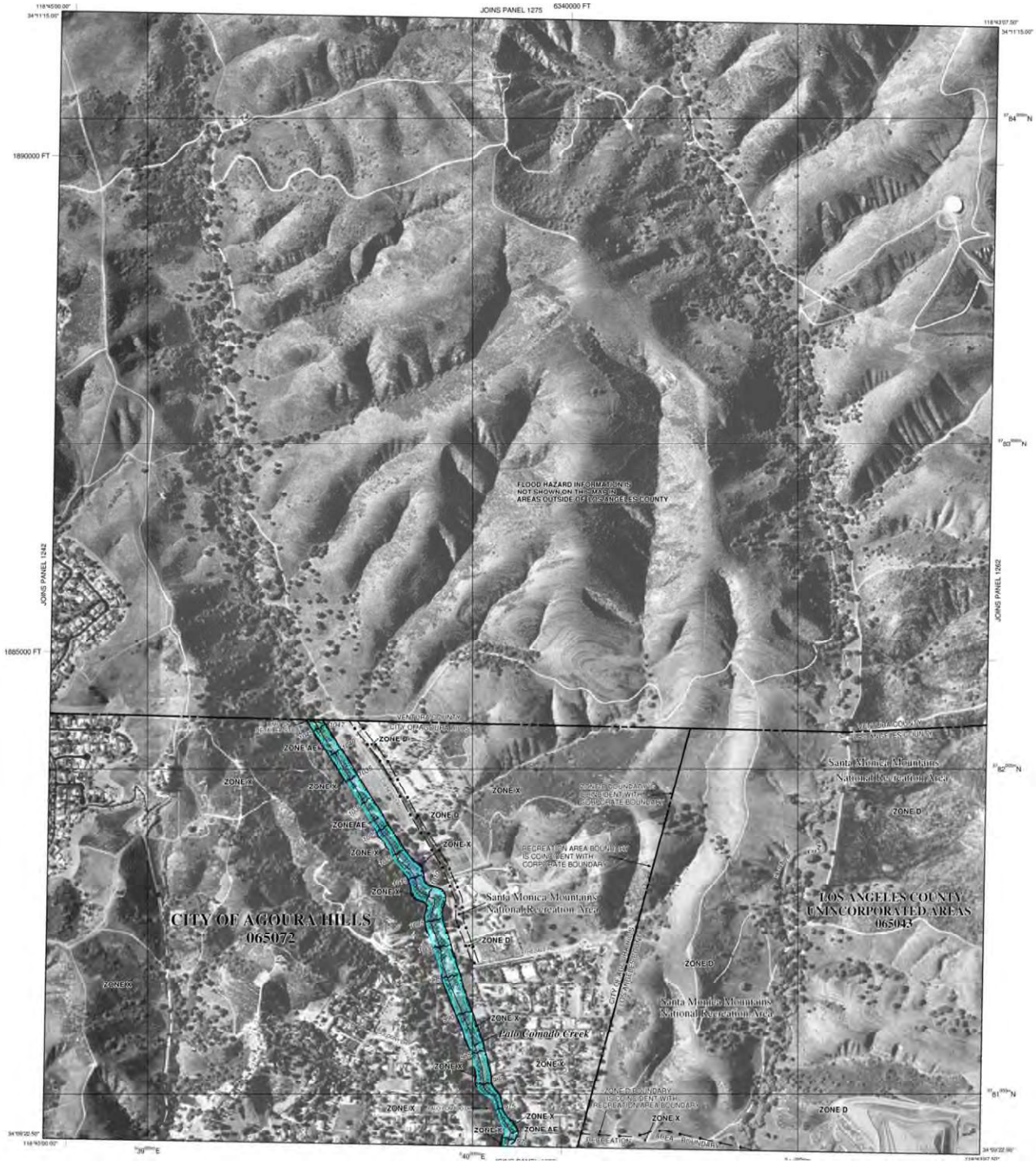
Map 108: Agoura Hills FIRM Panel 1242



Map 109: Agoura Hills FIRM Panel 1243



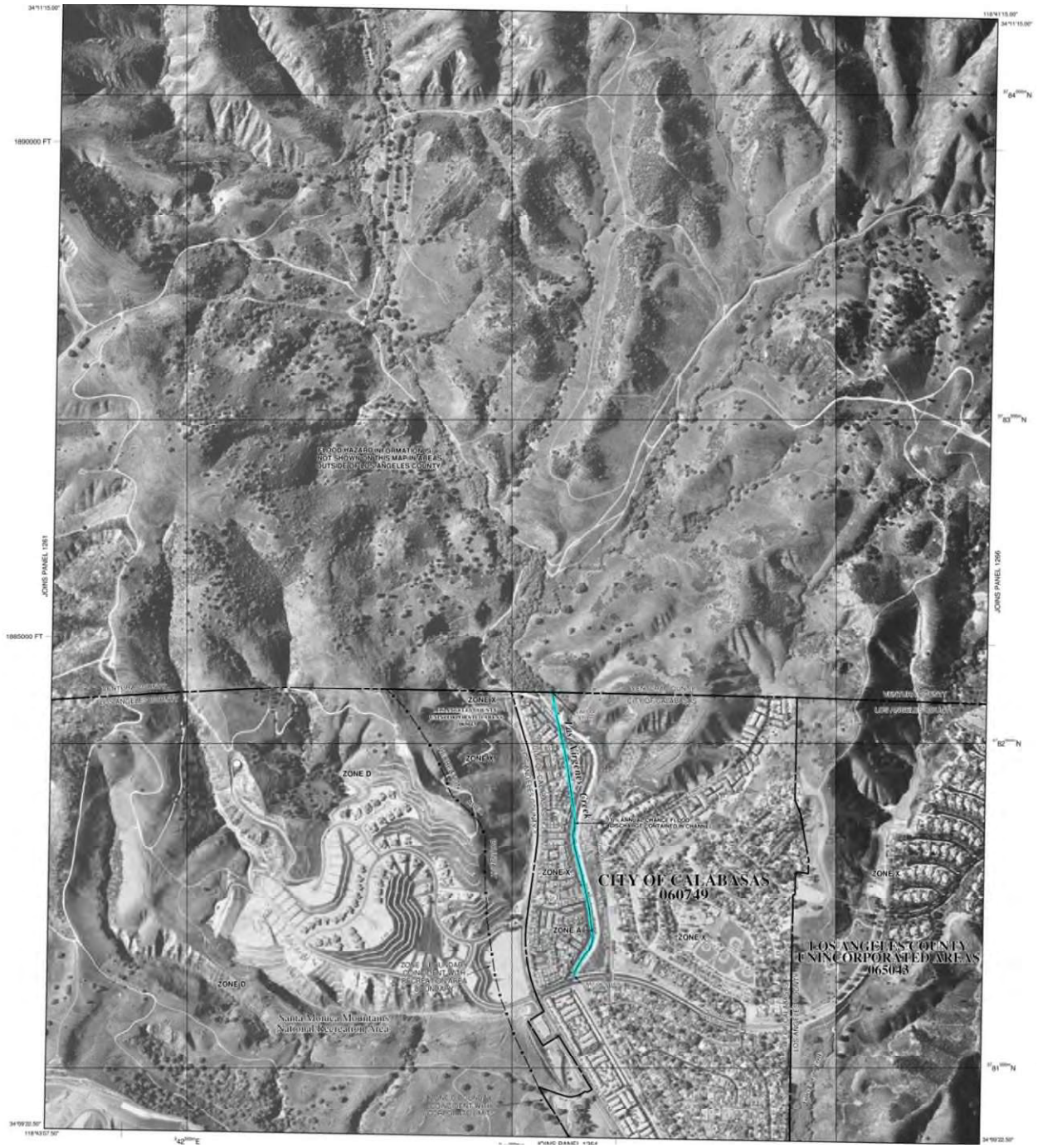
Map 110: Agoura Hills FIRM Panel 1244



Map 111: Agoura Hills FIRM Panel 1261

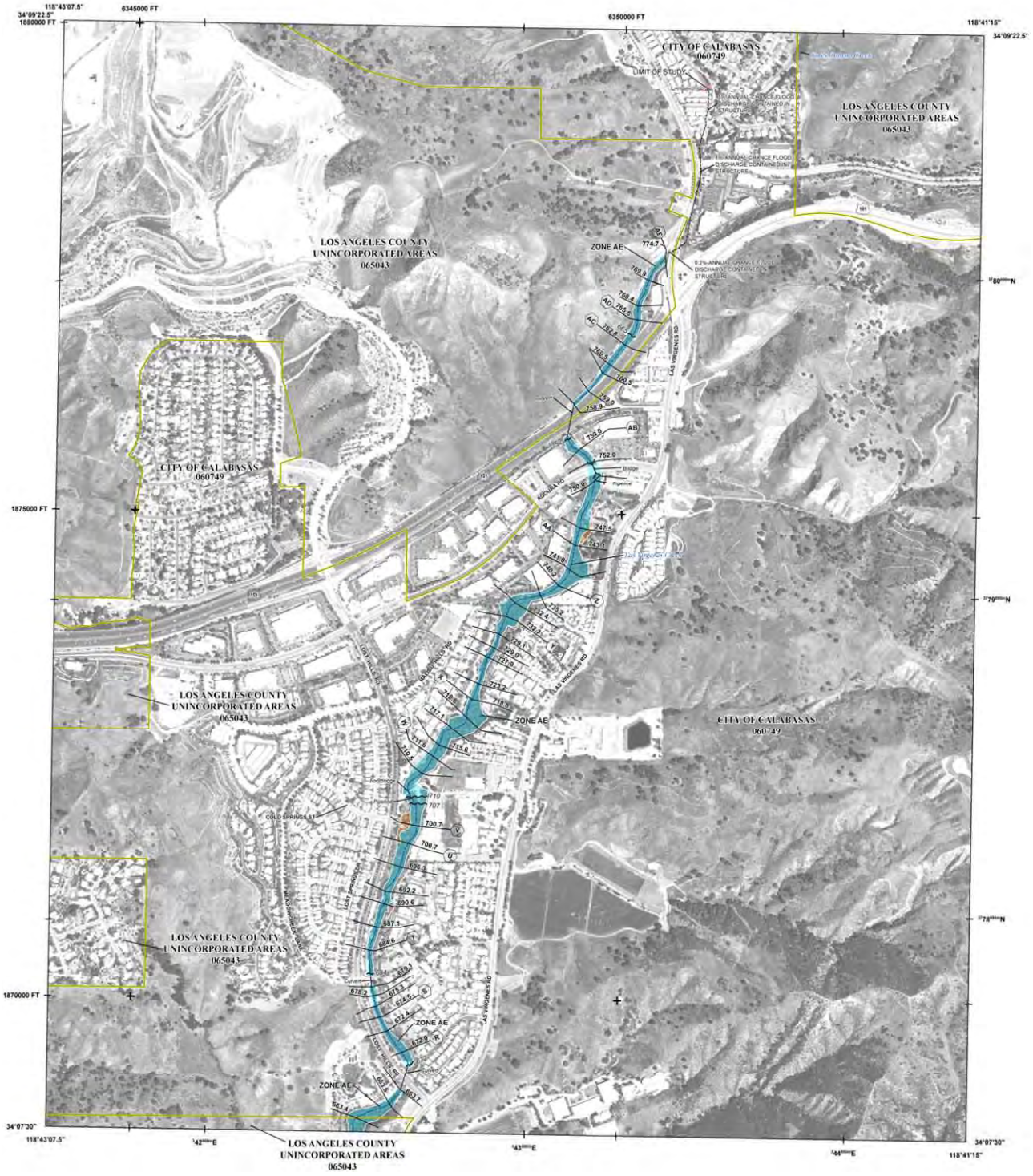
Map 112: Agoura Hills and Calabasas FIRM Panel 1263

CITY OF CALABASAS FIRMS

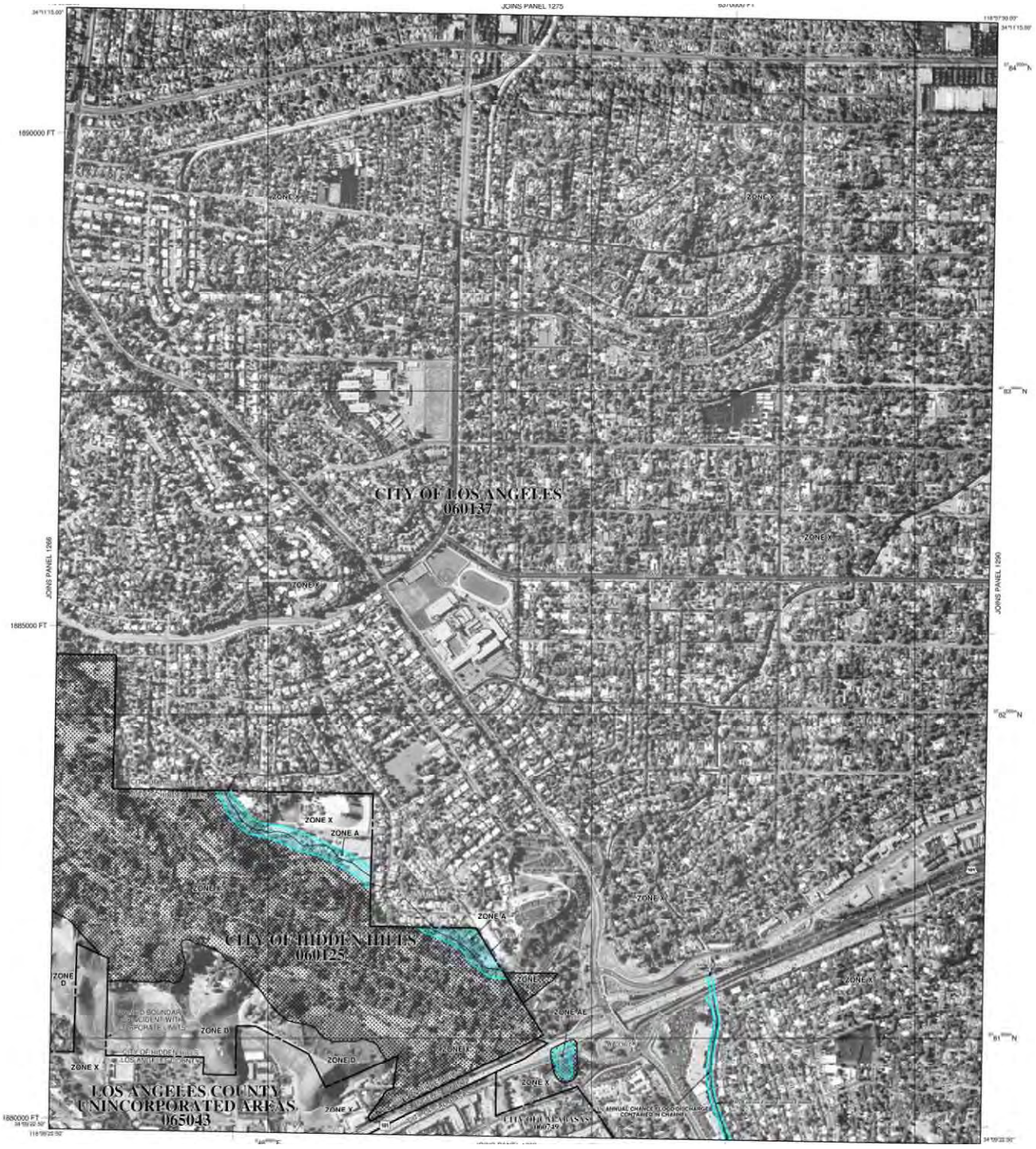


Map 113: Calabasas FIRM Panel 1262

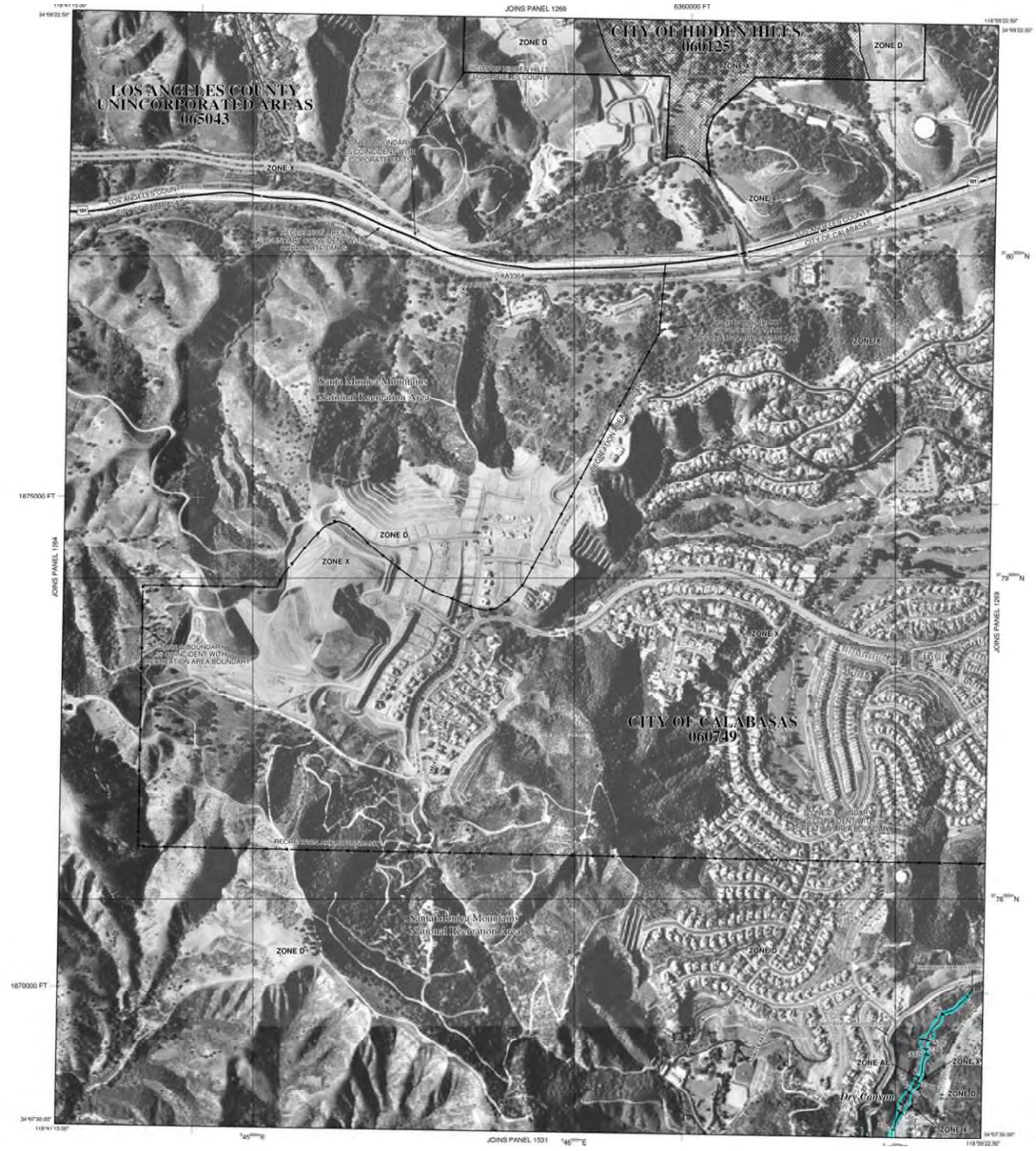
Map 114: Calabasas FIRM Panel 1263



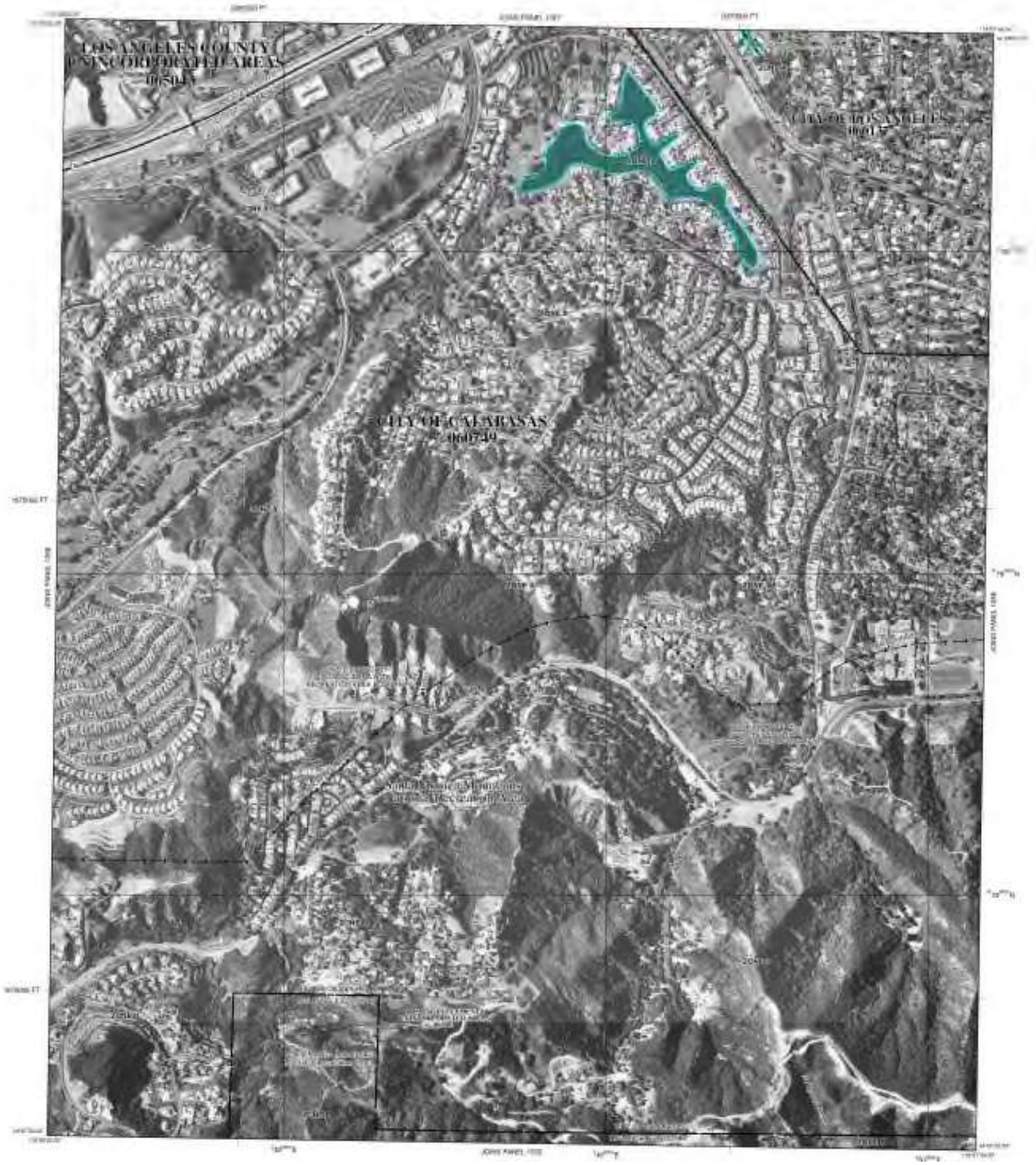
Map 115: Calabasas FIRM Panel 1264



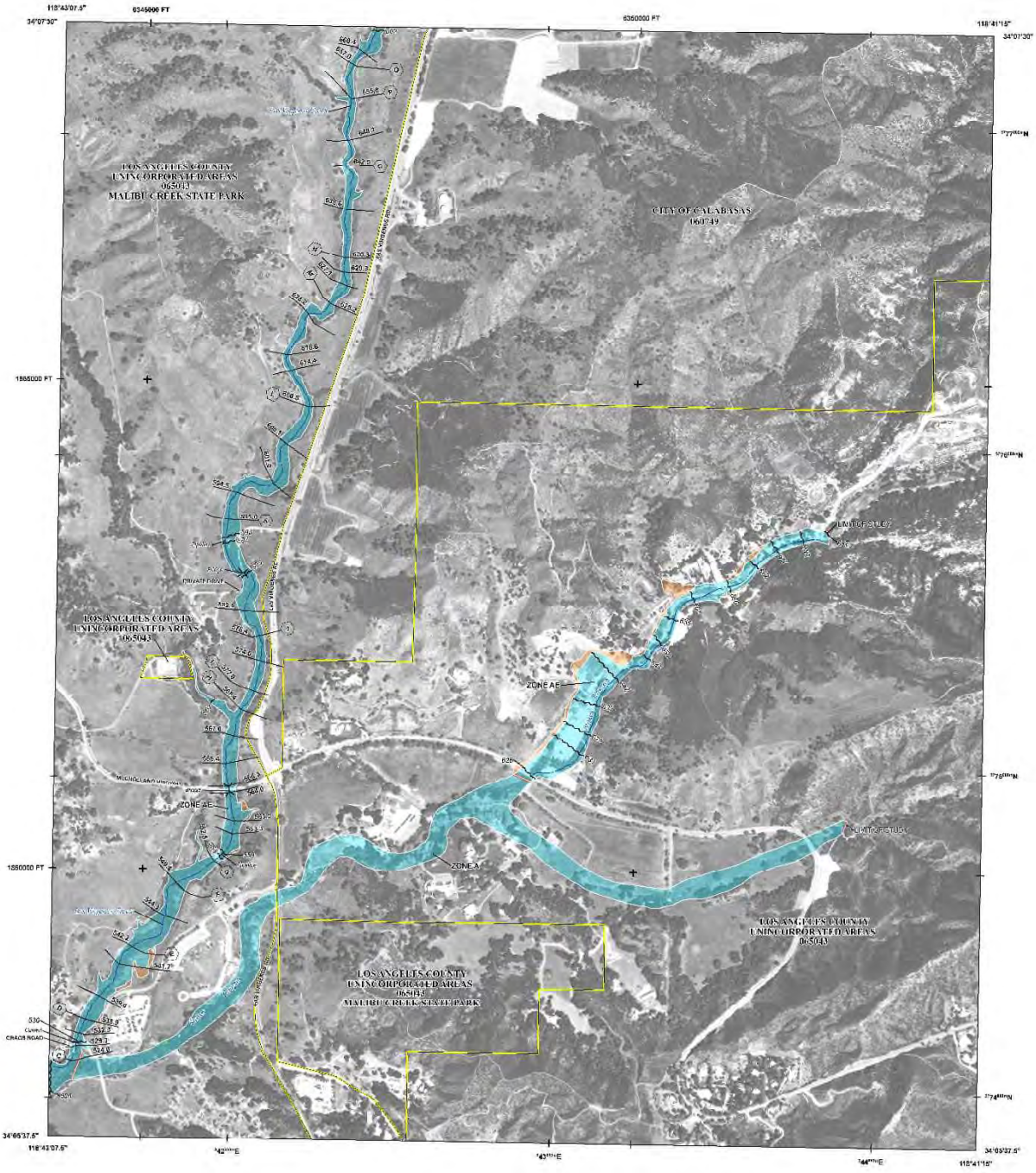
Map 116: Calabasas FIRM Panel 1267



Map 117: Calabasas FIRM Panel 1268

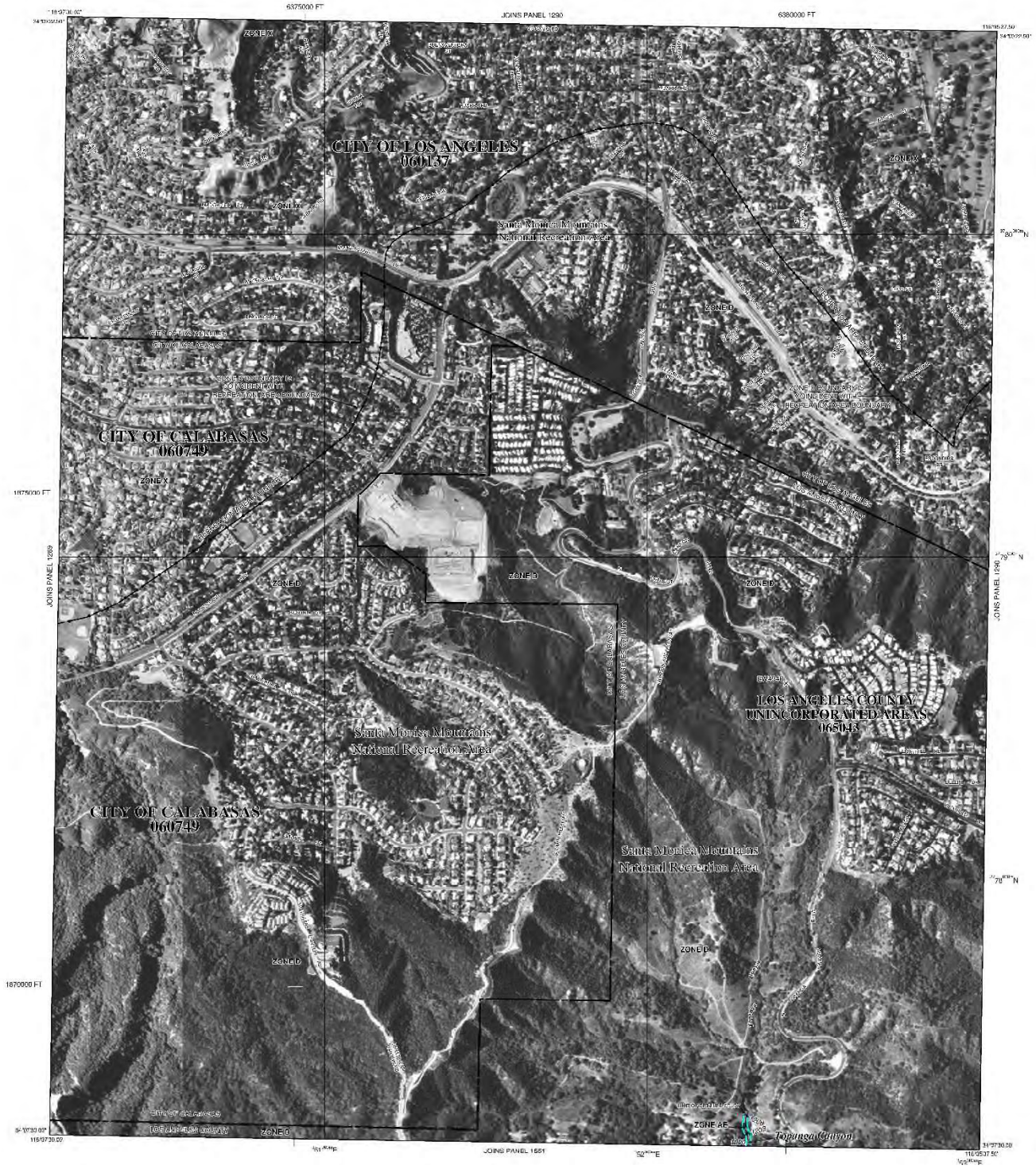


Map 118: Calabasas FIRM Panel 1269



Map 119: Calabasas FIRM Panel 1527

Map 120: Calabasas FIRM Panel 1531



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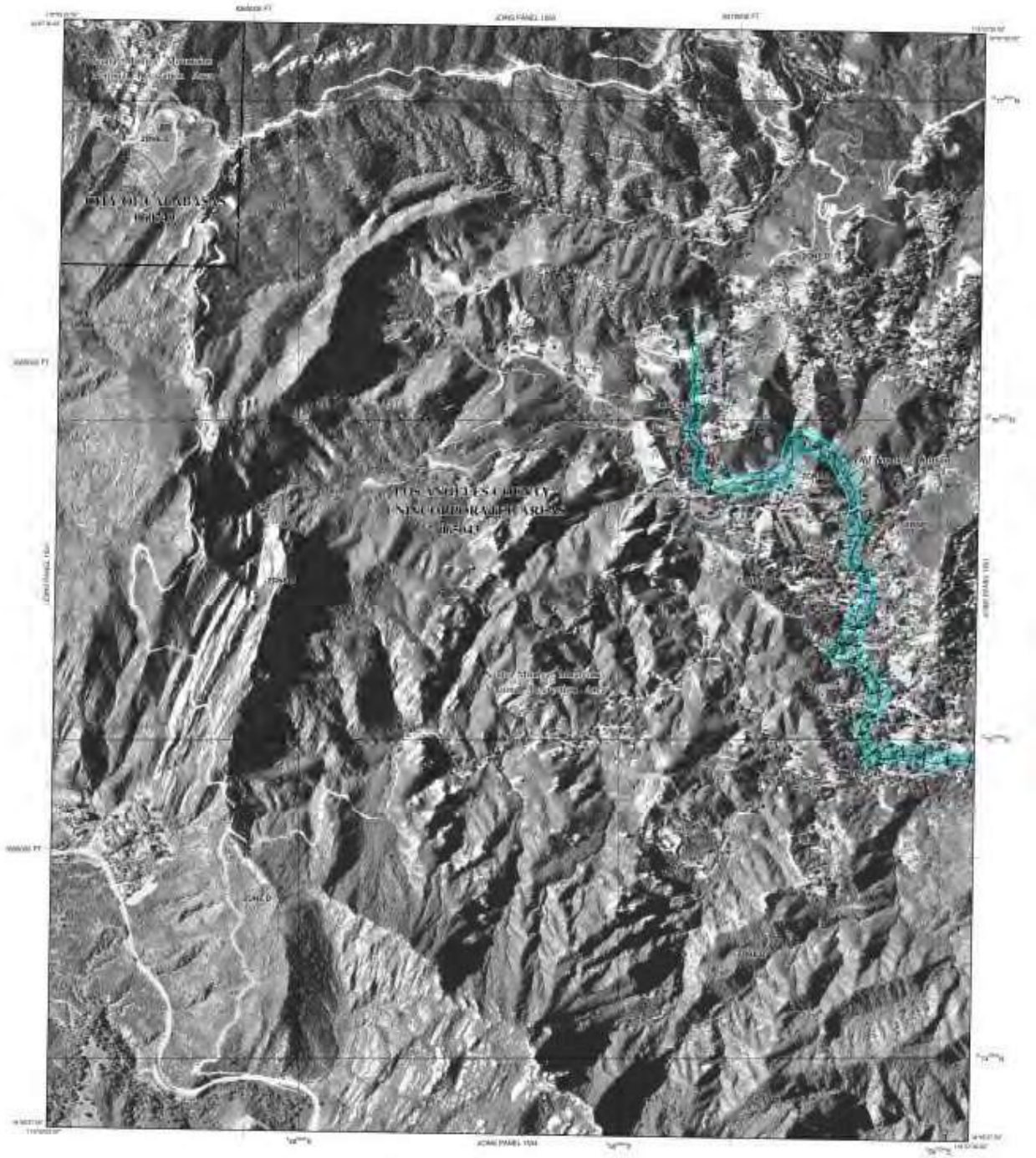
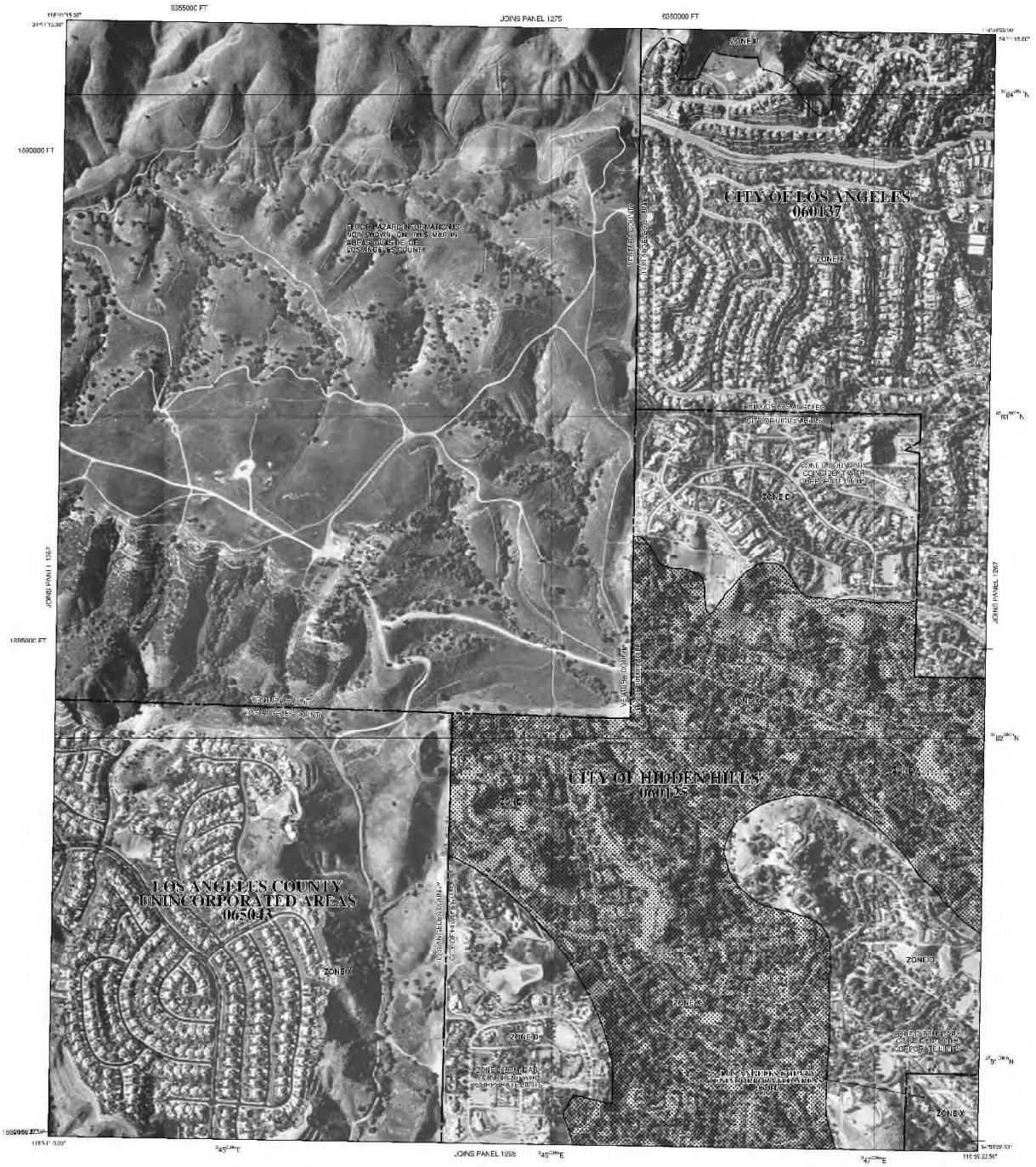
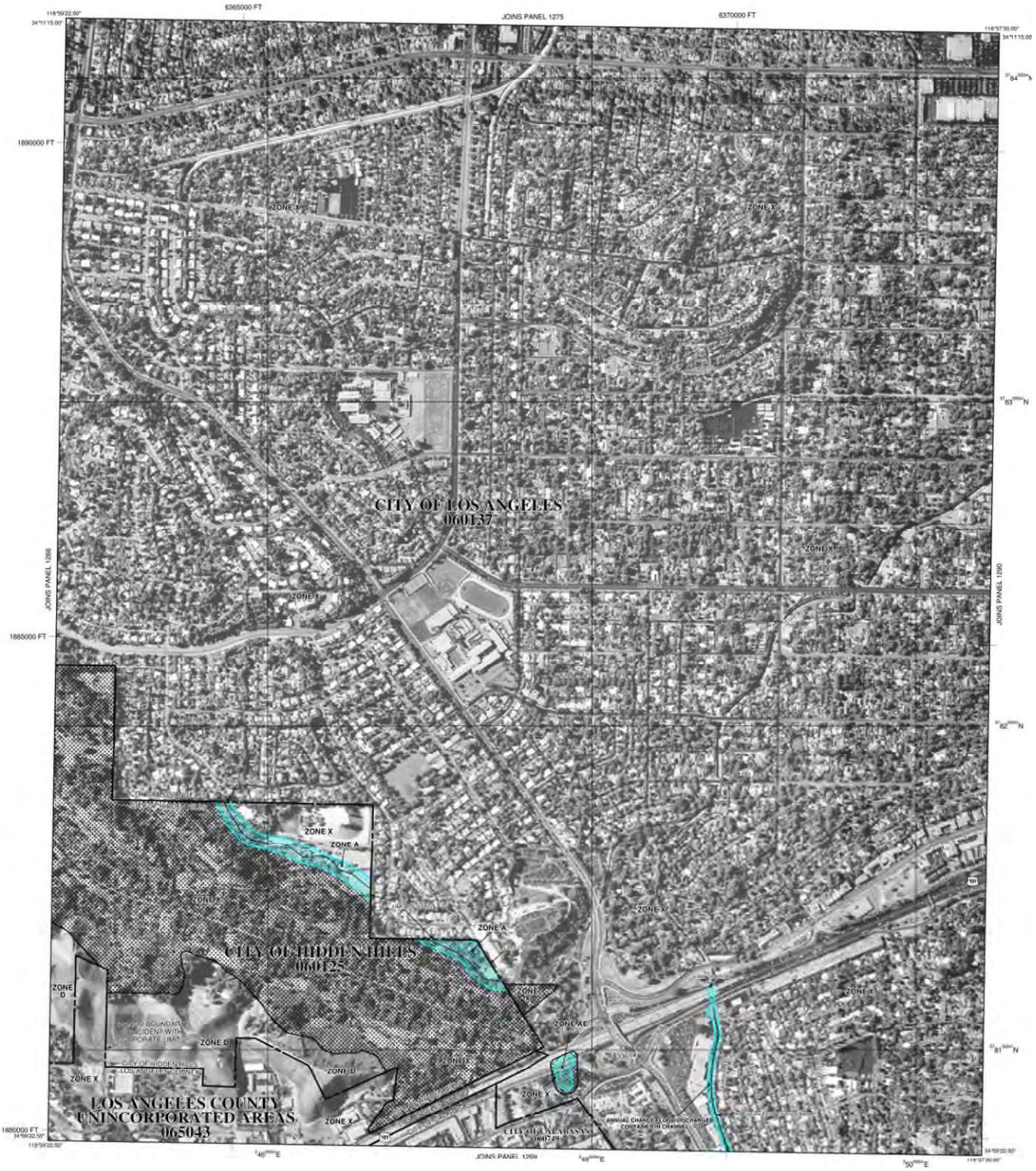


Map 122: Calabasas FIRM Panel 1532

HIDDEN HILLS FIRMS



Map 123: Hidden Hills FIRM Panel 1266



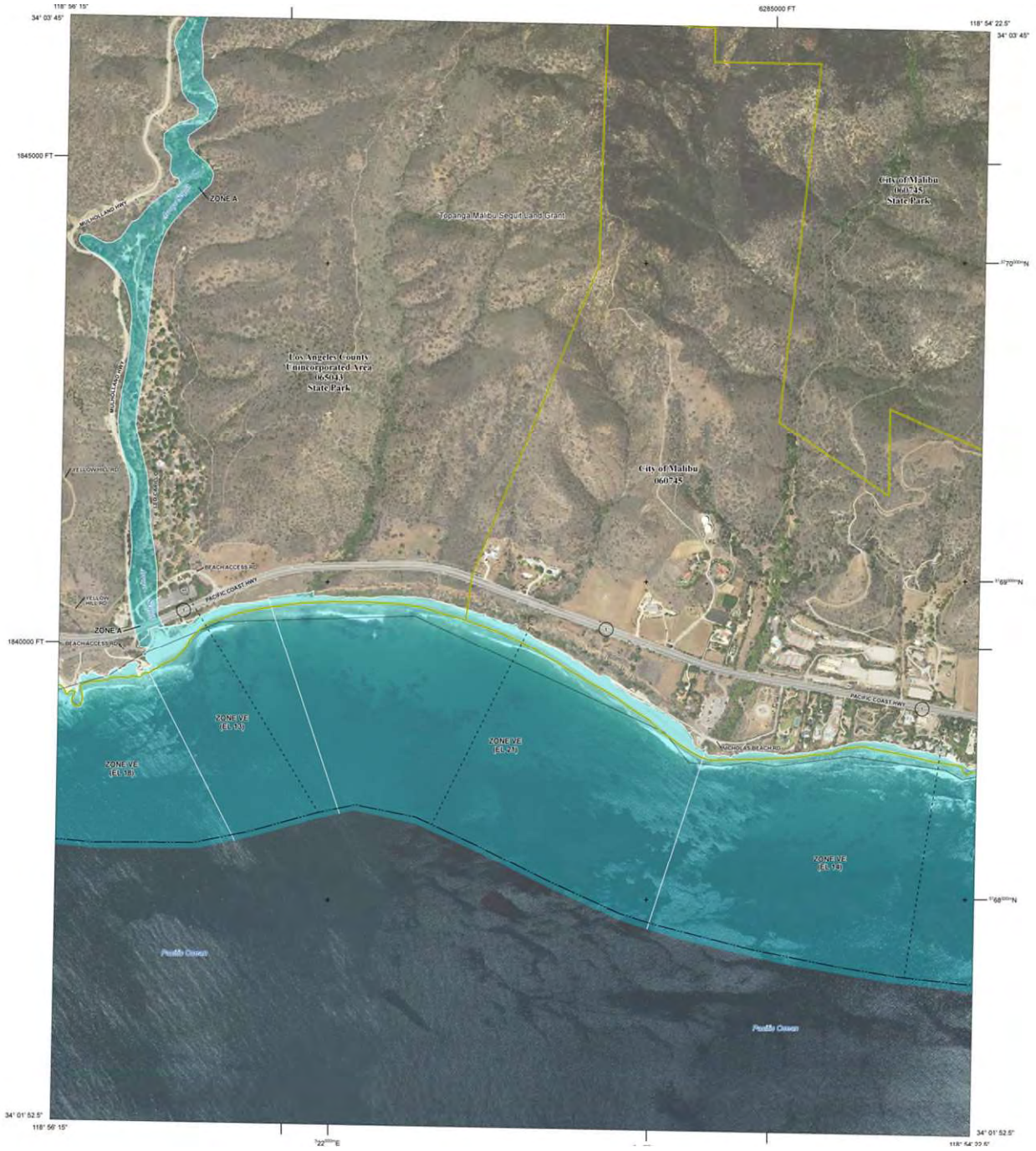
Map 124: Hidden Hills FIRM Panel 1267

Map 125: Calabasas and Hidden Hills FIRM Panel 1268

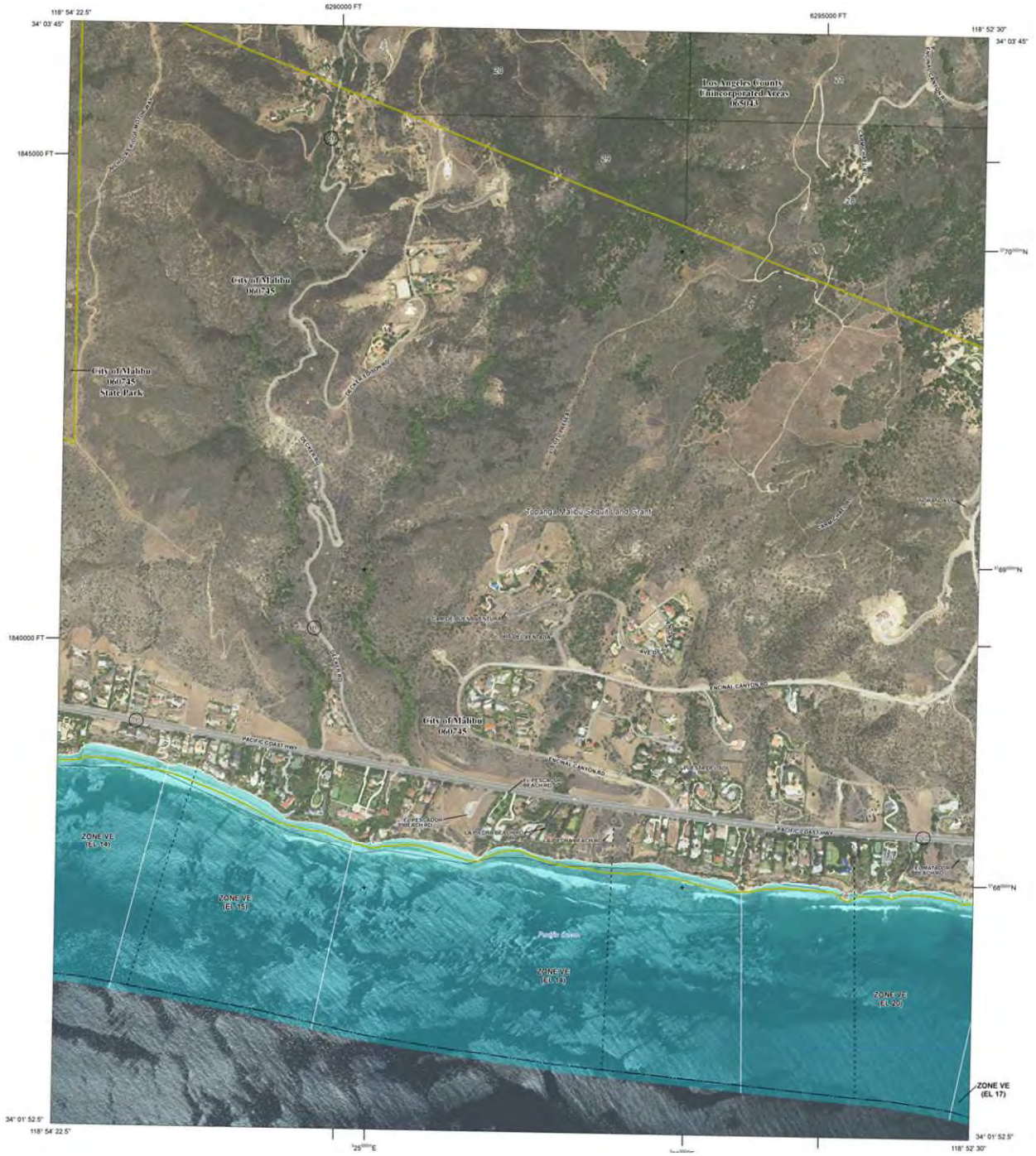
MALIBU FIRMS

Map 126: Malibu FIRM Panel 1485

Map 127: Malibu FIRM Panel 1487

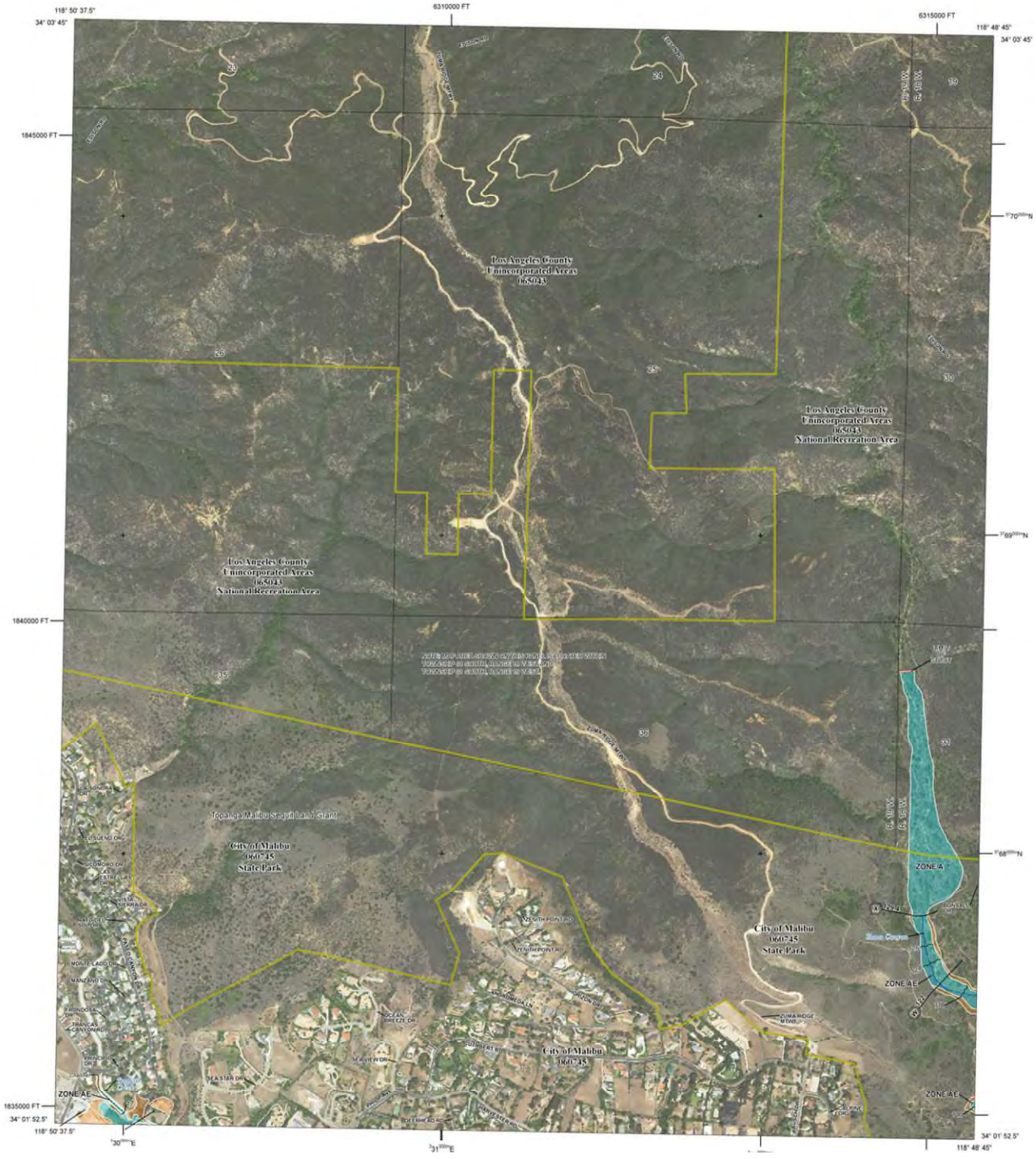


Map 128: Malibu FIRM Panel 1491

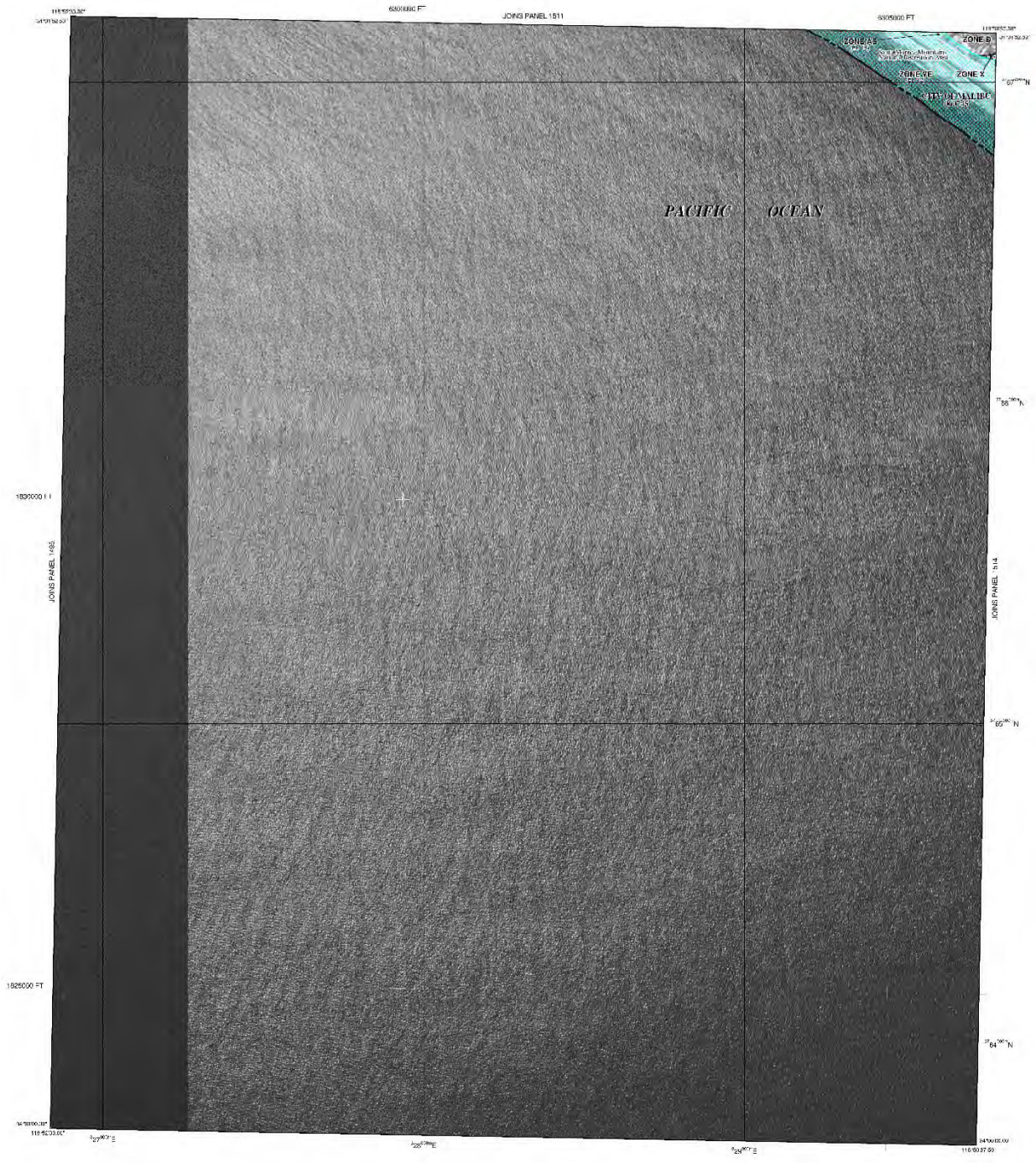


Map 129: Malibu FIRM Panel 1492

Map 130: Malibu FIRM Panel 1511

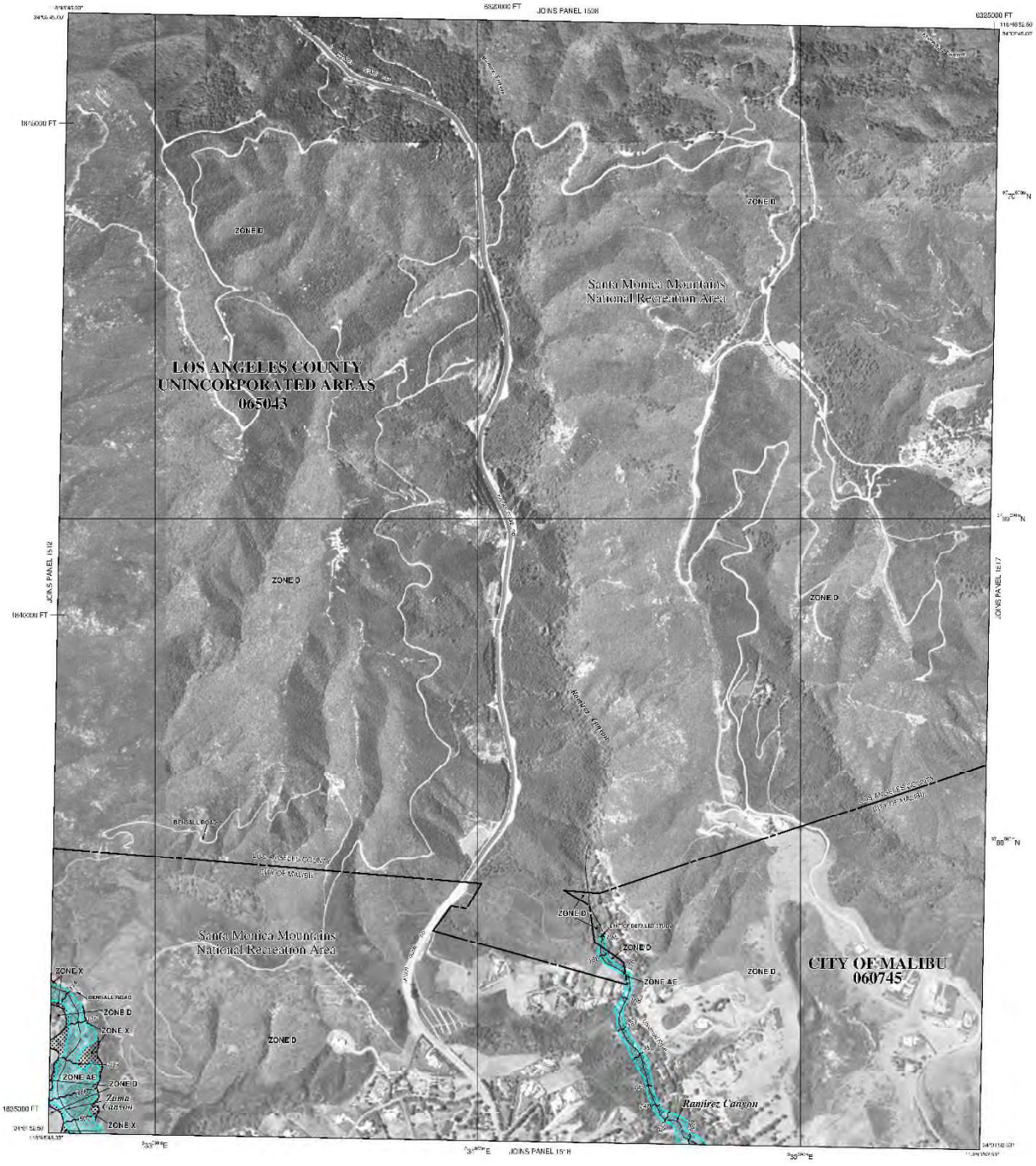


Map 131: Malibu FIRM Panel 1512

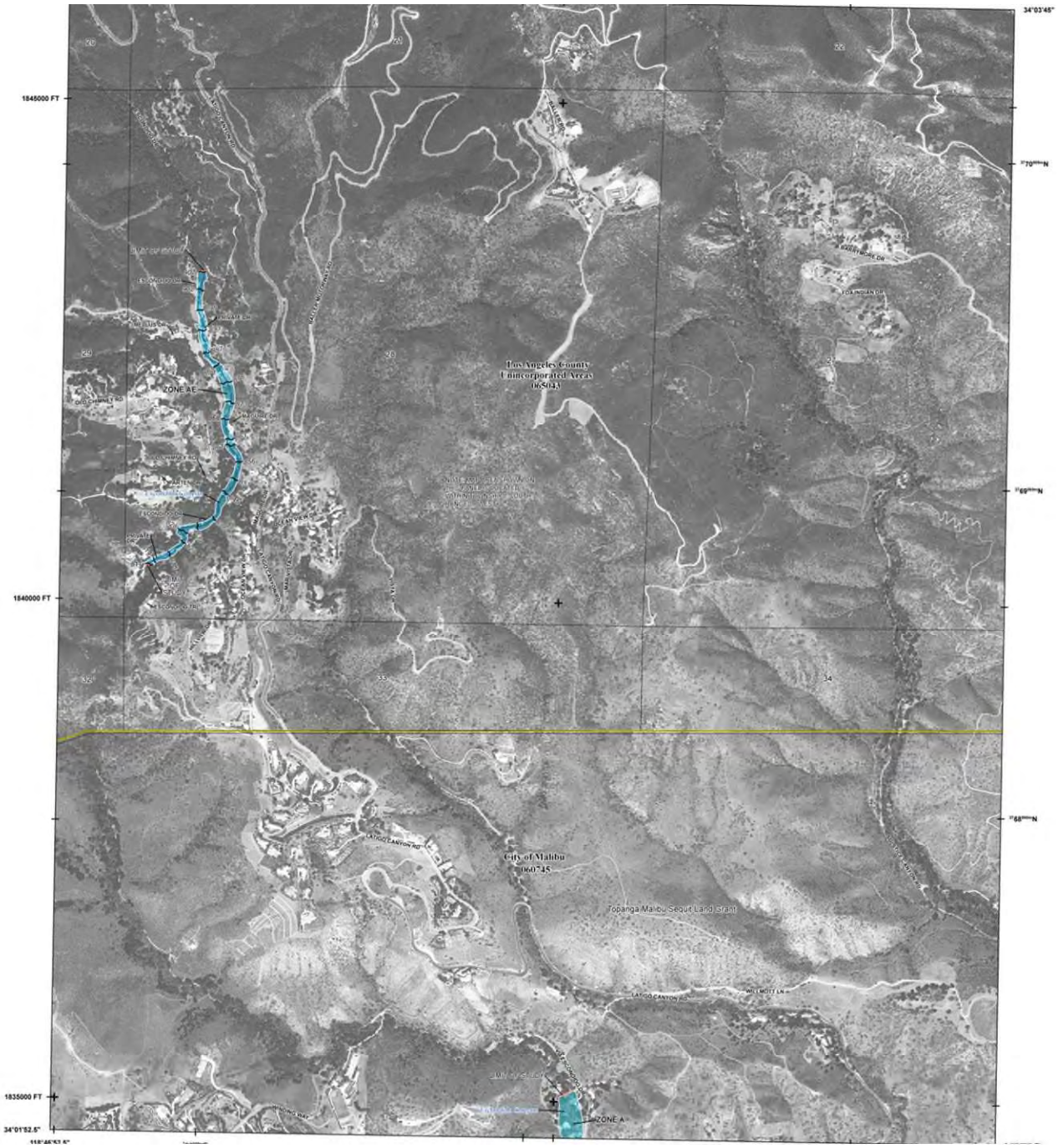


Map 132: Malibu FIRM Panel 1513

Map 133: Malibu FIRM Panel 1514



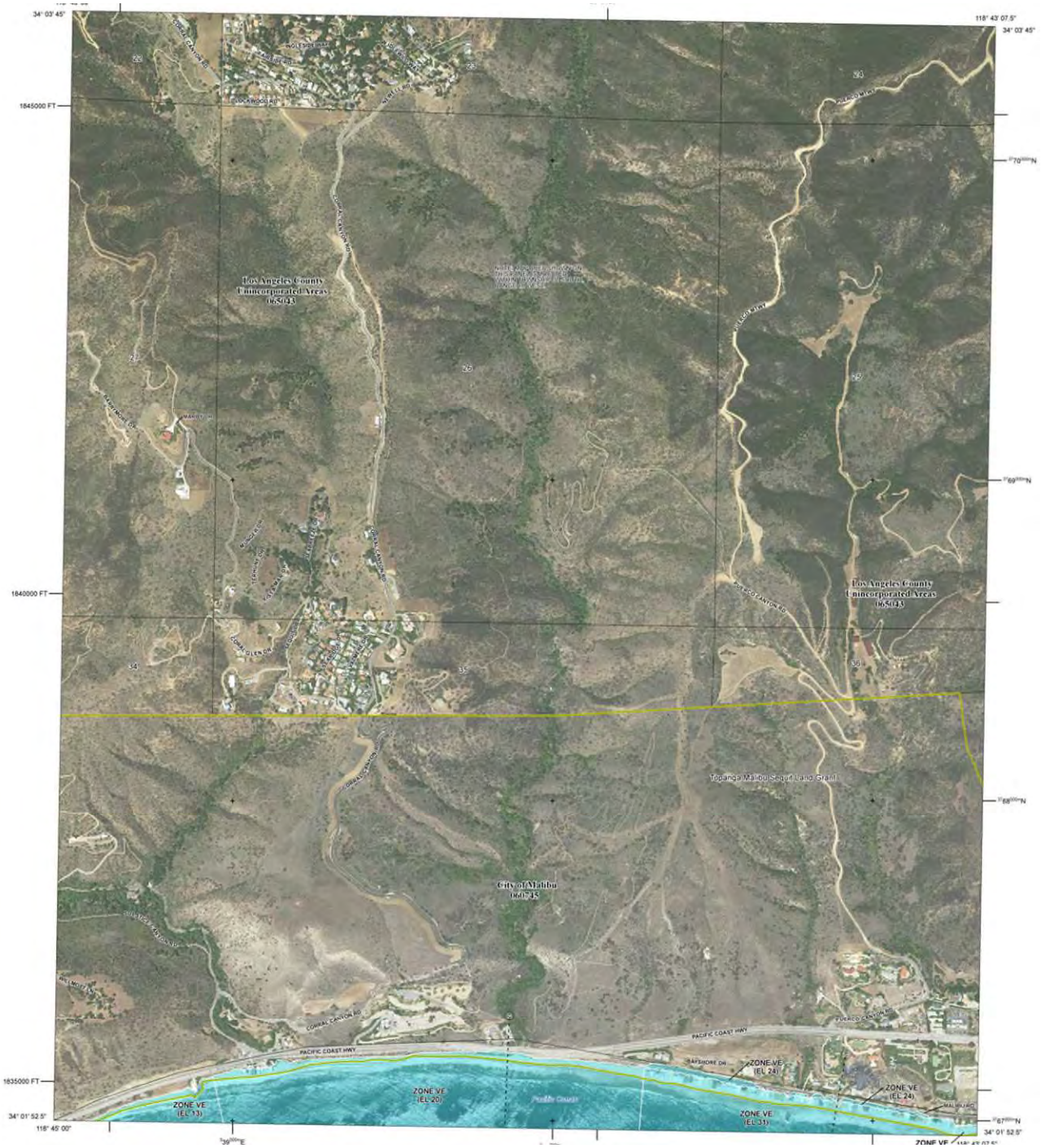
Map 134: Malibu FIRM Panel 1516



Map 135: Malibu FIRM Panel 1517

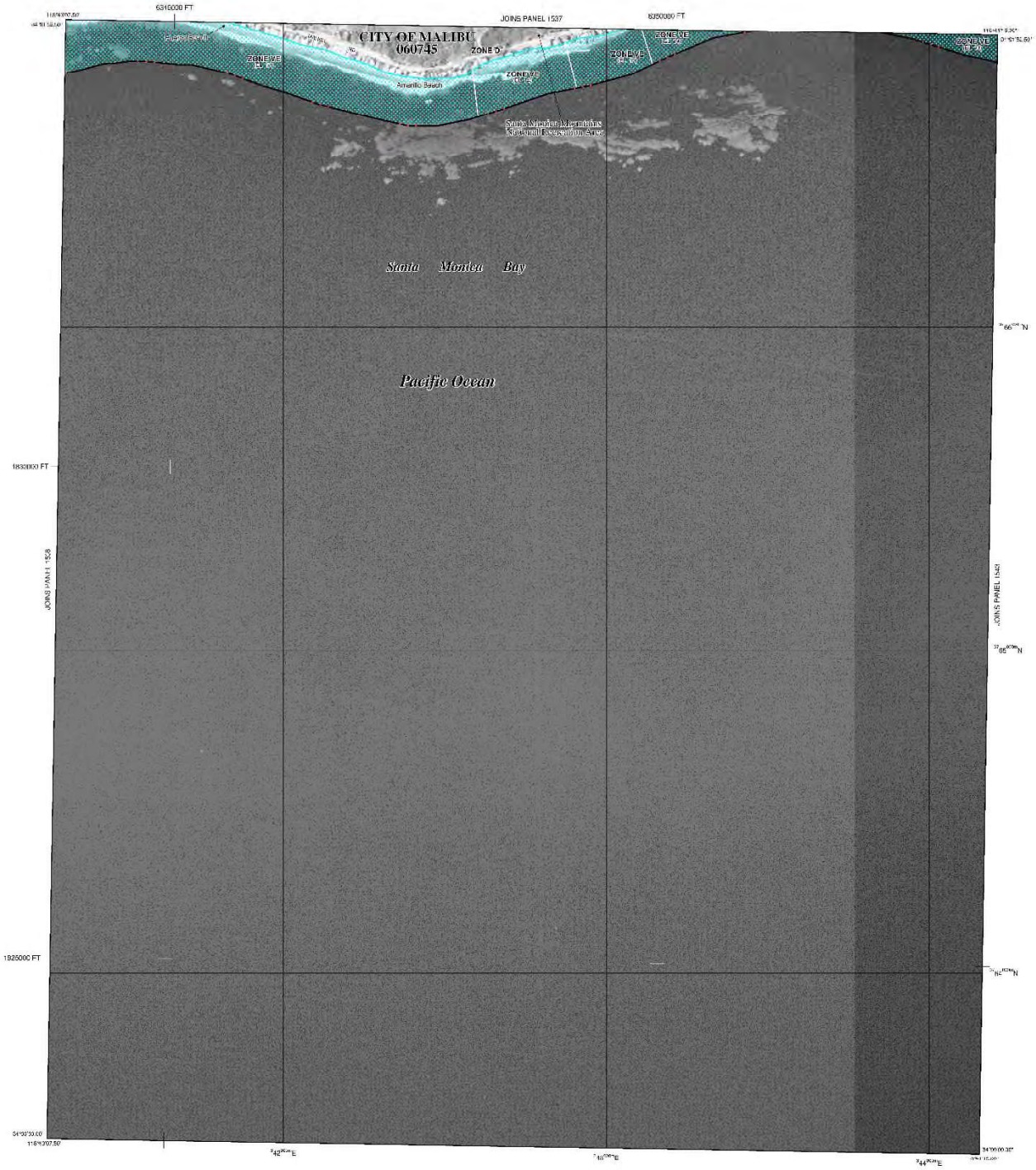
Map 136: Malibu FIRM Panel 1518

Map 137: Malibu FIRM Panel 1519

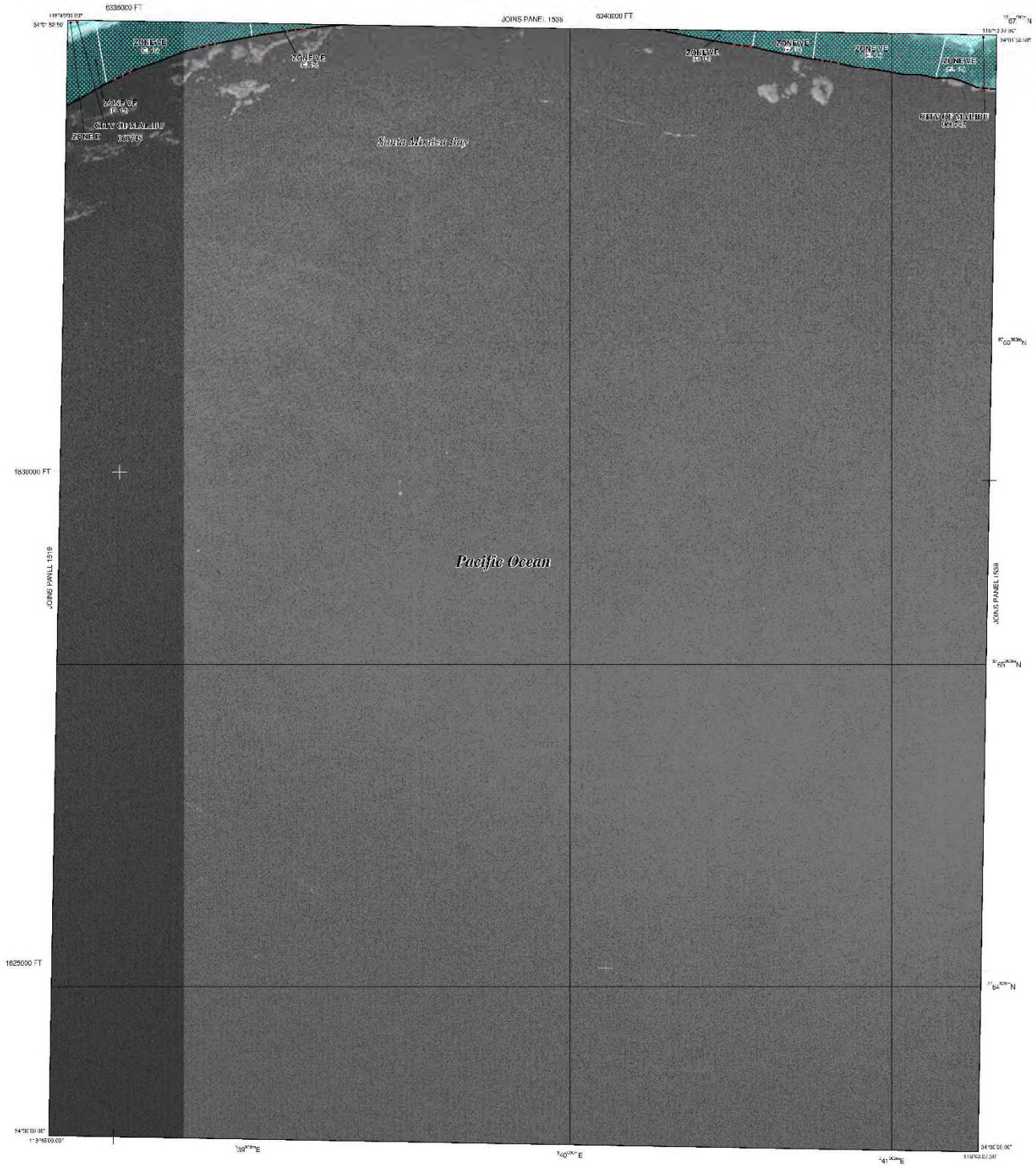


Map 138: Malibu FIRM Panel 1536

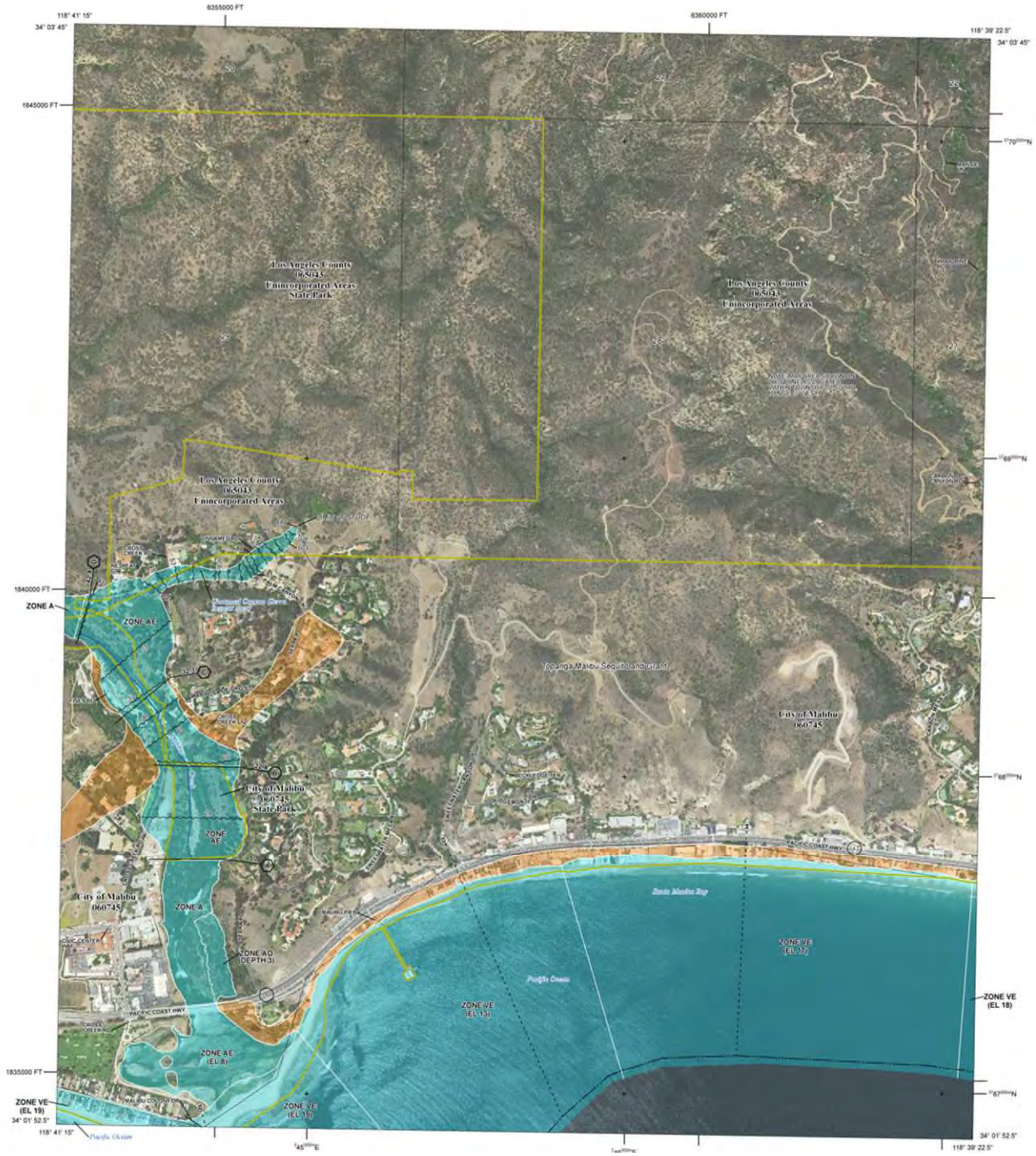
Map 139: Malibu FIRM Panel 1537



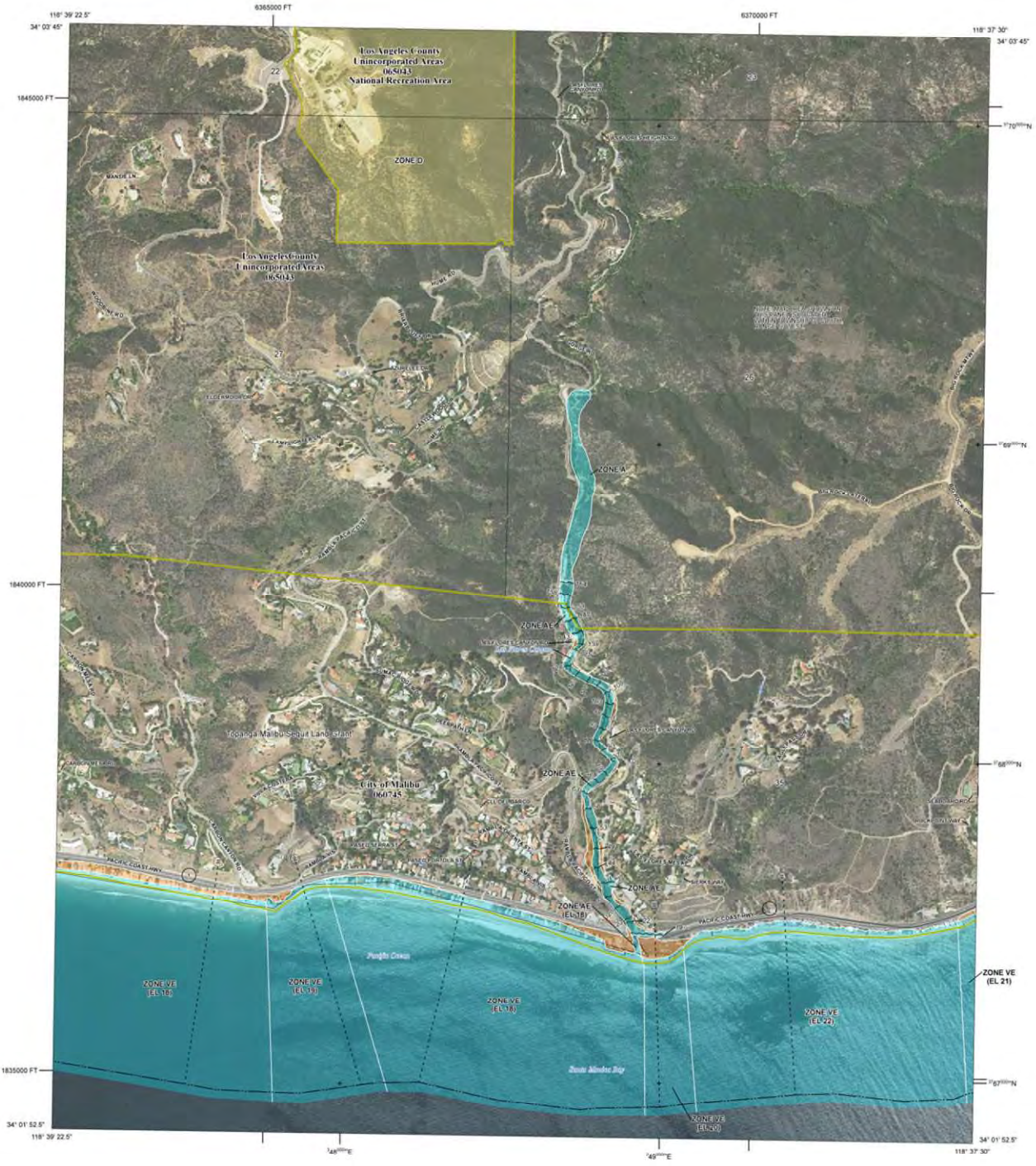
Map 140: Malibu FIRM Panel 1539



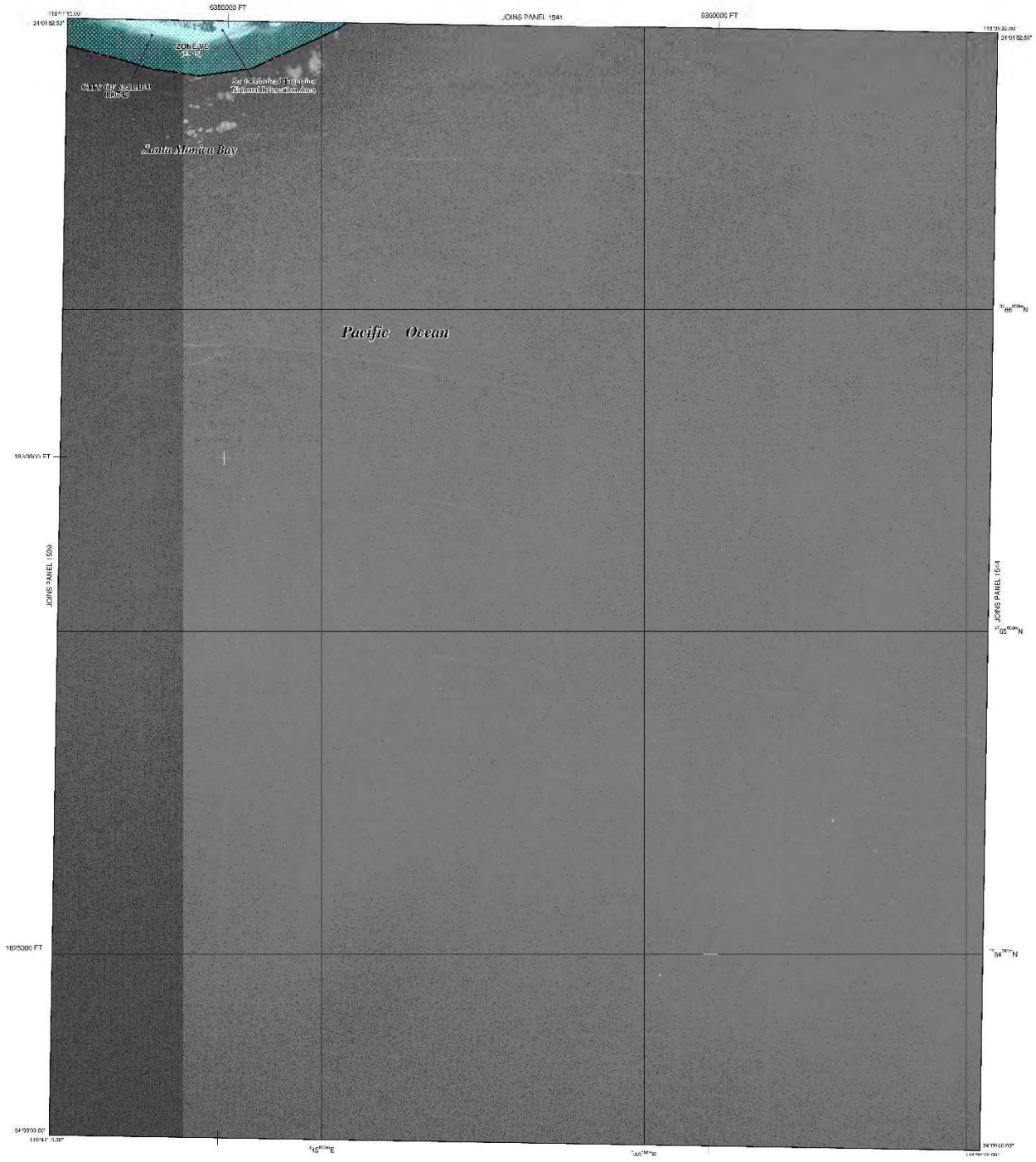
Map 141: Malibu FIRM Panel 1538



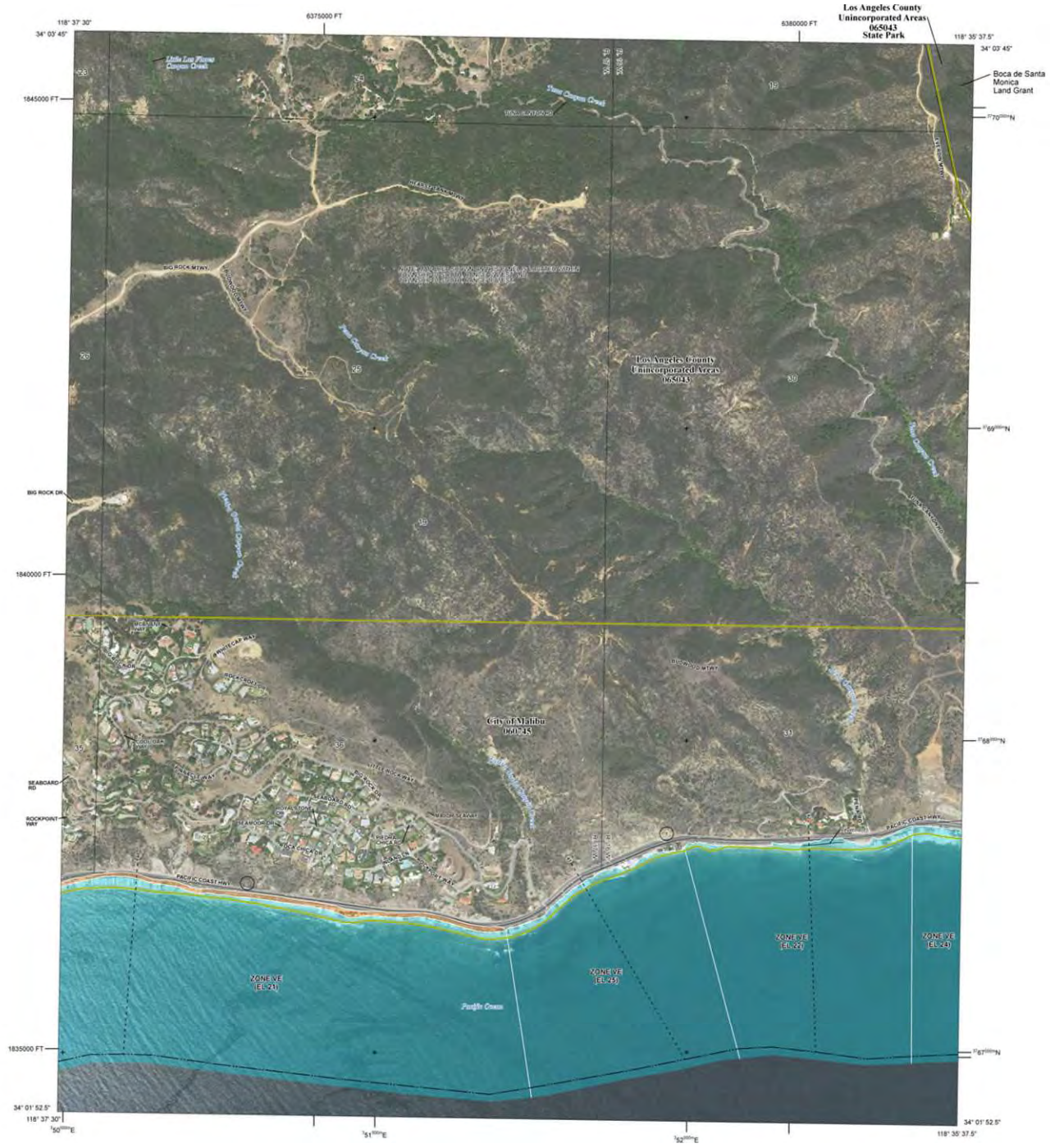
Map 142: Malibu FIRM Panel 1541



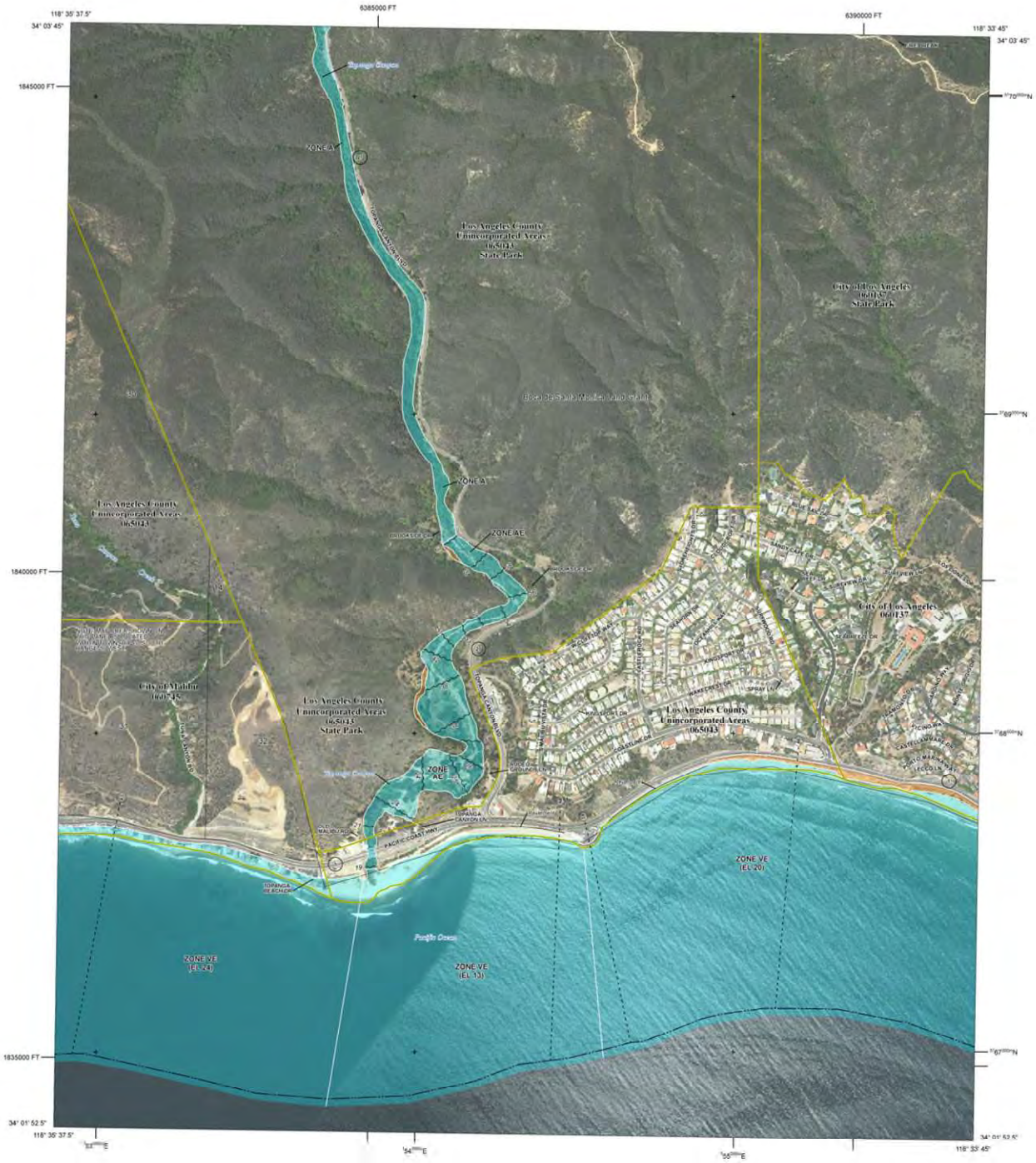
Map 143: Malibu FIRM Panel 1542



Map 144: Malibu FIRM Panel 1443

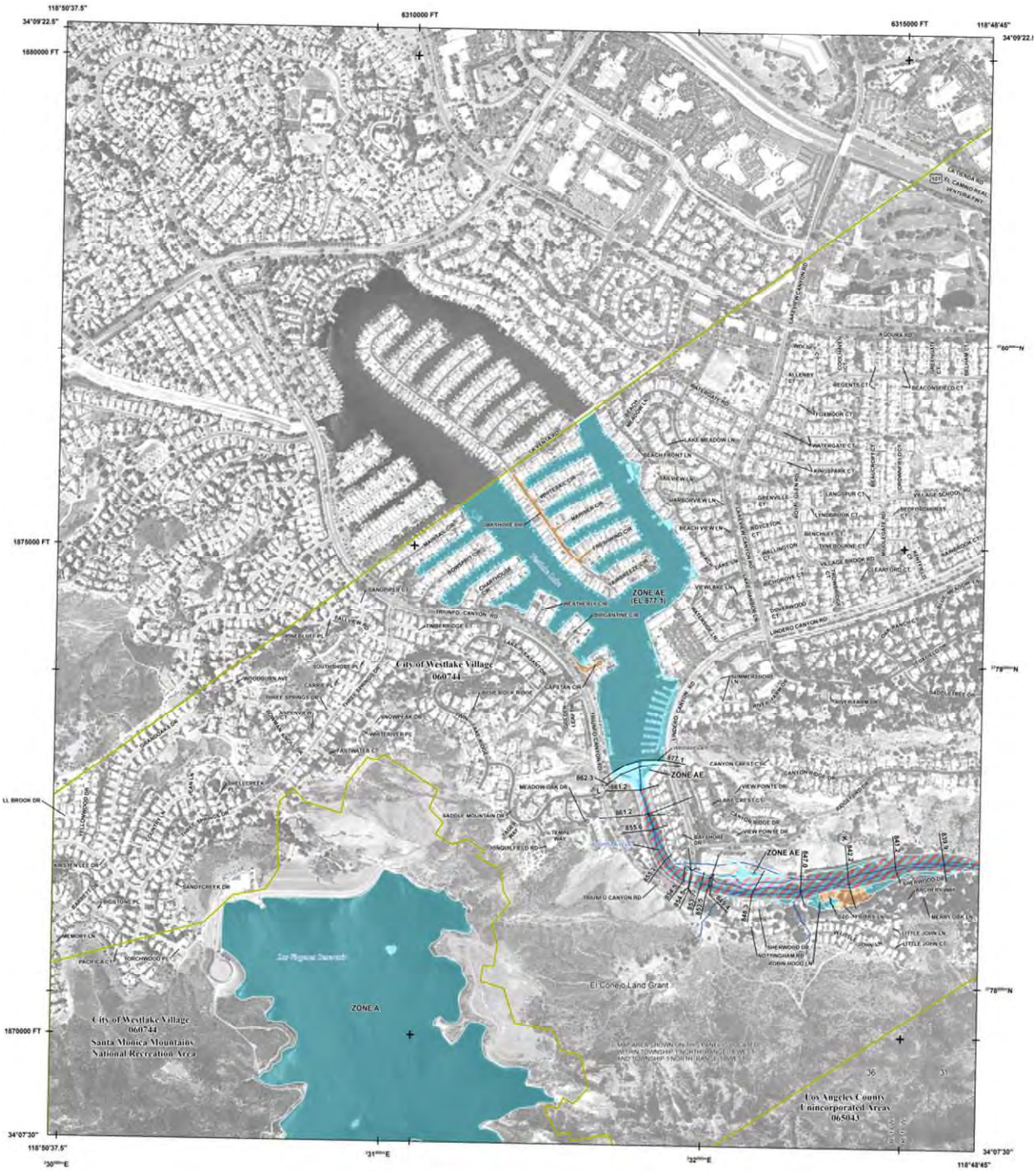


Map 145: Malibu FIRM Panel 1561

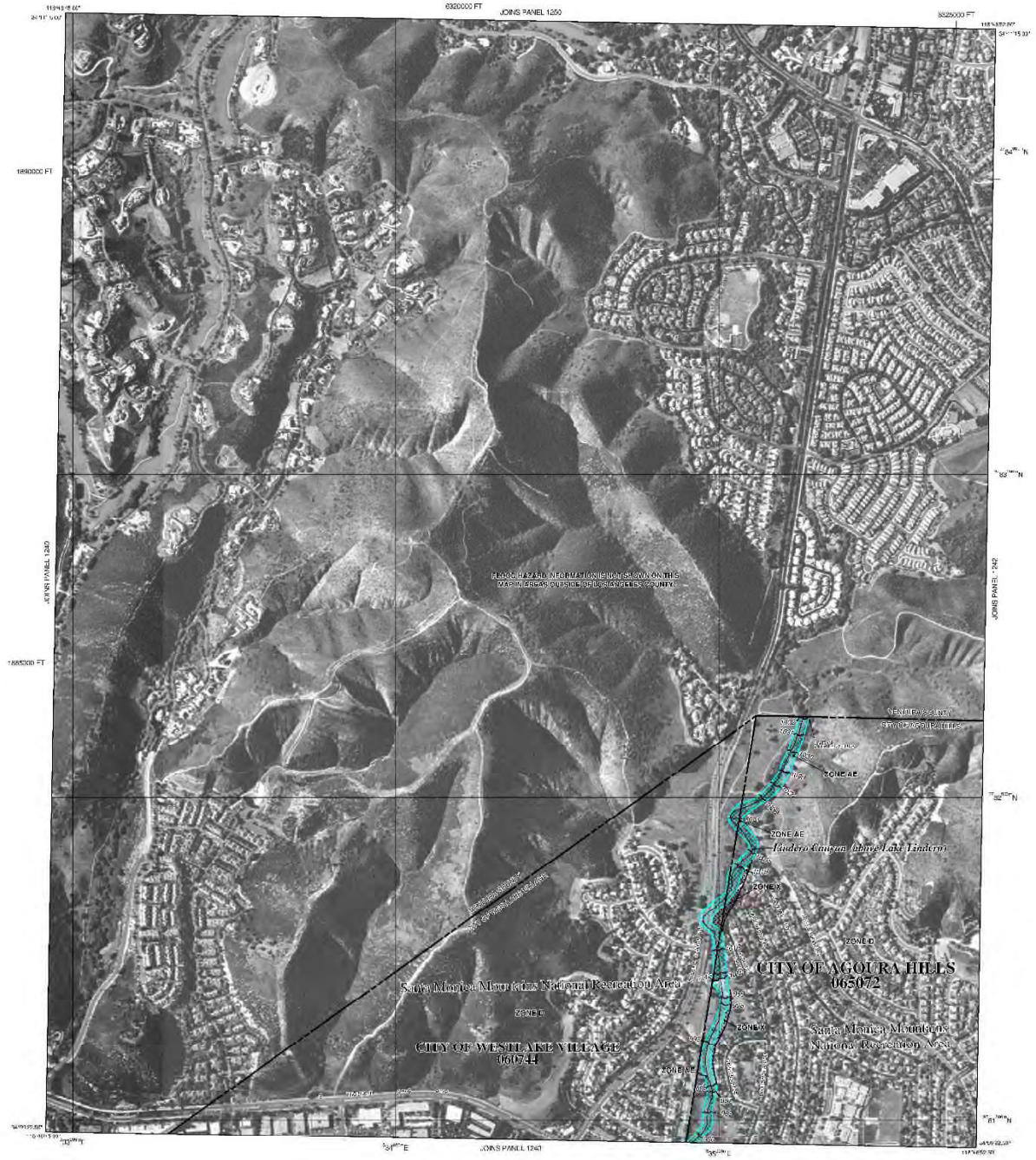


Map 146: Malibu FIRM Panel 1562

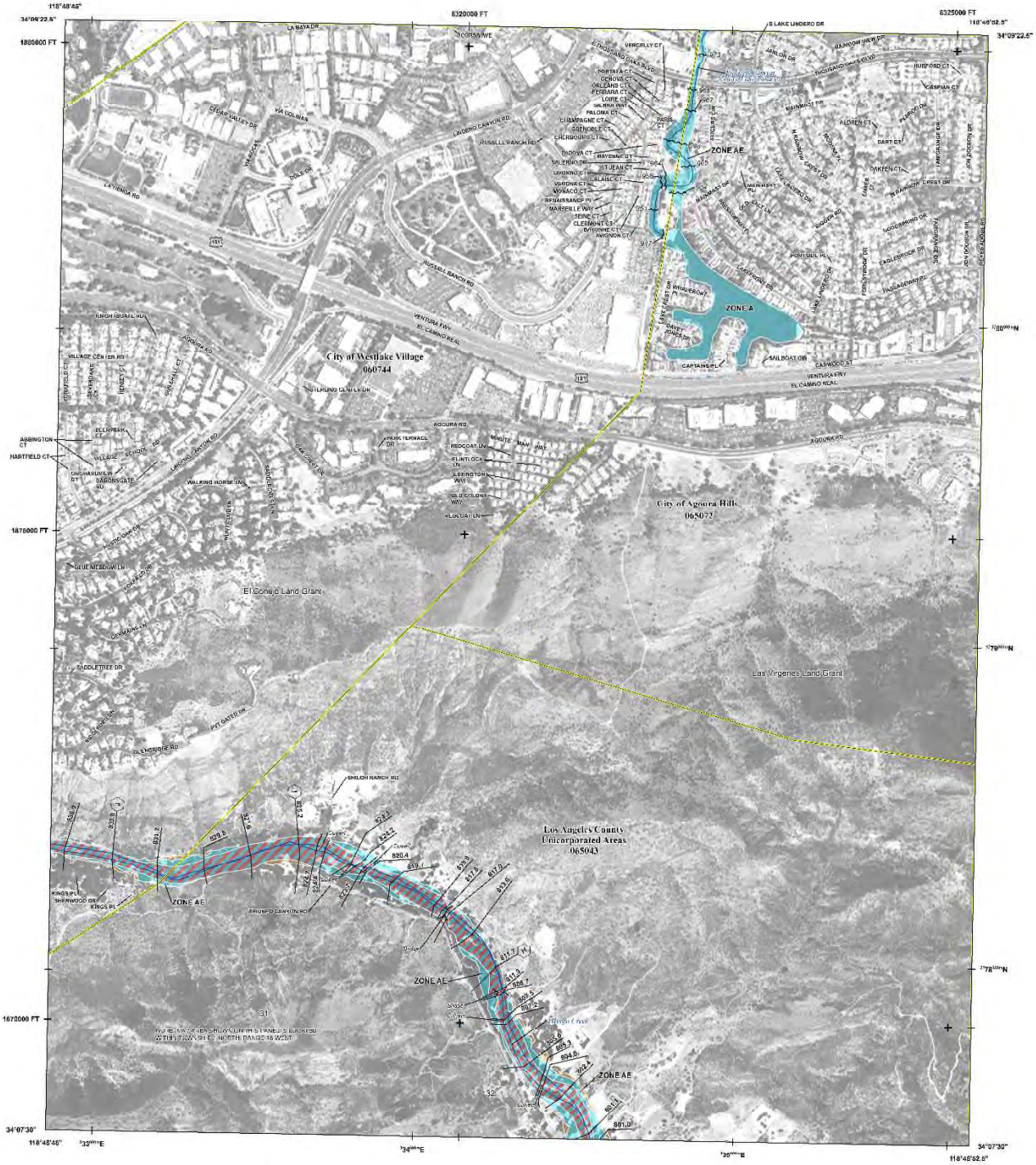
WESTLAKE VILLAGE FIRMS



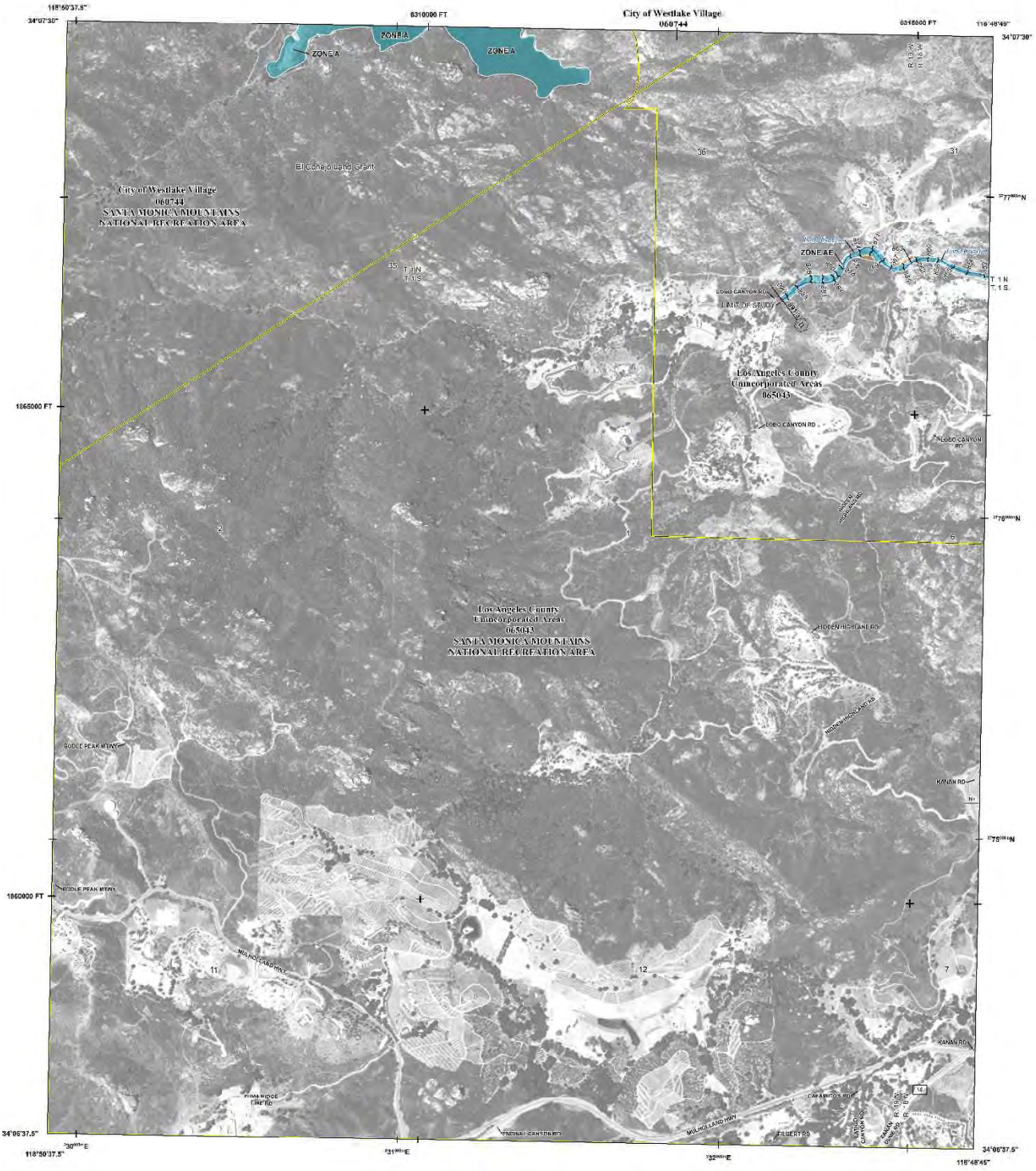
Map 147: Westlake Village FIRM Panel 1239



Map 148: Westlake Village FIRM Panel 1241



Map 149: Westlake Village FIRM Panel 1543



Map 150: Westlake Village FIRM Panel 1502

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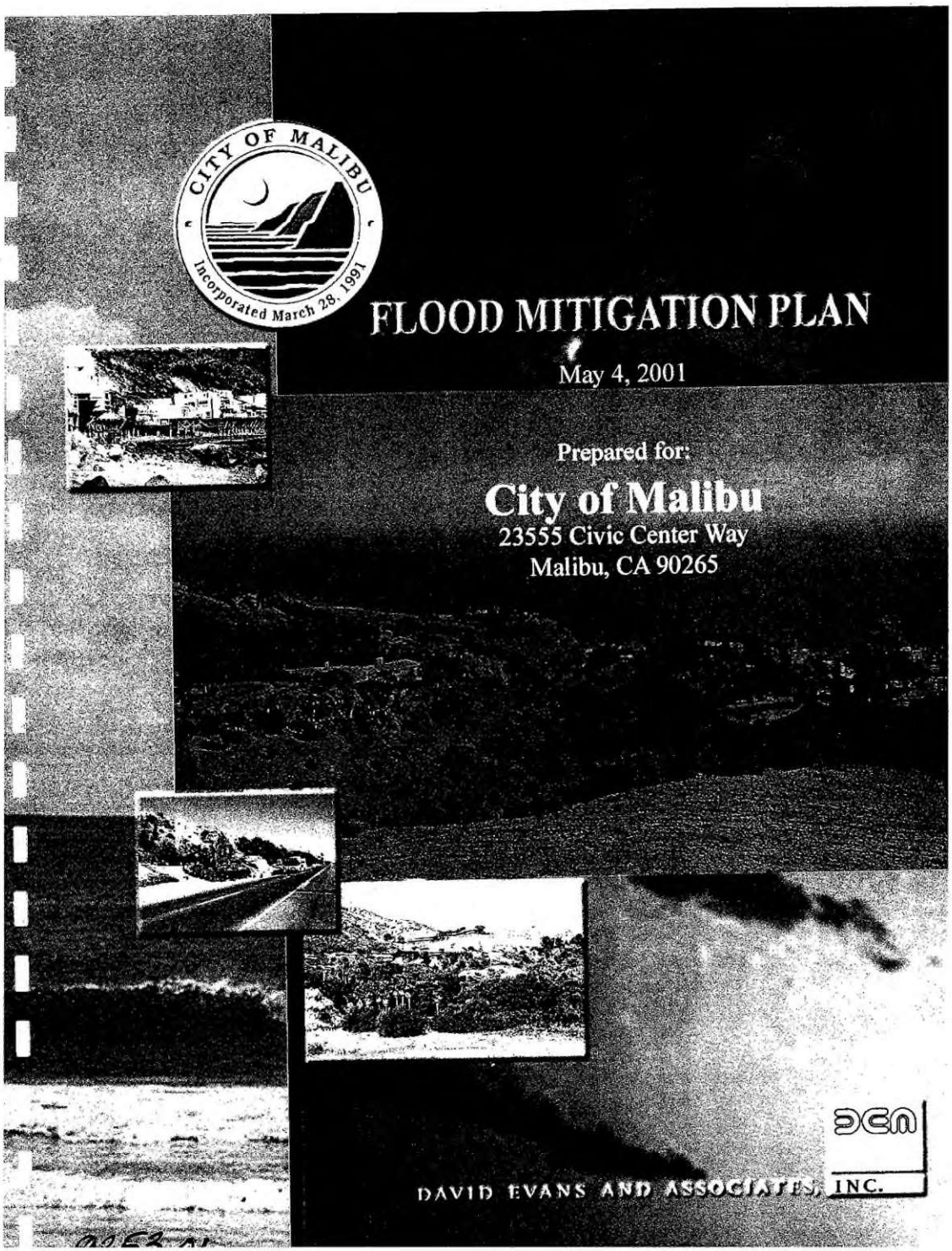
SECTION 23. ANNEX G: MALIBU FLOOD MITIGATION PLAN



CITY OF MALIBU
FLOOD MITIGATION PLAN

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- Public Notices
- Meeting Agenda
- Report to the Council
- Meeting Minutes
- Single and Repetitive loss properties field review, photographs and maps
- Specific watershed area mitigation activities

1.0 INTRODUCTION AND PURPOSE

The City of Malibu has a history of repetitive flooding caused by a variety of conditions. In fact, the City of Malibu has been ranked second in the State of California in terms of the amount of repetitive loss properties claims. A repetitive loss property is defined as one that has two or more claims of $1,000 or more that has been paid by the National Flood Insurance Program (NFIP) within any given 10-year period. For the City of Malibu, the Federal Emergency Management Agency (FEMA) has recorded 161 repetitive losses and 380 single-loss claims for properties in its file as of May of 2000.

The primary purpose of the preparation of the Flood Mitigation Plan (FMP) is to identify the causes of flooding, develop policies and flood mitigation measures in order to reduce the impacts of flooding, harm and hazard to life and properties in the City of Malibu (City). The loss properties, field assessment and their flooding problems are presented in the technical appendix. These documents can be used as a planning tool for the formulation of policies and mitigation efforts. Additionally, the FMP will also address measures that can be implemented to prevent future disasters and to guide the construction and development of the City. It can also assist in state and federal mitigation planning and funding efforts. This document can be used as a "Flood Management Plan" for the Community Rating System (CRS) of the NFIP. The mitigation measures would include both structural and non-structural improvements.

The FMP planning process was developed using a framework within which planners, local officials, residents, hydrologists and engineers, maintenance personnel, flood control experts and others reached a consensus on what should be done. This process included compilation, review, and analysis of available data followed by discussion, debate, and consensus. It entailed obtaining information from everyone who could provide pertinent information and data relevant to the flooding in the City.

This plan was drafted by a team of professional planners and engineers with input from the Flood Mitigation Committee, Public Works Commission, Planning Department, Public Works Department, Office of the Emergency Services (OES, State of California) and FEMA. The members included in the preparation of this planning documents are listed below:

- Flood Mitigation Plan Committee
  - ✓ Chairman, Public Works Commission
  - ✓ Chairman, Planning Commission
  - ✓ Member from Public At-Large
  - ✓ Planning Director
  - ✓ Building and Safety Director
  - ✓ Public Works Director
- Public Works Commission
- One member from OES
- One member from FEMA
- City Engineer
- Senior Professional Planner

- Consulting Engineering Firm

The FMP committee held two public meetings during the preparation of the draft FMP. In addition, five working sessions were conducted with the Committee focusing on hazard assessment, problem identification, mitigation goals, possible activities and review of the draft report.

As a part of the preparation of the FMP the consulting drainage engineers visited all of the 161 repetitive- loss properties and clusters of selected single-loss properties to:

- Assess the flood hazard
- Identify the flooding source
- Determine the proposed mitigation activities

The FMP preparation consisted of the following major steps:

- Identify areas of historic flooding and problem areas
- Determine existing hydrologic and hydraulic characteristics of the watersheds
- Develop goals for the FMP
- Consider possible mitigation activities to the flooding problems
- Evaluate and prioritize the potential mitigation activities
- Identify funding sources
- Prepare the Draft Flood Mitigation Plan
- Address and/or incorporate public comments
- Adopt and implement the policies and plans

One of the primary purposes of the FMP is to enable the City to apply for the NFIP's Community Rating System (CRS) program under Activity 500 "Flood Damage Reduction Activities" and Activity 510 "Floodplain Management Planning" at a later date. The CRS program allows reduction in flood insurance premiums for the preparation within the City based on the number of credit points.

2.0 DESCRIPTION OF STUDY AREA

The City of Malibu, with a population of approximately 15,000, encompasses an area of approximately 20 square miles, within relatively steep, rugged and unstable coastal slopes of the Santa Monica Mountains at the Pacific Ocean. The City stretches between the City of Santa Monica on the east and the Ventura County line on the west. Elevations within the City limits range from 2,650 feet above Mean Sea Level (MSL) to sea level through 21 major canyons and watershed areas along approximately 20 miles of shoreline. The watershed areas are shown on Figure 1.

The City averages less than a mile wide and is less than 2.5 miles at its widest point with the coastal length of 19 miles. Pacific Coast Highway (PCH), State Route 1, is the major four-

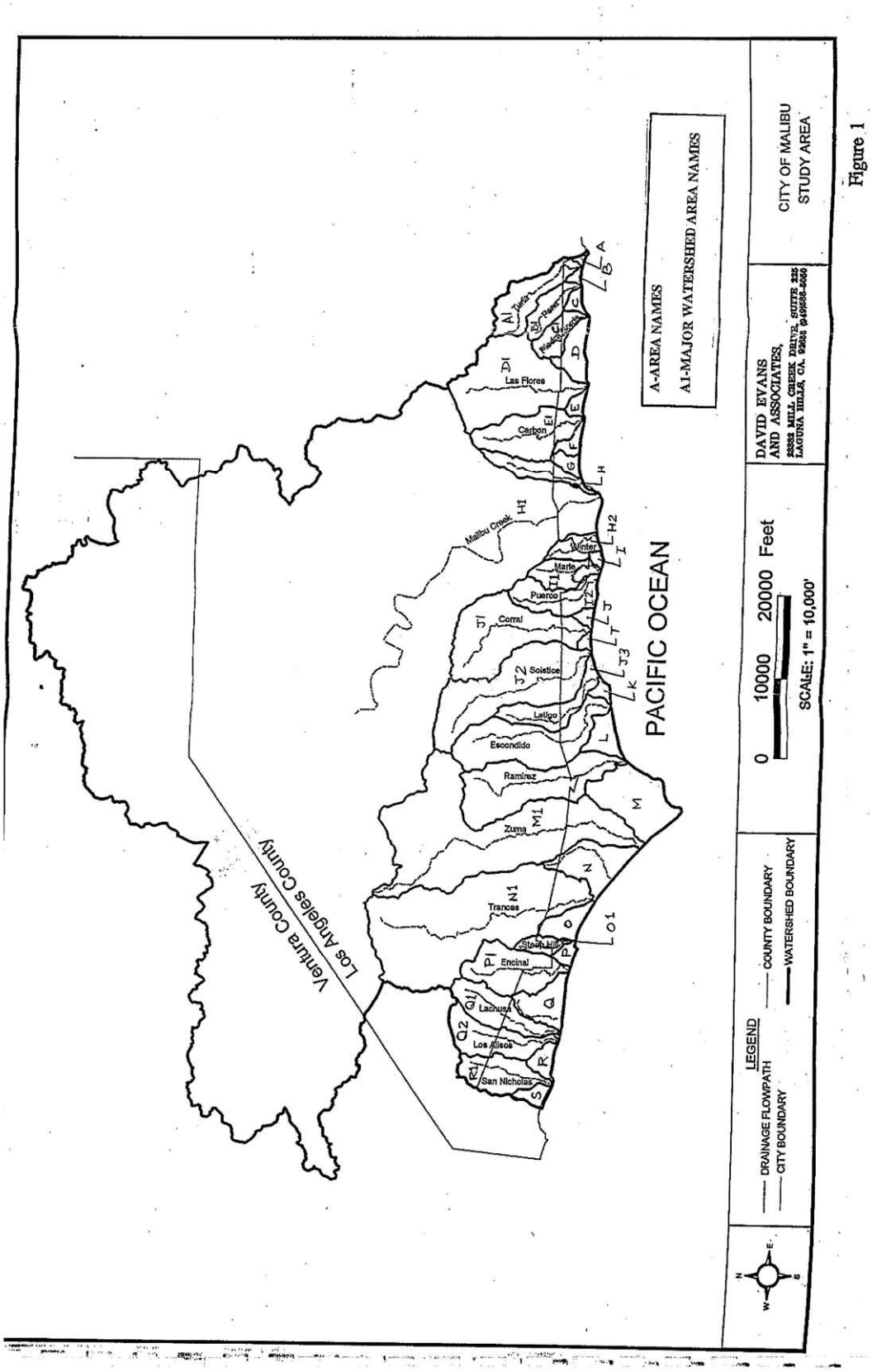
A-AREA NAMES
A1-MAJOR WATERSHED AREA NAMES
CITY OF MALIBU
STUDY AREA
DAVID EVANS
AND ASSOCIATES,
0 10000 20000 Feet
SCALE: 1" = 10,000'
LEGEND
DRAINAGE FLOWPATH
CITY BOUNDARY
COUNTY BOUNDARY
WATERSHED BOUNDARY
PACIFIC OCEAN
Ventura County
Los Angeles County
Malibu Creek
Las Flores
Carbon
Winter
Marie
Puerco
Corral
Solstice
Latigo
Escondido
Ramirez
Zuma
Trancas
Encinal
Lachusa
Los Alisos
San Nicholas

Figure 1

lane arterial roadway traversing the City, which provides access through the City for approximately 40,000 daily commuters. Beach traffic substantially increases the traffic congestion along PCH during the summer months. PCH and its facilities are owned and maintained by the Department f Transportation.

The City was incorporated in March 1991. Residential use comprises a majority of urbanized land use within the City. There are 6,753 parcels of land within the City, of which nearly 5,500 are developed. Generally, the developed portions of the City are situated in close proximity to the coast with direct access to the beach or a view of the ocean. About 20 percent of the parcels of land within the City falls in the undeveloped category. However, some of this acreage has already been planned for development and/or is currently under construction.

2.1 Watershed Characteristics

There are 21 major water courses that cross PCH within the City's boundaries. It is, important to note that the contributing watershed areas extend far beyond the City's boundaries. The City's Master Plan of Drainage (MPD), prepared by Hawks & Associates, has identified a study area of approximately 172 square miles reflecting both watershed characteristics and City boundaries. This is depicted on hydrology maps that were prepared as a part of MPD. The watershed boundaries thus approximately encompass more than eight times the incorporated City area of 20 square miles. Most of the contributing watersheds are outside the direct control of the City. The design of drainage and flood control facilities is not only dependent upon the corporate boundaries but also the characteristics at the upstream watershed.

Malibu Creek has the largest watershed area of 110 square miles. Wildfires over the years in canyon areas destroyed most of native vegetation, increased runoff, erosion and sedimentation and caused heavy flooding in 1993, 1994, 1995 and 1998. Flood flows in all of the 21 canyon watersheds are conveyed by major drainage facilities at and through PCH. The major seven canyon areas, draining through the City are shown below:

Canyon	Area (Acres)
• Trancas Canyon:	5,440
• Zuma Canyon:	22,600
• Ramirez Canyon:	4,360
• Escondido Canyon:	5,360
• Solistica Canyon:	4,280
• Malibu Creek:	70,470
• Las Flores Canyon:	8,440

The runoff for various frequencies using County's methodology and Army Corps of Engineers methodology are presented on Table 1.

TABLE 1

SUMMARY OF 50-YEAR FLOWS (CFS) IN CANYONS

NAME	LACFCD (B & B)	LAD		AREA (AC)
		Q_{50} Clear	B & B	
San Nicholas		987	1,668	845
Los Alisos	1580	1,153	2,252	948
Lachusa		1,126	2,187	922
Encinal		1,586	3,090	1,277
Steep Hill		410	709	241
Trancas	11,900	6,812	13,875	6,314
Zuma	11,600	7,715	14,117	5,687
Ramirez	4,360	2,813	4,835	2,150
Escondido	5,360	3,023	5,206	2,085
Latigo	1,600	962	1,593	786
Solstice	7,280	3,899	7,358	2,836
Corral		2,954	5,248	2,272
Puerco		1,163	1,902	918
Marle		820	1,464	595
Winter		535	832	352
Malibu	40,800			70,400
Carbon		1,931	3,695	1,288
Las Flores	8,440	4,051	8,351	2,646
Piedra Gorda		626	1,513	432
Pena		678	1,539	480
Tuna		1,347	2,665	932

B & B = burned and bulked watershed flows

4

Serious flooding and associated damage has also occurred along PCH at Las Flores and the smaller Pena Canyon (515 acres), Tuna Canyon (107 acres), and Piedra Gorda Canyon at Big Rock (464 acres). As indicated earlier, the maximum elevation within the City limits is about 2,650 feet MSL at Simi Peak north of Highway 101 and in the Santa Monica Mountains. Generally, north-south ground slopes are adequate to permit stormwater runoff to flow to the canyons, from which it is conveyed to the ocean. The steep slopes are primarily responsible for excessive velocities and associated surface erosion, sediment deposition during storms which contributes to frequent problem areas along PCH. However, the coastal plain areas at the mouth of Malibu Creek in the vicinity of the City Civic Center, the Malibu Colony, and the Cross Creek Shopping Center have relatively milder slopes. These areas have been subjected to frequent flooding in the past.

Additional details of meteorologic, hydrologic and hydraulic characteristics, along with design of drainage facilities are presented in the City's MPD.

3.0 BENEFITS OF PLANNING

The objective of planning is to produce a program of activities that will best tackle the City's flood problems and meet other community needs. The basic steps of planning are:

- Set goals and facilitate development of solutions
- Formulate policies that all possible activities are reviewed and implemented so that the local flood problem is addressed by the most appropriate and efficient solutions
- Coordinate flood management policies to specific activities
- Coordinate the FMP goals with each other and with other City's goals and activities, preventing conflicts and reducing the costs of implementing each individual activity
- Educate residents on the flood hazard, flood loss reduction measures, and the natural and beneficial functions of their floodplains
- Build public and political support for projects that prevent new flood problems; reduce flood losses, and protect the natural and beneficial functions of floodplains
- Coordinate with the state and/or federal assistance programs
- Facilitate implementation of floodplain management activities through an action plan that has specific tasks, staff assignments, and deadlines
- Allow the City to apply for, and receive, certification for CRS credits

This plan will guide the City's flood, stormwater, and related activities so that they are implemented more economically and in ways more attuned to the needs and objectives of the City and its residents to reduce the impacts of flooding.

4.0 PUBLIC INVOLVEMENT

At the beginning of this Plan, a Flood Mitigation Plan Committee was formed which included the public, City, OES and FEMA.

The first of two public meetings regarding the FMP was held at 7:00 PM, Thursday, June 29, 2000, at Hughes Research Labs. Prior to the first public meeting, notices were prepared for publication and advertisement along with the plan agenda. Notices and questionnaires were mailed to the County of Los Angeles, Caltrans, City of Calabasas, City of Agoura Hills, Sierra Club, Heal the Bay, repetitive loss property owners and single-loss property owners. Specifically, notices were mailed to the multiple-losses property owners as well as single-loss property owners, and homeowners associations. Questionnaires were also distributed to the repetitive-loss property owners requesting them to identify the flooding situations and issues and suggestions for solutions. It was emphasized at the meeting that public input is an extremely important ingredient of the planning process. This meeting was organized to provide orientation to the formulation of the FMP and review existing flood data.

The City presented an overview of the FMP, the need for the study, the formation of the FMP Committee, and the need for volunteer(s) to serve on the Committee. FEMA presented the background of the NFIP, benefits to the communities, ranking of Malibu as second in the State in terms of the amount of disaster-related claims, the overall process an FMP study, and the purpose of the public meeting(s).

The City's consultant, David Evans and Associates, Inc., presented a City-wide map with the location of multiple and single-loss properties in different colors for each number of claims.

The focus of the meeting was for the public to:

- Provide input on existing conditions
- Identify problem areas regarding flooding
- Discuss the cause(s) of the flooding problems
- Review possible activities
- Discuss the steps involved in the preparation of the Draft FMP

The second meeting was held on August 24th, 2000, which was devoted to an overall discussion of the general goal, specific goals and mitigation activities within the frame work of the six categories as suggested by the FEMA guidelines. Copies of Draft of Public Notice, Notes of two Meetings and Report to the City Council are included in Appendix A.

5.0 COORDINATION WITH OTHER AGENCIES

The City is cognizant of the importance of involving numerous other government agencies as well as private organizations in its planning efforts. Should these entities be implementing or planning to implement activities that may potentially impact flood damage and related concerns within the City, then the City would coordinate the activities to make sure that it's efforts are not going to be in conflict with another government program or duplicate the efforts of another organization. Although such planning initiatives by other state, regional, and federal agencies may not address all local issues, this kind of collaboration between the agencies will facilitate a thorough evaluation of flood mitigation alternatives with mutual benefits to residents of these communities.

Involving other agencies and organizations would facilitate acquisition of available flood hazard data, technical information regarding mitigation measures, and their implementation, guidance pertaining to regulatory requirements, advice and assistance in the planning effort, and/or financial assistance in the implementation of a recommended mitigation measure.

Currently, the City's planning effort includes collaboration with the Los Angeles County Department of Public Works (LACDPW), Caltrans, FEMA, Los Angeles District U.S. Army Corps of Engineers (COE), California Department of Water Resources (DWR), Governor's OES, City of Calabasas, City of Agoura Hills, and other regulatory agencies. These agencies have been contacted to attend the FMP Committee Meetings and public meetings. Notices have been mailed out to not only request their participation in these meetings, but also for providing a written response and any pertinent data for the City's planning process. The City believes that collaboration of this kind will continue on an on-going basis throughout the duration of the FMP process and its implementation.

6.0 PLAN ORGANIZATION

The FMP was organized to concentrate on the planning process rather than focusing on the specific detail of the mitigation measures. Hence the planning functions and the public involvement and consensus building with the public was important for the successful formulation of this Plan. This draft mitigation plan was prepared using the guidelines stated in the "Flood Management Plan", a CRS planning process by FEMA.

The following representatives were involved in the mitigation planning process:

- Planning and Community Development – planning direction, coordination with other plans or programs to help resident and businesses
- Engineer, Hydrologist or Flood Control Specialist – flood data, analysis, and evaluation, design of mitigation measures
- Public Safety/Police/Fire – emergency services including evacuation plans
- Public Works/Streets/Highways – channel maintenance and structural measures
- Building/Zoning/Code Enforcement – regulations, building and property protection

- Public Information/Community Relations – public involvement and property protection measures
- Parks, Recreation, Forest Preservation – acquisition and protection of natural areas
- Governing Board/City Council – political and institutional acceptance and adoption

7.0 FLOOD HAZARD ASSESSMENT

This section identifies the flood hazard for the single-loss and the repetitive-loss properties and flooding problem areas where properties had no claims.

In accordance with the FEMA's NFIP requirements, floodplain management and mitigation programs deal with the "base flood" which is defined as a 100-year frequency flood. The magnitude of the base flood thus will be equaled or exceeded, on the average, once every hundred years. This statistical concept considers both the severity of a flood and the likelihood of its occurrence. Most of the nation's base floodplains have been mapped by FEMA on Flood Insurance Rate Maps (FIRMs).

The City's FIRMs were used to delineate the base flood plain(s) for major watersheds, including Malibu Creek, Trancas Creek, Ramirez Canyon, Las Flores Canyon, Escondido Canyon, and Zuma Canyon. The FEMA flood insurance study identifies floodways for some major watercourses. A floodway is defined by FEMA as the minimum area, with encroachment, needed to convey the 100-year flood without raising the flood levels by more than one foot. FEMA did not define floodways, but Los Angeles County has delineated floodways for the 50-year burned and bulked floods in Malibu Canyon, Zuma Canyon, Trancas Canyon and Las Flores Canyon. They have not been adopted by the City to regulate the development of the flood hazard areas. Even though the County's 50-year burned and bulked discharge would be considerably higher then FEMA's 100-year clear discharge, it would be beneficial to the City to adopt flood plain and flood ways until the City develops its own floodplain and floodways. Also it should be noted that the discharges rates with respect to the frequencies and burned and bulked conditions will be inconsistent (FEMA and County of Los Angeles) if two sets of criteria are used within the City. FIRM generally does not include floodplains for smaller watersheds that drain less than one square mile area. The latter watersheds are under local jurisdiction. It should be noted that most of the existing drainage facilities were constructed by Caltrans and LACDPW prior to incorporation of the City in March 1991.

The FIRM designated two types of floodplains for most of the areas in the City as A Zone and V Zone. The A Zone is the regular floodplain due to the inland watersheds. The V Zone is the ""Coastal high hazard area" which is subjected to flooding due to the inland watersheds and coastal high hazards. In this combination of A and V Zones, V Zone will be shown on the map.

In addition to the major 21 watersheds discussed earlier, there are numerous "triangle-shaped" areas that are located between the major watersheds. These "triangle- shaped" watershed areas did not have any hydrologic data. As a part of the FMP preparation,

hydrology calculations were performed for a few of these triangle areas to determine representative hydrologic data for all other areas. These "triangle" areas were designated alphabetically starting from "A" through "R" and were located in the City-wide watershed map (Plate 1) and in Figure 1 of this report. In addition, the major watersheds have been assigned with new alphanumeric names such as "A1" for consistency and easier reference which are shown in the City-wide watershed map (Plat 1) and in Figure 1.

For this assessment, all available flood data was obtained from MPD and other agencies such as LACDPW, COE and FEMA. No detailed modeling and hydrologic/hydraulic analyses were performed for major watersheds.

The City-wide watershed map/Geographic Information System (GIS) map was divided into watershed boundaries and each repetitive-loss property and single-loss property was located within the watershed boundaries on the map. This facilitated organization of loss areas in accordance with the runoff corresponding to base flood hazard for the particular watershed. A color-coding scheme was used to clearly identify the number of losses for the single-loss and repetitive- loss properties on the City-wide map (Plate1).

As a technical back-up to the preparation of this FMP, a spreadsheet was created with data for each single-loss and repetitive-loss properties within the watershed. The spreadsheets were modified to show the following data in a tabular format:

- Date of Inspection
- Photograph
- Watershed Name
- Street Address
- Flood Zone
- Number of Losses
- Description of Existing Conditions
- Potential Flooding Source(s)
- Recommendations and Comments

8.0 ASSESSMENT OF THE FLOODING PROBLEM

Each multiple-loss property was observed to integrate the field condition and potential cause of the flooding that was documented. Photographs for these properties were added in to the property data sheets which are presented in the Appendix.

This assessment included comparison of the building pad elevation versus the water surface elevation, type of structure, existing drainage structure, condition of the structure, size of the drainage facility and observation of maintenance of the drainage structure, potential damage area within the lot, etc. After identifying the appropriate discharges and capacities of the existing facilities and street capacities, flood risk areas were determined based on available data.

Assessment included the nearby infrastructure facilities such as bridges, roads, conditions of roads, off-site and on-site drainage, type of damage and nature of damage during the past floods with year, potential velocities, low points within the lot, secondary outlets, sewer back ups, roof drainage and type of upstream conditions, flood control facilities and developments, and proposed development in the upstream watershed. Future flooding due to the change in the runoff coefficient in the upstream watershed was considered. Any construction or proposed new flood protection measure was noted during the field reconnaissance.

Our experience indicates that the properties located adjacent to the repetitive loss properties needed to be reviewed for potential flooding.

Also, some new property owners who acquired the property next to a repetitive loss property may not know the extent and the magnitude of flooding. This needed to be documented during the field visit.

New buildings must be elevated above the base flood elevation in A and V Zones of the FIRM. In A Zone, commercial buildings can be flood proofed. In the V Zone, the new buildings must be elevated on pilings or piers so that the waves do not batter the building walls.

Critical facilities and business facilities such as the Civic Center area have been closely observed. The backflow conditions from Malibu Creek into Cross Creek Road via the existing culvert were noted. The impacts due to the potential development in the Civic Center area and the required mitigation activities including a future on-site detention basin were reviewed. Enlargement of the existing drainage facilities across PCH by Caltrans were reviewed.

9.0 SETTING GOALS

This task depends upon the extent of consensus within the community. It is imperative that an agreement regarding overall goals as well as specific goals for each watershed area be achieved. Prior to setting the goals, mutual agreement among the affected parties with the result of the flood assessment needs to be achieved. Consensus among the participants needs to be achieved. During the public meetings, the public was asked to identify their goals, which were shared with all participants. Excluding fatal flaws, the goals were scrutinized to reach a common goal, which would be agreed upon by everyone on common ground.

Presented below are proposed FMP main and general goals as well as specific goals for each of the watershed area.

FMP Goals

MAIN GOAL: Reduce repetitive flood losses to NFIP insured and insurable structures and reduce exposure to flood damages and future flooding throughout the City.

GENERAL GOAL: The general goal of this FMP is to implement state-of-the-art technology and engineering practices using structural and non-structural solutions as a long range planning mechanism to reduce the impacts of flooding, harm and hazard to life and properties in the City.

SPECIFIC GOALS: In general, there are common goals for these areas such as: 1) reduce coastal flooding which is a combination of A and V Zones for the areas located along the shoreline; 2) improve and maintain existing drainage facilities' and 3) reduce runoff and debris flow. The other specific goals are listed below:

AREA A:
1. Reduce flood damage to Topanga Beach Drive and reduce the overflow from PCH.
2. Contain and reduce spill over from Tuna Canyon at PCH.
3. Reduce runoff and debris from Tuna Canyon watershed.
4. Improve and maintain existing drainage facilities.

AREA B:
1. Contain and reduce spill over from Tuna Canyon at PCH.
2. Reduce runoff and debris from Tuna Canyon watershed.
3. Establish new standards for new buildings and substantial improvements.
4. Improve and maintain culverts crossing at PCH.
5. Improve existing low point drainage facilities.

AREA C:
1. Contain and improve Big Rock Road "Piedra Gorda" crossing PCH and reduce spill over.
2. Reduce runoff and debris for Piedra Gorda.
3. Reduce runoff and provide erosion control within local Area C.
4. Improve existing low point drainage facilities.

AREA D:
1 Reduce runoff and debris within Area D.
2 Reduce spill over from Piedra Gorda.
3 Improve local drainage facilities.

AREA E:
1. Reduce Las Flores Creek spill over PCH and Rambla Pacifica.
2. Reduce runoff and debris from Las Flores watershed.
3. Improve and maintain local drainage facilities.

AREA F:
1. Reduce runoff and debris within Area F.
2. Improve and maintain debris basin and storm drain at Fanning.
3. Reduce spill over across Fanning and PCH.

4. Improve and maintain storm drain crossing PCH.
5. Improve local low point drainage facilities.

AREA G:
1. Improve and maintain debris basin.
2. Improve and maintain storm drain crossing at PCH.

AREA H:
1. Improve and maintain debris basin near Sweetwater Canyon.
2. Maintain catch basin and storm drain north of PCH.

Malibu Canyon (H1):
1. Keep the flow in Malibu Road to avoid spilling into Malibu Colony Road.
2. Improve and maintain existing storm drain facilities.

Winter Canyon (H2):
1. Reduce runoff and debris within watershed area of Winter Canyon.
2. Improve and maintain Winter Canyon drain.

AREA I:
1. Reduce spill over from Marie Canyon Creek at Malibu Road.

Marie Canyon (I 1):
1. Reduce spill over from Marie Canyon Creek across Malibu Road.
2. Reduce runoff and debris.

Puerto Canyon (I 2):
1. Improve and maintain storm drain across Malibu Road.
2. Improve local low point drainage facilities.

AREA J:
1. Reduce spill over along the north of PCH.
2. Reduce runoff and debris from Area J.

Latigo Canyon (J3):
1. Reduce spill over along Corral Canyon Road from Solstice Creek.

AREA K:
1. Reduce spill over from Escondido Creek at PCH.
2. Reduce runoff and debris from Escondido Creek.
3. Improve local drainage facilities.

Escondido Canyon (K1):
1. Reduce spill over at Escondido Canyon and PCH.
2. Reduce runoff and debris from Escondido watershed.

AREA L:
1. Reduce spill over from Meadows Drive at PCH.
2. Reduce spill over from Winding Way and PCH.
3. Reduce runoff and debris within Area L.
4. Improve and maintain storm drain across PCH.

Ramirez Canyon (L1):

1. Reduce outlet spill over of 10' x 10' Reinforced Concrete Barrier (RCB).

AREA M: 1. Improve property entrance and drainage.

Zuma Canyon (M1):

1. Improve entrance and street for Heathercliff Road and Bonsall Drive.
2. Improve drainage system.
3. Improve and maintain catch basin in Bonsall Drive.

AREA N: 1. Improve property entrance and street drainage.

Trancas Canyon (N1):

1. Improve entrance and street for Sea View Drive and El Sueno Drive.

AREA O:

1. Remove the bottleneck storm drain at Broad Beach Road.
2. Reduce spill over from Steep Hill Creek.
3. Improve and maintain storm drain system at low points in Broad Beach Road.

AREA P:

1. Reduce spill over at Broad Beach Road.
2. Reduce runoff and debris in Area P north of PCH.
2. Improve property entrance and local street.

AREA Q: 1. Improve local drainage.

Lachusa Canyon (Q1):

1. Improve outlet across PCH.
2. Reduce runoff and debris in Lachusa Canyon.

AREA R:

1. Improve entrance.
2. Reduce spill over at PCH and Los Alisos Canyon Creek.

10.0 REVIEW POSSIBLE ACTIVITES

All possible flood mitigation activities need to be evaluated. The mitigation measures are:

1. Preventive activities
2. Property protection
3. Natural resources protection
4. Emergency services
5. Structural projects

6. Public Information activities

The mitigation activities have been identified within the frame work of the above shown six categories. Budget, cost and funding resources will constitute the selection criteria. No measures were discarded without further investigation. These alternative mitigation activities were compared with the goals. The alternative mitigation activities were identified based on innovative ideas, cost-benefits, disadvantages, public opinions, and ease or difficulty of implementation, environmental impacts, environmental compliance, compliance to City and County codes, ordinances and regulations, and potential source of money for implementation and maintenance.

Presented below are the proposed mitigation activities for all of the watersheds based on the six categories for public review.

1. Preventive Activities

- Enforce floodplain regulations and zoning ordinances for new structures, new developments or substantial improvements to the existing structure/property.
- Incorporate landscape and pavement improvements that generate lower runoff and improve percolation for all new developments.
- Prepare a specific Storm Water Management Plan for Malibu Creek, Zuma Creek, Trancas Canyon and Los Flores Creek.
- Establish drainage fee based on the additional runoff generated due to improvements/developments.
- Modify the zoning ordinances of A Zone areas to locate building elevation a minimum of one foot above base flood elevation.
- Modify the zoning ordinances to require a minimum of one foot free board above base flood elevation for depth/height requirements for all flood hazard areas.
- Enforce permit requirements for all new developments in the floodplain and prohibit developments within floodway
- Modify the zoning ordinances of special flood hazard areas such as V Zones to require a minimum of one foot-free board above base flood elevation for lowest horizontal member of structures
- Review development policies for public buildings, utilities and private properties for open space preservation. Acquire easements in floodplain areas. Review City's policies to dedicate open space, park areas for large development projects.
- Review subdivision regulations, building codes and floodplain ordinances to regulate any developments within floodplain.
- Develop storm water management policies to maintain or reduce the runoff from existing conditions for all new developments using detention basins, retention basins and other natural barriers to reduce runoff.
- Review and update Storm Facility Maintenance System (including PCH/State/ County and Federal facilities) and establish reports for annual maintenance and each major storm event.

- Implement storm drain master plan.

2. Property Protection Activities

- Request to elevate existing structures as a part of any proposed development to the existing properties in special flood hazard areas.
- Recommend flood proofing of existing non-residential buildings that have repetitive losses.
- Prioritize properties to: A) Acquire B) elevate and C) relocate with FMA grant, Disaster Relief Grant Program (DRGP) for those that have had numerous NFIP losses claims. Use these properties for parks and recreation.
- Assist to acquire/elevate/relocate properties and buildings with aid from FEMA's Hazard Mitigation Grant Program (HMGP) for those properties that suffered losses or future flood loss.
- Assist in retrofitting non-residential properties with flood proofing.

3. Natural Resource Protection Activities

- All structural projects shall start with a project study report. This project study report shall include a comprehensive approach that will include:
  - ✓ Upstream and downstream watershed impacts
  - ✓ Water quality impact in relation to the proposed improvement
  - ✓ Reduction in peak flow
  - ✓ Addition of detention and filtration basins
  - ✓ Impact to endangered plant and animal
  - ✓ Impact of erosion and scour
  - ✓ Incorporation of soft engineering such as reduction of use of concrete and riprap and increase in use of channel grass lining and channel vegetation at various stages with different species in accordance with the depth of water and frequency of flood
  - ✓ Bioengineering solutions
  - ✓ Integration of treatment BMPs
  - ✓ Sediment reduction and mitigation measures
  - ✓ Watershed management
  - ✓ Concept level design of the proposed improvements
  - ✓ Integrate watershed improvement ideas without fatal flaws from local interest groups
- The project study report shall be submitted to the Environmental Review Board (ERB) for review and comments prior to the start of any preliminary design of any facilities.
- Enforce Best Management Practices (BMPs) within the watershed.
- Provide technical assistance to select appropriate BMPs.
- Review the Environmentally Sensitive Habitat Area(ESHA)) in relation to the repetitive loss map for integration of the design solutions and enhancement of the environment. All ESHA are to be identified in the repetitive loss map.

4. **Emergency Services Activities**
   - Provide flood forecasting, warning systems and emergency plans for potential flooding.
   - Prepare an emergency evacuation plan, and health and safety plan during flood event.
   - Develop flood emergency measures, disaster preparedness, flood recovery plans.

5. **Structural Project Activities**
   - Recommend future and existing roof drainage systems for the properties located along the shoreline to be designed to drain towards the ocean side rather than to the front of buildings.
   - Encourage runoff entrapment within the site with filtration system for reusing the storm water for irrigating landscape areas without creating public health hazards and degradation of geologic conditions.
   - Prepare structural mitigation plans for site-specific areas with priorities based on the extent of damage to life and property.

6. **Public Information Activities**
   - Participate in FEMA's CRS program to reduce flood insurance premium rates.
   - Create a computerized tracking system to follow up on multiple loss properties and improvements and other pertinent information with a database.
   - Advise and assist property owners on retrofitting buildings with multiple losses.
   - Request and maintain FEMA's elevation certification for all new buildings and for existing buildings with proposed substantial improvements.
   - Provide information and education about flooding and protection measures in a public forum.
   - Create a GIS map and maintain the repetitive loss areas and floodplain zones.
   - Continue to provide map information and formulate a regular outreach program.
   - Provide technical assistance for locating properties within the floodplain.
   - Maintain flood data, FIRM and relevant information in the library.

11.0 ACTION PLAN

Based on the review of the six categories, it is recommended that the City implement the following floodplain management activities.

- **Floodplain regulations**: For the properties along the coastal areas, enforce the zoning ordinances of special flood hazard areas such as V Zones to require a minimum of one-foot free board above base flood elevation for lowest horizontal member of structures for new structures or substantial improvement to the existing structure. Enforce permit

requirements for all new developments in the floodplain. Prohibit developments within floodway and prepare a specific Storm Water Management Plan for Malibu Creek, Zuma Creek, Trancas Canyon and Los Flores Creek. Implement storm drain master plan.

- **Flood Mapping:** For major watersheds that do not have floodway delineation's, the City shall prepare comprehensive floodway delineations using NFIP standards recognizing the fact that the County standards that include the burn and bulked condition would yield conservative results. Since the flood insurance program is based on the FIRM maps, NFIP standard should be followed. Until the comprehensive floodway mapping and preparation is completed for a specific watershed, any encroachment or construction activities within the floodplain area shall have its own hydrology/ hydraulics studies to prove that the proposed improvement within the flood plain does not increase the flood elevation by more than one foot which would follow the definition of the floodway. The City shall monitor and review the proposed improvements within the floodplain on a case by case basis until the preparation of a comprehensive floodway mapping for a specific watershed. The City shall adopt the new floodway delineations for the major watersheds after the review and approval of the new comprehensive floodway studies by FEMA.

- **Flood Protection Assistance:** City should obtain grants from OES and FEMA through programs such as DRGP and HMGP to assist to acquire/elevate/relocate properties and buildings that have had numerous NFIP loss claims. Also City should assist in retrofitting non-residential properties with flood proofing through low interest loans in coordination with the County, State and Federal government.

- **Flood Protection Materials:** City should mail FEMA's book, " Repairing Your Flooded Home" to all of the single- and multiple-loss property owners and other property owners that have potential of flooding. Copies of these books and other FEMA's publications should be available for distribution at the City Hall as well as the local library. City should provide technical assistance in understanding of the books and BMPs.

- **Flood Protection Activities:** For new buildings and proposed substantial improvements of the existing buildings, City should pass an ordinance that roof drainage systems for the properties located along the shoreline to be designed to drain towards the ocean side rather than to the front of buildings. City should encourage or provide incentives to entrap runoff within the property/site with filtration system for reusing the storm water for irrigating landscape areas without creating public health hazards and degradation of geologic conditions. City should prepare a long term and short term budgets with priorities to implement projects as stated in the Master Plan of Drainage.

- **Emergency Manager Training:** City should set up a task force comprising of the Building and Safety, Fire Department, Sheriff's Department and Pubic Works Department and provide training for coordinated effort for flood warning, evacuation and response to emergencies. City should assign a lead person such as Emergency Manager for this task force to coordinate these training and planning. The Emergency Manager should attend appropriate training on flood warning and flood response planning.

- **Flood Warning and Preparedness:** After the training, the Emergency Manager and the City Engineer in coordination with other departments should prepare a flood warning system and emergency flood preparedness systems for Trancas Canyon, Zuma Canyon, Ramirez Canyon, Escondido Canyon, Solistica Canyon, Malibu Creek and Las Flores Canyon. City should explore the possibility of installing level control system with telemetry devices with audio and video signals that could be connected to the City Hall, Emergency Manager's office and other Task Force members.

Mitigation Activities for Specific Areas

Watershed Name	Location (see figure 4)		Medium Priority	Low Priority	Comments
Area A	Triangular area at southeast end of the City Limits in between Topanga Canyon Blvd and Tuna Canyon Road.	1) Increase height of the AC berm at Topanga Beach Drive with a vertical curve along PCH to keep the PCH runoff within PCH. 2) Re-profile Topanga Beach Drive to drain the street flow along the gutter adjacent to the retaining wall along the north side of the street.		1). Improve existing 1-18" and 1-24" storm drain(SD) and inlets that are inadequate to discharge runoff from 24 acres.	
Area B	Triangular area between Tuna Canyon (Area A1) and Pena Canyon (Area B1).	1) Construct levee along Tuna Canyon Road 2) Re-profile and elevate Tuna Canyon Road for approximately 500' from PCH 3) Enlarge the Tuna Canyon culvert	1) Add additional inlet at north side of PCH east of Tuna Canyon Road	1) Replace existing three Storm Drains (1-18" Dia and 2-24" Dia) that are inadequate to discharge runoff from 49 acres (109 cfs for 10-year, 128 cfs for 25-year) with larger sizes. 2) Construct relief drain for the spill over of Tuna Canyon Creek 3) Improve drainage system at the low point between 18036 and 19040 PCH including upsizing the inlet and storm drain pipe	
Area C	Triangular area between Pena Canyon (Area B1) and Piedra Gorda Canyon (Area C1).	1) Construct levees and increase the headwall of the 84" pipe inlet at the "hairpin" bend location 2) Re-profile and elevate Big Rock Drive at this location 3) Enlarge the 8'X4' existing RCB which is under capacity to discharge the runoff across PCH.	1) Add additional inlets at southwesterly curb return of Big Rock / Tuna Canyon Road and increase the size of the existing 24" drain.	1) Consider rolled curb to keep the PCH runoff away from the garage level - reroute the roof drain to the back of the building	1) Caltrans to enlarge the 8' X 4' Reinforced Concrete Box(RCB) under court order
Area D	Triangular area between Piedra Gorda Canyon (Area C1) and Las Flores (Area D1).	1) Enlarge the 6'X4' existing RCB which is under capacity to discharge the runoff across PCH.	1) Remove "bottleneck" storm drain and replace or add a relief drain at 20330 to 20340 PCH areas 2) Replace the 18" storm drain with larger size storm drain at the area in front of garage to eliminate local ponding and positive drainage for 19016 PCH		
Area Las Flores (Area D1)	Area bounded by E1, E, D, C1, B1, and A1 (minima coastal frontage)	1) Elevate the Las Flores Canyon Road and adding Las Flores Mesa storm drain	1)Prepare a specific emergency plan for Las Flores Canyon at PCH crossing until completion of construction of the proposed enlargement of the flow area by Caltrans. Include evacuation of the nursery and the premises in the plan.		
Area E	Triangular area between Las Flores (Area D1) and Carbon Canyon (Area E1).	1) Provice a SD system to pick up the flows across PCH at 21400 PCH to 21422 2) Construct a new SD system at the low point in front of 21640 PCH to pick up the flows across PCH from the 24" outlet	1) Provide storm drain system with inlets at the intersection of Rambla Vista and PCH to drain across PCH. 2) Improve the existing 18" SD system at 21330 PCH.		
Area F	Triangular area between G and Carbon Cyn (Area E1)	1) Provide inlets at the intersection of PCH and direct the runoff in to Carbon Canyon creek east of PCH to prevent runoff crossing over PCH to the said low point.		1) Replace the deficient existing inlet and 14" SD at 21962 PCH 2) Construct inlet at the "T" intersection of Fanning and PCH and connect to the existing 30" SD	
Area G	Triangular area bounded by H, F and E1			1) Consider a new inlet at the low point of 22522 PCH and a storm drain system connecting to existing 48" storm drain	

Mitigation Activities for Specific Areas

Watershed Name	Location (See Figure 4)		Medium Priority	Low Priority	Comments
Area Malibu Canyon (Area H1)	Large area that includes Malibu Creek drainage area (H1)	1) Construct a structural levee west of the Malibu Colony Drive adjacent to the Tennis courts along the Creek. Disturbance to the environment need to be considered also. 2) Construct a new storm drain in Malibu Colony Drive to drain towards the south end of the street in to the ocean.(easement along the sideyard will not be needed) 3) Construct a flap gate for the 13.5' W X 5.5'H RCB outlet in to Malibu Creek to prevent "bubbling" of Malibu Creek in to the Civic Center area. 4) Perform a detailed design study for detention basin and year around wetland creek improvement near the Civic center. Expand the master plan concept study. 5) Add a new storm drain system with inlets in Malibu Road to eliminate ponding and flow diversion in to Malibu Colony Road. 6) Re-profile Malibu Road to eliminate the flat slope, low points and to keep Malibu Road runoff away from the garage level along with new curb and gutter. 7) Upgrade the existing storm drain in Webb Way	1) Upgrade the sump pump and storm drain within the gated community area of Malibu Colony 2) Create a "V" gutter and change the street cross slope for Malibu Colony Drive to keep the runoff flowing in the garages	1) Breach the sand dune/bar during a major storm event with early warning system such as telemetry attached to the upstream stream gauge to prevent backup of Malibu Creek	
Area Winter Canyon (Area H2)	Winter Creek (H2)		1) Extend the 60" storm drain system across Malibu Road and add inlet north of 23936 Malibu Road	1) Construct rolled curb and gutter along the south side of Malibu Road to keep runoff within the street	
Area I	Triangular area bounded by H2 and Marie Cyn (I1)	1) Remove and replace the existing corroded 12" CMP at 24460 Malibu Road		1) Construct rolled curb and gutter along the south side of Malibu Road to keep runoff within the street	
Area Marie Canyon (Area I1)	Area bounded by H1, H2, I and I2	1) Add a relief drain to the existing 6' H X 10'W RCB to provide additional capacity.		1) Construct rolled curb and gutter along the south side of Malibu Road to keep runoff within the street	
Area Puerco Canyon (Area I2)	Area bounded by H1, I1, J and J1	1) Re-profile Malibu Road to create cross fall and prevent spillover across the road 2) Construct a natural swale along the westerly side of Malibu Road (without creating any public driving hazard) to increase the depth of flow at inlets and increase the capacity of inlets.		1) Construct rolled curb and gutter along the south side of Malibu Road to keep runoff within the street	
Area J	Triangular area bounded by: I2 and J1	1) Re-profile Malibu Road to create cross fall and prevent spillover across the road 2) Construct a natural swale along the westerly side of Malibu Road (without creating any public driving hazard) to increase the depth of flow at inlets and increase the capacity of inlets.		1) Construct rolled curb and gutter along the south side of Malibu Road to keep runoff within the street	
Area K	Triangular area bounded by: J3 and Escondido Cyn		1) Construct a storm drain system across Malibu Cove Colony Drive to pick up the flows from the 10' X 10' culvert outlet located west of Malibu Cove Colony Drive at 26642 Latigo Shore Drive.	1) Re-profile Malibu Road to create cross fall and prevent spillover across the Road also Construct rolled curb and gutter along the east side of Malibu Road to keep runoff within the street 2) Construct additional inlets and storm drain system to capture the flows from the westerly side of Malibu Cove Colony Drive.	
Area L	Triangular area bounded by: Escondido Cyn and Ramirez Cyn		1) Raise the profile of Sea Lane at PCH to prevent PCH runoff spillover in to Sea Lane.(Private and Public)		

Mitigation Activities for Specific Areas

Watershed Name	Location (See Figure 4)		Medium Priority	Low Priority	Comments
Area Ramirez Canyon	Area bounded by Escondido Cyn, L, M, and M1	1) Replace the two CMPs with one large arch culvert or RCB at ocean outlet		1) Schedule regular maintenance at the outlet to remove sand buildup.	
Area M	Triangular area (on point) bounded by Ramirez Cyn and M1			1) Consider a storm drain system at the end of the cul-de-sac	
Area Zuma Canyon (Area M1)	Area bounded by M, Ramirez Cyn, H1, N, and N1			1) Remove and replace the existing onsite inlets and storm drain line with larger sizes at the property 29221 Heathercliff Road (private project) 2) Construct an opening in the perimeter screen wall for secondary flows at the property 29221 Heathercliff Road (private project)	
Area O	Triangular area bounded by N1 and O1	1) Perform a project study for the Broad Beach Road diversion drain project, project No.7 as stated in the Master Plan of Drainage. Evaluate all impacts such as environmental, structural and physical to the Trancas Canyon creek and watershed 2) Prepare plans, specifications and estimate and construct the project		1) Remove the existing "bottleneck" (8" connector pipes) and replace with large connector pipes. Construct a 30" SD westerly of PCH to easterly of Broad Beach Drive. Connect the inlet connector pipe in to the proposed 30" SD at 31034 Broad Beach Drive. 2) Remove the existing "bottleneck" (24" d/s end 30" up/s end) at this low point at 31310 Broad Beach Road. Replace with larger storm drain system at the downstream end easterly of Broad Beach Road. Replace the existing 10" catch basin connector pipes with larger pipes. Construct inlets east of Broad Beach Road between 31302 and 31310 Broad Beach Road.	
Area P	Triangular area bounded by O1 and P1		1) Remove the existing "bottleneck" Steep Hills Canyon 18" SD and replace it with larger size at 31431 Broad Beach Road. Remove the existing connector pipes and replace with larger size.	1) Replace existing 6' X 6' culvert across PCH which is under capacity to drain 3,090 cfs for 50 year storm. This will avoid spill over along the westerly side of PCH at Encinal Canyon.	
Area Q	Triangular area bounded by P1 and Q1		1) Re-profile the access road at 31974 PCH to the gate to higher elevation at gate to keep off the PCH runoff (private)		
Area R	Triangular area bounded by Q2 and R1		1) Re-profile the access road in to the property at 33306 PCH to higher elevation at the entrance to keep off the PCH runoff		

12.0 PLAN ADOPTION

Following assessment of flooding problem, setting goals, and reviewing all possible solutions, the draft FMP is being presented in a public forum so that the most appropriate actions can be selected for final implementation. The draft plan will also be made available to the FMP Committee, LACDPW, FEMA, OES, and various departments and organizations. Following discussion, debate, and common agreement, a written, final plan will emerge in the form of a series of recommendations. The Final FMP will be submitted to the City Council for adoption.

13.0 IMPLEMENTATION, EVALUATION AND REVISIONS

This is a relatively long process. The City's planning staff will be involved in this effort on a day to day basis. Inexpensive projects could be implemented quickly. Policy changes and Ordinances are inexpensive and take a longer time due to the procedural requirements.

Some of the structural and non-structural mitigation measures require close monitoring and periodic revisions based on the performance. The City's project manager will be responsible for overall implementation of the plan and presentation of the annual update to the City Council. This update will provide an overview of the plan and the progress made over the previous 12 months towards implementing the mitigation activities.

The City will use the CRS work sheets to claim credits for the FMP. Close coordination with FEMA and their involvement from the beginning will help the City get the maximum credit. The City will also provide a model annual evaluation report on progress that will be used for CRS re-certification.

APPENDIX

DRAFT OF PUBLIC NOTICE

The City of Malibu will hold a public meeting to discuss the preparation of a Comprehensive Flood Mitigation Plan.

Date:	Thursday, June 29, 2000
Time:	7-9 p.m.
Location:	HRL Laboratory Auditorium 3011 Malibu Canyon Road

There are 21 major canyon water courses that cross the Pacific Coast Highway (PCH) within the City's boundary. The watershed areas extend far beyond the City's boundaries. The City of Malibu has a history of repetitive flooding caused by a variety of conditions. The City is preparing a Flood Mitigation Plan to take measures to reduce and eliminate repetitive losses of property due to flooding. Possible mitigation could include non-structural and structural improvements.

The focus of the June 29th meeting is for the public to:

- Provide input on existing conditions
- Identify problem areas
- Discuss the cause(s) of the problem

Project Background

The project, which is partially funded by the Federal Emergency Management Agency (FEMA), consists of the following steps:

- Identify areas of historic flooding and problem areas
- Determine existing hydrologic conditions in the watersheds
- Develop goals and objectives for the Flood Mitigation Plan
- Consider possible solutions to the problems
- Evaluate and prioritize the potential solutions
- Identify funding sources
- Prepare the Draft Flood Mitigation Plan
- Adopt the Flood Mitigation Plan

Public input is extremely important! Please attend to provide your input. If you are unable to attend the meeting but would like to provide input, please contact Claudio Sanchez at (310) 456-2489 Ext. 237.

Harry Barovsky
Honorary Mayor 2000-2001
In Memoriam

City of Malibu

23555 Civic Center Way - Malibu, CA 90265
(310) 456-2489 FAX (310) 456-3356

FLOOD MITIGATION PLAN

PUBLIC MEETING

THURSDAY, JUNE 29, 2000 7-9PM

1. Introductions

2. Existing Conditions and Explanation of Problem

   - Problem and Risk Areas
   - Repetitive Loss
   - Watershed Areas
   - Floodplain and Floodway
   - National Flood Insurance Program

3. Flood Mitigation Plan

   - Reasons for a flood mitigation plan
   - Steps

4. Public Comment

   - Reports of Flood Problems
   - Suggested Solutions
   - Questions and Answers

5. Summary

   - Schedule and Public Meetings
   - Flood Mitigation Plan Committee

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Area R

SPECIFIC AREA MITIGATION ACTIVITIES

1. **Preventive activities**

- Increase the "n" value with additional landscaping and planting within the San Nicholas Canyon Watershed and Area Q.

- Prevent spillover from the PCH

2. **Property protection activities**

- Provide flood proofing with secondary outlets through the garage at 33306 PCH

3. **Natural resource protection activities**

- Prevent Bluff erosion by slope stabilizing with vegetation along the westerly side of PCH.

4. **Emergency services activities**

5. **Structural projects activities**

The existing inadequate 8" catch basin connector pipes in PCH located north of 33306 PCH are under capacity to drain the PCH runoff. There is a 3" AC berm along PCH in the frontage of this property. The height of adjacent AC berm along PCH is 6". The property slopes downwards from PCH. The depth of flow could exceed 3" in PCH and runoff could spill over in the property.

- Replace the existing catch basin and 18" connector pipe with large storm drain system north of 33306 PCH to reduce the depth of flow in PCH.
- Replace the existing berm with 6" berm to match the existing AC berm along PCH.

- Re-profile the access road in to the property at 33306 PCH to higher elevation at the entrance to keep off the PCH runoff.

6. **Public information activities**

AGENCY LETTER

June *, 2000

The City of Malibu has a history of repetitive flooding caused by a variety of conditions. There are 21 major canyon water courses that cross the Pacific Coast Highway (PCH) within the City's boundary. The watershed areas extend far beyond the City boundaries. The City of Malibu is beginning to prepare a Flood Mitigation Plan to identify mitigation measures to protect the community from flooding.

The objective of the FMP is to identify and implement measures to reduce and eliminate repetitive losses of property due to flooding. We would like to request assistance and input from your agency regarding our efforts. Specifically:

- Does your agency have any information on past flood studies and any possible solutions to flooding in the City of Malibu or the surrounding area?
- Is your agency planning or implementing any flood mitigation projects of which we should be aware?
- Does your agency have any financial or technical assistance programs that could help the City of Malibu?
- Do you have any suggestions on types of activities we should review that would reduce flood damage in Malibu?

City will hold a public meeting to discuss the preparation of Flood Mitigation Plan:

Date:	Thursday, June 29, 2000
Time:	7-9 p.m.
Location:	HRL Laboratory Auditorium 3011 Malibu Canyon Road

You are invited to attend this meeting. If your agency is unable to attend the meeting please send your response to the above questions to the City Manager, City of Malibu.

We appreciate your response to this letter. If you have any questions or need additional information concerning the City's efforts in this regard, please contact Claudio Sanchez at (310) 456-2489 Ext. 237.

COVER LETTER TO REPETITIVE LOSS PROPERTIES

August *, 2000

As you know, the City of Malibu is preparing a Flood Mitigation Plan to identify ways to mitigate the flooding in the City because of the repetitive flooding losses that have historically occurred. The objective of the Flood Mitigation Plan is to identify and implement measures to reduce and eliminate repetitive losses of property due to flooding. Enclosed is a public notice for the second public meeting to be held on August 24, 2000.

Based on the FEMA's records, we believe that your property is located in an area that has experienced losses due to flooding. Therefore, the City would again like to invite you to participate in the public meeting so that you may provide your input on goals, objectives and mitigation regarding this issue. If you are unable to attend the meeting, but have information that may be helpful, please contact Claudio Sanchez at (310) 456-2489 Ext. 237 or send your comments in writing to the address above.

Area A

SPECIFIC AREA MITIGATION ACTIVITIES

1. **Preventive activities**

- Improve maintenance frequencies of the existing inlets and the 18" and 24" storm drain at this low point.
- Improve existing 1-18" and 1-24" storm drain(SD) and inlets that are inadequate to discharge runoff from 24 acres.
- Increase the "n" value with additional landscaping and planting within the watershed
- Prevent Tuna Canyon spill over across PCH.

2. **Property protection activities**

- Consider an offer for relocation or request to elevate the building at 18814 Topanga Beach Dr.

- Elevate the buildings at 18856 PCH, 18862 PCH

3. **Natural resource protection activities**

- Prevent Bluff erosion by slope stabilizing with vegetation.
- Enforce the temporary and permanent Best Management Practices (BMPs) and to improve and to maintain the water quality within the watershed for substantial improvements to the property.

4. **Emergency services activities**

5. **Structural projects activities**

- Increase height of the AC berm at Topanga Beach Drive with a vertical curve along PCH to keep the PCH runoff within PCH.
- Re-profile the Topanga Beach Drive to drain the street flow along the gutter adjacent to the retaining wall along the north side of the street.
- Construct local SD and catch basin to collect and discharge the runoff
- Consider rolled curb to keep the PCH runoff away from the garage level
- Reroute the roof drain to the back of the buildings

- From 18922 PCH to north end of area A, regarding the Tuna Canyon spill over consider the following:
  a) clean the creek area and maintain low "n".
  b) construct levee along Tuna Canyon Road
  c) re-profile and elevate Tuna Canyon Road for approximately 500' from PCH
  d) enlarge the Tuna Canyon culvert
  e) add additional inlet at north side of PCH south of Tuna Canyon Rd
  f) construct relief drain for the spill over of the Tuna Canyon Creek
  g) enlarge the 4" dia pipe outlets and increase the size of the grate inlet.
  h) encourage flood proofing the garage and provide a secondary drain from the garage to the ocean with flap gate for emergencies.

6. Public information activities

Area B

SPECIFIC AREA MITIGATION ACTIVITIES

1. **Preventive activities**

- Provide regular maintenance of the existing inlets and the three storm drains at the low point. Existing three Storm Drains (1-18" Dia and 2-24" Dia) are inadequate to discharge runoff from 49 acres (109 cfs for 10-year, 128 cfs for 25-year).
- Increase the "n" value with additional landscaping and planting within the watershed.
- Prevent Tuna Canyon Spillover flows across PCH

2. **Property protection activities**

- Provide flood proofing with secondary outlets through the garages
- Consider offer for relocation of the building at 19028 PCH
- Elevate the buildings at 19028 PCH, 19034 PCH, 19126 PCH

3. **Natural resource protection activities**

- Prevent Bluff erosion by slope stabilizing with vegetation.
- Enforce the temporary and permanent Best Management Practices (BMPs) and to improve and to maintain the water quality within the watershed for substantial improvements to the property.

4. **Emergency services activities**

5. **Structural projects activities**

- From 19130 PCH to north end of Area B regarding the Tuna Canyon Spill over consider the following:
  a) clean the creek area and maintain low "n".
  b) construct levee along Tuna Canyon Road
  c) re-profile and elevate Tuna Canyon Road for approximately 500' from PCH
  d) enlarge the Tuna Canyon culvert
  e) add additional inlet at north side of PCH south of Tuna Canyon Rd

f) construct relief drain for the spill over of the Tuna Canyon Creek
g) enlarge the 4" dia pipe outlets and increase the size of the grate inlet.
h) encourage flood proofing the garage and provide a secondary drain from the garage to the ocean with flap gate for emergencies

- Repave the area in front of garage to eliminate local ponding and positive drainage at 19016 PCH

- Improve the drainage system at the low point between 19036 and 19040 PCH including the upsizing the inlet and storm drain pipe
- Improve the existing 4" dia storm drain and inlet at 19324 PCH

- Consider rolled curb to keep the PCH runoff away from the garage level

6. Public information activities

Area C

SPECIFIC AREA MITIGATION ACTIVITIES

1. **Preventive activities**

- Perform regular maintenance of the existing inlet and storm drain at southwesterly curb return of Big Rock Drive and the storm drain; perform regular maintenance of the three storm drains and inlets starting from 19700 PCH.

- Increase the "n" value with additional landscaping and planting within the watershed.
- Prevent Peidra Gorda Spillover at Big Rock Drive crossing "hairpin" bend. Existing 84" pipe and the culvert 6' X 4' is under capacity to discharge the runoff.

2. **Property protection activities**

- Provide floodproofing with secondary outlets through the garages

- Elevate the buildings for 19728 PCH and 19848 PCH

3. **Natural resource protection activities**

- Prevent Bluff erosion by slope stabilizing with vegetation.

4. **Emergency services activities**

5. **Structural projects activities**

- Prevent the spill over of Peidra Gorda Creek at Big Rock Dr crossing and spill over at 6' X 4' RCB at PCH
  a) clean the creek area and maintain low "n".
  b) construct levees and increase the headwall of the 84" pipe inlet at the "hairpin" bend location
  c) re-profile and elevate Big Rock Drive at this location
  d) Add additional relief drain per the master plan
  e) add additional inlets at southwesterly curb return of Big Rock Tuna Canyon Rd and increase the size of the existing 24" drain

g) enlarge the 6'X4' existing RCB which is under capacity to discharge the runoff across PCH.

- Encourage flood proofing the garage and provide a secondary drain from the garage to the ocean with flap gate for emergencies.
- Repave the area in front of garage to eliminate local ponding and positive drainage for 19848 PCH. Improve the drainage system at this low point with larger grate inlet
- Consider rolled curb to keep the PCH runoff away from the garage level
- Reroute the roof drain to the back of the building

6. Public information activities

Area D

SPECIFIC AREA MITIGATION ACTIVITIES

1. **Preventive activities**

- Regular maintenance of the existing inlets and the storm drains are required at the low point.
- Increase the "n" value with additional landscaping and planting within the watershed.
- Prevent Peidra Gorda Spillover flows across PCH at 19932 PCH

2. **Property protection activities**

- Provide flood proofing with secondary outlets through the garages
- Consider offer for relocation or elevating the building for 19028 PCH
- Elevate the repetitive loss buildings in V zone especially 20848 PCH

3. **Natural resource protection activities**

- Prevent Bluff erosion by slope stabilizing with vegetation.

4. **Emergency services activities**

5. **Structural projects activities**

- Prevent the spill over at 1) Peidra Gorda Creek at Big Rock Dr crossing and at 2) spill over at 6' X 4' RCB at PCH (see Area C)
- Remove "bottleneck" storm drain and replace or add a relief drain at 20330 to 20340 PCH areas. Replace the 18" SD with larger size storm drain (36" SD) at the area in front of garage to eliminate local ponding and positive drainage for 19016 PCH
- Replace the existing grate inlet with larger size at 20832 and 20848 PCH
- Repave and replace the undersized grate inlet and storm drain at 20806 PCH
- Add additional inlets at eastside of PCH and storm drain at 20648 to 20654 PCH
- Elevate 20866 PCH and replace existing 24" SD with a larger SD

- Provide storm drain system at 21056 to 21070 PCH
- Consider rolled curb to keep the PCH runoff away from the garage level
- Reroute the roof drain to the back of the building.

6. Public information activities

Area Los Flores

SPECIFIC AREA MITIGATION ACTIVITIES

1. **Preventive activities**

- Increase the "n" value with additional landscaping and planting within the watershed.

2. **Property protection activities**

3. **Natural resource protection activities**

- Prevent Bluff erosion by slope stabilizing with vegetation.

4. **Emergency services activities**
- Close the nursery during the heavy rainfall and evacuate the premises. Prepare a specific emergency plan for 21201 PCH and 3945 Las Flores Canyon until the completion of the construction of the new project by Caltrans.

5. **Structural projects activities**

- Add an additional culvert or a new bridge to convey 50 year frequency flow. This will be designed by Caltrans.
- Consider elevating the Las Flores Canyon Road and add Las Flores Mesa storm drain

5. **Public information activities**

Area E

SPECIFIC AREA MITIGATION ACTIVITIES

1. **Preventive activities**

- Regular maintenance of the existing inlets and the storm drains are required at the low point.
- Prevent spill over from Rambla Vista Dr across PCH

2. **Property protection activities**

- Elevate the repetitive loss buildings in V zone especially 21422 PCH, 21506 PCH and 21596 PCH

2. **Natural resource protection activities**

- Prevent Bluff erosion by slope stabilizing with vegetation.

3. **Emergency services activities**

4. **Structural projects activities**

There are two existing 18" SD discharge at east of PCH . But there is no other SD system to pick up this runoff to transport across PCH in to the ocean. The runoff crosses the crown of PCH and floods 21400 to 21422 PCH

- Provide a SD system to pick up the flows across PCH at 21400 PCH to 21422
- Provide storm drain system with inlets at the intersection of Rambla Vista and PCH to drain across PCH. Improve the existing the 18" SD system at 21330 PCH.
- Upgrade the existing inlet size of 18" SD at 21506 PCH
  An existing 24" SD located across 21640 PCH terminates east of PCH. There is no SD system to pick up the said flow and transport across PCH. There is low point at 21640 PCH in the street profile. Existing inlet located east of PCH at 21658 PCH is undersized to pick up spill over from Rambla Vista .
  Consider the following:
- Upsize the inlet and SD system at 21658 PCH

- Add a new SD system at the low point in front of 21640 PCH to pick up the flows across PCH from the 24" outlet
- Reroute the roof drain to the back of the building.

5. Public information activities

Area F

SPECIFIC AREA MITIGATION ACTIVITIES

1. **Preventive activities**

- Require regular maintenance of the inlets and the storm drains after major storm events and regular scheduled maintenance.
- Prevent Carbon Canyon Creek Spillover flows across PCH

2. **Property protection activities**

- Provide flood proofing with secondary outlets through the garages
- Consider offer for relocation and elevating the building for 19028 PCH
- Elevate the repetitive loss buildings in V zone especially 20848 PCH

3. **Natural resource protection activities**

- Prevent Bluff erosion by slope stabilizing with vegetation.

4. **Emergency services activities**

5. **Structural projects activities**

There are no inlets at the "T" intersection of Carbon Canyon Road and PCH. The street flow crosses the PCH and traverses towards the low point in the street at 21848 PCH. Consider the following:

- Provide inlets at the intersection and direct the runoff in to the Carbon Canyon creek east of PCH to prevent the runoff crossing over the PCH to the said low point.
- Construct new inlet and SD at the low point
- Perform flood proofing 21848 PCH

Replace the deficient existing inlet and 14" SD at 21962PCH
Local low point due to the flat profile of PCH contributed to the flooding of 22126 PCH, 22144 PCH, 22040 PCH and 22062 to 22104 PCH

- Replace the existing inlet and 15" SD at 22202 PCH with larger size
- Construct inlet at the "T" intersection of Fanning and PCH and connect to the existing 30" SD
- At 22306 PCH and 22338 PCH replace the inlets with larger sizes
- Reroute the roof drain to the back of the building.

6. Public information activities

Area G

SPECIFIC AREA MITIGATION ACTIVITIES

1. **Preventive activities**

- Provide maintenance of the existing inlets, debris basin and the 48" dia storm drain at 22522 PCH after major storm event and regularly scheduled maintenance.

2. **Property protection activities**

- Provide flood proofing with secondary outlets through the garages
- Elevate the repetitive loss buildings in V zone especially 22522 PCH

3. **Natural resource protection activities**

- Prevent Bluff erosion by slope stabilizing with vegetation.

4. **Emergency services activities**

5. **Structural projects activities**

The surface flooding at 22522 PCH appears to be due to the low point and under capacity inlet connected to 48" dia SD

- Enlarge the size of the inlet at 22528 PCH
- Consider a new inlet at the low point of 22522 PCH and a storm drain system connecting to existing 48" storm drain
- Consider adding or upsizing inlets west side of PCH at the existing storm drain locations

6. **Public information activities**

Area Malibu Canyon

SPECIFIC AREA MITIGATION ACTIVITIES

1. Preventive activities

- Incorporate the mitigation activities in the Watershed Management Area Plan (WMAP) for the Malibu creek with the participation of Cities of Agoura Hills and Calabasas and County of Los Angeles.
- Participate the discussions for the upstream watershed development with the County of Ventura and County of Los Angeles.
- Prepare an City ordinance restricting any increase in runoff and setting the minimum water quality standards such as TMDLs at the upstream end of the City boundary
- Formulate a Malibu Creek Watershed committee and facilitate regularly scheduled meeting. (once a month or once in two months). Encourage participation from the Malibu Colony Home owners group and local businesses that are located within the floodplain.
- Discourage any construction activities within the floodplain area including any interim activities
- Prepare specific ordinance for the properties within the floodplain area to use Best Management Practices to improve the water quality
- Maintain and upgrade the sump pumps within the Colony area
- Maintain the local storm drain system
- Add the maintenance fee for the storm drain system in the Association fee within the Malibu Colony area
- Create a section under City's web page about the Malibu Creek watershed management
- Adopt set of requirements for detention basin along with the water quality control for developments within the Malibu Watershed especially near the Civic Center areas.

2. Property protection activities

- Provide flood proofing with secondary outlets through the garages
- Consider offer for relocation and elevating the buildings in V zones

3. Natural resource protection activities

- Prevent scour,debris and sediment loading from the upstream end of Malibu Creek

4. Emergency services activities

- Consider a telemetry system at the stream gauge station in relation to the depth of flow at the upstream end to provide flood warning and the quantity of runoff. Connect the telemetry system to the City hall and the maintenance personnel for evacuation. Post the related quantity of runoff in the Internet under City's web page.

5. Structural projects activities

- Consider construction of a structural levee south of the Malibu Colony Drive along the Creek. Disturbance to the environment need to be considered also.
- Remove the sand dune in the lagoon during a major storm event with early warning system to prevent backup of Malibu Creek
- Consider schedule periodic removal of sand dune.
- Construct a flap gate for the 13.5' W X 5.5'H RCB outlet in to Malibu Creek to prevent "bubbling" of Malibu Creek in to the Civic Center area.
- Perform a detailed design study for detention basin and year around wetland creek improvement near the Civic center. Expand the master plan concept study.
- Add a new storm drain system with inlets in Malibu Road to eliminate ponding and flow diversion in to Malibu Colony Road.
- Secure easement along the side yard of 23736 Malibu Colony Road for the new storm drain
- Re-profile Malibu Road to eliminate the flat slope and low points along with new rolled curb and gutter
- Upgrade the sump pump and storm drain within the gated community area of Malibu Colony

- Request the property owners to reroute the roof drains to the back of the buildings
- Consider new storm drain in Malibu Colony Drive to drain towards the south end of the street in to the ocean.(easement along the sideyard will not be needed)
- Create a "V" gutter and change the street cross slope for Malibu Colony Drive to keep the runoff flowing in the garages
- Consider upgrading of the existing storm drain in Web Way
- Replace the existing grate inlet and storm drain with larger sizes within Colony
- Consider rolled curb to keep the Malibu Road runoff away from the garage level

6. Public information activities

Area Winter Canyon

SPECIFIC AREA MITIGATION ACTIVITIES

1. **Preventive activities**

- Provide maintenance of the existing inlets, 18" and 24" storm drains north of 23936 Malibu Road.
- Increase the "n" value with additional landscaping and planting within the watershed.

2. **Property protection activities**

- Provide flood proofing with secondary outlets through the garages

3. **Natural resource protection activities**

- Prevent Bluff erosion by slope stabilizing with vegetation.

4. **Emergency services activities**

5. **Structural projects activities**

- Extent the 60" storm drain system across Malibu Road and add inlets north of 23936 Malibu Road
- Construct rolled curb and gutter along the east of Malibu Road to keep the runoff within street
- Request the property owners to reroute the roof drains to the back of the buildings

6. **Public information activities**

Area I

SPECIFIC AREA MITIGATION ACTIVITIES

1. **Preventive activities**

- Provide maintenance of the inlets, 18" storm drain at 24246 Malibu Road and 48" storm drain at 24320 Malibu Road.
- Increase the "n" value with additional landscaping and planting within the watershed.

2. **Property protection activities**

- Provide flood proofing and secondary outlets through the garages

3. **Natural resource protection activities**

- Prevent Bluff erosion by slope stabilizing with vegetation.

4. **Emergency services activities**

5. **Structural projects activities**

In general the street level is higher than the garage level and there is no gutter to contain the street runoff. Most of the local inlets are owned by the property owners. Storm drain systems with inlets, 18" storm drain and 48" storm drain pick up flows.

- Add additional inlets to the storm drain system and replace the existing inlets with larger inlets.
- Encourage local property owners to enlarge the grate inlets and replace the existing 4" and 8" storm drains with larger size pipes.
- Construct rolled curb and gutter along the east of Malibu Road to keep the runoff within street
- Existing system is inadequate to carry the bulked flows. Remove and replace all the existing 12" storm drains and inlets with larger sizes.
- Remove and replace the existing corroded 12" CMP at 24460 Malibu Road.

- Request the property owners to reroute the roof drains to the back of the buildings

6. Public information activities

Area MARIE CYN

SPECIFIC AREA MITIGATION ACTIVITIES

1. **Preventive activities**

- Prevent Marie Canyon Creek Spillover flows from 6' H X 10'W RCB across Malibu Road
- Increase the "n" value with additional landscaping and planting within the area west of Malibu Road.
- Clean and maintain the 6'H X 10'W RCB outlet at the ocean

2. **Property protection activities**

- Provide flood proofing with secondary outlets through the garages

3. **Natural resource protection activities**

- Prevent erosion control and slope protection at the downstream of the Arch Culvert at PCH

4. **Emergency services activities**

5. **Structural projects activities**

The flooding at 24608 Malibu road is due to the spill over from 6' H X 10'W RCB and inlet located at 24604 Malibu Road. The RCB outlet has plugged conditions at the ocean.

- Add a relief drain to the existing 6' H X 10'W RCB to provide additional capacity.
- Encourage local property owners to enlarge the inlet at 24604 Malibu Road.
- Construct rolled curb and gutter along the east of Malibu Road to keep the runoff within street

- Request the property owners to reroute the roof drains to the back of the buildings

6. **Public information activities**

Area PUERCO CYN

SPECIFIC AREA MITIGATION ACTIVITIES

1. **Preventive activities**

- Increase the "n" value with additional landscaping and planting within the area east of PCH and west of Malibu Road. Runoff from the large lots could be reduced considerably to prevent local flooding in Malibu Road.
- Clean and maintain the numerous private drains west of Malibu road.
- Clean and maintain numerous drains that drain across Malibu Road in to the ocean.

2. **Property protection activities**

- Provide flood proofing with secondary outlets through the garages
- Elevate or relocate the repetitive loss buildings in V zone at 25154 Malibu Road

3. **Natural resource protection activities**

- Prevent erosion control and slope protection along the westerly side of Malibu Road.

4. **Emergency services activities**

5. **Structural projects activities**

There are numerous small 18" drains at the westerly side of Malibu Road from the large private lots. These drains discharge in to the street. There are only few storm drains that pick up these flow and drain across Malibu Road in to the ocean. Hence, there is surface overflow across the street. Malibu Road has very minimum to zero cross fall at these locations. Along the easterly side of the street, the runoff spills over the inlets and floods the adjacent property.

- Construct additional inlets and storm drain system along easterly side of Malibu Road to capture the flows from the private drains.
- Encourage local property owners to enlarge the local inlets and 4" drains especially at 24712 Malibu Road.

- Remove and replace the existing inlets and 18" storm drain with larger size at 25154 Malibu Road
- Construct rolled curb and gutter along the east of Malibu Road to keep the runoff within street
- Re-profile Malibu Road to create cross fall and prevent spillover across the Road
- Construct a natural swale along the westerly side of the Malibu Road without creating any public driving hazard. This will increase the depth of low at inlets and will increase the capacity of inlets.
- Request the property owners to reroute the roof drains to the back of the buildings

6. Public information activities

Area J

SPECIFIC AREA MITIGATION ACTIVITIES

1. **Preventive activities**

- Increase the "n" value with additional landscaping and planting within the area east of PCH and west of Malibu Road. Runoff from the large lots could be reduced considerably to prevent local flooding in Malibu Road.
- Clean and remove the silt in order to maintain the private drain at 25438 Malibu road that drains in to the ocean.

2. **Property protection activities**

- Provide flood proofing with secondary outlets through the garages
- Elevate or relocate the repetitive loss buildings in V zone at 25342 Malibu Road

3. **Natural resource protection activities**

- Prevent erosion control and slope protection along the westerly side of Malibu Road.

4. **Emergency services activities**

5. **Structural projects activities**

There are numerous small 18" drains at the westerly side of Malibu Road from the large private lots. These drains discharge in to the street. There are only few storm drains that pick up these flow and drain across Malibu Road in to the ocean. Hence, there is a potential for surface overflow across the street. Malibu Road has very minimum to zero cross fall at these locations. Along the easterly side of the street, the runoff spills over at the inlets and floods the adjacent property.

- Construct additional inlets and storm drain system along easterly side of Malibu Road to capture the flows from the private drains.
- Encourage local property owners to enlarge the local inlets and 6" drains especially at 25438 Malibu Road.
- Remove and replace the existing inlets and 18" storm drain with larger sizes

- Construct rolled curb and gutter along the east of Malibu Road to keep the runoff within street

- Re-profile Malibu Road to create cross fall and prevent spillover across the Road
- Construct a natural swale along the westerly side of the Malibu Road without creating any public driving hazard. This will increase the depth of low at inlets and will increase the capacity of inlets.
- Request the property owners to reroute the roof drains to the back of the buildings

6. Public information activities

Area K

SPECIFIC AREA MITIGATION ACTIVITIES

1. **Preventive activities**

- Increase the "n" value with additional landscaping and planting within the area east of PCH and west of Malibu Cove Colony Drive. Runoff from the large lots could be reduced considerably to prevent local flooding in Malibu Cove Colony Drive.
- Clean and remove the silt in order to maintain the storm drains that drain in to the ocean.

2. **Property protection activities**

- Provide flood proofing with secondary outlets through the garages
- Elevate or relocate the building in V zone at 27012 Malibu Cove Colony Drive

3. **Natural resource protection activities**

- Prevent erosion control and slope protection along the westerly side of Malibu Cove Colony Drive

4. **Emergency services activities**

5. **Structural projects activities**

Malibu Cove Colony Drive is relatively very flat. There are limited number of existing small drains lines 1 through 6 that drains from the westerly side of Malibu Cove Colony Drive in the ocean. There are no inlets along the easterly side of Malibu Cove Colony Drive.

- Construct a storm drain system across Malibu Cove Colony Drive to pick up the flows from the 10' X 10' culvert outlet located west of the Malibu Cove Colony Drive at 26642 Latigo Shore Drive.
- Construct additional inlets and storm drain system to capture the flows from the westerly side of Malibu Cove Colony Drive.
- Replace the existing 12" grate inlets at low points and storm drain at 27002 Malibu Cove Colony Drive.
-

- Remove and replace the inlets and storm drain lines 4, 5 and 6 with larger sizes
- Re-profile Malibu Road to create cross fall and prevent spillover across the Road
- Construct rolled curb and gutter along the east of Malibu Road to keep the runoff within street
- Request the property owners to reroute the roof drains to the back of the buildings

6. Public information activities

Area L

SPECIFIC AREA MITIGATION ACTIVITIES

1. **Preventive activities**

- Increase the "n" value with additional landscaping and planting within the gated community area
- Clean and remove the silt in order to maintain the storm drain at the ocean outlet

2. **Property protection activities**

- Provide flood proofing with secondary outlets through the garages

3. **Natural resource protection activities**

- Prevent erosion control and slope protection along the side slopes of the access road

4. **Emergency services activities**

5. **Structural projects activities**

Runoff from the V gutter exceeds the V gutter capacity and cascades along the side before reaching the curb opening catch basin. In addition, at the catch basin, there is no local depression to build up depth. Runoff cascades to the driveway along the side and floods the property. The original design was not done correctly for the quantity of discharge.

- Raise the profile of the Sea Lane at PCH to prevent PCH runoff spillover in to Sea Lane.
- Redesign the storm drain system at the inlet. Revise the grade at inlet and add grate inlets before the the curb opening catch basin.
- Reduce the velocity of the flow across the street
- Remove and replace the inlets and storm drain line with larger sizes

6. **Public information activities**

Area Remirez Cyn

SPECIFIC AREA MITIGATION ACTIVITIES

1. **Preventive activities**

- Clean and remove the silt in order to maintain the two existing CMP storm drain at the ocean outlet. One large 72" CMP outlet is fully plugged at the outlet. The other outlet is partially open.

2. **Property protection activities**

3. **Natural resource protection activities**

4. **Emergency services activities**

5. **Structural projects activities**

The two pipe capacities at the outlet in to the ocean are inadequate.

- Replace the two CMPs with one large arch culvert or RCB at ocean outlet
- Schedule a regular maintenance at the outlet to remove sand buildup.

6. **Public information activities**

Area M

SPECIFIC AREA MITIGATION ACTIVITIES

1. **Preventive activities**

2. **Property protection activities**
- Review the local drainage system within the large lot

3. **Natural resource protection activities**

4. **Emergency services activities**

5. **Structural projects activities**

There is an existing asphalt berm 6" high along the frontage of the property. Property has two unpaved entrances. Street has very mild cross slope. There is no drainage system at the end of the cul-de-sac of Greenwater Road. Street flow could top the berm for larger storms.

- Re-profile the property entrance to keep off the street runoff.
- Add local drainage within the lot if needed (private)
- Consider a storm drain system at the end of the Cul-de-sac

6. **Public information activities**

Area ZUMA CYN

SPECIFIC AREA MITIGATION ACTIVITIES

1. **Preventive activities**

- Clean and remove the silt in order to maintain the on site local storm drain
- Remove the flap gate and attach a down drain system at the outlet in the alley for the property at 29221 Heathercliff Road.

2. **Property protection activities**

- Provide flood proofing and secondary outlets

3. **Natural resource protection activities**

4. **Emergency services activities**

5. **Structural projects activities**

Runoff in the street is generated by small local area. Heathercliff Road has steep longitudinal slope and standard cross slope. The property at 29221 Heathercliff Road is a condominium complex. Driveway highpoint is along the property line at the street and the driveway drops to 4-5' feet at the entrance gate from the street level. Pedestrian access is the same way. The street highpoint is located at the "T" intersection of Wandermere. Street has considerable capacity due to the steep slope. The complex is landlocked and no secondary outlet due to the perimeter wall.

- Remove and replace the existing onsite inlets and storm drain line with larger sizes at the property 29221 Heathercliff Road. (private)
- Construct a drainage system with long grate inlets in front of the gate at the property 29221 Heathercliff Road. (private)
- Construct a opening in the perimeter screen wall for secondary flows at the property 29221 Heathercliff Road. (private)

6. **Public information activities**

Area O

SPECIFIC AREA MITIGATION ACTIVITIES

1. **Preventive activities**

- Increase the "n" value with additional landscaping and planting within the Steep Hills Canyon Watershed , Trancas Canyon Watershed and Area O.
- Prevent spillover from the Trancas Canyon Creek at PCH
- Prevent spillover from Trancas Canyon Creek at Principal Drive
- Prevent spillover from Steep Hills Canyon at PCH

2. **Property protection activities**

- Provide flood proofing with secondary outlets through the garages
- Elevate the repetitive loss buildings in V zone at 30962 Broad Beach Road.

3. **Natural resource protection activities**

- Prevent Bluff erosion by slope stabilizing with vegetation.

4. **Emergency services activities**

5. **Structural projects activities**

Within Broad Beach Drive, there are three low points. There is only one inlet along the easterly side of Broad Beach at one low point. The existing inlet and 8" connector pipes are under capacity to drain the street runoff. The runoff from Trancas Canyon Road could cross PCH and traverse in to Broad Beach Road. At 31400 Broad Beach Road, there is an existing 18" storm drain that is designated to carry 709 cfs for 50 year frequency storm. The existing storm drain capacity is inadequate to drain the quantity of flow. At the outlet, the pipe is enlarged into 4.75' X 4.75' RCB. This "bottle neck" across PCH and Broad Beach Drive need to be removed. Due to this "bottleneck" runoff spills over at Broad Beach Drive and traverses south to the low point.

- Replace existing grate inlets and storm drains with larger system at 30804 Broad Beach Drive.
- Replace existing grate inlets and 3" storm drain with larger system at 31220 Broad Beach Drive. (Garage level lower than the top of inlet)

- Replace the existing catch basins and 8" connector pipes with large storm drain system along PCH
- Remove the "bottleneck" (8" connector pipes) and replace with large connector pipes. Construct a storm drain 30" SD westerly of PCH to easterly of Broad Beach Drive. Connect the inlet connector pipe in to the proposed 30" SD at 31034 Broad Beach Drive.
- Replace existing grate inlets and 3" storm drain with larger system at 30962 Broad Beach Drive. (Garage level lower than the top of inlet)
- Remove the existing "bottleneck" (24" d/s end 30" up/s end)at this low point 31310 Broad Beach Road. Replace with larger storm drain system at the downstream end easterly of Broad Beach Road. Replace the existing 10" catch basin connector pipes with larger pipes. Construct inlets east of Broad Beach Road between 31302 and 31310 Broad Beach Road.
- Remove the existing "bottleneck" Steep Hills Canyon 18" SD and replace it with larger size at 31400 Broad Beach Road. Remove the existing connector pipes and replace with larger size.
- Construct a storm drain system at 31372 Broad Beach Road with the at the low points

6. **Public information activities**

Area P

SPECIFIC AREA MITIGATION ACTIVITIES

1. **Preventive activities**

- Prevent spillover from the Steep Hills Canyon storm drain "bottleneck"
- Prevent spillover from Encinal Canyon at PCH

2. **Property protection activities**

- Provide flood proofing with secondary outlets through the garage at 31450 Broad Beach Road

3. **Natural resource protection activities**

4. **Emergency services activities**

5. **Structural projects activities**

At 31430 Broad Beach Road, there is an existing 18" storm drain that is designated to carry 709 cfs for 50 year frequency storm. The existing storm drain capacity is inadequate to drain the quantity of flow. At the outlet, the pipe is enlarged into 4.75' X 4.75' RCB. This "bottle neck across PCH and Broad Beach Drive need to be removed. Due to this "bottleneck" runoff spills over at Broad Beach Drive and traverses south to the low point in area O.

- Replace the existing catch basin and 8" connector pipe with large storm drain system north of 31611 PCH to reduce the depth of flow in PCH.
- Construct a storm drain system at 31450 Broad Beach Drive.
- Replace existing 6' X 6' culvert across PCH which is under capacity to drain 3,090 cfs for 50 year storm. This will avoid the spill over along the westerly side of PCH at Encinal Canyon.
- Remove the existing "bottleneck" Steep Hills Canyon 18" SD and replace it with larger size at 31430 Broad Beach Road. Remove the existing connector pipes and replace with larger size.

6. **Public information activities**

Area Q

SPECIFIC AREA MITIGATION ACTIVITIES

1. **Preventive activities**
- Increase the "n" value with additional landscaping and planting within the Encinal Canyon Watershed and Area Q.

- Prevent spillover from the PCH

2. **Property protection activities**

- Provide flood proofing and with outlets through the garage at 31974 PCH

3. **Natural resource protection activities**
- Prevent Bluff erosion by slope stabilizing with vegetation along the westerly side of PCH.

4. **Emergency services activities**

5. **Structural projects activities**

The existing inadequate 8" connector pipes in PCH located north of 31974 PCH are under capacity to drain the PCH runoff. There is a 6" AC berm along PCH in the frontage of this property. The driveway slopes up to 6" at the gate location and slopes down from the gate towards the house. The depth of flow could exceed 6" in PCH and runoff could spill over in the property.

- Replace the existing catch basin and 8" connector pipe with large storm drain system north of 31974 PCH to reduce the depth of flow in PCH.

- Re-profile the access road at 31974 PCH to the gate to higher elevation at gate to keep off the PCH runoff. (private)

6. **Public information activities**

SECTION 24. ANNEX H: CITY COUNCIL APPROVALS

CITY OF AGOURA HILLS

CITY OF
AGOURA HILLS

Office of the City Clerk
30001 Ladyface Court
Agoura Hills, CA 91301

CERTIFICATION

STATE OF CALIFORNIA)
COUNTY OF LOS ANGELES) SS
CITY OF AGOURA HILLS)

I, Kimberly M. Rodrigues, City Clerk of the City of Agoura Hills, California, do hereby certify that the foregoing three (3) pages of **Resolution No. 24-2080**; *A Resolution of the City Council of the City of Agoura Hills, California, Adopting the 2023 Multi-Jurisdictional Hazard Mitigation Plan of the Las Virgenes-Malibu Council of Governments and Finding that the Proposed Action is Exempt from California Environmental Quality Act;* are copies of the full, true and correct original of the Resolution adopted by the City Council at its Regular Meeting held at 6:00 p.m. on Wednesday, August 28, 2024, and on file and of record in the Office of the City Clerk, pursuant to the City's Electronic Documentation Management System (EDMS) policy.

City of Agoura Hills, California Incorporated Dec. 8, 1982

Kimberly M. Rodrigues, MPPA, MMC
City Clerk

Dated: September 9, 2024

RESOLUTION NO. 24-2080

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AGOURA HILLS CALIFORNIA, ADOPTING THE 2023 MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN OF THE LAS VIRGENES-MALIBU COUNCIL OF GOVERNMENTS AND FINDING THAT THE PROPOSED ACTION IS EXEMPT FROM CALIFORNIA ENVIRONMENTAL QUALITY ACT

THE CITY COUNCIL OF THE CITY OF AGOURA HILLS HEREBY FINDS, RESOLVES, AND ORDERS AS FOLLOWS:

Section 1. Findings and Intent.

A. The Disaster Mitigation Act of 2000 ("Act") (Pub. L. 106-390), as implemented by 44 CFR § 201.6, mandates that local governments submit and maintain a Federal Emergency Management Agency ("FEMA") approved local hazard mitigation plan.

B. The Las Virgenes-Malibu Council of Governments ("LVMCOG"), working with the cities of Agoura Hills, Calabasas, Hidden Hills, Malibu and Westlake Village, has coordinated the hazard mitigation planning efforts among the incorporated cities and participating special districts.

C. The LVMCOG Multi-Jurisdictional Hazard Mitigation Plan identifies a region-wide risk assessment and mitigation strategies to reduce the impacts of natural, technological, and human caused disasters on the public and local government.

D. Identification of hazards in the region assists with response planning, exercise development, public education and awareness, and other emergency management functions.

E. The Act specifies documentation that the LVMCOG Multi-Jurisdictional Hazard Mitigation Plan has been approved by the FEMA and formally adopted by the City Council.

F. On August 7, 2024, FEMA approved the 2023 LVMCOG Multi-Jurisdictional Hazard Mitigation Plan.

G. The Governor's Office of Emergency Services ("Cal OES") Mitigation Division requires a Council Resolution recognizing the adoption of the current LVMCOG Multi-Jurisdictional Hazard Mitigation Plan and into the Safety Element of the Agoura Hills General Plan.

H. The City of Agoura Hills's ("City") Safety Element of the General Plan currently incorporates and refers to the 2018 LVMCOG Multi-Jurisdictional Hazard Mitigation Plan, in accordance with California Government Code Sections 8685.9, 65302 and 65302.6;

SECTION 2. Adoption. The City Council hereby adopts the 2023 LVMCOG Multi-Jurisdictional Hazard Mitigation Plan, dated June 13, 2024 ("HMP") and hereby resolves to adopt and incorporate such HMP as part of the City's Safety Element of the General Plan ("Safety Element") and to update the Safety Element with identified evacuation routes and their capacity, safety, and viability and evacuation locations, all of which is anticipated to occur by December 31, 2024.

SECTION 3. California Environmental Quality Act. Based on its own independent judgment, the City Council of the City of Agoura Hills hereby finds and determines that the HMP is exempt from the requirements of the California Environmental Quality Act ("CEQA") pursuant to CEQA Guidelines Section 15061(b)(3) because it can be seen with certainty that there is no possibility that the proposed HMP will have a significant effect on the environment. The adoption of the proposed HMP is an administrative process of the City that will not result in direct or indirect physical changes in the environment. In addition, the City Council hereby finds that the HMP is exempt from CEQA pursuant to CEQA Guidelines Section 15306, because the HMP consists of data collection, research, experimental management, and resource evaluation activities which do not result in a serious or major disturbance to environmental resources. The HMP also provides information and resources to assist in understanding the region and the hazard-related issues facing citizens, businesses, and the environment, with the goal of reducing risk and preventing loss from future hazard events, but the City has not yet approved, adopted or funded any specific action in the HMP.

SECTION 4. Effective Date and Certification. This Resolution shall be in full force and effect immediately upon adoption. The City Clerk shall certify to the adoption of this Resolution.

PASSED, APPROVED, AND ADOPTED this 28th day of August, 2024, by the following vote to wit:

AYES:	(5) Buckley Weber, Sylvester, Anstead, Klein Lopez, Wolf
NOES:	(0)
ABSTAIN:	(0)
ABSENT:	(0)

Illece Buckley Weber, Mayor

ATTEST:

City of Agoura Hills, California Incorporated Dec. 8, 1982 California

Kimberly M. Rodrigues, City Clerk, MMC

3

CITY OF CALABASAS

RESOLUTION NO. 2024-1922

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF CALABASAS, CALIFORNIA, ADOPTING THE 2024 MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN OF THE LAS VIRGENES-MALIBU COUNCIL OF GOVERNMENTS.

WHEREAS, the Federal Disaster Mitigation Act of 2000 ("Act"), as described in 44 Code of Federal Regulations Section 201.6 (44 CFR § 201.6) mandates local governments to submit and maintain a Federal Emergency Management Agency ("FEMA") approved local hazard mitigation plan; and

WHEREAS, the Las Virgenes-Malibu Council of Governments (LVMCOG), working with the cities of Agoura Hills, Calabasas, Hidden Hills, Malibu and Westlake Village, has coordinated the hazard mitigation planning efforts among the incorporated cities and participating special districts; and

WHEREAS, the LVMCOG Multi-Jurisdictional Hazard Mitigation Plan, ("Plan") identifies a region-wide risk assessment and mitigation strategies to reduce the impacts of natural, technological, and human caused disasters on the public and local government; and

WHEREAS, identification of hazards in the region assists with response planning, exercise development, public education and awareness, and other emergency management functions; and

WHEREAS, the Act specifies documentation that the Plan has been approved by the FEMA and formally adopted by the Calabasas City Council; and

WHEREAS, on August 6, 2024, FEMA approved the Plan; and

WHEREAS, the Governor's Office of Emergency Services (Cal OES) Mitigation Division requires a Council Resolution recognizing the adoption of the current Plan and into the Safety Element of the Calabasas General Plan;

WHEREAS, the City Council last adopted the revised Safety Element to the General Plan April 26, 2023; and

WHEREAS, the City Council seeks to adopt and updated Plan; and

Resolution No. 2024-1922
Page 2 of 2

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF CALABASAS AS FOLLOWS:

1. Adopts the updated LVMCOG Multi-Jurisdictional Hazard Mitigation Plan, enclosed as Attachment A, and resolves to update the reference in the Safety Element of the General Plan to include this LVMCOG Multi-Jurisdictional Hazard Mitigation Plan.

2. In compliance with the requirements of Government Code sections 65302, 65302.6 and 8685.9 (AB 2140(2006), there is no possibility that this activity in question may have a significant impact on the environment and is therefore exempt from the provisions of CEQA as ministerial and categorical exemptions for general policy making and organizational or administrative activities of governments that will not result in direct or indirect physical changes in the environment under CEQA Guidelines Section 15378, subdivisions (b)(2) & (b)(5).

PASSED, APPROVED AND ADOPTED this 28th day of August 2024.

Alicia Weintraub, Mayor

ATTEST:

Lisa Pope, City Clerk

APPROVED AS TO FORM:

Mathew T. Summers
Colantuono, Highsmith & Whatley, PC
City Attorney

370875.1

CITY OF HIDDEN HILLS

RESOLUTION NO. 1033

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF HIDDEN HILLS, CALIFORNIA, APPROVING THE MULTI-JURISDICTIONAL HAZARD MITIGATION ACTION PLAN OF THE LAS VIRGENES MALIBU COUNCIL OF GOVERNMENTS

WHEREAS, the Federal Disaster Mitigation Act of 2000 (Mitigation Act) requires that local governments develop and submit local hazard mitigation plans to the Federal Emergency Management Agency (FEMA) as a condition of receiving FEMA Hazard Mitigation Grant program funds after 2004; and the plans be reviewed and updated every five years; and

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF HIDDEN HILLS AS FOLLOWS:

SECTION 1. The City Council of the City of Hidden Hills hereby approve the 2024 Las Virgenes Malibu Council of Governments Multi-Jurisdictional Hazard Mitigation Plan.

SECTION 2. The City Clerk shall certify to the adoption of this resolution and shall cause the same to be processed in the manner required by law.

PASSED, APPROVED AND ADOPTED this 12th day of August, 2024.

Eniko Gold, Mayor

ATTEST:

Deana L. Gonzalez, CMC, City Clerk

CITY OF MALIBU

RESOLUTION NO. 24-42

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MALIBU ADOPTING THE LAS VIRGENES-MALIBU COUNCIL OF GOVERNMENTS 2023 MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

The City Council of the City of Malibu does hereby find, order and resolve as follows:

SECTION 1. Recitals.

A. The Federal Disaster Mitigation Act of 2000 (Mitigation Act) requires that local governments develop and submit local hazard mitigation plans to the Federal Emergency Management Agency (FEMA) as a condition of receiving FEMA Hazard Mitigation Grant funds.

B. The Las Virgenes-Malibu Council of Governments (LVMCOG) coordinated the planning effort to develop the 2023 Multi-Jurisdictional Hazard Mitigation Plan (Plan) to serve as the hazard mitigation plan for the cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, and Westlake Village.

C. The Mitigation Act requires multi-jurisdictional plans be formally adopted by each participating jurisdiction. FEMA is prepared to approve the Plan pending receipt of documentation that all five City Councils within the LVMCOG have approved the Plan.

D. The Hazard Mitigation Plan has been environmentally reviewed pursuant to the California Environmental Quality Act (CEQA), the State CEQA Guidelines (California Code of Regulations, Title 14, Sections 15000 *et seq.)* (hereafter the Guidelines) and a Class 6 Categorical Exemption has been issued in accordance with the requirements of Section 15308 of the Guidelines.

E. The public has been provided an opportunity to comment on the Hazard Mitigation Plan during its drafting and prior to its approval by the City Council.

SECTION 2. The Las Virgenes-Malibu Council of Governments 2023 Hazard Mitigation Plan, as presented to the City Council as Attachment No. 2 to Agenda Item No. 3.B.4., for the August 26, 2024 Council meeting, is hereby adopted.

SECTION 3. The City Clerk shall certify to the passage and adoption of this resolution and enter it into the book of original resolutions.

PASSED, APPROVED, and ADOPTED this 26th day of August 2024.

Resolution No. 24-42
Page 2 of 3

DOUG STEWART, Mayor

ATTEST:

KELSEY PETTIJOHN, City Clerk
(seal)

APPROVED AS TO FORM:

TREVOR RUSIN, Interim City Attorney

Resolution No. 24-42
Page 3 of 3

I CERTIFY THAT THE FOREGOING RESOLUTION NO. 24-42 was passed and adopted by the City Council of the City of Malibu at the Regular meeting thereof held on the 26th day of August 2024 by the following vote:

AYES:	5	Councilmembers:	Grisanti, Silverstein, Uhring, Riggins, Stewart
NOES:	0		
ABSTAIN:	0		
ABSENT:	0		

KELSEY PETTIJOHN, City Clerk
(seal)

CITY OF WESTLAKE VILLAGE

RESOLUTION NO. 2364-24

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF WESTLAKE VILLAGE ADOPTING THE 2024 MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN OF THE LAS VIRGENES-MALIBU COUNCIL OF GOVERNMENTS

THE CITY COUNCIL OF THE CITY OF WESTLAKE VILLAGE HEREBY FINDS, RESOLVES, AND ORDERS AS FOLLOWS:

Section 1. Findings and Intent.

A. The Disaster Mitigation Act of 2000 (Pub. L. 106-390), and implementing regulations (44 CFR Part 201), mandates that local governments obtain Federal Emergency Management Agency ("FEMA") approval of a hazard mitigation plan as a condition of receipt of an increased federal share for hazard mitigation measures.

B. The Las Virgenes-Malibu Council of Governments ("COG"), working with the Cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, and Westlake Village, has coordinated the hazard mitigation planning efforts among the incorporated cities and participating special districts.

C. The COG's 2024 Multi-Jurisdictional Hazard Mitigation Plan ("2024 HMP") provides a region-wide risk assessment and mitigation strategies to reduce the impacts of natural, technological, and human caused disasters on the public and local government.

D. On August 7, 2024, FEMA approved the COG's 2024 HMP.

E. The Governor's Office of Emergency Services requires a City Council resolution recognizing the adoption of the COG's 2024 HMP and incorporation of it into the Safety Element (i.e., Chapter 4 (Hazards)) of the Westlake Village General Plan.

F. The City Council last updated the Safety Element of the Westlake Village General Plan on December 8, 2021 by adopting Resolution No. 2222-21, and the Safety Element currently incorporates the COG's 2018 Multi-Jurisdictional Hazard Mitigation Plan.

Section 2. Policy Adoption. The City Council adopts the COG's 2024 HMP. By separate resolution, anticipated to be adopted by October 23, 2024, the City Council will incorporate such document into the Safety Element of the Westlake Village General Plan and will update the Safety Element with identified evacuation routes and their capacity, safety, and viability, and evacuation locations under a range of emergency scenarios.

Section 3. CEQA. The City Council finds and determines that the adoption of the COG's 2024 HMP is exempt from the requirements of the California Environmental Quality Act ("CEQA") pursuant to CEQA Guidelines Section 15061(b)(3) because it can be seen with certainty that there is no possibility this action will have a significant effect on the environment. The adoption of the COG's 2024 HMP is an administrative process

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of the City that will not result in direct or indirect physical changes in the environment. In addition, the City Council finds that adoption of the COG's 2024 HMP is exempt from CEQA pursuant to CEQA Guidelines Section 15306, because the document consists of data collection, research, experimental management, and resource evaluation activities that do not result in a serious or major disturbance to an environmental resource. The COG's 2024 HMP also provides information and resources to assist in understanding the region and the hazard-related issues facing citizens, businesses, and the environment, with the goal of reducing risk and preventing loss from future hazard events, but the City has not yet approved, adopted or funded any specific action in the document.

Section 4. Effective Date and Certification. This Resolution shall be in full force and effective immediately upon adoption. The City Clerk shall certify the adoption of this Resolution and shall enter the same in the Book of Resolutions of the City.

PASSED, APPROVED and ADOPTED this 11th day of September, 2024.

Ned E Davis, Mayor

ATTEST:

Antoinette Mann, City Clerk

Exhibit A – Hazard Mitigation Plan

CERTIFICATION

STATE OF CALIFORNIA)
COUNTY OF LOS ANGELES) ss.
CITY OF WESTLAKE VILLAGE)

I, ANTOINETTE M. MANN, City Clerk of the City of Westlake Village, California, DO HEREBY CERTIFY that the foregoing is a full, true and correct copy of Resolution No. 2364-24 which was duly and regularly passed and adopted by the City Council of the City of Westlake Village at a Special Meeting held on September 11, 2024 the following vote:

YES:	Councilmembers Pearl, Halpern, McSweeney, Mayor Pro Tem Honig and Mayor Davis
NO:	None
ABSENT:	None

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the official seal of the City of Westlake Village, California.

Antoinette M. Mann
Antoinette M. Mann, City Clerk
City of Westlake Village, California

September 12, 2024
Date Attested

CITY OF WESTLAKE VILLAGE ★ INCORPORATED DEC. 11, 1991 ★ CALIFORNIA

CITY OF
AGOURA HILLS

Office of the City Clerk
30001 Ladyface Court
Agoura Hills, CA 91301

CERTIFICATION

STATE OF CALIFORNIA)
COUNTY OF LOS ANGELES) SS
CITY OF AGOURA HILLS)

I, Kimberly M. Rodrigues, City Clerk of the City of Agoura Hills, California, do hereby certify that the foregoing three (3) pages of **Resolution No. 24-2080;** *A Resolution of the City Council of the City of Agoura Hills, California, Adopting the 2023 Multi-Jurisdictional Hazard Mitigation Plan of the Las Virgenes-Malibu Council of Governments and Finding that the Proposed Action is Exempt from California Environmental Quality Act;* are copies of the full, true and correct original of the Resolution adopted by the City Council at its Regular Meeting held at 6:00 p.m. on Wednesday, August 28, 2024, and on file and of record in the Office of the City Clerk, pursuant to the City's Electronic Documentation Management System (EDMS) policy.

City of Agoura Hills, California
Incorporated
Dec.
8,
1982
California

Kimberly M. Rodrigues, MPPA, MMC
City Clerk

Dated: September 9, 2024

RESOLUTION NO. 24-2080

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AGOURA HILLS CALIFORNIA, ADOPTING THE 2023 MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN OF THE LAS VIRGENES-MALIBU COUNCIL OF GOVERNMENTS AND FINDING THAT THE PROPOSED ACTION IS EXEMPT FROM CALIFORNIA ENVIRONMENTAL QUALITY ACT

THE CITY COUNCIL OF THE CITY OF AGOURA HILLS HEREBY FINDS, RESOLVES, AND ORDERS AS FOLLOWS:

Section 1. Findings and Intent.

A. The Disaster Mitigation Act of 2000 ("Act") (Pub. L. 106-390), as implemented by 44 CFR § 201.6, mandates that local governments submit and maintain a Federal Emergency Management Agency ("FEMA") approved local hazard mitigation plan.

B. The Las Virgenes-Malibu Council of Governments ("LVMCOG"), working with the cities of Agoura Hills, Calabasas, Hidden Hills, Malibu and Westlake Village, has coordinated the hazard mitigation planning efforts among the incorporated cities and participating special districts.

C. The LVMCOG Multi-Jurisdictional Hazard Mitigation Plan identifies a region-wide risk assessment and mitigation strategies to reduce the impacts of natural, technological, and human caused disasters on the public and local government.

D. Identification of hazards in the region assists with response planning, exercise development, public education and awareness, and other emergency management functions.

E. The Act specifies documentation that the LVMCOG Multi-Jurisdictional Hazard Mitigation Plan has been approved by the FEMA and formally adopted by the City Council.

F. On August 7, 2024, FEMA approved the 2023 LVMCOG Multi-Jurisdictional Hazard Mitigation Plan.

G. The Governor's Office of Emergency Services ("Cal OES") Mitigation Division requires a Council Resolution recognizing the adoption of the current LVMCOG Multi-Jurisdictional Hazard Mitigation Plan and into the Safety Element of the Agoura Hills General Plan.

H. The City of Agoura Hills's ("City") Safety Element of the General Plan currently incorporates and refers to the 2018 LVMCOG Multi-Jurisdictional Hazard Mitigation Plan, in accordance with California Government Code Sections 8685.9, 65302 and 65302.6;

SECTION 2. Adoption. The City Council hereby adopts the 2023 LVMCOG Multi-Jurisdictional Hazard Mitigation Plan, dated June 13, 2024 ("HMP") and hereby resolves to adopt and incorporate such HMP as part of the City's Safety Element of the General Plan ("Safety Element") and to update the Safety Element with identified evacuation routes and their capacity, safety, and viability and evacuation locations, all of which is anticipated to occur by December 31, 2024.

SECTION 3. California Environmental Quality Act. Based on its own independent judgment, the City Council of the City of Agoura Hills hereby finds and determines that the HMP is exempt from the requirements of the California Environmental Quality Act ("CEQA") pursuant to CEQA Guidelines Section 15061(b)(3) because it can be seen with certainty that there is no possibility that the proposed HMP will have a significant effect on the environment. The adoption of the proposed HMP is an administrative process of the City that will not result in direct or indirect physical changes in the environment. In addition, the City Council hereby finds that the HMP is exempt from CEQA pursuant to CEQA Guidelines Section 15306, because the HMP consists of data collection, research, experimental management, and resource evaluation activities which do not result in a serious or major disturbance to environmental resources. The HMP also provides information and resources to assist in understanding the region and the hazard-related issues facing citizens, businesses, and the environment, with the goal of reducing risk and preventing loss from future hazard events, but the City has not yet approved, adopted or funded any specific action in the HMP.

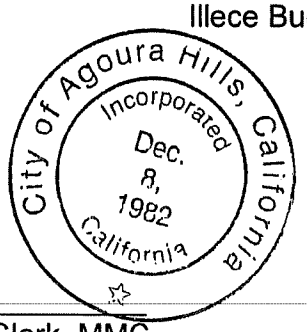
SECTION 4. Effective Date and Certification. This Resolution shall be in full force and effect immediately upon adoption. The City Clerk shall certify to the adoption of this Resolution.

PASSED, APPROVED, AND ADOPTED this 28th day of August, 2024, by the following vote to wit:

AYES:	(5) Buckley Weber, Sylvester, Anstead, Klein Lopez, Wolf
NOES:	(0)
ABSTAIN:	(0)
ABSENT:	(0)

Illece Buckley Weber, Mayor

ATTEST:



Kimberly M. Rodrigues, City Clerk, MMC