LOS ANGELES COUNTY

REPETITIVE LOSS AREA ANALYSIS

COMPANION REPORT TO THE COMPREHENSIVE FLOODPLAIN MANAGEMENT PLAN

FINAL

DECEMBER 16, 2024

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CONTENTS

FIGURES

TABLES

List of Abbreviations

Abbreviation	Term/Phrase/Name
AB	Assembly Bill
ADA	Americans with Disabilities Act
BLS	Bureau of Labor Statistics
CEQA	California Environmental Quality Act
CRA	Coastal Resource Area
CRS	Community Rating System
DWR	California Department of Water Resources
EDD	Employment Development Department
EPA	Environmental Protection Agency
ERP	Emergency Response Plan
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FMP	Floodplain Management Plan
GIS	Geographic Information System
HUC	Hydrologic Unit Code
IRWM	Integrated Regional Water Management
LACDA	Los Angeles County Drainage Area
LACFCD	Los Angeles County Flood Control District
LCP	Local Coastal Program
LID	Low Impact Development
MS4	Municipal Separate Storm Sewer System
NFIA	National Flood Insurance Act
NFIP	National Flood Insurance Program
NIMS	National Incident Management System
NRCS	Natural Resources Conservation Service
PPI	Program for Public Information
RLAA	Repetitive Loss Area Analysis
SB	Senate Bill
SEA	Significant Ecological Area
SFHA	Special Flood Hazard Area

SR	State Route

Part 1 – Planning Process and Project Background

1 Introduction

1.1 Repetitive Loss Properties and the Community Rating System

A repetitive loss property is defined by the Federal Emergency Management Agency (FEMA) as a property in which two or more claims of more than $1,000 have been paid by the National Flood Insurance Program (NFIP) within any 10-year period since 1978 (e.g., two claims during the periods 1978–1987, 1979–1988, etc.) (FEMA, 2021). Over $12 billion has been paid to repetitive loss properties nationwide, about one-fourth of the NFIP payments since 1978. (FEMA, 2021).

FEMA's Community Rating System (CRS) encourages communities to identify and mitigate the causes of repetitive losses. The first step is to map repetitive loss areas, which are contiguous areas that include one or more properties on FEMA's list of repetitive loss properties and the nearby properties with exposure to the same or similar flooding conditions. FEMA considers listed repetitive loss properties to indicate an overall repetitive loss problem that may affect other nearby properties. Designation of repetitive loss areas around listed repetitive loss properties allows an evaluation of actual or potential flooding problems at properties that may not have flood insurance or may have had only a single previous claim. This provides properties with the same exposure to a flood risk to be addressed equally. The CRS, which provides reduced flood insurance premiums for communities that carry out flood mitigation activities, requires the following from participating communities with 50 or more repetitive loss properties (Category C communities):

- Prepare a map of repetitive loss areas.
- Review and describe each area's repetitive loss problem.
- Prepare a list of the addresses of all properties in the repetitive loss areas with insurable buildings, which are defined to include the following (FEMA, 2017a):
  - A structure that is affixed to a permanent site and has two or more outside rigid walls and a fully secured roof
  - A manufactured home (also known as a mobile home) built on a permanent chassis, transported to its site in one or more sections, and affixed to a permanent foundation
  - A travel trailer without wheels, built on a chassis and affixed to a permanent foundation, that is regulated under the community's floodplain management and building ordinances or laws.
- Undertake an annual outreach project to those addresses.
- Prepare a floodplain management plan or area analysis for the repetitive loss areas (FEMA, 2017a).

1.2 Los Angeles County Repetitive Loss Area Analysis

Los Angeles County had 54 FEMA-designated repetitive loss properties in its unincorporated areas as of 2023. Forty-nine (49) of these 54 repetitive loss properties on the 2023 FEMA list were also FEMA-

designated repetitive loss properties identified in the 2020 FEMA list. These 49 repetitive loss properties are listed in Table 1-1 were analyzed and mapped into repetitive loss areas in the 2020 FMP Report. The reviewed and approved methodology used to develop the repetitive loss areas for these 49 properties is outlined in this section. The repetitive loss areas previously developed for the 49 properties are used in this report, where no changes have been made to the number and location of repetitive loss properties. The exception is the Malibou Lake A repetitive loss area, where one new repetitive loss property has been added to the 2023 list. This property is included in Table 1-1 and footnoted. Additionally, one repetitive loss property (RL #74498) was reported in the 2020 FEMA list and designated in the Upper Topanga Canyon Repetitive Loss Area. The list of repetitive loss properties provided by FEMA in 2023 did not include this property, and therefore not listed in Table 1-1. The five new repetitive loss areas and associated newly listed properties are included in Table 1-1 and footnoted. The methodology used to analyze and map the repetitive loss areas for these five new properties is presented in this section. This includes revision to the Malibou Lake A repetitive loss area.

Table 1-1: Naming and Numbering of Los Angeles County Repetitive Loss Properties and Areas

Repetitive Loss Area Name	FEMA RL #
Agua Dulce A	91339
Agua Dulce B	302668 [a]
Altadena A	56933
Altadena B	91348 [b]
Calabasas A	72498
Calabasas B	136718
Cold Creek A	71255
Cold Creek B	148768
Del Sur	138781
Lake Hughes	317907 [a]
Lower Topanga Canyon	14900 [b]
	17941 [b]
	17942 [b]
	28440 [b] /58082 [ac]
	17940 [b]
Malibou Lake A	46576
	1165
	39962
	28487
	40087
	12820
	49496
	28444
	71413 [b]
	73653

Repetitive Loss Area Name	FEMA RL #
	72406
	71417
	35727
	52974
	93872
	57971
	137792
	47197
	91232
	282562 [a]
Malibou Lake B	57972 [a]
Malibu	70079
Quartz Hill A	57385[b]
Quartz Hill B	91087
Quartz Hill C	131222
Roosevelt	137354
Rowland Heights	138651
Topanga Canyon A	28394
Topanga Canyon B	12818
Topanga Canyon C	111971
Topanga Canyon D	137970
Topanga Canyon E	138321
Topanga Canyon F	256028[a]
Triunfo Canyon A	95737
Triunfo Canyon B	137793
Upper Topanga Canyon	74656
	74334
	74553
	76269

[a] This is a new property in the 2023 FEMA dataset.

[b] These repetitive loss properties have been requested to be removed and AW-501s have been submitted to FEMA.

[c] This point has been removed from analysis as it is a duplicate of an existing point containing the same coordinates and an empty address.

FEMA prescribes the following five-step process for conducting an area analysis:

- Step 1—Advise all the property owners in the repetitive flood loss area that the analysis will be conducted and request their input on the flood hazard and recommended actions.
- Step 2—Contact agencies or organizations that may have plans that could affect the cause or impacts of the flooding.

- Step 3—Collect data on the analysis area and each building in it to determine the causes of the repetitive damage and mitigation measures that would be appropriate.
- Step 4—Review alternative mitigation approaches and determine whether any property protection measures or drainage improvements are feasible.
- Step 5—Document the findings in a report.

This Repetitive Loss Area Analysis (RLAA) documents the fulfillment of the CRS requirements for Category C communities, following the five-step area-analysis process. As required under Step 5, it provides the following information:

- A summary of the process followed (Chapters 2 and 3)
- Problem statements with maps for each area (Chapters 7 – 30)
- A table of basic information about each building in the area (Chapters 7 – 30)
- A description of alternative approaches considered to address the problem (Chapter 6)
- A set of recommended action items to address the problem (Chapters 7 – 30).

Individual properties and structures are counted and described in this document, but specific address information is withheld under the federal Privacy Act of 1974. A separate document on file with Los Angeles County for internal use only correlates the property ID numbers presented here with specific address information.

1.3 Numbering and Nomenclature

In designating federally recognized repetitive loss properties, FEMA assigns a seven-digit repetitive loss number (RL #) to each property, using a nationally defined numbering system. Based on geographic distribution, repetitive loss areas were defined for the current RLAA that include one or more repetitive loss properties. Areas were designated with a place name indicating the general location of the area. Table 1-1 summarizes area naming used in this analysis and the FEMA numbering of repetitive loss properties in each area.

2 Repetitive Loss Area Analysis Methodology

2.1 Basic Requirements

There are two key sets of requirements to be met for a repetitive loss area analysis (RLAA):

- Repetitive loss area mapping requirements contained in Section 503 of the CRS Coordinator's Manual and in the supplemental publication, *Mapping Repetitive Loss Areas* (FEMA, 2015).
- Building data collection requirements contained in Section 512.b of the CRS Coordinator's Manual (FEMA, 2017a):
    - Visit each building in the repetitive loss area and collect basic data.
    - Collect data during the site visit that is sufficient to make a preliminary determination of the cause of the repetitive flooding and of mitigation measures that would be appropriate to address the problem. This usually includes a review of drainage patterns around the building, the condition of the structure, and the condition and type of foundation.
    - The person conducting the visit should not have to enter the property—adequate information should be collected from observations from the street.
    - Floor elevations or historical flood levels are not required but can be helpful if available.
    - The date of each building's insurance claim can help identify the cause of flooding (e.g., rainfall or overbank flooding). The amount of the claim can help determine the amount of damage. Every year, each repetitive loss community is provided with a list of its historical insurance claims. This includes single-claim properties. Non-repetitive-loss communities that elect to do an RLAA may request these data from the CRS program.

More information on building data can be found in *Selecting Appropriate Mitigation Measures for Floodprone Structures* (FEMA-551).

2.2 Reverse Damage Function Methodology

2.2.1 Rationale for Alternative Approach

The Reverse Damage Function Methodology was used for the 49 repetitive loss properties that are on both the 2023 FEMA list and those analyzed in the 2020 Los Angeles County RLAA. For the additional five repetitive loss properties on the 2023 FEMA list, the Reverse Damage Function Methodology was used where applicable. The other methodologies considered and used for these additional properties are discussed in this section.

The building data collection requirements outlined in the CRS Coordinator's Manual were met using the Reverse Function Methodology. This approach was used for initial identification of repetitive loss areas for the following reasons:

- Los Angeles County used the 2023 dated repetitive loss data that it received from the Insurance Services Office (ISO) (also referred to as FEMA list) for this RLAA. As noted, 49 of the repetitive loss properties listed in the 2023 FEMA list were also listed on the 2018 FEMA list.
- A Level 2, user-defined flood model using FEMA's Hazus hazard-evaluation software (version 6.1) was constructed to support the development of the 2025 and 2020 Los Angeles County

Comprehensive Floodplain Management Plan. The model was possible due to the quality of Los Angeles County Assessor data available to the planning team. The County Assessor data provided key building attributes to model flood risk, such as date of construction, foundation type, occupancy class, square footage and permit history, The detailed model data allowed the use of the selected alternative approach.

- The repetitive loss areas developed using this methodology for the 49 repetitive loss properties in the 2020 Los Angeles County Comprehensive Floodplain Management Plan that are also in the 2023 FEMA list are used in this 2025 update with the exception of the Malibou Lakes Repetitive Loss Area A where one new repetitive loss property has been added. The methods used for this repetitive loss area and of those for the other new repetitive loss properties are summarized in Section 2.2.2.

2.2.2 Description of Selected Approach

The selected reverse damage function approach used available data and capabilities to prepare the RLAA. The alternative approach achieved the same objectives as the approach prescribed in the 2017 CRS Coordinator's Manual (Section 512b), while providing the County a better protocol for maintaining data in the future to identify properties in a defined repetitive loss area and determine the cause of repetitive flooding.

The reverse damage function approach is a quantitative process based on modeling principles rather than the qualitative process outlined in the 2017 CRS Coordinator's Manual and 2021 Addendum. It uses an existing model to apply the principles of the "depth-damage function," which is the cornerstone of risk assessment in FEMA's Hazus and Benefit-Cost Analysis programs. Both of these programs estimate damage using curves that show the percentage of asset value that will be damaged as a function of the depth of floodwaters. These depth-damage curves are well-established as a basis for estimating losses caused by flooding.

The reverse damage function methodology uses known values of damage from a flood event, based on filed claims, to estimate what the floodwater depth was for that event. The following protocol was followed:

- Each repetitive loss property from the ISO data set was mapped in GIS to look for possible groupings based on proximity. The GIS mapping was based on the LiDAR-generated digital elevation model used to prepare the Los Angeles County Comprehensive Floodplain Management Plan. This digital elevation model has a 3-foot resolution.
- The average loss for each repetitive-loss property was determined by taking the average of all claims for that property.
- Replacement cost for each structure was calculated by applying the size and construction class for each repetitive-loss property to the construction-cost-per-square-foot tables in 2024 BNi Home Builder's Costbook (Building News International, p. 2024). (note: the 2015 BNi Costbook was used for the 2020 FMP for the 40 properties also listed in the 2023 FEMA list)
- The percent damage "X" was calculated as:

  $X = Z \div Y$

where:
X is the percent damage (to be determined)
Y is the replacement cost of the structure (based on assessor information)
Z is the estimated loss (based on the flood insurance claim)

- Once the percent damage was determined, the corresponding flood depth was determined by looking at the U.S. Army Corps of Engineers 2003 Generic Depth-Damage Relationships for Residential Structures (see Appendix A). These damage functions represent projected flood depths above the top of the finished floor.
- The determined flood depth was applied to the repetitive loss structure. Using the foundation type from the Assessor's data, the depth was added to the top of the finished floor. For a structure with a slab foundation, the top of the finished floor was set at 8 inches above adjacent grade. For a structure with a crawlspace foundation, the finished floor was set at 24 inches above adjacent grade. These parameters are based on standard building practices. None of the repetitive-loss properties were shown to have basements, according to the Assessor's data.
- Once the depth was applied to the finished floor, it was extended across the digital elevation model until it ran to zero depth (high ground) and a boundary was delineated. These boundaries were projected north, south, east and west for each property. In areas with multiple repetitive-loss properties, the property with the highest depth above finished floor was used for this exercise.
- The boundary for each repetitive loss area was intersected with an ortho-photo and parcel boundary map. Each parcel with a structure within the delineated boundary was determined to be a property potentially subjected to repetitive flooding and was added to a repetitive loss area list for Los Angeles County. These additional properties are not FEMA-recognized repetitive-loss properties.
- Property condition assessments included in existing Los Angeles County Assessor's data were used for this RLAA.

Utilizing this methodology, repetitive loss areas were delineated for the 49 repetitive loss properties that were analyzed in the 2020 Updated RLAA and again listed in the 2023 FEMA list with the exception of the Malibou Lake Repetitive Loss Area A where one new repetitive loss property has been added. The development of the repetitive loss areas for Malibou Lake A and the four additional repetitive loss properties in the 2023 FEMA list used several methodologies depending on the characteristics of the area hydrology, topography, property, nearby properties, and closest repetitive loss area. The methods used include:

- Hazus Model – the Hazus model was used for defined stream segments where the model provided output that corresponded to FEMA flood maps.
- FEMA & County Flood Maps – 100-year and 500-year frequency maps were used for properties located within floodways near tributaries that are mapped.
- Reverse Function Analysis – this methodology was used to both check the results of the output of the other methodologies and where no Hazus Model or flood mapping provided data that could be used to develop the repetitive loss area.

Maps and descriptions of the causes of flooding for each area can be found in Chapters 7 to 34. The methodology used and assumptions are also listed in these Chapters for each area as a basis for future adjustments in these areas as properties are removed or added.

The final step was to determine the cause of flooding, giving consideration to the findings from the initial identification.

2.3 Secondary Identification

Once the initial identification of the repetitive loss areas was completed using the reverse-damage-function methodology, the planning team performed a secondary review of each repetitive loss area based on three questions about each area:

- Is there really a repetitive loss problem in this area, based on local knowledge?
- Does the list of properties make sense based on what we know about the area?
- Does the County have any additional qualifying data on the area to justify adding or removing properties?

Adjustments were made after applying these questions to each repetitive loss area. Based on the analysis and Floodplain Management Committee feedback, there were 223 properties in repetitive loss areas with 364 insurable structures.. The list of properties was put on an official repetitive loss area mailing list as a part of the unincorporated areas of Los Angeles County public information program.

2.4 Property Condition Assessment

To assess the condition of the structures in the repetitive loss areas, the planning team relied on the Quality Class value in the Los Angeles County Assessor's data. This value identifies the condition of the building relative to the following characteristics:

- Construction Type
  - Class A: Fireproof construction – structural steel frame
  - Class B: Fireproof construction – reinforced concrete frame
  - Class C: Fire-resistant construction – masonry walls, combustible roof, and interior
  - Class D: Non-fireproof construction – usually wood frame
  - Class S: Specialized buildings that do not fit in any of the above categories
- Quality Range (1.0 to 14.5 or "X")
  - The quality class concept is a function of all construction features, depending on quality of materials, construction methods, and workmanship. It considers specifications for foundation, structure, roof, floor, interior, exterior, heat, and bathrooms.
  - The quality value can range from 1.0 to 14.5 with 1.0 being the lowest.
  - An "X" quality rating is for unique or unusual construction that does not lend itself to being classified using the standard classification system.
- Shape Class (A, B, C, D)

  The shape class is based on the building's perimeter in relation to the total square footage. It's important to distinguish the shape class of a structure as a structure with a relatively large

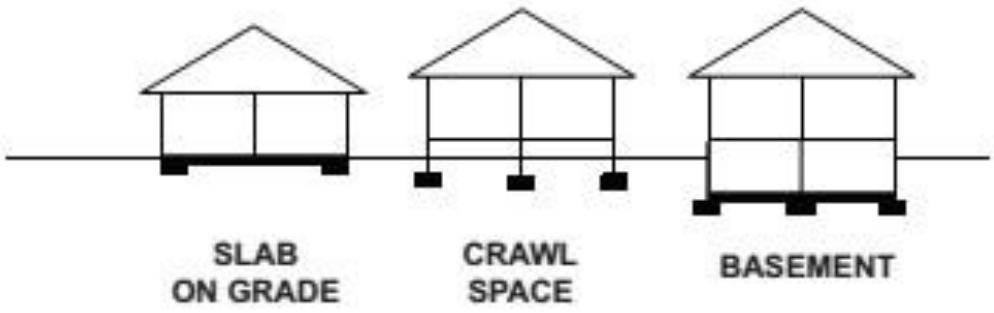
perimeter in relation to its square footage (many angles, turns, a 'cut-up' custom shape, etc.) typically costs more to construct than a simple square/rectangle structure.

- Shape A represents a relatively-square/rectangle structure. It has a relatively small perimeter compared to its total square footage.
- Shape D represents a structure with many angles, turns, etc. (a "cut-up" custom shape). It has a relatively-large perimeter compared to its total square footage.
- A structure with a "DX" Construction Type and Quality Range will usually not have a Shape Class.

2.5 Foundation Type

In Los Angeles County, there are generally three types of foundations (see Figure 2-1):

- A basement foundation has its floor below grade on each side. Walls may be poured concrete or blocks.
- A slab foundation is usually concrete poured directly onto the ground. This type of foundation uses concrete rather than wood to help support the weight of the home.
- A crawlspace, or raised foundation, is built above the ground, with just enough room to crawl underneath. There are stem walls on the perimeters, pierced in-between, with a girder system and floor joists on top of that. The foundation is high enough to leave at least 2 feet below to crawl into for access to the home's mechanical systems.



(International Code Council, 2020)

Figure 2-1: Foundation Types

3 Repetitive Loss Areas Outreach

3.1 CRS Outreach Requirements for RLAA

RLAA Step 1 (2017 CRS Coordinator's Manual Section 512.b) requires notification that an analysis is being conducted to the properties in the repetitive loss areas, with a request for input on the hazard and recommended actions. The notice (or any public document) must not identify which properties are on FEMA's repetitive loss list. There are no restrictions on publicizing what properties are in repetitive loss areas that have more than one property and there are no restrictions on publishing aggregate data, such as how many properties received claims or the average value of those claims. Floodplain management staff in the Stormwater Engineering Division may share insurance claim information with the owner of a property but may not make it available to anyone else.

- The notice can be sent to owners OR residents, at the community's discretion, as long as a representative of each property is notified.
- The notice cannot be done via a newspaper or newsletter notice or article.
- The notice must advise the recipients when and how copies of the draft report can be obtained and ask for their comments on the draft.

Several methods were deployed to engage repetitive loss area property owners during the course of this RLAA process. This chapter highlights those efforts.

RLAA Step 2 requires contact with agencies or organizations that may have plans or studies that could affect the cause or impacts of the flooding. The analysis report must identify contacted agencies and organizations (FEMA, 2017a).

3.2 Countywide Floodplain Management Planning Effort

This Repetitive Loss Area Analysis is considered by Los Angeles County Public Works to be the companion document to the 2025 Los Angeles County Comprehensive Floodplain Management Plan (FMP). The two plans were created in concert, with oversight by the same planning team. The development of this RLAA benefited from the planning process conducted to develop the FMP. The outreach effort used to develop the FMP included properties in the repetitive loss areas and provided a tangible benefit to the RLAA effort. This section provides an overview of the outreach conducted for the FMP.

3.2.1 Contact with Agencies and Organizations

The following agencies were invited to participate in the planning process from the beginning and were kept apprised of plan development milestones:

Floodplain Management Plan Committee

- Public Works Stormwater Engineering - CRS Coordinator
- Public Works Emergency Management Group
- Public Works Building & Safety
- Public Works Stormwater Maintenance
- Public Works Community Government Relations Group
- Public Works Stormwater Planning
- Public Works Stormwater Engineering – Hydrology & Hydraulics
- Los Angeles County Regional Planning
- Los Angeles County Fire Department
- City of Los Angeles Bureau of Engineering
- Altadena Town Council
- Malibou Lake Mountain Club
- Antelope Valley Resident
- Acton Resident
- Red Cross of Greater Los Angeles
- California Department of Water Resources
- Cal State Los Angeles Geography, Geology & Environment
- Environmental Restoration Group
- Tree People Land Trust

Other Stakeholders

- Acton Town Council
- Agua Dulce Town Council
- Ana Verde Hills Town Council
- Antelope Acres Town Council
- Association of Rural Town Councils
- Castaic Town Council
- City of Agoura Hills
- City of Arcadia
- City of Azusa
- City of Bradbury
- City of Calabasas
- City of Carson
- City of Claremont
- City of Compton
- City of El Monte
- City of El Segundo
- City of Gardena
- City of Glendale
- City of Glendora
- City of Harbor City
- City of Hawthorne
- City of Hidden Hills
- City of Industry
- City of Inglewood
- City of La Canada Flintridge
- City of La Habra Heights
- City of La Mirada
- City of La Puente
- City of La Verne
- City of Lancaster
- City of Lawndale
- City of Long Beach
- City of Malibu
- City of Monrovia
- City of Montebello
- City of Monterey Park
- City of Palmdale
- City of Pasadena
- City of Pomona
- City of Rancho Palos Verdes
- City of Rolling Hills Estates
- City of San Dimas
- City of San Marino
- City of San Pedro
- City of Santa Clarita
- City of Sierra Madre
- City of Temple City
- City of Torrance
- City of Walnut
- City of West Covina
- City of Westlake Village
- City of Whittier
- Crescenta Valley Town Council
- Fairmont Town Council
- Green Valley Town Council
- Insurance Services Office (ISO)-ISO/CRS Specialist
- Juniper Hills Town Council
- Kern County
- Lake Los Angeles Town Council
- Lakes Town Council
- Leona Valley Town Council
- Littlerock Town Council
- Monrovia/Arcadia/Duarte Town Council
- Mount Baldy Town Council
- Orange County Public Works
- Oso Town Council
- Pearblossom Rural Town Council
- Quartz Hill Town Council
- Roosevelt Town Council
- San Bernardino County Flood Control District
- San Gabriel Council of Governments
- Southern California Association of Governments
- Sun Village Town Council
- Three Points/Liebre Mountain Town Council
- Topanga Town Council
- Ventura County Watershed Protection District

These agencies received meeting announcements, meeting agendas, and meeting minutes by email throughout the FMP development process, which also informed the RLAA development. Public meetings, such as the Floodplain Management Committee meetings and Open Houses, provided accommodations compliant with the Americans with Disabilities Act and Title IV.

3.2.2 Strategy

The strategy for involving the public in developing the RLAA emphasized the following elements:

- Include members of the public on the Floodplain Management Committee (see Section 3.2.1).
- Attempt to reach as many citizens as possible using multiple media outlets.
- Use a survey to determine public perception of flood risk and support of mitigation actions.
- Identify and involve stakeholders.
- Develop a Program for Public Information.
- Conduct public meetings to invite the public's input.

3.2.2.1 Website

At the beginning of the development of the current plan, a floodplain management plan page was developed on the Los Angeles County Public Work's website to keep the public informed about planning activities and to solicit input (see Figure 3-1). The site's address, https://pw.lacounty.gov/WMD/NFIP/FMP2025/, was publicized in all social media releases, mailings, and public meetings. The site provided the public with information on the plan development process, the Floodplain Management Committee, a project survey, and drafts of the plan. Los Angeles County Public Works will keep the website active after the plan's completion to keep the public informed about mitigation projects and future plan updates.

Figure 3-1: Sample Page from Floodplain Management Plan Website

3.2.2.2 Survey

The planning team developed a "Flood Preparedness" survey (see Figure 3-2) with guidance from the Floodplain Management Plan Committee. The survey was used to gauge resident, household, and local business preparedness for potential flood hazards and the level of knowledge about the tools and techniques that might assist them in reducing their risk and loss from flooding. This survey was designed to help identify the types of information and resources needed in communities vulnerable to floods, and the tools and messaging that might work best to communicate with community members in the event of a flood hazard in their community. Survey responses also helped to guide the Floodplain Management Committee in affirming the goals and objectives identified during the planning process and in selecting mitigation actions.

Multiple methods were used to solicit survey responses:

- A web-based version of the survey was postedon the Floodplain Management Plan website.
- Mailings to residents and property owners notifying them of public meetings included links to the online survey (see Figure 3-3).
- All attendees at public meetings were asked to complete a survey, using the link on the Floodplain Management Plan web site or hard copies of the survey form available at the meetings.

- A flyer was prepared advertising the survey.
- E-mails were sent from Public Works to several of the town councils, requesting their input and help publicizing the survey.
- Individual Floodplain Management Plan Committee members shared the survey and contacted organizations to request that they publicize the link to the online survey.

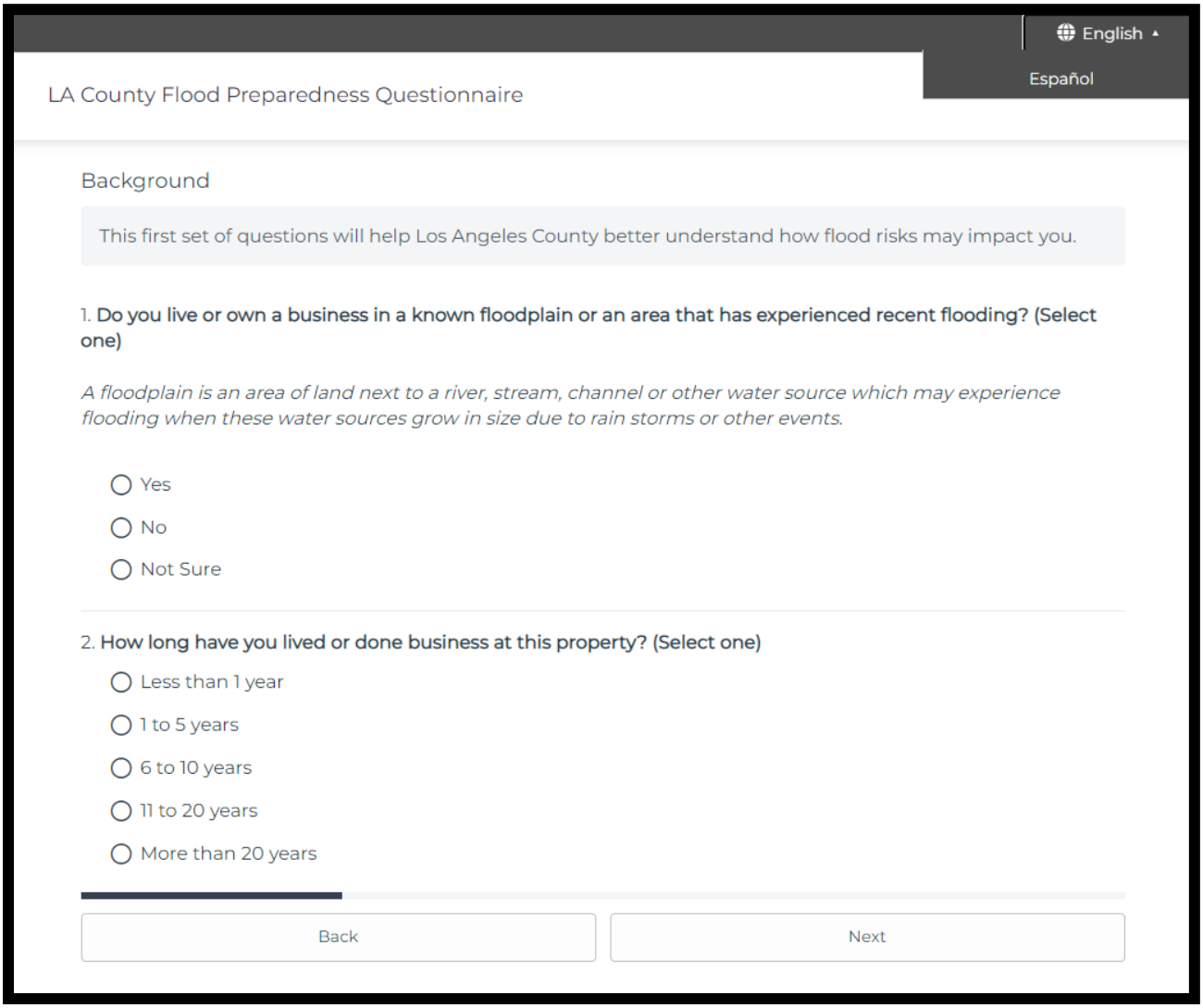


Figure 3-2: Sample Page from Survey

Figure 3-3: Post Card Mailing Advertising the Survey

3.2.2.3 Public Meetings

Meaningful public participation is always essential to the planning process. A public meeting was held in partnership with a local resident association in Malibou Lake to share information about the Floodplain Management Plan update and how residents can mitigate flood risk at their properties. Community members were also asked to share their thoughts about local flood hazards, programs and any questions they had about the plan and process. Information about the public meeting is summarized in Table 3-1.

Table 3-1: Floodplain Management Plan Public Meetings

When	Where
July 18th 2024 6:00-8:00pm	Malibou Lake Mountain Club 29033 Lake Vista Drive Agoura, CA 91301
April 3rd 2025 6:00-8:00pm	Quartz Hill Library 5040 West Ave M-2, Quartz Hill, CA 93536

Public Meeting Notification

Multiple means were used to provide broad public notice of the open house public meetings:

- A notice of the public meeting was posted on the Floodplain Management Plan website.
- Flyers were developed and distributed throughout the community and through local resident association email lists (Figure 3-4).

Figure 3-4: Flyer Announcing Phase 1 Public Meeting for the Floodplain Management Plan

Public Meeting Format

At the public meeting, attendees examined maps and handouts and held conversations with project staff about their flood risks and past experiences with flood hazards at their properties. The project team introduced the goals for the Floodplain Management Plan update, and discussed and displayedinformation generated for the risk assessment via community maps, shared with attendees via a PowerPoint presentation. Computer mapping workstations loaded with the FEMA and Los Angeles County Flood Maps were set up to allow attendees to see information the hazards on their property. This tool was effective in illustrating local risks for several community members. Planning team members answered questions and asked attendees to complete a Flood Preparedness Survey. The project team also provided comment cards to participants to share additional thoughts and questions with the Floodplain Management Plan Committee. Example meeting activities are shown in Figure 3-5 and Figure 3-6.

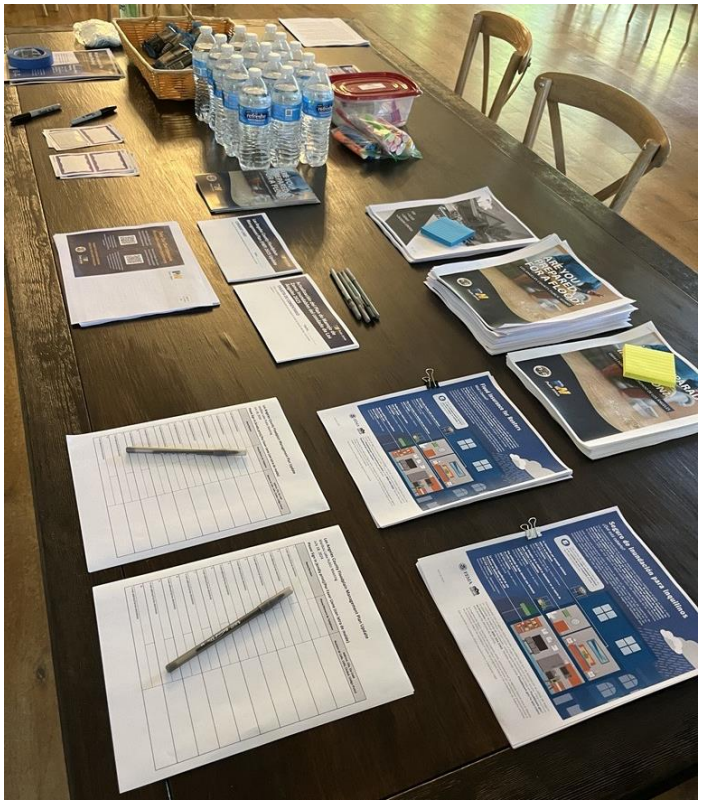


Figure 3-5: Printouts at Phase 1 Public Meeting

Figure 3-6: FMP Presentation at Malibou Lake Public Meeting Phase 1 July 18th 2024

3.2.3 Public Involvement Results

3.2.3.1 Survey Results

The County received 109 responses. 44 of these responses were complete (responded to all questions), 65 were partially complete (responded to some questions) and none were disqualified. The following percentages were rounded to the nearest whole number. Detailed results for the survey are provided in Appendix C.

Key results are as follows:

- Nearly half of respondents said their home or business is not located in a floodplain or experienced recent flooding; 36 percent said it is; 15 percent said they are not sure.
- Over half of respondents said they do not have flood insurance; 35 percent said they do; over 11 percent said they are not sure.
- The top responses for why those without flood insurance don't have it are that they feel they don't need it (property never flooded, located on high ground, or not in a flood zone, renting), they feel it is not worth it (too expensive, does not provide enough coverage), or they don't know about it (unsure if they qualify or if their other insurance covers it).
- 40 percent of the respondents said that the presence of a flood hazard at their current home was not disclosed to them prior to purchasing or moving into the property. 44 percent said such disclosure would have influenced their decision to buy or rent a home.
- The following flood hazards were identified as greatest issues of concern based on a scale of 1 (not concerned) to 5 (extremely concerned):
    - Post-fire mud/debris flow (weighted score of 3.05)
    - Detours caused by flooding of roads (weighted score of 2.98)
    - Failure of infrastructure (such as water/sewer main pipes, water storage tanks) (weighted score of 2.98)
    - Mud-flow hazards (weighted score of 2.95)
    - Climate change impacts (weighted score of 2.84)
    - Urban stormwater flooding/Drainage issues (weighted score of 2.78)
    - River/stream/channel overflow (weighted score of 2.62)
- 65 percent of respondents said they are at least adequately prepared for a flood event; 45 percent indicated feeling somewhat prepared or not at all prepared.
- About 28 percent of residents neither agree nor disagree that flood hazard and risk information is easy to find; 28 percent of residents somewhat agreed, 23 percent somewhat disagreed, 15 percent strongly agreed and 8 percent strongly disagreed.
- Respondents chose the following as the most effective means for providing general flood hazard and disaster information:
    - Internet (55 percent)
    - Community Events (38 percent)
    - Public awareness campaign, e.g., flood awareness week, winter storm preparedness month (38 percent)
    - Social media, such as X, Nextdoor or Facebook (38 percent).

  - Fire Department/ Rescue (30 percent)
  - Informational Brochures (25 percent)
  - Word of mouth (25 percent)
  - Local Government Newsletters (23 percent)
  - TV News (23 percent)
- Respondents' top preferred methods for receiving emergency notifications are text messages (73 percent), cell or mobile phone call (65 percent) , and email (50 percent).
- 73 percent of respondents agree or strongly agree that local, state and federal government should provide programs promoting resident action to reduce exposure to flood risks.
- Respondents ranked (1 for low priority and 3 for high priority) government-sponsored flood damage reduction projects in the following order of preference:
  - Retrofitting infrastructure (improving culverts, bridges, and local drainage) (weighted sore of 2.42)
  - Capital projects (dams, levees, flood walls, and drainage improvements) (weighted score of 2.41)
  - Projects that will mitigate future flood impacts caused by climate change (weighted score of 2.24)
  - Assisting vulnerable property owners with securing mitigation funding (weighted score of 2.19)
  - Providing better flood risk information to the public (weighted score of 2.11)
  - Strengthening codes and regulations to higher regulatory standards (weighted score of 1.94)
  - Acquiring vulnerable properties, removing any properties and maintaining them as open space (weighted score of 1.85)
- 20 percent of respondents stated they would not be willing to spend any money to retrofit their property to reduce flood risks, additionally, 17 percent stated they would only be willing to spend less than $1000. The respondents stated the following incentives would encourage spending money on retrofits:
  - Grand finding (55 percent)
  - Insurance premium discount (50 percent)
  - Mortgage discount (43 percent)
- 69 percent of respondents support the preservation of natural land containing a flood hazard and 17 percent of them support it only for properties other than their own.

3.2.3.2 Public Meeting Attendance

Table 3-2 summarizes participation in the public meetings that were held during the outreach effort.

Table 3-2: Summary of Public Meetings[1]

Date	Location	Number of Attendees	Number of Surveys or Comments Received
July 18th 2024 6:00-8:00pm	Malibou Lake Mountain Club 29033 Lake Vista Drive Agoura, CA 91301	4	2
April 3rd 2025 6:00-8:00pm	Quartz Hill Library 5040 West Ave M-2, Quartz Hill, CA 93536	TBD	See Footnote

3.3 Repetitive Loss Area Specific Outreach

During the development of the draft of this report, the Los Angeles County Public Works sent a letter to residents in each repetitive loss area informing them that their properties are in identified repetitive loss areas, requesting that they provide information about how flooding affects their properties, and informing them that the RLAA was being conducted and that they would be informed when the draft is ready for review. A copy of the letter is shown in Figure 3.7.

Upon the completion of a draft of this report, Los Angeles County Public Works disseminated the letter to residents in each repetitive loss area informing them of this report, where and how they would be able to review it, and where and how they might submit comments regarding it. The communication document is shown in Figure 3-8.

[1] To be Determined (TBD) based on recorded attendance for this future meeting. Survey period ended in December 2024.

COUNTY OF LOS ANGELES

DEPARTMENT OF PUBLIC WORKS

"To Enrich Lives Through Effective and Caring Service"

900 SOUTH FREMONT AVENUE
ALHAMBRA, CALIFORNIA 91803-1331
Telephone: (626) 458-5100
http://dpw.lacounty.gov

MARK PESTRELLA, Director

ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 1460
ALHAMBRA, CALIFORNIA 91802-1460

IN REPLY PLEASE
REFER TO FILE: SWE-7

August 12, 2024

«Property_Owner»
«Mailing_Address»
«Mailing_City»

Dear «Property_Owner»:

LOS ANGELES COUNTY REPETITIVE LOSS AREA ANALYSIS
PROPERTY LOCATION: «SITE_ADDRESS», «SITE_CITY»

Your property at the listed location above has been identified to be in an area considered to be potentially vulnerable to repetitive flooding. In an effort to help reduce the risk of flood damage to properties, Los Angeles County Public Works is updating its Repetitive Loss Area Analysis that outlines the location of these areas, the likely sources of flooding, and possible mitigation measures to reduce the risk from flood events. The latest 2020 Repetitive Loss Area Analysis is currently undergoing updates and can be found at: https://pw.lacounty.gov/wmd/NFIP/FMP/RLAA.

You may recall that you received a postcard from Public Works in early July 2024 asking for your participation in a flood risk preparedness survey. This resident participation will allow Public Works to learn more about the flood hazards in the community and help Public Works identify suitable actions for improving its comprehensive Floodplain Management Program. If you have not already, please take our survey at the following link: https://bit.ly/LACFMPSurvey2025.

Repetitive Loss Areas have been delineated based on a list of Repetitive Loss Properties maintained by the Federal Emergency Management Agency, and properties in the vicinity that are not listed by Federal Emergency Management Agency but may be subject to similar flooding issues. A Repetitive Loss Property is any insurable building, which two or more claims of more than $1,000 were paid by the National Flood Insurance Program within any rolling 10-year period, since 1978.

If you would like to share any information about the flood hazards you many have experienced at your property or have any suggestions, please provide them by September 5, 2024, to:

«Property_Owner»
August 12, 2024
Page 2

Los Angeles County Public Works
Stormwater Engineering Division
Attention Mr. Anjero Asprer
900 South Fremont Avenue
Alhambra, CA 91803

You may also e-mail your suggestions to Mr. Asprer at aasprer@pw.lacounty.gov.

The draft Repetitive Loss Area Analysis is expected to be completed at the end of November 2024. Public Works will be sending a letter to offer you the opportunity to review and comment on the draft document before it is finalized.

Please note that specific property addresses and owner names will not be included in the report and flood insurance claims will be aggregated. This will be done for privacy reasons. We look forward to receiving your input.

If you have any questions, please contact Ms. Patricia Wood at (626) 458-6131 or pwood@pw.lacounty.gov, or Mr. Anjero Asprer at (626) 458-4337 or aasprer@pw.lacounty.gov.

Very truly yours,

MARK PESTRELLA, PE
Director of Public Works

for

STERLING KLIPPEL
Assistant Deputy Director
Stormwater Engineering Division

AA:og
P:\wmd\Flood Analyses\NFIP\Floodplain Management Plan Update\2025 FMP\RLAA\Outreach\1st Notification Letter

Figure 3-7: Repetitive Loss Area Target Mailing #1

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
"To Enrich Lives Through Effective and Caring Service"

900 SOUTH FREMONT AVENUE
ALHAMBRA, CALIFORNIA 91803-1331
Telephone: (626) 458-5100
http://dpw.lacounty.gov

MARK PESTRELLA, Director

ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 1460
ALHAMBRA, CALIFORNIA 91802-1460

IN REPLY PLEASE
REFER TO FILE: SWE-7

December 12, 2024

«Property_Owner»
«MAILING_ADDRESS»
«MAILING_CITY»

Dear «Property_Owner»:

LOS ANGELES COUNTY REPETITIVE LOSS AREA ANALYSIS
PROPERTY LOCATION: «SITE_ADDRESS», «SITE_CITY»

This is a follow up to our August 12, 2024, letter to you. You may recall, we informed you that your property at the above listed location has been identified to be in an area considered to be potentially vulnerable to repetitive flooding. We also notified you that Los Angeles County Public Works is updating its Repetitive Loss Area Analysis for unincorporated areas. The Repetitive Loss Area Analysis outlines the location of these Repetitive Loss Areas like yours, the likely sources of flooding, and possible mitigation measures to reduce the risk from flood events. The County's current Repetitive Loss Area Analysis was adopted in July 2021, and can be found at: https://pw.lacounty.gov/wmd/NFIP/FMP/RLAA.aspx.

As stated in the August 2024 letter, Repetitive Loss Areas have been delineated based on a list of Repetitive Loss Properties maintained by the Federal Emergency Management Agency. A Repetitive Loss Property is any insurable building, for which two or more claims of more than $1,000 were paid by the National Flood Insurance Program within any rolling 10-year period since 1978. Also included in the Repetitive Loss Areas are properties that are not listed as Repetitive Loss Properties, but are nearby and, therefore, may face similar flood risk and can benefit from information contained in the Repetitive Loss Area Analysis. Recipients of the letter were invited to share any information about the flood hazards they may have experienced at their properties. This property owner participation allowed us to learn more about the flood hazards in the community and helped us identify suitable actions for improving its Repetitive Loss Area Analysis.

Please note that specific property addresses and owner names are not included in the Repetitive Loss Area Analysis report and flood insurance claims have been aggregated (lumped together). This has been done to protect yours and other property owners' privacy.

«Property_Owner»
December 9, 2024
Page 2

We would like to offer you the opportunity to review and comment on the draft updated Repetitive Loss Area Analysis before it is finalized. A copy of the draft document is available at: https://pw.lacounty.gov/wmd/NFIP/FMP2025/DraftRLAA. If you would like to provide any comments on the draft document, please e-mail them by **January 31, 2025**, to Mr. William Saunders at wsaunder@pw.lacounty.gov.

You may also mail your comments to Mr. Saunders at:

Los Angeles County Public Works
Stormwater Engineering Division
900 South Fremont Avenue
Alhambra, CA 91803

Please contact Mr. Saunders if you would like a copy of the draft mailed to you on a Compact Disc.

If you have any questions, please contact Ms. Patricia Wood at (626) 458-6131 or pwood@pw.lacounty.gov, or Mr. Saunders at (626) 458-4355 or wsaunder@pw.lacounty.gov.

Very truly yours,

MARK PESTRELLA, PE
Director of Public Works

for

STERLING KLIPPEL
Assistant Deputy Director
Stormwater Engineering Division

WS:og
P:\wmd\flood Analysis\NFIP\Floodplain Management Plan Update\2025 FMP\RLAA\Outreach\2nd Notification letter\2025 RLAA 2nd Letter.2docx

Figure 3-8: Repetitive Loss Area Target Mailing #2

4 Relevant Programs and Regulations

This chapter provides a comprehensive review of existing laws, ordinances and plans at the federal, state, and local level that can support or impact action items identified in this RLAA. Federal, state, and local agencies share and coordinate responsibilities for flood protection in Los Angeles County. The two main federal agencies are the U.S. Army Corps of Engineers, which implements federal flood protection policies, and FEMA. The California Department of Water Resources (DWR) is responsible for managing the state's waterways. Los Angeles Public Works and the Los Angeles County Flood Control District (LACFCD) work to reduce flood risk in Los Angeles County. Development of the RLAA included a review and incorporation, if appropriate, of existing plans, studies, reports, and technical information as part of the planning process. Pertinent federal, state, and local laws are described below.

4.1 Federal and State

Federal and state regulations and programs that need to be considered in floodplain management are constantly evolving. For this plan, a review was performed to determine which regulations and programs are currently most relevant to local comprehensive floodplain management. The findings are summarized in Table 4-1 and Table 4-2. Short descriptions of programs are provided in Appendix B**.**

Table 4-1: Summary of Relevant Federal Agencies, Programs and Regulations

Agency, Program or Regulation	Local Relevance and Response
National Flood Insurance Program	The NFIP provides flood insurance against potential losses from flooding for participating property owners. Los Angeles County participates in the NFIP and has adopted regulations that meet the NFIP requirements. The County entered the NFIP in 1980, and the first Los Angeles County FIRM was issued December 2, 1980. The index date for the current FIRM is June 2, 2021. Los Angeles County is currently in good standing with the provisions of the NFIP as monitored by FEMA Region IX and the California Department of Water Resources. Table 4-8 (at the end of this chapter) summarizes local NFIP capabilities of Los Angeles County. NFIP regulations are detailed in 44 Code or Regulations (CFR). 44 CFR regulations provide policies and procedures for disaster assistance, flood insurance, and floodplain management criteria. In 2023, the NFIP pricing approach, Risk Rating 2.0, was fully implemented. Under this pricing approach, flood zones are no longer used for the determination of flood risk and the CRS discount is applied uniformly to all policies throughout the community regardless of whether the structure is located inside the Special Flood Hazard Area (SFHA). Additionally, the Risk Rating 2.0 method for calculating NFIP flood insurance premiums accounts for an individual property's actual flood risk and cost to rebuild by considering additional flood risk variables such as flood frequency, river overflow, storm surcharge, coastal erosion, heavy rainfall, distance to a water source, property and structure attributes, and cost to reconstruct (Los Angeles County Public Works, 2024).

Agency, Program or Regulation	Local Relevance and Response
Community Rating System	Los Angeles County has participated in the CRS program since 1990. The County has a Class 6 rating (out of 10, 10 being the lowest rating), so NFIP policy holders in unincorporated areas of Los Angeles County can receive a 20 percent discount on residential and nonresidential structures in flood zones on flood insurance. This equates to an average savings of $4177 per policy, for a total countywide premium savings of $138,583 (FEMA, 2023a). To maintain or improve its rating, the County goes through recertification and re-verification every five years. This plan is developed to help the County maintain or enhance its CRS classification.
Disaster Mitigation Act of 2000	Los Angeles County, in conjunction with emergency services partners, has prepared a local All-Hazards Mitigation Plan that sets strategies for coping with the natural and man-made hazards. The scope of this plan is for the unincorporated County areas only. The plan correlates information from County departments with known and projected hazards that face Southern California. It was formally adopted by the Los Angeles County Board of Supervisors for use in the development of specific cost-effective hazard mitigation proposals. The plan complies with requirements of FEMA and the Governor's Office of Emergency Services and was first approved by both agencies in 2014. It has a 5-year performance period through 2019 and an updated All-Hazard Mitigation Plan was approved in 2020 (Los Angeles County, 2020).
Biggert-Waters Flood Insurance Reform Act of 2012 and Homeowner Flood Insurance Affordability Act of 2014	The Biggert-Waters Flood Insurance Reform Act of 2012 required flood insurance premiums to reflect real flood risk, leading to increased premiums for homeowners. The Homeowner Flood Insurance Affordability Act for 2014 delayed the increases in premiums for renewed policies by limiting annual increases to a maximum of 18 percent.
Executive Order 11988: Floodplain Management	Executive Order 11988 requires Federal agencies to avoid long and short-term adverse impacts due to occupancy and modification of floodplains to the extent possible. They are also required to avoid direct or indirect support of floodplain development whenever a practicable alternative is feasible.
Executive Order 13690: Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input	Executive Order 13690 establishes the Federal Flood Risk Management Standard which is a framework to increase resilience against flooding as well as preserve the floodplains' natural values. The Executive Order also sets a process for further consideration of public input.
Executive Order 14030: Climate-Related Financial Risk	This Executive Order requires the Assistant to the President for Economic Policy and Director of the National Economic Council and the Assistant to the President and National Climate Advisor to develop in coordination with the Secretary of the Treasury and the Director of the Office of Management and Budget, a comprehensive Government-wide strategy climate-related financial risk.
Endangered Species Act (ESA)	FEMA suspended processing two types of flood map revision requests in Los Angeles County after July 1, 2023, which will affect requests for Letters of Map Revision Based on Fill (LOMR-F) and Conditional Letters of Map Revision Based on Fill (CLOMR-F). The suspension will last at least until FEMA formally consults with the National Marine Fisheries Service and U.S. Fish and Wildlife Service required by Section 7 of the ESA (FEMA, 2023b).

Agency, Program or Regulation	Local Relevance and Response
Clean Water Act	The Clean Water Act provides regulatory and non-regulatory tools to reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff in order to support propagation of wildlife and recreation in and on the water.
National Incident Management System	Los Angeles County adopted the County of Los Angeles Operational Area Emergency Response Plan in March 2012. The Governor's Office of Emergency Services approved it on August 31, 2011, as fully compliant with the National Incident Management System (NIMS). An update to the plan was completed and approved in November 2023 continuing the County's compliance (Los Angeles County, 2023).
Americans with Disabilities Act	The Americans with Disabilities Act intersects with disaster preparedness programs in regard to transportation, social services, temporary housing, and rebuilding. Persons with disabilities may require additional assistance in evacuation and transit (e.g., vehicles with wheelchair lifts or paratransit buses). Evacuation and other response plans should address the unique needs of residents. Local governments may implement a special-needs registry to identify the home addresses, contact information, and needs of residents who require more assistance for emergency management purposes.
Public Law 8499, Flood Control and Coastal Emergencies (33 U.S.C. 701n) (69 Stat. 186)	This law gives the U.S. Army Corps of Engineers the legal authority to conduct emergency preparation, response, and recovery activities and to supplement local efforts in the repair of flood damage reduction projects that are damaged by floods. It authorizes the Corps' Chief of Engineers to undertake activities including disaster preparedness, advance measures, emergency operations (flood response and post-flood response), rehabilitation of flood control works threatened or destroyed by flood, protection or repair of federally authorized shore protective works threatened or damaged by coastal storm, and provisions of emergency water in the event of drought or contaminated source.

Table 4-2: Summary of Relevant State Agencies, Programs and Regulations

Agency, Program or Regulation	Local Relevance and Response
California General Planning Law	The Los Angeles County 2035 General Plan provides a policy framework for how and where the unincorporated County will grow through 2035, while recognizing the County's diversity of cultures, abundant natural resources, and status as an international economic center. The Los Angeles County 2035 General Plan accommodates new housing and jobs in unincorporated areas in anticipation of population growth in the County and the region (Los Angeles County Department of Regional Planning, 2022).
California Environmental Quality Act	This RLAA does not require CEQA environmental review. It constitutes a feasibility and planning study for possible future actions, which the County has not approved, adopted or funded, and therefore is exempt from CEQA under Section 15262 of the CEQA Guidelines. However, future mitigation actions implemented as recommended by this plan may be subject to CEQA review

Porter-Cologne Act	The Porter-Cologne Water Quality Control Act expanded the enforcement authority of the State Water Resources Control Board and the nine Regional Water Quality Control Boards, including the Los Angeles Regional Water Quality Control Board. The act provided for the California Environmental Protection Agency to create the local boards and better protect water rights and water quality.
AB 162: Flood Planning, Chapter 369, Statues of 2007	Compliance with this law constitutes inclusion of certain General Plan elements. Los Angeles County's compliance with Chapter 369, Statutes of 2007 is described in Appendix B.
AB 2140: General Plans – Safety Element	This bill enables state and federal disaster assistance and mitigation funding to communities with compliant hazard mitigation plans.
AB 747: General Plans—Safety Element	The safety elements of cities' and counties' general plans must address evacuation routes and include any new information on flood and fire hazards and climate adaptation and resiliency strategies.
AB 2800: Climate Change—Infrastructure Planning	This act requires State agencies to take into account the impacts of climate change when developing state infrastructure.
Senate Bill (SB) 92 and New Standards for Submitting Dam Inundation Maps	This bill (SB 92, part of the 2017-18 budget package) makes significant legislative changes related to dam safety. It requires owners of dams under the regulatory jurisdiction of the California Department of Water Resources' Division of Safety of Dams to prepare inundation maps and emergency action plans and provides for fees and enforcement.
SB 379: Land Use, General Plan, Safety Element	Los Angeles County's compliance with SB 379 is described in Appendix B.
California State Building Code	Los Angeles County has adopted the State's Building Codes by reference, except where the County has made amendments or revisions to apply higher standards such as the NFIP minimum standards for building in floodplains and the ASCE-24 standards. The permitting process in Los Angeles County ensures compliance with the State's Building Codes.
Standardized Emergency Management System	Los Angeles County has adopted an emergency response plan that is fully NIMS compliant (the County of Los Angeles Operational Area Emergency Response Plan in March 2012 then adopted the updated plan in November 2023. The Governor's Office of Emergency Services approved it as NIMS compliant.
California State Hazard Mitigation Plan	The 2020 County of Los Angeles All Hazards Mitigation Plan was determined to be consistent with the State Plan by the Governor's Office of Emergency Services during its review and approval of the plan in 2019.
Governor's Executive Order S-13-08	This order includes guidance on planning for sea level rise in designated coastal and floodplain areas for new projects. Climate impact information developed under this executive order is used in the climate change evaluation of the 2025 Los Angeles County Comprehensive Floodplain Management Plan.
California Civil Code 1102 and California Government Code Section 8589.45	The flood hazard disclosure requirements established under this code applies to all real estate transactions in Los Angeles County. and In every lease or rental agreement for residential property entered into on or after July 1, 2018, the owner or person offering the property for rent must disclose to the tenant any known flood hazards.
Local Flood Protection Planning Act	This State statute provides guidance on what a flood mitigation plan should include.

Water Code Division 5, Part 2, Chapter 4, Article 4	This code provides floodplain regulations for public agencies within a floodplain or the planning area of a floodplain management plan.
California Coastal Management Program	This program requires coastal communities to prepare coastal plans and requires that new development minimize risks to life and property in areas of high geologic, flood, and fire hazard.

4.2 Local

4.2.1 General Plan

The Los Angeles County 2035 General Plan, adopted in October 2015 and updated in July 2022, is the latest update to the County of Los Angeles general plan. It provides a policy framework for how and where the unincorporated County will grow through 2035. It accommodates new housing and jobs within the unincorporated areas in anticipation of population growth in the County and the broader region. The General Plan includes the following elements (Los Angeles County Department of Regional Planning, 2022):

- Land Use Element
- Mobility Element
- Air Quality Element
- Conservation and Natural Resources Element
- Parks and Recreation Element
- Noise Element
- Safety Element
- Public Services and Facilities Element
- Economic Development Element
- Housing Element.

General Plan elements that are particularly applicable to implementation of the floodplain management plan are: the Conservation and Natural Resources Element and the Safety Element. The Conservation and Natural Resources Element guides the long-term conservation of natural resources and preservation of available open space areas. In addition, the Safety Element, which reduces the potential risk of death, injuries, and economic damage resulting from natural and human-caused hazards is applicable to the floodplain management plan. By inclusion of these elements, the Los Angeles County General Plan is in compliance with California's First Validating Act of 2023. This Act refers to California's SB-878 which plays a role in flood planning by validating the organization, boundaries, acts, proceedings, and bonds of public bodies, including flood control districts. This validation is crucial for flood control projects because it verifies the legal and administrative frameworks governing these districts are recognized and upheld.

Conservation and Natural Resources Element

Watershed Management

The Conservation and Natural Resources Element of the General Plan addresses watershed management, noting that it is an effective and comprehensive way to address water resource challenges. Watershed

management integrates habitat enrichment and recreation availability with water supply, flood protection, and clean runoff (Los Angeles County Department of Regional Planning, 2022).

Because a watershed may encompass many jurisdictions, water supply, water quality, flood protection and natural resource issues are best managed at a regional or multiple-agency level. The County works within its jurisdiction to improve the health of rivers, streams and lesser tributaries to enhance overall water resources, runoff quality and wildlife habitat. However, watershed integration requires the County to also participate with other stakeholders to manage the function and health of watersheds. Collaboration with local stakeholders and jurisdictions and with educational and professional institutions is needed to develop and implement watershed plans to protect and augment local water supplies, maintain flood protection standards, provide assistance in the event of flooding, encourage recreational opportunities, conserve habitats of native species, and improve the quality of water that flows to rivers, lakes, and the ocean.

Significant Ecological Areas and Coastal Resources

The Conservation and Natural Resources Element of the General Plan establishes the Significant Ecological Area (SEA) designation for land in unincorporated areas that contains irreplaceable biological resources (SEAs also have been identified in cities, but they function differently from those in unincorporated areas). Coastal Resource Areas (CRAs) are located within the coastal zone and include biological resources equal in significance to SEAs. The General Plan identifies 21 SEAs and eight CRAs. SEAs and CRAs are shown in the table below. Two CRAs are linked to SEAs that are not entirely within CRAs (the Santa Monica Mountains Coastal Zone and Palos Verdes Coastline) (Los Angeles County Department of Regional Planning, 2022).

Table 4-3: Significant Ecological Areas and Coastal Resource Areas

Significant Ecological Areas		Coastal Resource Areas
Altadena Foothills and Arroyos*	San Andreas*	Alamitos Bay
Antelope Valley*	San Dimas Canyon / San Antonio Wash*	Ballona Wetlands*
Cruzan Mesa Vernal Pools*	San Gabriel Canyon*	El Segundo Dunes
East San Gabriel Valley*	Santa Clara River*	Malibu Coastline*
Griffith Park	Santa Felicia*	Point Dume
Harbor Lake Regional Park*	Santa Monica Mountains*	Santa Catalina Island*
Joshua Tree Woodlands*	Santa Susana Mountains / Simi Hills*	Coastal Zone of the Santa Monica Mountains*
Madrona Marsh Preserve	Tujunga Valley / Hansen Dam	Terminal Island (Pier 400)
Palos Verdes Peninsula and Coastline*	Valley Oaks Savannah*	
Puente Hills*	Verdugo Mountains	
Rio Hondo College Wildlife Sanctuary*		

*Indicate areas within unincorporated areas of Los Angeles County

The objective of the SEA program is to conserve genetic and physical diversity by designating biological resource areas that are capable of sustaining themselves into the future. However, SEAs are not wilderness preserves. Much of the land in SEAs is privately held, used for public recreation, or abuts

developed areas. The SEA program must therefore balance the overall objective of resource preservation against other critical public needs. The General Plan goals and policies are intended to see that privately held lands within the SEAs retain the right of reasonable use, while avoiding activities and developments that are incompatible with the long-term survival of the SEAs (Los Angeles County Department of Regional Planning, 2022).

Safety Element

Flooding is among the natural hazards addressed in the Safety Element of the General Plan. The element presents goals and policies for uses in flood hazard zones, as well as tsunami hazard areas and potential dam failure inundation areas. The Safety Element of the County's General Plan was updated July 2022 and is in compliance with the provisions of California's SB 379.

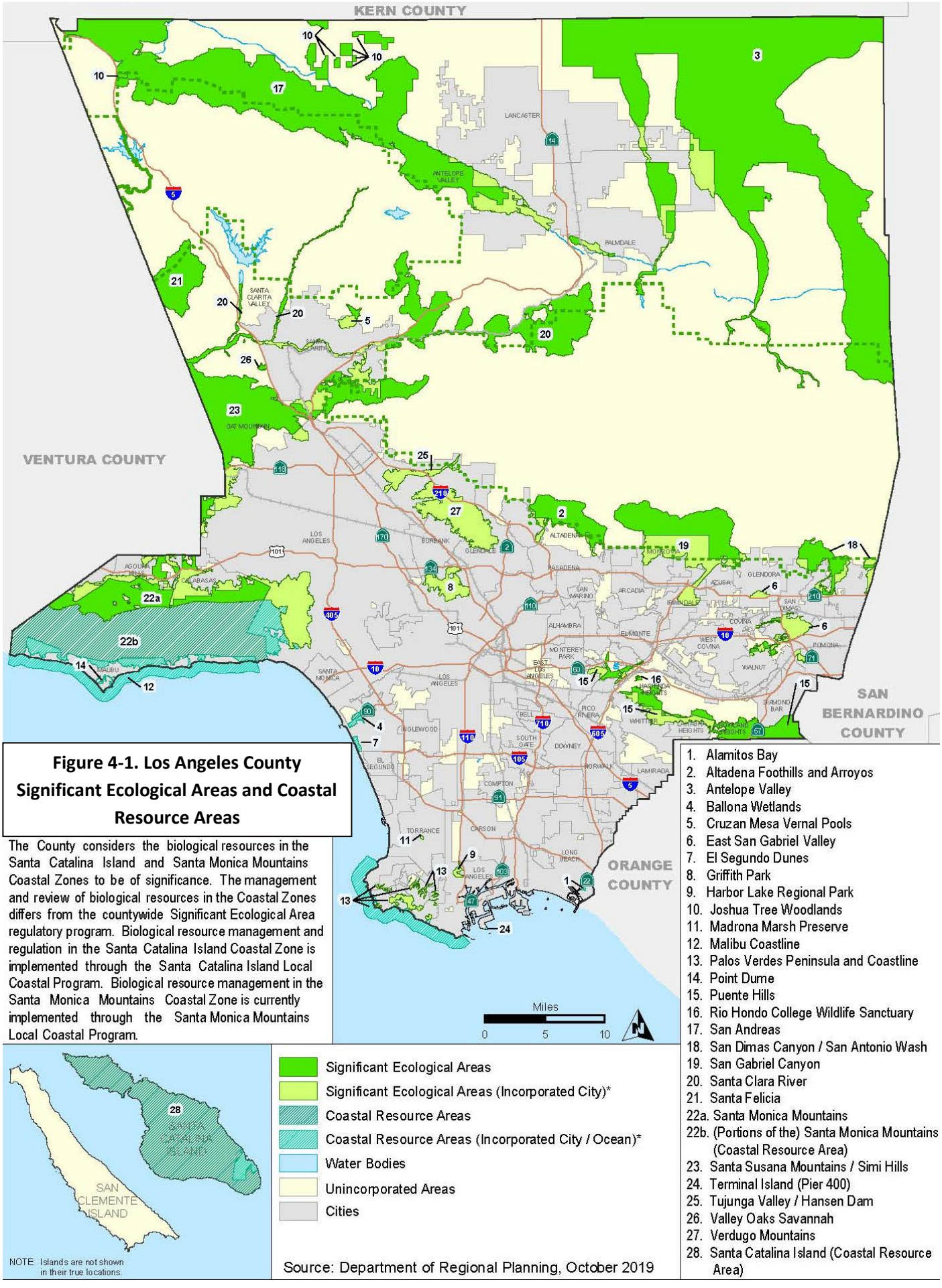


Figure 4-1. Los Angeles County Significant Ecological Areas and Coastal Resource Areas

The County considers the biological resources in the Santa Catalina Island and Santa Monica Mountains Coastal Zones to be of significance. The management and review of biological resources in the Coastal Zones differs from the countywide Significant Ecological Area regulatory program. Biological resource management and regulation in the Santa Catalina Island Coastal Zone is implemented through the Santa Catalina Island Local Coastal Program. Biological resource management in the Santa Monica Mountains Coastal Zone is currently implemented through the Santa Monica Mountains Local Coastal Program.

4.2.2 Community Plans

The Los Angeles County General Plan (2022) serves as the foundation for community-based plans, such as area plans, community plans, and coastal land use plans. Area plans focus on land use and policy issues that are specific to the planning area. Community plans cover smaller geographic areas within the planning area and address neighborhood and/or community-level policy issues. Coastal land use plans are components of local coastal programs; they regulate land use and establish policies to guide development in the state-designated coastal zone. The following is a list of adopted and in-progress community-based plans in unincorporated Los Angeles County (Los Angeles County Department of Regional Planning, 2022):

- Altadena Community Plan
- Antelope Valley Area Plan
- East Los Angeles 3rd Street Plan
- East Los Angeles Community Plan
- Florence-Firestone Community Plan
- Hacienda Heights Community Plan
- Marina del Rey Local Coastal Program Land Use Plan
- Pepperdine Long Range Development Plan
- Rowland Heights Community Plan
- Santa Catalina Island Local Coastal Program Land Use Plan
- Santa Clarita Valley Area Plan
- Santa Monica Mountains North Area Plan
- Twin Lakes Community Plan
- Walnut Park Neighborhood Plan
- West Athens-Westmont Community Plan

4.2.3 Watershed Management Program

Municipalities and community stakeholders throughout Los Angeles County developed a total of 31 collaborative Watershed Management Programs and Enhanced Watershed Management Programs for the county's six watersheds—Dominguez Channel, Los Angeles River, Los Cerritos Channel, San Gabriel River, Santa Monica Bay and Upper Santa Clara River. Each Watershed Management Group meets regularly to implement its plan (California Water Boards, 2023a).

Each plan identifies programs and projects to improve water quality, promote water conservation, enhance recreational opportunities, manage flood risk, improve aesthetics, and support public education. Each includes water quality priorities, watershed control measures, the scheduling of projects, and monitoring, assessment and adaptive management for projects. The plans rely heavily on three approaches:

- **Regional Multi-Benefit Projects**— Regional multi-benefit projects, such as the Alondra Park Multi-Benefit Stormwater Capture Project, retain, divert or treat stormwater and non-stormwater from sub watershed areas, while also providing water conservation, flood, recreation, habitat and other benefits. The Alondra Park Multi-Benefit Stormwater Capture Project, seen in Figure 4-2, is located in El Camino Village, Lawndale, CA and will capture and

divert or treat stormwater from 4,495 acres of land. This project is currently in construction, which started in late January 2024. (Los Angeles County Public Works, 2023a).

Figure 4-2: Alondra Park Multi-Benefit Stormwater Capture Project

- **Green Street Projects**— Green Street projects such as the 103rd Street Green Improvement Project, improve streets, sidewalks or other paved areas using permeable materials and drought-tolerant plants to capture, clean or infiltrate rainwater. Green infrastructure projects help to clean surface water bodies, recharge groundwater, beautify neighborhoods, and cool communities by increasing the amount of vegetation. The 103rd Street Green Improvement Project will construct a green street through 103rd street and portions of Ted Watkins Park to collect dry weather runoff and stormwater. The street will also be rehabilitated with improved sidewalks, curbs, and pavement. Project was completed in November 2020. (Los Angeles Public Works, 2023b).
- **Low Impact Development—** Low impact development consists of site design approaches and best management practices that address runoff and pollution at the source. These practices can effectively remove nutrients, bacteria, and metals while reducing the volume and intensity of stormwater flows.

4.2.4 Greater Los Angeles County Region Integrated Regional Water Management Plan

The 2017 Integrated Regional Water Management (IRWM) Plan Update defines the direction for collaborative planning to achieve sustainable management of water resources in the Greater Los Angeles County Region. The update meets the California Department of Water Resources' 2016 updated IRWM

guideline requirements. The Plan identifies solutions to achieve the following objectives over the 25-year planning horizon (Greater Los Angeles County, 2014):

- Reduce the region's reliance on imported water
- Comply with water quality regulations by improving the quality of urban runoff, stormwater and wastewater
- Protect, restore and enhance natural processes and habitats
- Increase watershed-friendly recreational space for all communities
- Reduce flood risk in flood-prone areas by increasing protection or decreasing needs using integrated flood management approaches
- Adapt to and mitigate against climate change vulnerabilities.

4.2.5 Los Angeles County Flood Control District

The Los Angeles County Flood Control Act was adopted by the State Legislature in 1915 after a regional flood took a heavy toll on lives and property. The act established the Los Angeles County Flood Control District and empowered it to provide flood protection and water conservation within its boundaries. Authority to address recreation and aesthetics was added via subsequent amendments. The County of Los Angeles Board of Supervisors is the ex-officio governing body for the Los Angeles County Flood Control District. In 1984, the Flood Control District entered into an operational agreement transferring administration, planning and operational activities to Los Angeles County Public Works.

Within the Greater Los Angeles County area, the Flood Control District and the U.S. Army Corps of Engineers share responsibilities for managing flood risk. The Flood Control District is the primary agency able to address large regional drainage needs. It uses available funds to operate and maintain flood control facilities and systems that cross various cities. In years of heavy rainfall, the flood control system has largely prevented serious flooding that affected the Los Angeles area many years ago.

The Flood Control District boundaries encompass more than 2,700 square miles, six major watersheds, 86 incorporated cities, and most of the unincorporated County areas. The boundary does not encompass communities north of Avenue S. It excludes communities in Antelope Valley. Information on Antelope Valley's Plan is found in the following sections. A map of the LACFCD can be found using the link above. The Flood Control District's municipal flood protection and water conservation system is one of the largest in the world. It includes 14 major dams and reservoirs, 491 miles of open channels, 27 spreading grounds, 189 debris basins, operates 61 pump stations, 3,400 miles of underground storm drains, and an estimated 97,466 catch basins. Planning efforts to rehabilitate flood control facilities also consider other potential beneficial uses of those facilities, such as environmental restoration, enhancement of water quality, and recreation (Los Angeles County Public Works, 2023c).

4.2.6 Antelope Valley Comprehensive Plan and Amendments

Los Angeles County prepared and adopted the Antelope Valley Areawide General Plan in 1986, a comprehensive plan for the unincorporated County area of Antelope Valley. The Plan was updated in June 2015, renamed the Antelope Valley Area Plan. The Antelope Valley differs from other parts of the County because it lacks an ocean drainage outlet. It also lacks defined natural channels below the foothills, as well as an adequate flood control system, resulting in unpredictable and varying flood risk across the valley

floor. The Plan explores flood control and water conservation measures to reduce the negative effects of regional private development and to better address local flood hazard needs. It seeks to provide a cohesive approach to drainage, stormwater management, and flood risk mitigation. The Plan evaluates the fee structures available to finance drainage solutions (Los Angeles County Public Works, 1987). Two amendments to the original plan update costs and drainage fees to continue implementing recommended improvements (Los Angeles County Public Works, 1991; Los Angeles County Public Works, 2006). The most recent update to the plan in 2015 provided for zone changes, including residential, agricultural, commercial, industrial, special purpose, C-RU (rural commercial) and MXD-RU (rural mixed use) zones (Los Angeles County Department of Regional Planning, 2015).

4.2.7 Antelope Valley Integrated Regional Water Management Plan and Salt and Nutrient Management Plan

The Antelope Valley IRWM group developed a water resource management plan in 2007. The 2007 plan was updated in 2013 and again in 2019 to include new information as required by the California Department of Water Resources' 2016 IRWM Proposition 1 Guidelines as well as updates to information from the previous IRWM. The 2019 Antelope Valley IRWM Plan explores key issues, including uncertain and variable water supply, water demand exceeding supply, water quality and flood management, environmental resources, water management and land use, and climate change. It identifies and prioritizes a series of projects to address key concerns in the region, particularly those related to water supply (Antelope Valley Integrated Regional Water Management Group, 2019).

The Antelope Valley Salt and Nutrient Management Plan of 2014 was developed to manage salts, nutrients, and other elements from various sources to ensure that water quality objectives of the State Water Resource Control Board's Recycled Water Policy are met and safeguarded. The State Water Resources Control Board requires a Salt and Nutrient Management Plan for any community to qualify for recycled water projects through the Lahontan Regional Water Quality Control Board.

4.2.8 Upper Santa Clara River Watershed Integrated Regional Water Management Plan

The Upper Santa Clara River Watershed Integrated Regional Water Management group updated its IRWM plan in 2018 to meet the 2016 IRWM Guidelines under Proposition 1 (the Water Quality, Supply, and Infrastructure Improvement Act of 2014). The 2018 Upper Santa Clara River Watershed IRWM Plan examines current and future water-related needs, identifies regional objectives for water-related resource management, develops strategies to address identified needs, and evaluates projects to meet the regional objectives. It integrates planning and implementation and facilitates regional cooperation, with the goals of reducing water demand, improving operational efficiency, increasing water supply, improving water quality, and promoting resource stewardship over the long term (Los Angeles County, 2018)

4.2.9 Sediment Management Strategic Plan

The Los Angeles County Flood Control District developed a Sediment Management Strategic Plan in response to challenges in managing sediment. These challenges included wildfires occurring in 2007, 2009 and 2020 that led to an increased inflow of sediment and debris and increased pressure on the capacity of sediment placement sites. This plan provides an overview of sediment management issues and

evaluates various projects. The plan, designed to be effective from 2012 to 2032, is guided by the following objectives (Los Angeles County Public Works, 2013):

- Maintaining flood risk management and water conservation
- Recognizing opportunities for increased environmental stewardship
- Reducing social impacts related to sediment management
- Identifying ways to use sediment as a resource
- Ensuring that the Flood Control District is fiscally responsible in its decision-making.

4.2.10 Local Coastal Programs

Los Angeles County local coastal programs (LCPs) comply with the 1976 Coastal Act, enacted by the California Legislature, which requires coastal cities and counties to establish coastal resource conservation and development programs. The LCPs consist of planning and regulatory measures that manage development in the coastal zone. Each LCP includes a land use plan and implementation program. LCPs must consider the unique factors of the coastal community, as well as regional and state concerns. There are five coastal areas within the unincorporated Los Angeles County jurisdiction: the Santa Monica Mountains, Marina Del Rey, Santa Catalina Island, San Clemente Island and Ballona Wetlands Area A. Of these five areas, three have certified LCPs: Marina del Rey, Santa Catalina Island, and the Santa Monica Mountains. Certified LCPs are not required for San Clemente Island or Ballona Wetlands Area A (Los Angeles County Department of Regional Planning, 2023).

4.2.11 Los Angeles County Low Impact Development Ordinance

In November 2012, the Los Angeles Regional Water Quality Control Board adopted a Municipal Separate Storm Sewer System (MS4) Permit to regulate stormwater and non-stormwater discharges in the Los Angeles region. The Permit included low impact development (LID) requirements for certain projects to reduce the discharge of stormwater and associated pollutants into receiving water bodies and to control hydromodification. In November 2013, Los Angeles County amended its LID Ordinance in response to the 2012 MS4 Permit. The LID Ordinance applies to certain new development and re-development projects and is intended to accomplish the following:

- Lessen adverse impacts of stormwater and urban runoff from development on natural drainage systems, receiving waters and other water bodies.
- Minimize pollutant loadings from impervious surfaces by requiring certain projects to incorporate appropriate best management practices and other LID strategies.
- Require hydromodification to minimize erosion and other hydrologic impacts on natural drainage systems.

In 2014 Los Angeles County created the Low Impact Development Standards Manual to comply with requirements of the National Pollutant Discharge Elimination System MS4 Permit for discharges within the coastal watersheds of Los Angeles County. The manual provides guidance in new development as well as redevelopments within unincorporated areas of Los Angeles County. Its intent is to improve water quality and mitigate potential water quality impacts from stormwater and non-stormwater discharges.

4.2.12 County of Los Angeles Operational Area Emergency Operations Plan

The County of Los Angeles Operational Area Emergency Operations Plan provides details for coordinated response to large-scale emergency situations in the County, whether natural, man-made, or technological. In 2023, the 2012 Operational Area Emergency Response Plan was updated and renamed the County of Los Angeles Operational Area Emergency Operations Plan. It focuses on potentially catastrophic disasters that require more than normal response measures. It reviews capabilities in prevention, protection, response, recovery, and mitigation. It describes continuity of government plans and provides annexes for specific situations, including tsunamis, oil spills, and terrorism (Los Angeles County, 2023)

4.2.13 Topanga Creek Watershed Management Plan

The Topanga Creek Watershed covers 18 square miles, has the greatest diversity of native plants and animals of all the watersheds in the Santa Monica Mountains, and is the third largest drainage into the Santa Monica Bay. In 2002, the Topanga Creek Watershed Committee updated its original 1996 Topanga Creek Watershed Management Study with new preventive planning strategies and best management practices. These projects and practices were developed to maintain and enhance the watershed's current physical, chemical, biological, economic, and social characteristics, including its diversity in land use (i.e., residential, business development, infrastructure, wilderness recreation, and biological habitat). The plan also seeks to protect life and property from vulnerability to natural hazards such as stormwater runoff, floods, earthquakes, and wildfires (Topanga Creek Watershed Committee, 2002).

4.2.14 Rio Hondo Watershed Management Plan

The 2018 Rio Hondo Watershed Management Plan provides goals and strategies to all affected municipalities and conservation organizations as a way to improve water quality, health, habitat and recreational opportunities for the Rio Hondo watershed. The Rio Hondo watershed is a sub-watershed of the Los Angeles River watershed and is linked to the San Gabriel River watershed as a result of both natural hydrologic processes and human intervention. The watershed contains both rural and urban areas, with the San Gabriel Mountains and Angeles National Forest defining the upper reaches and the more urban and developed San Gabriel Valley below the foothills. The watershed encompasses 22 cities and six unincorporated communities in Los Angeles County (California Water Boards, 2022b).

4.2.15 Gateway Watershed Management Program

The Gateway Watershed Management Authority is a coalition of 25 cities and government entities that manage regional water planning needs for the Gateway Cities region. The Gateway Watershed Management Authority developed an integrated regional water management plan in 2013. Although the plan primarily focuses on needs for cities in this region, it includes a few unincorporated County areas. Recommendations developed for this plan include coordinating regional water management efforts, continued maintenance of projects and grant opportunities, addressing MS4 permit watershed monitoring and reporting, and developing a funding and finance plan to implement projects (Gateway Management Authority, 2013).

4.2.16 Los Angeles River Master Plan and Corridor Highlights

The Los Angeles River is 51 miles long, and its watershed covers 834 square miles. It extends from the Santa Monica Mountains to the Simi Hills in the west and from the San Gabriel Mountains in the east. The

Los Angeles River flows eastward from its headwaters in the mountains to the northern corner of Griffith Park, where the channel turns southward through the Glendale Narrows before it flows across the coastal plain and into San Pedro Bay near Long Beach. The river is a valuable resource for the County, as well as a major source of flooding.

The County developed the Los Angeles River Master Plan in 1996 to seek ways to utilize the natural assets of the Los Angeles basin for economic, recreational, and environmental benefits while maintaining the waterway as a flood protection resource. The plan highlights water conservation as a major concern, noting that 30 to 40 percent of the County's water supply comes from local sources. It also recommends multi-use and multi-benefit projects, which not only strengthen flood control measures but also educate residents, create environmental habitats, or increase recreational opportunities (Los Angeles County Public Works, 1996; Los Angeles County Public Works, 2022).

In 2005, the County released the Master Plan and Corridor Highlights document, which provides information about Master Plan projects implemented since the adoption of the original 1996 Master Plan and those planned at the time for future construction. Many of the projects were structural but highlights also included natural resource preservation and education and outreach projects. Where sufficient data was available, the report documented specific benefits as well as implementation and location information (Los Angeles County Public Works, 2005). The plan update was developed through four phases: analysis of existing plans and regional context, proposing changes for the future, drafting the update, and final plan update. Members of the public, a steering committee appointed by the Board of Supervisors made up of 41 organizations, and a Los Angeles County Public Works technical team were the three main groups that provided input during these phases (Los Angeles County Public Works, 2022).

4.2.17 Los Angeles County Annual Hydrologic Reports

Los Angeles County releases an annual report containing hydrologic data relevant to the County; the most recent report covers 2021 through 2022. The report is organized into eight major sections providing background and statistics on the following areas (Los Angeles County Public Works, 2024):

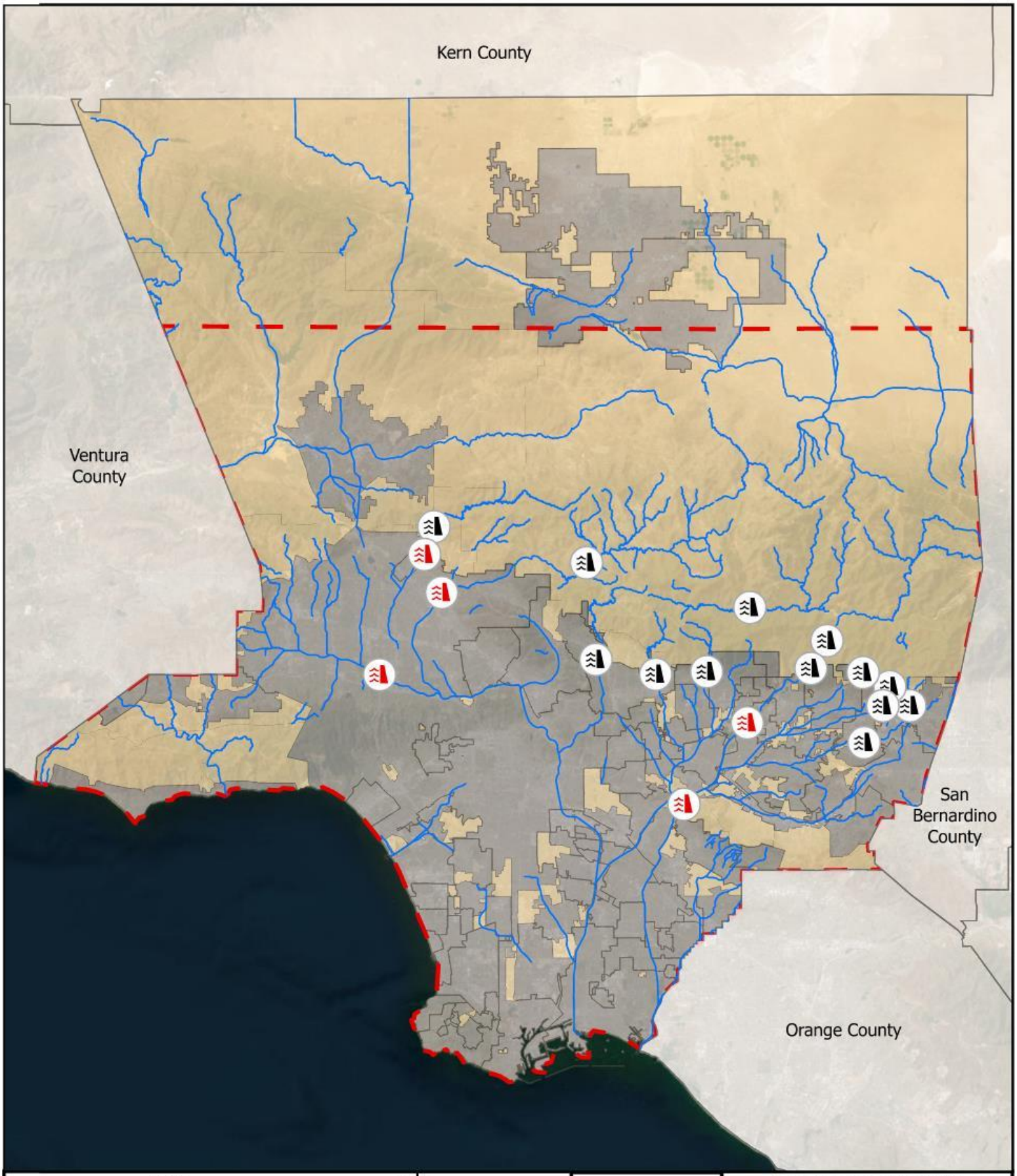
- Los Angeles County—County's topography, geology, and land use.
- Runoff—Mean daily and peak annual runoff flow rates for active stream gaging stations.
- Flood Control District—Flood events summaries.
- Reservoirs—Summary of annual inflow, outflow, and storage data for County dams and reservoirs.
- Precipitation—Daily and annual rainfall data from County rain gage stations.
- Erosion control—Debris basin design data, production summary, and production history.
- Evaporation—Data for the County's active evaporation stations.
- Water conservation—Groundwater recharge facility data and historical well data.

These reports are a resource for County personnel evaluating water management.

4.2.18 Los Angeles County Drainage Area

In 1915, the State Legislature created the Los Angeles County Flood Control District, shown in Figure 4-3 to control floods and conserve water. Early Flood Control District bond issues financed construction of 13 dams in the San Gabriel Mountains as well as flood channel modifications. The federal Emergency Relief

Appropriations Act of 1935 financed the construction of Eaton Wash Dam and several of the County's first debris basins. The federal 1935 Act and the Flood Control Act of 1936 made the U.S. Army Corps of Engineers a participant in Los Angeles County's flood protection program. Subsequent federal Flood Control Acts provided additional funding for flood control facilities. The Army Corps' Los Angeles River, San Gabriel River and Ballona Creek projects constructed five flood storage reservoirs or basins, 24 debris basins, 95 miles of main channels, 191 miles of tributary channels and two jetties. This regional flood control system is described in the LACDA study. It includes the Los Angeles River, San Gabriel River, Rio Hondo Channel and Ballona Creek. Flood control facilities in the Flood Control District and LACDA system fall into four general categories: debris basins, flood control reservoirs, improved tributary channels, and improved main channels. In total, the combined Flood Control District and LACDA systems consist of over 100 miles of main stem channel, over 370 miles of tributary channels, over 200 debris basins, 14 flood control and stormwater capture dams, and five flood control dams.



BURNS McDONNELL

Los Angeles County Floodplain Management Plan

Figure 4-3: Los Angeles County Flood Control District Area

Source: Los Angeles County Department of Public Works, 2023

Issued: 4/19/2024

4.2.19 Trash Best Management Practices

The 2004 Technical Report of Trash Best Management Practices identifies necessary measures to meet trash total maximum daily load goals for the Los Angeles River and Ballona Creek. Recommendations include trash and runoff source-control best management practices as the top preference. Also recommended are structural projects for high-trash generation areas, such as drain system retrofits, channel-cleaning contracts, and replacement of impervious surfaces (Los Angeles County Public Works, 2004). Keeping flood control facilities, including catch basins, free from trash and debris helps prevent localized street flooding.

4.2.20 Los Angeles County Response to Americans with Disabilities Act

The County of Los Angeles Operational Area Emergency Operations Plan Access and Functional Needs Annex defines "individuals with disabilities and access and functional needs" as populations whose members may have additional needs before, during and after an incident in functional areas including but not limited to the following:

- Maintaining independence
- Communication
- Transportation
- Supervision
- Medical care.

These populations may include any of the following:

- Individuals with mobility and transportation impairments
- Individuals with vision, hearing and dual sensory impairment
- Individuals with health, behavioral and mental health needs
- Individuals with intellectual and developmental disabilities
- Individuals who live in institutionalized settings
- Seniors and children
- Culturally diverse populations
- Individuals with limited English proficiency or non-English speakers
- Individuals with socio-economic barriers, including the homeless population.

4.2.20.1 Reasonable Accommodations Ordinance

The ordinance, which was adopted by the Board of Supervisors on November 28, 2011, creates an administrative procedure for persons with disabilities to request reasonable accommodation from land use and zoning standards or procedures, when those standards or procedures are a barrier to equal housing access, pursuant to state and federal Fair Housing laws. The ordinance applies to the unincorporated areas of Los Angeles County.

4.2.20.2 Plan Action Implementation

The Americans with Disabilities Act protocol will be applied when implementing any actions in this plan that could impact individuals with disabilities and access and functional needs. This will involve measures such as review by the Los Angeles County Inclusive Emergency Management Advisory Committee or whatever protocol has been established by the County at the time of project implementation.

4.3 Capability Assessment

The planning team performed an inventory and analysis of existing authorities and capabilities called a "capability assessment." A capability assessment creates an inventory of an agency's mission, programs and policies, and evaluates its capacity to carry them out. Table 4-4 summarizes the legal and regulatory capability of Los Angeles County. This table describes the legal authorities available to the county and/or enabling legislation at the state level affecting planning and land management tools that can support floodplain management action items. Each of these capabilities represents an ongoing program that supports Los Angeles County's commitment to floodplain resilience. Any gap in capability identified in this table should be considered as an action by the County in the action plan component of this plan. The table identifies the following information for each program:

- Local Authority: Does the County have the authority to implement the identified capability through policy or formal adoption?
- State or Federal Prohibitions: Are there any regulations that may impact the implementation of an identified capability that are enforced or administered by another agency (e.g., a state agency or special purpose district)?
- Other Regulatory Authority: Are there any regulations that may impact the implementation of a capability that are enforced or administered by another agency (e.g., a state agency or special purpose district)? This can also be referred to as delegated authority.
- State Mandated—Do state laws or other requirements enable or require the listed item to be implemented at the local level?

Table 4-4: Los Angeles County Legal and Regulatory Capability

	Local Authority	State or Federal Prohibitions	Other Regulatory Authority	State Mandated
Codes, Ordinances & Requirements				
Building Code	Yes	No	No	Yes
Comment: County of Los Angeles County Code: Title 26 – Building Code Title 30 – Residential Code				
Zoning Code	Yes	No	No	Yes
Comment: County of Los Angeles County Code, Title 22 – Planning and Zoning.				
Subdivisions	Yes	Yes	No	No
Comment: County of Los Angeles County Code, Title 21 – Subdivision Code. The California State Subdivision Map Act sets out how long a map approval can be valid, and the County cannot grant time longer than that.				
Post-Disaster Recovery	Yes	No	No	No
Comment: County of Los Angeles County Code, Title 2 – Administration, Division 3 – Departments and Other Administrative Bodies, Chapter 2.68 – Emergency Services, Part 6 – Director of Recovery Operations.				
Flood Damage Prevention Ordinance	Yes	No	No	No

	Local Authority	State or Federal Prohibitions	Other Regulatory Authority	State Mandated
Comment: County of Los Angeles County Code: Title 26, Chapter 1, Section 110 – Prohibited Uses of Building Sites. Title 11, Division 3, Chapter 11.60 – Floodways and Water Surface Elevations. Title 21, Chapter 21.44.320 – Land subject to flood hazard, inundation, or geological hazard. Title 21, Chapter 21.44.330 – Flood-hazard area, floodway or natural watercourse designation. Title 20, Division 5, Chapter 20.94 – Channels. Title 22, Division 1, Chapter 22.52, Part 5 – Flood Control.				
Low-Impact Development Standards	Yes	No	No	Yes
Comment: County of Los Angeles Code, Title 12 – Environmental Protection, Chapter 12.84 Low Impact Development Standards.				
Real Estate and Rental Disclosure	Yes	No	No	Yes
Comment: State of California Natural Hazards Disclosure Act, effective June 1, 1998 (California Civil Code Section 1103.2). California Government Code Section 8589.45 effective July 1, 2018.				
Growth Management	No	No	Yes	Yes
Comment: County of Los Angeles County Code, Title 22 – Planning and Zoning, Chapter 22.46 – Specific Plans. Specific Plans are available for Santa Catalina Island, Marina Del Rey, Universal Studios, and East Los Angeles Third Street.				
Site Plan Review	Yes	No	No	No
Comment: County of Los Angeles County Code, Title 22 and Title 26 – Building Code, Chapter 1 – Administration, Inspections.				
Special Purpose (flood management, critical areas)	–	–	–	–
County of Los Angeles County Code, Title 11 – Health and Safety, Division 2 – General Hazards, Chapter 11.52 – Water Hazards. County of Los Angeles County Code, Title 11 – Health and Safety, Division 3 – Miscellaneous Regulations, Chapter 11.60 – Floodways and Water Surface Elevations. County of Los Angeles County Code, Title 12 – Environmental Protection, Chapter 12.80 – Stormwater and Runoff Pollution Control. County of Los Angeles County Code, Title 12 – Environmental Protection, Chapter 12.20 – Depositing Petroleum Products on Beaches or into Pacific Ocean. County of Los Angeles County Code, Title 20 – Utilities, Division 5 – Flood Control District Property and Facilities. County of Los Angeles County Code, Title 31 – County Green Building Standards Code. County of Los Angeles County Code, Flood Control District Code, Chapter 21 – Stormwater and Runoff Pollution Control.				
Planning Documents				
General Plan	Yes	No	No	Yes
The *Los Angeles County 2035 General Plan*, adopted by the Los Angeles County Board of Supervisors on October 6, 2015, provides a policy framework for how and where the unincorporated County will grow through 2035. Comprising 2,650 square miles, unincorporated Los Angeles County is home to over one million people. The General Plan accommodates new housing and jobs within the unincorporated areas in anticipation of population growth in the County and the region.				
Capital Improvement Plan	Yes	No	No	No
Los Angeles County Public Works develops and implements capital projects, and manages projects implemented by consultants. The 2035 General Plan Implementation Program identifies a goal project of Public Works and the Department of Regional Planning jointly securing funding and setting priorities to prepare capital improvement plans for the County's 11 planning areas. Some current community plans have capital improvements listed, but level of detail varies based on community and plan age.				
Economic Development Plan	Yes	No	No	No
Los Angeles County Strategic Plan for Economic Development, 2016. 2035 General Plan, Chapter 14 – Economic Development Element. Available online.				
Floodplain or Basin Plan	Yes	No	No	No
Los Angeles County Floodplain Management Plan, 2020. Available online.				
Stormwater Plan	Yes	No	Yes	Yes
Low Impact Development Standards Manual, February 2014.				
Watershed Management Plan	Yes	No	Yes	No

	Local Authority	State or Federal Prohibitions	Other Regulatory Authority	State Mandated
Enhanced Watershed Management Programs in progress and to be submitted for approval to the Los Angeles Regional Water Quality Control Board by June 28, 2015. These plans will include the County's five watersheds: Ballona Creek, Dominguez Channel, Marina Del Ray, Santa Monica Bay, and Upper Los Angeles River. All available online. Other unincorporated community watershed management plans: Topanga Creek, Upper Santa Clara River, Rio Hondo and Gateway Cities Region.				
Habitat Conservation Plan	Yes	No	Yes	No
2035 General Plan, Chapter 9 – Conservation and Natural Resources Element, Significant Ecological Areas. Available online. The General Plan has policies related to habitat and resource conservation, but the Conservation and Natural resources Element is not the equivalent of a habitat conservation plan. Other regulatory authority lies with the California Department of Fish & Wildlife or the U.S. Fish & Wildlife Service, depending upon the species.				
Shoreline Management Plan	Yes	No	No	Yes
Los Angeles County Stormwater Monitoring Reports, Section 1.1.1.4 – Shoreline Monitoring (released annually and with most recent report of 2014-2015). Local Coastal Programs (LCP). • Santa Monica Mountains LCP, adopted on August 26, 2014, and certified on October 10, 2014. • Marina Del Rey LCP, adopted in 1996, and amended and certified in 2012. • Santa Catalina Island LCP, adopted on March 15, 1983, and certified on November 17, 1983. All available online.				
Emergency Response Plan	Yes	No	No	Yes
County of Los Angeles Operational Area Emergency Operations Plan (ERP), 2012. Available online.				
Post-Disaster Recovery Plan	Yes	No	No	No
Recovery Annex to the Emergency Response Plan. Emergency Response Plan, Section 2.7: Recovery Considerations also reviews County Recovery Procedures.				
Sediment Management Plan	Yes	No	No	No
Sediment Management Strategic Plan, 2012-2032. Available online.				
Continuity of Operations Plan	Yes	No	No	Yes
All Los Angeles County departments and/or divisions must develop, exercise, and maintain plans for business continuity functions and processing resources. Each department and/or division must develop a plan for its business operations that can sufficiently support the service requirements of other operations and functions involved in the incident. Plans must address the full range of resources including data processing, data communications links, personnel, personal computers, terminals, workspace, voice communication, and documents. Additionally, Chapter 3 of the Emergency Response Plan includes Continuity of Government information.				
Water Resource Management Plan	Yes	No	Yes	Yes
Greater Los Angeles County Region Integrated Regional Water Management Plan, 2013, Antelope Valley Integrated Regional Water Management Plan, 2013, Upper Santa Clara River Watershed Integrated Regional Water Management Plan, 2014.				
Best Management Practices	–	–	–	–
Technical Report of Trash Best Management Practices, 2004. These best management practices were identified and evaluated to provide effective alternatives to meet the goals of the trash total maximum daily load for Los Angeles River and Ballona Creek.				

Table 4-5 summarizes the administrative and technical capability of Los Angeles County. This table inventories the staff/personnel resources available to Los Angeles County to help with floodplain management and the implementation of specific actions.

Table 4-5: Administrative and Technical Capability

Staff/Personnel Resources	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Los Angeles County Public Works (Public Works) Land Development Division; Los Angeles County Department of Regional Planning
Engineers or professionals trained in building or infrastructure construction practices	Yes	Public Works Geotechnical and Materials Engineering Division; Public Works Building and Safety Division
Planners or engineers with an understanding of flooding hazards	Yes	Public Works Geotechnical and Materials Engineering Division; Public Works Stormwater Engineering Division and associated subdivisions
Staff with training in benefit/cost analysis	Yes	Public Works multiple divisions, including the Stormwater Planning Division
Floodplain manager	Yes	Public Works Stormwater Engineering Division
Surveyors	Yes	Public Works Survey/Mapping and Property Management (Land Records) Division
Personnel skilled or trained in GIS applications	Yes	Public Works Survey/Mapping and Property Management (Land Records) Division; Public Works Stormwater Engineering Division; and Public Works GIS Managers
Scientists familiar with flooding hazards in local area	Yes	Public Works Stormwater Engineering Division and associated subdivisions
Emergency manager	Yes	Public Works Emergency Management Group; Los Angeles County Office of Emergency Management
Grant writers	Yes	Public Works Stormwater Planning Division, Stormwater Engineering Division, Community Services, Government Relations Group, and Transportation Planning and Programs Division; Los Angeles County Office of Emergency Management

Table 4-6 summarizes fiscal capability of Los Angeles County. This table identifies what financial resources (other than grants) are available to the county to support the implementation of repetitive loss area action items.

Table 4-6: Fiscal Capability

Financial Resources	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding (Flood Control District)	Yes
Authority to Levy Taxes for Specific Purposes	Yes
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
State and Federal Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Measure W (Safe Clean Water Program)	Yes

Table 4-7 summarizes community based classification programs that rate facets of a community's floodplain management capability. The Community Rating System is described in Section 1.1. The Building

Code Effectiveness Grading Schedule assesses the building codes in effect in a community and how the community enforces them, with emphasis on mitigation of losses from natural hazards. The National Oceanic and Atmospheric Administration administers the StormReady and TsunamiReady programs. StormReady helps arm communities with communication and safety skills needed to save lives and property before, during and after an event. It helps community leaders and emergency managers strengthen local safety programs.

Table 4-7: Community Classifications

	Participating?	Classification	Date Classified
Community Rating System	Yes	6	4/01/2022
Building Code Effectiveness Grading Schedule	Yes	2/2	2021
StormReady	No	No	N/A
TsunamiReady	No	No	N/A

Table 4-8 summarizes the County's participation in national flood-related programs.

Table 4-8: National Flood Insurance Program Compliance

NFIP Criteria	County Information
Department responsible for floodplain management	Los Angeles County Public Works Stormwater Engineering Division
Community's Floodplain Administrator	Los Angeles County Public Works Stormwater Engineering Division
Date of Adoption of Flood Damage Prevention Ordinance	County of Los Angeles County Code: • Title 26, Chapter 1, Section 110 – Prohibited Uses of Building Sites, last amended by ordinance 2013-0048 § 2, effective 2013 • Title 11, Division 3, Chapter 11.60 – Floodways and Water Surface Elevations, last amended by ordinance 2016-0062 § 2, effective 2016 • Title 21, Chapter 21.44.320 – Land subject to flood hazard, inundation, or geological hazard, last amended by ordinance 11665 § 38, effective 1978 • Title 21, Chapter 21.44.330 – Flood-hazard area, floodway or natural watercourse designation, last amended by ordinance 11665 § 39, effective 1978 • Title 20, Division 5, Chapter 20.94 – Channels, last amended by ordinance 86-0032 § 1, effective 1986 • Title 22, Division 1, Chapter 22.52, Part 5 – Flood Control, last amended by ordinance 1494 Ch. 7 Art. 5 § 705.1, effective 1926
Most Recent Community Assistance Visit or Community Assistance Contact	Last Community Assistance Visit: December 19, 2019 Community Assistance Visit Report: July 13, 2020 Community Assistance Visit Closed: January 19, 2021 Issues: None
NFIP Compliance Violations	No issues that would render Los Angeles County out of full compliance with the provisions of the NFIP were identified during the last Community Assistance Visit.
Flood Hazard Mapping	Flood hazard mapping has been identified as an issue that needs to be addressed by this planning process. See Section 6.14 lists mapping issues, which are addressed by Mitigation #33 (Chapter 11).

NFIP Criteria	County Information
Floodplain Management Staff Training	Los Angeles County Public Works Stormwater Engineering Division staff actively participate in programs of the Floodplain Management Association as well as other trainings offered by the state and FEMA where feasible. County staff welcomes opportunities for training on floodplain management programs and principles.
CRS Participation and Classification	Los Angeles County has participated in the CRS since 10/1/1991 and received a CRS Class 6 in June 2021.

4.4 FEMA Special Flood Hazard Areas

Special flood hazard areas are defined in the 2008 and 2021, Digital Flood Insurance Rate Maps (FIRMs) for Los Angeles County, Letters of Map Change (LOMC) issued by FEMA, and FIRMs resulting from FEMA's final Physical Map Revisions in 2024. These areas include the following:

- Areas of Shallow Flooding (Zone AH)—Shallow flooding occurs in flat areas when there are depressions in the ground that collect ponds of water, areas of sloping land and areas of sheet flow where flood depths range from 1 to 3 feet.
- Riverine Flooding (Zones A, AE, AR, A99)—Flooding that occurs in a river (including tributaries), stream, or brook.
- Regulated Floodways—The regulated floodway consists of a stream channel plus the portion of the overbanks that must be kept free from encroachment in order to convey the 100-year (base flood) event without increasing base flood levels/elevations.
- Alluvial Fan Flooding (Zone AO)—An alluvial fan is a sedimentary deposit at a point where ground surface slope changes suddenly, such as the base of a mountain front, escarpment, or valley side. Sediments at these locations are deposited in the shape of a fan. Alluvial fan flooding occurs on the surface of these deposits and is characterized by uncertain flow paths.
- Coastal Areas (Zones V, VE)—SFHAs along coasts are subject to inundation by the 100-year flood with the additional hazards associated with storm waves.
- Unmapped hazard zones (Zone D)—Areas with possible but undetermined flood hazards. No flood hazard analysis has been conducted. Flood insurance rates are commensurate with the uncertainty of the flood risk.

5 Mitigated Repetitive Loss Properties

5.1 Repetitive Loss List Correction

As part of their application and cycle verification obligations, CRS-participating communities must review their lists of repetitive-loss properties for accuracy, for correct addresses, to determine whether the properties are incorrectly assigned to the community, and to determine whether the insured buildings have been removed, retrofitted or otherwise protected from the cause of the repetitive flooding. The result of this review is recorded on a Repetitive Loss Update Worksheet (AW-501; see Figure 5-1).

A community with repetitive losses must sign the Repetitive Loss List Community Certification, CC-RL, indicating each address has been checked. If there are updates, the submittal must include corrected Repetitive Loss Update Worksheets (AW-501) with any required supporting documentation. The community must note the following situations in which the form should be updated:

1. The property is not located in the community's jurisdiction. The property may be outside the community's corporate limits, it may be in another city, or it may have been annexed by another community. If it can be determined in which community the property belongs, the property will be reassigned to the correct community. If a property is not in the community, it will not be reassigned unless the community in which the property does belong can be definitely identified.
2. There was an error in the repetitive loss data base, such as a duplicate listing or an incorrect address.
3. The property has subsequently been protected from the types of events that caused the losses. Buildings that have been acquired, relocated, retrofitted, or otherwise protected from the types of frequent floods that caused the past damage are not counted in determining the community's CRS requirements.
4. The property is protected from damage by the base flood shown on the current Flood Insurance Rate Map (FIRM). For example, the community may demonstrate that the building is elevated or flood-proofed above the base flood elevation but was flooded by a higher level. If the property is outside the Special Flood Hazard Area, the community may show that all of the repetitive losses were caused by events with recurrence intervals of over 100 years (e.g., two 200-year storms).

For corrections made under situations 3 or 4 above, future AW-501s issued for the community will be segregated into two categories: mitigated and unmitigated.

OMB Control Number: 1660-0022
Expiration: XX/XX/XXX

Federal Emergency Management Agency

National Flood Insurance Program

NFIP REPETITIVE LOSS UPDATE WORKSHEET (AW-501)

THE INFORMATION ON THIS FORM IS BASED ON CLAIMS ON OR BEFORE: 01/31/2017

REPETITVE LOSS NUMBER: 0012345

Internal use only ☐ A ☐ N/A ☐ FRR

NFIP Community Name: LOS ANGELES COUNTY	CID#: 012345
Local Property Identifier:	

Current Property Address	Previous Property Address/Community ID#
1234 MOCKINGBIRD LANE HOPE, ID 83836	
Last Claimant:	Last Claimant:
Insured: No / Name Insured:	
Date of Losses: 19800216; 19780303	Total Number of Losses for Property:2

REQUESTED UPDATES

MARK ALL UPDATES BELOW THAT APPLY (IMPORTANT - SEE INSTRUCTIONS)

1. ☐ **INFORMATION PROVIDED NOT SUFFICIENT TO IDENTIFY PROPERTY.**
   Choose this update if all attempts to locate the property fail. Please describe the steps you took to locate the property in the comments section below.

2. ☐ **COSMETIC CHANGES REQUIRED TO THE ADDRESS:**
   Update the address shown above and/or add our local alternative property identifier such as a Tax Assessor #.

3. ☒ **PROPERTY NOT IN OUR COMMUNITY OR JURISDICTION:**
   Choose this update if you have positively determined that the property shown is not located in your community. Please provide the correct NFIP community name and if known the NFIP community ID Number. If available, please attach a map showing the property location.
   ASSIGN TO NFIP COMMUNITY NAME: STATE OF CALIFORNIA NFIP COMMUNITY ID#: N/A

4. ☐ **FLOOD PROTECTION PROVIDED.**
   Choose this update only if some type of structural intervention has occurred to the building, prop-erty or the source of flooding that protects the building from future events similar to those that occurred in the past. The update must be supported by documentation such as an Elevation Certifi-cate and the Mitigation action and funding below must be provided.

   (Mitigation Action 1.) (Source of Primary Mitigation Funding 3.) (Secondary Source of Funding 3.)

CC-RL-2 (AW-501-1) *[continued on next page]*

Figure 5-1: Example AW-501

5.2 Mitigated Repetitive Loss Properties

Los Angeles County is using the 2023 ISO repetitive loss list and AW-501s dated May 2023 as the basis for this Repetitive Loss Area Analysis. This is the last officially sanctioned CRS repetitive loss data set issued to Los Angeles County. According to the AW-501s issued, Los Angeles County has 54 repetitive loss properties, none of which are officially recognized as “mitigated”. Four AW-501s were issued to remove properties in the community, an example form is shown above in Figure 5-1. These properties have been included in the analysis as they are not offically mitigated.

6 Mitigation Alternatives Considered

Although this report presents separate analyses for each identified repetitive loss area in unincorporated Los Angeles County, the list of potential measures to address repetitive flooding problems was the same for each area. This chapter summarizes the alternatives that were identified for consideration. These alternatives can be implemented by the County, the homeowner, or other entities. The selection of suitable alternatives for each at-risk property in the repetitive loss areas is described in the chapters presenting individual repetitive loss area analyses.

Many types of flood hazard mitigation exist, and there is not one mitigation measure that fits every case or even most cases. Successful mitigation often requires multiple strategies. The CRS Coordinator's Manual breaks the primary types of mitigation down as follows (FEMA, 2017a):

- Preventive activities keep flood problems from getting worse. The use and development of flood-prone areas is limited through planning, land acquisition, or regulation. They are usually administered by building, zoning, planning, and/or code enforcement offices.
- Property protection activities are usually undertaken by property owners on a building-by-building or parcel basis.
- Natural resource protection activities preserve or restore natural areas or the natural functions of floodplain and watershed areas. They are implemented by a variety of agencies, primarily parks, recreation, or conservation agencies or organizations.
- Emergency services are measures taken during an emergency to minimize its impact. These measures are usually the responsibility of city or county emergency management staff and the owners or operators of major or critical facilities.
- Structural projects keep floodwaters away from an area with a levee, reservoir, or other flood control measure. They are usually designed by engineers and managed or maintained by public works staff.
- Public information activities advise property owners, potential property owners, and visitors about hazards and ways to protect people and property from them, as well as the natural and beneficial functions of local floodplains. They are usually implemented by a public information office.

6.1 Preventive

Los Angeles County regulates residential and commercial development through its building code, planning and zoning requirements, stormwater management regulations and floodplain management ordinances. Any project in an unincorporated area located in a floodplain outside state or federally owned lands, regardless of the project's size, requires a permit from Los Angeles County, unless the project can be characterized as routine maintenance.

6.2 Property Protection

These measures are generally performed by property owners or their agents. FEMA has published numerous manuals that help a property owner determine which property protection measures are appropriate for particular situations:

- FEMA 259, Engineering Principles and Practices of Retrofitting Floodprone Residential Structures.
- FEMA 312, Homeowner's Guide to Retrofitting: Six Ways to Protect Your House from Flooding.
- FEMA 551, Selecting Appropriate Mitigation Measures for Floodprone Structures.
- FEMA 348, Protecting Building Utilities from Flood Damage.
- FEMA 511, Reducing Damage from Localized Flooding.
- FEMA 102, Floodproofing Non-Residential Structures.
- FEMA 84, Answers to Questions about the NFIP.
- FEMA 54, Elevated Residential Structures Book.
- FEMA 268, Protecting Floodplain Resources: A Guidebook for Communities.
- FEMA 347, Above the Flood: Elevating Your Floodprone House.
- FEMA 85, Protecting Manufactured Homes from Floods and Other Hazards.

The manuals listed above are available for review at FEMA's website. For a complete guide to retrofitting homes for flood protection, see FEMA P-312, Homeowner's Guide to Retrofitting 3rd Edition (FEMA, 2014). The primary methods of property protection in Los Angeles County are:

- Demolition/relocation.
- Elevation (structure or damage-prone components such as furnace or AC unit).
- Dry flood-proof (so water cannot get in).
- Wet flood-proof portions of the building (so water will not cause damage).
- Direct drainage away from the building.
- Drainage maintenance.
- Sewer Improvements.

6.2.1 Aquisition

One of the most effective approaches to preventing further flood damage to a building is acquisition and relocation or clearing of the structure. The property would then serve as open space or recreation area. Property owners retain the right to select this as a mitigation method. They may sell their property to a government agency or an agency dedicated to the preservation and management of local open space. The property owner can also relocate the building to another property. Alternatively, the building can be moved to another area of the same property, if that area is outside the flood hazard. The property owner can also take advantage of federal funding for such mitigation.

For the Los Angeles County RLAA, it has been determined that acquisition would not be a cost-effective alternative for structures with probable flood depths of 2 feet or less. "Cost-effective" means that the benefits of the action would equal or exceed the costs to implement the action. For this RLAA, a benefit is considered to be an avoided loss. The high value of property in Los Angeles County makes it unlikely that acquisition projects can be cost-effective.

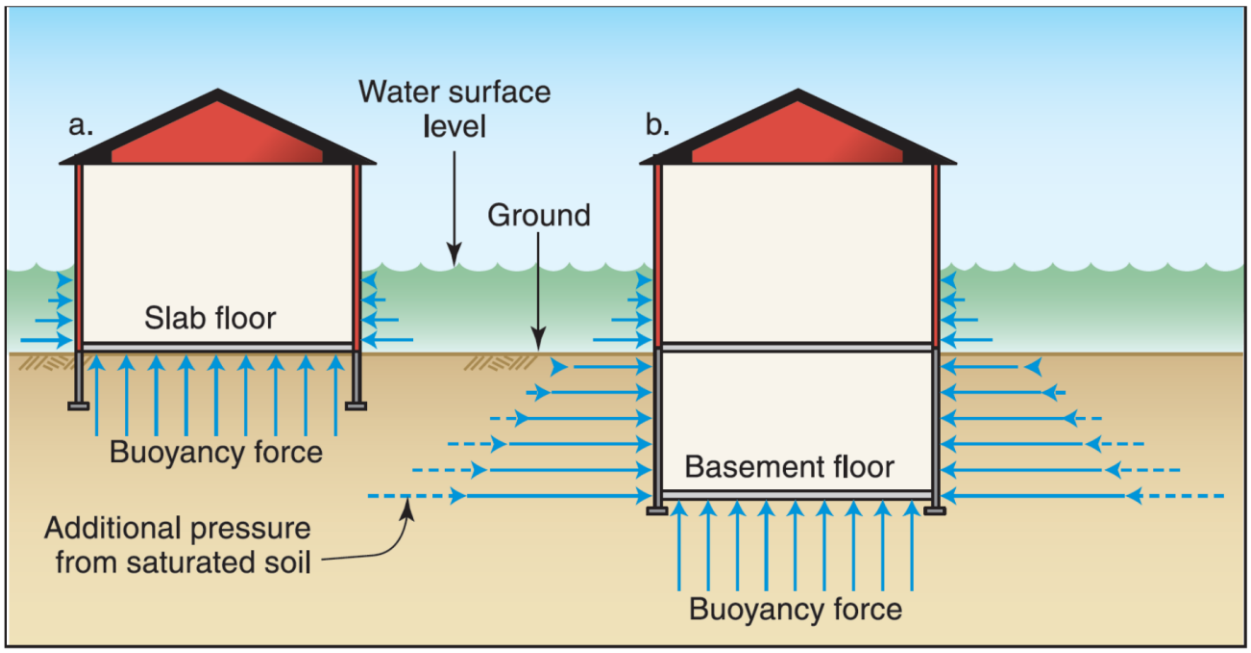
6.2.2 Home Elevation

Sometimes dry or wet flood-proofing are not enough and greater measures must be taken. For example, if the floodwaters are too high for dry flood-proofing and the inhabited area is too low for wet flood-

proofing, it may be necessary to raise the structure. Whenever the floor of a home is below the 1 percent annual chance (100-year) flood elevation, physically elevating the structure is often recommended as it is one of the most effective means to prevent flood damage. Financial assistance may be available for floodproofing. Los Angeles County requires substantially improved residential buildings to have their lowest floor elevated at least 1 foot above the 100-year elevation. No basements are allowed in the flood hazard.

6.2.3 Dry Flood-Proofing

Dry flood-proofing consists of completely sealing around the exterior of the building so that water cannot enter the building (see Figure 6-1). Dry flood-proofing is not a good option for areas where floodwater is deep or flows quickly. The hydrostatic pressure and/or hydrodynamic force can structurally damage the building by causing the walls to collapse or causing the entire structure to float. However, in areas that have minimal velocity and low depth, dry flood-proofing can be a good option.



(FEMA, 2014)

Figure 6-1: Dry Flood-Proofing Example

Many flood hazards can be mitigated with various forms of dry flood-proofing. Properties that do not have adequate protection of their low opening (window or basement door) can effectively raise the low opening height with a window well or a flood gate as shown in **Figure 6-2**. The ultimate height of the low opening depends on several factors, such as: the level of flood protection desired, the appearance, and cost. The flood protection elevation could be set 1 foot higher than the existing low opening elevation, or it could be set to match the elevation of the lowest opening into a home that cannot be raised. This might be the elevation of the threshold of a door, for example.

(Waterproof Masters, 2024)

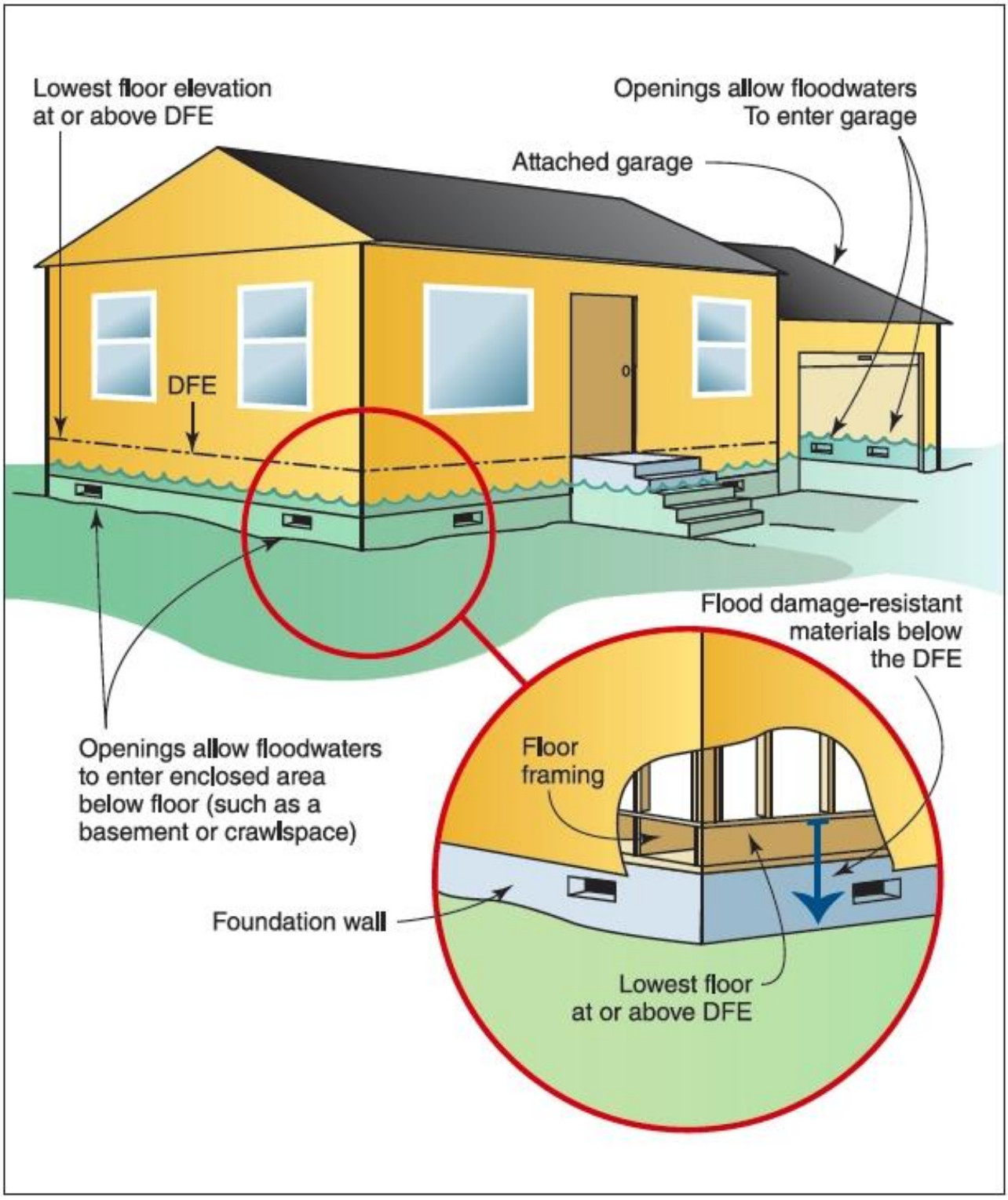
Figure 6-2: Window Well Example

The NFIP only allows dry flood-proofing for residential retrofits that are not classified as a substantial improvement. A substantial improvement is any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50% of the market value of the structure before the "start of construction" of the improvement.

6.2.4 Wet Flood-Proofing

Wet flood-proofing consists of modifying uninhabited portions of a home, such as a crawlspace, garage, or unfinished basement with flood-damage resistant materials, to allow floodwaters to enter the structure without causing damage (see Figure 6-3). Wet flood-proofing requires portions of the building to be cleared of valuable items and mechanical utilities.

A key component of wet flood-proofing is providing openings large enough for the water to flow through the structure such that the elevation of the water in the structure is equal to the elevation of the water outside of the structure. This equilibrium of floodwater prevents hydrostatic pressure from damaging structural walls. The NFIP requires the bottoms of the openings to be no more than 1 foot above the lowest adjacent grade, whether that lowest adjacent grade is outside the structure or in the crawlspace.



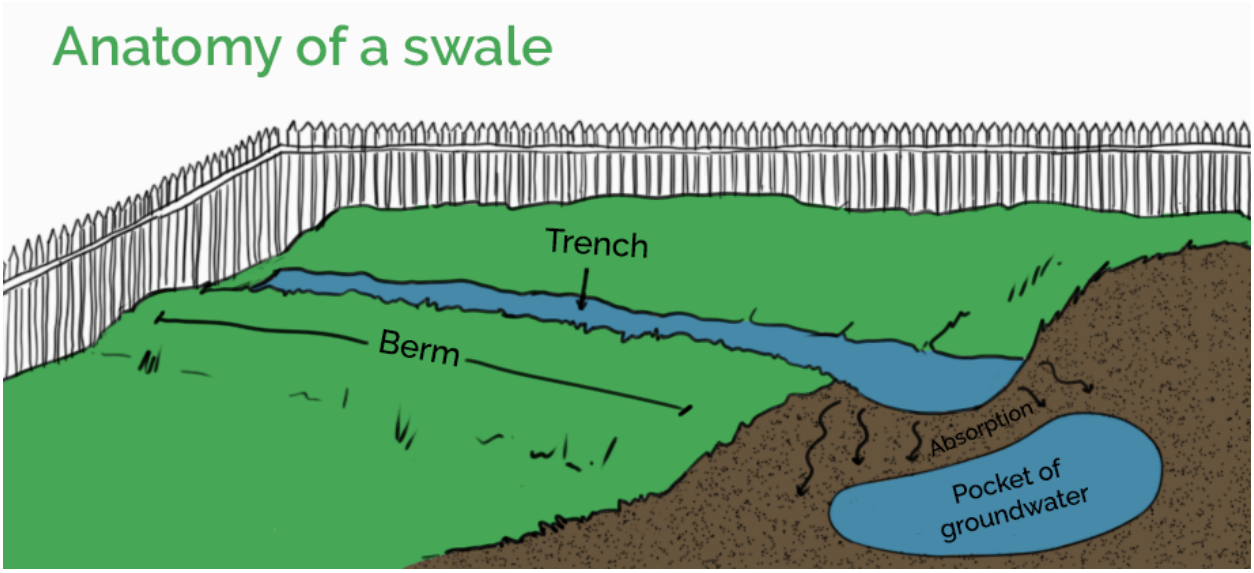
(FEMA, 2014)

Figure 6-3: Wet Flood-Proofing Example

6.2.5 Direct Drainage Away from the Building

In some cases, there are things that the property owner can do on-site such as directing shallow floodwater away from a flood-prone structure. Shallow flooding can often be kept away from a structure if some simple improvements are made to the yard. Sometimes structures are built at the bottom of a hill or in a natural drainage way or storage area, so that water naturally flows toward them.

One solution is to regrade the yard. If water flows toward the building; a new swale or wall can direct the flow to the street or a drainage way (Figure 6-4). Filling and grading next to the building can also direct shallow flooding away, which may also require a grading permit from the local jurisdiction. Although water may remain in the yard temporarily, it is kept away from the structure. When these types of drainage modifications are made, care must be taken not to adversely affect the drainage patterns of adjacent properties. Over time, the swales along the lot lines or in the back yard may get filled in as property owners build fences, garages, sheds, swimming pools, and other obstructions up to the lot line. These drainage problems can be fixed by removing the obstructions and restoring the swales so they will carry water away from the building.



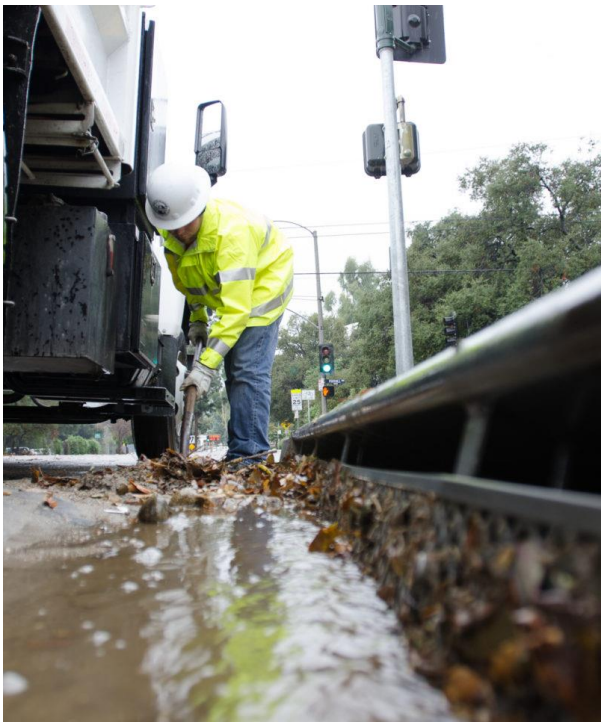
(Fantastic Team, 2018)

Figure 6-4: Example of a Residential Yard Swale

6.2.6 Drainage Maintenance

A drainage system consists of natural and man-made watercourses, conduits, and storage basins that collect rainfall and convey flood flows. It includes both open systems and those that are underground (FEMA, 2017a). The Los Angeles County Drainage Needs Assessment Program (DNAP) continues to be implemented to identify, evaluate, and prioritize local drainage issues within the Flood Control District. This includes cleaning debris and trash from drainage areas (Figure 6-5). Reported issues by unincorporated communities are maintained in a database and evaluated once a year for potential future project development using established criteria, including equity in infrastructure considerations (Los Angeles County Public Works, 2023c).

Dumping into the drainage system is a Los Angeles County Code violation. Debris can accumulate and restrict the flow of stormwater, increasing the potential of localized flooding. To report flood problems or illegal dumping to the drainage system, call (888) CLEAN LA (253-2652).

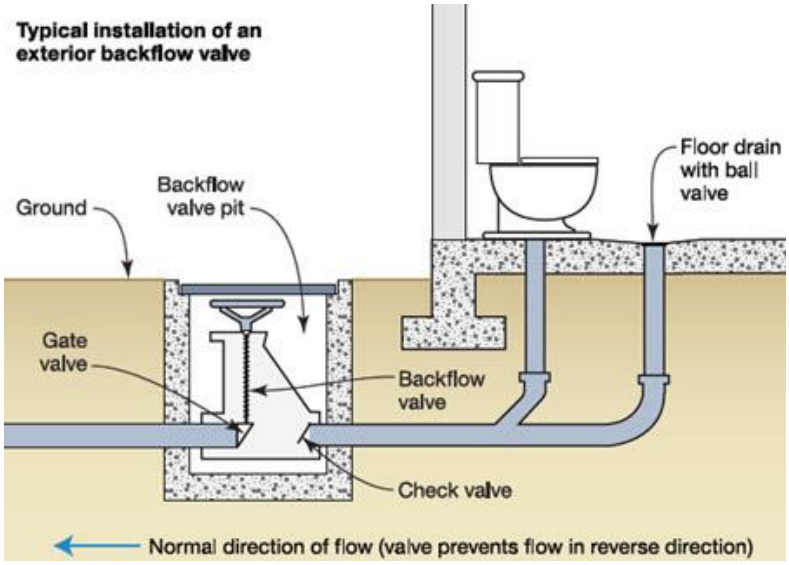


(Los Angeles County Department of Public Works)

Figure 6-5: Public Works employee clearing storm drains during rainy season.

6.2.7 Sewer Improvements

Heavy rains can saturate the soil and infiltrate the sanitary sewer system through leaky joints or cracks in the pipes. Heavy flows in the streets can also infiltrate the sanitary sewer system through the openings in and around the street shaft (manhole) covers. The inflow of stormwater floods the sanitary sewer system causing water to back up into the home through lower-level plumbing fixtures. This occurrence can be prevented by installing a sewer backflow preventer (see Figure 6-6). A backflow preventer will allow the sanitary sewer water to flow freely from the home to the sewer, but restrict the reverse flow. Backflow preventers do require maintenance and can fail if debris in the sewer prevents the valve from seating properly. An overhead sewer system pumps wastewater from basement-level plumbing fixtures up to an elevation near the ground level, where it can drain by gravity into the sewer service line. This higher sewer makes it unlikely that water will back-up into the building.



(FEMA, 2014)

Figure 6-6: Sewer Backflow Valve Installation Example

6.2.8 Permanent Temporary Barriers

Several types of barriers are available to address typical flooding problems. They work to direct drainage away from structures. Permanent barriers such as deflectors, concrete block walls, floodwalls, planted slopes, and slope drains can help prevent flooding and keep debris away from properties. The same principles apply to temporary barriers, such as sandbags, but they can be removed, stored, and reused in subsequent flood events. Sandbags are commonly used in Los Angeles County as shown in Figure 6-7.

Homes in erosive watersheds, like after a fire, have a higher risk of debris flow and should be prepared prior to the flow. This can protect not only the insured building but also the uninsured surroundings from major damage. This is especially important in rural areas where properties are larger and fires are more common. The Los Angeles County Department of Public Works Homeowner's Guide provides more instructions on how to properly use barriers. Figures from the guide are shown in Figure 6-8 and Figure 6-9.

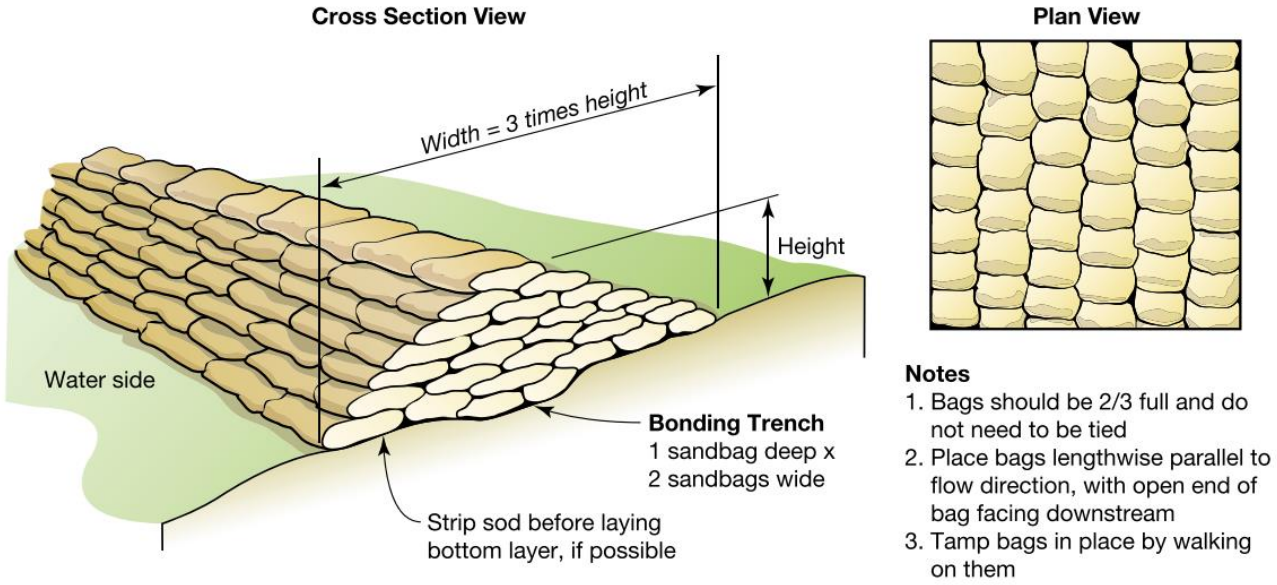
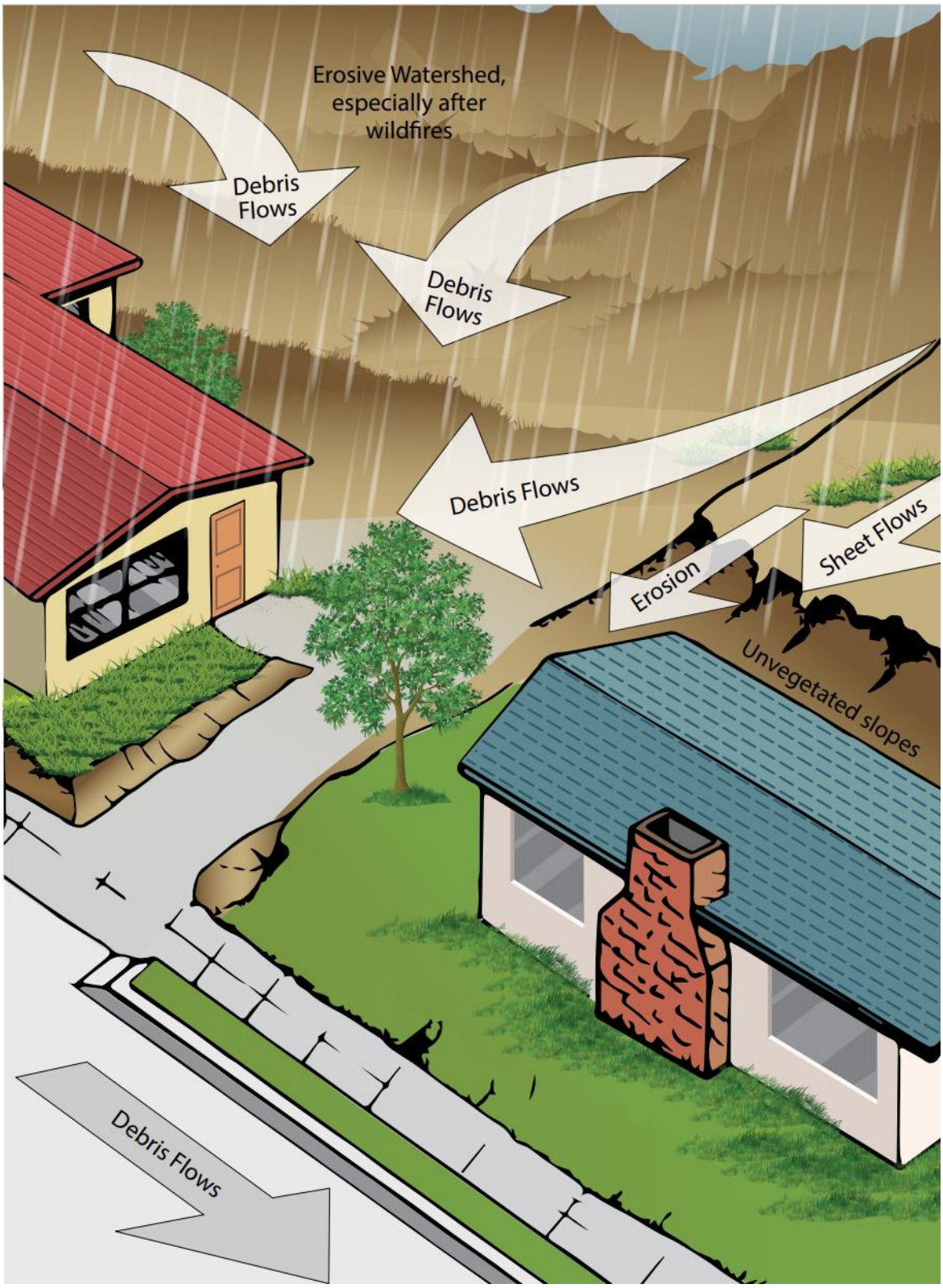


Figure 3-5. Techniques for proper placement of sandbags.

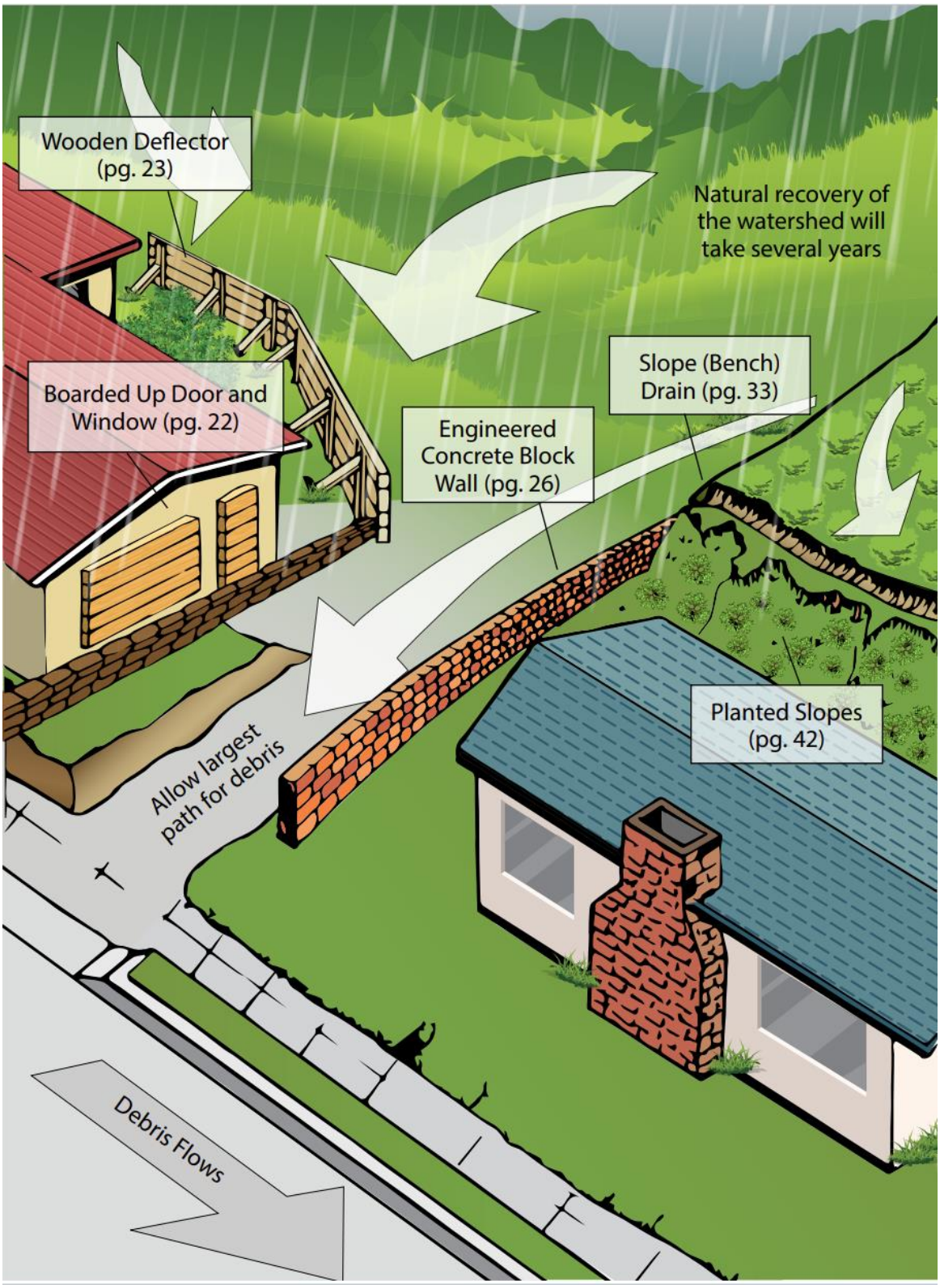
(FEMA, 2017b)

Figure 6-7: Sandbags as a Temporary Barrier



(Los Angeles County Department of Public Works, 2018)

Figure 6-8: Unprotected Homes



(Los Angeles County Department of Public Works, 2018)

Figure 6-9: Homes Protected from Major Damage

6.3 Natural Resouce Protection

Care should be taken to maintain the streams, wetlands and other natural resources within a floodplain or repetitive loss area. Removing debris from streams and channels prevents obstructions. Preserving and restoring natural areas provides flood protection, preserves water quality and provides natural habitat.

6.4 Emergency Services

Advance identification of an impending storm is only the first part of an effective Flood Warning and Response Plan. To truly realize the benefit of an early flood warning system, the warning must be disseminated quickly to floodplain occupants, repetitive loss areas and critical facilities. Appropriate response activities must then be implemented, such as: road closures, directing evacuations, sandbagging, and moving building contents above flood levels. Finally, a community should take measures to protect public health and safety and facilitate recovery. These measures may include cleaning up debris and garbage, clearing streets, and ensuring that citizens have shelter, food, and safe drinking water.

6.5 Structural Projects

Structural projects keep floodwaters away from an area with a levee, reservoir, or other flood control measure. They are usually designed by engineers and managed or maintained by public works staff. Los Angeles County Public Works develops and implements capital projects. The 2035 General Plan Implementation Program identifies a goal project of the Los Angeles County Department of Regional Planning and Los Angeles County Public Works jointly securing funding and setting priorities to prepare capital improvement plans for the County's 11 planning areas within the LACFCD.

6.6 Public Information

One of the most important, and often overlooked, aspects of mitigation is public awareness. Awareness starts with recognition of the flood risk. FEMA's Flood Insurance Rate Maps (FIRM) panels, which designate areas of a community according to various levels of flood risk, can be viewed at www.FEMA.gov. Public Works' Flood Zone Determination Website also has links to the FIRM panels as well as links to the County Floodway Maps. Also, real estate transactions (sales and rentals) require disclosure of known flood hazards. The next level of awareness is related to flood hazard mitigation measures. Often homeowners can greatly reduce their risks with mitigation efforts if they are aware of the risks. For that reason, as part of this analysis, every resident in the repetitive loss area has been contacted and informed of the opportunity to review this Report. In addition, Los Angeles County Public Works sends out an annual outreach letter to every resident in each repetitive loss area.

Los Angeles County has defined a program for public information as part of its 2025 Comprehensive Floodplain Management Plan. This program for public information includes a strategy for providing important information about property protection to property owners in the repetitive loss areas identified under this RLAA.

Part 2 – Analysis of Individual Repetitive Loss Areas

7 Agua Dulce A Repetitive Loss Area

7.1 Problem Statement

Figure 7-1 shows the Agua Dulce A Repetitive Loss Area. The 100-year and 500-year flood zones are mapped on the FEMA FIRM and included in Figure 7-1. This repetitive loss area is in the San Gabriel Mountains, northeast of Santa Clarita. The targeted repetitive loss property for this area is located within the floodplain of Mint Canyon. The property is in Zone AE, which has a significant risk from a 1 percent annual chance (100-year) flood. The culvert under Sierra Highway, approximately 250 feet upstream from the repetitive loss property, is subject to becoming obstructed by debris from upstream. When runoff exceeds the capacity of the culvert, street flooding occurs, and the subject property is subject to inundation. In addition, the property owner previously asserted that the upstream neighbor improperly altered the natural creek, encroached on the floodplain, and caused flow breakout from the channel. Mint Canyon borders the repetitive loss property, eroding and flooding its backyard. Previously, the property owner placed log retaining walls around the street-side property entrance. The County built a berm on top of the channel bank near the culvert under the Sierra Highway in an effort to contain the water inside the channel.

7.2 Identified Repetitive Loss Property

Table 7-1 lists the FEMA-designated repetitive loss property within this repetitive loss area. The dates of previous flood claims and the average claim paid were provided by FEMA in the 2023 repetitive loss property list. Field and desktop assessments were conducted for each FEMA repetitive loss property to determine the cause of flooding and describe any mitigation measures implemented.

Table 7-1: Repetitive Loss Properties in Agua Dulce A Repetitive Loss Area

FEMA RL #	Flood Dates of Previous Claims	Average Claim Paid	Mitigated?
91339	2/93, 2/98	$13,903	No
Identified Flood Cause: The property is located in the floodplain. Repetitive flooding is possibly caused by street flooding when storm flows exceed the capacity of an upstream culvert. No reported losses since 1998.			

7.3 Properties Included in Repetitive Loss Area

There are three properties with a total of 20 insurable buildings included in this repetitive loss area. The properties in this repetitive loss area were also listed in the 2020 RLAA. The extent of this repetitive loss area was developed through the methodology presented for the 2020 RLAA (See Section 2 of this RLAA document). In the 2023 FEMA repetitive loss list provided to the County, no new repetitive loss properties were identified, and no existing properties were removed in this area. Consequently, the repetitive loss area remains unchanged. Table 7-2 provides general information for the properties, along with mitigation measures that could be employed to address repetitive flood losses. For identified mitigation measures that are located on private properties, the decision on whether to implement the identified mitigation

measures resides with the private property owners. These measures are recommended due to the flood risks, but owners are not obligated to implement them. Regarding education on flood risk and flood risk mitigation, it is a shared responsibility. Public entities make information on flood risk and flood risk mitigation available to the public. Property owners undertake the task of seeking and taking in flood risk and flood risk mitigation information and consulting the appropriate design professionals to implement flood risk and flood risk mitigation measures.

Table 7-2: All Properties in Agua Dulce A Repetitive Loss Area

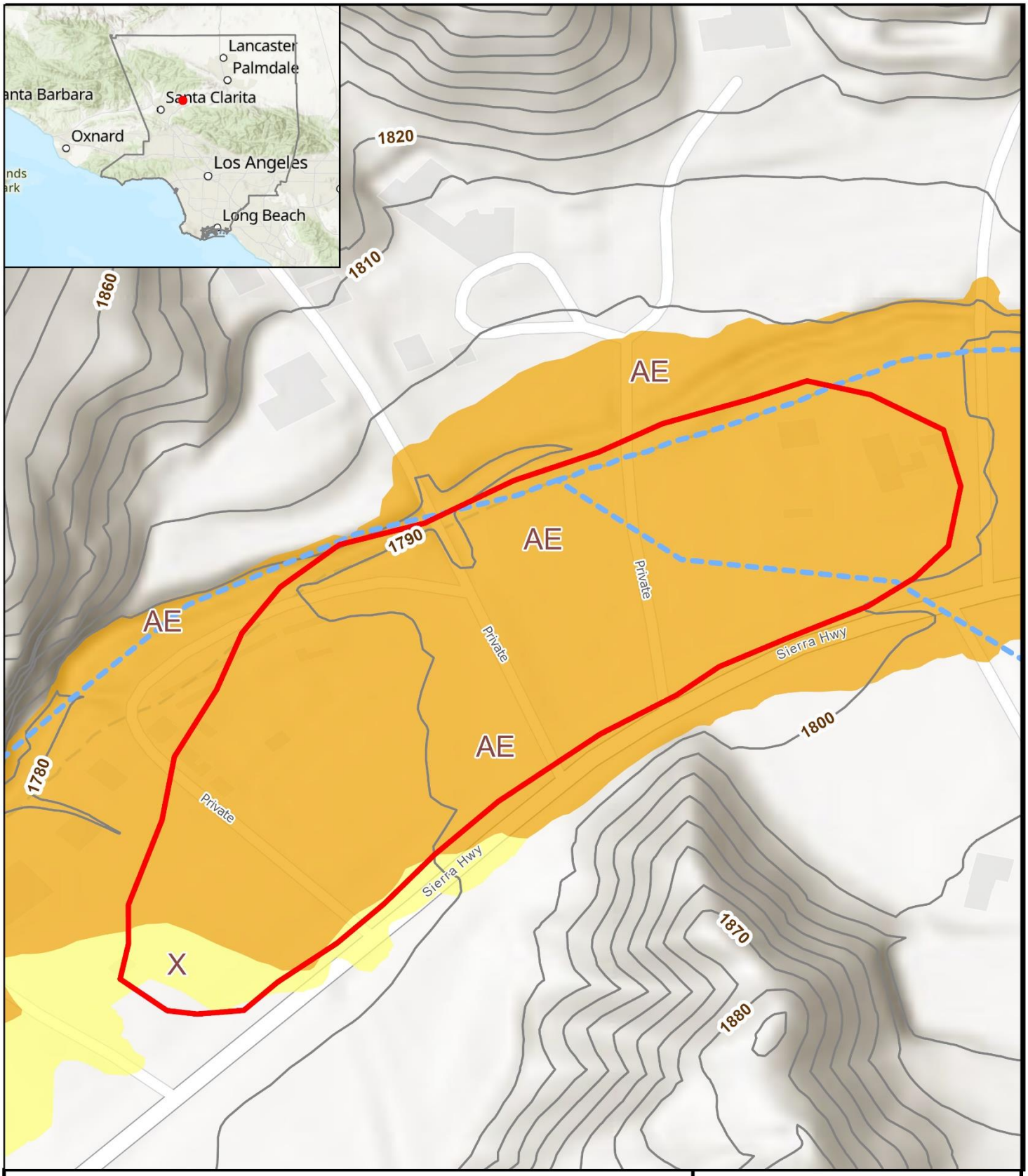
Property ID	Number of Insurable Buildings	Building Description		Probable Mitigation Measures
		Foundation	Condition	
AD-A1	6	Crawlspace	D7B	Enlarge culvert [a] Drainage system maintenance[b] Acquisition [c] Elevation [d] Public education [a,d]
AD-A2	12	Crawlspace	D7	Enlarge culvert [a] Drainage system maintenance [d] Acquisition [b] Elevation [c] Public education [a,d]
AD-A3	2	Crawlspace	D55C	Enlarge culvert [a] Drainage system maintenance[d] Acquisition [b] Elevation [c] Public education [a,d]
Total	**20**			

(a) Public entity action

(b) Public entity action for storm drain in the public street/road, property owner action for private street/road and lot drainage

(c) Public entity action, but only with the cooperation of the property owner

(d) Property owner action



Legend

- FEMA 100 yr Flood Zone (Zone AE)
- FEMA 500 yr Flood Zone (Zone X)
- Ephemeral Stream
- 10ft Contour lines
- Repetitive Loss Areas (RLAs)

NORTH

100 50 0 100

Scale in Feet

Repetitive Loss Area
Agua Dulce A
Figure 7-1

BURNS McDONNELL

Source: Esri World Topographic Map, FEMA NFHL, USGS NHD, LA County GIS Database

Issued: 7/11/2024

8 Agua Dulce B Repetitive Loss Area

8.1 Problem Statement

Figure 8-1 shows the Agua Dulce B Repetitive Loss Area. This repetitive loss area is located east of the town of Agua Dulce and within the floodplain of Agua Dulce Canyon. The repetitive loss area is in a FEMA Zone AE, which has significant risk from a 1 percent annual chance (100-year) flood. The extent of the repetitive loss area was developed using the information from the reverse damage function, FEMA flood map information, and 1-foot elevation contour lines. The outcome of the reverse damage function and elevation of the FEMA property resulted in using the 2499-foot contour line to create the repetitive loss area around the property. The FEMA flood map boundaries were followed to draw the repetitive loss area around the adjacent and downstream properties. The repetitive loss area continues further downstream until the flood hazard zone discontinues due to the presence of a public road at higher elevations.

8.2 Identified Repetitive Loss Property

Table 8-1 lists the FEMA-designated repetitive loss property within this repetitive loss area. FEMA provided the dates of previous flood claims and the average claim paid in the 2023 repetitive loss property list. Field and desktop assessments were conducted for the FEMA repetitive loss property to determine the cause of flooding and describe any mitigation measures implemented.

Table 8-1: Repetitive Loss Properties in Agua Dulce B Repetitive Loss Area

FEMA RL #	Flood Dates of Previous Claims	Average Claim Paid	Mitigated?
302668	1/96, 2/98	$1,752	No
Identified Flood Cause: Flooding from Agua Dulce Canyon Creek			

8.3 Properties Included in Repetitive Loss Area

There are seven properties with a total of 15 insurable buildings included in this repetitive loss area. Table 8-2 provides general information for the properties, along with mitigation measures that could be employed to address repetitive flood losses. For identified mitigation measures that are located on private properties, the decision on whether to implement the identified mitigation measures resides with the private property owners. These measures are recommended due to the flood risks, but owners are not obligated to implement them. Regarding education on flood risk and flood risk mitigation, it is a shared responsibility. Public entities make information on flood risk and flood risk mitigation available to the public. Property owners undertake the task of seeking and taking in flood risk and flood risk mitigation information and consulting the appropriate design professionals to implement flood risk and flood risk mitigation measures.

Table 8-2: All Properties in Agua Dulce B Repetitive Loss Area

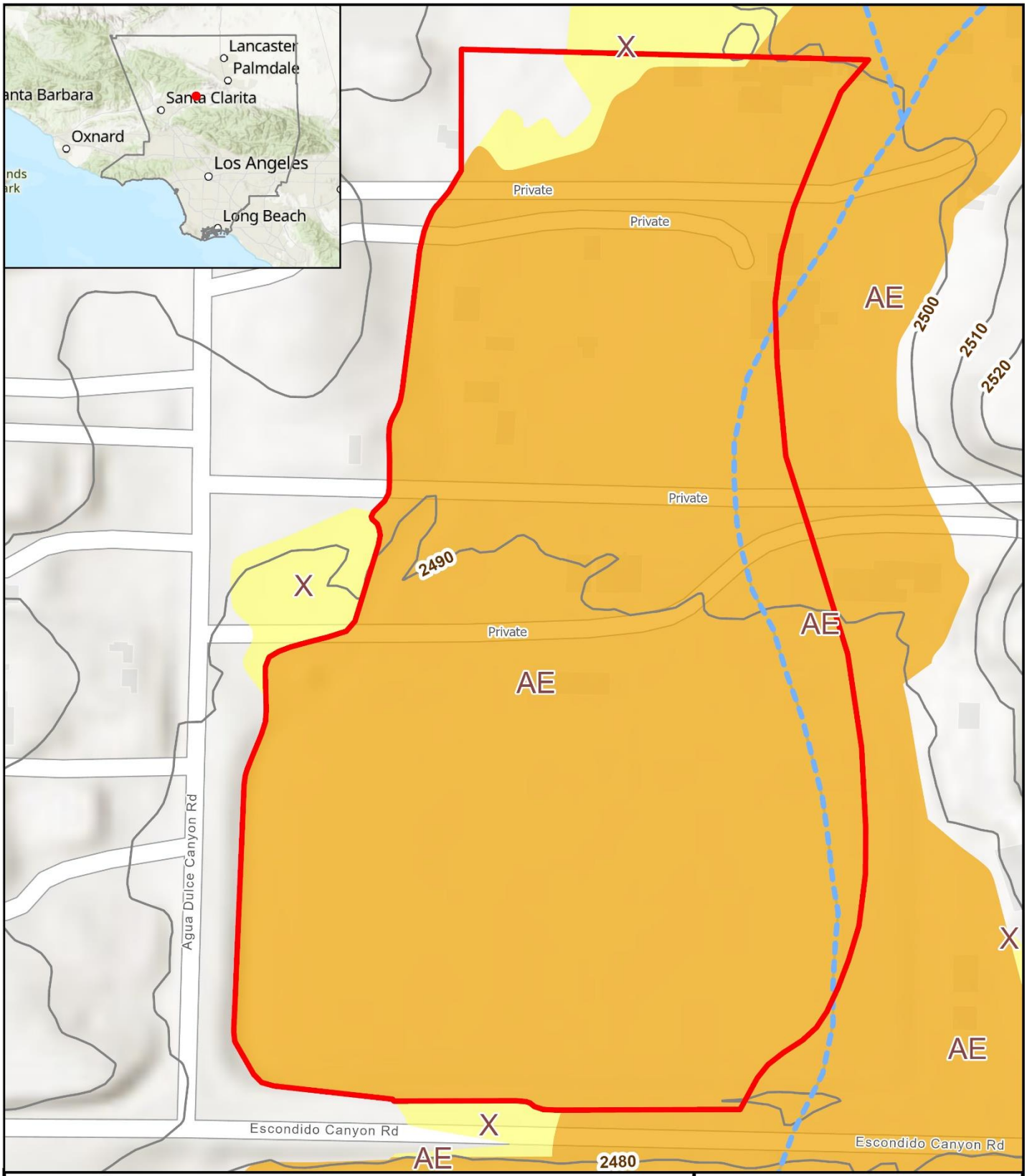
Property ID	Number of Insurable Buildings	Building Description		Probable Mitigation Measures
		Foundation	Condition	
AD-B1	1	Slab	D45B	Drainage system maintenance [a] Acquisition [b] Elevation [c] Public education [c,d]
AD-B2	3	Slab	D2A	Drainage system maintenance [a] Acquisition [b] Elevation [c] Public education [c,d]
AD-B3	2	Raised	D6	Drainage system maintenance [a] Acquisition [b] Elevation [c] Public education [c,d]
AD-B4	3	Slab	D2B	Drainage system maintenance [a] Acquisition [b] Elevation [c] Public education [c,d]
AD-B5	2	Slab	D3A	Drainage system maintenance [a] Acquisition [b] Elevation [c] Public education [c,d]
AD-B6	3	Basement	C5C	Drainage system maintenance [a] Acquisition [b] Elevation [c] Public education [c,d]
AD-B7	1	Slab	D75C	Drainage system maintenance [a] Acquisition [b] Elevation [c] Public education [c,d]
Total	15			

(a) Public entity action for storm drain in the public street/road, property owner action for private street/road and lot drainage

(b) Public entity action, but only with the cooperation of the property owner

(c) Property owner action

(d) Public entity action



Legend

- FEMA 100 yr Flood Zone (Zone AE)
- FEMA 500 yr Flood Zone (Zone X)
- Ephemeral Stream
- 10ft Contour lines
- Repetitive Loss Areas (RLAs)

NORTH

100 50 0 100

Scale in Feet

Repetitive Loss Area
Agua Dulce B
Figure 8-1

BURNS McDONNELL

Source: Estri World Topographic Map, FEMA NFHL, USGS NHD, LA County GIS Database

Issued: 7/11/2024

9 Altadena A Repetitive Loss Area

9.1 Problem Statement

The Altadena A Repetitive Loss Area is located in the San Gabriel Mountains, east of Burbank, near Altadena. This is a single-property repetitive loss area. The property is in FEMA Zone D (an area of possible but unknown flood risk). No map of this repetitive loss area is provided herein due to privacy concerns. The area is located at the bottom of a hill and is possibly impacted by storm runoff from surrounding hills. There is a 2-foot-wide and 1-foot-deep dry earthen ditch running west of, but outside of the property. The property is on higher ground than the bank elevations of the ditch. Repetitive flood history in this area can be associated with post-wildfire conditions.

9.2 Identified Repetitive Loss Property

Table 9-1 lists the FEMA-designated repetitive loss property within this repetitive loss area. FEMA provided the dates of previous flood claims and the average claim paid in the 2023 repetitive loss property list. Field and desktop assessments were conducted for the FEMA repetitive loss property to determine the cause of flooding and describe any mitigation measures implemented.

Table 9-1: Repetitive Loss Properties in Altadena A Repetitive Loss Area

FEMA RL #	Flood Dates of Previous Claims	Average Claim Paid	Mitigated?
56933	2/91, 2/92	$2,725	No
Identified Flood Cause: Hillside drainage problem.			

9.3 Properties Included in Repetitive Loss Area

There is one property included in this repetitive loss area, with a total of two insurable buildings. The property in this repetitive loss area was also listed in the 2020 RLAA. The extent of this repetitive loss area was developed through the methodology presented for the 2020 RLAA (See Section 2 of this RLAA document). In the 2023 FEMA repetitive loss list provided to the County, no new repetitive loss properties were identified, and no existing properties were removed in this repetitive loss area. Consequently, the repetitive loss area remains unchanged. Table 9-2 provides general information for the property, along with mitigation measures that could be employed to address repetitive flood losses. For identified mitigation measures that are located on private properties, the decision on whether to implement the identified mitigation measures resides with the private property owners. These measures are recommended due to the flood risks, but owners are not obligated to implement them. Regarding education on flood risk and flood risk mitigation, it is a shared responsibility. Public entities make information on flood risk and flood risk mitigation available to the public. Property owners undertake the task of seeking and taking in flood risk and flood risk mitigation information and consulting the appropriate design professionals to implement flood risk and flood risk mitigation measures.

Table 9-2: All Properties in Altadena A Repetitive Loss Area

Property ID	Number of Insurable Buildings	Building Description		Probable Mitigation Measures
		Foundation	Condition	
ALT-A1	2	Crawlspace	No Information	Drainage improvement [a] Public education [a,b]
Total	2			

(a) Property owner action
(b) Public entity action

10 Altadena B Repetitive Loss Area

10.1 Problem Statement

The Altadena B Repetitive Loss Area is in the San Gabriel Mountains, east of Burbank, near Altadena. This is a single-property repetitive loss area. The property is in a FEMA Zone X. No map of this repetitive loss area is provided herein due to privacy concerns. The target repetitive loss property for this area is adjacent to a private, unmapped channel within a private residential community. Repetitive flood history in this area can be associated with post-wildfire conditions.

10.2 Identified Repetitive Loss Property

Table 10-1 lists the FEMA-designated repetitive loss property within this repetitive loss area. The dates of previous flood claims and the average claim paid were provided by FEMA in the 2023 repetitive loss property list. Field and desktop assessments were conducted for the FEMA repetitive loss property to determine the cause of flooding and describe any mitigation measures implemented.

Table 10-1: Repetitive Loss Properties in Altadena B Repetitive Loss Area

FEMA RL #	Flood Dates of Previous Claims	Average Claim Paid	Mitigated?
91348	3/95, 2/98	$4,321	Yes[a]
Identified Flood Cause: The property is located near the privately constructed channel within the private hillside residential community. The property owner, who resides in the community, previously reported that the channel has a concrete bottom but is not engineered. After a brush fire in 1993, hillside storm runoff in the channel destroyed a private studio in the floodplain and eroded the bank protections, which were restored and improved later. In a separate incident, the basement was flooded due to a backyard drainage deficiency, which was improved with a 6-inch berm.			

(a): an AW-501 has been submitted for this property, but correction was not yet approved as of this RLAA. The repetitive loss area will be removed once correction is processed by FEMA.

10.3 Properties Included in Repetitive Loss Area

There is only one property included in this repetitive loss area. It has three insurable buildings. The property in this repetitive loss area was also listed in the 2020 RLAA. The extent of this repetitive loss area was developed through the methodology presented for the 2020 RLAA (See Section 2 of this RLAA document). In the 2023 FEMA repetitive loss list provided to the County, no new repetitive loss properties were identified, and no existing properties were removed in this repetitive loss area. Consequently, the repetitive loss area remains unchanged. Table 10-2 provides general information about the property, along with mitigation measures. As noted in Table 10-1, mitigation measures have been implemented by the property owner following flood events and recorded claims. An AW-501 form has been submitted to FEMA.

Table 10-2: All Properties in Altadena B Repetitive Loss Area

Property ID	Number of Insurable Buildings	Building Description		Probable Mitigation Measures
		Foundation	Condition	
ALT-B1	3	Crawlspace	D7A	Mitigation measures have been implemented by the property owner, and a AW501 Form has been completed and submitted to FEMA
Total	3			

11 Calabasas A Repetitive Loss Area

11.1 Problem Statement

The Calabasas A Repetitive Loss Area is in the Santa Monica Mountains in the southwestern portion of Los Angeles County. This is a single-property repetitive loss area. The property is in a FEMA Zone X. No map of this repetitive loss area is provided herein due to privacy concerns. This area is a camping ground on privately owned land, located at the bottom of a hillside area. The steep hill at the west corner, the highest point of the property, is prone to mudflow from the hill whenever it rains. The flow then runs along the private road across the camping ground between the camp housing facilities to the natural creek at the east property boundary. The owner previously placed sandbags in some locations to temporarily protect the housing facilities near the bottom of the hill. The owner reported that the sandbags were strategically placed to protect the housing facilities, and if the pattern of hillside runoff changes, as it did in 1996 after the brush fire, the property would again be at risk. The subject property is not located in or near a FEMA-mapped floodplain.

11.2 Identified Repetitive Loss Property

Table 11-1 lists the FEMA-designated repetitive loss property within this repetitive loss area. The dates of previous flood claims and the average claim paid were provided by FEMA in the 2023 repetitive loss property list. Field and desktop assessments were conducted for each FEMA repetitive loss property to determine the cause of flooding and describe any mitigation measures implemented.

Table 11-1: Repetitive Loss Properties in Calabasas A Repetitive Loss Area

FEMA RL #	Flood Dates of Previous Claims	Average Claim Paid	Mitigated?
72498	2/92, 1/95, 1/95, 2/98	$6,584	No
Identified Flood Cause: Mudflow from the hillside at the east end of the property and along the private road within the property.			

11.3 Properties Included in Repetitive Loss Area

There is only one property included in this repetitive loss area. It has 12 insurable buildings. The property in this repetitive loss area was also listed in the 2020 RLAA. The extent of this repetitive loss area was developed through the methodology presented for the 2020 RLAA (See Section 2 of this RLAA document). In the 2023 FEMA repetitive loss list provided to the County, no new repetitive loss properties were identified, and no existing properties were removed in this area. Consequently, the repetitive loss area remains unchanged. Table 11-2 provides general information for the property, along with mitigation measures that could be employed to address repetitive flood losses. For identified mitigation measures that are located on private property, the decision on whether to implement the identified mitigation measures resides with the private property owner. These measures are recommended due to the flood risks, but the owner is not obligated to implement them. Regarding education on flood risk and flood risk mitigation, it is a shared responsibility. Public entities make information on flood risk and flood risk mitigation available to the public. Property owners undertake the task of seeking and taking in flood risk and flood risk mitigation information and consulting the appropriate design professionals to implement flood risk and flood risk mitigation measures.

Table 11-2: All Properties in Calabasas A Repetitive Loss Area

Property ID	Number of Insurable Buildings	Building Description		Probable Mitigation Measures
		Foundation	Condition	
CA-A1	12	Slab	D55A	Local drainage improvement [a] Drainage system maintenance [a] Public education [a,b]
Total	**12**			

(a) Property owner action

(b) Public entity action

12 Calabasas B Repetitive Loss Area

12.1 Problem Statement

Figure 12-1 shows the Calabasas B Repetitive Loss Area. This area is in the Santa Monica Mountains in the southwestern portion of Los Angeles County. This repetitive loss area is not within the FEMA 100-year flood Zone AE for Medea Creek, nor in a FEMA Zone D (an area of possible but unknown flood risk), but in a FEMA Zone X, defined as an area of minimal flood risk . The flooding appears to be associated with local drainage issues associated with flows in the private streets not collected by the publicly owned storm drains as well as grading issues from property to property. The repetitive-loss property for this area is located at the low point of the private street, and storm flows entering the front yard can be trapped and cause damage to the house, including foundation cracks.

12.2 Identified Repetitive Loss Property

Table 12-1 lists the FEMA-designated repetitive loss property within this repetitive loss area. The dates of previous flood claims and the average claim paid were provided by FEMA in the 2023 repetitive loss property list. Field and desktop assessments were conducted for each FEMA repetitive loss property to determine the cause of flooding and describe any mitigation measures implemented.

Table 12-1: Repetitive Loss Properties in Calabasas B Repetitive Loss Area

FEMA RL #	Flood Dates of Previous Claims	Average Claim Paid	Mitigated?
136718	2/98, 12/04	$4,105	No
Identified Flood Cause: This repetitive loss area is not within the FEMA 100-year flood zone for Medea Creek. The subject property is adjacent to a higher neighboring property and receives runoff that can seep into the house. A former problem is that runoff from the roof enters planters in front of the house. The owner has installed pipes and drains in the planters to evacuate the water from the planters. Street level is higher than the subject property, potentially creating a condition where runoff could enter from the street. However, the owner indicated that an existing storm drain adequately captures flows from the street.			

12.3 Properties Included in Repetitive Loss Area

Eighteen properties with 33 insurable buildings have been identified in this repetitive loss area. The properties in this repetitive loss area were also listed in the 2020 RLAA. The extent of this repetitive loss area was developed through the methodology presented for the 2020 RLAA (See Section 2 of this RLAA document). In the 2023 FEMA repetitive loss list provided to the County, no new repetitive loss area properties were identified, and no existing properties were removed in this repetitive loss area. Consequently, the repetitive loss area remains unchanged. Table 12-2 provides general information for each property, along with mitigation measures that could be employed to address repetitive flood losses. As summarized in Table 12-1, the owner of the FEMA-designated repetitive loss property has implemented measures regarding roof runoff entering planters and seeping into the house. For identified mitigation measures that are located on private properties, the decision on whether to implement the identified mitigation measures resides with the private property owners. These measures are recommended due to the flood risks, but owners are not obligated to implement them. Regarding education on flood risk and flood risk mitigation, it is a shared responsibility. Public entities make

information on flood risk and flood risk mitigation available to the public. Property owners undertake the task of seeking and taking in flood risk and flood risk mitigation information and consulting the appropriate design professionals to implement flood risk and flood risk mitigation measures.

Table 12-2: All Properties in Calabasas B Repetitive Loss Area

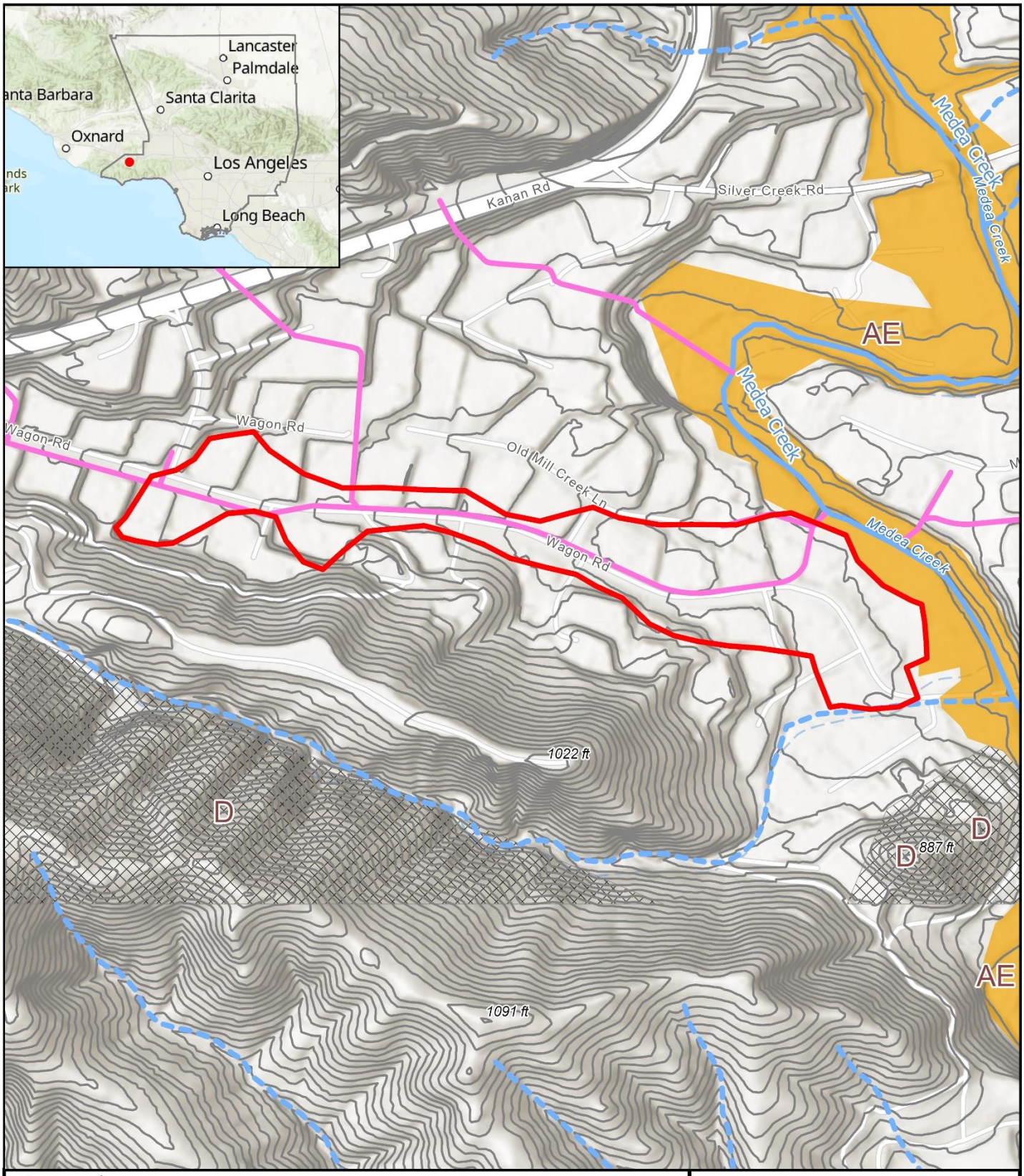
Property ID	Number of Insurable Buildings	Building Description		Probable Mitigation Measures
		Foundation	Condition	
CA-B1	2	Crawlspace	D11A	Drainage system maintenance [a] Public education [b,c] Construct a berm to prevent off-site flows from entering the property if street runoff is confirmed to be a source of seepage. [c] Confirm that the measures taken by the residents to address ponding within planters are effective. [c] Continue to inspect the foundation for cracks and repair. [c]
CA-B2	2	Crawlspace	D8C	Drainage system maintenance [a] Public education [b,c]
CA-B3	1	Crawlspace	No Info	Drainage system maintenance [a] Public education [b,c]
CA-B4	1	Crawlspace	D9B	Drainage system maintenance [a] Public education [b,c]
CA-B5	1	Crawlspace	D9C	Drainage system maintenance [a] Public education [b,c]
CA-B6	3	Crawlspace	D10D	Drainage system maintenance [a] Public education [b,c]
CA-B7	3	Crawlspace	D75D	Drainage system maintenance [a] Public education [b,c]
CA-B8	2	Crawlspace	D85C	Drainage system maintenance [a] Public education [b,c]
CA-B9	2	Crawlspace	D11D	Drainage system maintenance [a] Public education [b,c]
CA-B10	2	Crawlspace	D11A	Drainage system maintenance [a] Public education [b]
CA-B11	3	Crawlspace	D8C	Drainage system maintenance [a] Public education [b,c]
CA-B12	2	Crawlspace	D11D	Drainage system maintenance [a] Public education [b,c]
CA-B13	1	Crawlspace	D10C	Drainage system maintenance [a] Public education [b,c]
CA-B14	1	Crawlspace	D105A	Drainage system maintenance [a] Public education [b,c]

CA-B15	2	Crawlspace	D11A	Drainage system maintenance [a] Public education [b,c]
CA-B16	1	Crawlspace	D10B	Drainage system maintenance [a] Public education [b,c]
CA-B17	2	Crawlspace	D11A	Drainage system maintenance [a] Public education [b,c]
CA-B18	2	Crawlspace	D9B	Drainage system maintenance [a] Public education [b,c]
Total	**33**			

(a) Public entity action for public storm drain in the street, property owner action for private street and lot drainage

(b) Public entity action

(c) Property owner action



Legend

- FEMA 100 yr Flood Zone (Zone AE)
- Area of Undetermined Flood Hazard (Zone D)
- Pipeline (Underground)
- Intermittent Stream
- Ephemeral Stream
- 10ft Contour lines
- Repetitive Loss Areas (RLAs)

NORTH

300 150 0 300

Scale in Feet

Repetitive Loss Area
Calabasas B
Figure 12-1

BURNS McDONNELL

Source: Esri World Topographic Map, FEMA NFHL, USGS NHD, LA County GIS Database

Issued: 7/11/2024

13 Cold Creek A Repetitive Loss Area

13.1 Problem Statement

Figure 13-1 shows the Cold Creek A Repetitive Loss Area. Since this is a smaller area containing few properties, street and building outlines are not shown on the map. Street names remain to provide spatial context. This area is in the Santa Monica Mountains in the southwestern portion of Los Angeles County. The single FEMA-designated repetitive loss property is within a FEMA Zone X, but the delineated repetitive loss area does parallel a FEMA 100-year flood Zone AE area mapped along Cold Creek. There is significant topographic relief in this area. The cause of repetitive flooding in the area is associated with the blockage or obstruction of contributory drainages to Cold Creek off the hillside areas. Drainage ways and flow paths can become blocked by debris (downed trees and shrubs, leaves, sediment, and trash) collected by overland flows. When the drainages are blocked, stormwater flows overland to the public streets, where there are few drains present. The properties in the Cold Creek A repetitive loss area are topographically subject to flooding when these situations occur due to their locations below roadways.

13.2 Identified Repetitive Loss Property

Table 13-1 lists the FEMA-designated repetitive loss property within this repetitive loss area. The dates of previous flood claims and the average claim paid were provided by FEMA in the 2023 repetitive loss property list. Field and desktop assessments were conducted for the FEMA repetitive loss property to determine the cause of flooding and describe any mitigation measures implemented.

Table 13-1: Repetitive Loss Properties in Cold Creek A Repetitive Loss Area

FEMA RL #	Flood Dates of Previous Claims	Average Claim Paid	Mitigated?
71255	2/92, 1/93	$23,983	No
***Identified Flood Cause*:** The property is located on high ground and flooded by excessive storm runoff from surrounding hills. It was also determined from the FEMA FIRM in Figure 13-1 that the property was not in the floodplain of Cold Canyon, adjacent to the property.			

13.3 Properties Included in Repetitive Loss Area

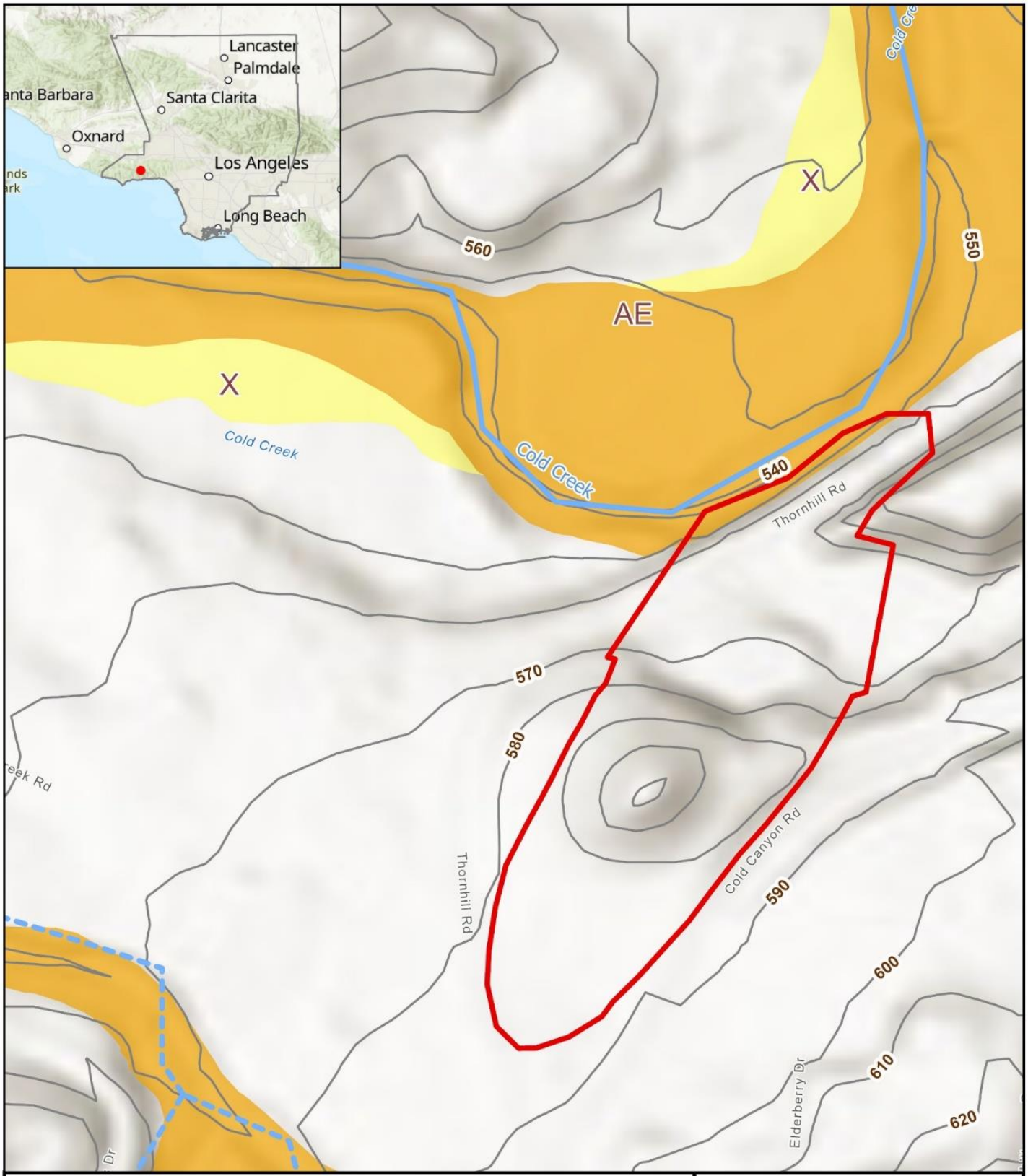
Two properties with two insurable buildings have been identified in this repetitive loss area. The properties in this repetitive loss area were also listed in the 2020 RLAA. The extent of this repetitive loss area was developed through the methodology presented for the 2020 RLAA (See Section 2 of this RLAA document). In the 2023 FEMA repetitive loss list provided to the County, no new repetitive loss properties were identified, and no existing properties were removed in this area. Consequently, the repetitive loss area remains unchanged. Table 13-2 provides general information for each property, along with mitigation measures that could be employed to address repetitive flood losses. For identified mitigation measures that are located on private properties, the decision on whether to implement the identified mitigation measures resides with the private property owners. These measures are recommended due to the flood risks, but owners are not obligated to implement them. Regarding education on flood risk and flood risk mitigation, it is a shared responsibility. Public entities make information on flood risk and flood risk mitigation available to the public. Property owners undertake the task of seeking and taking in flood

risk and flood risk mitigation information and consulting the appropriate design professionals to implement flood risk and flood risk mitigation measures.

Table 13-2: All Properties in Cold Creek A Repetitive Loss Area

Property ID	Number of Insurable Buildings	Building Description		Probable Mitigation Measures
		Foundation	Condition	
CO-A1	1	Crawlspace	D5A	Public education [a,b] Local drainage improvements [b] Drainage maintenance [c]
CO-A2	1	Slab	D9C	Public education [a,b] Local drainage improvements [b] Drainage maintenance [c]
Total	2			

(a) Public entity action
(b) Property owner action
(c) Public entity action for public storm drain in the street/road, property owner action for lot drainage



Legend

- FEMA 100 yr Flood Zone (Zone AE)
- FEMA 500 yr Flood Zone (Zone X)
- Intermittent Stream
- Ephemeral Stream
- 10ft Contour lines
- Repetitive Loss Areas (RLAs)

NORTH

100 50 0 100

Scale in Feet

Repetitive Loss Area
Cold Creek A
Figure 13-1

BURNS McDONNELL

Source: Esri World Topographic Map, FEMA NFHL, USGS NHD, LA County GIS Database

Issued: 6/11/2024

14 Cold Creek B Repetitive Loss Area

14.1 Problem Statement

Figure 14-1 shows the Cold Creek B Repetitive Loss Area. This area is in the Santa Monica Mountains in the southwestern portion of Los Angeles County. The single repetitive loss property is within a FEMA Zone X, but the delineated repetitive loss area does parallel a FEMA 100-year flood Zone AE area mapped along Cold Creek. There is significant topographic relief in this area. The cause of repetitive flooding in the area is associated with the blockage or obstruction of contributory drainages to Cold Creek off the hillside areas. Drainage ways and flow paths can become blocked by debris (downed trees and shrubs, leaves, sediment, and trash) collected by overland flows. When the drainages are blocked, stormwater flows overland to the public streets, where there are few if any drainage conveyances. The properties in the Cold Creek B repetitive loss area are topographically subject to flooding when these situations occur due to their locations below roadways.

14.2 Identified Repetitive Loss Property

Table 14-1 lists the FEMA-designated repetitive loss property within this repetitive loss area. The dates of previous flood claims and average claim paid were provided by FEMA in the 2023 repetitive loss property list. Field and desktop assessments were conducted for each FEMA repetitive loss property to determine the cause of flooding and describe any mitigation measures implemented.

Table 14-1: Repetitive Loss Properties in Cold Creek B Repetitive Loss Area

FEMA RL #	Flood Dates of Previous Claims	Average Claim Paid	Mitigated?
148768	3/83, 1/95, 12/04, 2/05	$7,081	No
Identified Flood Cause: Property is lower than the adjacent street, where flows concentrate during a rainstorm. The property is adjacent to Cold Creek (Zone AE in FIRM); however, the owner previously reported that no issues were caused by creek flows. The owner reported that perimeter berms and ditches along the streets to divert as much street flow as possible were installed. The owner also reported completing improvements to collect and convey the flows to the creek through the side yard. The owner reported that catch basin and ditch installed convey flows from the front yard to the side yard. Field survey to be conducted to confirm these measures have been installed and have been effective. Without proper diversion and control of runoff from the streets, future flood damage may occur.			

14.3 Properties Included in Repetitive Loss Area

Seven properties with eight insurable buildings have been identified in this repetitive loss area. The properties in this repetitive loss area were also listed in the 2020 RLAA. The extent of this repetitive loss area was developed through the methodology presented for the 2020 RLAA (See Section 2 of this RLAA document). In the 2023 FEMA repetitive loss list provided to the County, no new repetitive loss properties were identified, and no existing properties were removed in this area. Consequently, the repetitive loss area remains unchanged. Table 14-2 provides general information for each property, along with mitigation measures that could be employed to address repetitive flood losses. As summarized in Table 14-2, the property owner of the repetitive loss property has implemented measures to control runoff from the street. For identified mitigation measures that are located on private properties, the decision on whether to implement the identified mitigation measures resides with the private property owners. These

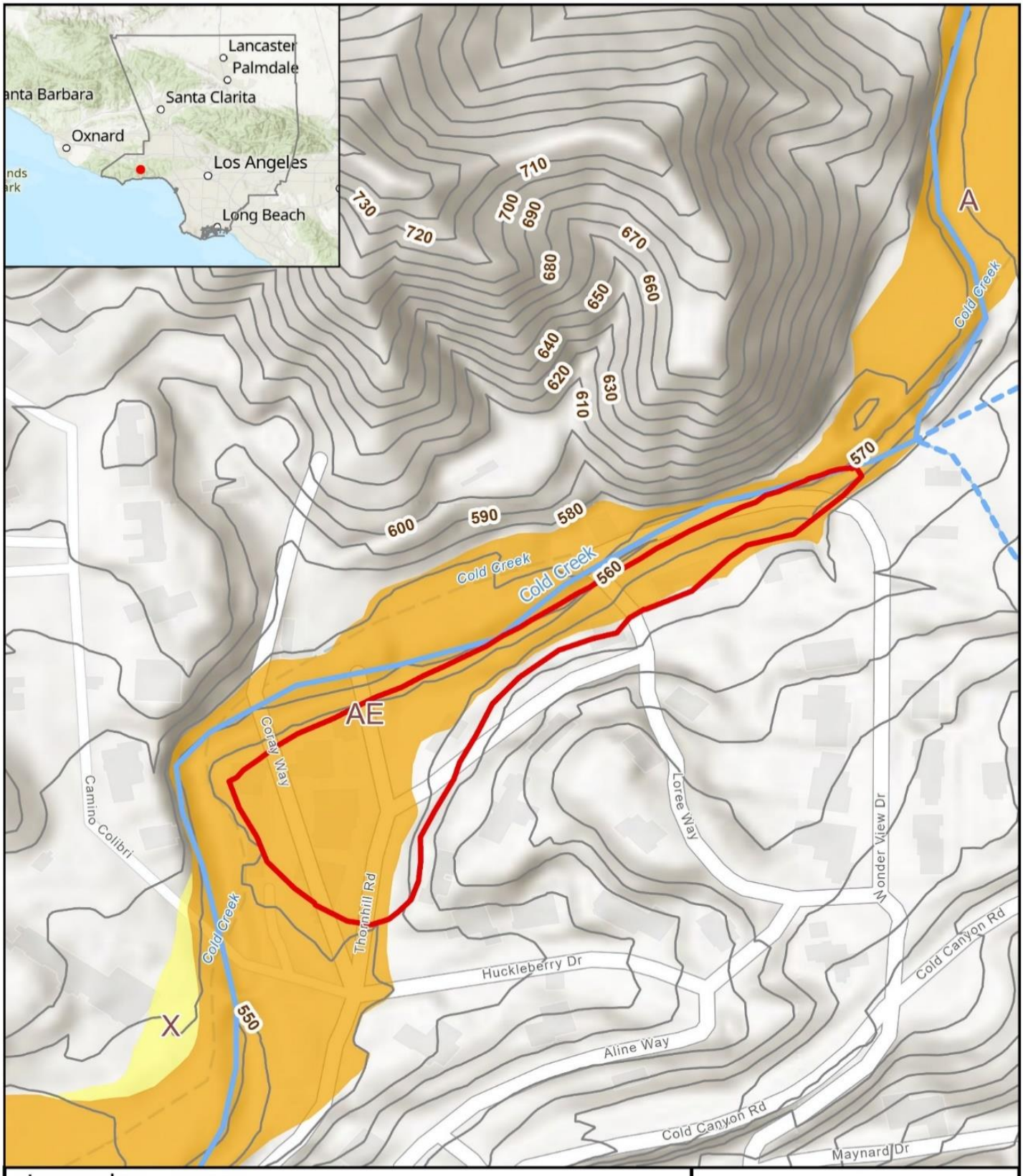
measures are recommended due to the flood risks, but owners are not obligated to implement them. Regarding education on flood risk and flood risk mitigation, it is a shared responsibility. Public entities make information on flood risk and flood risk mitigation available to the public. Property owners undertake the task of seeking and taking in flood risk and flood risk mitigation information and consulting the appropriate design professionals to implement flood risk and flood risk mitigation measures.

Table 14-2: All Properties in Cold Creek B Repetitive Loss Area

Property ID	Number of Insurable Buildings	Building Description		Probable Mitigation Measures
		Foundation	Condition	
CO-B1	2	Slab	D75C	Public education [a,b] Local drainage improvements [b] Drainage maintenance
CO-B2	1	Slab	D7C	Public education [a,b] Local drainage improvements [b] Drainage maintenance [b]
CO-B3	1	Slab	D75B	Public education [a,b] Local drainage improvements [b] Drainage maintenance [b]
CO-B4	1	Slab	D45A	Public education [a,b] Local drainage improvements [b] (Owner implemented measures as summarized in Table 14-1. Survey planned to confirm these measures have been implemented and are effective) Drainage maintenance [b] (Continue to monitor repaired foundation cracks and pumping system for the basement.)
CO-B5	1	Slab	D55B	Public education [a,b] Local drainage improvements [b] Drainage maintenance [b]
CO-B6	2	Slab	No Information	Public education [a,b] Local drainage improvements [b] Drainage maintenance [b]
CO-B7	1	Crawlspace	D4B	Public education [a,b] Local drainage improvements [b] Drainage maintenance [b]
Total	9			

a. Public entity action

b. Property owner action



Legend

- FEMA 100 yr Flood Zone (Zone AE)
- FEMA 500 yr Flood Zone (Zone X)
- Intermittent Stream
- Ephemeral Stream
- 10ft Contour lines
- Repetitive Loss Areas (RLAs)

NORTH

100 50 0 100

Scale in Feet

Repetitive Loss Area
Cold Creek B
Figure 14-1

BURNS McDONNELL

Source: Esri World Topographic Map, FEMA NFHL, USGS NHD, LA County GIS Database

Issued: 6/11/2024

15 Del Sur Repetitive Loss Area

15.1 Problem Statement

Figure 15-1 shows the Del Sur Repetitive Loss Area. This area is in the northwestern part of Los Angeles County. Flood zones are mapped on FEMA FIRMs. This repetitive-loss area is within a FEMA 100-year flood Zone AE, and the dates of loss for the claims on the property coincide with federally declared flood disasters. No other loss history suggests any flooding of this area other than from the riverine overbank flooding reflected in the FEMA FIRMs. The properties identified for this area analysis were selected due to their proximity to the stream.

15.2 Identified Repetitive Loss Property

Table 15-1 lists the FEMA-designated repetitive loss property within this repetitive loss area. FEMA provided the dates of previous flood claims and average claim paid in the 2023 repetitive loss property list. Field and desktop assessments were conducted for each FEMA repetitive loss property to determine the cause of flooding and describe any mitigation measures implemented.

Table 15-1: Repetitive Loss Properties in Del Sur Repetitive Loss Area

FEMA RL #	Flood Dates of Previous Claims	Average Claim Paid	Mitigated?
138781	1/05, 2/05	$14,034	No
Identified Flood Cause: This property is within a FEMA designated 100-year floodplain and the dates of loss for the two claims coincide with significant flood events in LA county that received federal disaster declarations (DR-1577 and DR-1585). The cause of flooding for this area is commensurate with the flood risk reflected on the FEMA FIRM for this area.			

15.3 Properties Included in Repetitive Loss Area

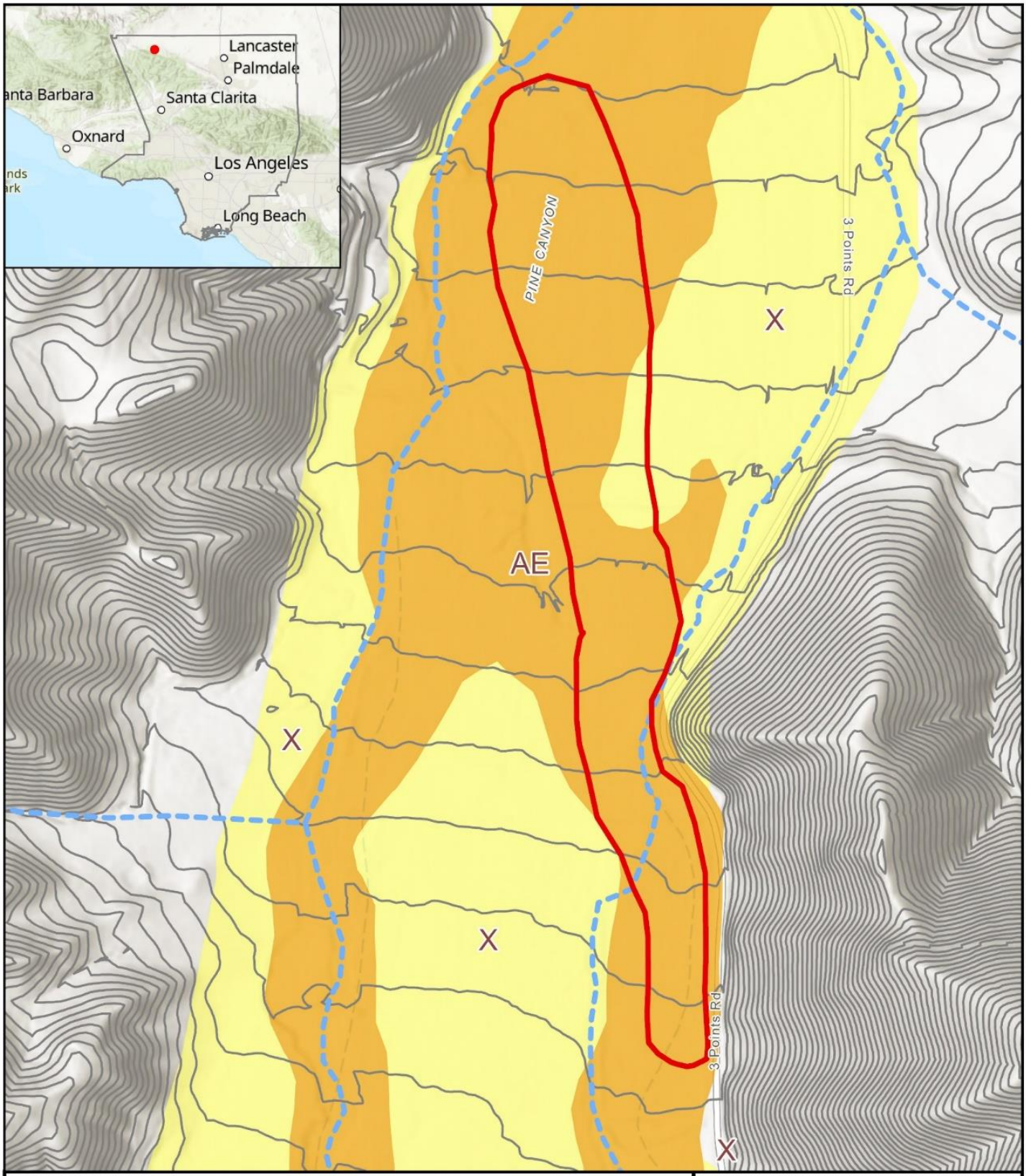
Two properties with ten insurable buildings have been identified in this repetitive loss area. The properties in this repetitive loss area were also listed in the 2020 RLAA. The extent of this repetitive loss area was developed through the methodology presented for the 2020 RLAA (See Section 2 of this RLAA document). In the 2023 FEMA repetitive loss list provided to the County, no new repetitive loss properties were identified, and no existing properties were removed in this area. Consequently, the repetitive loss area remains unchanged. Table 15-2 provides general information for the properties, along with mitigation measures that could be employed to address repetitive flood losses. For identified mitigation measures that are located on private properties, the decision on whether to implement the identified mitigation measures resides with the private property owners. These measures are recommended due to the flood risks, but owners are not obligated to implement them. Regarding education on flood risk and flood risk mitigation, it is a shared responsibility. Public entities make information on flood risk and flood risk mitigation available to the public. Property owners undertake the task of seeking and taking in flood risk and flood risk mitigation information and consulting the appropriate design professionals to implement flood risk and flood risk mitigation measures.

Table 15-2: All Properties in Del Sur Repetitive Loss Area

Property ID	Number of Insurable Buildings	Building Description		Probable Mitigation Measures
		Foundation	Condition	
DS-1	3	Crawlspace	D8B	Elevation [a] Public education [a,b] Local drainage improvements[a] Drainage maintenance [a]
DS-2	7	Crawlspace	D75B	Elevation [a] Public education [a,b] Local drainage improvements[a] Drainage maintenance [a]
Total	10			

a. Property owner action

b. Public entity action



Legend

- FEMA 100 yr Flood Zone (Zone AE)
- FEMA 500 yr Flood Zone (Zone X)
- Ephemeral Stream
- 10ft Contour lines
- Repetitive Loss Areas (RLAs)

NORTH

300 150 0 300

Scale in Feet

Repetitive Loss Area
Del Sur
Figure 15-1

BURNS McDONNELL

Source: Estri World Topographic Map, FEMA NFHL, USGS NHD, LA County GIS Database

Issued: 5/30/2024

16 Lake Hughes Repetitive Loss Area

16.1 Problem Statement

Figure 16-1 depicts the Lake Hughes Repetitive Loss Area. This repetitive loss area is in the northwestern part of Los Angeles County. The repetitive loss area was made around the singular FEMA reported property using the information from the reverse damage function and the FEMA flood map information. Based on the information generated by the reverse damage function and the information depicted on the FEMA flood map, the 3,219-foot contour line was used to create the repetitive loss area. The repetitive loss area continues downstream to the confluence of two creeks. Flood zones are mapped on FEMA FIRMs. This repetitive loss area is within a FEMA 100-year flood Zone AO and a FEMA approximate 100-year flood Zone A.

Lake Hughes is situated in the unincorporated community of Lake Hughes, approximately 2,500 feet west of Munz Lake. It is a natural basin with a surface area of 21.4 acres. During the wet season, the lake's depth varies from 3 feet near the perimeter to 18 feet at the center. In addition to rainwater and street runoff which are depicted in Figure 16-1, Lake Hughes is replenished by the surrounding lakes (Lake Elizabeth and Munz Lake) as well as underground springs (Califonia Regional Water Quality Control Board, 2007).

16.2 Identified Repetitive Loss Property

Table 16-1 lists the FEMA-designated repetitive loss property within this repetitive loss area. The dates of previous flood claims and average claim paid were provided by FEMA in the 2023 repetitive loss property list. Field and desktop assessments were conducted for each FEMA repetitive loss property to determine the cause of flooding and describe any mitigation measures implemented.

Table 16-1: Repetitive Loss Properties in Lake Hughes Repetitive Loss Area

FEMA RL #	Flood Dates of Previous Claims	Average Claim Paid	Mitigated?
317907	10/15, 9/22	$13,598	No
Identified Flood Cause: This property is within a FEMA designated 100-year floodplain and the dates of loss for the two claims coincide with significant flood events in LA county (See FMP Section 6.5). The cause of flooding for this area is commensurate with the flood risk reflected on the FEMA FIRM for this area.			

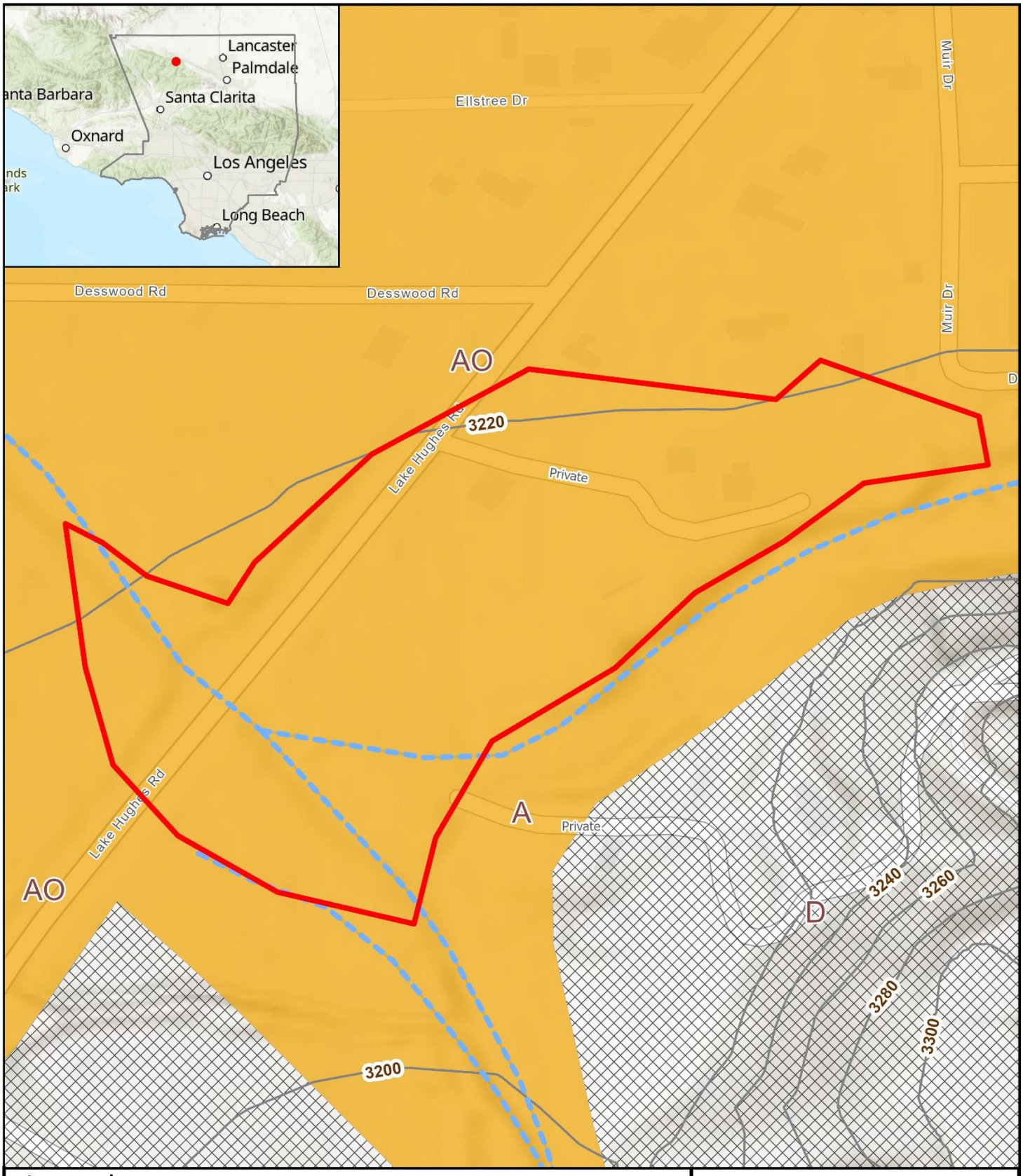
16.3 Properties Included in Repetitive Loss Area

Six properties with ten insurable buildings have been identified in this repetitive loss area. Table 16-2 provides general information for each property, along with mitigation measures that could be employed to address repetitive flood losses. For identified mitigation measures that are located on private properties, the identified measures have been determined to reduce the flood risks, but their implementation is in the discretion and responsibility of the property owner. Regarding education on flood risk and flood risk mitigation, it is a shared responsibility. Public entities make information on flood risk and flood risk mitigation available to the public. Property owners undertake the task of seeking and taking in flood risk and flood risk mitigation information and consulting the appropriate design professionals to implement flood risk and flood risk mitigation measures.

Table 16-2: Properties in Lake Hughes Repetitive Loss Area

Property ID	Number of Insurable Buildings	Building Description		Probable Mitigation Measures
		Foundation	Condition	
LH-1	1	Slab	D6A	Elevation [a] Public education [a,b] Local drainage improvements[a] Drainage maintenance [c]
LH-2	2	Slab	D6A/D45B	Elevation [a] Public education [a,b] Local drainage improvements[a] Drainage maintenance [c]
LH-3	3	Slab	D4B	Elevation [a] Public education [a,b] Local drainage improvements[a] Drainage maintenance [c]
LH-4	2	Raised	D45A	Elevation [a] Public education [a,b] Local drainage improvements[a] Drainage maintenance [c]
LH-5	1	Slab	D6A	Elevation [a] Public education [a,b] Local drainage improvements[a] Drainage maintenance [c]
LH-6	1	Slab	D55B	Elevation [a] Public education [a,b] Local drainage improvements[a] Drainage maintenance [c]
Total	**10**			

a. Property owner action
b. Public entity action
c. Public entity action for culvert in the public street/road, property owner action for private street/road and lot drainage



Legend

- FEMA 100 yr Flood Zone (Zone AO)
- Area of Undetermined Flood Hazard (Zone D)
- Ephemeral Stream
- 10ft Contour lines
- Repetitive Loss Areas (RLAs)

NORTH

100 50 0 100

Scale in Feet

Repetitive Loss Area
Lake Hughes
Figure 16-1

BURNS McDONNELL℠

Source: Esri World Topographic Map, FEMA NFHL, USGS NHD, LA County GIS Database

Issued: 7/11/2024

17 Lower Topanga Canyon Repetitive Loss Area

17.1 Problem Statement

The Lower Topanga Canyon Repetitive Loss Area is shown in Figure 17-1. This area is in the Topanga Canyon area of Los Angeles County, about 26 miles northwest of Downtown Los Angeles. All of the areas along the lower reach of the Topanga Canyon channel (sometimes referred to as the Rodeo Grounds area) were frequently inundated by Topanga Canyon flood flows and are located in a FEMA 100-year flood Zone AE. These properties are within the lower reach of Topanga Canyon, with ground elevation similar to the channel invert (i.e. lowest elevation of the channel). This information was derived from analysis of the topographic data as described in Chapter 2. Rodeo Grounds Road is higher than the invert; however, the berm is not sufficient to confine the floodwater and the Rodeo Grounds low-lying areas have been subject to severe flood damage. Previous insurance claims were filed by residents who leased the properties.

AW-501 forms were submitted for properties within this repetitive loss area as they are outside the communty and jurisdiction of Los Angeles County. They are managed and within the jurisdiction of State of California Parks and Recreation. The RLAA will be removed from Los Angeles County jurisdiction once the AW-501s have been processed by FEMA.

17.2 Identified Repetitive Loss Property

Table 17-1 lists the FEMA-designated repetitive loss properties within this repetitive loss area. The dates of previous flood claims and average claim paid were provided by FEMA in the 2023 repetitive loss property list. Field and desktop assessments were conducted for each FEMA repetitive loss property to determine the cause of flooding and describe any mitigation measures implemented.

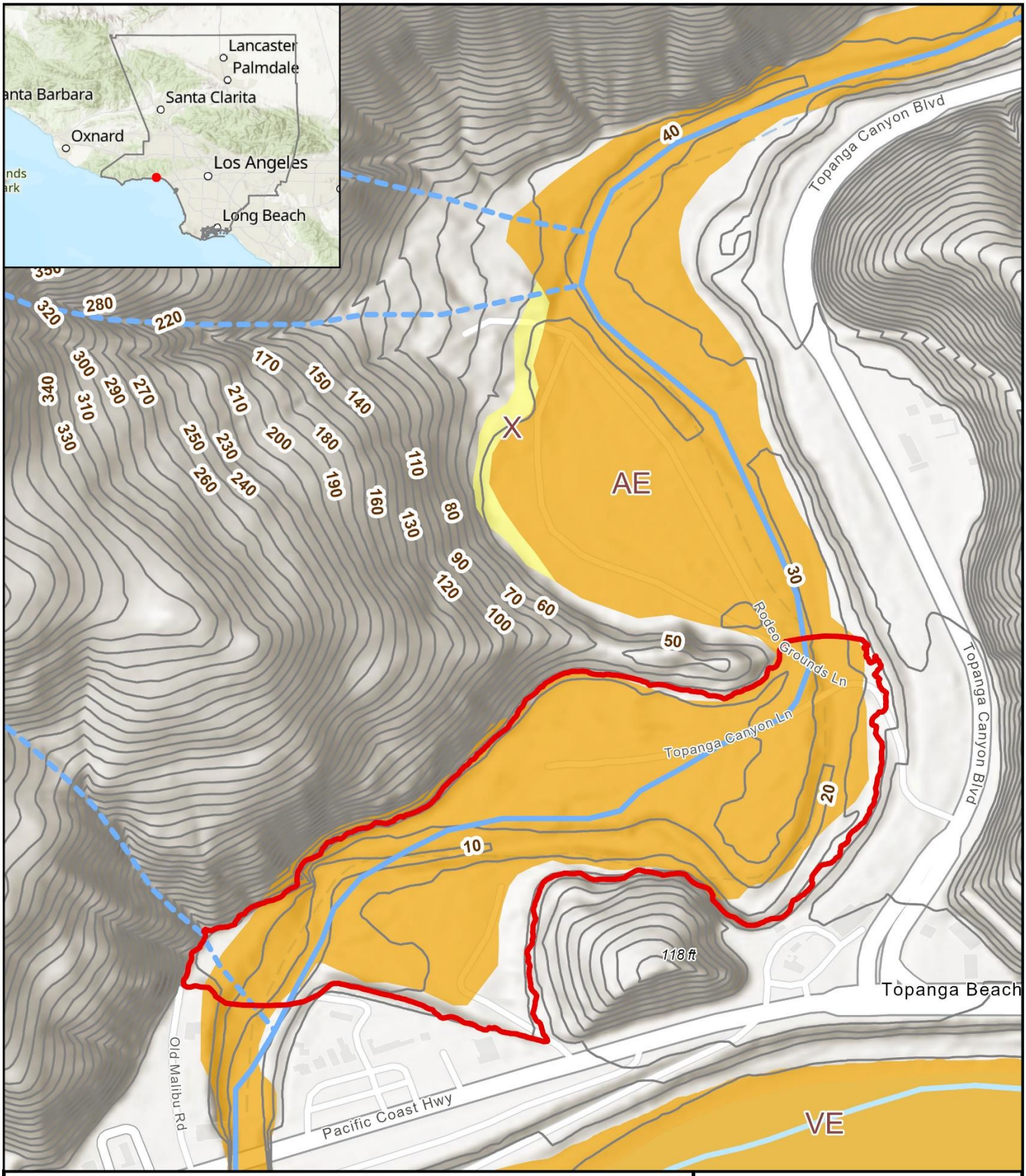
Table 17-1: Repetitive Loss Properties in Lower Topanga Canyon Repetitive Loss Area

FEMA RL #	Flood Dates of Previous Claims	Average Claim Paid	Mitigated?
14900	3/78, 2/80	$9,171	Yes[a]
Identified Flood Cause: Property in the channel and in Flood Zone AE of Lower Topanga Canyon			
17940	1/78, 3/78, 2/80	$3,999	Yes[a]
Identified Flood Cause: Property in the channel and in Flood Zone AE of Lower Topanga Canyon			
17941	1/78, 2/80, 1/83	$9,446	Yes[a]
Identified Flood Cause: Property in the channel and in Flood Zone AE of Lower Topanga Canyon			
17942	1/78, 3/78, 1/79, 1/80, 2/80, 2/80, 1/83, 2/92, 1/95	$10,326	Yes[a]
Identified Flood Cause: Property in the channel and in Flood Zone AE of Lower Topanga Canyon			
28440/58082	1/78, 3/78 / 1/83, 3/83, 1/88	$8,806/$7,035	Yes[a]
Identified Flood Cause: Property in the channel and in Flood Zone AE of Lower Topanga Canyon			

(a): The secondary analysis for this area determined that there are no longer structures on any of the properties. An AW-501 has been submitted for this property, but correction was not yet approved as of this RLAA. The repetitive loss properties will be removed once the AW-501 is approved and fully processed by FEMA.

17.3 Properties Included in Repetitive Loss Area

The structures on the identified five repetitive loss properties within this repetitive loss area have been removed. The County submitted an AW-501 form for these properties, however corrections to the FEMA lists have not yet processed as of this RLAA. This repetitive loss properties will be removed from RLAA once the AW-501 is approved and processed by FEMA



Source: Esri World Topographic Map, FEMA NFHL, USGS NHD, LA County GIS Database

Issued: 6/11/2024

18 Malibou Lake A Repetitive Loss Area

18.1 Problem Statement

Figure 18-1 shows the Malibou Lake A repetitive loss area, which lies within a FEMA 100-year flood Zone AE. This repetitive loss area was developed in the 2020 report. Two new properties were added to the FEMA list that were analyzed for inclusion in this repetitive loss area. The repetitive loss area for Malibou Lake developed for the 2020 FMP update was re-analyzed for these new properties. The 2020 repetitive loss area was developed using the FEMA flood map that defined the 100-year flood elevation at approximately the 737-foot contour. No updates were identified to this flood data since the 2020 update, and therefore the repetitive loss area boundary based on the FEMA map was retained. One of the new repetitive loss properties was located within the repetitive loss area. The second new repetitive loss property is located outside of the repetitive loss area and at a much higher elevation. A new and separate repetitive loss area was developed for this second new repetitive loss property (See Section 19, Malibou Lake B).

Malibou Lake A repetitive loss area includes 20 FEMA repetitive loss properties, one of which was added in 2023, one of which has been mitigated, one of which was destroyed, and 18 of which are unmitigated. Malibou Lake is a privately owned and operated reservoir in the southwest area of Los Angeles County near the Ventura County/Los Angeles County line. The contributing watershed starts in Ventura Hidden Valley in Ventura County, approximately 10 miles northwest of Malibou Lake. Stormwater runoff enters the ungated Lake Sherwood and flows through Potrero Valley Creek, Westlake Lake, and Triunfo Canyon Creek before emptying into Malibou Lake. Westlake Lake is 4.7 miles northwest of Malibou Lake and is in both Ventura and Los Angeles Counties. Malibou Lake also receives runoff from Medea Creek, a major tributary north of the lake. The total drainage area at the spillway of Malibou Lake is 64 square miles.

The lake has a surface area of approximately 20 acres at spillway elevation of the lake's dam. The contributory watershed covers portions of Ventura County and Los Angeles County and crosses the boundaries of three cities: Thousand Oaks, Agoura Hills, and Westlake Village.

Most of the repetitive loss properties in this area are damaged by the rising water of Malibou Lake during flood events. Malibou Lake lies at the confluence of Triunfo Canyon and Medea Creek. The terrain around the lake is steep and rocky, causing rainwater to concentrate at the lake quickly. In addition, the watershed is highly urbanized, which can result in high runoff volumes and peak flows, but the flows from the urbanized areas would contain significantly less sediment than flow from non-urbanized areas. The storage below the dam's spillway is ineffective for peak flow attenuation during normal times since the water elevation is maintained at the spillway elevation at all times for recreational purposes. During flood events, the lake is partially filled with sediments, reducing its recreational functions.

18.2 Identified Repetitive Loss Property

Table 18-1 lists the FEMA-designated repetitive loss properties within this repetitive loss area. The dates of previous flood claims and the average claim paid were provided by FEMA in the 2023 repetitive loss property list. Field and desktop assessments were conducted for each FEMA repetitive loss property to determine the cause of flooding and describe any mitigation measures implemented.

Table 18-1: Repetitive Loss Properties in Malibou Lake A Repetitive Loss Area

FEMA RL #	Flood Dates of Previous Claims	Average Claim Paid	Mitigated?
1165	2/98, 1/01, 3/01, 2/03, 2/04, 1/05, 2/05, 1/08, 1/10, 3/11, 1/17, 2/17, 2/19, 12/21, 1/23	$21,981	No
12820	2/92, 2/93, 1/95, 2/98, 2/98, 3/01, 12/04, 1/05, 2/17, 2/19, 12/21, 1/23	$64,874	No
28444	3/78, 2/80, 2/80, 1/83, 3/83, 1/95, 3/95, 2/98	$17,287	No
28487	3/78, 2/80	$9,398	No
35727	2/80, 1/83, 3/83, 2/92, 1/95, 2/98	$25,272	No
39962	2/80, 2/92, 3/95, 2/98	$2,859	No
40087	2/80, 3/83	$15,836	No
46576	2/80, 3/83, 3/83, 2/92, 2/93, 1/95, 3/95, 2/98	$6,798	No
47197	2/80, 3/83, 2/92	$5,538	No
49496	3/83, 2/92, 1/95, 2/98	$9,792	No
52974	2/80, 1/83, 3/83, 2/92, 1/95, 3/95, 2/98, 1/05, 2/17	$14,207	No
57971	3/83, 2/92, 1/95	$9,150	Destroyed
71413	2/92, 1/95, 3/95	$16,264	Yes[a]
71417	2/92, 1/95, 2/98, 2/01, 1/05	$3,784	No
72406	2/93, 1/95	$4,391	No
73653	2/92, 1/95	$65,231	No
91232	2/98, 2/98, 1/05	$14,607	No
93872	1/95, 2/98	$5,895	No
137792	3/01, 1/05	$1,557	No
282562	2/17, 2/19	$59,190	No
Identified Flood Cause: Inundated by rising water of Malibou Lake during storms. The properties are located within the FEMA floodplain boundary and are subject to flooding by rising water of Malibou Lake, when the flood rainfall occurs in the drainage area of the Malibou Lake.			

(a) An AW-501 has been submitted for this property, but correction was not yet approved as of this RLAA. The repetitive loss property will be removed from RLAA once the AW-501 is approved and fully processed by FEMA.

18.3 Properties Included in Repetitive Loss Area

Fifty-six properties with 58 insurable buildings have been identified in this repetitive loss area. Fifty-five of the properties in this repetitive loss area were also listed in the 2020 RLAA. This repetitive loss area includes an additional repetitive loss property that was added to the 2023 FEMA list. The extent of this repetitive loss area was developed through the methodology presented for the 2020 RLAA (See Section 2 of this RLAA document) and re-analyzed for the new repetitive loss property as discussed previously. The

boundary of the repetitive loss areas remained the same and the additional property is located within the repetitive loss area.

As noted in Table 18-1, all structures for one of the repetitive loss properties were destroyed. An AW-501 form will be submitted to FEMA for re-classifying the property. An additional repetitive loss property within this area has been submitted for re-classification through the AW-501 process. This property will be removed from the RLAA following AW-501 approval and processing by FEMA.

Table 18-2 provides general information for each property, along with mitigation measures that could be employed to address repetitive flood losses. For identified mitigation measures that are located on private properties, the decision on whether to implement the identified mitigation measures resides with the private property owners. These measures are recommended due to the flood risks, but owners are not obligated to implement them. Regarding education on flood risk and flood risk mitigation, it is a shared responsibility. Public entities make information on flood risk and flood risk mitigation available to the public. Property owners undertake the task of seeking and taking in flood risk and flood risk mitigation information and consulting the appropriate design professionals to implement flood risk and flood risk mitigation measures.

Table 18-2: All Properties in Malibou Lake A Repetitive Loss Area

Property ID	Number of Insurable Buildings	Building Description		Probable Mitigation Measures
		Foundation	Condition	
ML-A1	1	Crawlspace	D75B	Abandon lowest floor or convert to parking and storage [a] Elevate lowest floor to above base flood elevation [a] Acquisition [b] Public education [a,c]
ML-A2	1	Slab	D75B	Abandon lowest floor or convert to parking and storage [a] Elevate lowest floor to above base flood elevation[a] Acquisition [b] Public education [a,c]
ML-A3	1	Slab	D75B	Elevation [a] Flood-proofing [a] Floodwall [a] Public education [a,c]
ML-A4	0	-	-	All structures destroyed Acquisition [b]
ML-A5	1	Slab	D75B	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]

Property ID	Number of Insurable Buildings	Building Description		Probable Mitigation Measures
		Foundation	Condition	
ML-A6	1	Slab	D75B	Elevation [a] Floodwall [a] Flood-proofing [a] Public education [a,c]
ML-A7	1	Slab	D75B	Abandon lowest floor or convert to parking and storage [a] Elevate lowest floor to above base flood elevation[a] Acquisition [b] Flood-proofing [a] Public education [a,c]
ML-A8	1	Slab	D75B	Abandon lowest floor or convert to parking and storage [a] Elevate lowest floor to above base flood elevation[a] Acquisition [b] Flood-proofing [a] Public education [a,c]
ML-A9	1	Slab	D75B	Abandon lowest floor or convert to parking and storage [a] Elevate lowest floor to above base flood elevation[a] Acquisition [b] Flood-proofing [a] Public education [a,c]
ML-A10	1	Slab	D75B	Abandon lowest floor or convert to parking and storage [a] Elevate lowest floor to above base flood elevation[a] Acquisition [b] Flood-proofing [a] Public education [a,c]
ML-A11	1	Slab	D75B	Public education
ML-A12	1	Slab	D75B	Abandon lowest floor or convert to parking and storage [a] Elevate lowest floor to above base flood elevation[a] Acquisition [b] Public education [a,c]

Property ID	Number of Insurable Buildings	Building Description		Probable Mitigation Measures
		Foundation	Condition	
ML-A13	1	Slab	D75B	Abandon lowest floor or convert to parking and storage [a] Elevate lowest floor to above base flood elevation[a] Acquisition [b] Public education [a,c]
ML-A14	1	Slab	D75B	Abandon lowest floor or convert to parking and storage [a] Elevate lowest floor to above base flood elevation[a] Acquisition [b] Public education [a,c]
ML-A15	1	Slab	D75B	Elevation [a] Acquisition [b] Public education
ML-A16	1	Slab	D75B	Confine upstream inflow [a] Upsize the pipe opening [a] Improve storm drain [a] Add a truss rack at the inlet [a] Public education [a,c]
ML-A17	1	Slab	D75B	Elevation [a] Acquisition [b] Public education [a,c]
ML-A18	1	Slab	D75B	Install perimeter diversion ditches, walls, and berms to prevent street runoff entering the property [a] Raise and pave planting areas with ditches to drain [a] Build a cutoff wall to keep storm runoff from street flows away from the structure [a] Provide a ditch crossing the driveway to divert flows away from the structure [a] Build cutoff wall to prevent seepage [a] Public education [a,c]
ML-A19	1	Slab	D75B	Abandon lowest floor or convert to parking and storage [a] Elevate lowest floor to above base flood elevation[a] Acquisition [b] Public education [a,c]

Property ID	Number of Insurable Buildings	Building Description		Probable Mitigation Measures
		Foundation	Condition	
ML-A20	1	Slab	D75B	Maintain drainage flow away from property [a] Public education [a,c]
ML-A21	1	Slab	D75B	Maintain drainage flow away from property [a] Public education [a,c]
ML-A22	1	Slab	D75B	Install perimeter diversion ditches, walls, and berms to prevent street runoff entering the property [a] Raise and pave planting areas with ditches to drain flows away from the structure. [a] Flood-proofing of the garage [a] Public education [a,c]
ML-A23	1	Slab	D75B	Flood-proofing [a] Public education [a,c]
ML-A24	1	Slab	D75B	Flood-proofing [a] Public education [a,c]
ML-A25	1	Slab	D75B	Flood-proofing [a] Public education [a, c]
ML-A26	1	Slab	D75B	Flood-proofing boat house[a] For the main house [a]: • Flood-proofing • Abandon lowest floor • Elevation Acquisition [b] Public education [a,c]
ML-A27	1	Slab	D75B	Flood-proofing [a] Public education [a,c]
ML-A28	1	Slab	D75B	Flood-proofing [a] Public education [a,c]
ML-A29	1	Slab	D75B	Flood-proofing [a] Public education [a,c]
ML-A30	1	Crawlspace	D75B	Flood-proofing [a] Public education [a,c]
ML-A31	1	Crawlspace	D75B	Abandon lowest floor or convert to parking and storage [a] Elevate lowest floor to above base flood elevation[a] Flood-proofing [a] Floodwall [a] Public education [a,c]

Property ID	Number of Insurable Buildings	Building Description		Probable Mitigation Measures
		Foundation	Condition	
ML-A32	1	Slab	D75B	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]
ML-A33	1	Slab	D75B	Flood-proofing [a] Floodwall [a] Public education [c]
ML-A34	1	Slab	D75B	Floodwall [a] Flood-proofing [a] Public education [a,c]
ML-A35	1	Slab	D6B	Temporary barriers to protect doors, divert water around home, decrease water coming in from street/driveway [a] Public education [c]
ML-A36	1	Slab	D75B	Mitigation measures for main structure [a]: • Flood-proofing • Floodwall Acquisition [b] Public education [a,c]
ML-A37	1	Slab	D75B	Flood-proof basement garage [a] Floodwall [a] Public education [c]
ML-A38	2	Slab	D75B	Abandon lowest floor or convert to parking and storage [a] Elevate lowest floor to above base flood elevation[a] Acquisition [b] Flood-proofing [a] Public education [a,c]
ML-A39	1	Slab	D75B	Abandon lowest floor or convert to parking and storage [a] Elevate lowest floor to above base flood elevation[a] Acquisition [b] Flood-proofing [a] Public education [a,c]
ML-A40	1	Crawlspace	D6A	Elevation [a] Acquisition [b] Floodwall [a] Public education [a,c]

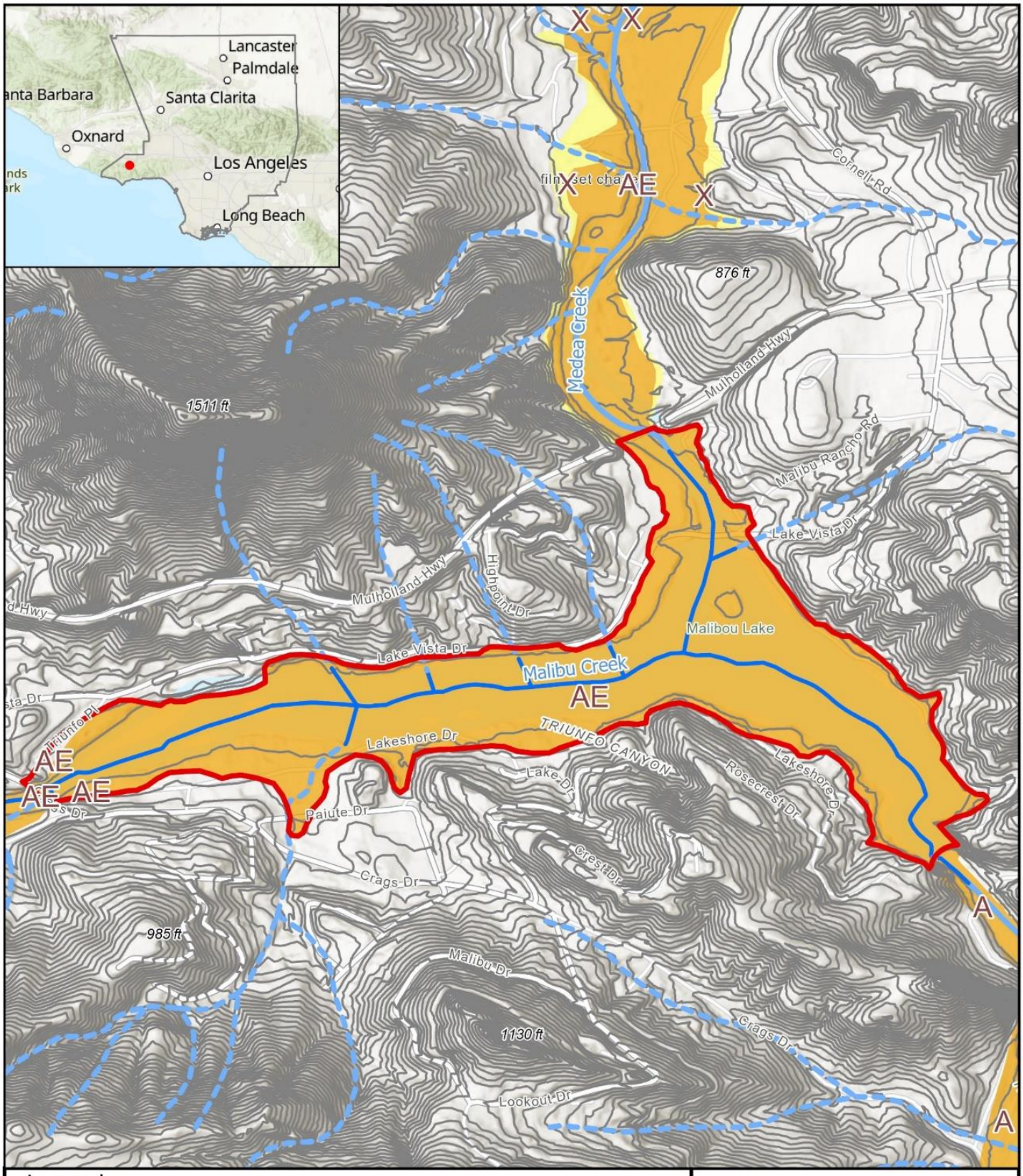
Property ID	Number of Insurable Buildings	Building Description		Probable Mitigation Measures
		Foundation	Condition	
ML-A41	1	Slab	D75B	Elevation [a] Acquisition [b] Floodwall [a] Public education [a,c]
ML-A42	1	Slab	D75B	Acquisition [b] Floodwall [a] Public education [a,c]
ML-A43	1	Slab	D75B	Flood-proof basement garage [a] Floodwall [a] Public education [a,c]
ML-A44	1	Crawlspace	D75B	Flood-proofing [a] Temporary barriers (sandbags and such other items) [a] Acquisition [b] Public education [a,c]
ML-A45	1	Slab	D75B	Public education [a,c]
ML-A46	1	Slab/Crawlspace	D75B	Public education [a,c]
ML-A47	1	Slab	D75B	Flood-proofing [a] Public education [a,c]
ML-A48	1	Slab	D75B	Elevation [a] Acquisition [b] Floodwall [a] Flood-proofing [a] Public education [a,c]
ML-A49	1	Crawlspace	D75B	Floodwall [a] Flood-proofing [a] Public education [a,c]
ML-A50	1	Crawlspace	D5B	Flood-proofing [a] Public education [a,c]
ML-A51	2	Crawlspace	D75B	Abandon lowest floor or convert to parking and storage [a] Elevate lowest floor to above based flood elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]
ML-A52	1	Crawlspace	D75B	Public education [a,c]
ML-A53	1	Crawlspace	D75B	Public education [a,c]
ML-A54	1	Slab	D75B	Public education [a,c]

Property ID	Number of Insurable Buildings	Building Description		Probable Mitigation Measures
		Foundation	Condition	
ML-A55	1	Crawlspace	D75B	Elevation [a] Acquisition [b] Floodwall [a] Flood-proofing [a] Public education [a,c]
ML-A56	1	Slab	D45D	Elevation [a] Acquisition [b] Floodwall [a] Public education [a,c]
Total	**58**			

a. Property owner action

b. Public entity action, but only with cooperation of property owner

c. Public entitiy action



Legend

- FEMA 100 yr Flood Zone (Zone AE)
- FEMA 500 yr Flood Zone (Zone X)
- Intermittent Stream
- Perennial Stream
- Ephemeral Stream
- 10ft Contour lines
- Repetitive Loss Areas (RLAs)

NORTH

500 250 0 500

Scale in Feet

Repetitive Loss Area
Malibou Lake A
Figure 18-1

BURNS McDONNELL

Source: Esri World Topographic Map, FEMA NFHL, USGS NHD, LA County GIS Database

Issued: 6/11/2024

19 Malibou Lake B Repetitive Loss Area

19.1 Problem Statement

Figure 19-1 shows the Malibou Lake B Repetitive Loss Area. This area includes one repetitive loss property. The area is located on a hill south of the lake, near, but not within, the Malibou Lake A repetitive loss area boundary. This property is not near water bodies or streams that could cause large scale flooding to the surrounding properties. A field visit completed by Los Angeles County determined flooding was caused due to local hillside drainage. This repetitive loss area includes the FEMA-designated repetitive loss property and adjacent properties at lower elevation that may be subject to the same drainage problem. The extent of the area was developed by using topographic contours and the nearby water drainage flow paths. The terrain in the area around the lake is steep and rocky, causing rainwater to concentrate quickly.

19.2 Identified Repetitive Loss Property

Table 19-1 lists the FEMA-designated repetitive loss property within this repetitive loss area. The dates of previous flood claims and average claim paid were provided by FEMA in the 2023 repetitive loss property list. Field and desktop assessments were conducted for the FEMA repetitive loss property to determine the cause of flooding and describe any mitigation measures implemented.

Table 19-1: Repetitive Loss Properties in Malibou Lake B Repetitive Loss Area

FEMA RL #	Flood Dates of Previous Claims	Average Claim Paid	Mitigated?
57972	2/80, 2/92, 2/98	$6,964	No
Identified Flood Cause: Hillside drainage.			

19.3 Properties Included in Repetitive Loss Area

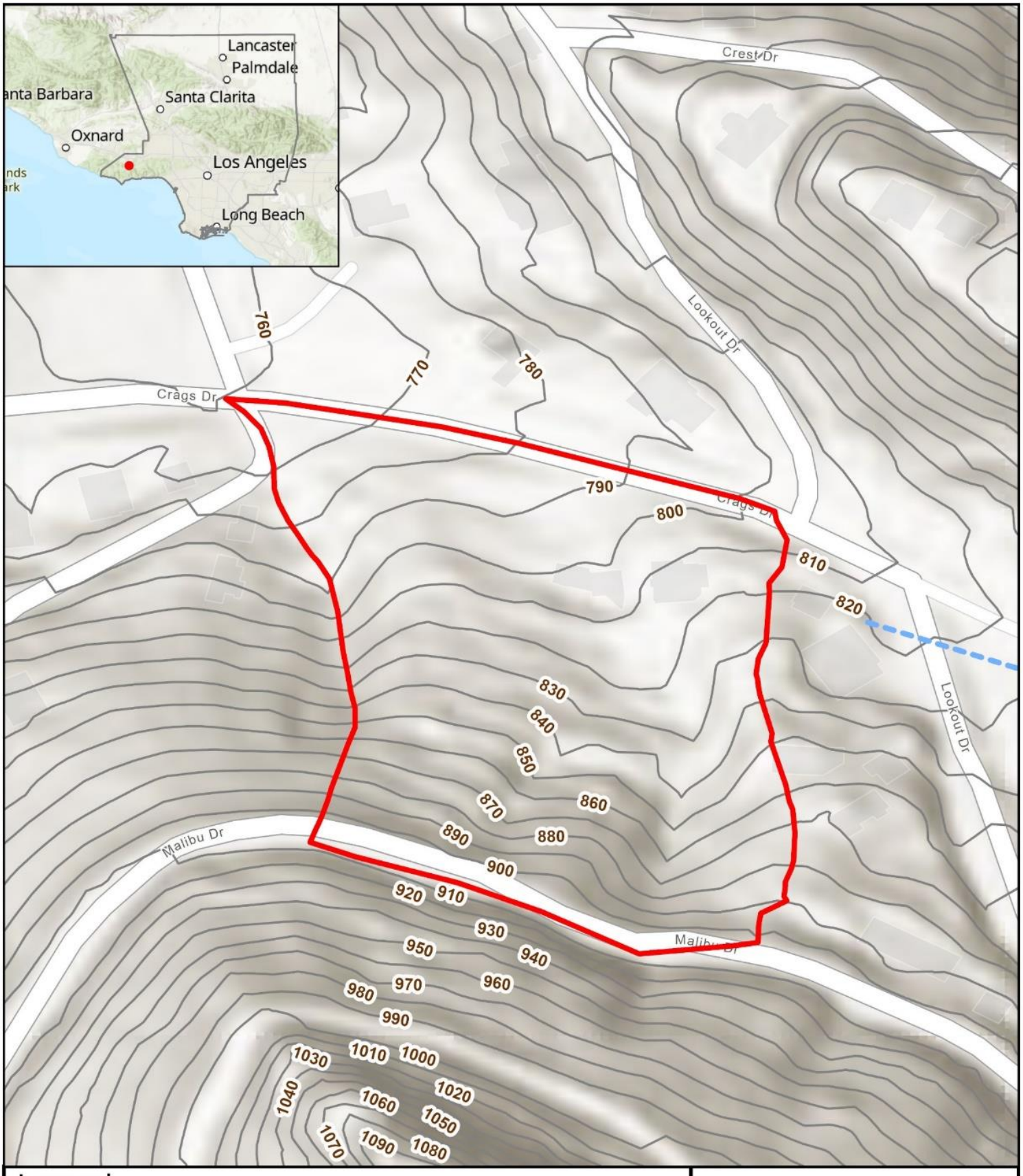
There are three properties included in this repetitive loss area with four insurable buildings. Table 19-2 provides general information for each property, along with mitigation measures that could be employed to address repetitive flood losses. For identified mitigation measures that are located on private properties, the decision on whether to implement the identified mitigation measures resides with the private property owners. These measures are recommended due to the flood risks, but owners are not obligated to implement them. Regarding education on flood risk and flood risk mitigation, it is a shared responsibility. Public entities make information on flood risk and flood risk mitigation available to the public. Property owners undertake the task of seeking and taking in flood risk and flood risk mitigation information and consulting the appropriate design professionals to implement flood risk and flood risk mitigation measures.

Table 19-2: All Properties in Malibou Lake B Repetitive Loss Area

Property ID	Number of Insurable Buildings	Building Description		Probable Mitigation Measures
		Foundation	Condition	
ML-B1	2	Slab	D4A	Elevation [a] Public education [a,b] Local drainage improvements[a] Drainage maintenance [c]
ML-B2	1	Slab	D8A	Elevation [a] Public education [a,b] Local drainage improvements[a] Drainage maintenance [c]
ML-B3	1[2]	Under construction	N/A	Elevation [a] Public education [a,b] Local drainage improvements[a] Drainage maintenance [c]
Total	4			

a. Property owner action
b. Public entity action
c. Public entity action for culvert in the public street/road, property owner action for lot drainage

[2] A new home is currently being rebuilt after burning down in a fire.



Legend

- Ephemeral Stream
- 10ft Contour lines
- Repetitive Loss Areas (RLAs)

NORTH

100 50 0 100

Scale in Feet

Repetitive Loss Area
Malibou Lake B
Figure 19-1

BURNS McDONNELL

Source: Estri World Topographic Map, FEMA NFHL, USGS NHD, LA County GIS Database

Issued: 6/12/2024

20 Malibu Repetitive Loss Area

20.1 Problem Statement

Figure 20-1 shows the Malibu Repetitive Loss Area. This area is in the Santa Monica Mountains in the southwestern portion of Los Angeles County. There is one repetitive loss property in this area. The property is located at the lowest point of the street. The first floor of the house was built lower than the street level, and street runoff can enter the house through the driveway. An owner of this property built a 6-inch berm in front of the driveway to divert the water. This, however, may not have relieved the flood problem associated with major floods. The other properties in this area have similar circumstances, with the first floor of the houses built below the street within a similar elevation contour.

20.2 Identified Repetitive Loss Property

Table 20-1 lists the FEMA-designated repetitive loss property within this repetitive loss area. The dates of previous flood claims and average claim paid were provided by FEMA in the 2023 repetitive loss property list. Field and desktop assessments were conducted for the FEMA repetitive loss property to determine the cause of flooding and describe any mitigation measures implemented.

Table 20-1: Repetitive Loss Properties in Malibu Repetitive Loss Area

FEMA RL #	Flood Dates of Previous Claims	Average Claim Paid	Mitigated?
70079	2/92, 1/95, 3/98, 3/00	$5,524	Destroyed
Identified Flood Cause: House is located at the low point of the street.			

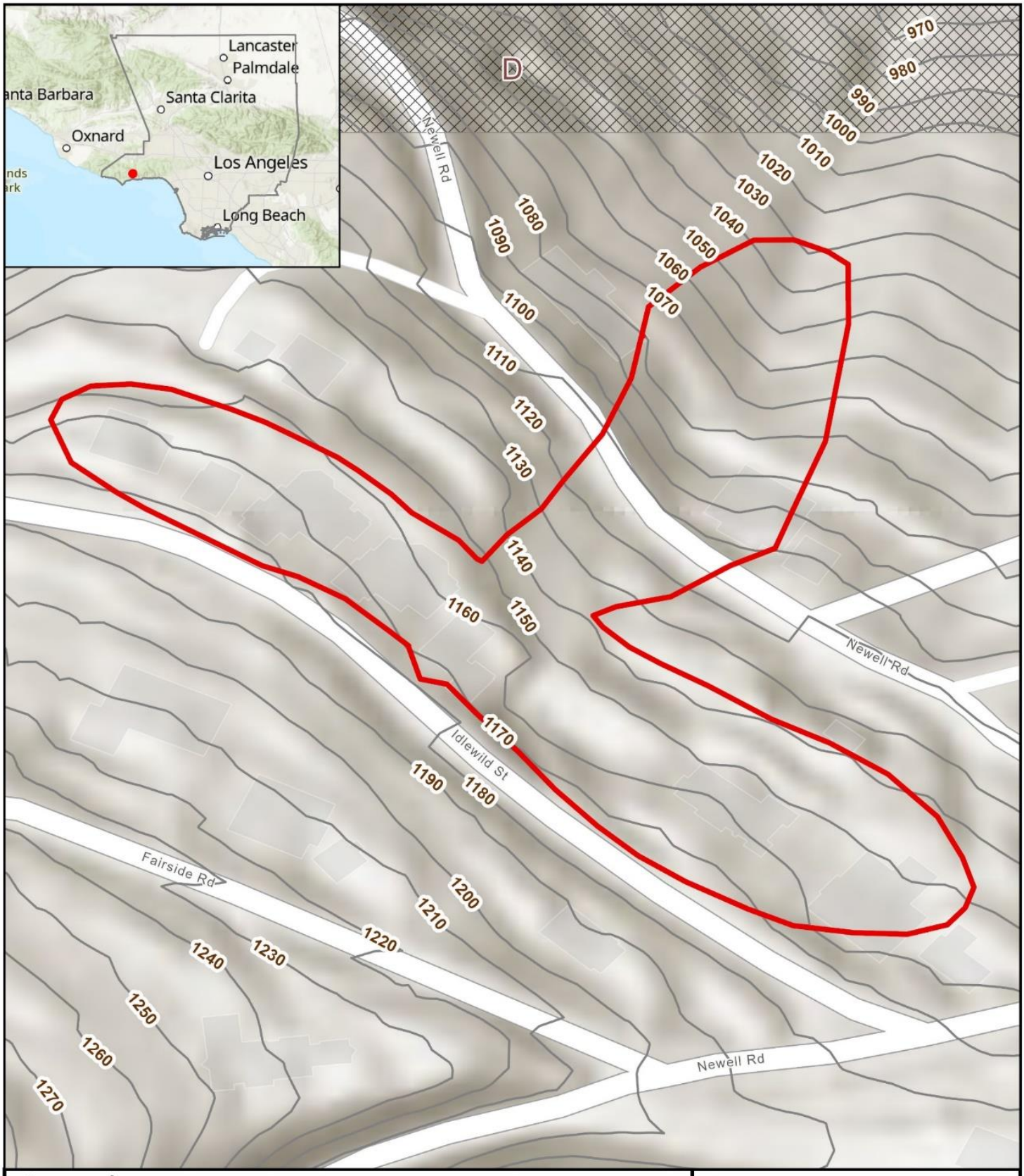
20.3 Properties Included in Repetitive Loss Area

Seven properties with ten insurable buildings have been identified in this repetitive loss area. The properties in this repetitive loss area were also listed in the 2020 RLAA. The extent of this repetitive loss area was developed through the methodology presented for the 2020 RLAA (See Section 2 of this RLAA document). In the 2023 FEMA repetitive loss list provided to the County, no new repetitive loss properties were identified, and no existing properties were removed in this area. Consequently, the repetitive loss area remains unchanged. Table 20-2 provides general information for each property, along with mitigation measures that could be employed to address repetitive flood losses. For identified mitigation measures that are located on private properties, the decision on whether to implement the identified mitigation measures resides with the private property owners. These measures are recommended due to the flood risks, but owners are not obligated to implement them. Regarding education on flood risk and flood risk mitigation, it is a shared responsibility. Public entities make information on flood risk and flood risk mitigation available to the public. Property owners undertake the task of seeking and taking in flood risk and flood risk mitigation information and consulting the appropriate design professionals to implement flood risk and flood risk mitigation measures.

Table 20-2: All Properties in Malibu Repetitive Loss Area

Property ID	Number of Insurable Buildings	Building Description		Probable Mitigation Measures
		Foundation	Condition	
MAL-1	2	Slab	No Information	Diversion [a] Berm at driveway [a] Street grading [b] Public education [a,b]
MAL-2	1	Slab	No Information	Diversion Berm Street grading Public education [a,b]
MAL-3	2	Slab	No Information	Diversion Berm Street grading Public education [a,b]
MAL-4	1	Crawlspace	No Information	Diversion Berm Street grading Public education [a,b]
MAL-5	1	Crawlspace	D10A	Diversion Berm Street grading Public education [a,b]
MAL-6	1	Slab	D85A	Diversion Berm Street grading Public education [a,b]
MAL-7	2	Basement	D10D	Diversion Berm Street grading Public education [a,b]
Total	**10**			

a. Property owner action
b. Public entitiy action



Legend

- Area of Undetermined Flood Hazard (Zone D)
- Ephemeral Stream
- 10ft Contour lines
- Repetitive Loss Areas (RLAs)

NORTH

50 25 0 50

Scale in Feet

Repetitive Loss Area
Malibu
Figure 20-1

BURNS McDONNELL

Source: Estri World Topographic Map, FEMA NFHL, USGS NHD, LA County GIS Database

Issued: 5/30/2024

21 Quartz Hill A Repetitive Loss Area

21.1 Problem Statement

The Quartz Hill A Repetitive Loss Area is located in the Quartz Hill region of Los Angeles County. Quartz Hill, a 390-square mile, high desert neighborhood, is located in the westernmost part of the Mojave Desert north of the San Gabriel Mountains and west of Lancaster and Palmdale. Flood studies of the Quartz Hill area show that the identified repetitive-loss property is located within FEMA Zone X, an area of minimal flooding. The repetitive flooding of this area is due to the overflow runoff from a detention basin, which has now been relocated southeast of the identified repetitive-loss property. This property is also possibly subject to sheet-flow along the Antelope Valley Drainage Corridor No. 9, (identified in the *Antelope Valley Comprehensive Plan of Flood Control and Water Conservation*; Los Angeles County, 1991). According to the repetitive-loss property owner, the property was flooded when the retention basin, located a couple of blocks to the south, could not hold the stormwater, and the gate was forced to open. The overland runoff entered his property across empty lots, causing flooding at the property. The basin has been replaced by a golf course and relocated one half mile to the northwest, further downstream from the property, which eliminated further flooding problems. This is substantiated by the fact that there has been no subsequent flood damage to the property since the relocation of the retention basin. This is considered to be an isolated event, and no other properties were determined to be impacted. The County has submitted an AW-501 form for this property. Upon FEMA's approval and processing of the AW-501, this property will be classified by FEMA as "mitigated," and the area will be removed from obligation for annual repetitive loss mailing under the County's CRS program.

21.2 Identified Repetitive Loss Property

Table 21-1 lists the FEMA-designated repetitive loss property within this repetitive loss area, which is being listed as "mitigated." No other properties were identified for this area. The dates of previous flood claims and the average claim paid were provided by FEMA in the 2023 repetitive loss property list. Field and desktop assessments were conducted for the FEMA repetitive loss property to determine the cause of flooding and describe any mitigation measures implemented.

Table 21-1: Repetitive Loss Properties in Quartz Hill A Repetitive Loss Area

FEMA RL #	Flood Dates of Previous Claims	Average Claim Paid	Mitigated?
57385	1/92, 1/92, 2/92, 12/92	$15,228	Yes[a]
Identified Flood Cause: Overflow from detention basin, which has been relocated. Property no longer subject to repetitive flooding.			

(a): An AW-501 has been submitted for this property, but correction was not yet approved as of this RLAA. RLA will be removed once correction is processed by FEMA.

21.3 Properties Included in Repetitive Loss Area

There is only one property included in this repetitive loss area, with three insurable buildings. The property in this repetitive loss area was also listed in the 2020 RLAA. This repetitive loss area was developed through the methodology presented for the 2020 RLAA (See Section 2 of this RLAA document). As noted in Table 21-2, an AW-501 form has been submitted for this repetitive loss property. Following approval

and processing of the AW-501 by FEMA, this property will be reclassified, and removed from the RLAA and the obligation for annual repetitive loss mailing under the County's CRS program.

Table 21-2 provides general information for the property. The property is listed as mitigated, so no new mitigation measures are recommended.

Table 21-2: All Properties in Quartz Hill A Repetitive Loss Area

Property ID	Number of Insurable Buildings	Building Description		Probable Mitigation Measures
		Foundation	Condition	
QH-A1	3	Slab	D6C	N/A
Total	**3**			

22 Quartz Hill B Repetitive Loss Area

22.1 Problem Statement

Figure 22-1 shows the Quartz Hill B Repetitive Loss Area. This area is located in the Quartz Hill region of Los Angeles County. Quartz Hill, a 390-square mile, high desert neighborhood, is located in the westernmost part of the Mojave Desert north of the San Gabriel Mountains and west of Lancaster and Palmdale.

None of the properties in this area are located within a FEMA-identified special flood hazard (100-year) area. However, the properties are located in a FEMA 500-year flood Zone X flood area. The flooding source for this repetitive-loss area is street runoff that breaks out from Antelope Valley Drainage Corridor No. 7 (identified in the *Antelope Valley Comprehensive Plan of Flood Control and Water Conservation*; Los Angeles County, 1991) along 50th and 52nd Streets. The other properties in this area are at ground elevations similar to that of the identified repetitive loss property and have lowest floors with similar elevations as well. Drainage improvements were made along 50th Street W in the vicinity of Quartz Hill B Repetitive Loss Properties that mitigated for more frequent storm events. The drainage improvements were not sized to address the full 100-year storm event due to site constraints. Therefore, the status of Quartz Hill B remains unmitigated.

22.2 Identified Repetitive Loss Property

Table 22-1 lists the FEMA-designated repetitive loss property within this repetitive loss area. The dates of previous flood claims and average claim paid were provided by FEMA in the 2023 repetitive loss property list. Field and desktop assessments were conducted for each FEMA repetitive loss property to determine the cause of flooding and describe any mitigation measures implemented.

Table 22-1: Repetitive Loss Properties in Quartz Hill B Repetitive Loss Area

FEMA RL #	Flood Dates of Previous Claims	Average Claim Paid	Mitigated?
91087	2/92, 12/97	$2,783	No
Identified Flood Cause: Property is located in Antelope Drainage Corridor. Sheet flow from Antelope Valley Drainage Corridor No. 7 flooded the property, displacing retaining walls. The property currently has a private earthen ditch and small berms along it to route the water through the property boundaries.			

22.3 Properties Included in Repetitive Loss Area

Twelve properties with 26 insurable buildings have been identified in this repetitive loss area. The properties in this repetitive loss area were also listed in the 2020 RLAA. The extent of this repetitive loss area was developed through the methodology presented for the 2020 RLAA (See Section 2 of this RLAA document). In the 2023 FEMA repetitive loss list provided to the County, no new repetitive loss properties were identified, and no existing properties were removed in this area. Consequently, the repetitive loss area remains unchanged. Table 22-2 provides general information for each property, along with mitigation measures that could be employed to address repetitive flood losses. For identified mitigation measures that are located on private properties, the decision on whether to implement the identified mitigation measures resides with the private property owners. These measures are recommended due to

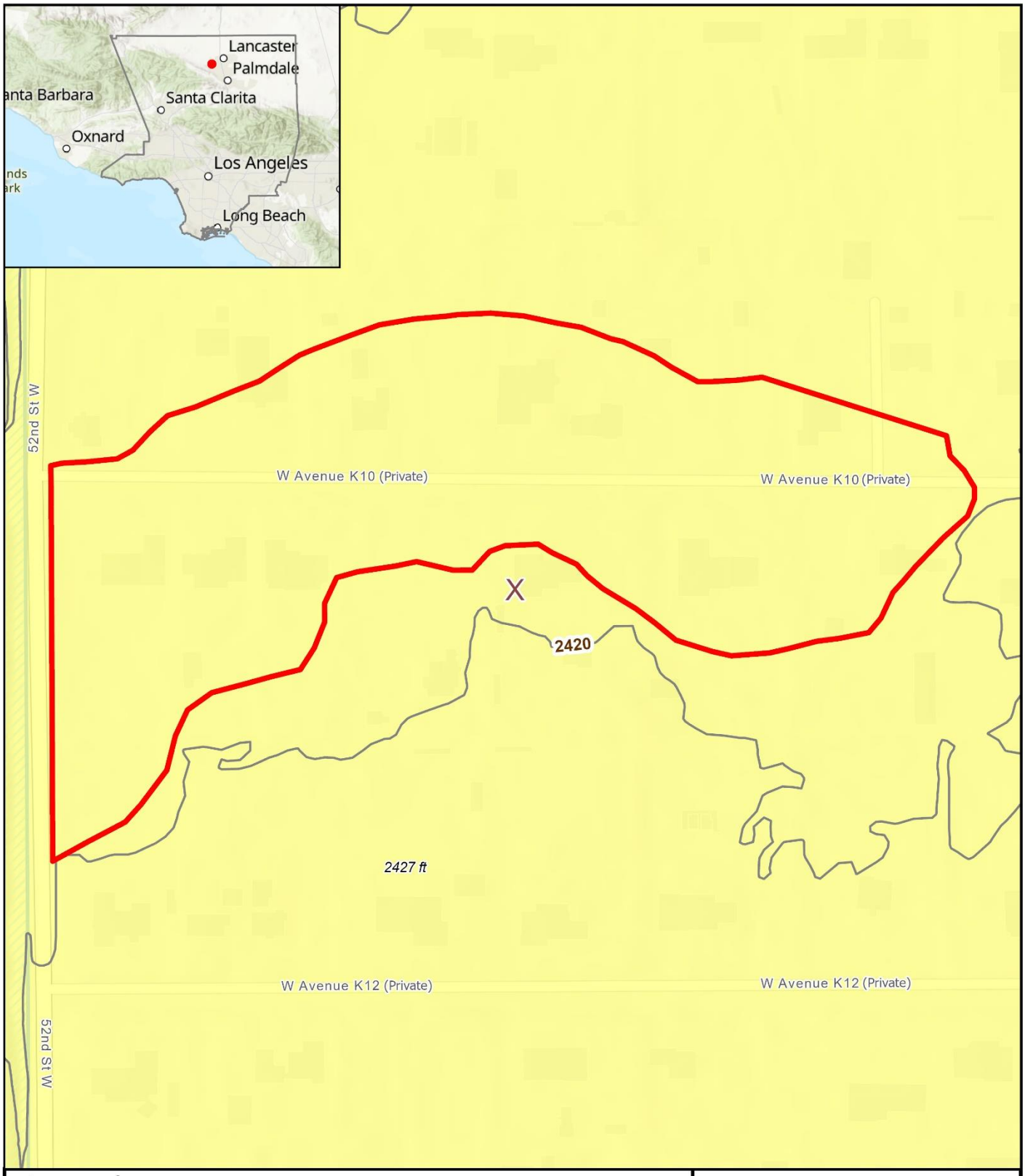
the flood risks, but owners are not obligated to implement them. Regarding education on flood risk and flood risk mitigation, it is a shared responsibility. Public entities make information on flood risk and flood risk mitigation available to the public. Property owners undertake the task of seeking and taking in flood risk and flood risk mitigation information and consulting the appropriate design professionals to implement flood risk and flood risk mitigation measures.

Table 22-2: All Properties in Quartz Hill B Repetitive Loss Area

Property ID	Number of Insurable Buildings	Building Description		Probable Mitigation Measures
		Foundation	Condition	
QH-B1	2	Crawlspace	D5C	Improve private ditch [a] Construct an area-wide storm drain and flood retention system [b] Public education [a,c]
QH-B2	1	Crawlspace	D65C	Construct an area-wide storm drain and flood retention system [b] Public education [a,c]
QH-B3	1	Crawlspace	D55B	Construct an area-wide storm drain and flood retention system [b] Public education [a,c]
QH-B4	4	Crawlspace	D6B	Construct an area-wide storm drain and flood retention system [b] Public education [a,c]
QH-B5	1	Crawlspace	D75D	Construct an area-wide storm drain and flood retention system [b] Public education [a,c]
QH-B6	3	Crawlspace	D65D	Construct an area-wide storm drain and flood retention system [b] Public education [a,c]
QH-B7	5	Crawlspace	D55C	Construct an area-wide storm drain and flood retention system [b] Public education [a,c]
QH-B8	2	Crawlspace	D8D	Improve private ditch [a] Construct an area-wide storm drain and flood retention system [b] Public education [a,c]
QH-B9	3	Crawlspace	D45C	Construct an area-wide storm drain and flood retention system [b] Public education [a,c]
QH-B10	2	Crawlspace	D75A	Construct an area-wide storm drain and flood retention system [b] Public education [a,c]
QH-B11	1	Slab	D65D	Construct an area-wide storm drain and flood retention system [b] Public education [a,c]

Property ID	Number of Insurable Buildings	Building Description		Probable Mitigation Measures
		Foundation	Condition	
QH-B12	1	Crawlspace	D55C	Construct an area-wide storm drain and flood retention system [b] Public education [a,c]
Total	**26**			

a. Property owner action
b. Public entity action, but would require formation of a special district or incorporation of the area into the Los Angeles County Flood Control District
c. Public entity action



Legend

- FEMA 500 yr Flood Zone (Zone X)
- 10ft Contour lines
- Repetitive Loss Areas (RLAs)

NORTH

100 50 0 100

Scale in Feet

Repetitive Loss Area
Quartz Hill B
Figure 22-1

BURNS McDONNELL

Source: Estri World Topographic Map, FEMA NFHL, USGS NHD, LA County GIS Database

Issued: 7/11/2024

23 Quartz Hill C Repetitive Loss Area

23.1 Problem Statement

Figure 23-1 shows the Quartz Hill C Repetitive Loss Area. This area is located in the Quartz Hill region of Los Angeles County. Quartz Hill, a 390-square mile, high desert community, is located in the westernmost part of the Mojave Desert north of the San Gabriel Mountains and west of Lancaster and Palmdale.

None of the properties in this area are located within a FEMA-identified special flood hazard area. However, the properties are located in a FEMA 500-year Zone X flood area. The repetitive loss area is within an alluvial fan in Antelope Valley Drainage Corridor No. 7 (identified in the *Antelope Valley Comprehensive Plan of Flood Control and Water Conservation*; Los Angeles County, 1991) which contributes flows to the property via surrounding streets. The FEMA-designated repetitive loss property is located at the low point of the street where flows can concentrate and enter the property. The other properties identified within this area have a topographic relationship with the identified repetitive loss property.

23.2 Identified Repetitive Loss Property

Table 23-1 lists the FEMA-designated repetitive loss property within this repetitive loss area. The dates of previous flood claims and average claim paid were provided by FEMA in the 2023 repetitive loss property list. Field and desktop assessments were conducted for each FEMA repetitive loss property to determine the cause of flooding and describe any mitigation measures implemented.

Table 23-1: Repetitive Loss Properties in Quartz Hill C Repetitive Loss Area

FEMA RL #	Flood Dates of Previous Claims	Average Claim Paid	Mitigated?
131222	2/04, 10/04, 12/04, 1/05, 2/05	$6,186	No
***Identified Flood Cause*:** The subject property is located within Flood Hazard Zone X-shaded (yellow) and is located in Antelope Drainage Corridor 7. The corridor flows may be conveyed to this property through streets and low-lying areas and trapped at the property (which is lower than the streets). The first floor is also lower than the streets and has been damaged frequently by historical floods. The owner has constructed berms at the entry gate and prepared a pump pit. Without a comprehensive and reliable berm and on-site pump system, this property may continue to experience flood damage and submit future claims. In addition, the interior household flows are being discharged to the side yard but should be disposed via a sanitary sewer or County-approved dry well.			

23.3 Properties Included in Repetitive Loss Area

Twelve properties with 26 insurable buildings have been identified in this repetitive loss area. The properties in this repetitive loss area were also listed in the 2020 RLAA. The extent of this repetitive loss area was developed through the methodology presented for the 2020 RLAA (See Section 2 of this RLAA document). In the 2023 FEMA repetitive loss list provided to the County, no new repetitive loss properties were identified, and no existing properties were removed in this area. Consequently, the repetitive loss area remains unchanged. Table 23-2 provides general information for each property, along with mitigation measures that could be employed to address repetitive flood losses. For identified mitigation

measures that are located on private properties, the decision on whether to implement the identified mitigation measures resides with the private property owner. These measures are recommended due to the flood risks, but owners are not obligated to implement them. Regarding education on flood risk and flood risk mitigation, it is a shared responsibility. Public entities make information on flood risk and flood risk mitigation available to the public. Property owners undertake the task of seeking and taking in flood risk and flood risk mitigation information and consulting the appropriate design professionals to implement flood risk and flood risk mitigation measures.

Table 23-2: All Properties in Quartz Hill C Repetitive Loss Area

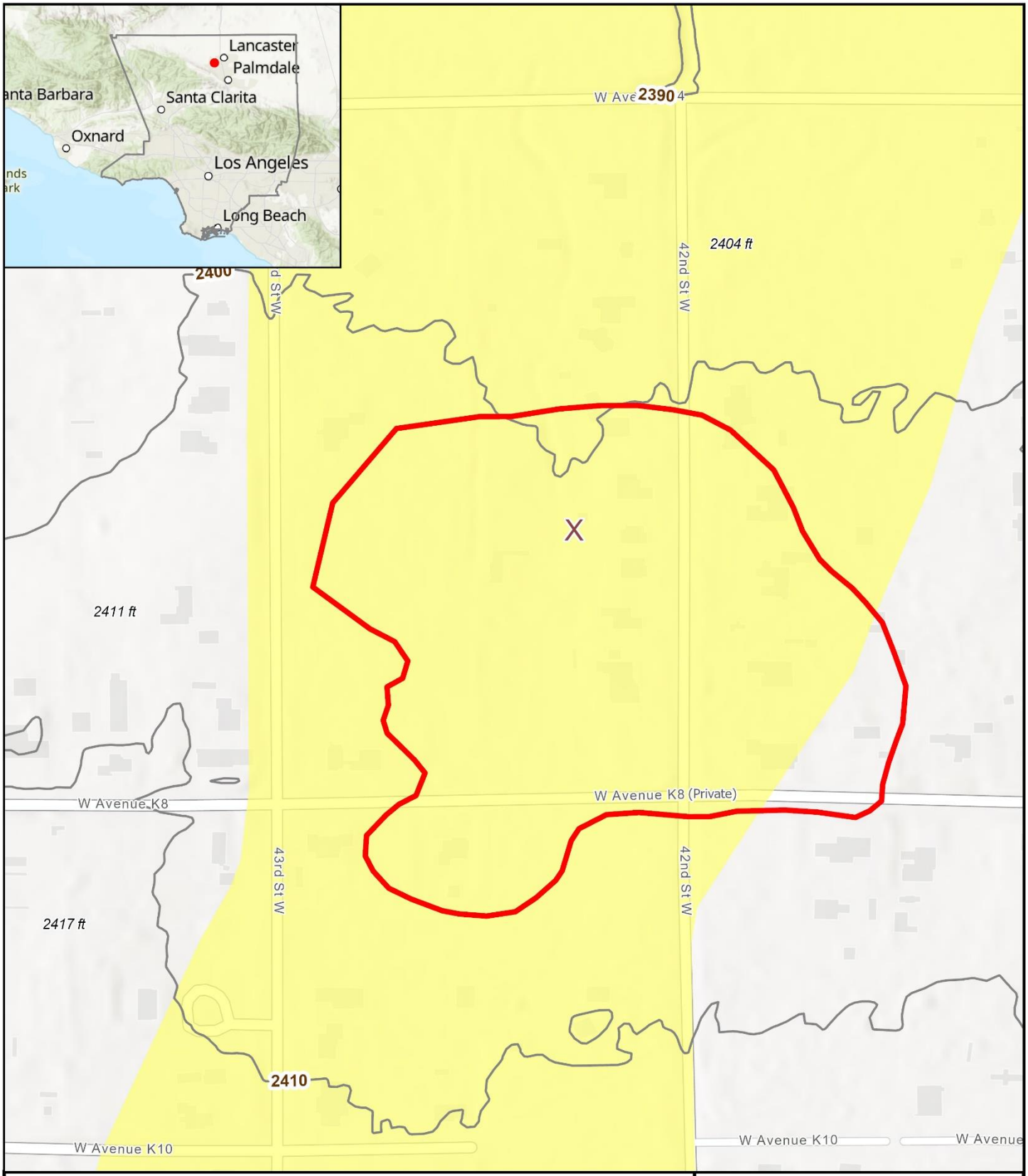
Property ID	Number of Insurable Buildings	Building Description		Probable Mitigation Measures
		Foundation	Condition	
QH-C1	2	Crawlspace	D35B	Stabilize the entry with rock or concrete blocks under the dirt. [a] Complete and raise the 1ft high side wall Install a permanent automatic control pump so that it activates if water reaches a predetermined level of 1 or 2 inches. [a] Install a dry well with dimensions of 2’ or 3’ diameter, 10’ or 15, depth to receive discharge. Connect the washer and bath flow to the dry well. [a] Construct an area-wide storm drain and flood retention system [b] Elevate the house if problem continues [a]
QH-C2	2	Crawlspace	D5A	Construct an area-wide storm drain and flood retention system Public education [a,c]
QH-C3	3	Crawlspace	D6D	Construct an area-wide storm drain and flood retention system [b] Public education [a,c]
QH-C4	3	Crawlspace	D7B	Construct an area-wide storm drain and flood retention system [b] Public education [a,c]
QH-C5	2	Crawlspace	D4B	Construct an area-wide storm drain and flood retention system [b] Public education [a,c]
QH-C6	3	Crawlspace	D65D	Construct an area-wide storm drain and flood retention system [b] Public education [a,c]
QH-C7	3	Crawlspace	D6C	Construct an area-wide storm drain and flood retention system [b] Public education [a,c]

Property ID	Number of Insurable Buildings	Building Description		Probable Mitigation Measures
		Foundation	Condition	
QH-C8	2	Crawlspace	D75D	Construct an area-wide storm drain and flood retention system [b] Public education [a,c]
QH-C9	1	Crawlspace	D5B	Construct an area-wide storm drain and flood retention system [b] Public education [a,c]
QH-C10	2	Crawlspace	C5C	Construct an area-wide storm drain and flood retention system [b] Public education [a,c]
QH-C11	1	Crawlspace	D65D	Construct an area-wide storm drain and flood retention system [b] Public education [a,c]
QH-C12	2	Crawlspace	D8A	Construct an area-wide storm drain and flood retention system [b] Public education [a,c]
Total	**26**			

a. Property owner action

b. Public entity action, but would require formation of a special district or incorporation of the area into the Los Angeles County Flood Control District

c. Public entity action



Legend

- FEMA 500 yr Flood Zone (Zone X)
- 10ft Contour lines
- Repetitive Loss Areas (RLAs)

NORTH

200 100 0 200

Scale in Feet

Repetitive Loss Area
Quartz Hill C
Figure 23-1

BURNS McDONNELL

Source: Estri World Topographic Map, FEMA NFHL, USGS NHD, LA County GIS Database

Issued: 7/11/2024

24 Roosevelt Repetitive Loss Area

24.1 Problem Statement

Figure 24-1 shows the Roosevelt Repetitive Loss Area. Flood zones are mapped on FEMA FIRMs. This area is within the floodplain of Little Red Rock Wash in Lancaster and located in the 100-year FEMA approximate Flood Hazard Zone A. Lancaster is approximately 70 miles north of Downtown Los Angeles in Southern California's Antelope Valley. It is separated from the Los Angeles Basin by the San Gabriel Mountain Range to the south and from Bakersfield and the San Joaquin Valley by the Tehachapi Mountain Range to the north. Lancaster's elevation is 2,500 feet above sea level on a high, flat valley surrounded by mountain ranges. The subject property lies below adjacent grade and receives runoff from the higher adjacent grade during rain events.

24.2 Identified Repetitive Loss Property

Table 24-1 lists the FEMA-designated repetitive loss property within this repetitive loss area. The dates of previous flood claims and average claim paid were provided by FEMA in the 2023 repetitive loss property list. Field and desktop assessments were conducted for the FEMA repetitive loss property to determine the cause of flooding and describe any mitigation measures implemented.

Table 24-1: Repetitive Loss Properties in Roosevelt Repetitive Loss Area

FEMA RL #	Flood Dates of Previous Claims	Average Claim Paid	Mitigated?
137354	1/05, 2/05	$17,148	No
Identified Flood Cause: The property is located in FEMA Flood Hazard Zone A and in the floodplain of Little Red Rock Wash. The existing lot is lower than the adjacent grade and may receive runoff from adjacent properties during rain events.			

24.3 Properties Included in Repetitive Loss Area

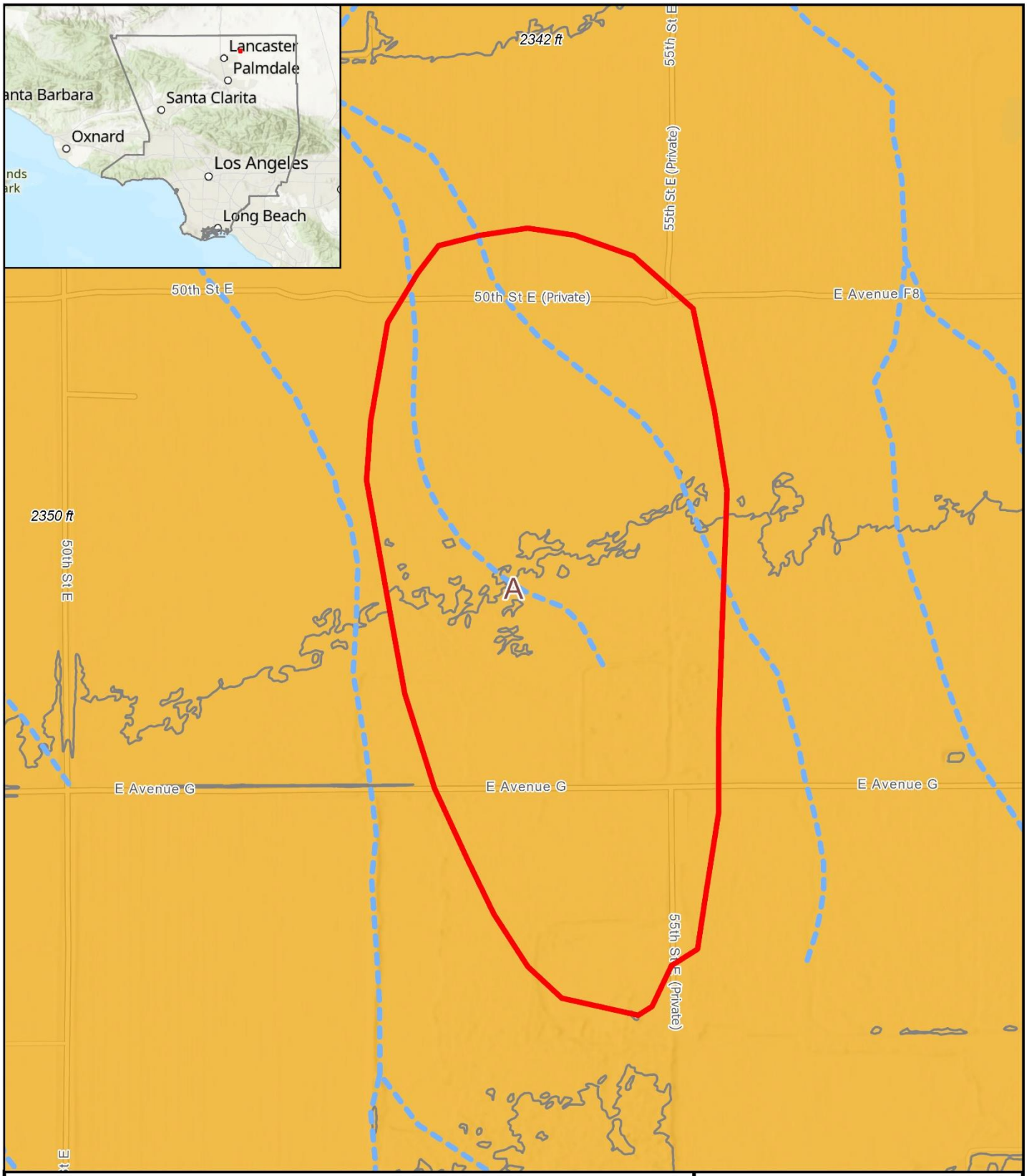
Three properties with seven insurable buildings have been identified in this repetitive loss area. The properties in this repetitive loss area were also listed in the 2020 RLAA. The extent of this repetitive loss area was developed through the methodology presented for the 2020 RLAA (See Section 2 of this RLAA document). In the 2023 FEMA repetitive loss list provided to the County, no new repetitive loss properties were identified, and no existing properties were removed in this area. Consequently, the repetitive loss area remains unchanged. Table 24-2 provides general information for each property, along with mitigation measures that could be employed to address repetitive flood losses. For identified mitigation measures that are located on private properties, the decision on whether to implement the identified mitigation measures resides with the private property owners. These measures are recommended due to the flood risks, but owners are not obligated to implement them. Regarding education on flood risk and flood risk mitigation, it is a shared responsibility. Public entities make information on flood risk and flood risk mitigation available to the public. Property owners undertake the task of seeking and taking in flood risk and flood risk mitigation information and consulting the appropriate design professionals to implement flood risk and flood risk mitigation measures.

Table 24-2: All Properties in Roosevelt Repetitive Loss Area

Property ID	Number of Insurable Buildings	Building Description		Probable Mitigation Measures
		Foundation	Condition	
ROO-1	4	Slab	D65C	Establish drainage flow paths around structure [a] Elevation [a] Drainage system maintenance [a] Public education [a,b]
ROO-2	2	Crawlspace	DX	Establish drainage flow paths around structure [a] Elevation [a] Drainage system maintenance [a] Public education [a,b]
ROO-3	1	Crawlspace	D6A	Establish drainage flow paths around structure [a] Elevation, drainage control and foundation elevation design during construction [a] Drainage system maintenance [a] Public education [a,b]
Total	**7**			

(a). Property owner action

(b). Public entity action



Legend

- FEMA 100 yr Flood Zone (Zone A)
- Ephemeral Stream
- 10ft Contour lines
- Repetitive Loss Areas (RLAs)

NORTH

500 250 0 500

Scale in Feet

Repetitive Loss Area
Roosevelt
Figure 24-1

BURNS McDONNELL

Source: Estri World Topographic Map, FEMA NFHL, USGS NHD, LA County GIS Database

Issued: 7/11/2024

25 Rowland Heights Repetitive Loss Area

25.1 Problem Statement

The Rowland Heights Repetitive Loss Area is in Rowland Heights. This is a single-property repetitive loss area. No map of this repetitive loss area is provided herein due to privacy concerns. The area is about 9 square miles of unincorporated Los Angeles County near where Los Angeles County, Orange County, and San Bernardino County meet. The elevation is 540 feet above sea level. It is loosely bounded by the Puente Hills to the south and San Jose Hills to the north-northeast. The area is approximately 10 miles north of Anaheim and 34 miles east-southeast of Los Angeles.

Flood studies of the Rowland Heights area show that this repetitive-loss area is located within FEMA Flood Hazard Zone X, an area of minimal flooding. The repetitive-loss area is a single dwelling within a hillside development generally situated high above the floodplain. The possible flooding sources are storm flows and irrigation runoff from the adjoining neighboring property to the east, which is much higher than the subject property. The property may receive significant excess runoff from the elevated neighboring property, especially during large storms. There is also a possibility of slope erosion due to the high and steep nature of the slope. The flooding problem seems to have been partially fixed with a small toe wall. However, a more comprehensive wall and drain system will be required to prevent future claims. This repetitive flooding problem is considered to be localized and isolated to the identified repetitive loss property. The fact that no subsequent claims have been filed in the last ten years suggests that the problem has been rectified.

25.2 Identified Repetitive Loss Property

Table 25-1 lists the FEMA-designated repetitive loss property within this repetitive loss area. The dates of previous flood claims and the average claim paid were provided by FEMA in the 2023 repetitive loss property list. Field and desktop assessments were conducted for the FEMA repetitive loss property to determine the cause of flooding and describe any mitigation measures implemented.

Table 25-1: Repetitive Loss Properties in Rowland Heights Repetitive Loss Area

FEMA RL #	Flood Dates of Previous Claims	Average Claim Paid	Mitigated?
138651	3/01, 2/05	$9,734	No
Identified Flood Cause: The property is significantly lower in elevation than the neighboring property. Without insurance records to confirm, it seems that flows from the neighboring property to the side yard can be sufficient to cause damage. Additionally, the slope may be eroded and contribute to debris. Street flows may tend to collect in front of the property before moving down the steep street. The finished floor elevation, however, seems to be high enough to prevent damage by street flow.			

25.3 Properties Included in Repetitive Loss Area

One property with one insurable building has been identified in this repetitive loss area. The property in this repetitive loss area was also listed in the 2020 RLAA. The extent of this repetitive loss area was developed through the methodology presented for the 2020 RLAA (See Section 2 of this RLAA document). In the 2023 FEMA repetitive loss list provided to the County, no new repetitive loss properties were

identified, and no existing properties were removed in this area. Consequently, the repetitive loss area remains unchanged.

Mitigation measures have been implemented by the property owner and a site survey is planned to verify reported and any subsequent measures. Additional measures are limited due to needed consent and agreements with the adjacent property owner.

Table 25-2 provides general information for the property, along with mitigation measures that could be employed to address repetitive flood losses. For identified mitigation measures that are located on private properties, the decision on whether to implement the identified mitigation measures resides with the private property owners. These measures are recommended due to the flood risks, but owners are not obligated to implement them. Regarding education on flood risk and flood risk mitigation, it is a shared responsibility. Public entities make information on flood risk and flood risk mitigation available to the public. Property owners undertake the task of seeking and taking in flood risk and flood risk mitigation information and consulting the appropriate design professionals to implement flood risk and flood risk mitigation measures.

Table 25-2: All Properties in Rowland Heights Repetitive Loss Area

Property ID	Number of Insurable Buildings	Building Description		Probable Mitigation Measures
		Foundation	Condition	
ROW-1	1	Slab	D75B	Planned field review of site to verify mitigation measures and recent measures [a] Extend existing side wall and provide ditch to convey flows from the slope [b] Construct ditches, grate inlets, French drains and terrace drains to divert water away from the structure (Construction will require neighbor's consent) [b] Public education [a,b]
Total	**1**			

a. Public entity action

b. Property owner action

26 Topanga Canyon A Repetitive Loss Area

26.1 Problem Statement

The Topanga Canyon A repetitive loss area is near Garapito Creek, approximately 550 feet upstream of its confluence with Topanga Canyon. Topanga Canyon is located in the Santa Monica Mountains in southwest Los Angeles County. This is a single-property repetitive loss area near Garapito Creek, upstream of its confluence with Topanga Canyon. No map of this repetitive loss area is provided herein due to privacy concerns. The studies of Garapito Creek show this repetitive-loss area to be near two FEMA 100-year flood areas, approximately Zone A and Zone AE. The property is on the bank of Garapito Creek and is being accessed by a private bridge from the street. The ground elevation of the house appears to be lower than the street, and the house's front door and front wall were built on the slope of the creek bank. The problem is associated with limited creek capacity and backwater effect caused by the small bridge. The property, however, is subject to much greater risk due to high flood discharges estimated for the FEMA 1 percent annual chance (100-year) flood and the Los Angeles County Capital Flood (flooding produced by a 50-year rainfall frequency storm falling on a saturated watershed that has been burned and has had four years of recovery). The elevation for the lowest point of the house is about 920 feet, while the FEMA FIRM shows that the FEMA 100-year water surface elevation of Garapito Creek at the location is approximately 926 feet. The creek is moderately vegetated, which may also contribute to the high water.

26.2 Identified Repetitive Loss Property

Table 26-1 lists the FEMA-designated repetitive loss property within this repetitive loss area.

Table 26-1: Repetitive Loss Properties in Topanga Canyon A Repetitive Loss Area

FEMA RL #	Flood Dates of Previous Claims	Average Claim Paid	Mitigated?
28394	3/78, 2/80, 3/83, 2/92, 1/93	$9,247	No
***Identified Flood Cause*:** The subject property is on the channel bank and partially in Garapito Creek. The problem is associated with limited creek capacity and a backwater effect caused by the small bridge.			

26.3 Properties Included in Repetitive Loss Area

There is one property included in this repetitive loss area. It has one insurable building. The property in this repetitive loss area was also listed in the 2020 RLAA. The extent of this repetitive loss area was developed through the methodology presented for the 2020 RLAA (See Section 2 of this RLAA document). In the 2023 FEMA repetitive loss list provided to the County, no new repetitive loss properties were identified, and no existing properties were removed in this area. Consequently, the repetitive loss area remains unchanged. Table 26-2 provides general information for the property, along with mitigation measures that could be employed to address repetitive flood losses. For identified mitigation measures that are located on private properties, the decision on whether to implement the identified mitigation measures resides with the private property owners. These measures are recommended due to the flood risks, but owners are not obligated to implement them.

Table 26-2: All Properties in Topanga Canyon A Repetitive Loss Area

Property ID	Number of Insurable Buildings	Building Description		Probable Mitigation Measures
		Foundation	Condition	
TOP-A1	1	Slab	D45C	Waterproof the lower level of the house [a] Construct retaining walls around the Creekside of the house [a]
Total	**1**			

a. Property owner action.

27 Topanga Canyon B Repetitive Loss Area

27.1 Problem Statement

Figure 27-1 shows the Topanga Canyon B Repetitive Loss Area. This area is in the vicinity of Topanga Canyon, approximately 600 feet upstream of the Old Topanga Canyon confluence, within the Santa Monica Mountains in southwestern Los Angeles County. This repetitive loss area is subject to flooding from Topanga Canyon and is within the 100-year FEMA Flood Zone, which is commensurate with the AE flood risk identified in the FIRM. The elevation for the lowest point of the property is about 770 feet and is higher than the channel invert of Topanga Canyon (765 feet) by only 5 feet. Based on the FEMA FIRM, the water surface elevation of the area is 772 feet.

27.2 Identified Repetitive Loss Property

Table 27-1 lists the FEMA-designated repetitive loss property within this repetitive loss area. The dates of previous flood claims and average claim paid were provided by FEMA in the 2023 repetitive loss property list. Field and desktop assessments were conducted for each FEMA repetitive loss property to determine the cause of flooding and describe any mitigation measures implemented.

Table 27-1: Repetitive Loss Properties in Topanga Canyon B Repetitive Loss Area

FEMA RL #	Flood Dates of Previous Claims	Average Claim Paid	Mitigated?
12818	1/80, 2/80, 3/91, 2/92, 1/95	$7,872	No
Identified Flood Cause: Property in the channel and FEMA Flood Zone AE of Topanga Canyon. The elevation for the lowest point of the house is about 770 feet and is higher than the channel invert of Topanga Canyon (765 feet) by only 5 feet. Based on the FEMA FIRM, the water surface elevation of the area is 772 feet, which would cause flooding of the house.			

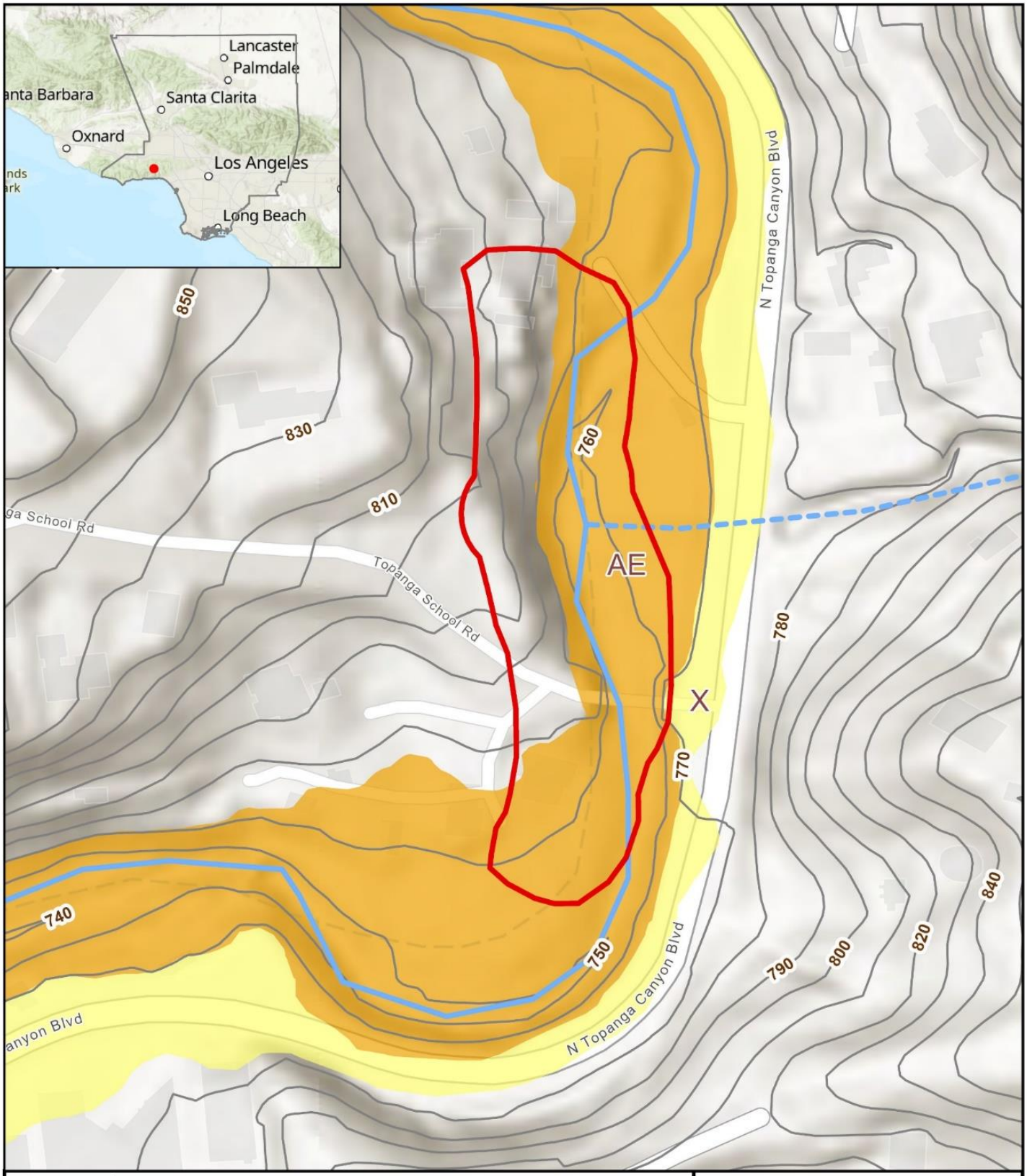
27.3 Properties Included in Repetitive Loss Area

Two properties with five insurable buildings have been identified in this repetitive loss area. The properties in this repetitive loss area were also listed in the 2020 RLAA. The extent of this repetitive loss area was developed through the methodology presented for the 2020 RLAA (See Section 2 of this RLAA document). In the 2023 FEMA repetitive loss list provided to the County, no new repetitive loss properties were identified, and no existing properties were removed in this area. Consequently, the repetitive loss area remains unchanged. Table 27-2 provides general information for each property, along with mitigation measures that could be employed to address repetitive flood losses. For identified mitigation measures that are located on private properties, the decision on whether to implement the identified mitigation measures resides with the private property owners. These measures are recommended due to the flood risks, but owners are not obligated to implement them. Regarding education on flood risk and flood risk mitigation, it is a shared responsibility. Public entities make information on flood risk and flood risk mitigation available to the public. Property owners undertake the task of seeking and taking in flood risk and flood risk mitigation information and consulting the appropriate design professionals to implement flood risk and flood risk mitigation measures.

Table 27-2: All Properties in Topanga Canyon B Repetitive Loss Area

Property ID	Number of Insurable Buildings	Building Description		Probable Mitigation Measures
		Foundation	Condition	
TOP-B1	1	Slab	D75B	Acquisition [a] Elevation [b] Convert flood-prone living space and replace with new story [b] Public education [b,c]
TOP-B2	4	Crawlspace	D45B	Acquisition [a] Elevation [b] Convert flood-prone living space and replace with new story [b]
Total	**5**			

a. Public entity action, but only with cooperation of property owner
b. Property owner action
c. Public entity action



Legend

- FEMA 100 yr Flood Zone (Zone AE)
- FEMA 500 yr Flood Zone (Zone X)
- Intermittent Stream
- Ephemeral Stream
- 10ft Contour lines
- Repetitive Loss Areas (RLAs)

NORTH

100 50 0 100

Scale in Feet

Repetitive Loss Area
Topanga Canyon B
Figure 27-1

BURNS McDONNELL

Source: Estri World Topographic Map, FEMA NFHL, USGS NHD, LA County GIS Database

Issued: 6/11/2024

28 Topanga Canyon C Repetitive Loss Area

28.1 Problem Statement

The Topanga Canyon C Repetitive Loss Area is in the vicinity of Calabasas in southwestern Los Angeles County. No map of this repetitive loss area is provided herein due to privacy concerns. This area is in a FEMA Zone D, which is defined as an area of possible but unknown flood risk. The identified repetitive-loss property is newer construction and is located on a knoll of an area with a lot of topographic relief. Flooding at this property appears to be associated with drainage from a surrounding hillside.

The repetitive flooding problem is considered to be isolated to the identified repetitive loss property. The fact that no claims have been filed in the last ten years suggests that the problem has been rectified.

28.2 Identified Repetitive Loss Property

Table 28-1 lists the FEMA-designated repetitive loss property within this repetitive loss area. The dates of previous flood claims and average claim paid were provided by FEMA in the 2023 repetitive loss property list. Field and desktop assessments were conducted for the FEMA repetitive loss property to determine the cause of flooding and describe any mitigation measures implemented.

Table 28-1: Repetitive Loss Properties in Topanga Canyon C Repetitive Loss Area

FEMA RL #	Flood Dates of Previous Claims	Average Claim Paid	Mitigated?
111971	2/98, 3/01	$15,698	No
Identified Flood Cause: Localized flooding associated with hillside drainage.			

28.3 Properties Included in Repetitive Loss Area

There is only one property included in this repetitive loss area. It has one insurable building. The property in this repetitive loss area is also listed in the 2020 RLAA. The extent of this repetitive loss area was developed through the methodology presented for the 2020 RLAA (See Section 2 of this RLAA document). In the 2023 FEMA repetitive loss list provided to the County, no new repetitive loss properties were identified, and no existing properties were removed in this area. Consequently, the repetitive loss area remains unchanged. Table 28-2 provides general information for the property, along with mitigation measures that could be employed to address repetitive flood losses. For identified mitigation measures that are located on private properties, the decision on whether to implement the identified mitigation measures resides with the private property owners. These measures are recommended due to the flood risks, but owners are not obligated to implement them. Regarding education on flood risk and flood risk mitigation, it is a shared responsibility. Public entities make information on flood risk and flood risk mitigation available to the public. Property owners undertake the task of seeking and taking in flood risk and flood risk mitigation information and consulting the appropriate design professionals to implement flood risk and flood risk mitigation measures.

Table 28-2: All Properties in Topanga Canyon C Repetitive Loss Area

Property ID	Number of Insurable Buildings	Building Description		Probable Mitigation Measures
		Foundation	Condition	
TOP-C1	1	Crawlspace	No Information	Establish drainage flow paths around structure [a] Drainage system maintenance [a] Floodwall [a] Public education [a,b]
Total	**1**			

a. Property owner action

b. Public entity action

29 Topanga Canyon D Repetitive Loss Area

29.1 Problem Statement

Figure 29-1 shows the Topanga Canyon D Repetitive Loss Area. Since this is a smaller area containing few properties, streets and building outlines are not shown on the map herein for privacy. Street names remain to provide spatial context. This area is in Topanga Canyon within the Santa Monica Mountains in southwestern Los Angeles County. The identified repetitive loss property for this area is not located in a FEMA-mapped Zone D (an area of possible but unknown flood risk) but not in a special flood hazard area, and the source of repetitive flood risk appears to be localized. The dates of loss correspond to storm events that occurred in early 2005. The property is located in a cul-de-sac. There is a gradient slope in this vicinity with properties above the identified repetitive-loss property as well as below it. The cause of flooding is most likely drainage flows from the uphill neighboring property. The other property within this area is at ground elevation similar to that of the FEMA-identified repetitive loss property and has its lowest floor with similar elevation as well.

29.2 Identified Repetitive Loss Property

Table 29-1 lists the FEMA-designated repetitive loss property within this repetitive loss area. The dates of previous flood claims and average claim paid were provided by FEMA in the 2023 repetitive loss property list. Field and desktop assessments were conducted for each FEMA repetitive loss property to determine the cause of flooding and describe any mitigation measures implemented.

Table 29-1: Repetitive Loss Properties in Topanga Canyon D Repetitive Loss Area

FEMA RL #	Flood Dates of Previous Claims	Average Claim Paid	Mitigated?
137970	1/05, 2/05	$10,822	No
Identified Flood Cause: Localized drainage issue associated with interior drainage from private property			

29.3 Properties Included in Repetitive Loss Area

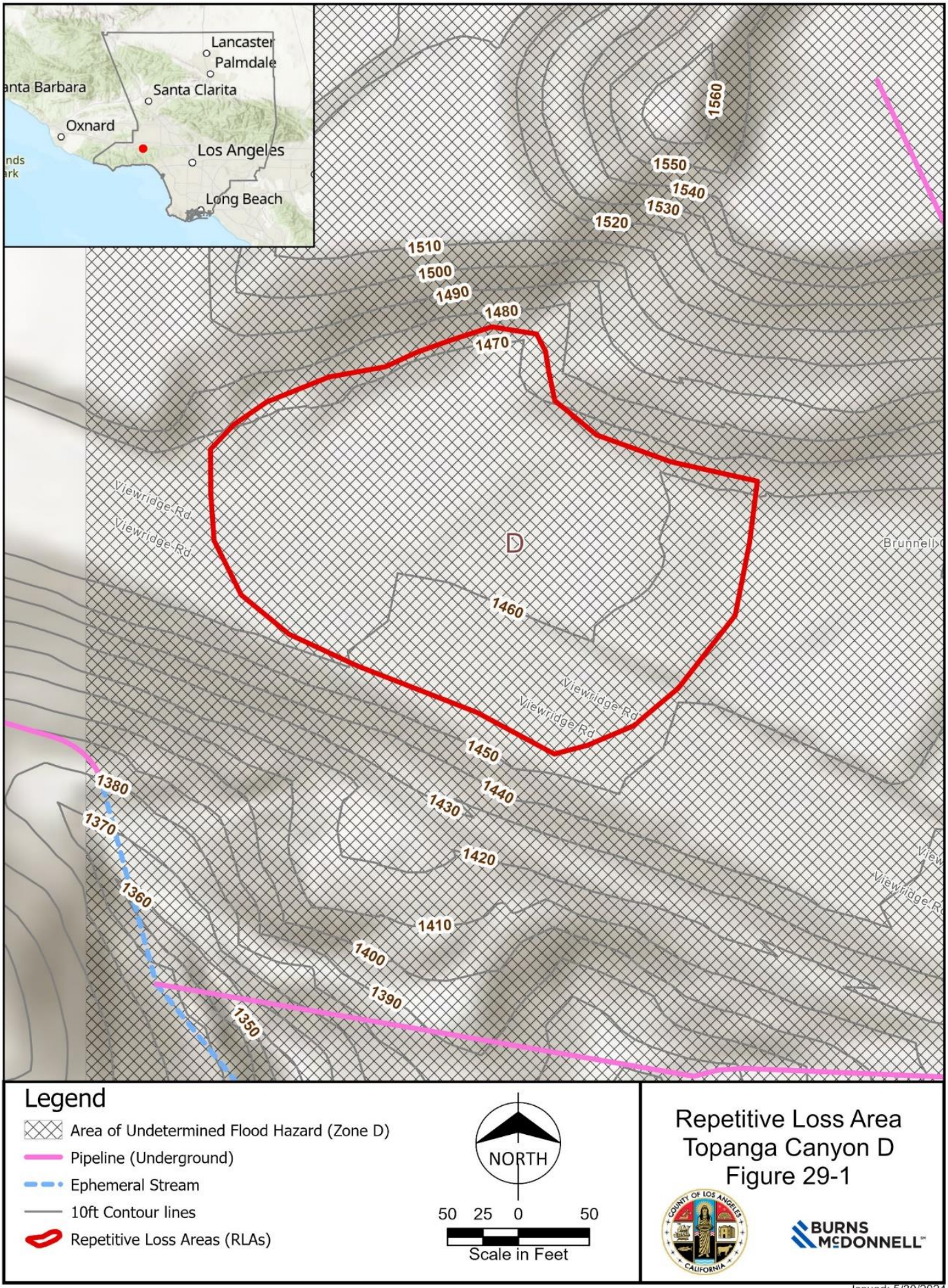
Two properties with two insurable buildings have been identified in this repetitive loss area. The property in this repetitive loss area is also listed in the 2020 RLAA. The extent of this repetitive loss area was developed through the methodology presented for the 2020 RLAA (See Section 2 of this RLAA document). In the 2023 FEMA repetitive loss list provided to the County, no new repetitive loss properties were identified, and no existing properties were removed in this area. Consequently, the repetitive loss area remains unchanged. Table 29-2 provides general information for each property, along with mitigation measures that could be employed to address repetitive flood losses. For identified mitigation measures that are located on private properties, the decision on whether to implement the identified mitigation measures resides with the private property owners. These measures are recommended due to the flood risks, but owners are not obligated to implement them. Regarding education on flood risk and flood risk mitigation, it is a shared responsibility. Public entities make information on flood risk and flood risk mitigation available to the public. Property owners undertake the task of seeking and taking in flood risk and flood risk mitigation information and consulting the appropriate design professionals to implement flood risk and flood risk mitigation measures.

Table 29-2: All Properties in Topanga Canyon D Repetitive Loss Area

Property ID	Number of Insurable Buildings	Building Description		Probable Mitigation Measures
		Foundation	Condition	
TOP-D1	1	Slab	D10B	Create/maintain flow paths to public storm drains-[a] Drainage system maintenance[a] Public education [a,b]
TOP-D2	1	Slab	D95B	Create/maintain flow paths to public storm drains [a] Drainage system maintenance[a] Public education [a,b]
AD-3	**2**			

a. Property owner action

b. Public entity action



Source: Estri World Topographic Map, FEMA NFHL, USGS NHD, LA County GIS Database

Issued: 5/30/2024

30 Topanga Canyon E Repetitive Loss Area

30.1 Problem Statement

Figure 30-1 shows the Topanga Canyon E Repetitive Loss Area. This area is in the Santa Monica Mountains, in the southwestern area of Los Angeles County and the southeastern area of Ventura County. The identified repetitive loss property for this area is in the vicinity of Calabasas. The property backs up to steep terrain of the Santa Monica Mountains. The two events in 1995 and 2005 were 5-year and 13-year flood events, respectively, based on historical data. A 5-year flood event is a projected flood event that has a 20 percent chance of occurring in a given year; a 13-year flood event is a projected flood with a 7.7 percent chance of occurring in a given year. The area is near a FEMA Flood Hazard Zone AE but primarily in FEMA Zone D (defined as an area of possible but unknown flood risk). However, based on topography, the flooding problem appears to be associated with runoff from the surrounding hillside. This problem could be exacerbated by wildfire events within the region.

30.2 Identified Repetitive Loss Property

Table 30-1 lists the FEMA-designated repetitive loss property within this repetitive loss area. The dates of previous flood claims and the average claim paid were provided by FEMA in the 2023 repetitive loss property list. Field and desktop assessments were conducted for the FEMA repetitive loss property to determine the cause of flooding and describe any mitigation measures implemented.

Table 30-1: Repetitive Loss Properties in Topanga Canyon E Repetitive Loss Area

FEMA RL #	Flood Dates of Previous Claims	Average Claim Paid	Mitigated?
138321	3/95, 1/05	$28,727	No
Identified Flood Cause: Hillside drainage.			

30.3 Properties Included in Repetitive Loss Area

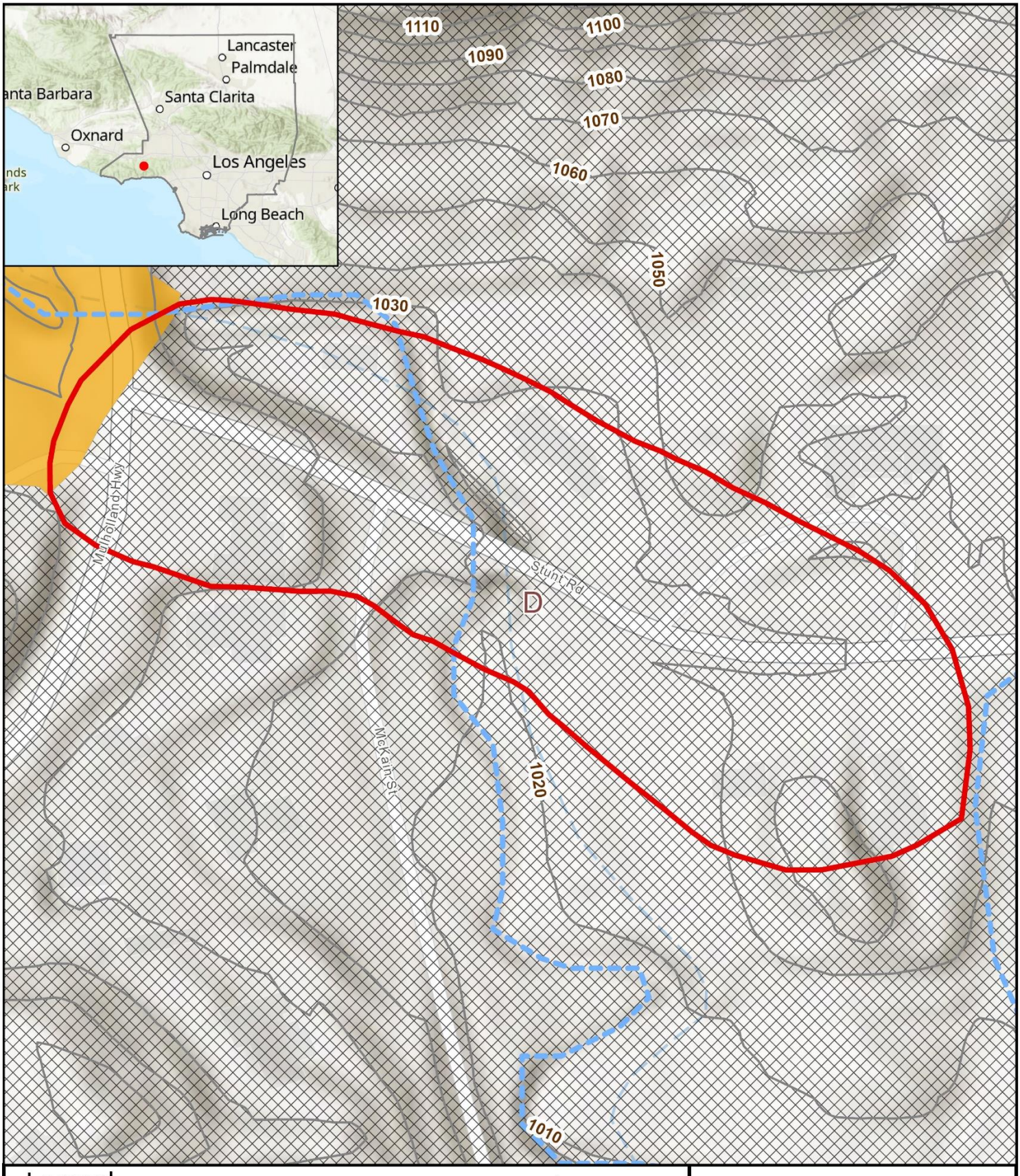
Four properties with five insurable buildings have been identified in this repetitive loss area. The properties in this repetitive loss area were also listed in the 2020 RLAA. The extent of this repetitive loss area was developed through the methodology presented for the 2020 RLAA (See Section 2 of this RLAA document). In the 2023 FEMA repetitive loss list provided to the County, no new RLPs were identified, and no existing properties were removed in this area. Consequently, the repetitive loss area remains unchanged. Table 30-2 provides general information for the properties, along with mitigation measures that could be employed to address repetitive flood losses. For identified mitigation measures that are located on private properties, the decision on whether to implement the identified mitigation measures resides with the private property owners. These measures are recommended due to the flood risks, but owners are not obligated to implement them. Regarding education on flood risk and flood risk mitigation, it is a shared responsibility. Public entities make information on flood risk and flood risk mitigation available to the public. Property owners undertake the task of seeking and taking in flood risk and flood risk mitigation information and consulting the appropriate design professionals to implement flood risk and flood risk mitigation measures.

Table 30-2: All Properties in Topanga Canyon E Repetitive Loss Area

Property ID	Number of Insurable Buildings	Building Description		Probable Mitigation Measures
		Foundation	Condition	
TOP-E1	2	Crawlspace	D75D	Establish/maintain flow paths around the structure to improved drainage system [a] Hillside retaining wall [a] Public education [a,b]
TOP-E2	1	Slab	D75C	Establish/maintain flow paths around structure to improved drainage system [a] Hillside retaining wall [a] Public education [a,b]
TOP-E3	1	Crawlspace	D2B	Establish/maintain flow paths around structure to improved drainage system [a] Hillside retaining wall [a] Public education [a,b]
TOP-E4	1	Slab	D75D	Establish/maintain flow paths around structure to improved drainage system [a] Hillside retaining wall [a] Public education [a,b]
Total	**5**			

a. Property owner action

b. Public entity action



Legend

- FEMA 100 yr Flood Zone (Zone AE)
- Area of Undetermined Flood Hazard (Zone D)
- Ephemeral Stream
- 10ft Contour lines
- Repetitive Loss Areas (RLAs)

NORTH

100 50 0 100

Scale in Feet

Repetitive Loss Area
Topanga Canyon E
Figure 30-1

BURNS McDONNELL

Source: Esri World Topographic Map, FEMA NFHL, USGS NHD, LA County GIS Database

Issued: 5/30/2024

31 Topanga Canyon F Repetitive Loss Area

31.1 Problem Statement

Figure 31-1 shows the Topanga Canyon F Repetitive Loss Area between Malibu and Topanga in southwestern Los Angeles County. The repetitive loss area is not located near a water body. It is in a FEMA Zone D (defined as an area of possible but unknown flood risk). This repetitive loss area includes the FEMA-designated repetitive loss property and nearby properties at higher elevations that may be subject to the same drainage problem as water flows down the hillside. This area was created by using topographic contours and the water drainage flow paths that could have led to flooding of the property. The identified repetitive loss property is located on a hillside in an area characterized by canyons and mountain slopes. A field visit concluded that the flooding could be caused due to hillside drainage issues for this single property. Therefore, the flooding at this property was determined to be an isolated incident.

Based on topography, the flooding problem appears to be associated with runoff from the surrounding hillside. This problem could have been exacerbated by wildfire events within the region.

31.2 Identified Repetitive Loss Property

Table 33-1 lists the FEMA-designated repetitive loss property within this repetitive loss area. The dates of previous flood claims and the average claim paid were provided by FEMA in the 2023 repetitive loss property list. Field and desktop assessments were conducted for the FEMA repetitive loss property to determine the cause of flooding and describe any mitigation measures implemented.

Table 31-1: Repetitive Loss Properties in Topanga Canyon F Repetitive Loss Area

FEMA RL #	Flood Dates of Previous Claims	Average Claim Paid	Mitigated?
256028	12/04, 12/16, 12/21	$16,150	No
Identified Flood Cause: Hillside drainage.			

31.3 Properties Included in Repetitive Loss Area

Seven properties with seven insurable buildings have been identified in this repetitive loss area. Table 33-2 provides general information for the property, along with mitigation measures that could be employed to address repetitive flood losses. For identified mitigation measures that are located on private properties, the decision on whether to implement the identified mitigation measures resides with the private property owners. These measures are recommended due to the flood risks, but owners are not obligated to implement them. Regarding education on flood risk and flood risk mitigation, it is a shared responsibility. Public entities make information on flood risk and flood risk mitigation available to the public. Property owners undertake the task of seeking and taking in flood risk and flood risk mitigation information and consulting the appropriate design professionals to implement flood risk and flood risk mitigation measures.

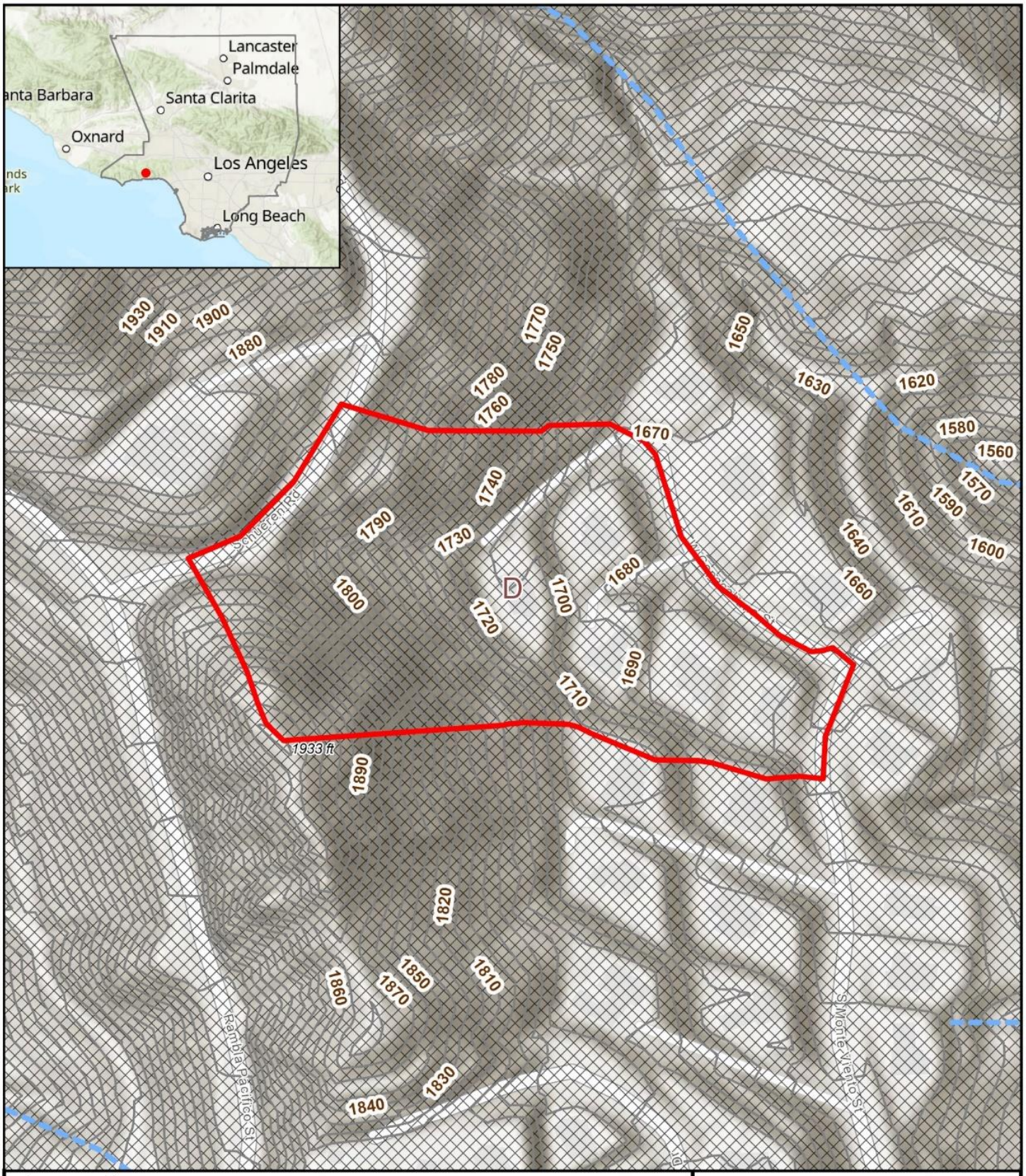
Table 31-2: All Properties in Topanga Canyon F Repetitive Loss Area

Property ID	Number of Insurable Buildings	Building Description		Probable Mitigation Measures
		Foundation	Condition	
TOP-F1	1	Concrete Slab	D8C	Create/maintain flow paths to public storm drains [a] Drainage system maintenance [b] Public education [a,c]
TOP-F2	1	Concrete slab	D8B	Create/maintain flow paths to public storm drains [a] Drainage system maintenance Public education [a,c]
TOP-F3	1	Concrete slab	D8B	Create/maintain flow paths to public storm drains [a] Drainage system maintenance [b] Public education [a,c]
TOP-F4	1	Concrete slab	D8B	Create/maintain flow paths to public storm drains [a] Drainage system maintenance [b] Public education [a,c]
TOP-F5	1	Concrete slab	D8C	Create/maintain flow paths to public storm drains [a] Drainage system maintenance [b] Public education [a,c]
TOP-F6	1	Concrete slab	D8B	Create/maintain flow paths to public storm drains [a] Drainage system maintenance [b] Public education [a,c]
TOP-F7	1	Concrete slab	D8A	Create/maintain flow paths to public storm drains [a] Drainage system maintenance [b] Public education [a,c]
Total	7			

a. Property owner action

b. Public entity action for culvert in the public street/road, property owner action for lot drainage

c. Public entity action



Legend

- Area of Undetermined Flood Hazard (Zone D)
- Ephemeral Stream
- 10ft Contour lines
- Repetitive Loss Areas (RLAs)

NORTH

100 50 0 100

Scale in Feet

Repetitive Loss Area
Topanga Canyon F
Figure 31-1

BURNS McDONNELL

Source: Esri World Topographic Map, FEMA NFHL, USGS NHD, LA County GIS Database

Issued: 6/12/2024

32 Triunfo Canyon A Repetitive Loss Area

32.1 Problem Statement

The Triunfo Canyon A Repetitive Loss Area is in the Santa Monica Mountains in the southwestern portion of Los Angeles County. There is a single-property repetitive loss area on Lobo Canyon Road. No map of this repetitive loss area is provided herein due to privacy concerns. This is an offsite drainage problem isolated to the single property. The property is located in the floodplain and FEMA 100-year flood Zone AE. In the past, small private bridges and culverts in the creek running behind the house clogged with debris, causing water to overflow and run along Lobo Canyon Road in front of the subject property.

32.2 Identified Repetitive Loss Property

Table 32-1 lists the FEMA-designated repetitive loss property within this repetitive loss area. The dates of previous flood claims and average claim paid were provided by FEMA in the 2023 repetitive loss property list. Field and desktop assessments were conducted for the FEMA repetitive loss property to determine the cause of flooding and describe any mitigation measures implemented.

Table 32-1: Repetitive Loss Properties in Triunfo Canyon A Repetitive Loss Area

FEMA RL #	Flood Dates of Previous Claims	Average Claim Paid	Mitigated?
95737	1/95, 2/98	$23,454	No
Identified Flood Cause: The property is in FEMA Flood Zone AE of Lobo Canyon (behind the house). Past clogging of small private bridges and culverts in the creek caused water to overflow onto the street and flood the property. No losses have been reported since 1998. The structure's windows are boarded up and it is assumed to be vacant.			

32.3 Properties Included in Repetitive Loss Area

There is one property included in this repetitive loss area. It has two insurable buildings. The property in this repetitive loss area was also listed in the 2020 RLAA. The extent of this repetitive loss area was developed through the methodology presented for the 2020 RLAA (See Section 2 of this RLAA document). In the 2023 FEMA repetitive loss list provided to the County, no new repetitive loss properties were identified, and no existing properties were removed in this area. Consequently, the repetitive loss area remains unchanged. Any renovations subject to substantial improvement or substantial damage shall be built to current flood resiliency requirements at the time of permit application. Table 32-2 provides general information for the property, along with mitigation measures that could be employed to address repetitive flood losses. For identified mitigation measures that are located on private properties, the decision on whether to implement the identified mitigation measures resides with the private property owners. These measures are recommended due to the flood risks, but owners are not obligated to implement them. Regarding education on flood risk and flood risk mitigation, it is a shared responsibility. Public entities make information on flood risk and flood risk mitigation available to the public. Property owners undertake the task of seeking and taking in flood risk and flood risk mitigation information and consulting the appropriate design professionals to implement flood risk and flood risk mitigation measures.

Table 32-2: All Properties in Triunfo Canyon A Repetitive Loss Area

Property ID	Number of Insurable Buildings	Building Description		Probable Mitigation Measures
		Foundation	Condition	
TRI-A1	2	Slab	No Information	Acquisition [a] Elevation [b] Berm [b] Floodwall [b] Public education [b,c]
Total	**2**			

a. Public entity action, but only with cooperation of property owner
b. Property owner action
c. Public entity action

33 Triunfo Canyon B Repetitive Loss Area

33.1 Problem Statement

The Triunfo Canyon B repetitive loss area is in the Santa Monica Mountains in the southwestern portion of Los Angeles County. This is a single-property repetitive loss area on Hidden Highland Road where the structures have been demolished. No map of this repetitive loss area is provided herein due to privacy concerns. The repetitive loss property is at the base of a hillside and receives runoff from the adjacent hills. It is located in a FEMA Zone X. Based on topography, the property is subject to runoff from the hillside behind the property.

33.2 Identified Repetitive Loss Property

Table 33-1 lists the FEMA-designated repetitive loss property within this repetitive loss area. The dates of previous flood claims and average claim paid were provided by FEMA in the 2023 repetitive loss property list. Field and desktop assessments were conducted for the FEMA repetitive loss property to determine the cause of flooding and describe any mitigation measures implemented.

Table 33-1: Repetitive Loss Properties in Triunfo Canyon B Repetitive Loss Area

FEMA RL #	Flood Dates of Previous Claims	Average Claim Paid	Mitigated?
137793	2/98, 1/05	$13,473	Demolished
Identified Flood Cause: Based on topography, the property is subject to runoff from the hillside behind the property. The structures on the property has been demolished.			

33.3 Properties Included in Repetitive Loss Area

There is one property included in this repetitive loss area. The property in this repetitive loss area was also listed in the 2020 RLAA. The extent of this repetitive loss area was developed through the methodology presented for the 2020 RLAA (See Section 2 of this RLAA document). In the 2023 FEMA repetitive loss list provided to the County, no new repetitive loss properties were identified, and no existing properties were removed in this area. Consequently, the repetitive loss area remains unchanged. The property used to have two insurable buildings. Previous reports indicated the former buildings on this property were demolished. Any new structures to be built will meet current flood resiliency requirements. A site survey is planned to verify the current condition of the new buildings on this property. Table 33-2 provides general information for the property, but no mitigation measures are identified for the new structures.

Table 33-2 All Properties in Triunfo Canyon B Repetitive Loss Area

Property ID	Number of Insurable Buildings	Building Description		Probable Mitigation Measures
		Foundation	Condition	
TRI-B1	0	Slab	No Information	Former buildings demolished. New construction will be subject to requirements for proper grading, drainage, erosion control, foundation elevation and floodproofing that meet or exceed NFIP standards.
Total	**0**			

34 Upper Topanga Canyon Repetitive Loss Area

34.1 Problem Statement

Figure 34-1 shows the Upper Topanga Canyon repetitive loss area. This repetitive-loss area is in the Topanga Canyon area in the Santa Monica Mountains in southwest Los Angeles County, 26 miles northwest of Downtown Los Angeles. Properties in the repetitive loss area are in or immediately adjacent to the FEMA 100-year flood Zone AE for Topanga Canyon. Topanga Canyon's contributing watershed is the second largest watershed in the Santa Monica Mountains. Sources of flooding in the Topanga Canyon area consist of storm runoff in Topanga Creek and associated storm drainage facilities. Historically, Topanga Canyon Road flooded because the upstream culvert at Topanga Canyon Road was blocked with debris. If the culverts are not properly cleaned, water can back up and can cause flooding. Based on historical information and FEMA's Flood Insurance Study, flooding occurs from 5-year or greater flood events. (A 5-year flood event is a projected flood event that has a 20 percent chance of occurring each year.) Because most of the repetitive loss properties are located within the low-lying floodplain areas immediately adjacent to the low-flow channels, it is expected that without mitigation, these properties will continue to be subject to future floods.

34.2 Identified Repetitive Loss Property

Table 34-1 lists the FEMA-designated repetitive loss properties within this repetitive loss area. The dates of previous flood claims and average claim paid were provided by FEMA in the 2023 repetitive loss property list. Field and desktop assessments were conducted for each FEMA repetitive loss property to determine the cause of flooding and describe any mitigation measures implemented.

Table 34-1: Repetitive Loss Properties in Upper Topanga Canyon Repetitive Loss Area

FEMA RL #	Flood Dates of Previous Claims	Average Claim Paid	Mitigated?
74656	1/95, 3/95	$6,972	No
Identified Flood Cause: Property on the bank next to Old Topanga Canyon. Crawlspace foundation with finished floor below 100-year water surface elevation. Damage caused by the 5-year return interval flood event in 1995. No reported damage since.			
74334	2/92, 1/95	$11,451	No
Identified Flood Cause: Property on the bank next to Old Topanga Canyon. Crawlspace foundation with finished floor below 100-year water surface elevation. Damage caused by the 5-year return interval flood event in 1995. No reported damage since.			
74553	1/95, 3/95	$10,276	No
Identified Flood Cause: In 1983, and 1993, the water from the natural creek tributary east of the house overtopped Old Topanga Canyon Road and poured into the house. The owner reported no more problems with the tributary flooding. The property is still subject to flooding from Old Topanga Canyon channel (Zone AE). The property is in Zone AE, which has significant risk from a 1 percent annual chance (100-year) flood. The tributary flow may continue to overtop the street if the culvert inlet becomes obstructed by debris from the upstream reach.			
76269	1/95, 3/95	$38,148	No
Identified Flood Cause: This property was not mapped by FEMA but was confirmed by field investigation to be subject to a high risk from Red Rock Canyon flooding. The property is on the opposite bank from Red Rock Road and is accessed by a pedestrian bridge crossing the creek. The creek is very shallow, without the capacity to carry the estimated 810 cubic feet per second of the 1 percent annual chance (100-year) flood discharge, and the bridge has a very low clearance, which can cause further flow blockage and higher backwater.			

34.3 Properties Included in Repetitive Loss Area

Fifty-six properties with 91 insurable buildings have been identified in this repetitive loss area. The properties in this repetitive loss area were also listed in the 2020 RLAA. The extent of this repetitive loss area was developed through the methodology presented for the 2020 RLAA (See Section 2 of this RLAA document). In the 2023 FEMA repetitive loss list provided to the County, no new repetitive loss properties were identified, and no existing properties were removed in this area. Consequently, the repetitive loss area remains unchanged. Table 34-2 provides general information for each property, along with mitigation measures that could be employed to address repetitive flood losses. For identified mitigation measures that are located on private properties, the decision on whether to implement the identified mitigation measures resides with the private property owners. These measures are recommended due to the flood risks, but owners are not obligated to implement them. Regarding education on flood risk and flood risk mitigation, it is a shared responsibility. Public entities make information on flood risk and flood risk mitigation available to the public. Property owners undertake the task of seeking and taking in flood risk and flood risk mitigation information and consulting the appropriate design professionals to implement flood risk and flood risk mitigation measures.

Table 34-2: All Properties in Upper Topanga Canyon Repetitive Loss Area

Property ID	Number of Insurable Buildings	Building Description		Probable Mitigation Measures
		Foundation	Condition	
UTC-1	1	Crawlspace	D65B	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]
UTC-2	1	Slab	D45A	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]
UTC-3	2	Slab	D3A	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]
UTC-4	1	Slab	D75A	Elevation [a] Acquisition [b] Convert flood prone living space and replace with new story [a]
UTC-5	2	Slab	No Info	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]
UTC-6	1	Slab	D75D	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]
UTC-7	1	Crawlspace	D65B	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]
UTC-8	2	Crawlspace	D7C	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]
UTC-9	2	Crawlspace	D65C	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]
UTC-10	2	Crawlspace	No Info	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]

Property ID	Number of Insurable Buildings	Building Description		Probable Mitigation Measures
		Foundation	Condition	
UTC-11	1	Crawlspace	D45A	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]
UTC-12	1	Crawlspace	D7B	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]
UTC-13	1	Slab	D6B	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]
UTC-14	2	Crawlspace	D55C	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]
UTC-15	1	Crawlspace	D45C	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]
UTC-16	3	Crawlspace	D45A	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]
UTC-17	1	Crawlspace	D6A	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]
UTC-18	2	Crawlspace	D7B	Elevation [a] Acquisition [b] Flood-proofing [a] Public education
UTC-19	2	Crawlspace	D6B	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]
UTC-20	1	Slab	D5B	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]

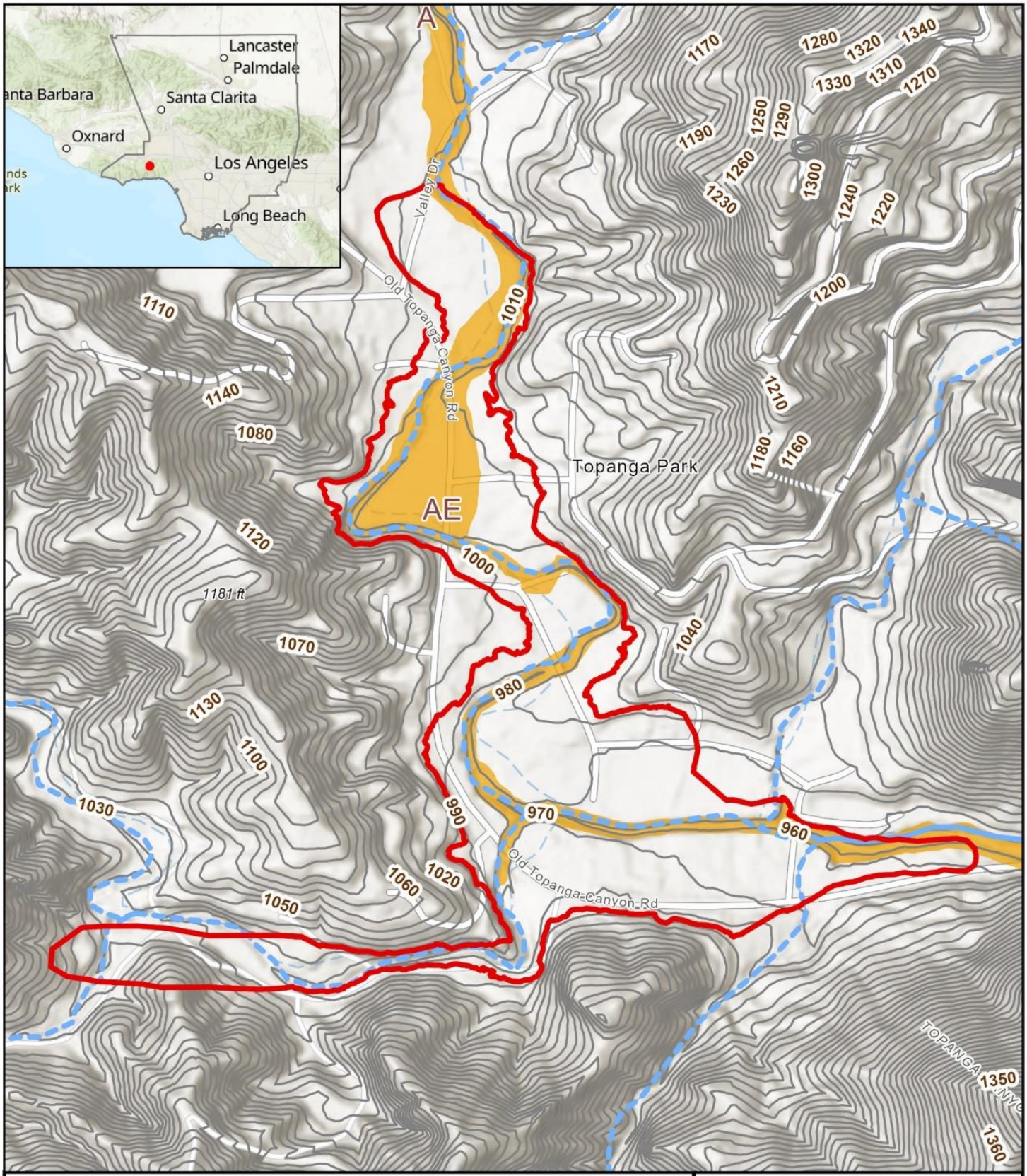
Property ID	Number of Insurable Buildings	Building Description		Probable Mitigation Measures
		Foundation	Condition	
UTC-21	1	Crawlspace	D75B	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]
UTC-22	1	Crawlspace	D65	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]
UTC-23	1	Crawlspace	D6C	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]
UTC-24	1	Crawlspace	D55C	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]
UTC-25	2	Crawlspace	CX	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]
UTC-26	1	Crawlspace	CX	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]
UTC-27	1	Crawlspace	D6A	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]
UTC-28	1	Slab	D4C	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]
UTC-29	2	Slab	D45B	Elevation [a] Acquisition [b] Covert flood-prone living space and replace with new story [a] Flood-proofing [a] Public education [a,c]
UTC-30	3	Crawlspace	DX	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]

Property ID	Number of Insurable Buildings	Building Description		Probable Mitigation Measures
		Foundation	Condition	
UTC-31	2	Crawlspace	D55B	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]
UTC-32	2	Slab	D65C	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]
UTC-33	2	Crawlspace	D7D	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]
UTC-34	3	Crawlspace	D5B	Elevation [a] Acquisition [b] Covert flood-prone living space and replace with new story [a] Flood-proofing [a] Public education [a,c]
UTC-35	1	Crawlspace	D6D	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]
UTC-36	2	Crawlspace	D55A	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]
UTC-37	1	Slab	D8C	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]
UTC-38	1	Slab	D7B	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]
UTC-39	2	Crawlspace	D65C	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]
UTC-40	2	Crawlspace	D65A	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]

Property ID	Number of Insurable Buildings	Building Description		Probable Mitigation Measures
		Foundation	Condition	
UTC-41	3	Crawlspace	D8A	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]
UTC-42	1	Slab	D7B	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]
UTC-43	2	Crawlspace	D7A	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]
UTC-44	1	Crawlspace	D6A	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]
UTC-45	2	Crawlspace	D7B	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]
UTC-46	1	Slab	D7B	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]
UTC-47	3	Slab	No Information	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]
UTC-48	1	Crawlspace	D7B	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]
UTC-49	1	Slab	D7A	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]
UTC-50	2	Slab	D75B	Elevation [a] Acquisition [b] Flood-proofing [a] Public education

Property ID	Number of Insurable Buildings	Building Description		Probable Mitigation Measures
		Foundation	Condition	
UTC-51	3	Crawlspace	No Information	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]
UTC-52	3	Slab	D65B	Elevation [a] Acquisition [b] Flood-proofing [a] Public education
UTC-53	1	Crawlspace	D5B	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]
UTC-54	2	Slab	D95B	Flood-proof lower level and retaining wall on creek side [a]
UTC-55	2	Crawlspace	D5B	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]
UTC-56	1	No Information	D55B	Elevation [a] Acquisition [b] Flood-proofing [a] Public education [a,c]
Total	**91**			

a. Property owner action
b. Public entity action, but only with cooperation of property owner
c. Public entity action



Legend

- FEMA 100 yr Flood Zone (Zone AE)
- Intermittent Stream
- Ephemeral Stream
- 10ft Contour lines
- Repetitive Loss Areas (RLAs)

NORTH

250 125 0 250

Scale in Feet

Repetitive Loss Area
Upper Topanga Canyon
Figure 34-1

BURNS McDONNELL

Source: Estri World Topographic Map, FEMA NFHL, USGS NHD, LA County GIS Database

Issued: 5/30/2024

35 Summary of Repetitive Loss Area Analysis

Table 35-1 summarizes the overall results of the Repetitive Loss Area analysis based on the 2023 FEMA list of repetitive loss properties and the repetitive loss area analysis. Table 35-1 lists for each repetitive loss area, the number of FEMA designated repetitive loss properties, total number of properties based on the repetitive loss area, the mitigated and destroyed properties, AW-501s submitted and official FEMA status. Also listed are the potential number of properties for which AW-501 are planned based on current survey data and the general cause of reported flooding in the repetitive loss area.

Table 35-1: Summary of Repetitive Loss Area Analysis

Repetitive Loss Area	FEMA-Designated Properties	Properties in Area	Properties Mitigated or Destroyed	Number of AW-501s Submitted	FEMA Status	Number of Potential AW-501s[3]	Cause of Flooding
Agua Dulce A	1	3	0	0	Not mitigated	0	In the 100-year floodplain
Agua Dulce B	1	7	0	0	Not mitigated	0	Agua Dulce Canyon Creek
Altadena A	1	1	0	0	Not mitigated	0	Hillside drainage
Altadena B	1	1	1	1	Not mitigated	0	Backyard drainage deficiency (now improved)
Calabasas A	1	1	0	0	Not mitigated	0	Hillside mudflow
Calabasas B	1	18	0	0	Not mitigated	1	Lower than street
Cold Creek A	1	2	0	0	Not mitigated	0	Excessive hillside storm runoff
Cold Creek B	1	7	0	0	Not mitigated	0	Lower than street
Del Sur	1	2	0	0	Not mitigated	0	In the 100-year floodplain
Lake Hughes	1	6	0	0	Not mitigated	0	In the 100-year floodplain
Lower Topanga Canyon	5	5	5	5	Not mitigated	0	In the 100-year floodplain
Malibou Lake A	20	56	2	1	Not mitigated	1	Rising water of Malibou Lake
Malibou Lake B	1	1	0	0	Not mitigated	0	Hillside drainage
Malibu	1	7	1	0	Not mitigated	1	Lower than street

[3] This column includes properties where additional surveys will be completed to determine if mitigation measures, or property status warrant a submission of an AW-501.

Repetitive Loss Area	FEMA-Designated Properties	Properties in Area	Properties Mitigated or Destroyed	Number of AW-501s Submitted	FEMA Status	Number of Potential AW-501s[3]	Cause of Flooding
Quartz Hill A	1	1	1	1	Not mitigated	0	Overflow from detention basin (now relocated)
Quartz Hill B	1	12	0	0	Not mitigated	0	Sheet flow from Antelope Valley Drainage Corridor No. 7
Quartz Hill C	1	12	0	0	Not mitigated	0	Sheet flow from Antelope Valley Drainage Corridor No. 7
Roosevelt	1	3	0	0	Not mitigated	0	In the 100-year floodplain
Rowland	1	1	0	0	Not mitigated	1	Flooding from neighbor (fixed elevation)
Topanga Canyon A	1	1	0	0	Not mitigated	0	Backup from Garapito Creek
Topanga Canyon B	1	2	0	0	Not mitigated	0	In the 100-year floodplain
Topanga Canyon C	1	1	0	0	Not mitigated	0	Hillside drainage
Topanga Canyon D	1	2	0	0	Not mitigated	0	Interior drainage from private property
Topanga Canyon E	1	4	0	0	Not mitigated	0	Hillside drainage
Topanga Canyon F	1	1	0	0	Not mitigated	0	Hillside drainage
Triunfo Canyon A	1	1	0	0	Not mitigated	0	In the 100-year floodplain
Triunfo Canyon B	1	1	1	0	Not mitigated	1	Hillside runoff
Upper Topanga Canyon	4	56	0	0	Not mitigated	0	In the 100-year floodplain

Part 3 – Repetitive Loss Area Action Plan

36 Repetitive Loss Area Action Plan

36.1 Mitigation Actions

This Los Angeles County Repetitive Loss Area Analysis was created in conjunction with the development of the *2025 Los Angeles County Comprehensive Floodplain Management Plan*. The floodplain management plan identified and prioritized an action plan that will have direct relevance to this RLAA. This action plan has been adapted to apply to the RLAA and is shown in Table 36-1. The following information is presented for each action plan item:

- Action item **number** and **description**
- **Lead agency** responsible for implementing the action item
- **Support agencies** expected to participate in the implementation
- Agencies or programs that may be able to provide **funding** to implement the action item
- An estimated **cost** range (see Section 31.2 for definition of high, medium and low cost ratings)
- A statement of **timing** for implementing the action item:
  - Ongoing—This action already occurs and will continue
  - Short term—This action would be implemented within five years
  - Long term— This action would be implemented after five years
- A list of the **repetitive loss areas that would be affected** by the action item
- Indication of whether the action item was **included in the previous RLAA** and, if so, its number in that previous document.

Table 36-1: Action Plan-Flood Mitigation Initiatives

Action, Responsible Agencies and Potential Funding	Estimated Project Cost	Timeline	Affected Repetitive Loss Area	In Previous Plan? Action #
1—Promote awareness of flood hazards to residents in flood hazard areas. ***Lead Agency:*** Public Works (Stormwater Engineering Division) ***Support Agencies:*** Regional Planning Department, Public Works (Building and Safety Division) ***Funding Source:*** FEMA; Cal EMA; Public Works; County Regional Planning Department	Low	Ongoing	All	Yes-1
2—Develop and distribute flood protection information and materials to property owners, renters, and developers in high-risk areas. ***Lead Agency:*** Public Works (Stormwater Engineering Division) ***Support Agencies:*** Public Works (Community & Government Relations Group, Building and Safety Division, Land Development Division, Program for Public Information) ***Funding Source:*** Public Works	Low	Ongoing	All	Yes-2
3—Maintain a list of critical facilities located in FEMA-designated flood zones, provide flood protection information to operators of these critical facilities, and encourage the implementation of flood protection measures. ***Lead Agency:*** Public Works (Stormwater Engineering Division) ***Support Agencies:*** Los Angeles County Chief Executive Office/Office of Emergency Management (CEO OEM), Public Works (Disaster Services Group) ***Funding Source:*** Public Works; CEO OEM	Low	Ongoing	Agua Dulce A, Agua Dulce B, Calabasas B, Cold Creek A, Cold Creek B, Del Sur, Lake Hughes, Lower Topanga Canyon, Malibou Lake A, Quartz Hill A, Quartz Hill B, Quartz Hill C, Roosevelt, Topanga Canyon A, Topanga Canyon B, Topanga Canyon E, Triunfo Canyon A, Upper Topanga Canyon	Yes-3

Action, Responsible Agencies and Potential Funding	Estimated Project Cost	Timeline	Affected Repetitive Loss Area	In Previous Plan? Action #
4—Investigate Repetitive Loss Properties identified by FEMA and update the Repetitive Loss Property and high-risk property list. Conduct the following flood control activities for these properties: • **Annually notify owners regarding local flood hazards and proper protection activities** • **Provide technical advice regarding flood protection and flood preparedness** • **Distribute a revised questionnaire to new Repetitive Loss Properties.** ***Lead Agency:*** Public Works (Stormwater Engineering Division) ***Support Agencies:*** Public Works (Building and Safety Division, Program for Public Information) ***Funding Source:*** Public Works	Low	Ongoing	All	Yes-4
5—Make sandbags available to flood risk property owners during the wet season, provide notifications of the availability of these materials, and track the distribution of the materials. ***Lead Agency:*** Fire Department, Public Works (Administrative Services Division, Stormwater Engineering Division) ***Support Agencies:*** Public Works (Community & Government Relations Group) ***Funding Source***: FEMA; Cal EMA; Fire Department; Public Works	Low	Ongoing	All	Yes-5
6—Provide public education about maintaining the stormwater system free of debris. ***Lead Agency:*** Public Works (Stormwater Quality Division) ***Support Agencies:*** Public Works (Community & Government Relations Group, Stormwater Engineering Division, Stormwater Maintenance Division, Stormwater Planning Division, Road Maintenance Division, Program for Public Information) ***Funding Source:*** Public Works	Low	Ongoing	All	Yes-6
7—Continue to maintain/enhance the County's classification under the Community Rating System to address increased flood insurance costs and promote safety and preparedness. ***Lead Agency:*** Public Works (Stormwater Engineering Division) ***Support Agencies:*** Regional Planning Department, Public Works (Stormwater Maintenance Division, Stormwater Planning Division, Transportation Planning and Programs Division, Community & Government Relations Group, Program for Public Information) ***Funding Source:*** Public Works	Low	Ongoing	All	Yes-7

Action, Responsible Agencies and Potential Funding	Estimated Project Cost	Timeline	Affected Repetitive Loss Area	In Previous Plan? Action #
8—Implement the Program for Public Information (PPI) protocol identified in this plan including appropriate messaging for compliance with ADA. ***Lead Agency:*** Public Works (Stormwater Engineering Division, Community & Government Relations Group) ***Funding Source:*** FEMA; Cal EMA; Public Works	Low	Ongoing	All	Yes-8
9—Provide emergency preparedness and flood protection information to the general public. ***Lead Agency:*** CEO OEM ***Support Agencies:*** Public Works (Stormwater Engineering Division, Program for Public Information, Stormwater Planning Division, Community & Government Relations Group), National Weather Service ***Funding Source:*** FEMA; Cal EMA; CEO OEM; Public Works; USC Sea Grant	Low	Ongoing	All	Yes-9
10—Distribute information regarding flood prevention and flood insurance at emergency operations and emergency preparedness events. ***Lead Agency:*** CEO OEM, Public Works (Disaster Services Group) ***Support Agencies:*** Public Works (Stormwater Engineering Division, Stormwater Planning Division, Community & Government Relations Group, Program for Public Information) ***Funding Source:*** FEMA; Cal EMA; CEO OEM; Public Works	Low	Ongoing	All	Yes-10
11—Develop and maintain a list of priority maintenance-related problem sites. ***Lead Agency:*** Public Works (Stormwater Maintenance Division) ***Support Agencies:*** Public Works (Stormwater Engineering Division, Stormwater Planning Division, Road Maintenance Division) ***Funding Source:*** Public Works	Low	Ongoing	Altadena A, Altadena B, Calabasas A, Calabasas B, Cold Creek A, Cold Creek B, Malibou Lake A, Malibou Lake B, Malibu, Roosevelt, Quartz Hill B, Topanga Canyon C, Topanga Canyon D, Topanga Canyon E, Topanga Canyon F, Triunfo Canyon B	Yes-11
12—Conduct routine maintenance of flood control facilities and additional maintenance as needed at priority maintenance-related flood problem sites. ***Lead Agency:*** Public Works (Stormwater Maintenance Division, Road Maintenance Division) ***Funding Source:*** Public Works	Low	Ongoing	All	Yes-12

Action, Responsible Agencies and Potential Funding	Estimated Project Cost	Timeline	Affected Repetitive Loss Area	In Previous Plan? Action #
13—Conduct a stormwater facilities condition assessment to identify the physical and hydraulic condition of the system and to support infrastructure management. ***Lead Agency:*** Public Works (Stormwater Maintenance Division) ***Support Agencies:*** Public Works (Stormwater Planning Division, Stormwater Engineering Division) ***Funding Source:*** Public Works	Low	Ongoing	All	Yes-13
14—Evaluate LACFCD storm drain, open channel, and flood retention basin facilities for future improvements. Drainage infrastructure outside of the LACFCD may be covered by the Road Maintenance Division where applicable. ***Lead Agency:*** Public Works (Stormwater Planning Division) ***Support Agencies:*** Public Works (Design Division, Stormwater Maintenance Division, Stormwater Engineering Division, Stormwater Quality Division) Stakeholders ***Funding Source:*** Public Works	Low	Ongoing	All	Yes-14
15— Pursue appropriate flood hazard mitigation grant funding (i.e. Building Resilient Infrastructure and Communities (BRIC)) for projects that use the Community Lifeline Framework, and address multiple hazards, where applicable. ***Lead Agency:*** Public Works (Stormwater Engineering Division) ***Support Agencies:*** Public Works (Transportation Planning and Programs Division, Disaster Services Group, Stormwater Planning Division), CEO OEM ***Funding Source:*** Public Works; CEO OEM	Low	Ongoing	All	Yes-15
16—Consider the conversion of high-risk properties into open space. ***Lead Agency:*** Public Works (Stormwater Engineering Division) ***Support Agencies:*** Regional Planning Department, Parks and Recreation ***Funding Source:*** FEMA; U.S. EPA; Cal EMA; Cal EPA; Public Works; County Regional Planning Department; County Parks and Recreation	High	Ongoing	All	Yes-16

Action, Responsible Agencies and Potential Funding	Estimated Project Cost	Timeline	Affected Repetitive Loss Area	In Previous Plan? Action #
17—Refine the plan check system to track properties in the flood zone and address drainage. ***Lead Agency:*** Public Works (Stormwater Engineering Division) ***Support Agencies:*** Public Works (Building and Safety Division, Land Development Division) ***Funding Source:*** Public Works	Low	Ongoing	Agua Dulce A, Agua Dulce B, Calabasas B, Cold Creek A, Cold Creek B, Del Sur, Lake Hughes, Lower Topanga Canyon, Malibou Lake A, Quartz Hill A, Quartz Hill B, Quartz Hill C, Roosevelt, Topanga Canyon A, Topanga Canyon B, Topanga Canyon E, Triunfo Canyon A, Upper Topanga Canyon	Yes-17
18—Flag Repetitive Loss Properties in the plan, and check database for review and approval of building permit applications. ***Lead Agency:*** Public Works (Stormwater Engineering Division) ***Support Agencies:*** Public Works (Building and Safety Division) ***Funding Source:*** Public Works	Low	Ongoing	All	Yes-18
19—Maintain a database system for tracking all reviewed and approved elevation certificates prior to the closure of a building permit. ***Lead Agency:*** Public Works (Stormwater Engineering Division) ***Support Agencies:*** Public Works (Building and Safety Division, Chief Information Office) ***Funding Source:*** Public Works	Low	Ongoing	Agua Dulce A, Agua Dulce B, Calabasas B, Cold Creek A, Cold Creek B, Del Sur, Lake Hughes, Lower Topanga Canyon, Malibou Lake A, Quartz Hill A, Quartz Hill B, Quartz Hill C, Roosevelt, Topanga Canyon A, Topanga Canyon B, Topanga Canyon E, Triunfo Canyon A, Upper Topanga Canyon	Yes-19
20—Evaluate opportunities for incorporating watershed ecosystem restoration into projects where applicable and grant funding available. ***Lead Agency:*** Public Works (Stormwater Planning Division) ***Support Agencies:*** Regional Planning Department, Public Works (Stormwater Engineering Division), Stakeholders ***Funding Source:*** FEMA, U.S. EPA; Cal EMA; Cal EPA; Public Works; County Regional Planning Department, Safe Clean Water (SCW) Program (applicable to LACFS, State Water Resources and Conservation Agencies Grant Projrams for Nature Based Solutions	Low	Ongoing	All	Yes-20

Action, Responsible Agencies and Potential Funding	Estimated Project Cost	Timeline	Affected Repetitive Loss Area	In Previous Plan? Action #
21—Where feasible, cost-effective and supported both publicly and politically, restore the natural and beneficial functions of floodplains. ***Lead Agency:*** Public Works (Stormwater Planning Division, Stormwater Quality Division) ***Support Agencies:*** Public Works (Transportation Planning and Programs Division, Stormwater Engineering Division) ***Funding Source:*** FEMA; U.S. EPA; Cal EMA; Cal EPA; Public Works; State Water Resources and Conservation Agencies Grant Programs for Nature-Based Solutions	High/ Medium	Long Term	Agua Dulce A, Agua Dulce B, Calabasas B, Cold Creek A, Cold Creek B, Del Sur, Lake Hughes, Lower Topanga Canyon, Malibou Lake A, Quartz Hill A, Quartz Hill B, Quartz Hill C, Roosevelt, Topanga Canyon A, Topanga Canyon B, Topanga Canyon E, Triunfo Canyon A, Upper Topanga Canyon	Yes-21
22—Encourage the application of biological resource measures for the control of stormwater and erosion to the best of their applicable limits. ***Lead Agency:*** Fire Department, Public Works (Building and Safety Division, Design Division, Land Development Division) ***Support Agencies:*** Regional Planning Department, Public Works (Environmental Programs Division, Stormwater Quality Division, Stormwater Planning Division, Stormwater Engineering Division, Project Management Division) ***Funding Source:*** FEMA; U.S. EPA; Cal EMA; Cal EPA; County Fire Department; Public Works	Low	Ongoing	All	Yes-22
23—Maintain the Operational Area Emergency Response Plan. ***Lead Agency:*** CEO OEM ***Support Agencies:*** Public Works (Disaster Services Group, Stormwater Engineering Division) ***Funding Source:*** FEMA; Cal EMA; Public Works; CEO OEM	Low	Ongoing	All	Yes-23
24—Maintain standards for the use of structural and non-structural techniques that mitigate flood hazards and manage stormwater pollution. ***Lead Agency:*** Public Works (Building and Safety Division, Design Division, Land Development Division) ***Support Agencies:*** Public Works (Stormwater Engineering Division, Stormwater Quality Division, Stormwater Planning Division) ***Funding Source:*** Public Works	Low	Ongoing	All	Yes-24

Action, Responsible Agencies and Potential Funding	Estimated Project Cost	Timeline	Affected Repetitive Loss Area	In Previous Plan? Action #
25—Continue to require environmental review in the development process to provide for the creation or protection of natural resources that can mitigate the impacts of development. ***Lead Agency:*** Regional Planning Department ***Support Agencies:*** Public Works (Stormwater Engineering Division, Transportation Planning and Programs Division, Land Development Division) ***Funding Source:*** Public Works; County Regional Planning Department	Low	Ongoing	All	Yes-25
26—Where appropriate, support retrofitting, purchase, or relocation of structures in hazard-prone (high risk) areas to prevent future structure damage. Give priority to properties with exposure to repetitive losses. ***Lead Agency:*** Public Works (Stormwater Engineering Division) ***Support Agencies:*** Regional Planning Department, Parks and Recreation, Public Works (Building and Safety Division, Transportation Planning and Programs Division) ***Funding Source:*** FEMA Hazard Mitigation Grant Program, Pre-Disaster Mitigation Grant Program, and Flood Mitigation Act; U.S. HUD; Cal EMA; Public Works; CEO OEM; County Regional Planning Department; County Parks and Recreation	Low	Ongoing	All	Yes-26
27—Use risked-based information from the *Los Angeles County Comprehensive Floodplain Management Plan* and the *Los Angeles County Hazard Mitigation Plan* to update the Safety Element of the County's General Plan. ***Lead Agency:*** Regional Planning Department ***Support Agencies:*** Public Works (Stormwater Engineering Division) ***Funding Source:*** County Regional Planning Department; Public Works	Low	Short Term	All	Yes-27

Action, Responsible Agencies and Potential Funding	Estimated Project Cost	Timeline	Affected Repetitive Loss Area	In Previous Plan? Action #
28—Continue to maintain good standing under the National Flood Insurance Program by implementing programs that meet or exceed the minimum NFIP requirements. Such programs include enforcing an adopted flood damage prevention ordinance, participating in floodplain mapping updates, and providing public assistance and information on floodplain requirements and impacts. ***Lead Agency:*** Public Works (Stormwater Engineering Division) ***Support Agencies:*** Public Works (Building and Safety Division, Land Development Division, Stormwater Maintenance Division), Regional Planning Department ***Funding Source:*** Public Works	Low	Ongoing	All	Yes-28
29—Consider the best available data and science to determine probable impacts on all forms of flooding from global climate change when making program enhancements or updates to the County's floodplain management program. ***Lead Agency:*** Public Works (Stormwater Engineering Division) ***Funding Source:*** FEMA; U.S. EPA; Cal EMA; Cal EPA; Public Works; USC Sea Grant	Low	Long Term	All	Yes-29
30—Identify flood-warning systems for properties where such systems can be beneficially employed. ***Lead Agency:*** Public Works (Stormwater Engineering Division) ***Support Agencies:*** CEO OEM, Sheriff's Department, Public Works (Stormwater Maintenance Division, Disaster Services Group), National Weather Service ***Funding Source:*** FEMA Hazard Mitigation Grant Program , Pre-Disaster Mitigation Grant Program, and Flood Mitigation Act; Cal EMA; Public Works; CEO OEM	Low	Ongoing	All	Yes-30
31—Consider the development of a comprehensive flood warning and response plan for the unincorporated County that would become a functional annex to the Operational Area Emergency Response Plan and meet the Community Rating System Activity 610 requirements. ***Lead Agency:*** Public Works (Stormwater Engineering Division) ***Support Agencies:*** CEO OEM, Public Works (Disaster Services Group), National Weather Service ***Funding Source:*** FEMA; Cal EMA; Public Works; CEO OEM	Medium/ Low	Long Term	All	Yes-31

Action, Responsible Agencies and Potential Funding	Estimated Project Cost	Timeline	Affected Repetitive Loss Area	In Previous Plan? Action #
32—Continue to enforce the County's development regulations to prevent increases of the flood hazard on adjacent properties. ***Lead Agency:*** Public Works (Building and Safety Division, Land Development Division) ***Support Agencies:*** Public Works (Stormwater Engineering Division) ***Funding Source:*** Public Works	Low	Ongoing	All	Yes-32
33—Conduct an evaluation of FEMA-designated flood zones and revise/update them to reflect current conditions. ***Lead Agency:*** Public Works (Stormwater Engineering Division) ***Support Agencies:*** : Public Works (Stormwater Planning Division, Design Division) ***Funding Source:*** FEMA; Cal EMA; Public Works	Medium/ Low	Ongoing	Agua Dulce A, Agua Dulce B, Calabasas B, Cold Creek A, Cold Creek B, Del Sur, Lake Hughes, Lower Topanga Canyon, Malibou Lake A, Quartz Hill A, Quartz Hill B, Quartz Hill C, Roosevelt, Topanga Canyon A, Topanga Canyon B, Topanga Canyon E, Triunfo Canyon A, Upper Topanga Canyon	Yes-33
34— Continue to maintain and update the Hazus model constructed to support the development of this plan, in order to make flood risk information available to property owners and agencies that own and operate critical infrastructure/facilities. ***Lead Agency:*** Public Works (Stormwater Engineering Division) ***Funding Source:*** FEMA; Cal EMA; Public Works	Low	Ongoing	All	Yes-34
35—Continue County coordination with other agencies and stakeholders on issues of flood control. ***Lead Agency:*** Public Works (Stormwater Engineering Division, Stormwater Planning Division) ***Funding Source:*** Public Works	Low	Ongoing	All	Yes-35
36—Continue to identify and assess drainage needs. ***Lead Agency:*** Public Works (Stormwater Engineering Division, Stormwater Planning Division) ***Support Agencies:*** Public Works (Stormwater Maintenance Division, Road Maintenance Division) ***Funding Source:*** Public Works	Medium/ Low	Ongoing	All	Yes-36

Action, Responsible Agencies and Potential Funding	Estimated Project Cost	Timeline	Affected Repetitive Loss Area	In Previous Plan? Action #
37— Pursue BRIC program projects that use the Community Lifeline Framework. ***Lead Agency:*** Public Works (Stormwater Engineering Division) ***Support Agencies:*** Public Works (Disaster Services Group, Stormwater Planning Division, Stormwater Maintenance Division) ***Funding Source:*** Public Works; FEMA	Low	Long Term	All	No
38— Provide annual submittals/re-submittals to FEMA for mitigated Repetitive Loss Properties ***Lead Agency:*** Public Works (Stormwater Engineering Division) ***Support Agencies:*** Public Works (Stormwater Planning Division, Regional Planning Department, Building and Safety Division) ***Funding Source:*** Public Works; FEMA	Low	Annually	1, 3, 11	No

36.2 Benefit/Cost Analysis

The action plan is prioritized according to a benefit/cost analysis of the proposed projects (CRS Step 8). The benefits of proposed projects were weighed against estimated costs as part of the project prioritization process. The benefit/cost analysis was not of the detailed variety required by FEMA for project grant eligibility under various grant programs. A less formal approach was used because some projects may not be implemented for some time, and associated costs and benefits could change dramatically in that time. Therefore, a review of the apparent benefits versus the apparent cost of each project was performed. Parameters were established for assigning subjective ratings (high, medium, and low) to the costs and benefits of these projects.

Cost ratings were defined as follows:

- **High**—Existing funding will not cover the cost of the project; implementation would require new revenue through an alternative source (for example, bonds, grants, and fee increases). Costs are estimated to be greater than $5 million.
- **Medium**—The project could be implemented with existing funding but would require a re-apportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years. Costs are estimated to be between $500,000 and $5 million.
- **Low**—The project could be funded under the existing budget. The project is part of or can be part of an ongoing existing program. Costs are estimated to be less than $500,000.

Benefit ratings were defined as follows:

- **High**—Project will provide an immediate reduction of risk exposure for life and property.

- **Medium**—Project will have a long-term impact on the reduction of risk exposure for life and property, or project will provide an immediate reduction in the risk exposure for property.
- **Low**—Long-term benefits of the project are difficult to quantify in the short term.

Using this approach, projects with positive benefit versus cost ratios (such as high over high, high over medium, medium over low, etc.) are considered cost-beneficial and are prioritized accordingly.

For many of the strategies identified in this action plan, Los Angeles County may seek financial assistance under the Hazard Mitigation Grant Program or Hazard Mitigation Assistance programs, both of which require detailed benefit/cost analyses. These analyses will be performed on projects at the time of application using the FEMA benefit-cost model. For projects not seeking financial assistance from grant programs that require detailed analysis, Los Angeles County reserves the right to define "benefits" according to parameters that meet floodplain management goals and objectives.

36.3 Action Plan Prioritization

Table 36-2 lists the priority of each action item assigned by the planning team, using the same parameters used in selecting the action items. A qualitative benefit-cost review was performed for each action item. The priorities are defined as follows:

- **High Priority**—A project that meets multiple objectives, has benefits that exceed cost, has funding secured or is an ongoing project and meets eligibility requirements for a grant program. High priority projects can be completed in the short term (1 to 5 years). The key factors for high priority projects are that they have funding secured and can be completed in the short term.
- **Medium Priority**—A project that meets goals and objectives, that has benefits that exceed costs, and for which funding has not been secured but that is grant eligible. Project can be completed in the short term, once funding is secured. Medium priority projects will become high priority projects once funding is secured. The key factors for medium priority projects are that they are eligible for funding, but do not yet have funding secured, and they can be completed within the short term.
- **Low Priority**—A project that will mitigate the risk of the flood hazard, that has benefits that do not exceed the costs or are difficult to quantify, for which funding has not been secured, that is not eligible for FEMA grant funding, and for which the timeline for completion is long term (1 to 10 years). Low priority projects may be eligible for grant funding from other programs. Low priority projects are "blue-sky" projects. How they will be financed is unknown, and they can be completed over a long term.

Table 36-2: Prioritization of Mitigation Actions

Action	# of Objectives Met	Benefits	Costs	Benefits >Costs?	Grant Eligible	Funded Under Existing Programs/ Budgets?	Priority	Community Lifeline Served
1—Promote awareness of flood hazards to residents in flood hazard areas.	3	Medium	Low	Yes	Yes	Yes	High	Safety & Security (SS); Food, Water Shelter (FWS)
2—Develop and distribute flood protection information and materials to property owners, renters, and developers in high-risk areas.	2	Medium	Low	Yes	No	Yes	High	SS; FWS; Communication (C); Health & Medical (HM)
3—Maintain a list of critical facilities located in FEMA-designated flood zones, provide flood protection information to operators of these critical facilities, and encourage the implementation of flood protection measures.	2	High	Low	Yes	No	Maybe	High	SS; FWS; C; HM; Energy (E); Transportation (T); Hazardous Material (HZM)
4—Investigate Repetitive Loss Properties identified by FEMA and update the Repetitive Loss Property and high-risk property list. Conduct the following flood control activities for these properties: • Annually notify owners regarding local flood hazards and proper protection activities • Provide technical advice regarding flood protection and flood preparedness • Distribute a revised questionnaire to new Repetitive Loss Properties.	4	High	Low	Yes	No	Yes	High	SS; FWS; C
5—Make sandbags available to flood risk property owners during the wet season, provide notifications of the availability of these materials, and track the distribution of the materials.	2	High	Low	Yes	Yes	Yes	High	SS; FWS; C
6—Provide public education about maintaining the stormwater system free of debris.	2	Medium	Low	Yes	No	Yes	High	SS; FWS

Action	# of Objectives Met	Benefits	Costs	Benefits >Costs?	Grant Eligible	Funded Under Existing Programs/ Budgets?	Priority	Community Lifeline Served
7—Continue to maintain/enhance the County's classification under the Community Rating System to address increased flood insurance costs and promote safety and preparedness.	5	Medium	Low	Yes	No	Yes	High	SS; FWS
8—Implement the Program for Public Information (PPI) protocol identified in this plan including appropriate messaging for compliance with ADA.	3	Medium	Low	Yes	Yes	Maybe	High	SS; C
9—Provide emergency preparedness and flood protection information to the general public.	3	Medium	Low	Yes	Yes	Yes	High	SS; FWS; C
10—Distribute information regarding flood prevention and flood insurance at emergency operations and emergency preparedness events.	3	Medium	Low	Yes	No	Yes	High	SS; FWS; C
11—Develop and maintain a list of priority maintenance-related problem sites	2	Low	Low	Yes	No	Yes	High	SS; FWS
12—Conduct routine maintenance of flood control facilities and additional maintenance as needed at priority maintenance-related flood problem sites	2	Medium	Low	Yes	No	Yes	High	SS; FWS; HM
13—Conduct a stormwater facilities condition assessment to identify the physical and hydraulic condition of the system and to support infrastructure management.	3	Low	Low	Yes	No	Yes	High	SS; FWS; HM
14—Evaluate LACFCD storm drain, open channel, and flood retention basin facilities for future improvements.	2	Medium	Low	Yes	No	Yes	High	SS; FWS; HM
15— Pursue appropriate flood hazard mitigation grant funding (i.e. BRIC) for projects that use the Community Lifeline Framework, and address multiple hazards, where applicable.	2	Low	Low	Yes	No	Yes	High	SS; FWS; HM

Action	# of Objectives Met	Benefits	Costs	Benefits >Costs?	Grant Eligible	Funded Under Existing Programs/ Budgets?	Priority	Community Lifeline Served
16—Consider the conversion of high-risk properties into open space.	3	High	High	Yes	Yes	No	Medium	SS; FWS; HM
17—Refine the plan check system to track properties in the flood zone and address drainage.	4	Medium	Low	Yes	No	Maybe	Medium	SS; FWS; HM
18—Flag Repetitive Loss Properties in the plan, and check database for review and approval of building permit applications.	3	Medium	Low	Yes	No	Yes	High	SS; FWS; HM
19—Maintain a database system for tracking all reviewed and approved elevation certificates prior to the closure of a building permit.	3	Medium	Low	Yes	No	Maybe	High	SS; FWS; HM
20—Evaluate opportunities for incorporating watershed ecosystem restoration into projects, where applicable and funding is available. .	3	Medium	Low	Yes	Yes	Yes	High	SS
21—Where feasible, cost-effective and supported both publicly and politically, restore the natural and beneficial functions of floodplains.	5	Medium	High/ Mediu m	No	Yes	No	Medium	SS
22—Encourage the application of biological resource measures for the control of stormwater and erosion to the best of their applicable limits.	3	Medium	Low	Yes	Yes	Yes	High	SS
23—Maintain the Operational Area Emergency Response Plan.	3	Medium	Low	Yes	Yes	Yes	High	SS; C
24—Maintain standards for the use of structural and non-structural techniques that mitigate flood hazards and manage stormwater pollution.	4	Medium	Low	Yes	No	Yes	High	SS; FWS; HM
25—Continue to require environmental review in the development process to provide for the creation or protection of natural resources that can mitigate the impacts of development.	2	Medium	Low	Yes	No	Yes	High	SS

Action	# of Objectives Met	Benefits	Costs	Benefits >Costs?	Grant Eligible	Funded Under Existing Programs/ Budgets?	Priority	Community Lifeline Served
26—Where appropriate, support retrofitting, purchase, or relocation of structures in hazard-prone (high risk) areas to prevent future structure damage. Give priority to properties with exposure to repetitive losses.	3	High	Low	Yes	Yes	Yes	High	SS; FWS; HM; E; C; T; HZM
27—Use risked-based information from the Los Angeles County Comprehensive Floodplain Management Plan and the Los Angeles County Hazard Mitigation Plan to update the Safety Element of the County's General Plan.	3	Low	Low	Yes	No	Yes	High	SS; FWS; HM; E; C; T; HZM
28—Continue to maintain good standing under the National Flood Insurance Program by implementing programs that meet or exceed the minimum NFIP requirements. Such programs include enforcing an adopted flood damage prevention ordinance, participating in floodplain mapping updates, and providing public assistance and information on floodplain requirements and impacts.	5	Medium	Low	Yes	No	Yes	High	SS; FWS; HM; E; C; T; HZM
29—Consider the best available data and science to determine probable impacts on all forms of flooding from global climate change when making program enhancements or updates to the County's floodplain management program.	4	Medium	Low	Yes	Yes	Maybe	High	SS; FWS; HM; E; C; T; HZM
30—Identify flood-warning systems for properties where such systems can be beneficially employed.	3	Medium	Low	Yes	Yes	Maybe	Medium	SS; FWS; C
31—Consider the development of a comprehensive flood warning and response plan for the unincorporated County that would become a functional annex to the Operational Area Emergency Response Plan and meet the Community Rating System Activity 610 requirements.	2	Medium	Mediu m/ Low	Yes	Yes	Maybe	High	SS; FWS; HM; E; C; T; HZM

Action	# of Objectives Met	Benefits	Costs	Benefits >Costs?	Grant Eligible	Funded Under Existing Programs/ Budgets?	Priority	Community Lifeline Served
32—Continue to enforce the County's development regulations to prevent increases of the flood hazard on adjacent properties.	4	Medium	Low	Yes	No	Yes	High	SS; FWS; HM; E; C; T; HZM
33—Conduct an evaluation of FEMA-designated flood zones and revise/update them to reflect current conditions.	3	Low	Medium/ Low	No	Yes	Maybe	Medium	SS; FWS; HM; E; T; HZM
34— Continue to maintain and update the Hazus model constructed to support the development of this plan, in order to make flood risk information available to property owners and agencies that own and operate critical infrastructure/facilities.	2	Medium	Low	Yes	Yes	Maybe	High	SS; FWS; HM; E; T; HZM
35—Continue County coordination with other agencies and stakeholders on issues of flood control.	3	Low	Low	Yes	No	Yes	Medium	SS; FWS; HM; E; T; HZM
36—Continue to identify and assess drainage needs.	3	Medium	Medium/ Low	Yes	Yes	Yes	High	SS; FWS
37— Pursue Building Resilient Infrastructure and Communities (BRIC) program projects that use the Community Lifeline Framework.	2	Medium	Medium	Yes	Yes	No	Medium	SS; FWS; HM; E; T; HZM
38— Provide annual submittals/re-submittals to FEMA for mitigated Repetitive Loss Properties	3,	High	Low	Yes	No	Yes	High	SS, FWS, C,

36.4 Annual Evaluation Report

Los Angeles County will prepare an annual evaluation report for its area analyses. The report will include a review of each action item, including a description of what was implemented or not implemented and recommended changes to the action items as appropriate. The report will be made available to the media and the public and will be submitted with the annual CRS recertification.

37 Plan Adoption

This chapter documents formal adaption of the 2025 Los Angeles County Repetitive Loss Area Analysis by the Los Angeles County Board of Supervisors (CRS Step 9). Los Angeles County formally adopted the plan on XX XX , XXXX. A copy of the resolution is provided on the following pages[4].

[4] Resolution will be provided once approved.

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APPENDIX A – GENERIC DEPTH DAMAGE RELATIONSHIPS FOR RESIDENTIAL STRUCTURES

CECW-PG 10 October 2003

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Economic Guidance Memorandum (EGM) 04-01, Generic Depth-Damage Relationships for Residential Structures with Basements.

1. Purpose. The purpose of this memorandum is to release, and provide guidance for the use of, generic depth-damage curves for use in U.S. Army Corps of Engineers flood damage reduction studies.

2. Background. Proper planning and evaluation of flood damage reduction projects require knowledge of actual damage caused to various types of properties. The primary purpose of the Flood Damage Data Collection Program is to meet that requirement by providing Corps district offices with standardized relationships for estimating flood damage and other costs of flooding, based on actual losses from flood events. Under this program, data have been collected from major flooding that occurred in various parts of the United States from 1996 through 2001. Damage data collected are based on comprehensive accounting of losses from flood victims' records. The generic functions developed and provided in this EGM represent a substantive improvement over other generalized depth-damage functions such as the Flood Insurance Administration (FIA) Rate Reviews.

3. Results. Generic damage functions are attached for one-story homes with basement, two or more story homes with basement, and split-level homes with basement. Generic damage functions for similar structures without basements were published in 2000 and are included as enclosure 1 for ready reference.

a. Regression analysis was used to create the damage functions. While several independent variables, such as flood duration and flood warning lead-time, were examined in building the models, the models that were most efficient in explaining the percent damage to structure and contents were quadratic and cubic forms with depth as the only independent variable.

b. Content damage was modeled with the dependent variable being content damage as a percentage of structure value. This differs from the previous technique of first developing content valuations and then content damage relationships as a function of content valuations. The generic content damage models are statistically significant and their use eliminates the need to establish content-to-structure ratios through surveys.

c. While the data collected include information on all aspects of National Economic Development (NED) losses, only results and recommendations related to the structure and content damages for homes with basements are included in this EGM.

Direct costs for cleanup expenses, unpaid hours for cleanup and repair, emergency damage prevention actions, and other flood-related costs are not included in these damage functions. Information on other residential flood costs, beyond those included in these damage functions will found the summary report, discussed in paragraph 5. These costs should be developed using site-specific historical information.

4. Application. The following paragraphs provide information on the application of the generic curves within the HEC-FDA damage calculation program.

a. The economic section of HEC-FDA divides the quantification of flood damages into a direct method and an indirect method. The direct method allows the user to directly enter a stage-damage relationship for any structure. This approach is commonly used for large or unique properties such as industrial or pubic buildings. The indirect method quantifies the stage-damage relationship for a group of structures that have significant commonality. Typically damage to residential structures is calculated using the indirect method. The procedures described in the following paragraphs apply only when using the indirect method to determine the stage-damage relationship.

b. The traditional approach to quantifying damage to contents by the indirect method relies on three pieces of information: 1) structure value; 2) content-to-structure value ratio; and 3) the content depth-damage relationship. The content-to-structure value ratio and content depth-damage relationship are unique to the structure occupancy type to which a structure is assigned. The content depth-damage relationship provides the estimate of content flood damage as a percentage of content value. Thus, to calculate a content stage-damage function for an individual structure, the structure value for an individual structure is first multiplied by the content-to-structure value ratio to provide an estimate of the content value. This content value is then multiplied by each percent damage value of the content depth-damage relationship.

c. The new content depth-damage functions provided herein are different from those used by the Corps in the past in one important aspect. The new functions calculate content damage as a percent of structure value rather than content value. Using these functions within HEC-FDA requires care in specifying a content-to-structure value ratio. To understand the requirements for using the new content depth-damage functions requires a basic understanding of how HEC-FDA calculates content damage.

(1). To calculate damages by the indirect method, each structure must be assigned to a structure occupancy type. For each structure occupancy type a content-to-structure value ratio and content depth-damage relationship are defined. These data for calculating content damage within HEC-FDA is entered on the “Study Structure Occupancy Type” screen. As long as a content value is not entered for a structure in the Structure Inventory Data, HEC-FDA calculates the content stage-damage by first calculating content using the structure value multiplied by the content-to-structure value ratio.

In some instances, however, analysts develop unique estimates of content values for a structure, which are entered for the individual structure on the Structure Inventory Data screen. For each structure that has a content value entered, calculating a content value by using the content-to-structure value ratio is ignored and the user entered content value is used to calculate content damage.

(2). The new content depth-damage functions do not require this intermediate step of calculating content values. Therefore, the content-to-structure value ratio for each structure occupancy type using the new content depth-damage relationships must be set to one hundred percent (100). This forces the content depth-damage function to be multiplied by the structure value as required. Also, the "Error Associated with Content/Structure Value" on the "Study Structure Occupancy Type" screen should be left blank. This implies that the error in content-to-structure value ratio is part of the new content depth-damage relationship.

(3). Because entering a content value on the Structure Inventory Data window overrides the content-to-structure value ratio, the new content depth-damage relationships should not be used for structures that have separately entered content values.

(4). Questions concerning the use of the generic curves within the HEC-FDA model can be addressed to Dr. David Moser, Institute of Water Resources (IWR), (703) 428-8066.

5. Report. A report summarizing the data collection effort and analyses performed to derive these curves will shortly be available on the IWR website. More information may be obtained by contacting the program's principal investigator, Stuart Davis, (703) 428-7086.

6. Waiver to Policy. These curves are developed for nation-wide applicability in flood damage reduction studies. When using these curves, the requirement to develop site-specific depth-damage curves contained in ER 1105-2-100, E-19q.(2) is waived. Additionally, the requirement to develop content valuations and content-to-structure ratios based on site-specific or comparable floodplain information, ER 1005-2-100, E-19q.(1)(a), is also waived. Note these waivers currently apply only to single-family homes with and without basements for which generic curves have been published, and not other categories of flood inundation damages for which no generic curves exist. Feasibility reports must state the generic curves are being used in the flood damage analysis for residential structures with and/or without basements. Use of these curves is optional and analysts should always endeavor to use the best available information to accurately quantify the damages and benefits in inundation reduction studies.

7. Point of Contact. Administrators of the Flood Damage Data Collection Program continue to collect and analyze flood-related damages to both residential and commercial properties. The HQUSACE program monitor is Lillian Almodovar, (202) 761-4233, who can address any questions concerning the program.

FOR THE COMMANDER:

/s/

Encl

WILLIAM R. DAWSON, P.E.
Chief, Planning and Policy Division
Directorate of Civil Works

CECW-PG
SUBJECT: Economic Guidance Memorandum (EGM) 04-01, Generic Depth-Damage Relationships

DISTRIBUTION:
North Atlantic Division, ATTN: CENAD-ET-P
South Atlantic Division, ATTN: CESAD-ET-P
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Mississippi Valley Division: ATTN: CEMVD-PM

DAMAGE FUNCTIONS FOR SINGLE FAMILY RESIDENTIAL STRUCTURES WITH BASEMENTS

Structure Depth-Damage

Table 1 Structure One Story, With Basement		
Depth	Mean of Damage	Standard Deviation of Damage
-8	0%	0
-7	0.7%	1.34
-6	0.8%	1.06
-5	2.4%	0.94
-4	5.2%	0.91
-3	9.0%	0.88
-2	13.8%	0.85
-1	19.4%	0.83
0	25.5%	0.85
1	32.0%	0.96
2	38.7%	1.14
3	45.5%	1.37
4	52.2%	1.63
5	58.6%	1.89
6	64.5%	2.14
7	69.8%	2.35
8	74.2%	2.52
9	77.7%	2.66
10	80.1%	2.77
11	81.1%	2.88
12	81.1%	2.88
13	81.1%	2.88
14	81.1%	2.88
15	81.1%	2.88
16	81.1%	2.88

Table 2 Structure Two or More Stories, With Basement		
Depth	Mean of Damage	Standard Deviation of Damage
-8	1.7%	2.70
-7	1.7%	2.70
-6	1.9%	2.11
-5	2.9%	1.80
-4	4.7%	1.66
-3	7.2%	1.56
-2	10.2%	1.47
-1	13.9%	1.37
0	17.9%	1.32
1	22.3%	1.35
2	27.0%	1.50
3	31.9%	1.75
4	36.9%	2.04
5	41.9%	2.34
6	46.9%	2.63
7	51.8%	2.89
8	56.4%	3.13
9	60.8%	3.38
10	64.8%	3.71
11	68.4%	4.22
12	71.4%	5.02
13	73.7%	6.19
14	75.4%	7.79
15	76.4%	9.84
16	76.4%	12.36

Table 3 Structure Split Level, With Basement		
Depth	Mean of Damage	Standard Deviation of Damage
-8		
-7		
-6	2.5%	1.8%
-5	3.1%	1.6%
-4	4.7%	1.5%
-3	7.2%	1.6%
-2	10.4%	1.6%
-1	14.2%	1.6%
0	18.5%	1.6%
1	23.2%	1.7%
2	28.2%	1.9%
3	33.4%	2.1%
4	38.6%	2.4%
5	43.8%	2.6%
6	48.8%	2.9%
7	53.5%	3.2%
8	57.8%	3.4%
9	61.6%	3.6%
10	64.8%	3.9%
11	67.2%	4.2%
12	68.8%	4.8%
13	69.3%	5.7%
14	69.3%	5.7%
15	69.3%	5.7%
16	69.3%	5.7%

Content Depth-Damage

Table 4 Content One Story, With Basement		
Depth	Mean of Damage	Standard Deviation of Damage
-8	0.1%	1.60
-7	0.8%	1.16
-6	2.1%	0.92
-5	3.7%	0.81
-4	5.7%	0.78
-3	8.0%	0.76
-2	10.5%	0.74
-1	13.2%	0.72
0	16.0%	0.74
1	18.9%	0.83
2	21.8%	0.98
3	24.7%	1.17
4	27.4%	1.39
5	30.0%	1.60
6	32.4%	1.81
7	34.5%	1.99
8	36.3%	2.13
9	37.7%	2.25
10	38.6%	2.35
11	39.1%	2.45
12	39.1%	2.45
13	39.1%	2.45
14	39.1%	2.45
15	39.1%	2.45
16	39.1%	2.45

Table 5 Content Two or More Stories-With Basement		
Depth	Mean of Damage	Standard Deviation of Damage
-8	0%	0
-7	1.0%	2.27
-6	2.3%	1.76
-5	3.7%	1.49
-4	5.2%	1.37
-3	6.8%	1.29
-2	8.4%	1.21
-1	10.1%	1.13
0	11.9%	1.09
1	13.8%	1.11
2	15.7%	1.23
3	17.7%	1.43
4	19.8%	1.67
5	22.0%	1.92
6	24.3%	2.15
7	26.7%	2.36
8	29.1%	2.56
9	31.7%	2.76
10	34.4%	3.04
11	37.2%	3.46
12	40.0%	4.12
13	43.0%	5.08
14	46.1%	6.39
15	49.3%	8.08
16	52.6%	10.15

Table 6 Content Split-Level-With Basement		
Depth	Mean of Damage	Standard Deviation of Damage
-8	0.6%	2.09
-7	0.7%	1.49
-6	1.4%	1.14
-5	2.4%	1.01
-4	3.8%	1.00
-3	5.4%	1.02
-2	7.3%	1.03
-1	9.4%	1.04
0	11.6%	1.06
1	13.8%	1.12
2	16.1%	1.23
3	18.2%	1.38
4	20.2%	1.57
5	22.1%	1.76
6	23.6%	1.95
7	24.9%	2.13
8	25.8%	2.28
9	26.3%	2.44
10	26.3%	2.44
11	26.3%	2.44
12	26.3%	2.44
13	26.3%	2.44
14	26.3%	2.44
15	26.3%	2.44
16	26.3%	2.44

ENCLOSURE
DAMAGE FUNCTIONS
FOR SINGLE FAMILY RESIDENTIAL

STRUCTURES WITHOUT BASEMENTS

Structure One Story, No Basement		
Depth	**Mean of Damage**	**Standard Deviation of Damage**
-2	0%	0%
-1	2.5%	2.7%
0	13.4%	2.0%
1	23.3%	1.6%
2	32.1%	1.6%
3	40.1%	1.8%
4	47.1%	1.9%
5	53.2%	2.0%
6	58.6%	2.1%
7	63.2%	2.2%
8	67.2%	2.3%
9	70.5%	2.4%
10	73.2%	2.7%
11	75.4%	3.0%
12	77.2%	3.3%
13	78.5%	3.7%
14	79.5%	4.1%
15	80.2%	4.5%
16	80.7%	4.9%

Structure Two or More Stories-No Basement		
Depth	**Mean of Damage**	**Standard Deviation of Damage**
-2	0%	0%
-1	3.0%	4.1%
0	9.3%	3.4%
1	15.2%	3.0%
2	20.9%	2.8%
3	26.3%	2.9%
4	31.4%	3.2%
5	36.2%	3.4%
6	40.7%	3.7%
7	44.9%	3.9%
8	48.8%	4.0%
9	52.4%	4.1%
10	55.7%	4.2%
11	58.7%	4.2%
12	61.4%	4.2%
13	63.8%	4.2%
14	65.9%	4.3%
15	67.7%	4.6%
16	69.2%	5.0%

Structure Split-Level-No Basement		
Depth	**Mean of Damage**	**Standard Deviation of Damage**
-2	0%	0%
-1	6.4%	2.9%
0	7.2%	2.1%
1	9.4%	1.9%
2	12.9%	1.9%
3	17.4%	2.0%
4	22.8%	2.2%
5	28.9%	2.4%
6	35.5%	2.7%
7	42.3%	3.2%
8	49.2%	3.8%
9	56.1%	4.5%
10	62.6%	5.3%
11	68.6%	6.0%
12	73.9%	6.7%
13	78.4%	7.4%
14	81.7%	7.9%
15	83.8%	8.3%
16	84.4%	8.7%

Content One Story, No Basement		
Depth	**Mean of Damage**	**Standard Deviation of Damage**
-2	0%	0%
-1	2.4%	2.1%
0	8.1%	1.5%
1	13.3%	1.2%
2	17.9%	1.2%
3	22.0%	1.4%
4	25.7%	1.5%
5	28.8%	1.6%
6	31.5%	1.6%
7	33.8%	1.7%
8	35.7%	1.8%
9	37.2%	1.9%
10	38.4%	2.1%
11	39.2%	2.3%
12	39.7%	2.6%
13	40.0%	2.9%
14	40.0%	3.2%
15	40.0%	3.5%
16	40.0%	3.8%

Content Two or More Stories-No Basement		
Depth	**Mean of Damage**	**Standard Deviation of Damage**
-2	0%	0%
-1	1.0%	3.5%
0	5.0%	2.9%
1	8.7%	2.6%
2	12.2%	2.5%
3	15.5%	2.5%
4	18.5%	2.7%
5	21.3%	3.0%
6	23.9%	3.2%
7	26.3%	3.3%
8	28.4%	3.4%
9	30.3%	3.5%
10	32.0%	3.5%
11	33.4%	3.5%
12	34.7%	3.5%
13	35.6%	3.5%
14	36.4%	3.6%
15	36.9%	3.8%
16	37.2%	4.2%

Content Split-Level-No Basement		
Depth	**Mean of Damage**	**Standard Deviation of Damage**
-2	0%	0%
-1	2.2%	2.2%
0	2.9%	1.5%
1	4.7%	1.2%
2	7.5%	1.3%
3	11.1%	1.4%
4	15.3%	1.5%
5	20.1%	1.6%
6	25.2%	1.8%
7	30.5%	2.1%
8	35.7%	2.5%
9	40.9%	3.0%
10	45.8%	3.5%
11	50.2%	4.1%
12	54.1%	4.6%
13	57.2%	5.0%
14	59.4%	5.4%
15	60.5%	5.7%
16	60.5%	6.0%

APPENDIX B – FEDERAL AND STATE AGENCIES, PROGRAMS AND REGULATIONS

LOS ANGELES COUNTY

FEDERAL AND STATE AGENCIES, PROGRAMS AND REGULATIONS

COMPREHENSIVE FLOODPLAIN MANAGEMENT PLAN

PROJECT NO. 163333

DECEMBER 12, 2024

CONTENTS

TABLES

Federal

Existing laws, ordinances, plans and programs at the federal level can support or impact flood hazard mitigation actions identified in this plan. The following federal programs have been identified as programs that may interface with the actions identified in this plan. Each program enhances capabilities to implement recommended actions or has a nexus with a recommended action in this plan.

National Flood Insurance Program

The National Flood Insurance Program (NFIP) makes federally backed flood insurance available to homeowners, renters, and business owners in participating communities that enact floodplain regulations. For most participating communities, FEMA has prepared a detailed Flood Insurance Study. The study presents water surface elevations for floods of various magnitudes, including the 1 percent annual chance (100-year) flood (or base flood) and the 500-year flood. Base flood elevations and the boundaries of the 100- and 500-year floodplains are shown on Flood Insurance Rate Maps (FIRMs), which are the primary tools for identifying the extent and location of the flood hazard. FIRMs are the most detailed and consistent data source available, and for many communities they represent the minimum area of oversight under their floodplain management program.

Participants in the NFIP must, at a minimum, regulate development in floodplain areas in accordance with NFIP criteria. Before issuing a permit to build in a flood-prone area, participating jurisdictions must, at a minimum, ensure that the project meets the following criteria (44 CFR Part 60, Section 60.3):

- Be designed (or modified) and adequately anchored to prevent flotation, collapse, or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy,
- Be constructed with materials resistant to flood damage
- Be constructed by methods and practices that minimize flood damage
- Be constructed with electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities that are designed or located so as to prevent water from entering or accumulating within the components during conditions of flooding.

Additional criteria apply depending on the availability of information about the flood hazard.

Community Rating System

The Community Rating System (CRS) is a voluntary program within the NFIP that encourages floodplain management activities that exceed the minimum NFIP requirements. Flood insurance premiums are discounted to reflect the reduced flood risk resulting from community actions to meet the CRS goals of reducing flood losses, facilitating accurate insurance rating and promoting awareness of flood insurance.

For participating communities, flood insurance premium rates are discounted in increments of 5 percent, as shown in Table 1 below:

Table 1. CRS Classes and Premium Discounts

CRS Class	1	2	3	4	5	6	7	8	9	10
CRS Discount (Premium Reduction)	45%	40%	35%	30%	25%	20%	15%	10%	5%	0%

The CRS classes for local communities are based on 18 creditable activities in the following categories:

- Public information
- Mapping and regulations
- Flood damage reduction
- Flood preparedness.

CRS activities can help to save lives and reduce property damage. Communities participating in the CRS represent a significant portion of the nation's flood risk; over 70 percent of the NFIP's policy base is located in these communities. Communities receiving premium discounts through the CRS range from small to large and represent a broad mixture of flood risks, including both coastal and riverine flood risks (FEMA, 2021).

Disaster Mitigation Act of 2000

The federal Disaster Mitigation Act (DMA) of 2000 (Public Law 106-390) provides the legal basis for FEMA mitigation planning requirements for state, local and Indian tribal governments as a condition of mitigation grant assistance. The DMA replaced previous federal mitigation planning provisions with new requirements that emphasize the need for planning entities to coordinate mitigation planning and implementation efforts. The DMA established a new requirement for local mitigation plans and authorized up to 7 percent of Hazard Mitigation Grant Program funds to be available for development of state, local, and Indian tribal mitigation plans.

Biggert-Waters Flood Insurance Reform Act of 2012 and Homeowner Flood Insurance Affordability Act of 2014

The Biggert-Waters Flood Insurance Reform Act of 2012 authorized and funded a national mapping program. It also authorized insurance premium rate increases to ensure the fiscal soundness of the NFIP by transitioning the program from subsidized rates, also known as artificially low rates, to offer full actuarial rates reflective of risk.

The Homeowner Flood Insurance Affordability Act of 2014 repealed parts of Biggert-Waters, restoring grandfathering, putting limits on certain rate increases and updating the approach to ensuring the fiscal soundness of the fund by applying an annual surcharge to all policyholders.

Certain provisions in these acts were codified in July 2020 to clarify certain existing NFIP rules relating to NFIP operations and the Standard Flood Insurance Policy as per §44 CFR 61.

Executive Order 11988 Floodplain Management

Executive Order 11988 requires Federal agencies to avoid long and short-term adverse impacts due to occupancy and modification of floodplains to the extent possible. They are also required to avoid direct or indirect support of floodplain development whenever a practicable alternative is feasible.

Executive Order 13690: Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input

Executive Order 13690 establishes the Federal Flood Risk Management Standard which is a framework to increase resilience against flooding as well as preserve the floodplains' natural values. The Executive Order also sets a process for further consideration of public input.

Executive Order 14030: Climate-Related Financial Risk

This Executive Order requires the Assistant to the President for Economic Policy and Director of the National Economic Council and the Assistant to the President and National Climate Advisor to develop in coordination with the Secretary of the Treasury and the Director of the Office of Management and Budget, a comprehensive Government-wide strategy climate-related financial risk.

Endangered Species Act

The federal Endangered Species Act (ESA) was enacted in 1973 to conserve species facing depletion or extinction and the ecosystems that support them. The act sets forth a process for determining which species are threatened and endangered and requires the conservation of the critical habitat in which those species live. The ESA provides broad protection for species of fish, wildlife and plants that are listed as threatened or endangered. Provisions are made for listing species, as well as for recovery plans and the designation of critical habitat for listed species. The ESA outlines procedures for federal agencies to follow when taking actions that may jeopardize listed species and contains exceptions and exemptions. It is the enabling legislation for the Convention on International Trade in Endangered Species of Wild Fauna and Flora. Criminal and civil penalties are provided for violations of the ESA and the Convention.

In some parts of the country, including the Pacific Northwest and the Sacramento-San Joaquin Delta area, court rulings have found that floodplain management measures can be in conflict with the goals of the endangered species act. Those rulings have required FEMA and local governments to engage in a consultation process with federal wildlife agencies (Section 7 of the ESA) as they work to develop certain floodplain management programs, plans and projects.

Clean Water Act

The federal Clean Water Act (CWA) employs regulatory and non-regulatory tools to reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff. These tools are employed to achieve the broader goal of restoring and maintaining the chemical, physical, and biological integrity of the nation's surface waters so that they can support "the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water."

Evolution of CWA programs over the last decade has included a shift from a program-by-program, source-by-source,pollutant-by-pollutant approach to more holistic watershed-based strategies. Under the watershed approach, equal emphasis is placed on protecting healthy waters and restoring impaired ones. A full array of issues are addressed, not just those subject to CWA regulatory authority. Involvement of stakeholder groups in the development and implementation of strategies for achieving and maintaining water quality and other environmental goals is a hallmark of this approach.

National Incident Management System

The National Incident Management System (NIMS) is a systematic approach for government, nongovernmental organizations, and the private sector to work together to manage incidents involving floods and other hazards. The NIMS provides a flexible but standardized set of incident management practices. Incidents typically begin and end locally, and they are managed at the lowest possible geographical, organizational, and jurisdictional level. In other instances, success depends on the involvement of multiple jurisdictions, levels of government, functional agencies, and emergency-responder disciplines. These instances necessitate coordination across this spectrum of organizations. Communities using NIMS follow a comprehensive national approach that improves the effectiveness of emergency management and response personnel across the full spectrum of potential hazards (including natural hazards, terrorist activities, and other human-caused disasters) regardless of size or complexity.

Americans with Disabilities Act

The Americans with Disabilities Act (ADA) seeks to prevent discrimination against people with disabilities in employment, transportation, public accommodation, communications, and government activities. The most recent amendments became effective in January 2009 (Public Law 110-325). Title II of the ADA deals with compliance with the Act in emergency management and disaster-related programs, services, and activities. It applies to state and local governments as well as third parties, including religious entities and private nonprofit organizations. The ADA has implications for sheltering requirements and public notifications. During an emergency alert, officials must use a combination of warning methods to ensure that all residents have any necessary information. Those with hearing impairments may not hear radio, television, sirens, or other audible alerts, while those with visual impairments may not see flashing lights or visual alerts. Two stand-alone technical documents have been issued for shelter operators to meet the needs of people with disabilities. These documents address physical accessibility as well as medical needs and service animals. The ADA also intersects with disaster preparedness programs in regards to transportation, social services, temporary housing, and rebuilding. Persons with disabilities may require additional assistance in evacuation and transit (e.g., vehicles with wheelchair lifts or paratransit buses). Evacuation and other response plans should address the unique needs of residents. Local governments may be interested in implementing a special-needs registry to identify the home addresses, contact information, and needs for residents who may require more assistance.

Public Law 8499, Flood Control and Coastal Emergencies

Federal law that gives the U.S. Army Corps of Engineers the legal authority to conduct emergency preparation, response, and recovery activities and to supplement local efforts in the repair of flood

damage reduction projects that have been damaged by floods. Under Public Law 8499, the Corps' Chief of Engineers is authorized to undertake activities including disaster preparedness, advance measures to prevent or reduce damage when there is an imminent threat of unusual flooding, emergency operations (flood response and post-flood response), rehabilitation of flood control works threatened or destroyed by flood, protection or repair of federally authorized shore protective works threatened or damaged by coastal storm, and provision of emergency water in the event of drought or contaminated source.

State

Existing laws, ordinances, plans and programs at the state level can support or impact flood hazard mitigation actions identified in this plan. The following state programs have been identified as programs that may interface with the actions identified in this plan. Each program enhances capabilities to implement recommended actions or has a nexus with a recommended action in this plan.

California General Planning Law

California state law requires that every county and city prepare and adopt a comprehensive long-range plan to serve as a guide for community development. The general plan expresses the community's goals, visions, and policies relative to future land uses, both public and private. The general plan is mandated and prescribed by state law (Cal. Gov. Code §65300 et seq.), and forms the basis for most local government land use decision-making. The plan must consist of an integrated and internally consistent set of goals, policies, and implementation measures. In addition, the plan must focus on issues of the greatest concern to the community and be written in a clear and concise manner. County actions, such as those relating to land use allocations, annexations, zoning, subdivision and design review, redevelopment, and capital improvements, must be consistent with the plan.

California Environmental Quality Act

The California Environmental Quality Act (CEQA) was passed in 1970, shortly after the federal government passed the National Environmental Policy Act, to institute a statewide policy of environmental protection. CEQA requires state and local agencies in California to follow a protocol of analysis and public disclosure of the potential environmental impacts of development projects. CEQA makes environmental protection a mandatory part of every California state and local agency's decision making process.

CEQA establishes a statewide environmental policy and mandates actions all state and local agencies must take to advance the policy. For any project under CEQA's jurisdiction with potentially significant environmental impacts, agencies must identify mitigation measures and alternatives by preparing an environmental impact report and may approve only projects with no feasible mitigation measures or environmentally superior alternatives.

Porter-Cologne Act

The Porter-Cologne Water Quality Control Act expanded the enforcement authority of the State Water Resources Control Board and the nine Regional Water Quality Control Boards, including the Los Angeles Regional Water Quality Control Board. The act provided for the California Environmental Protection Agency to create the local boards and better protect water rights and water quality. The act uses National Pollutant Discharge Elimination System permits for point source discharges and waste discharge to keep people from degrading the water quality of the state. The policy states:

- The quality of all waters of the state shall be protected
- All activities and factors affecting the quality of water will be regulated in order to attain the highest water quality within reason.
- The state must be prepared to exercise its fullest power and jurisdiction in order to protect the quality of water in the state from degradation.

AB 162: Flood Planning, Chapter 369, Statutes of 2007

This California State Assembly Bill passed in 2007 requires cities and counties to address flood-related matters in the land use, conservation, and safety and housing elements of their general plans. The land use element must identify and annually review the areas covered by the general plan that are subject to flooding as identified in floodplain mapping by either FEMA or the California Department of Water Resources. The conservation element of the general plan must identify rivers, creeks, streams, flood corridors, riparian habitat, and land that may accommodate floodwater for the purposes of groundwater recharge and stormwater management. The safety element must identify information regarding flood hazards including (California Legislature, 2007):

- Flood hazard zones
- Maps published by FEMA, California Department of Water Resources, the U.S. Army Corps of Engineers, the Central Valley Flood Protection Board, the Governor's Office of Emergency Services, etc.
- Historical data on flooding
- Existing and planned development in flood hazard zones. The general plan must establish goals, policies and objectives to protect from unreasonable flooding risks including:
- Avoiding or minimizing the risks of flooding new development
- Evaluating whether new development should be located in flood hazard zones
- Identifying construction methods to minimize damage.

AB 162 establishes goals, policies and objectives to protect from unreasonable flooding risks. It establishes procedures for the determination of available land suitable for urban development, which may exclude lands where FEMA or California Department of Water Resources has determined that the flood management infrastructure is not adequate to avoid the risk of flooding.

AB 2140: General Plans- Safety Element

This bill provides that the state may allow for more than 75 percent of public assistance funding under the California Disaster Assistance Act only if the local agency is in a jurisdiction that has adopted a local hazard mitigation plan as part of the safety element of its general plan. The local hazard mitigation plan needs to include elements specified in this legislation. In addition, this bill requires the California Office of Emergency Services to give preference for federal mitigation funding to cities and counties that have adopted local hazard mitigation plans. The intent of the bill is to encourage cities and counties to create and adopt hazard mitigation plans.

AB 747: General Plans- Safety Element

This bill requires California communities with general plans to address evacuation routes in the safety element of the general plan. Information on the evacuation routes and their capacity, safety and viability under a range of emergency scenarios must be provided. For communities that have not adopted a local hazard mitigation plan, the safety element must be updated with this information by January 1, 2022. For those with a local hazard mitigation plan, the requirement applies upon the next revision of the hazard mitigation plan on or after January 1, 2022. Communities that have adopted a local hazard mitigation plan, emergency operations plan, or other document that fulfills the goals and objectives of this law may comply with this requirement by summarizing and incorporating by reference the other plan or document in the safety element.

In subsequent revisions to the safety element, communities also will be required 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. These subsequent updates must occur upon each revision of the general plan housing element or local hazard mitigation plan and not less than once every eight years.

AB 2800: Climate Change- Infrastructure Planning

This California State Assembly bill passed in 2016 and until July 1, 2020, requires state agencies to take into account the current and future impacts of climate change when planning, designing, building, operating, maintaining, and investing in state infrastructure. The bill, by July 1, 2017, and until July 1, 2020, requires an agency to establish a Climate-Safe Infrastructure Working Group to examine how to integrate scientific data concerning projected climate change impacts into state infrastructure engineering.

SB 92 and New Standards for Submitting Dam Inundation Maps

On June 27, 2017, significant legislative changes related to dam safety were adopted by California through the passing of Senate Bill 92 (SB 92, part of the 2017-18 budget package). The bill requires the following changes which will affect dam owners:

- Inundation Maps
- Emergency Action Plans
- Fees and Enforcement

SB 379: Land Use, General Plan, Safety Element

This California Senate Bill establishes provisions that require the safety element in local general plans to be reviewed and updated to address climate adaptation and resiliency strategies. The safety element must include a vulnerability assessment, adaptation goals, policies and objectives, and implementation measures. A safety element update to comply with the law is due at the time of a jurisdiction's first local hazard mitigation plan adoption after January 1, 2017, or if no such FEMA plan has been adopted, by January 1, 2022. The bill also references specific sources of useful climate information to consult, such as Cal-Adapt.

California State Building Code

California Code of Regulations Title 24, also known as the California Building Standards Code, is a compilation of building standards from three sources:

- Building standards that have been adopted by state agencies without change from building standards contained in national model codes
- Building standards that have been adopted and adapted from the national model code standards to meet California conditions
- Building standards authorized by the California legislature that constitute extensive additions not covered by the model codes adopted to address particular California concerns.

The state Building Standards Commission is authorized by California Building Standards Law (Health and Safety Code Sections 18901 through 18949.6) to administer the processes related to the adoption, approval, publication, and implementation of California's building codes. These building codes serve as the basis for the design and construction of buildings in California. The national model code standards adopted into Title 24 apply to all occupancies in California except for modifications adopted by state agencies and local governing bodies. Since 1989, the Building Standards Commission has published new editions of Title 24 every three years.

Standardized Emergency Management System

California Code of Regulations Title 19 establishes the Standardized Emergency Management System to standardize the response to emergencies involving multiple jurisdictions. The Standardized Emergency Management System is intended to be flexible and adaptable to the needs of all emergency responders in California. It requires emergency response agencies to use basic principles and components of emergency management. Local governments must use the system in order to be eligible for state funding of response-related personnel costs under California Code of Regulations Title 19 (Sections 2920, 2925 and 2930). Individual agencies' roles and responsibilities contained in existing laws or the state emergency plan are not superseded by these regulations.

California State Hazard Mitigation Plan

Under the DMA, California must adopt a federally approved state multi-hazard mitigation plan in order to be eligible for certain disaster assistance and mitigation funding. The intent of the California State

Hazard Mitigation Plan is to reduce or prevent injury and damage from hazards in the state through the following:

- Documenting statewide hazard mitigation planning in California
- Describing strategies and priorities for future mitigation activities
- Facilitating the integration of local and tribal hazard mitigation planning activities into statewide efforts
- Meeting state and federal statutory and regulatory requirements.

The plan is an annex to the State Emergency Plan, and it identifies past and present mitigation activities, current policies and programs, and mitigation strategies for the future. It also establishes hazard mitigation goals and objectives. The plan will be reviewed and updated annually to reflect changing conditions and new information, especially information on local planning activities.

Local hazard mitigation plans developed in response to the Disaster Mitigation Act in the State of California are to be consistent with the provisions of the approved State Hazard Mitigation Plan.

Governor's Executive Order S-13-08

Governor's Executive Order S-13-08 enhances the state's management of climate impacts from sea level rise, increased temperatures, shifting precipitation and extreme weather events. There are four key actions in the executive order:

- Initiate California's first statewide climate change adaptation strategy to assess expected climate change impacts, identify where California is most vulnerable, and recommend adaptation policies by early 2009. This effort will improve coordination within state government so that better planning can more effectively address climate impacts on human health, the environment, the state's water supply and the economy.
- Request that the National Academy of Science establish an expert panel to report on sea level rise impacts in California, to inform state planning and development efforts.
- Issue interim guidance to state agencies for how to plan for sea level rise in designated coastal and floodplain areas for new projects.
- Initiate a report on critical infrastructure projects vulnerable to sea level rise.

California Civil Code 1102

Article 1102 of the California Civil Code establishes requirements for disclosure of information as part of real estate transactions. It applies to any transfer of real property or residential stock cooperative with one to four dwelling units, by sale, exchange, installment land sale contract, lease with an option to purchase, other option to purchase, or ground lease coupled with improvements. The code imposes disclosure duties on the seller, the seller's agent, or both. Provisions of this code require disclosure of information regarding the proximity of the subject property to areas of natural hazards, including flood, wildfire and earthquake.

Local Flood Protection Planning Act

This statute provides guidance on what a flood mitigation plan should include.

Water Code Division 5, Part 2, Chapter 4, Article 4

This code provides flood plain regulations established for public agencies within flood plain or a flood plain management plan.

California Coastal Management Program

This program requires coastal communities to prepare coastal plans and requires that new development minimize risks to life and property in areas of high geologic, flood, and fire hazard.

References

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