



**Suburban
Water Systems**
A SouthWest Water Company

WATER SHORTAGE CONTINGENCY PLAN

SUBURBAN WATER SYSTEMS



JUNE 2021



WATER SHORTAGE CONTINGENCY PLAN



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Water Systems**

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Table of Contents

Section	Page
1 Overview	1
2 Water Supply Reliability Analysis.....	1
3 Annual Water Supply and Demand Assessment Procedures	6
4 Shortage Stages and Shortage Response Actions.....	11
5 Communication Protocols	29
6 Compliance and Enforcement	33
7 Legal Authorities	35
8 Financial Consequences of WSCP Implementation	36
9 Monitoring and Reporting.....	36
10 Special Water Feature Distinction.....	36
11 WSCP Adoption and Refinement Procedures.....	37

Appendices

Appendix	Description
Appendix A.....	Board Resolution Adopting WSCP
Appendix B.....	Suburban's Tariff Rule & Schedule No. 14.1
Appendix C.....	2019 County of Los Angeles All-Hazards Mitigation Plan

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ACRONYMS

AF	acre-feet
AWIA	America's Water Infrastructure Act of 2018
CBMWD	Central Basin Municipal Water District
CIC	Covina Irrigating Company
CPUC	California Public Utilities Commission
CSIP	Catastrophic Supply Interruption Plan
CWC	California Water Code
DRA	Drought Risk Assessment
DWR	California Department of Water Resources
EOC	Emergency Operation Center
ERP	Emergency Response Plan
FY	Fiscal Year
GW	Groundwater
IC	Incident Commander
ICS	Incident Command System
IRP	Integrated Resource Plan
LACSD	Los Angeles County Sanitation Districts
LHMP	Local Hazard Mitigation Plan
MWD	Metropolitan Water District of Southern California
OES	California Governor's Office of Emergency Services
RRA	Risk and Resilience Assessment
SEMS	Standardized Emergency Management System
SGVPA	San Gabriel Valley Protective Association
SUBURBAN	Suburban Water Systems
SWP	State Water Project
TVMWD	Three Valleys Municipal Water District
USGVMWD	Upper San Gabriel Valley Municipal Water District
UWMP	Urban Water Management Plan
WSAP	Water Supply Allocation Plan
WSCP	Water Shortage Contingency Plan
WSDM	Water Surplus and Drought Management Plan

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1. OVERVIEW

Water supplies may be interrupted or reduced significantly in a number of ways, including droughts, earthquakes, and power outages, that hinder a water agency's ability to effectively deliver water. The ability to manage water supplies in times of drought or other emergencies is an important part of water resources management for a community.

Recent water supply challenges throughout the American Southwest and the State of California have resulted in the development of a number of policy actions that water agencies would implement in the event of a water shortage. In Southern California, the development of such policies has occurred at both the wholesale and retail level. This section addresses elements related to the urban water supplier's Water Shortage Contingency Plan (WSCP) describing new and existing policies that Metropolitan Water District of Southern California (MWD) and Suburban Water Systems (Suburban) have in place to respond to water supply shortages, including a catastrophic interruption and greater than a 50 percent reduction in water supply.

2. WATER SUPPLY RELIABILITY ANALYSIS

2.1 WATER SERVICE RELIABILITY ASSESSMENT

Southern California is expected to experience an increase in regional demands in the years 2025 through 2045 as a result of population growth. Although increases in demand are expected, future demands are effectively limited due to the requirements of SBx7-7. It can be reasonably expected that the majority of agencies have met or were near their compliance targets for 2020 and will continue to meet, or will soon meet, their per-capita usage limit in the future.

The data in the MWD 2020 Urban Water Management Plan (UWMP) shows supply reliability projections for average and single dry years and is important to effectively project and analyze supply and demand over the next 25 years for many regional agencies. Projected supplies during single and multiple dry year scenarios indicate MWD's projected supply will exceed its projected single dry year demands in all years. Likewise, for average years, MWD supply exceeds projected demands for all years. Due to the semi-arid nature of Suburban's climate and as a result of past drought conditions, Suburban is vulnerable to water shortages due to its climatic environment and seasonally hot summer months. Section 3 of Suburban's 2020 UWMP describes the water availability during single and multiple

dry year scenarios. **Tables 1 through 9** summarize the supply and demand comparisons, in acre feet (AF), during normal, single-dry year, and multiple dry year for Suburban's service areas.

Table 1: Combined Suburban Normal Year Supply & Demand Comparison (AF)

	2025	2030	2035	2040	2045
Supply totals	60,851	60,851	60,851	60,851	60,851
Demand totals	45,250	45,643	46,040	46,441	46,845
Difference	15,601	15,208	14,811	14,410	14,006

Table 2: San Jose Hills Normal Year Supply & Demand Comparison (AF)

	2025	2030	2035	2040	2045
Supply totals	35,615	35,615	35,615	35,615	35,615
Demand totals	24,789	25,028	25,270	25,515	25,762
Difference	10,826	10,587	10,345	10,100	9,853

Table 3: Whittier/La Mirada Normal Year Supply & Demand Comparison (AF)

	2025	2030	2035	2040	2045
Supply totals	25,136	25,136	25,136	25,136	25,136
Demand totals	20,461	20,615	20,770	20,926	21,083
Difference	4,675	4,521	4,366	4,210	4,053

Table 4: Combined Suburban Single Dry Year Supply & Demand Comparison (AF)

	2025	2030	2035	2040	2045
Supply totals	47,493	47,493	47,493	47,493	47,493
Demand totals	46,364	46,767	47,174	47,585	48,000
Difference	1,129	726	319	(92)	(507)

Table 5: San Jose Hills Single Dry Year Supply & Demand Comparison (AF)

	2025	2030	2035	2040	2045
Supply totals	29,579	29,579	29,579	29,579	29,579
Demand totals	25,535	25,782	26,032	26,283	26,538
Difference	4,044	3,797	3,547	3,295	3,041

Table 6: Whittier/La Mirada Single Dry Year Supply & Demand Comparison (AF)

	2025	2030	2035	2040	2045
Supply totals	17,914	17,914	17,914	17,914	17,914
Demand totals	20,828	20,985	21,143	21,302	21,462
Difference	(2,914)	(3,071)	(3,229)	(3,388)	(3,548)

Table 7: Combined Suburban Multiple Dry Year Supply & Demand Comparison (AF)

		2025	2030	2035	2040	2045
First year	Supply totals	55,449	55,449	55,449	55,449	55,449
	Demand totals	44,062	44,445	44,832	45,223	45,618
	Difference	11,387	11,003	10,616	10,226	9,831
Second year	Supply totals	54,890	54,890	54,890	54,890	54,890
	Demand totals	44,062	44,445	44,832	45,223	45,618
	Difference	10,828	10,444	10,057	9,666	9,272
Third year	Supply totals	52,513	52,513	52,513	52,513	52,513
	Demand totals	44,062	44,445	44,832	45,223	45,618
	Difference	8,451	8,068	7,681	7,290	6,895
Fourth year	Supply totals	47,493	47,493	47,493	47,493	47,493
	Demand totals	44,062	44,445	44,832	45,223	45,618
	Difference	3,431	3,048	2,661	2,270	1,875
Fifth year	Supply totals	56,766	56,766	56,766	56,766	56,766
	Demand totals	44,062	44,445	44,832	45,223	45,618
	Difference	12,705	12,321	11,934	11,543	11,149

Table 8: San Jose Hills Multiple Dry Year Supply & Demand Comparison (AF)

		2025	2030	2035	2040	2045
First year	Supply totals	33,945	33,945	33,945	33,945	33,945
	Demand totals	24,374	24,610	24,848	25,088	25,331
	Difference	9,571	9,336	9,098	8,857	8,614
Second year	Supply totals	32,893	32,893	32,893	32,893	32,893
	Demand totals	24,374	24,610	24,848	25,088	25,331
	Difference	8,519	8,284	8,046	7,805	7,562
Third year	Supply totals	32,481	32,481	32,481	32,481	32,481
	Demand totals	24,374	24,610	24,848	25,088	25,331
	Difference	8,107	7,872	7,634	7,393	7,150
Fourth year	Supply totals	29,579	29,579	29,579	29,579	29,579
	Demand totals	24,374	24,610	24,848	25,088	25,331
	Difference	5,205	4,969	4,731	4,491	4,248
Fifth year	Supply totals	36,662	36,662	36,662	36,662	36,662
	Demand totals	24,374	24,610	24,848	25,088	25,331
	Difference	12,289	12,053	11,815	11,574	11,331

Table 9: Whittier/La Mirada Multiple Dry Year Supply & Demand Comparison (AF)

		2025	2030	2035	2040	2045
First year	Supply totals	21,504	21,504	21,504	21,504	21,504
	Demand totals	19,688	19,836	19,985	20,135	20,287
	Difference	1,816	1,668	1,519	1,368	1,217
Second year	Supply totals	21,996	21,996	21,996	21,996	21,996
	Demand totals	19,688	19,836	19,985	20,135	20,287
	Difference	2,309	2,161	2,012	1,861	1,710
Third year	Supply totals	20,032	20,032	20,032	20,032	20,032
	Demand totals	19,688	19,836	19,985	20,135	20,287
	Difference	344	196	47	(103)	(255)
Fourth year	Supply totals	17,914	17,914	17,914	17,914	17,914
	Demand totals	19,688	19,836	19,985	20,135	20,287
	Difference	(1,774)	(1,921)	(2,071)	(2,221)	(2,372)
Fifth year	Supply totals	20,104	20,104	20,104	20,104	20,104
	Demand totals	19,688	19,836	19,985	20,135	20,287
	Difference	416	268	119	(31)	(183)

As shown in **Tables 1 to 9**, Suburban can meet the majority of future demands through 2045. The Whittier/La Mirada service area indicates supply deficits in the analysis. Because groundwater (GW) supplies are shared amongst both Suburban service areas, a shortfall of groundwater supplies in one service area may be supplemented by the surplus within the other service area. Furthermore, these projections do not include groundwater right agreements with outside agencies. Suburban typically has agreements with other agencies to pump additional groundwater if they anticipate to exceed their adjudicated rights within the Main Basin and this amount varies annually.

2.2 FIVE-YEAR DROUGHT RISK ASSESSMENT

During a five-year drought, Suburban's service areas may import water to meet demands in excess of their adjudicated pumping rights as necessary. Imported water supplies, like groundwater, are subject to demand increases and reduced supplies during dry years; however, MWD modeling in its 2020 UWMP results in 100 percent reliability for full-service demands through the year 2045 for all climatic conditions. Based on the conditions described above, Suburban anticipates the ability to meet water demand for all climatic conditions for the near future.

A Drought Risk Assessment (DRA) was conducted over a 5-year period examining the reliability of Suburban’s water supplies. **Tables 10 to 12** show the results of the analysis. The analysis was done utilizing the State of California’s Department of Water Resources’ (DWR) DRA Planning Tool to determine supply and demand projections, and to analyze Suburban’s vulnerability to droughts. The tool also allows water purveyors to utilize potential water usage saving or supply augmentation methods to mitigate supply shortfalls. These water usages saving methods (restrictions) and supply augmentation methods are further discussed in the WSCP. As shown, both of Suburban’s service areas are capable to meet the projected demands based on the estimated water supplies during drought conditions without the need for WSCP stage implementation and supply augmentation.

Table 10: Combined Suburban Five-Year Drought Risk Assessment (AF)

	2021	2022	2023	2024	2025
Total Water Use	40,616	40,690	40,763	40,837	40,911
Total Supplies	55,449	54,890	52,513	47,493	56,766
Surplus/Shortfall w/o WSCP Action	14,833	14,200	11,750	6,656	15,855
Planned WSCP Actions (Use Reduction and Supply Augmentation)					
Supply Augmentation Benefit from WSCP Response	0	0	0	0	0
Use Reduction Savings Benefit from WSCP Response	0	0	0	0	0
Revised Surplus/Shortfall	14,833	14,200	11,750	6,656	15,855
Resulting % Use Reduction from WSCP Action	0%	0%	0%	0%	0%

Table 11: San Jose Hills Five-Year Drought Risk Assessment (AF)

	2021	2022	2023	2024	2025
Total Water Use	23,898	23,946	23,993	24,041	24,089
Total Supplies	33,945	32,893	32,481	29,579	36,662
Surplus/Shortfall w/o WSCP Action	10,047	8,947	8,488	5,538	12,574
Planned WSCP Actions (Use Reduction and Supply Augmentation)					
Supply Augmentation Benefit from WSCP Response	0	0	0	0	0
Use Reduction Savings Benefit from WSCP Response	0	0	0	0	0
Revised Surplus/Shortfall	12,574	5,538	8,488	8,947	10,047
Resulting % Use Reduction from WSCP Action	0%	0%	0%	0%	0%

Table 12: Whittier/La Mirada Five-Year Drought Risk Assessment (AF)

	2021	2022	2023	2024	2025
Total Water Use	16,718	16,744	16,770	16,796	16,823
Total Supplies	21,504	21,996	20,032	17,914	20,104
Surplus/Shortfall w/o WSCP Action	4,786	5,252	3,262	1,118	3,281
Planned WSCP Actions (Use Reduction and Supply Augmentation)					
Supply Augmentation Benefit from WSCP Response	0	0	0	0	0
Use Reduction Savings Benefit from WSCP Response	0	0	0	0	0
Revised Surplus/Shortfall	4,786	5,252	3,262	1,118	3,281
Resulting % Use Reduction from WSCP Action	0%	0%	0%	0%	0%

Response to a future drought would follow the water use efficiency mandates of Tariff Rule No. 14.1 along with implementation of the appropriate stage of regional plans, such as MWD's Water Surplus Drought Management (WSDM) Plan as described in **Section 4.1** of this WSCP.

3. ANNUAL WATER SUPPLY AND DEMAND ASSESSMENT PROCEDURES

Under California Water Code (CWC) Section 10632(a)(2), beginning by July 1, 2022, each urban water supplier is required to prepare their annual water supply and demand assessment (Annual Assessment) and submit an Annual Water Shortage Assessment Report to DWR. The Annual Water Shortage Assessment Report will be due by July 1 of every year, as required by CWC Section 10632.1.

This section outlines Suburban's procedures used in conducting an Annual Assessment, including the following: 1) written decision-making process for determining water supply reliability; and 2) key data inputs and assessment methodology for evaluating the water supply reliability for the current year and one dry year.

3.1 DECISION-MAKING PROCESS

Suburban's Annual Assessment will be mostly based on daily recorded water production and supply figures, which are reported to the Water Production Manager on a daily basis throughout the year. To determine its water supply reliability and actual reductions in water use during declared water shortages or emergencies, Suburban can rely on its daily records

as well as the monthly totals. These periodical analyses are used by Suburban to manage resources to meet projected demands and adjust to changing conditions (i.e., precipitation) throughout the year.

Starting in 2022, Suburban staff will submit and present a finalized Annual Water Shortage Assessment Report to the Board of Directors for approval by June each year. Suburban staff will also present determination of recommended water shortage response actions deemed appropriate as a result of the Annual Assessment. Following approval, Suburban staff will submit the approved Annual Water Shortage Assessment Report to DWR by July 1 of every year. The functional procedures for the decision-making process are depicted in the following timeline shown in **Figure 1**.

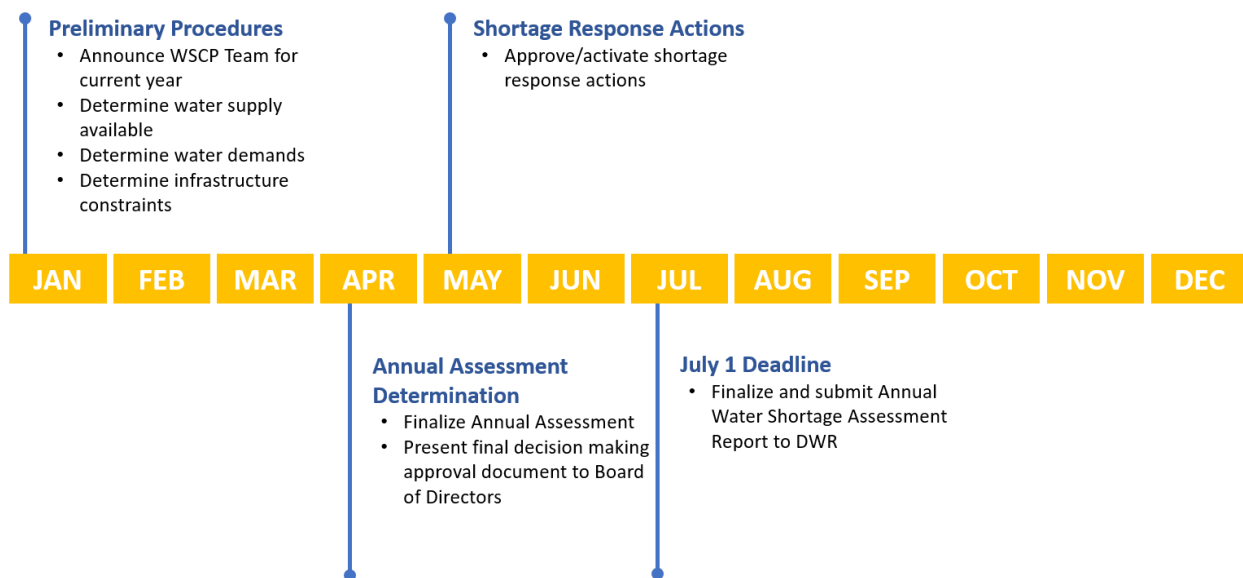


Figure 1: Sample Annual Assessment Decision-Making Process Timeline

3.2 KEY DATA INPUTS AND ASSESSMENT METHODOLOGY

This section defines the key data inputs and assessment methodology used to evaluate the water supply reliability for the anticipated conditions for the current year and for one dry year that follows. The Annual Assessment determination will focus on the current year unconstrained demand, infrastructure constraints, and total water supply availability. Moreover, the Annual Assessment will consider the current year's weather, population growth, policies in place that will impact demands, and other influencing factors. The current year available supply will incorporate the hydrological regulatory conditions for the current year and following dry year.

LOCALLY APPLICABLE EVALUATION CRITERIA

The locally applicable evaluation criteria that will be consistently relied on for each Annual Assessment include the following:

- 1) Assumed unconstrained demand (i.e., demand without any conservation measures) for current year and one dry year
- 2) Assumed total water supply availability for current year and one dry year
- 3) Existing infrastructure capabilities and plausible constraints
 - Any known issues with the water facilities (including water quality conditions limiting local sources)
 - Planned power outages for operation and maintenance
 - New construction and repairs
 - Environmental mitigation measures
 - Other constraints that may affect near-term water supply reliability

WATER SUPPLY SOURCES DESCRIPTION AND QUANTIFICATION

As part of the Annual Assessment, the total available water supply evaluation criteria will comprise of Suburban's water supply sources as shown and quantified in **Tables 13** through **18**.

Table 13: Combined Suburban Water Supplies in 2020 (AF)

Water Supply	Additional Detail on Water Supply	2020	
		Actual Volume	Water Quality
Groundwater (not desalinated)	Main San Gabriel Basin	27,379	Drinking Water
Groundwater (not desalinated)	Central Basin	1,562	Drinking Water
Purchased or Imported Water	All Imports	16,449	Drinking Water
Recycled Water	CBMWD	710	Recycled Water
Total		46,100	

Table 14: San Jose Hills Water Supplies in 2020 (AF)

Water Supply	Additional Detail on Water Supply	2020	
		Actual Volume	Water Quality
Groundwater (not desalinated)	San Jose Hills Region - Main San Gabriel Basin	16,852	Drinking Water
Purchased or Imported Water	San Jose Hills Region - All Imports	8,087	Drinking Water
Recycled Water	San Jose Hills Region - Recycled Water	710	Recycled Water
Total		25,649	

Table 15: Whittier/La Mirada Water Supplies in 2020 (AF)

Water Supply	Additional Detail on Water Supply	2020	
		Actual Volume	Water Quality
Groundwater (not desalinated)	Whittier/La Mirada Region - Main San Gabriel Basin	10,527	Drinking Water
Groundwater (not desalinated)	Whittier/La Mirada Region - Central Basin	1,562	Drinking Water
Purchased or Imported Water	Whittier/La Mirada Region - All Imports	8,362	Drinking Water
Total		20,451	

Table 16: Combined Suburban Projected Water Supplies for 2025 – 2045 (AF)

Water Supply	Additional Detail on Water Supply	Projected Water Supplies				
		2025	2030	2035	2040	2045
Groundwater (not desalinated)	All Regions - Main Basin	29,000	29,000	29,000	29,000	29,000
Groundwater (not desalinated)	Central Basin	3,721	3,721	3,721	3,721	3,721
Purchased or Imported Water	Whittier/La Mirada Region - All Imports	8,200	8,200	8,200	8,200	8,200
Purchased or Imported Water	San Jose Hills Region - All Imports	18,200	18,200	18,200	18,200	18,200
Recycled Water	San Jose Hills Region (USGVMWD)	700	700	700	700	700
Recycled Water	Whittier/La Mirada Region (CBMWD)	930	930	930	930	930
Total		60,751	60,751	60,751	60,751	60,751

Table 17: San Jose Hills Projected Water Supplies for 2025 – 2045 (AF)

Water Supply	Additional Detail on Water Supply	Projected Water Supplies				
		2025	2030	2035	2040	2045
Groundwater	San Jose Hills Region - Main Basin	16,715	16,715	16,715	16,715	16,715
Recycled Water	San Jose Hills Region - All Imports	700	700	700	700	700
Purchased or Imported Water	San Jose Hills Region - Recycled Water	18,200	18,200	18,200	18,200	18,200
Total		35,615	35,615	35,615	35,615	35,615

Table 18: La Mirada/Whittier Projected Water Supplies for 2025 – 2045 (AF)

Water Supply	Additional Detail on Water Supply	Projected Water Supplies				
		2025	2030	2035	2040	2045
Groundwater (not desalinated)	Whittier/La Mirada Region - Main Basin	12,285	12,285	12,285	12,285	12,285
Groundwater (not desalinated)	Central Basin	3,721	3,721	3,721	3,721	3,721
Purchased or Imported Water	Whittier/La Mirada Region - All Imports	8,200	8,200	8,200	8,200	8,200
Recycled Water	Whittier/La Mirada Service Area	930	930	930	930	930
Total		25,136	25,136	25,136	25,136	25,136

Imported Water Purchases

Suburban purchases water imported by MWD through its MWD member agencies: Central Basin Municipal Water District (CBMWD), Upper San Gabriel Valley Municipal Water District (USGVMWD), and Three Valleys Municipal Water District (TVMWD). In addition, Suburban purchases imported water, groundwater, and surface water from other retailers to supplement their supplies.

In the San Jose Hills Service Area, Suburban purchases water from:

- City of Covina
- City of Glendora
- Rowland Water District
- Valencia Heights Water Company

- Covina Irrigating Company
- La Puente Valley County Water District
- Valley County Water District
- Walnut Valley Water District

In the Whittier/La Mirada Service Area, Suburban purchases water from:

- California Domestic Water Company
- City of Whittier
- La Habra Heights County Water District
- Orchard Dale Water District
- San Gabriel Valley Water Company

Groundwater Supply

Suburban produces groundwater from the Main Basin to serve both the Whittier/La Mirada system and the San Jose Hills Service Area. Suburban additionally supplies the Whittier/La Mirada Service Area with Central Basin groundwater.

Surface Water Supply

Suburban uses surface water purchased from the City of Covina and Covina Irrigating Company (CIC), and is described as purchased water. Only the San Jose Hills Service Area receives this purchased surface water. The surface waters of the San Gabriel River, allocated as diversion rights, are coordinated by the Committee of Nine and the San Gabriel Valley Protective Association (SGVPA).

Recycled Water Supply

Suburban provides recycled water in the San Jose Hills Service Area, but not within the Whittier/La Mirada Service Area. The recycled water used in the San Jose Hills Service Area is produced by Los Angeles County Sanitation Districts (LACSD) and distributed by USGVMWD to Suburban's customers.

4. SHORTAGE STAGES AND SHORTAGE RESPONSE ACTIONS

4.1 MWD STAGES OF ACTION

WATER SURPLUS & DROUGHT MANAGEMENT PLAN (WSDM)

In addition to the provisions of Tariff Rule No. 14.1, Suburban also works in conjunction with its wholesalers (CBMWD, USGVMWD, and TVMWD) and MWD to implement conservation measures within the framework of MWD's Water Surplus and Drought

Management (WSDM) Plan. The WSDM Plan was developed in 1999 by MWD with assistance and input from its member agencies. The plan addresses both surplus and shortage contingencies. MWD's WSDM Plan documents the stages of action that it would undertake in response to a water supply shortage.

The WSDM Plan guiding principle is to minimize adverse impacts of water shortage. The plan guides the operations of water resources (local resources, Colorado River, State Water Project (SWP), and regional storage) to ensure regional reliability. It identifies the expected sequence of resource management actions MWD will take during surpluses and shortages of water to minimize the probability of severe shortages, which require curtailment of full-service demands. Mandatory allocations are avoided to the extent practical; however, in the event of an extreme shortage, an allocation plan will be implemented.



Figure 2: Severe Droughts Highlight the Importance of Conservation Ordinances (Lake Oroville in 2014)

In addition to its WSDM Plan, MWD developed a Water Supply Allocation Plan (WSAP), which provides a standardized methodology for allocation of supplies during times of extreme shortage (Stage 7 in MWD's WSDM Plan). During a shortage, Suburban's imported water supplies will be allocated based on the methodology documented in the Allocation Plans of CBMWD, USGVMWD, and TVMWD, which typically mirror the MWD allocation plan.

MWD's WSDM and WSAP Plans help guide drought management for many agencies throughout the region.

The following description of shortage stages is from MWD's 2020 UWMP, page 2-29:

"Shortage: Metropolitan can meet full-service demands and partially meet or fully meet interruptible demands, using stored water or water transfers as necessary.

Severe Shortage: Metropolitan can meet full-service demands only by using stored water, transfers, and possibly calling for extraordinary conservation.

Extreme Shortage: Metropolitan allocates available supply to full-service customers.

The WSDM Plan also defines six shortage management stages to guide resource management activities. These stages are not defined merely by shortfalls in imported water supply, but also by the water balances in Metropolitan's storage programs. Thus, a 10 percent shortfall in imported supplies could be a stage one shortage if storage levels are high. If storage levels are already depleted, the same shortfall in imported supplies could potentially be defined as a more severe shortage.

When Metropolitan must make net withdrawals from storage to meet demands, it is considered to be in a shortage condition. Under most of these stages, Metropolitan is still able to meet all end-use demands for water. For shortage stages 1 through 3, Metropolitan will meet demands by withdrawing water from storage. At shortage stages 4 and 5, Metropolitan may undertake additional shortage management steps, including issuing public calls for extraordinary conservation and exercising water transfer options, or purchasing water on the open market."

MWD WATER SUPPLY ALLOCATION PLAN (FOR WSDM SHORTAGE STAGE 7)

In February 2008, MWD's Board of Directors adopted a WSAP, which includes a methodology for calculating supply allocations in the event that MWD enters a Shortage Stage 7 and is unable to meet the demands of its member agencies. MWD revised its WSAP in 2014 to include the following updates: new Fiscal Year (FY) 12-13 to FY 13-14 baseline, implement a Conservation Demand Hardening Adjustment, create a separate Groundwater Replenishment Allocation for applicable agencies, and replace WSAP Penalty Rates with Allocation Surcharges based on the marginal costs of turf removal. It should be noted that the WSAP is not a rationing plan. Rather, it is a pricing plan where water is allocated at regular prices and agencies that choose to take more than the allocated water pay surcharges. The surcharge pricing mechanism acts to discourage the use of water above the allocation. The WSAP uses a combination of

When a WSDM Shortage Stage 7 is triggered, MWD's WSAP helps to assess resources in the most equitable way possible.

estimated total retail demands and historical local supply production within the member agency service area to estimate the demands on MWD from each member agency in a given year. Based on a number of factors, including storage and supply conditions, MWD then determines whether it has the ability to meet these demands or will need to allocate its limited supplies among its member agencies. Thus, implicit in MWD's decision not to implement an allocation of its supplies is that, at a minimum, MWD will be able to meet the demands identified for each of the member agencies.

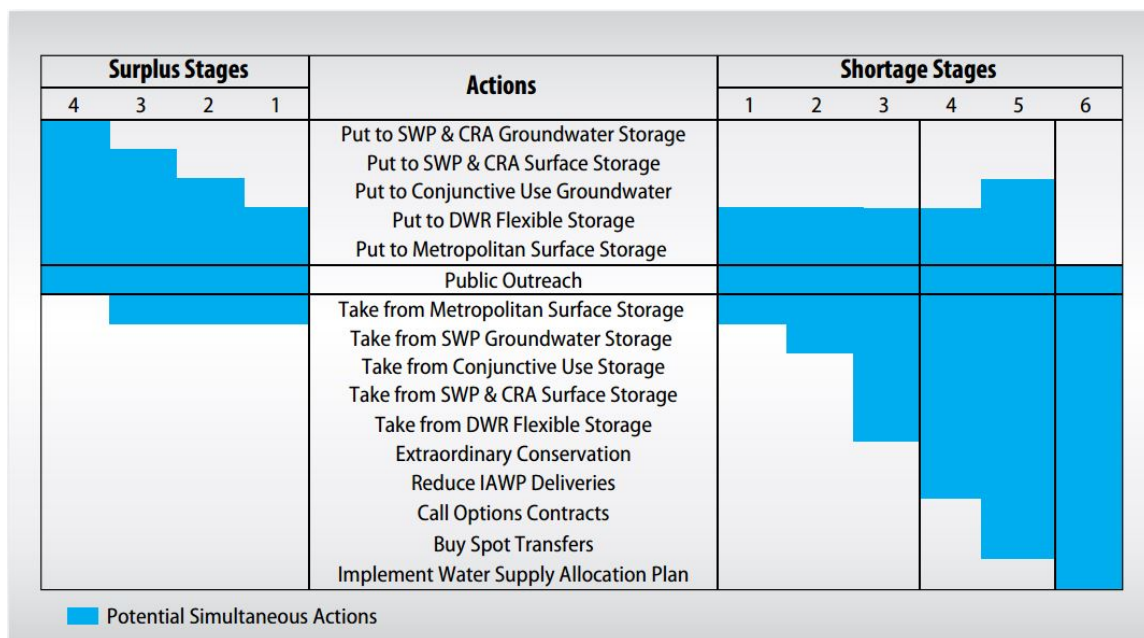


Figure 3: MWD WSDM Surplus & Drought Stages

According to MWD's 2015 Integrated Resource Plan (IRP), the approach seeks to balance the impacts of a shortage at the retail level while maintaining equity on the wholesale level and takes into account growth, local investments, changes in supply conditions and the demand hardening aspects of non-potable recycled water use and the implementation of conservation savings programs. The methodology attempts to allocate supplies based on an estimate of an agency's relative need for imported water using the following process:

1. Establish a baseline for total retail demands (and adjust for growth) to determine the allocation year total retail demands. (*"What are your total water demands?"*)
2. Estimate the amount of local supplies to be utilized in the allocation year and subtract from total retail demands. This is the allocation year baseline demand on MWD. (*"How much imported water do you need from MWD?"*)
3. Apply the minimum allocation percentage (per the regional shortage level) to the

allocation year baseline demand and provide minor adjustments based on various criteria. (*“Restrict normal supply deliveries and provide allocation.”*)

BASE PERIOD CALCULATIONS (USED TO DETERMINE WSAP REDUCTIONS)

The Base Period is calculated using data from FY 2012-13 and FY 2013-14. Base Period wholesale demands are based on the two-year average of demands on MWD during the Base Period, including full-service, seawater barrier, seasonal shift, and surface storage operating agreement demands.

Local supplies for the base period are calculated using a two-year average of groundwater production, groundwater recovery, Los Angeles Aqueduct supply, surface water production, and other imported supplies. Non-potable recycling production is not included in this calculation, which, according to MWD, is intended to address the impact of demand hardening due to recycled water use.

Total potable retail demands for the Base Period are then calculated by adding the Base Period wholesale demands on MWD and the Base Period local supplies.

WSAP ALLOCATION YEAR CALCULATIONS

The next step is to estimate water needs in an allocation year by (1) adjusting the Base Period total retail demands for population or economic growth, and (2) accounting for changes in local supplies.

The Base Period retail demands are adjusted for growth using the average annual rate of population growth occurring since the two-year base period based on county-level data generated by the California Department of Finance.

Next, these growth-adjusted demands are adjusted again to account for (1) gains and losses of local supply, and (2) extraordinary increases in production over the base year. According to MWD, these adjustments are made to give a more accurate estimate of actual supplies in the allocation year, and, in turn, more accurately reflect an agency’s demand for MWD supplies.

The adjustment for gains in local supplies is intended to account for planned or scheduled gains in local supply production above the Base Period, which are not due to extraordinary actions



Figure 4: MWD’s Diamond Valley Lake (Potential Reserves for WSAP Allocations)

to increase water supply in the allocation year. These previously scheduled increases in supply programs (i.e., San Diego County Water Authority/Imperial Irrigation District) or local production are added to the base period local supplies. Again, new supplies from non-potable recycling projects are not counted as local supplies.

While the local agency does become more reliable with the addition of the new supplies, assuming that the new supplies are available during an allocation, the benefits of these programs are partially offset because the impact of adding the new supplies to the Base Period local supplies is to reduce an agency’s dependence on MWD and thus their allocation under the WSAP.

Alternatively, only a portion of the additional supplies from what are termed “extraordinary increases in production” are added back to Allocation Year local supplies depending on the retail shortage level. Extraordinary increases in production include such efforts as purchasing transfers or mining of groundwater basins. By adding only a percentage of the yield from these supplies to Allocation Year local supplies, it has the effect of “setting aside” the majority of yield for the agency who procured the supply.

Table 19 reflects the set of percentages used in the WSAP to establish water allocations for each agency.

Table 19: Water Allocation Percentages

Regional Shortage Level	Regional Shortage Percentage	Wholesale Minimum Percentage	Maximum Retail Impact Adjustment Maximum
1	5%	92.5%	2.5%
2	10%	85.0%	5.0%
3	15%	77.5%	7.5%
4	20%	70.0%	10.0%
5	25%	62.5%	12.5%
6	30%	55.0%	15.0%
7	35%	47.5%	17.5%
8	40%	40.0%	20.0%
9	45%	32.5%	22.5%
10	50%	25.0%	25.0%

4.2 SUBURBAN SHORTAGE STAGES OF ACTION

SUBURBAN RESPONSE PLAN

Suburban’s WSCP for the San Jose Hills and Whittier/La Mirada service areas is the combination of Tariff Rule No. 14.1 and Tariff Schedule No. 14.1, which are both included as **Appendix B**. The purpose of the WSCP is to detail actions and restrictions to be followed during the various stages of a water shortage. Suburban has established diverse approaches to meeting future water demands including: facility improvements and increased deliveries of local groundwater; increased deliveries of imported water; implementing a recycled water program; and supporting water demand management programs. This has allowed Suburban to meet most demands in spite of drought conditions; however, water shortages can be triggered by a hydrologic limitation in supply, limitations or failure of supply and treatment infrastructure, or both. Hydrologic or drought limitations tend to develop and abate more slowly, whereas infrastructure failure tends to happen quickly and relatively unpredictably. Suburban’s WSCP ensures that water demands are met promptly and equitably.

As a regulated utility, Suburban’s rates are determined by the California Public Utilities Commission (CPUC), including drought surcharge rates and penalties. Since the mid-1980s, the CPUC allows all classes of water utilities to file a water conservation and rationing plan consisting of two distinct tariffs: Rule No. 14.1 (the voluntary conservation program) and Schedule No. 14.1 (the mandatory rationing with drought surcharge rates and penalties).

The CPUC has jurisdiction over Suburban because Suburban is an Investor-owned Water Utility. The CWC requires suppliers who are subject to regulation by the CPUC secure its approval before imposing water consumption regulations and restrictions required by water supply shortage emergencies. Therefore, all retail private water utilities are bound by Tariff Rule No. 14.1, which provides three levels of water conservation actions: 1) voluntary rationing, 2) mandatory rationing, and 3) service connection moratorium.

When the state implemented mandatory water conservation measures in 2014, the CPUC required water utilities within its jurisdiction to activate Tariff Rule No. 14.1. Suburban's compliance put Stage 1 into effect. In June 2015, Suburban activated Tariff Schedule and Tariff Rule No. 14.1 at Stage 2 and began implementing the drought surcharge. The WSCP provides the actions implemented by Suburban during the various stages of a water shortage and includes the water conservation requirements for customers during each stage.

Suburban's WSCP includes actions to undertake in response to water supply shortages and is divided into four stages. The actions to be undertaken during each stage include, but are not limited to, the following:

- **Stage 1** - Stage 1 prohibits the non-essential or unauthorized use of water. It restricts irrigation/commercial use and requires repairs completed in five days. Prior to implementing Stage 1, Suburban must obtain approval from the CPUC to activate Tariff Rule No. 14.1.
- **Stage 2** - While including Stage 1 restrictions, Stage 2 further requires repairs completed in three days. Prior to implementing Stage 2, Suburban must obtain approval from the CPUC to activate Tariff Schedule No. 14.1.
- **Stage 3** - While including Stages 1 and 2 restrictions, Stage 3 further restricts irrigation. Once Tariff Schedule No. 14.1 is activated in Stage 2, Suburban is authorized to implement Stage 3 by filing a Tier 2 advice letter with the CPUC.
- **Stage 4** - While including Stages 1, 2, and 3, Stage 4 implements flow restrictors and requires immediate repair irrigation. Once Stage 3 is implemented, Suburban is authorized to implement Stage 4 by filing a Tier 2 advice letter with the CPUC.

The water supply condition required for each stage is not defined, such as a specific

reservoir level or groundwater level or a percent of supply reduction, due to the differing sources of Suburban’s water supply. Instead, each stage is implemented when the previous stage becomes insufficient in complying with the necessary reduction, as shown in **Table 20**. Each stage can be implemented when it is determined conditions exist requiring a further consumer demand reduction for more efficient use of water or when a government agency requests implementation of this stage to meet physical supply limitations.

Per CWC Section 10632(a)(3)(B), a supplier may continue using their own water shortage levels that were previously used. In accordance with this allowance, Suburban has chosen to continue to use its current water shortage levels in its WSCP and has included a graphic (**Table 20**) to correlate its water shortage levels to the six standard water shortage levels defined in CWC Section 10632(a)(3)(A).

Table 20: Water Supply Shortage Stages and Conditions – Rationing Stages

Suburban Shortage Levels			Mandated Standard Shortage Levels	
Stage No.	Water Supply Conditions	% Shortage	Shortage Level	% Shortage
1	Stage 1 shall be in effect at all times. Non-essential or prohibited water uses apply.	Up to 10%	1	Up to 10%
2	When Stage 1 becomes insufficient in complying with the necessary reduction.	Up to 20%	2	Up to 20%
3	When Stage 2 becomes insufficient in complying with the necessary reduction.	Up to 40%	3	Up to 30%
			4	Up to 40%
4	Emergency. When a critical water shortage emergency exists or that Stage 3 becomes insufficient in complying with the necessary reduction.	Up to 50% or greater	5	Up to 50%
			6	>50%

As reflected in **Table 20**, the mandatory prohibitions applied by Stage 4 will curtail water use more than 50 percent below the projected water consumption level. Correspondingly, Suburban’s shortage stages depicted in **Table 20** are bundled in such a way that if a conservation stage to reduce water consumption by 50 percent were mandated (CWC standard shortage level 5), the prohibitions and additional conservation measures activated by Suburban’s Stage 4 will provide more than enough shortage responses to exceed the conservation goal.

Suburban plans to submit to the CPUC an update to Schedule 14.1 to align with the WSCP including, but not limited to, consistency with the new six stage shortage level structure.

4.3 PROHIBITIONS

Suburban's WSCP details the various prohibitions and sets forth water use violation fines, charges for removal of flow restrictors, and establishes the period during which mandatory conservation and rationing measures will be in effect. The prohibitions on various wasteful water uses are summarized in **Table 21**.

Table 21: Restrictions and Prohibitions

Stage No.	Restrictions and Prohibitions on End Users	Additional Explanation
1-4	Landscape - Restrict or prohibit runoff from landscape irrigation	
1-4	Landscape - Limit landscape irrigation to specific times	
1-4	Landscape - Limit landscape irrigation to specific days	
1-4	CII - Lodging establishment must offer opt out of linen service	
1-4	CII - Restaurants may only serve water upon request	
1-4	CII - Other CII restriction or prohibition	Hydrants only for fire suppression or system maintenance.
1-4	Water Features - Restrict water use for decorative water features, such as fountains	
1-4	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	
1-4	Other - Require automatic shut-off hoses	
1-4	Other - Prohibit use of potable water for construction and dust control	Prohibits excessive use.
1-4	Other - Prohibit use of potable water for washing hard surfaces	
1-4	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water	Commercial transportation only, residential vehicles okay with auto shut off hose.
1-4	Other	Any other wasteful practice.
4	Other	Suburban allowed to install flow restrictor.

A complete listing can be found in Tariff Rule No. 14.1 in **Appendix B**.

4.4 CONSUMPTION REDUCTION METHODS

Most actions within Suburban’s WSCP leaves the responsibility to restrict water use to the customer; however, installation of flow restrictors on customers’ service lines automatically reduces consumption. Suburban may install flow restrictors during Stage 4, or for excessive violations or for egregious violation. In addition to the physical consumption reduction by flow restrictors, Suburban uses other methods to reduce consumption. These methods include expanding public information campaigns, offering water use surveys, providing rebates on plumbing fixtures and devices, and providing rebates for landscape irrigation efficiency. Consumption reduction methods are shown in **Table 22**. Note that the rebates are offered through MWD to Suburban’s customers on the SoCal Water\$mart website.

Table 22: Consumption Reduction Methods

Stage No.	Consumption Reduction Methods by Water Supplier
1-4	Expand Public Information Campaign
1-4	Offer Water Use Surveys
1-4	Provide Rebates on Plumbing Fixtures and Devices
1-4	Provide Rebates for Landscape Irrigation Efficiency

4.5 CATASTROPHIC SUPPLY INTERRUPTION

Given the great distances imported water supplies travel to reach the Suburban service areas, the region is vulnerable to interruptions along hundreds of miles of pipelines and other facilities associated with delivering the supplies to the region. Additionally, this water is distributed to customers through an intricate network of pipes and water mains that are susceptible to damage from earthquakes and other disasters, natural or otherwise.

MWD

MWD has comprehensive plans for stages of actions it would undertake to address a catastrophic interruption in water supplies through its WSDM and WSAP Plans. MWD also developed an Emergency Storage Objective to mitigate potential interruption in water supplies resulting from catastrophic occurrences within the Southern California region,

including seismic events along the San Andreas Fault. In addition, MWD is working with the state to implement a comprehensive improvement plan to address catastrophic occurrences that could occur outside of the Southern California region, such as a probable maximum seismic event in the Delta that would cause levee failure and disruption of SWP deliveries.

In July 2019, MWD's Board adopted amendments to their Administrative Code allowing deliveries of member agency water supplies in MWD's system during an emergency. With these enabled deliveries, MWD's member agencies will be able to deliver their water through MWD's system under specific emergency conditions. Emergency deliveries using a portion of MWD's system can only be made if MWD is unable to make deliveries to a member agency due to physical damage to its system resulting from a natural disaster or other emergency, and there are no alternatives.

SUBURBAN

Suburban's Catastrophic Supply Interruption Plan (CSIP) details the actions that Suburban will implement during a catastrophic interruption of water supply. A catastrophic interruption could be any event (either natural or man-made) such as regional power outage, earthquake, malevolent acts, and civil unrest that causes a water shortage severe enough to classify as either a Stage 3 or Stage 4 water supply shortage condition. A catastrophic supply interruption differs from a staged drought response discussed above in that catastrophic interruptions occur suddenly and can jeopardize Suburban's water supply.

The actions that Suburban will implement during a catastrophic interruption of water supply are outlined below:

Regional Power Outage

- Isolate areas that will take the longest to repair and/or present a public health threat. Arrange to provide emergency water.
- Establish water distribution points and ration water if necessary.
- If water service is restricted, attempt to provide potable water tankers or bottled water to the area.
- Make arrangements to conduct bacteriological tests, in order to determine possible contamination.
- Utilize backup power supply to operate pumps in conjunction with elevated storage.

Earthquake

- Assess the condition of the water supply system.

- Complete the damage assessment checklist for reservoirs, water treatment plants, wells and boosters, system transmission and distribution.
- Coordinate with California Governor's Office of Emergency Services (OES) utilities group or fire district to identify immediate firefighting needs.
- Isolate areas that will take the longest to repair and/or present a public health threat. Arrange to provide emergency water.
- Prepare report of findings, report assessed damages, advise as to materials of immediate need and identify priorities including hospitals, schools and other emergency operation centers.
- Take actions to preserve storage.
- Determine any health hazard of the water supply and issue any "Boil Water Order" or "Unsafe Water Alert" notification to the customers, if necessary.
- Cancel the order or alert information after completing comprehensive water quality testing.
- Make arrangements to conduct bacteriological tests, in order to determine possible contamination.

Malevolent Acts

- Assess threat or actual intentional contamination of the water system.
- Notify local law enforcement to investigate the validity of the threat.
- Receive notification from public health officials if there is a potential water contamination.
- Determine any health hazard of the water supply and issue any "Boil Water Order" or "Unsafe Water Alert" notification to the customers, if necessary.
- Assess any structural damage from an intentional act.
- Isolate areas that will take the longest to repair and or present a public health threat. Arrange to provide emergency water.

Civil Unrest

- Provide for the safety and welfare of employees.
- Increased awareness shall be maintained by all personnel in all service areas during times of elevated potential for civil unrest.
- A clear delineation of the troubled area(s) shall be determined by the Incident Commander.
- Routine work duties will be suspended in service areas deemed at risk.
- No service personnel shall enter the delineated trouble area on company business

without proper authorization or law enforcement escort.

- If at any time during the course of work within a delineated trouble area or any of the service area; a situation appears threatening you must leave the area immediately. Avoid any risk of confrontation.
- Protect company assets.
- Repair of catastrophic main leaks.
- Shut down sheared fire hydrants.
- Periodic visits to critical water facilities.
- Repair critical pumping units and/or system components.
- Provide for maintenance or rapid restoration of water service.
- Provide an implementation of business resumption/remediation plans.

4.6 SEISMIC RISK ASSESSMENT AND MITIGATION PLAN

INTRODUCTION

Earthquakes can vary significantly in magnitude and the amount of damage caused. Major earthquakes can cause loss of electrical power, damage to Suburban's structures and equipment, disruption of service, and injuries to staff. This section provides a description of Suburban's procedures (i.e., response and mitigation) after an earthquake event.

As mandated in CWC Section 10632.5, beginning January 1, 2020, water suppliers are required to include a seismic risk assessment and mitigation plan as part of their WSCP to assess the vulnerability of each of the various facilities of their water system and mitigate those vulnerabilities. If an urban water supplier does not have a seismic risk assessment and mitigation plan, the urban water supplier may instead, per CWC Section 10632.5(c), include a local hazard mitigation plan (LHMP) or a multi-hazard mitigation plan. This requirement is satisfied by the incorporation of elements and analyses from Suburban's Risk and Resilience Assessment (RRA) and Emergency Response Plan (ERP) for the San Jose Hills and Whittier/La Mirada service areas as well as the inclusion of the 2019 County of Los Angeles All-Hazards Mitigation Plan (attached as **Appendix C**) and elements from the 2015 Whittier LHMP. The complete RRA and ERP documents are not presented within this plan due to the highly confidential nature of the reports. Although Suburban does not currently have a Seismic Risk Assessment and Mitigation Plan or a schedule to prepare such a plan, Suburban refers to the 2019 County Los Angeles All-Hazard Mitigation Plan (attached as **Appendix C**).

SEISMOLOGY OF WATER FACILITIES & VULNERABILITY

According to the maps provided on the California Office of Emergency Services' online

planning tool (My Plan) and the California Geological Survey's online earthquake hazards zone application (EQ Zapp) no portion of the systems within the San Jose Hills and Whittier/La Mirada service areas is crossed by a known fault line as shown in **Figure 5**. Therefore, there are no Suburban potable water structures with an extremely high risk of earthquake damage. There are, however, areas indicated in Suburban's RRAs with increased risk due to landslides, liquefaction, and some Suburban facilities that are more susceptible to earthquake damage than other facilities.

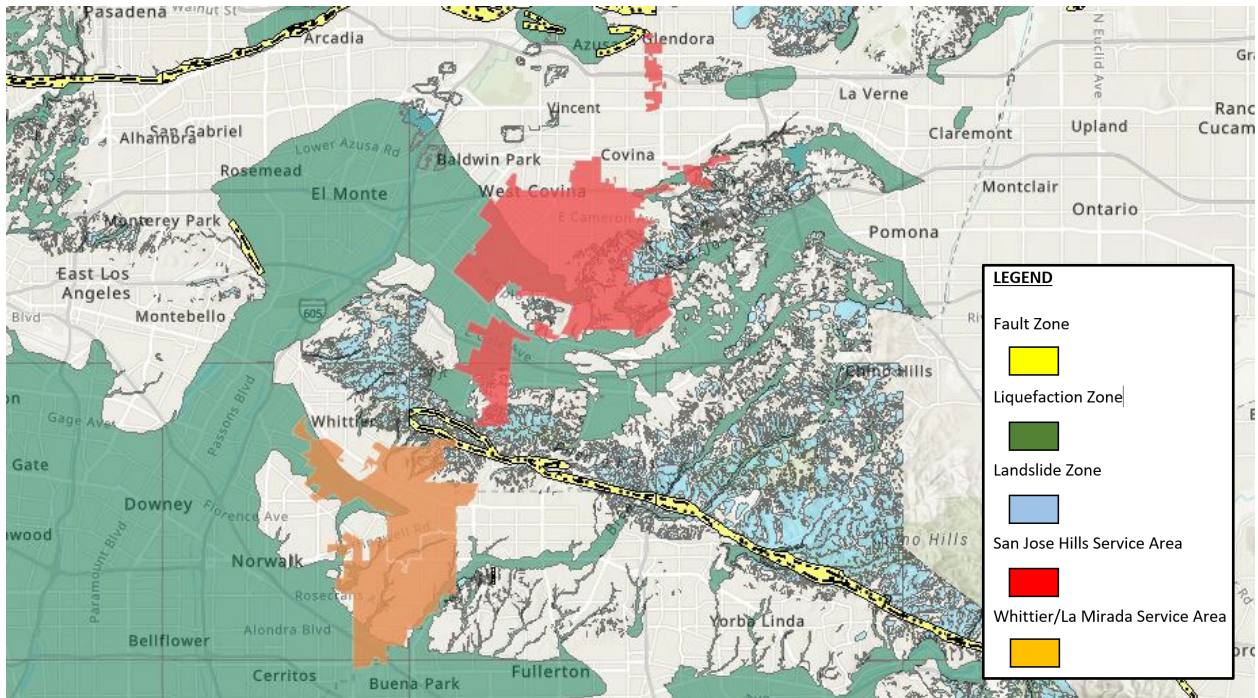


Figure 5: Seismic Hazards within Suburban's Service Area (California Geological Survey)

An earthquake is caused by the shifting of tectonic plates beneath the Earth's surface. Ground shaking from moving geologic plates collapses buildings and bridges, and sometimes triggers landslides, avalanches, flash floods, fires and tsunamis. The strong ground motion of earthquakes has the potential to cause a great deal of damage to drinking water and wastewater utilities, particularly since most utility components are constructed from inflexible materials (i.e., concrete, metal pipes). Earthquakes create many cascading and secondary impacts that may include, but are not limited to:

- Structural damage to facility infrastructure and equipment
- Water tank damage or collapse
- Water source transmission line realignment or damage
- Damage to distribution lines due to shifting ground and soil liquefaction, resulting in potential water loss, water service interruptions, low pressure, contamination and

- sinkholes and/or large pools of water throughout the service area
- Loss of power and communication infrastructure
- Restricted access to facilities due to debris and damage to roadways

ERP – EARTHQUAKE EMERGENCY RESPONSE

Suburban recently prepared a new ERP to replace its existing ERP on September 23, 2020 in order to meet the requirements of America’s Water Infrastructure Act of 2018 (AWIA). The ERP provides Suburban staff with the necessary information, strategies, procedures, and mitigation actions to address earthquake emergencies. Per the ERP, after a major earthquake, Suburban staff will notify the Incident Commander (IC) or designated alternate IC. The IC or alternate IC will then make the decision to activate the Emergency Operations Center (EOC) or escalate the event based on the event level. Once the decision to activate the EOC has been made, subsequent notification to the appropriate local government agencies will be made to notify the agency of the threat and the activation of the Suburban EOC.

Once the appropriate local government agencies have been notified of the threat and the Suburban EOC activation, the Suburban EOC designee will provide immediate, specific information to the relevant agencies by pre-designated communication method(s) and be prepared to describe the magnitude and potential impact of the event on public health and safety.

MITIGATION ACTIONS

Hazard mitigation may occur during any phase of a threat, emergency, or disaster. Mitigation can and may take place during the preparedness (before), response (during), and recovery (after) phases. The process of hazard mitigation involves evaluating a hazard’s impact and identifying and implementing actions to minimize or eliminate the impact.

The following mitigation actions goals established by the County of Los Angeles, the City of Whittier, and Suburban to mitigate seismic risks and vulnerabilities are further described within their respective hazard mitigation plans and ERP.

County of Los Angeles

The goals of the County of Los Angeles All-Hazard Mitigation Plan are based on a risk assessment, representing a long-term vision for hazard reduction or enhanced mitigation

capabilities.

The five mitigation goals and descriptions are listed below:

1. ***Protect Life and Property*** – Implement activities that assist in protecting lives by making homes, businesses, infrastructure, critical facilities, and other property more resistant to losses from natural, human-caused, and technological hazards. Improve hazard assessment information to make recommendations for avoiding new development in high-hazard areas and encouraging preventive measures for existing development in areas vulnerable to natural, human-caused, and technological hazards.
2. ***Enhance Public Awareness*** – Develop and implement education and outreach programs to increase public awareness of the risks associated with natural, human-caused, and technological hazards. Provide information on tools, partnership opportunities, and funding resources to assist in implementing mitigation activities.
3. ***Preserve Natural Systems*** – Support management and land use planning practices with hazard mitigation to protect life. Preserve, rehabilitate, and enhance natural systems to serve hazard mitigation functions.
4. ***Encourage Partnerships and Implementation*** – Strengthen communication and coordinate participation with public agencies, citizens, nonprofit organizations, business, and industry to support implementation. Encourage leadership within the County and public organizations to prioritize and implement local and regional hazard mitigation activities.
5. ***Strengthen Emergency Services*** – Establish policy to ensure mitigation projects are considered for critical facilities, services, and infrastructure.

City of Whittier

The mitigation actions for earthquake related hazards described in the City of Whittier's 2015 LHMP include, but are not limited to, the following:

- Develop, enhance, and implement education programs aimed at mitigating natural hazards, and reducing the risk to citizens, public agencies and private property
- Utilize existing public safety announcements on mitigation steps and strategies (i.e., residential earthquake retrofitting).

- Review seismic strength of remodeled structures in the City of Whittier as deemed appropriate by the building official.
- Ensure post-disaster rebuilding is in conformance with applicable codes, specifications, and standards.
- Encourage construction and subdivision design that can be applied to steep slopes to reduce the potential adverse impacts from ground failure, mudslides, etc.
- Encourage private property owners to conduct seismic strength evaluations of facilities classified as critical or essential to City of Whittier emergency response activities.

Suburban

After a major earthquake event, Suburban staff will follow the emergency management phases described in the ERP. After the Response Phase and Recovery Phase, Suburban staff will begin review actions to repair damaged water facilities and prepare for future earthquake emergencies.



Figure 6: The Five Phases of Emergency Management

Termination and review actions include the following:

- Initiate permanent reconstruction of damaged water utility facilities and systems.
- Obtain inspections and/or certifications that may be required before facilities can be returned to service.
- Restore water utility operations and services to full pre-event levels.
- Determine how emergency equipment and consumable materials should be replenished, decontaminated, repaired or replaced.
- Identify operational changes that have occurred as a result of repair, restoration, or incident investigation.
- Document the recovery phase, and compile applicable records for permanent storage.
- Continue to maintain liaison as needed with external agencies.
- Update training programs, the Suburban ERP, and standard operating procedures, as needed, based upon lessons learned during the emergency response and recovery phases of the event.

Existing and planned countermeasures for a regional earthquake include:

- Transmission Main Condition Assessment will be planned to improve the integrity of the transmission mains.
- Main loop system being replaced with earthquake-resistant piping where possible.
- Spare pipe is stored at maintenance facilities to replace localized breaks on their major transmission lines.

Specific seismic mitigation actions/measures are further described in Suburban's recently updated ERP.

5. COMMUNICATION PROTOCOLS

5.1 INTRODUCTION

Suburban's communication protocol includes the various channels that Suburban will utilize to convey critical messages regarding water shortage allocations and voluntary and mandatory actions. A strong communication strategy and a common understanding on the water supply situation and necessary actions between Suburban and its customers, the public, elected officials, and other key stakeholders are essential should the WSCP need to be activated. How the water shortage messages are addressed to the public are described in this communication protocol. The communication protocol will be in place prior to a water supply shortage and be initiated in Stage 2 water supply shortage. Activation of the communication protocol will continue through all subsequent water shortage stages. Suburban will ensure outreach efforts are reaching key audiences as needed.

It is important to communicate to its customers the following when urgent conservation is needed:

- Which shortage stage is being implemented;
- What response actions are triggered to save water;
- Why water needs to be saved; and
- What actions Suburban is taking to respond to the water supply situation.

5.2 COORDINATION

The goal of Suburban's outreach plans during dry periods and water shortages is to maintain effective coordination with key audiences. In order to maintain reliability in this

communication, Suburban will work closely with the Board of Directors. During dry periods or other times of limited supply, the frequency and extent of coordination will increase to ensure outreach tactics are consistent with the changing needs of Suburban and its customers. In addition to collaboration with its wholesalers, CBMWD, USGVMWD, and TVMWD, Suburban will seek opportunities with outside organizations and agencies to complement its own outreach.

5.3 COMMUNICATION GOALS

Communication objectives during an existing or anticipated water shortage condition include the following:

- Motivate key audiences (i.e., customers) to increase conservation in following any voluntary or mandatory actions called for at the current stage of the WSCP.
- Raise awareness of the drought, regulations, or other conditions affecting water sources and supplies.
- Educate customers, key stakeholders, elected officials, and the general public about water supply reliability, water quality, and water delivery.
- Prepare customers for any potential escalation of the supply shortage stages.

5.4 COMMUNICATION PROTOCOL FOR CURRENT OR PREDICTED SHORTAGE

A current or predicted shortage, as determined by Suburban's Annual Assessment, will be addressed to the public and its customers upon submittal of the Annual Water Shortage Assessment Report to DWR by July 1 of every year. This notice may be conducted by Suburban's website, signage in front of either service area District Office, and coordination with its wholesale agencies.

5.5 COMMUNICATION PROTOCOL FOR SHORTAGE RESPONSE ACTIONS TRIGGERED OR ANTICIPATED TO BE TRIGGERED

Suburban's customers and public will be notified about any triggered or anticipated to be triggered shortage response actions. Once a Schedule No. 14.1 is activated, Suburban can file a Tier 2 advice letter to the CPUC in order to designate a particular water supply shortage stage of the WSCP under the following circumstances:

1. If Suburban is unable to meet the production limitations as set by governmental and/or court orders under the currently implemented plan level, or

2. If the CPUC, or other government agency, declares an emergency requiring mandatory water use restrictions, or
3. If a government agency declares a state of emergency in response to severe drought conditions, earthquake, or other catastrophic event that severely reduces Suburban's water supply, or
4. If conservation levels set by the CPUC, Suburban, or government agency are insufficient.

The appropriate stage of water conservation and the shortage response action triggered by the stage is then declared in a written notice to every customer via first-class mail at least 30 days before the activation of an enforcement stage. Suburban will provide each customer with the requirements of a particular stage by means of bill insert, bill message or direct mailing, and by message on Suburban's website. Notification will take place prior to imposing any penalties associated with the WSCP.

5.6 OTHER RELEVANT COMMUNICATION PROTOCOLS

To reduce water use consumption during any water shortage stage, Suburban will increase its public education and outreach efforts to build awareness of needed actions from the public. Moreover, Suburban will regularly revise its outreach campaign to reflect current supply conditions. Key communication strategies and associated water shortage stage implementation are listed below:

- Promote available water assistance resources for vulnerable populations; specialized outreach for impacted industries (Stage 3).
- Keep stakeholders aware of conditions (all Stages).
- Proclaim stage change to key stakeholders and the general public (all Stages).
- Conduct meetings with elected officials and other key civic and business leaders (Stage 2).
- Encourage reduced optional outdoor use through outreach (Stages 3 and 4).

Suburban may implement these communication strategies through its newsletters, website, and social media platforms to reflect supply conditions. In addition, Suburban may conduct news briefings or other media outlets (i.e., TV, radio, newspapers) to announce changes in supply conditions.

5.7 CRISIS COMMUNICATION PROTOCOL

In the event of a catastrophic supply interruption due to a natural disaster or damage to

Suburban's facilities, Suburban will implement communication procedures in accordance with local, regional, state, and federal emergency response guidelines as outlined in its ERP. Depending upon the severity of the emergency and potential damage to Suburban's facilities, Suburban may determine that it is necessary to utilize the Standardized Emergency Management System (SEMS) response and the Incident Command System (ICS). Public information and crisis communication are an integral part of the ICS structure.

In general, communications during an emergency response will proceed along the chain of command of the SEMS/ICS. The number of people notified will increase as the incident expands and decrease as the incident contracts toward its conclusion.

The type and extent of the disaster will dictate the normal and/or alternative methods of communication that will be used. The possibility of a coordinated attack that targets the water, power, and communications systems must be considered. In this case, it would be reasonable to assume that some methods of communication will either be unavailable or limited to certain areas during an emergency. It is anticipated that employees will know upon arrival at their duty stations which communication systems are functional, and which are not. This information will be relayed to the Suburban Information Officer upon discovery.

Suburban uses the ICS for its command structure during water emergencies. The ERP describes the ICS command structure positions and shows which individuals will hold the various positions during different emergency situations (recognizing that at different stages of an event or for different severity of events that the person/position responsible in the ICS changes).

Crisis communication efforts will concentrate on providing information to the public and external audiences. Furthermore, outreach messaging will reflect emergency conditions and the need to focus on health and public safety. Suburban will keep the Board of Directors informed of incident status and coordinate with public health officials.

Suburban will maintain communication with its wholesalers and its customers. In addition, Suburban may also authorize release of public information to news media to announce conditions and explain needed action. Finally, Suburban will ensure ongoing coordination with emergency response services with daily advisories or alerts as needed.

6. COMPLIANCE AND ENFORCEMENT

6.1 PENALTIES

Suburban ensures compliance with and enforces provisions of the WSCP by education and communication programs as described in **Section 4.2.2**, of Suburban's 2020 UWMP, BMP 2 and warnings and citations as described in Tariff Rule No. 14.1. Suburban will first work closely with local law enforcement and public agencies charged with enforcing the mandatory water use restrictions. Usually, violations are reported by neighbors and other customers in the water system. Should the utility find that the local agency is not effectively enforcing the mandatory use restrictions, the utility, after written warnings, such as door hangers and letters, may begin to issue penalties. If a customer is seen violating the water use restrictions, as outlined in Rule No. 14.1 and the Special Conditions below, the customer will be subject to the following penalty structure:

- a) **First violation** - Written notice, including explanation of penalty for subsequent violation.
- b) **Second violation** - If Suburban verifies that the customer has used potable water for non-essential, wasteful uses after having been notified of the first violation, Suburban shall provide the customer with a second written notice of violation. In addition, Suburban is authorized to take the following actions:
 - i. Apply the following waste of water penalties, which are in addition to any other charges authorized by this Schedule No. 14.1 or other Suburban tariffs:
 - If Stage 1 is in effect, \$25
 - If Stage 2 is in effect, \$50
 - If Stage 3 is in effect, \$100
 - If Stage 4 is in effect, \$200
- c) **Third violation** - If Suburban verifies that the customer has used potable water for non-essential, wasteful uses after having been notified of the second violation, Suburban shall provide the customer with a third written notice of violation. Suburban is authorized to take the following actions:
 - i. Apply the following waste of water penalties, which are in addition to any other charges authorized by this Schedule No. 14.1 or other Suburban tariffs:

- a. **First violation** - Written notice, including explanation of penalty for subsequent violation.
- b. **Second violation** - If Suburban verifies that the customer has used potable water for non-essential, wasteful uses after having been notified of the first violation, Suburban shall provide the customer with a second written notice of violation. In addition, Suburban is authorized to take the following actions:
 1. Apply the following waste of water penalties, which are in addition to any other charges authorized by this Schedule No. 14.1 or other Suburban tariffs:
 - If Stage 1 is in effect, \$25
 - If Stage 2 is in effect, \$50
 - If Stage 3 is in effect, \$100
 - If Stage 4 is in effect, \$200
- c. **Third violation** - If Suburban verifies that the customer has used potable water for non-essential, wasteful uses after having been notified of the second violation, Suburban shall provide the customer with a third written notice of violation. Suburban is authorized to take the following actions:
 2. Apply the following waste of water penalties, which are in addition to any other charges authorized by this Schedule No. 14.1 or other Suburban tariffs:
 - If Stage 1 is in effect, \$25
 - If Stage 2 is in effect, \$50
 - If Stage 3 is in effect, \$100
 - If Stage 4 is in effect, \$200
- d. **Fourth violation** - If Suburban verifies that the customer has used potable water for non-essential, wasteful uses after having been notified of the third violation, Suburban shall provide the customer with a fourth written notice of violation. In addition to actions set forth in previous violations prescribed above, Suburban is authorized to install a flow restrictor on the customer's service line. Suburban shall not be held liable for any injuries, damages, and/or consequences arising from the installation of a flow restrictor.
- e. **Egregious violation** - After providing the customer with one notice of

egregious violation, either by direct mail or door hanger, which documents the egregious use of potable water for non-essential, wasteful uses and explains that failure to correct the violation may result in the installation of a flow restrictor on the customer's service line, Suburban shall not be held liable for any injuries, damages, and/or consequences arising from the installation of a flow restrictor.

The money collected from penalties will be accounted for in a balancing account for later disposition as ordered by the CPUC, which would typically result in all amounts being refunded to customers. Amounts refunded may be partly offset by Suburban's conservation costs charged to a memorandum account.

6.2 DROUGHT RATE STRUCTURES AND SURCHARGES

Suburban provides drought surcharge rates for residential metered service customers as shown on page 6 of Tariff Schedule No. 14.1 in **Appendix B**. The surcharge rates are only applied in Stages 2, 3, and 4. The rates vary by stage, meter size, and non-low income customer versus low income customer.

6.3 ENFORCEMENT

From second violation of the same restriction within a one-year period and onwards, a violation letter will be posted on the property and mailed to the billing address, if different from the service address. Violations will accrue for the period of one year and be considered corrected and expunged one year after the violation occurs. The purpose of this rule is to prevent discrete violations from accruing in the event of a multi-year enforcement of the WSCP.

7. LEGAL AUTHORITIES

Under California law, including CWC Chapter 3 (commencing with Section 350) of Division 1, Parts 2.55 and 2.6 of Division 6, Division 13, and Article X, Section 2 of the California Constitution, Suburban shall implement the water shortage response actions outlined in this section with authorization of the CPUC. In all water shortage cases, shortage response actions to be implemented will be at the discretion of Suburban and will be based on an assessment of the supply shortage, customer response, and need for demand reductions.

It is noted that upon proclamation by the Governor of a state of emergency under the

California Emergency Services Act, Chapter 7 (commencing with Section 8550) of Division 1 of Title 2 of the Government Code, based on drought conditions, the state will defer to implementation of locally adopted water shortage contingency plans to the extent practicable. Suburban will coordinate with any city or county within which it provides water supply services for the possible proclamation of a local emergency, as defined in Section 8558 of the Government Code.

8. FINANCIAL CONSEQUENCES OF WSCP IMPLEMENTATION

Because Suburban is an investor-owned water utility and is regulated by the CPUC, the CPUC authorizes it to establish balancing accounts to track differences between billed revenue based on conservation rates, and equivalent revenue based on uniform rates. Different amounts recorded in balancing accounts are subject to future refund or recovery.

8.1 USE OF FINANCIAL RESERVES

Non-governmental entities such as Suburban typically do not maintain reserves as is commonly used in governmental utilities.

8.2 OTHER FINANCIAL MANAGEMENT MECHANISMS

Like other investor-owned utilities, in downturns such as droughts, Suburban prudently manages its business to reflect revised circumstances. Suburban's commitment to making needed infrastructure improvements typically remains steadfast even in times of drought.

9. MONITORING AND REPORTING

9.1 REDUCTION MEASURING MECHANISM

When the WSCP is in effect, Suburban determines the actual reduction in water use through metering. Data from production meters and from customer usage meters is used to analyze the water conservation impacts during shortages. Additionally, customers can track their usage as recorded on their monthly water bill.

10. SPECIAL WATER FEATURE DISTINCTION

As required under CWC 10632(b), water features that are not pools or spas must be analyzed and defined separately from pools and spas in the WSCP. Non-pool or non-spa water features may use recycled water, whereas, for health and safety considerations, pools

and spas must use potable water. Presently, Suburban provides recycled water in the San Jose Hills Service Area, but not within the Whittier/La Mirada Service Area. Although the Whittier/La Mirada Service Area does not currently use and does not have the ability to use recycled water due to a lack of infrastructure, the Whittier/La Mirada Service Area would use non-potable water for non-pool water features if and when recycled water supply ever becomes available. Furthermore, the WSCP requires potable water recirculation for fountains and decorative water features.

11. WSCP ADOPTION AND REFINEMENT PROCEDURES

11.1 WSCP PUBLIC NOTICE AND ADOPTION

To encourage broad community participation in the WSCP preparation process, Suburban provided 60-day notification letters to agencies within Suburban's service areas. Copies of the draft WSCP were made available for public review at both service area District Offices prior to the public hearing. Shortly before the public hearing, a two-week and a one-week notice was published in the local press alerting the public of the public hearing. At a subsequent board meeting following the public hearing, Suburban's final WSCP was approved and adopted by its Board of Directors on June 17, 2021. **Appendix A** contains the Board resolution adopting the WSCP. The final plan was submitted to DWR within 30 days of Board adoption and includes all information necessary to meet the requirements of CWC Section 10632.

By June 30, 2021, Suburban's approved WSCP was filed with DWR. By July 1, 2021, Suburban's plan was submitted to the California State Library, County of Los Angeles, and cities within its service areas. Suburban will make the plan available for public review no later than 30 days after filing with DWR.

11.2 WSCP REFINEMENT PROCEDURES

This section discusses the process for reviewing and updating the WSCP to ensure it remains actively used, relevant and appropriate to the community, and consistent with applicable state and requirements. It is vital that Suburban's WSCP remain up to date so as to best ensure shortage risk tolerance is adequate, appropriate water shortage mitigation strategies are implemented as needed, proper procedures for water efficient practices are in place for the community, and better alignment with long-term water use goals.

The Suburban Water Management is responsible for maintaining this plan and updating it as needed. The Water Production Manager is the primary Suburban staff member who will

carry out this process. In addition, the Water Production Manager, or their designee, will serve as the WSCP project manager and will coordinate maintenance of the plan, conduct the formal review process, and direct the plan updates with the assistance of the Water Conservation Manager. The project manager will assign tasks, which may include collecting data, developing new or updated water shortage mitigation measures, updating sections of the plan, and presenting the plan to others.



**Suburban
Water Systems**

A SouthWest Water Company

Appendix A: Board Resolution Adopting WSCP

Suburban Water Systems | Water Shortage Contingency Plan

**ACTION BY UNANIMOUS WRITTEN CONSENT
OF THE BOARD OF DIRECTORS OF
SUBURBAN WATER SYSTEMS
ADOPTING THE 2020 WATER SHORTAGE CONTINGENCY PLAN**

Under and in accordance with Section 307(b) of the California Corporations Code and the Bylaws of Suburban Water Systems, a California corporation (the "Company"), the undersigned, being all the members of the Board of Directors (the "Board") of the Company, hereby execute this instrument, or a counterpart thereof, to evidence their consent to the taking of the actions set forth in, and the adoption of, the following preambles and resolutions without the holding of a meeting:

WHEREAS, the California Urban Water Management Planning Act, (Water Code §10610, et seq. ("the Act")), mandates that every urban supplier of water providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually, prepare and adopt, in accordance with prescribed requirements, a Water Shortage Contingency Plan ("WSCP") as part of its Urban Water Management Plan ("UWMP"); and

WHEREAS, the Act specifies the requirements and procedures for adopting such WSCPs; and

WHEREAS, urban water suppliers are required to adopt and electronically submit their WSCPs to the California Department of Water Resources ("DWR") by July 1, 2021; and

WHEREAS, pursuant to the Act, "urban water supplier" means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. An urban water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers; and

WHEREAS, the Company meets the definition of an urban water supplier for purposes of the Act and is required to prepare and adopt a WSCP as part of its 2020 UWMP; and

WHEREAS, the Company has prepared a WSCP in accordance with the Act, and in accordance with applicable legal requirements, has undertaken certain coordination, notice, public involvement, public comment, and other procedures in relation to its WSCP; and

WHEREAS, in accordance with the Act, the Company has prepared its WSCP with its own staff, with the assistance of consulting professionals, and in cooperation with other governmental agencies, and has utilized and relied upon industry standards and the expertise of industry professionals in preparing its WSCP, and has also utilized DWR's Urban Water Management Plan Guidebook 2020, including its related appendices, in preparing its WSCP; and

WHEREAS, Water Code section 10642 requires privately owned water suppliers to conduct a public hearing after providing public notice equivalent to the notice required by Government Code section 6066; and

WHEREAS, a Notice of a Public Hearing regarding the Company's WSCP was published within the service area of the Company on June 3, 2021, and June 10, 2021; and

WHEREAS, in accordance with applicable law, including but not limited to Water Code section 10642, in a format consistent with various public health orders relating to the COVID-19 pandemic, a virtual public hearing was held on June 17, 2021 at 5:00 p.m., in order to provide members of the public and other interested entities with the opportunity to be heard in connection with proposed adoption of the WSCP and issues related thereto; and

WHEREAS, pursuant to said public hearing on the Company's WSCP, the Company, among other things, encouraged the active involvement of diverse social, cultural, and economic members of the community within the Company's service area with regard to the WSCP, and encouraged community input regarding the Company's WSCP; and

WHEREAS, the Company has reviewed and considered the purposes and requirements of the Act, the contents of the WSCP, and the documentation contained in the Company's files relating to the WSCP, and has determined that the factual analyses and conclusions set forth in the WSCP are legally sufficient; and

WHEREAS, the Company desires to adopt the WSCP and to incorporate it as part of its 2020 UWMP prior to July 1, 2021 in order to comply with the Act.

NOW THEREFORE the Board hereby resolves as follows:

1. The WSCP is hereby adopted and shall be incorporated into the Company's 2020 UWMP;

2. The President of the Company or his designee is hereby authorized and directed to include a copy of this Resolution in the Company's WSCP and/or in the Company's 2020 UWMP;

3. The President of the Company or his designee is hereby authorized and directed, in accordance with subdivision (d) of Water Code section 10621 and subdivisions (a)(1) and (a)(2) of Water Code section 10644, to electronically submit a copy of the WSCP, as part of its 2020 UWMP, to DWR no later than July 1, 2021;

4. The President of the Company or his designee is hereby authorized and directed, in accordance with subdivision (a) of Water Code section 10644, to submit a copy of the WSCP, as part of its 2020 UWMP, to the California State Library, and to any city or county within which the Company provides water supplies no later than thirty (30) days after this adoption date;

5. The President of the Company or his designee is hereby authorized and directed, in accordance with Water Code section 10645, to make the WSCP available for public review at the Company's offices during normal business hours and/or on its website at www.swwc.com/suburban no later than thirty (30) days after filing a copy of the WSCP, as part of its 2020 UWMP, with DWR; and

6. The President of the Company or his designee is hereby authorized and directed to implement the WSCP in accordance with the Act and to provide

recommendations to the California Public Utilities Commission regarding the necessary budgets, procedures, rules, regulations, or further actions to carry out the effective and equitable implementation of the WSCP.

IN WITNESS WHEREOF, the undersigned, constituting all of the directors of the Company, have executed the foregoing written consent, effective as of June 25, 2021.

Rita Carroll

1919F37DF826D675C791BCAF8185A5CD contractworks.

Rita Carroll

Craig Gott

FE161386726808B3BAA39C0FB6235BB0 contractworks.

Craig Gott

Richard Rich

CAC955F54A5DF0B3FF67D2AE1A24C095 contractworks.

Richard Rich

Joseph Park

D1F8FA1C6B5D7325E9A594D3AD835C44 contractworks.

Joseph Park



**Suburban
Water Systems**

A SouthWest Water Company

Appendix B: Suburban's Tariff Rule & Schedule No. 14.1

Suburban Water Systems | Water Shortage Contingency Plan

Rule No. 14.1

WATER SHORTAGE CONTINGENCY PLAN

(C)

Suburban Water System's water supply may be interrupted or reduced due to a variety of circumstances, for instance, a drought or a catastrophic event, such as an earthquake or fire that damages water delivery and storage facilities, or a power outage that affects water treatment or the pumping of water to customers, or in response to legal or court imposed restrictions. This Water Shortage Contingency Plan ("Plan") enables Suburban Water System ("Suburban") to respond effectively to a wide variety of water supply conditions or catastrophic events that cause severe water shortages from time to time. (C)

A. GENERAL INFORMATION

This rule is applicable within all areas served by Suburban.

Should supply conditions or government directives dictate, prior to, or in response to, a declaration of emergency issued by a water wholesaler or other government agency, Suburban may request permission from the California Public Utilities Commission ("CPUC") to add a Schedule No. 14.1 – Staged Water Shortage Contingency Plan setting forth charges for water waste and drought surcharge rates applicable to quantities of water consumed.

All expenses incurred, and penalties received by Suburban to implement Rule No. 14.1 and Schedule No. 14.1 and requirements of the California State Water Resources Control Board ("SWRCB") that have not been authorized for recovery in a General Rate Case or other proceeding shall be accumulated in a separate memorandum account, authorized in Resolution W-4976, for disposition as directed or authorized from time to time by the Commission.

To the extent that a Stage of Water Shortage Contingency Plan in Schedule No. 14.1 has been activated, and a provision of this Rule is inconsistent with the activated Stage in Schedule No. 14.1, the provisions of Schedule No. 14.1 apply.

Suburban shall make available to its customers water conservation kits as required by Rule 20. Suburban shall notify all customers, at least annually, of the availability of conservation kits and other helpful information via bill inserts, bill messages, or direct mailers.

B. DEFINITIONS

1. "Authorizing Agency" means any agency that supplies, controls or allocates the water supply to Suburban or any governmental body that authorizes Suburban to produce and sell water in the service area, or Suburban itself if acting in accordance with Section E of this Rule. (C)

(Continued)

(To be inserted by utility)

Issued by

(To be inserted by Cal. P.U.C.)

Advise Letter No. 311-W

Robert L. Kelly
Name

Date Filed MAY 22 2015

Decision No.

Vice President
Title

Effective AUG - 1 2015

Resolution No.

Rule No. 14.1
(Continued)

WATER SHORTAGE CONTINGENCY PLAN

(C)

B. DEFINITIONS (Continued)

(C)

2. "Commission" means the California Public Utilities Commission.
3. "Conservation" means normal actions necessary to reduce the purchase, production, or consumption of potable water, including applicable Best Management Practices, while maintaining customary levels of service and public health and safety.
4. "Flow Restrictor" means a device placed into the water distribution system by Suburban that restricts the volume of flow to the customer with a minimum of three hundred cubic feet ("ccf"; one ccf = 748 gallons) per person, per month, based upon the U.S. Census calculation of the average number of people in a household in the area.
5. "Measurable rainfall" means any amount of precipitation of more than one-tenth of an inch (0.1")
6. "Person" means any natural person or persons, corporation, public or private entity, governmental agency or institution, or any other user of water provided by Suburban.
7. "Potable water" means water that is suitable for drinking.
8. "Recycled water" means the reclamation and reuse of non-potable water for beneficial use as defined in Title 22 of the California Code of Regulations.

C. WATER SHORTAGE CONTINGENCY PLAN

Wasteful water use practices, as outlined in Section D of this Rule, are prohibited at all times except where necessary to address an immediate health or safety need or to comply with a term or condition in a permit issued by a state or federal agency. Notwithstanding these prohibitions, Suburban may elect to enact additional prohibited uses as needed. No customer shall use Suburban supplied water for non-essential or prohibited uses as identified by the Commission or Suburban.

1. Prior to, or in response to, a declaration of emergency issued by a government agency or the need to reduce usage in an effort to stay within governmental or court ordered restrictions; Suburban may request, via a Tier 2 advice letter, a Schedule No. 14.1 – Staged Water Shortage Contingency Plan Tariff. Suburban may also request in the advice letter a lost revenue and/or conservation implementation cost memorandum account(s) to record related variances from that previously considered in a General Rate Case or other proceeding.

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(Continued)

(To be inserted by utility)

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Resolution No.

Rule No. 14.1
(Continued)

WATER SHORTAGE CONTINGENCY PLAN

(C)

C. WATER SHORTAGE CONTINGENCY PLAN (Continued)

(C)

2. Suburban shall file a Tier 2 advice letter to request activation of Schedule No. 14.1-Staged Water Shortage Contingency Plan Tariff, unless Suburban requests activation of Schedule No. 14.1 at the same time as requesting modification of the current Rule No. 14.1 or establishment of a new Rule No. 14.1 as per paragraph C.1 above.
3. Once a Schedule No. 14.1 is activated, Suburban can file a Tier 2 advice letter to designate a particular stage of the Staged Water Shortage Contingency Plan under the following circumstances:
 - a. If Suburban is unable to meet the production limitations as set by governmental and/or court orders under the currently implemented plan level, or
 - b. If the Commission, or other government agency declares an emergency requiring mandatory water use restrictions, or
 - c. If a government agency declares a state of emergency in response to severe drought conditions, earthquake or other catastrophic event that severely reduces Suburban's water supply, or
 - d. If conservation levels set by the Commission, Suburban, or government agency are insufficient.
4. After Schedule No. 14.1 has been activated and Suburban determines that water supplies are again sufficient to meet demands, and staged reduction measures are no longer necessary, Suburban shall seek Commission authority via a Tier 2 advice letter to de-activate the particular stage of reduction that was previously authorized.

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(To be inserted by utility)

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Name

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Title

Resolution No.

Rule No. 14.1
(Continued)

WATER SHORTAGE CONTINGENCY PLAN

D. STAGE 1 WATER CONSERVATION - Non-Essential or Unauthorized Water Use

The following are non-essential or prohibited water uses. Non-essential and prohibited use restrictions are in effect at all times until Commission authorizes deactivation.

a. Outdoor Irrigating Restrictions (Stage 1)

- i. Irrigating ornamental landscapes with potable water is limited to no more than three (3) days per week, on a schedule established and posted by Suburban on its website or otherwise provided to customers by bill message, bill insert, direct mail, or email, or as follows:
 1. Customer with even-numbered addresses may irrigate on Mondays, Wednesdays, and Saturdays.
 2. Customers with odd-numbered addresses may irrigate on Tuesdays, Thursday, and Sundays.
 3. For governmental entities irrigating parks, any given station may be watered only three (3) times per week.
 4. Customers without a street address may irrigate on Saturdays, Tuesdays, and Thursdays.
 5. Notwithstanding the foregoing restrictions, irrigation of special landscape areas or commercial nurseries may occur as needed, provided that the customer who wishes to irrigate a special landscape area or commercial nursery presents Suburban with a plan to achieve water use reductions commensurate with those that would be achieved by complying with foregoing restrictions.
 6. Notwithstanding the foregoing restrictions, when a city, a county, or other local public agency in one of Suburban's service areas duly adopts restrictions on the number of days or hours of the day that customers may irrigate which are different than those adopted by Suburban, Suburban may enforce the city, county, or other local public agency's restrictions.
- ii. Irrigating ornamental landscape with potable water is prohibited during the hours between 8:00 a.m. and 6:00 p.m.

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Resolution No.

Rule No. 14.1
(Continued)

WATER SHORTAGE CONTINGENCY PLAN

(C)

D. STAGE 1 WATER CONSERVATION - Non-Essential or Unauthorized Water Use
(Continued)

(C)

- iii. Watering or irrigating of any lawn, landscape, or other vegetated area with potable water during and for 48 hours following measurable rainfall is prohibited.
- iv. The foregoing restrictions do not apply to:
 - 1. Landscape irrigation zones that exclusively use drip irrigation systems and/or micro spray irrigation system;
 - 2. Irrigating ornamental landscapes with the use of a hand-held bucket or similar container, with a continuously monitored hose which is fitted with an automatic shut-off nozzle or device attached to it that causes it to cease dispensing water immediately when not in use or monitored, or for the express purpose of adjusting or repairing an irrigation system. Landscape that is irrigated with recycled water.
- b. Excessive water flow or run-off.
Watering or irrigating of any lawn, landscape or other vegetated area in a manner that causes or allows excessive water flow or runoff such that water flows onto adjacent property, non-irrigated areas, private and public walkways, roadways, parking lots, or structures is prohibited.
- c. Washing vehicles.
The use of a hose that dispenses potable water to wash a motor vehicle, except where the hose is fitted with a shut-off nozzle or device attached to it is prohibited. Use of water for washing commercial aircraft, cars, buses, boats, trailers or other commercial vehicles at any time is prohibited, except at commercial or fleet vehicle or boat washing facilities operated at a fixed location where equipment using water is properly maintained to avoid wasteful use.
- d. Washing down hard or paved surfaces.
Use of potable water for washing buildings, structures, driveways, patios, parking lots, tennis courts, or other hard surfaced areas is prohibited, except in cases where health and safety are at risk.
- e. Re-circulating water required for water fountains and decorative features.
Operating a water fountain or other decorative feature that does not use re-circulated water is prohibited.

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(To be inserted by utility)

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Advise Letter No. 311-W

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Effective AUG - 1 2015

Title

Resolution No.

Rule No. 14.1
(Continued)

WATER SHORTAGE CONTINGENCY PLAN

(C)

D. STAGE 1 WATER CONSERVATION - Non-Essential or Unauthorized Water Use
(Continued)

(C)

- f. Commercial businesses, including restaurants and other food service providers can only serve drinking water to customers on request.
- g. Hotel/motel operators must provide guests with the option of choosing not to have towels and linens laundered daily. Information about this option must be prominently displayed.
- h. Unmetered water from fire hydrants cannot be used for any reason other than fire suppression or Suburban's system maintenance purposes.
- i. Waste caused by correctable leaks, breaks or malfunctions.
This loss of potable water may be cited for water waste after a five-day period has passed in which the leak or malfunction could have been corrected.
- j. There cannot be unreasonable or excessive use of potable water for dust control or earth compaction.
- k. Operation of commercial car washes that do not recycle the potable water used as required by the California Water Code Sections 10950-10953 is prohibited.
- l. Other wasteful practices may be identified from time to time by the Commission, Suburban, or governmental agency.

When wasteful uses of water are reported to Suburban or when Suburban observes wasteful uses of water, Suburban shall provide the customer with a written notice of violation. Written notices of violation provided to customers pursuant to this Rule shall document the verified violation and alert the customer to the fact that future violations may result in penalties and after the fourth violation the installation of a flow restrictor. If Suburban verifies that the customer has used potable water for non-essential, wasteful uses after having been notified of the first violation, Suburban shall provide the customer with a second written notice of violation and the customer will be charged a waste of water penalty at varying amounts depending on the stage then in effect. A third violation will result in a further increased waste of water penalty. Suburban shall not be held liable for any injuries, damages, and/or consequences arising from the installation of a flow restrictor.

Subsequent continued wasteful water use practices may lead to the termination of water service to the premises pursuant to Tariff Rule No. 11.

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Resolution No. _____

SLIP/SUB SHEET

Rule No. 14.1
(Continued)

WATER SHORTAGE CONTINGENCY PLAN

(C)

E. ENFORCEMENT STAGES OF WATER SHORTAGE CONTINGENCY PLAN

(C)

1. Notice Requirements for Stages 1 – 4:
 - a. Suburban shall provide written notice of enforced water use restrictions to every Customer via first-class mail at least thirty (30) days before the activation of an enforcement stage.
2. Enforcement Stages shall be implemented according to a need as determined by Suburban. Activation will be requested through the filing of a Tier 2 advice letter, and Suburban shall notify its customers and provide each customer with the requirements of a particular stage by means of bill insert, bill message or direct mailing, and by message on Suburban's website. Notification shall take place prior to imposing any penalties associated with this plan.
3. If activation of Schedule No. 14.1 occurs one year or more since the public hearing associated with adding Schedule No. 14.1 to its tariffs, then Suburban shall conduct a public hearing pursuant to California Water Code Section 351 prior to activating a stage of its Water Shortage Contingency Plan.

F. STAGE 1 - WATER SHORTAGE CONTINGENCY PLAN

1. Conservation Measures: Prohibition on the non-essential or unauthorized uses of water identified in Section D.
2. Stage 1 Triggers:
 - a. Stage 1 shall be in effect at all times.
3. Rates: Staged Water Shortage Contingency Plan Schedules shall not be in place in this stage.

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(To be inserted by utility)

Issued by

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Decision No. _____

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Title

Resolution No. _____

Rule No. 14.1
(Continued)

WATER SHORTAGE CONTINGENCY PLAN

(C)

G. STAGE 2 - WATER SHORTAGE CONTINGENCY PLAN

(C)

1. A Stage 2 condition exists when it is determined that due to drought or other water supply conditions, a water supply shortage or threatened shortage exists and a further consumer demand reduction is necessary to make more efficient use of water and appropriately respond to existing water conditions. Stage 2 of the Water Shortage Contingency Plan will be enacted upon a determination that water usage should be further reduced from then current levels, that a temporary water emergency exists necessitating implementation or that the requirements in Stage 1 are insufficient in complying with the necessary reduction; and/or that a government agency requests implementation of this stage to meet physical supply limitations.
2. Additional Water Shortage Contingency Plan Measures: In addition to the non-essential or unauthorized uses of water identified in Stage 1, the following water use restriction requirements apply during Stage 2 of the Water Shortage Contingency Plan, except where necessary to address an immediate health or safety need or to comply with a term or condition in a permit issued by a state or federal agency:
 - a. Obligation to Fix Leaks, Breaks or Malfunctions: All leaks, breaks, or other malfunctions in the water user's plumbing or distribution system must be repaired within seventy-two (72) hours of notification from Suburban.
3. Rates: Suburban shall implement a Commission-approved Schedule No. 14.1 Staged Water Shortage Contingency Plan.

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Advise Letter No. 311-W

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Name

Vice President

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Title

Resolution No. _____

Rule No. 14.1
(Continued)

WATER SHORTAGE CONTINGENCY PLAN

(C)

H. STAGE 3 - WATER SHORTAGE CONTINGENCY PLAN

(C)

1. A Stage 3 Water Shortage Contingency Plan condition exists when it is determined that due to drought or other water supply conditions, a water supply shortage or threatened shortage exists and a further consumer demand reduction is necessary to make more efficient use of water and appropriately respond to existing water conditions. Stage 3 will be enacted upon a determination that water usage should be reduced further from then current levels, that a temporary water emergency exists, necessitating implementation or that the requirements in Stage 1 and 2 are insufficient in complying with the necessary reduction. Additional Water Shortage Contingency Plan measures: In addition to the prohibited uses of water identified in Stage 1, and 2, the following additional water restrictions apply during a declared Stage 3 Water Shortage Contingency Plan except where necessary to address an immediate health or safety need or to comply with a term or condition in a permit issued by a state or federal agency:
 - a. Watering Days: Watering or irrigating of lawn, landscape or other vegetated area with potable water is limited to two (2) days per week. Maintenance of vegetation, including trees and shrubs, watered by use of a hand-held bucket or similar container, hand-held hose equipped with a positive self-closing water shut-off nozzle or device is permitted. The watering days restriction does not apply to the following categories of use, unless Suburban has determined that recycled water is available and may be applied to the use:
 - i. Maintenance of existing landscape necessary for fire protection;
 - ii. Maintenance of existing landscape for soil erosion control;
 - iii. Maintenance of plant materials identified to be rare or essential to the well-being of protected species;
 - iv. Recycled water is in use.

This overall provision does not apply to landscape irrigation zones that exclusively use very low flow drip type irrigation systems when no emitter produces more than two (2) gallons of water per hour.

1. Requirements imposed by Stage 1 and Stage 2 shall remain in force during Stage 3.
2. Customers shall not use potable water for dust control purposes except by prior approval.
3. Rates: Suburban shall continue to implement Commission approved Schedule No. 14.1 – Staged Water Shortage Contingency Plan.

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Rule No. 14.1
(Continued)

WATER SHORTAGE CONTINGENCY PLAN

(C)

I. STAGE 4 - WATER SHORTAGE CONTINGENCY PLAN

(C)

1. A Stage 4 Water Shortage Contingency Plan condition is also referred to as an "Emergency" Condition. A Stage 4 condition exists when it is determined that a critical water shortage emergency exists or that the measures in Stage 1 through 3 are ineffective in complying with a necessary reduction and/or that a governmental agency requests implementation of this stage to meet physical supply limitations.
2. All requirements imposed by Stages 1 through 3, except for rates, shall remain in force during Stage 4. In addition, the following water conservation requirements apply during Stage 4 except where necessary to address an immediate health or safety need or to comply with a term or condition in a permit issued by a state or federal agency:
 - a. **Obligation to Fix Leaks, Breaks, or Malfunctions:** All leaks, breaks, or other malfunctions in the water user's plumbing or distribution system must be repaired immediately upon notification from Suburban unless other arrangements are made with Suburban.
 - b. **Flow restrictors.**
Suburban is authorized to install a flow restrictor on the customer's service line. The installation of a flow restrictor is subject to the following conditions:
 - i. The device shall be capable of providing the premise with a minimum of 3 Ccf per person, per month, based upon the U.S. Census calculation of the average number of people in a household in the area.
 - ii. The device may only be removed by Suburban, and only after a minimum three-day period has elapsed.
 - iii. Any tampering with the device may result in the discontinuation of the customer's water service and the customer being charged for any damage to Suburban's equipment or facilities and any required service visits.

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SUPPLEMENT

Rule No. 14.1 (Continued)

WATER SHORTAGE CONTINGENCY PLAN

(C)

I. STAGE 4 - WATER SHORTAGE CONTINGENCY PLAN (Continued)

(C)

- i. After the removal of the device, if Suburban verifies that the customer is using potable water for non-essential, wasteful uses, Suburban may install another flow restrictor without prior notice. This device may remain in place until water supply conditions warrant its removal. If, despite the installation of the device, Suburban verifies that the customer is using potable water for non-essential and unauthorized wasteful uses, then Suburban may discontinue the customer's water service as provided in its Rule No. 11.

- a. Flow restrictor removal charges.
The charge to customers for removal of a flow restrictor installed pursuant to this rule is \$100 during normal business hours, and \$150 for the device to be removed outside of normal business hours.
- b. Rates: Suburban shall continue to implement the Commission approved Schedule No. 14.1 – Staged Water Shortage Contingency Plan.

J. ENFORCEMENT

1. Each Stage of this rule establishes certain restrictions on the use of potable water. Violating the restrictions set forth in a particular Stage while it is in effect is declared a non-essential, wasteful use of potable water.
2. Suburban will work closely with local law enforcement and public agencies charged with enforcing the mandatory water use restrictions.
3. When it is verified by Suburban personnel or a Suburban contractor that a customer is using water for any non-essential or unauthorized use as defined in Stages 1 through 4 above, Suburban will provide the customer with a written notice of violation. Suburban may then begin to issue penalties in accordance with its Water Shortage Contingency Plan Schedule No. 14.1.

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Title

Resolution No. _____

SLIP/SUB SHEET

Rule No. 14.1
(Continued)

Page 12 of 14

WATER SHORTAGE CONTINGENCY PLAN

(C)

J. ENFORCEMENT (Continued)

(C)

1. After a series of written notices and penalties, Suburban may elect to install a flow restrictor on a customer's service line. The customer will be notified that the flow restrictor may be installed for the duration of the enforcement stage of the Water Contingency Plan.
2. The flow restrictor shall not restrict water delivery by greater than 50% of normal flow and shall be capable of providing the premise with a minimum of 3 Ccf/person/month based upon the U.S. Census calculations of the average number of people in a household in the area. The restricting device may only be removed by Suburban after a minimum three-day period has elapsed, and only after payment of the appropriate removal charge as set forth in Schedule No. 14.1.
3. Tampering with the flow restrictor further violations of prohibited uses may result in discontinuance of water service under Rule 11.
4. All monies collected by Suburban through surcharges, shall be booked to the Water Revenue Adjustment Mechanism (WRAM) balancing accounts or a memorandum account to offset recovery of lost revenues. All expenses incurred, and penalties received by Suburban to implement Rule No. 14.1 and Schedule No. 14.1 that have not been authorized for recovery in a General Rate Case or other proceeding, shall be recoverable by Suburban if determined to be reasonable by Commission. These additional monies shall be accumulated by Suburban in a memorandum account for disposition as directed or authorized from time to time by the Commission.

K. APPEAL PROCEDURE

1. Any customer who seeks a variance from any of the provisions of this water conservation and water use restriction plan, including any health and safety exceptions, or seeks a remedy to any of the actions of Suburban in regards to this plan, shall notify Suburban in writing, explaining in detail the reason for such a variance or remedy. Suburban shall respond to each such request in writing.

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Robert L. Kelly

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Decision No.

Vice President

Effective

AUG - 1 2015

Title

Resolution No.

Suburban Water Systems
1325 N. Grand Ave., Ste. 100
Covina, CA 91724-4044

Original _____
Canceling _____

Cal. P.U.C. Sheet No. 1503-W
Cal. P.U.C. Sheet No. _____

Page 13 of 14

Rule No. 14.1
(Continued)

WATER SHORTAGE CONTINGENCY PLAN

(C)

L. PUBLICITY

(C)

a. When Suburban requests authorization of Schedule No. 14.1 – Water Shortage Contingency Plan tariff, via a Tier 2 advice letter, it shall provide notice of the Tier 2 advice letter and associated public meeting provided to customers, per Resolution W-4976, and shall comply with all requirements of Sections 350-358 of the California Water Code (CWC), including but not limited to the following:

- a. In order to be in compliance with both General Order 96B and CWC, Suburban shall provide notice via both newspaper and bill message/direct mailing.
- b. Suburban shall file one notice for each advice letter filed, that includes both notice of the filing of the Tier 2 advice letter as well as the details of the public meeting (date, time, place, etc.).
- c. The public meeting shall be held after Suburban files the Tier 2 advice letter, and before the Commission authorizes implementation of the tariff.

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Resolution No. _____

Rule No. 14.1
(Continued)

WATER SHORTAGE CONTINGENCY PLAN

(C)

L. PUBLICITY (Continued)

(C)

- b. In the event that the Schedule No. 14.1 - Water Shortage Contingency Plan is triggered, and Suburban requests activation through the filing of a Tier 2 advice letter, Suburban shall notify its customers and provide each customer with the additional requirements of the particular stage by means of bill insert, bill message or direct mailing. Notification shall take place prior to imposing any penalty rates associated with this plan.
- c. Suburban shall notify Customers via press releases, and messages on Suburban's website, of the effective date of any change in Stages either moving up Stages, e.g. from Stage 2 to Stage 3, or moving down Stages, e.g. from Stage 3 to Stage 1. Notification will occur at least one week before any penalties are levied or drought surcharges are enacted. In addition, Suburban shall maintain communication with Customers regarding the ongoing water supply situation and related conservation requirements.

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**Suburban
Water Systems**

A SouthWest Water Company

Appendix C: 2019 County of Los Angeles All-Hazards Mitigation Plan

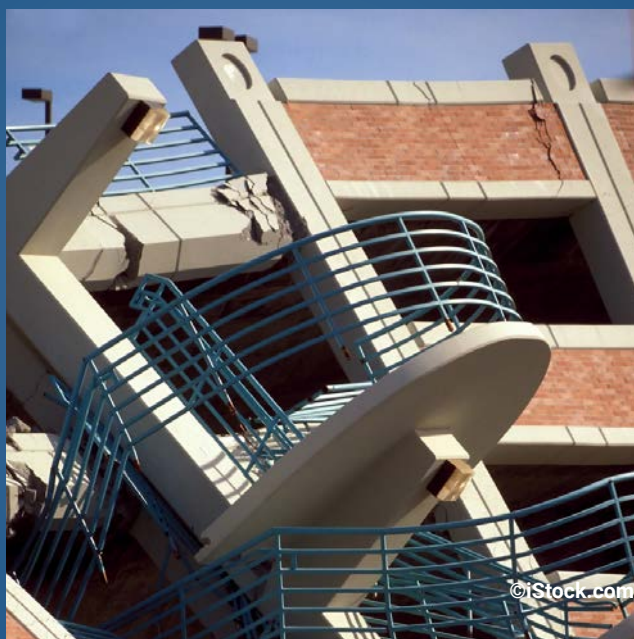
Suburban Water Systems | Water Shortage Contingency Plan



PUBLIC DRAFT

2019 County of Los Angeles All-Hazards Mitigation Plan

Chief Executive Office - Office of Emergency Management



**2019 COUNTY OF LOS ANGELES
ALL-HAZARDS MITIGATION PLAN**

TABLE OF CONTENTS

1	Introduction.....	1-1
1.1	Hazard Mitigation Planning	1-1
1.2	2019 All-Hazards Mitigation Plan Synopsis	1-1
2	Planning Process	2-1
2.1	Overview of 2019 AHMP Planning Process.....	2-1
2.2	Opportunities for Stakeholders.....	2-4
2.3	Public Involvement	2-4
2.4	Review and Incorporation of Existing Plans and Reports.....	2-5
2.5	Continued Public Participation.....	2-5
2.6	Plan Update Method and Schedule	2-6
3	Community Profile	3-1
3.1	Planning Area	3-1
3.2	Population and Development Trends	3-14
3.3	Vulnerable Populations	3-14
3.4	Critical Facilities	3-17
4	Hazard Identification and Risk Assessment	4-1
4.1	Climate Change	4-2
4.2	Dam Failure	4-9
4.3	Earthquake.....	4-16
4.4	Flood.....	4-25
4.5	Landslide	4-32
4.6	Tsunami	4-37
4.7	Wildfire	4-42
5	Mitigation Strategy	5-1
5.1	Authorities, Policies, Programs, and Resources.....	5-1
5.2	NFIP Participation.....	5-9
5.3	Mitigation Goals.....	5-9
5.4	Potential Mitigation Actions and Projects.....	5-9
5.5	Mitigation Action Plans	5-14
5.6	Plan Integration	5-15
6	Plan Review, Evaluation, and Implementation.....	6-1
6.1	Changes in Development	6-1
6.2	Progress in Local Mitigation Efforts	6-1

6.3	Changes in Priorities	6-2
7	Plan Adoption	7-1
7.1	Formal Adoption	7-1

LIST OF APPENDICES

Appendix A – Planning Process
Appendix B – Community Profile
Appendix C – Risk Assessment

LIST OF FIGURES

Figure 3-1. Location.....	3-8
Figure 3-2. Supervisorial District 1	3-9
Figure 3-3. Supervisorial District 2	3-10
Figure 3-4. Supervisorial District 3	3-11
Figure 3-5. Supervisorial District 4	3-12
Figure 3-6. Supervisorial District 5	3-13
Figure 3-7. People Experiencing Homelessness in the City of Los Angeles.....	3-15
Figure 3-8. People Experiencing Homelessness in Unincorporated Los Angeles County	3-16
Figure 3-9. Los Angeles County Animal Care & Control.....	3-18
Figure 3-10. Los Angeles County Fire Department.....	3-19
Figure 3-11. Los Angeles County Health Services.....	3-20
Figure 3-12. Los Angeles County Library.....	3-21
Figure 3-13. Los Angeles County Museum of Art and Museum of Natural History	3-22
Figure 3-14. Los Angeles County Office of Education	3-23
Figure 3-15. Los Angeles County Other (Offices)	3-24
Figure 3-16. Los Angeles County Parks & Recreation.....	3-25
Figure 3-17. Los Angeles County Department of Public Health.....	3-26
Figure 3-18. Los Angeles County Public Works	3-27
Figure 3-19. Los Angeles County Sheriff's Department	3-28
Figure 4-1. Temperature Change	4-7
Figure 4-2. Sea Level Rise Inundation Areas	4-8
Figure 4-3. Dam Breach Inundation Areas	4-13
Figure 4-4. Major Faults in Southern California	4-22
Figure 4-5. Historical Earthquakes (1769-2019)	4-23
Figure 4-6. Seismic Hazard Areas	4-24
Figure 4-7. Los Angeles County Flood Control System.....	4-30
Figure 4-8. Special Flood Hazard Areas	4-31
Figure 4-9. Deep-Seated Landslide Susceptibility Areas	4-36
Figure 4-10. Tsunami Inundation Areas	4-41
Figure 4-11. Fire Hazard Severity Zones.....	4-47
Figure 4-12. Recent Wildfires (2000-2018).....	4-48

LIST OF TABLES

Table 2-1. AHMP Timeline	2-1
Table 2-2. Hazard Mitigation Advisory Committee	2-3
Table 2-3. Existing Plans and Reports	2-5
Table 3-1. Los Angeles County Land Area	3-1
Table 3-2. Supervisorial District 1	3-1
Table 3-3. Supervisorial District 2	3-3
Table 3-4. Supervisorial District 3	3-4
Table 3-5. Supervisorial District 4	3-4
Table 3-6. Supervisorial District 5	3-5
Table 3-7. People Experiencing Homelessness	3-14
Table 3-8. Los Angeles County-Owned and County-Related Critical Facilities.....	3-17
Table 4-1. Climate Change Identification Profile	4-2
Table 4-2. Climate Change Impact on Land Area	4-4
Table 4-3. Climate Change Impact on Vulnerable Populations – People Experiencing Homelessness	4-4
Table 4-4. Climate Change Impact on County Critical Facilities.....	4-5
Table 4-5. Overall Summary of Vulnerability to Climate Change	4-6
Table 4-6. Dam Failure Identification Profile	4-9
Table 4-7. Dam Failure Impact on Land Area	4-11
Table 4-8. Dam Failure Impact on Vulnerable Populations – People Experiencing Homelessness	4-11
Table 4-9. Dam Failure Impact on County Critical Facilities	4-11
Table 4-10. Overall Summary of Vulnerability to Dam Failure	4-12
Table 4-11. Drought Identification Profile	4-14
Table 4-12. Drought Impact.....	4-15
Table 4-13. Overall Summary of Vulnerability to Drought	4-15
Table 4-14. Earthquake Identification Profile	4-16
Table 4-15. Seismic Hazard Impact on Land Area	4-19
Table 4-16. Seismic Hazard Impact on Vulnerable Populations – People Experiencing Homelessness	4-20
Table 4-17. Seismic Hazard Impact on County Critical Facilities	4-21
Table 4-18. Overall Summary of Vulnerability to Earthquakes	4-21
Table 4-19. Flood Identification Profile	4-25
Table 4-20. Flood Impact on Land Area	4-27
Table 4-21. Flood Impact on Vulnerable Populations – People Experiencing Homelessness ..	4-27
Table 4-22. Flood Impact on County Critical Facilities	4-28
Table 4-23. Overall Summary of Vulnerability to Floods	4-29
Table 4-24. Landslide Identification Profile	4-32
Table 4-25. Landslide Impact on Land Area	4-34
Table 4-26. Landslide Impact on Vulnerable Populations – People Experiencing Homelessness	4-34
Table 4-27. Landslide Impact on County Critical Facilities	4-34
Table 4-28. Overall Summary of Vulnerability to Landslides	4-35
Table 4-29. Tsunami Identification Profile	4-37
Table 4-30. Tsunami Impact on Land Area	4-39

Table 4-31. Tsunami Impact on Vulnerable Populations – People Experiencing Homelessness	4-39
Table 4-32. Tsunami Impact on County Critical Facilities	4-39
Table 4-33. Overall Summary of Vulnerability to Tsunamis	4-40
Table 4-34. Wildfire Identification Profile	4-42
Table 4-35. Wildfire Impact on Land Area	4-44
Table 4-36. Wildfire Impact on Vulnerable Populations – People Experiencing Homelessness	4-45
Table 4-37. Wildfire Impact on County Critical Facilities	4-45
Table 4-38. Overall Summary of Vulnerability to Wildfires	4-46
Table 5-1 Human and Technical Resources for Hazard Mitigation	5-2
Table 5-2. Financial Resources for Hazard Mitigation	5-4
Table 5-3. Legal and Regulatory Resources for Hazard Mitigation	5-7
Table 5-4. Potential Mitigation Actions and Projects	5-9
Table 5-5. Tier 1 Mitigation Action Plan	5-14
Table 5-6. Tier 2 Mitigation Action Plan	5-15
Table 6-1. Completed Local Mitigation Efforts	6-1

LIST OF ACRONYMS AND ABBREVIATIONS

°F	degrees Fahrenheit
AECOM	AECOM Technical Services, Inc.
AB	Assembly Bill
AHMP	All-Hazards Mitigation Plan
Cal FIRE	California Department of Forestry and Fire Protection
Cal OES	California Office of Emergency Services
CFR	Code of Federal Regulations
CGS	California Geological Survey
CWPP	Community Wildfire Protection Plans
CPG	Comprehensive Preparedness Guide
CRS	Community Rating System
DFIRM	Digital Flood Insurance Rate Map
DHS	Department of Homeland Security
DMA	Disaster Mitigation Act
DR	Disaster Declaration Number
DSOD	Division of Safety of Dams
EAP	Emergency Action Plan
EPA	Environmental Protection Agency
EQ	Earthquake
FEMA	Federal Emergency Management Agency
FHSZ	Fire Hazard Severity Zones
GIS	Geographic Information System
IPCC	Intergovernmental Panel on Climate Change
LACMA	Los Angeles County Museum of Art
LRA	Local Responsibility Area
M	Magnitude
MARAC	Mutual Aid Regional Advisory Committee
NFIP	National Flood Insurance Program
NHM	Los Angeles County Natural History Museum
OEM	Office of Emergency Management
PGA	Peak Ground Acceleration

RL	Repetitive Loss
SFHA	Special Flood Hazard Area
SRA	State Responsibility Area
U.S.	United States
USACE	United States Army Corps of Engineers
USGS	U.S. Geological Survey
WUI	wildland-urban interface

1 INTRODUCTION

1.1 HAZARD MITIGATION PLANNING

As defined in Title 44 of the Code of Federal Regulations (CFR), Subpart M, Section 206.401, hazard mitigation is “any action taken to reduce or eliminate the long-term risk to human life and property from natural hazards.” As such, hazard mitigation is any work to minimize the impacts of any type of hazard event before it occurs. Hazard mitigation aims to reduce losses from future disasters. It is a process that identifies and profiles hazards, analyzes the people and facilities at risk, and develops mitigation actions to reduce or eliminate hazard risk. The implementation of the mitigation actions, which include short- and long-term strategies that may involve planning, policy changes, programs, projects, and other activities, is the end result of this process.

In recent years, local hazard mitigation planning has been driven by a federal law, known as the Disaster Mitigation Act of 2000 (DMA 2000). On October 30, 2000, Congress passed the DMA 2000 (Public Law 106-390), which amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988 (Stafford Act) (Title 42 of the United States Code Section 5121 et seq.) by repealing the act’s previous mitigation planning section (409) and replacing it with a new mitigation planning section (322). This new section emphasized the need for state, tribal, and local entities to closely coordinate mitigation planning and implementation efforts. This new section also provided the legal basis for the Federal Emergency Management Agency’s (FEMA’s) mitigation plan requirements for the Hazard Mitigation Assistance grant programs.

1.2 2019 ALL-HAZARDS MITIGATION PLAN SYNOPSIS

To meet the requirements of the DMA 2000, the Los Angeles County Office of Emergency Management (OEM) has prepared an All- Hazards Mitigation Plan (AHMP) (hereinafter referred to as the 2019 AHMP) to assess risks posed by natural hazards and to develop a mitigation action plan for reducing the risks in Unincorporated Los Angeles County. The 2019 AHMP replaces the AHMP that was approved in 2014.

The 2019 AHMP is organized to follow FEMA’s Local Mitigation Plan Review Tool, which demonstrates how local AHMPs meet the DMA 2000 regulations. As such, specific planning elements of this review tool are in their appropriate plan sections.

The 2019 AHMP structure has been updated to including the following sections:

- **Section 2 Planning Process** provides an overview of the 2019 planning process, starting with a plan update timeline. It identifies advisory committee members and describes their involvement with the plan update process. It also details stakeholder outreach, public involvement and continued public involvement. It provides an overview of the existing plans and reports and how they were incorporated into the 2019 AHMP and lastly lays out a plan update method and schedule. Supporting planning process documentation is listed in **Appendix A**.
- **Section 3 Community Profile** describes the planning area for the 2019 AHMP, which includes the unincorporated areas of the county. It touches on the current population and development trends in the county and discusses vulnerable populations in the county, including the growing homeless crisis. Finally, this section lists the county-owned and

county-related critical facilities included in this plan. Supporting community profile information can be found in **Appendix B**.

- **Section 4 Hazard Identification and Risk Assessment** describes each of the eight hazards addressed in this plan. Additionally, it includes impact (i.e., risk assessment) tables for the planning area, vulnerable populations and critical facilities within each hazard area. An overall summary description is also provided for each hazard. **Appendix C** contains supporting hazard identification and risk assessment information.
- **Section 5 Mitigation Strategy** details Los Angeles County's capabilities (authorities, policies, programs and resources) available for hazard mitigation. It also discusses the county's participation in the National Flood Insurance Program (NFIP). Finally, it describes the mitigation strategy, which is the blueprint for how the County will reduce its risks to hazards. The mitigation strategy is made up of three main components: mitigation goal(s); potential mitigation actions and projects; and a mitigation action plan.
- **Section 6 Plan Review, Evaluation and Implementation** discusses the revisions made to the 2019 AHMP to address changes in development, progress made in local mitigation efforts and changes to priorities.
- **Section 7 Plan Adoption** contains a scanned copy of the adoption resolution.

2 PLANNING PROCESS

Section 2 – Planning Process addresses Element A of the Local Mitigation Plan Regulation Checklist.

Regulation Checklist – 44 CFR 201.6 Local Mitigation Plans	
Element A: Planning Process	
A1. Does the Plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement §201.6(c)(1))	
A2. Does the Plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process? (Requirement §201.6(b)(2))	
A3. Does the Plan document how the public was involved in the planning process during the drafting stage? (Requirement §201.6(b)(1))	
A4. Does the Plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement §201.6(b)(3))	
A5. Is there discussion of how the community(ies) will continue public participation in the plan maintenance process? (Requirement §201.6(c)(4)(iii))	
A6. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a 5-year cycle)? (Requirement §201.6(c)(4)(i))	

2.1 OVERVIEW OF 2019 AHMP PLANNING PROCESS

The development of the 2019 AHMP was collaborative effort between Los Angeles County OEM, AECOM Technical Services, Inc. (AECOM), an advisory committee, and various county departments and agencies. **Table 2-1** provides a timeline of the major plan update tasks and milestones by month over a 9-month period. **Table 2-2** lists the advisory committee members and how they contributed to the development of the plan.

Table 2-1. AHMP Timeline

Date	Tasks	People Involved
March 2019	Reviewed the 2014 AHMP and decided to continue efforts to streamline the plan Held 2019 AHMP advisory committee kick-off meeting (March 15)	AHMP project manager, advisory committee
April 2019	Determined the hazards to be profiled, including climate change (new to the 2019 AHMP), drought, dam failure, earthquake, flood, landslide, tsunami and wildfire (all addressed in the 2014 AHMP)	AHMP project manager, AECOM
May 2019	Collected local and regional existing plans and reports	AECOM
June 2019	Determined the Geographic Information System (GIS) strategy for risk assessment including land area/geographical boundaries and critical facilities and discussed how to incorporate people experiencing homelessness	AHMP project manager, AECOM, Los Angeles County Office of Emergency Management

Table 2-1. AHMP Timeline

Date	Tasks	People Involved
July 2019	- Identified initial list of stakeholders - Crafted public outreach messages for the Twitter handle @ReadyLACounty - Created draft hazard figures - Developed homeless people risk assessment tables - Developed land area/geographic boundaries risk assessment tables - Rewrote/updated the hazard profiles into a streamlined tabular format - Began developing/updating/collecting draft mitigation actions - Streamlined and updated the community profile section to only address the planning area, population and development trends and county critical facilities (deleted general County information)	AHMP project manager, AECOM
August 2019	- Tweeted public outreach messages about the 2019 AHMP - Emailed stakeholders about the 2019 AHMP - Conducted conference call with Los Angeles County Regional Planning (August 5) to discuss joint public outreach efforts as well as mitigation strategies - Conducted meeting with Los Angeles County Public Works (August 7) to discuss 2019 AHMP, progress made to date, and existing and new mitigation strategies - Developed critical facilities risk assessment tables - Created draft risk assessment tables - Revised plan maintenance approach from quarterly meetings to annual review questionnaires	AHMP project manager, AECOM, Los Angeles County Department of Regional Planning, Los Angeles County Public Works, advisory committee
September 2019	- Updated the capability assessment tables - Developed a list of potential mitigation actions and prioritized actions based on a new tiered approach - Created public outreach flyers in English and Spanish and placed on the Los Angeles County OEM website - Documented progress in local mitigation efforts - Addressed changes in development since the 2014 AHMP - Created Initial Draft AHMP - Created Public Draft AHMP	AHMP project manager, AECOM, advisory committee
October 2019	Created Final Draft AHMP	AECOM

Table 2-2. Hazard Mitigation Advisory Committee

Name	Department / Agency, Title	Contribution
Emily Montanez	Office of Emergency Management, AHMP project manager, Senior Program Manager	Led kick-off meeting, reviewed draft hazard figures and risk assessment tables, draft mitigation actions and initial draft plan.
Margaret Carlin	Office of Emergency Management, GIS Project Supervisor	Provided input on GIS, reviewed draft hazard figures and risk assessment tables, draft mitigation actions and initial draft plan.
Stephanie Kim	Office of Emergency Management, Academic Intern	Reviewed and updated the community profile, provided input on people experiencing homelessness, participated on conference calls, attended department meetings, and reviewed the initial draft plan.
Caroline Chen	Los Angeles County Department of Regional Planning, Regional Planner	Attended kick-off meeting, participated on conference call, reviewed draft hazard figures and risk assessment tables, draft mitigation actions, and initial draft plan.
Iris Chi	Los Angeles County Department of Regional Planning, Regional Planner	Attended kick-off meeting, participated on conference call, reviewed draft hazard figures and risk assessment tables, draft mitigation actions and initial draft plan.
Loni Eazell	Los Angeles County Public Works, Disaster Services Specialist	Coordinated August 7 department meeting, reviewed draft hazard figures and risk assessment tables, draft mitigation actions, and initial draft plan.
Frank Forman	Los Angeles County Fire Department, Battalion Chief	Reviewed draft hazard figures and risk assessment tables, draft mitigation actions and initial draft plan.
Andrew Gano	City of Glendale Fire Department, Captain	Attended kick-off meeting, reviewed draft hazard figures and risk assessment tables, draft mitigation actions, and initial draft plan.
Angine Geragoosian	Los Angeles County Public Works, Disaster Services Analyst	Attended kick-off meeting, reviewed draft hazard figures and risk assessment tables, draft mitigation actions, and initial draft plan.
Patricia Hachiya	Regional Planning, Supervising Regional Planner	Attended kick-off meeting, participated on conference call, reviewed draft hazard figures and risk assessment tables, draft mitigation actions, and initial draft plan.
Jack Husted	Department of Public Works, Senior Civil Engineer	Attended August 7 meeting, reviewed draft hazard figures and risk assessment tables, draft mitigation actions, and initial draft plan.
Sheryll Jones	Emergency Services Coordinator, Southern Region Cal OES	Advised Los Angeles County OEM about initial update process and reviewed initial draft plan.
Sinan Khan	Office of Emergency Management, Associate Director	Reviewed draft hazard figures and risk assessment tables, draft mitigation actions and initial draft plan.

Table 2-2. Hazard Mitigation Advisory Committee

Name	Department / Agency, Title	Contribution
Diana Manzano	Area D Disaster Management, Coordinator	Attended kick-off meeting, reviewed draft hazard figures and risk assessment tables, draft mitigation actions, and initial draft plan.
John Eric Pearce	Fire Department, Captain	Reviewed draft hazard figures and risk assessment tables, draft mitigation actions, and initial draft plan.
Christine Shaffer	Sheriff's Department, Deputy	Reviewed draft hazard figures and risk assessment tables, draft mitigation actions, and initial draft plan.
Nathaniel VerGow	Los Angeles Homeless Services Authority, Director of Access and Engagement	Reviewed draft hazard figures and risk assessment tables, draft mitigation actions, and initial draft plan.
Steven Wallace	San Gabriel Fire Department, Interim Fire Chief	Reviewed draft hazard figures and risk assessment tables, draft mitigation actions, and initial draft plan.
Iain Watt	Office of Emergency Management, Emergency Management Coordinator	Participated on conference call, reviewed draft hazard figures and risk assessment tables, draft mitigation actions, and initial draft plan.

2.2 OPPORTUNITIES FOR STAKEHOLDERS

On August 20, 2019, the AHMP project manager reached out to stakeholders about the 2019 AHMP to invite them to participate in the plan update process. The stakeholders were also notified on October 4, 2019, that a copy of the public draft plan was available for review on the Los Angeles County OEM website. Stakeholders include members of the Mutual Aid Regional Advisory Committee (MARAC) for the Southern Region. The MARAC consists of: the California Office of Emergency Services (Cal OES) regional administrator, or deputy, for the Administrative Region encompassing the mutual aid region(s); regional mutual aid coordinators (fire, law enforcement, disaster medical and other established mutual aid systems); a representative from each operational area located in the mutual aid region; representatives from two municipalities (small/large and rotates bi-annually); regional public utility representative; private utility representative; special district representative; and other designee as appointed by an individual MARAC. Stakeholder documentation is located in **Appendix A**.

2.3 PUBLIC INVOLVEMENT

The Los Angeles County OEM engaged the public in the plan update process through various media formats. A flyer about the 2019 AHMP was created in both English and Spanish and placed on the Los Angeles County OEM website. The website also includes a copy of the public draft plan for public comment on October 4, 2019.

<https://www.lacounty.gov/emergency/county-of-los-angeles-all-hazards-mitigation-plan/>

Additionally, the Los Angeles County OEM used Twitter, @ReadyLACounty, to engage the public through a series of tweets about the 2019 AHMP, hazards in Los Angeles County, hazard mitigation planning, and the public draft plan.

2.4 REVIEW AND INCORPORATION OF EXISTING PLANS AND REPORTS

The consultant reviewed existing relevant information to include in the 2019 AHMP. **Table 2-3** lists the plans and reports reviewed as well as information to be incorporated into the 2019 AHMP.

Table 2-3. Existing Plans and Reports

Plans and Reports	Information to be Incorporated into the 2019 AHMP
Los Angeles County Operational Area Emergency Response Plan (2012)	Appendix K Hazards-Specific to the operational area into Section 4 Hazard Identification and Risk Assessment
Los Angeles County 2035 General Plan (2015)	Safety element mitigation policies into Section 5 Mitigation Strategy
Los Angeles County Floodplain Management Plan (2016)	Flood hazard profile, non-implemented flood mitigation initiatives into Section 4 Hazard Identification and Risk Assessment
County of Los Angeles Floodplain Management Plan Progress Report 2017 – 2018	Non-implemented flood mitigation initiatives into Section 5 Mitigation Strategy, implemented flood mitigation initiatives into Section 6 Plan Review, Evaluation, and Implementation
County of Los Angeles Repetitive Loss Area Analysis Progress Report 2017 – 2018	Non-implemented flood mitigation initiatives into Section 5 Mitigation Strategy, implemented flood mitigation initiatives into Section 6 Plan Review, Evaluation, and Implementation
Unincorporated Los Angeles County Community Climate Action Plan 2020	Climate change mitigation objectives into Section 5 Mitigation Strategy
2019 Greater Los Angeles Homeless Count Results	People experiencing homelessness count into Section 4 Hazard Identification and Risk Assessment
Los Angeles County Fire Department 2018 Strategic Fire Plan	Vegetation management programs into Section 5 Mitigation Strategy
Southern California Earthquake Data Center's Earthquake Catalogs	Historic seismic data into Section 4 Hazard Identification and Risk Assessment
Maritime Tsunami Response Playbooks: Background Information and Guidance for Response and Hazard Mitigation Use (2016)	Historical tsunami information and evaluation data into Section 4 Hazard Identification and Risk Assessment
FEMA Flood Insurance Study, Los Angeles County, California (2018)	Historical flood information and flood hazard areas into Section 4 Hazard Identification and Risk Assessment
U.S. Geological Survey (USGS): Rainfall and Landslides in Southern California (active)	Landslide nature, location, historical and extent information into Section 4 Hazard Identification and Risk Assessment

2.5 CONTINUED PUBLIC PARTICIPATION

A copy of the 2019 AHMP will be kept on the Los Angeles County OEM website along with contact information. The Los Angeles County OEM will also notify residents of any changes or

updates to the 2019 AHMP, including mitigation projects identified in the plan as they are implemented, via @ReadyLACounty on Twitter.

2.6 PLAN UPDATE METHOD AND SCHEDULE

The 2014 AHMP recommended quarterly meetings to discuss and track mitigation projects implemented during the lifespan of the 2014 AHMP. It is unknown how often specific departments/agencies met to track the status of their mitigation actions. For the 2019 AHMP, the plan update method and schedule has been revised to include an annual review and an advisory committee roundtable prior to the 5-year update. Mitigation projects will be monitored via a progress project report. Details are as follows:

- **Annual Review Worksheets:** Every 12 months from plan adoption, the AHMP project manager will email each member of the advisory committee an Annual Review Worksheet to complete. As shown in Appendix A, the Annual Review Worksheet reflects the Local Mitigation Plan Review Tool and includes the following: planning process, hazard profile, risk assessment, and mitigation strategy. Each member of the advisory committee will email completed worksheets back to the AHMP project manager to review. The AHMP project manager will summarize these findings and email them out to the committee. If the AHMP project manager believes that the 2019 AHMP needs to be updated based on the findings, then an invitation will be sent to advisory committee members to attend a formal AHMP update meeting.
- **Mitigation Progress Project Reports:** Mitigation actions will be monitored and updated using the Mitigation Project Progress Report. During each annual review, each department or agency currently administering a mitigation project will submit a progress report to the AHMP project manager. For projects that are being funded by a FEMA mitigation grant, FEMA quarterly reports may be used as the preferred reporting tool. As shown in Appendix A, the progress report will discuss the current status of the mitigation project, including any changes made to the project, identify implementation problems, and describe appropriate strategies to overcome them.
- **Advisory Committee Roundtable:** On the fourth year of the update, the AHMP project manager will reconvene the advisory committee (updating membership, if necessary) and lead a tabletop exercise with the advisory committee to: collect the Annual Review Worksheet and any Mitigation Project Progress Reports and FEMA quarterly reports; determine hazards to be included in the 2024 AHMP; develop a new work plan; and begin the plan update process.

3 COMMUNITY PROFILE

3.1 PLANNING AREA

With approximately 4,760.72 square miles, Los Angeles County is geographically one of the largest counties in the country. As shown in **Figure 3-1**, the county stretches along 75 miles of the Pacific coast of Southern California and is bordered to the east by Orange County and San Bernardino County, to the north by Kern County, and to the west by Ventura County. Los Angeles County has two islands, Santa Catalina (75.00 square miles) and San Clemente (60.69 square miles), which are part of an eight-island group called the Channel Islands.

As shown in **Tables 3-1 – 3-6** and **Figures 3-2 – 3-6**, the county is divided into five supervisorial districts, each representing approximately 2 million people in 88 cities and approximately 140 communities or 122 county-wide statistical areas. The five supervisorial districts consist of 4,150 square miles, with 3,014.17 square miles located in the unincorporated areas. The remaining area of Los Angeles County is federal land, including the Los Padres National Forest and Angeles National Forest.

For the 2019 AHMP, the planning area is defined as Unincorporated Los Angeles County. However, the plan's risk assessment includes: Los Angeles County, Unincorporated Los Angeles County, and supervisorial districts 1-5. In addition, specific county-wide statistical area risk assessment information is provided in **Appendix C**.

Table 3-1. Los Angeles County Land Area

Entity	Square Miles
Los Angeles County	4,760.72
Unincorporated Los Angeles County	3,041.17
Supervisorial District 1	246.19
Supervisorial District 2	161.83
Supervisorial District 3	431.21
Supervisorial District 4	439.95
Supervisorial District 5	2,807.00

Table 3-2. Supervisorial District 1

City	County-wide Statistical Area
Azusa	Arcadia
Baldwin Park	Angeles National Forest
Bell	Avocado Heights
Bell Gardens	Azusa
Claremont	Bandini Islands

Table 3-2. Supervisorial District 1

City	County-wide Statistical Area
Commerce	Bassett
Cudahy	Charter Oak
El Monte	Claremont
Huntington Park	Covina
Industry	Covina (Charter Oak)
Irwindale	Duarte
La Puente	East Los Angeles
Maywood	El Monte
Montebello	Florence – Firestone
Monterey Park	Glendora
Pico Rivera	Hacienda Heights
Pomona	La Verne
Rosemead	Lynwood
South El Monte	North Whittier
South Gate	Padua Hills
Vernon	Pellissier Village
Walnut	Pomona
West Covina	Rowland Heights
	San Jose Hills
	South El Monte
	South San Gabriel
	Sunrise Village
	Valinda
	Walnut
	Walnut Park
	West Puente Valley
	West Whittier / Los Nietos
	Whittier
	Whittier Narrows

Table 3-3. Supervisorial District 2

City	County-wide Statistical Area
Carson	Athens Village
Compton	Athens-Westmont
Culver City	Del Aire
Gardena	Del Rey
Hawthorne	East Rancho Dominguez
Inglewood	El Camino Village
Lawndale	Florence – Firestone
Los Angeles (portion)	Hawthorne
Lynwood	Ladera Heights
	Lennox
	Lynwood
	Marina del Rey
	Rancho Dominguez
	Rosewood
	Rosewood/East Gardena
	Rosewood/West Rancho Dominguez
	View Park/Windsor Hills
	Walnut Park
	West Carson
	West Rancho Dominguez
	Willowbrook
	Wiseburn

Table 3-4. Supervisorial District 3

City	County-wide Statistical Area
Agoura Hills	Angeles National Forest
Beverly Hills	Franklin Canyon
Calabasas	Marina del Rey
Hidden Hills	Miracle Mile
Malibu	Kagel/Lopez Canyons
San Fernando	Santa Monica Mountains
Santa Monica	Universal City
West Hollywood	West LA
Westlake Village	Westhills

Table 3-5. Supervisorial District 4

City	County-wide Statistical Area
Artesia	Cerritos
Avalon	Del Aire
Bellflower	East La Mirada
Cerritos	East Rancho Dominguez
Diamond Bar	East Whittier
Downey	El Camino Village
El Segundo	Hacienda Heights
Hawaiian Gardens	Harbor Gateway
Hermosa Beach	La Habra Heights
La Habra Heights	La Rambla
La Mirada	Lakewood
Lakewood	Lennox
Lomita	Long Beach
Long Beach	Lynwood
Los Angeles (portion)	Marina del Rey
Manhattan Beach	Palos Verdes Peninsula
Norwalk	Rancho Dominguez
Palos Verdes Estates	Rowland Heights
Paramount	San Clemente Island
Rancho Palos Verdes	Santa Catalina Island

Table 3-5. Supervisorial District 4

City	County-wide Statistical Area
Redondo Beach	South Whittier
Rolling Hills	Sunrise Village
Rolling Hills Estates	West Carson
Santa Fe Springs	West Whittier / Los Nietos
Signal Hill	Westfield/Academy Hills
Torrance	Whittier
Whittier	

Table 3-6. Supervisorial District 5

City	County-wide Statistical Area
Alhambra	Acton
Arcadia	Agua Dulce
Bradbury	Altadena
Covina	Anaverde
Duarte	Angeles National Forest
Glendale	Arcadia
Glendora	Azusa
La Canada – Flintridge	Bouquet Canyon
La Verne	Bradbury
Lancaster	Canyon Country
Monrovia	Castaic
Palmdale	Claremont
Pasadena	Covina
San Dimas	Covina (Charter Oak)
San Gabriel	Del Sur
San Marino	Desert View Highlands
Santa Clarita	Duarte
Sierra Madre	East Covina
South Pasadena	East Lancaster
Temple City	East Pasadena
Los Angeles City	Elizabeth Lake
Canoga Park (portion)	Glendora

Table 3-6. Supervisorial District 5

City	County-wide Statistical Area
Chatsworth (portion)	Hi Vista
Granada Hills (portion)	Kagel / Lopez Canyons
Hansen Dam (portion)	La Crescenta-Montrose
Lake View Terrace (portion)	La Verne
Mission Hills (portion)	Lake Hughes
Northridge (portion)	Lake Los Angeles
Olive View Hospital (Sylmar)	Lake Manor
Porter Ranch	Leona Valley
Shadow Hills	Littlerock
Sun Valley (portion)	Littlerock/Juniper Hills
Sunland	Littlerock/Pearblossom
Sylmar (portion)	Llano
Tujunga	Monrovia
West Hills (portion)	Newhall
	North Lancaster
	Northeast San Gabriel
	Palmdale
	Pearblossom/Llano
	Placerita Canyon
	Pomona
	Quartz Hill
	Roosevelt
	San Francisquito Canyon/Bouquet Canyon
	San Pasqual
	Sand Canyon
	Saugus
	Saugus/Canyon Country
	South Antelope Valley
	South Edwards
	Southeast Antelope Valley
	Stevenson Ranch
	Sun Village
	Twin Lakes/Oat Mountain

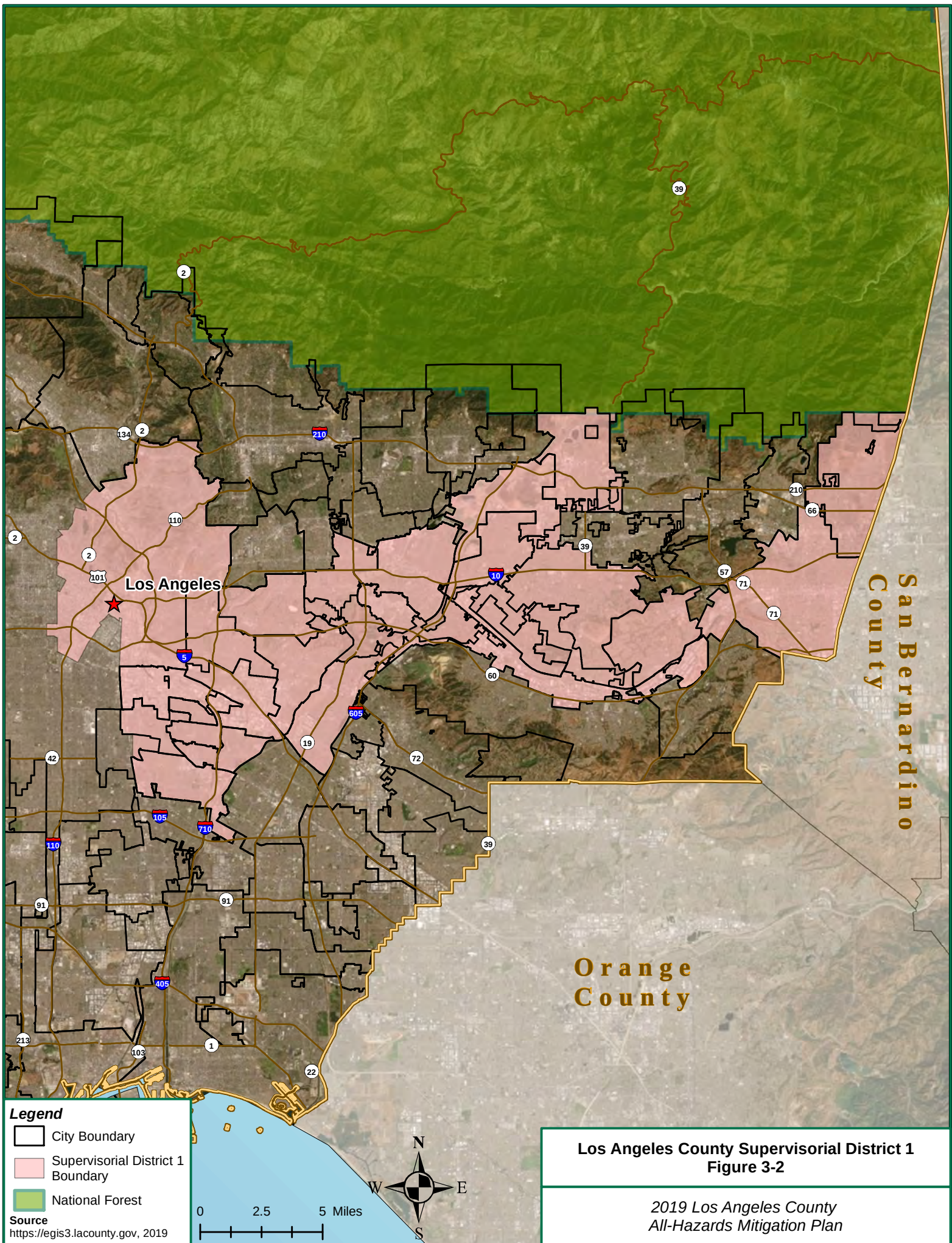
Table 3-6. Supervisorial District 5

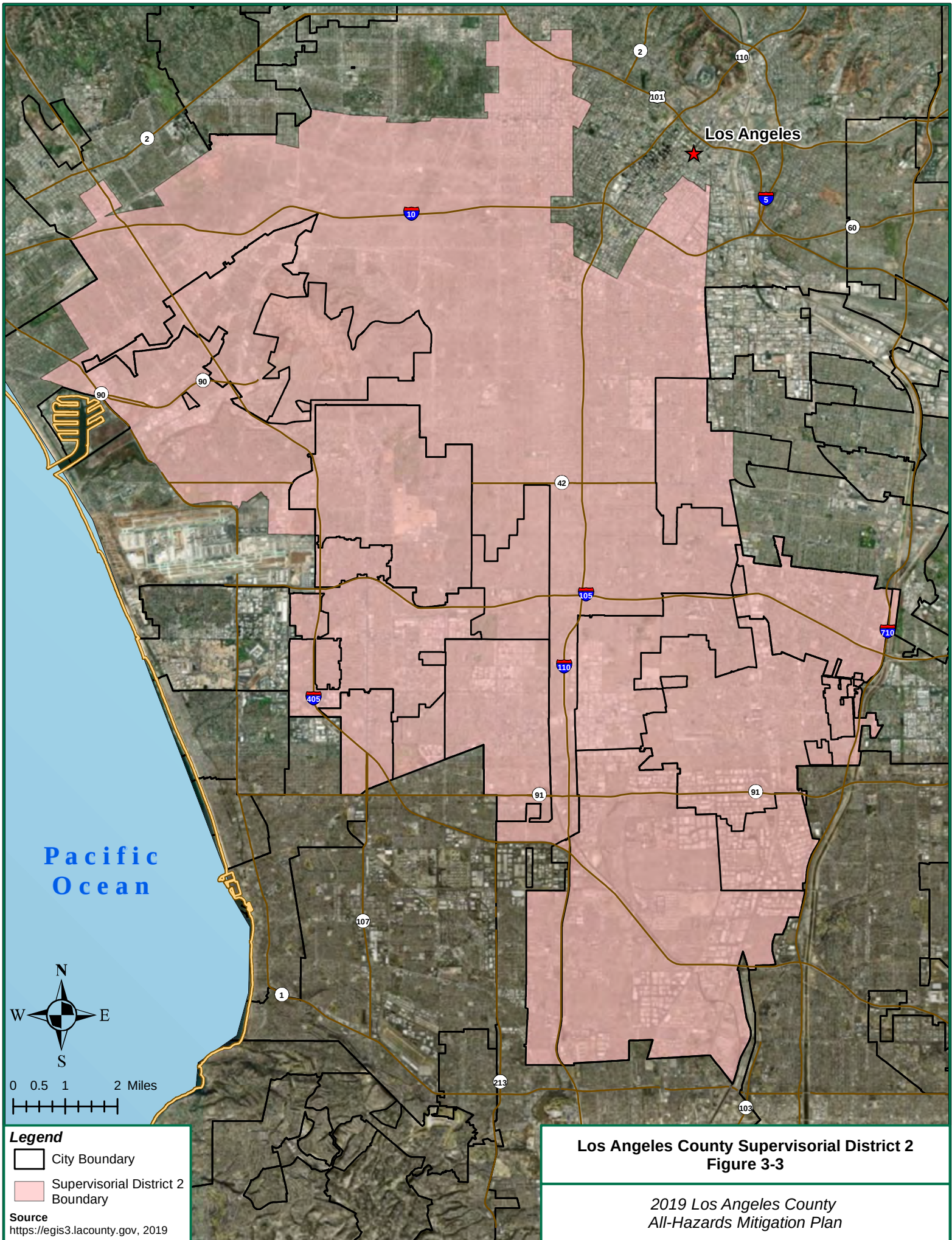
City	County-wide Statistical Area
	Val Verde
	Valencia
	West Antelope Valley
	West Chatsworth
	White Fence Farms



Los Angeles County
Figure 3-1

*2019 Los Angeles County
All-Hazards Mitigation Plan*







Ventura
County

Pacific Ocean

Los Angeles

Legend

- City Boundary
- Supervisorial District 3 Boundary
- National Forest

Source
<https://egis3.lacounty.gov>, 2019

**Los Angeles County Supervisorial District 3
Figure 3-4**

*2019 Los Angeles County
All-Hazards Mitigation Plan*



San Bernardino
County

Orange
County

Pacific Ocean



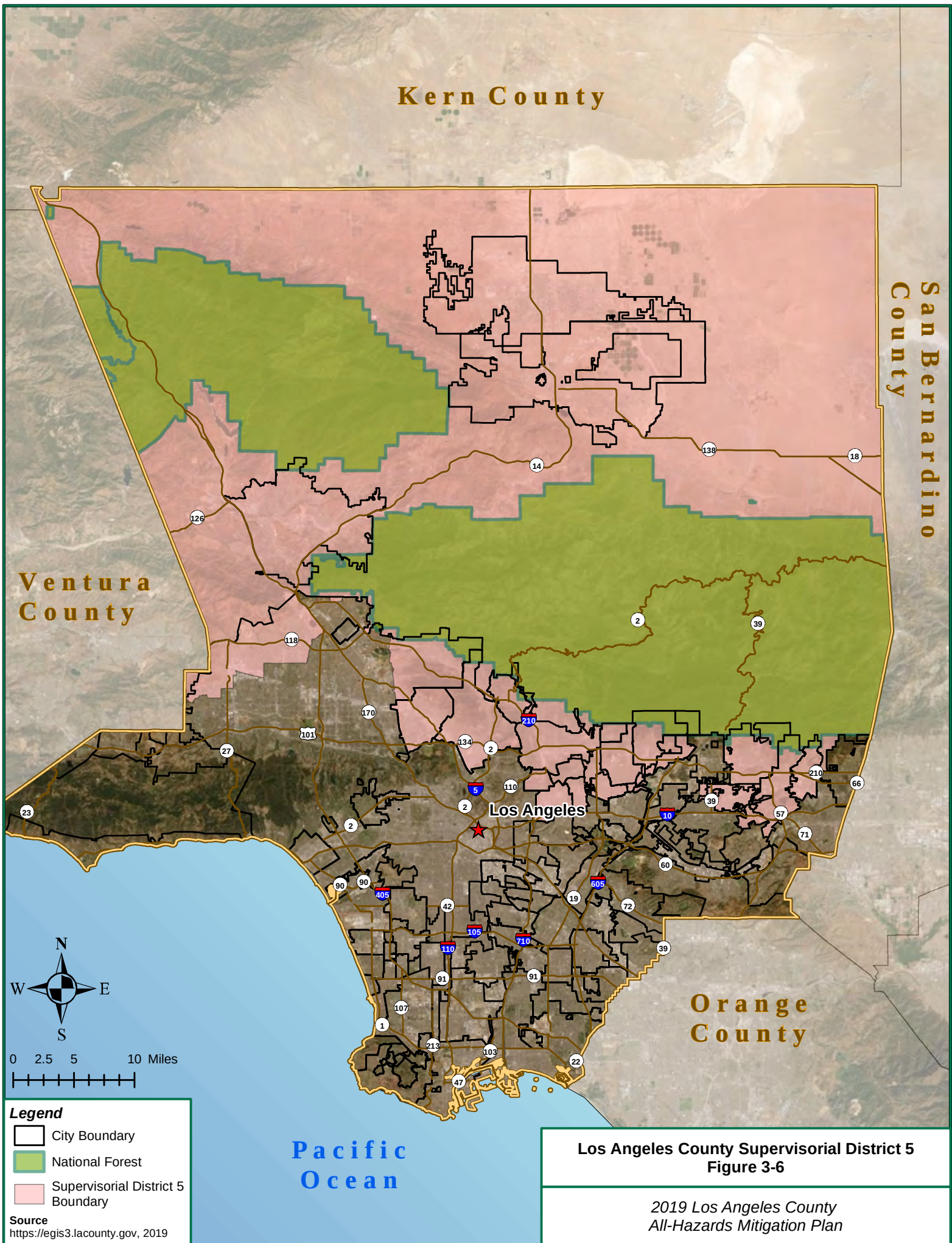
0 5 10 Miles

Legend
City Boundary
Supervisorial District 4
Boundary

Source
<https://egis3.lacounty.gov>, 2019

Los Angeles County Supervisorial District 4
Figure 3-5

2019 Los Angeles County
All-Hazards Mitigation Plan



Kern County

San Bernardino
County

Ventura
County

Orange
County

Pacific
Ocean

Los Angeles County Supervisorial District 5
Figure 3-6

2019 Los Angeles County
All-Hazards Mitigation Plan

Legend

- City Boundary
- National Forest
- Supervisorial District 5 Boundary

Source
<https://legis3.lacounty.gov>, 2019

3.2 POPULATION AND DEVELOPMENT TRENDS

Since the drafting of the 2014 AHMP, United States (U.S.) Census Bureau Intercensal Estimates from July 1, 2015, to July 1, 2018, show the number of people residing in Los Angeles County only grew from 10,097,037 to 10,105,518. While the county experienced population growth of 0.50 percent in 2015 and 0.23 percent in 2016, the county population fell by 0.02 percent in 2017 and 0.13 percent in 2018.

The California Department of Finance noted that the decline in population can be linked in part to a decline in birthrate. Researchers at the University of Southern California Lusk Center for Real Estate also suggest that one of the biggest reasons behind Los Angeles County's growth rate slip is due the lack of housing. Despite the city of Los Angeles adding between 15,000 and 17,000 units of housing each year from 2014 to 2018, housing has become prohibitively unaffordable, which has led many young Los Angeles County residents to move out-of-state or put down roots in nearby Inland Empire counties, where thousands of new jobs in distribution hubs and fulfillment centers have fueled more affordable housing development.

For the 2019 AHMP, population and residential buildings are not included in the risk assessment. As 2020 U.S. Census data become available, this information may be included in plan updates.

3.3 VULNERABLE POPULATIONS

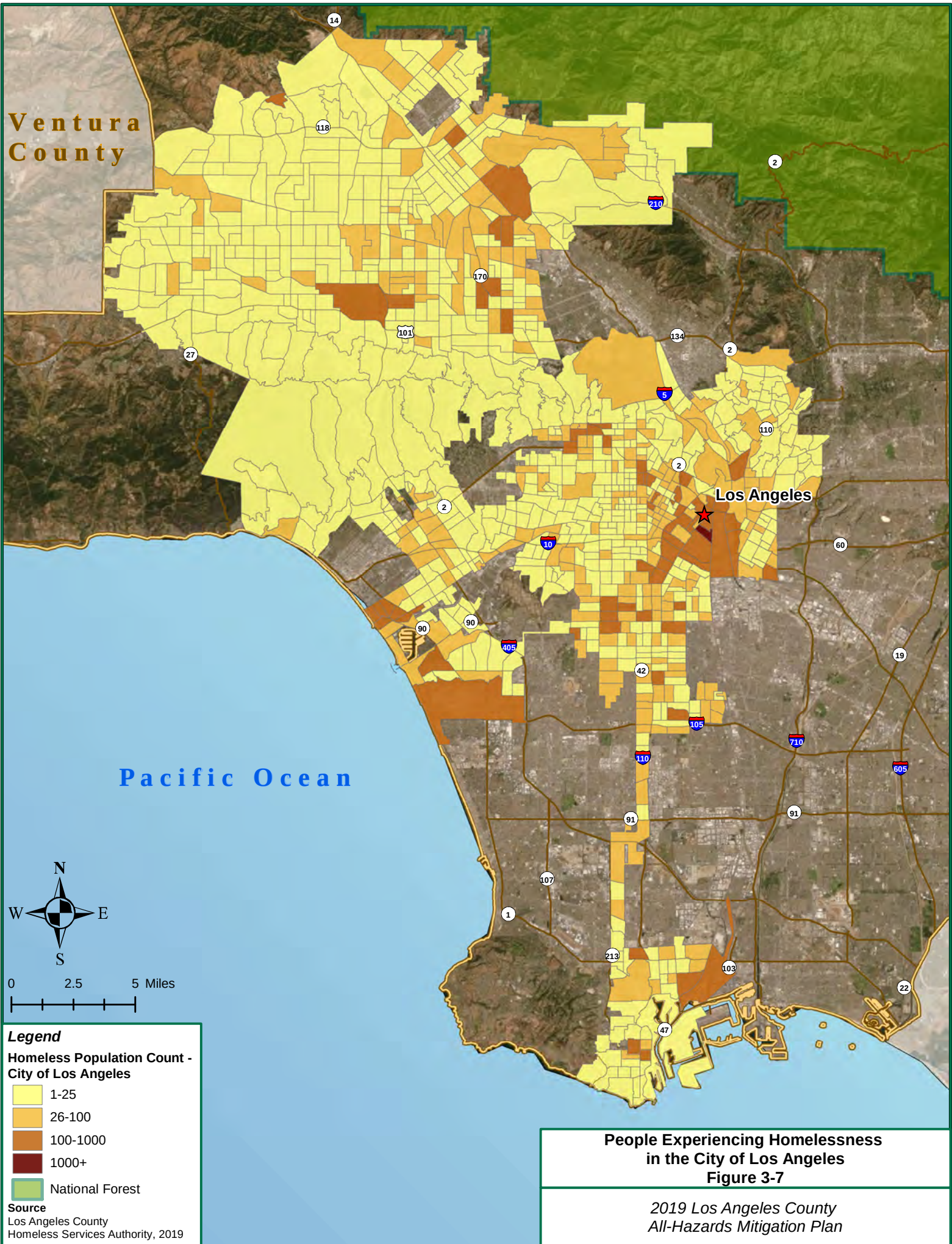
As noted by the Center for Disease Control (CDC), "Everyone must remain safe in an emergency. But for some, it's more difficult." Vulnerable or at-risk groups include people that may have difficulty communicating or accessing medical care, need help maintaining independence, require supervision, and need help accessing transportation.

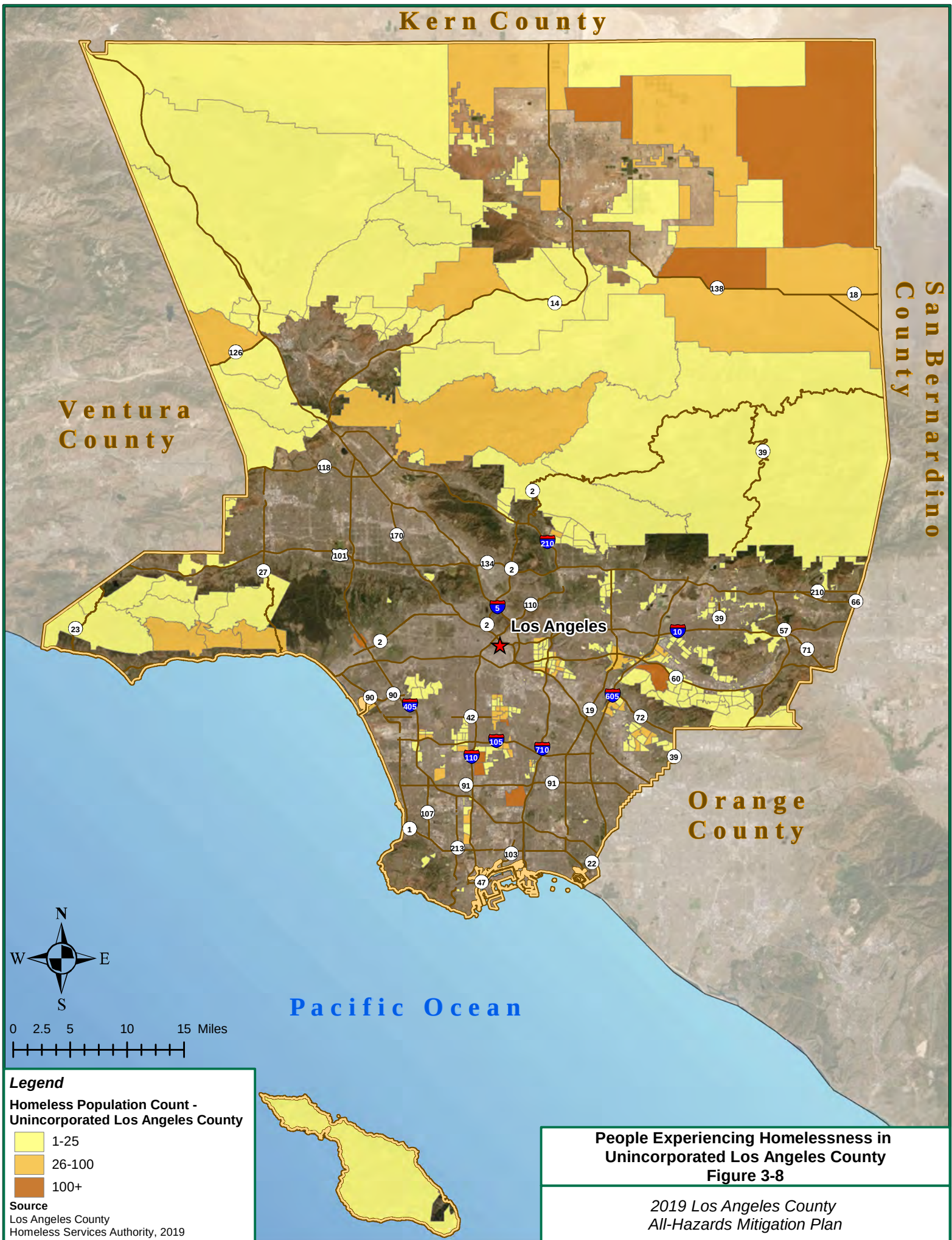
For the 2019 AHMP, vulnerable population groups addressed in the risk assessment include people experiencing homelessness. People experiencing homelessness have become a regional crisis as the number of this vulnerable population group has risen to nearly 60,000 in Los Angeles County alone. **Table 3-7** and **Figures 3-7 and 3-8** show the total point-in-time number of people experiencing homelessness in the city of Los Angeles and Unincorporated Los Angeles County, as captured for the 2019 Greater Los Angeles Homeless Count.

There are several other vulnerable groups at-risk to hazards in Los Angeles County; future updates of the AHMP will expand vulnerable population categories as the 2020 U.S. Census socioeconomic status, household composition and disability, minority status and language, and housing and transportation data becomes available.

Table 3-7. People Experiencing Homelessness

Entity	Total # of People Experiencing Homelessness (Sheltered and Unsheltered)
City of Los Angeles	32,931
Unincorporated Los Angeles County	5,881





3.4 CRITICAL FACILITIES

A critical facility provides services and functions essential to a community, especially during and after a disaster. Common types of critical facilities include: fire stations, police stations, hospitals, schools, water and waste water systems, and utilities. Critical facilities may also include places that can be used for sheltering or staging purposes, such as community centers and libraries. Critical facilities may also include large public gathering spots.

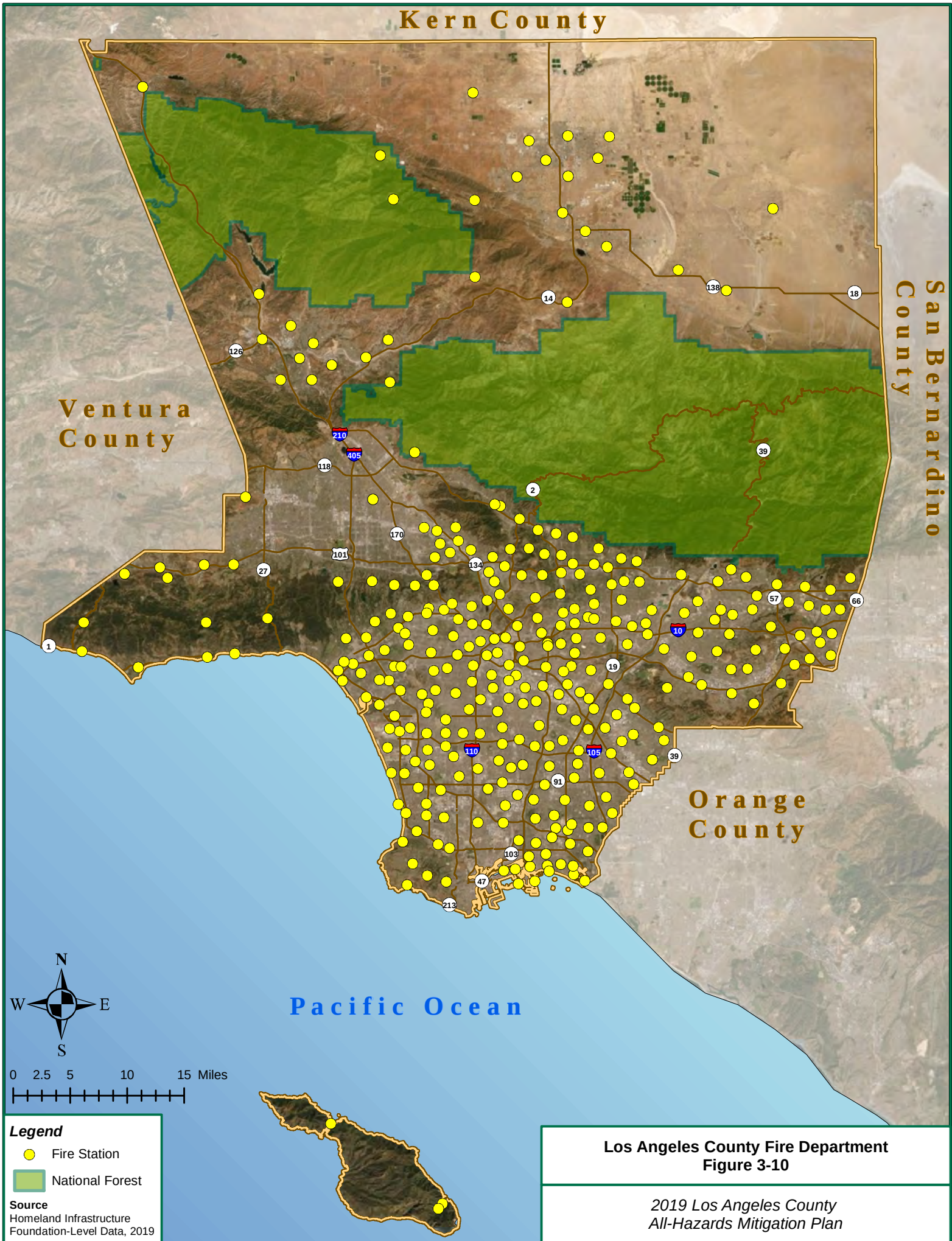
Los Angeles County does not currently maintain a centralized critical facilities database. For the 2019 AHMP, 915 major county-owned and county-related critical facilities were collected from various county department and agencies and also from the U.S. Department of Homeland Security's (DHS) Homeland Infrastructure-Foundation-Level Data site. Critical facility names and addresses were then geocoded to a location and the resulting geographic features were used for the risk assessment. The results of this process are shown in **Table 3-8** and **Figure 3-9** through **Figure 3-19**. Facility-specific information is provided in **Appendix B**. Some departments and agencies have multiple facilities at the same location; hence there are duplications of facility sites.

The County hopes to implement a coordinated data collection and database system for critical facilities; as such, future updates to this plan will likely include an expanded critical facilities list.

Table 3-8. Los Angeles County-Owned and County-Related Critical Facilities

Department / Agency	# of Facilities
Los Angeles County Animal Care & Control	7
Los Angeles County Fire Department	337*
Los Angeles County Health Services	29
Los Angeles County Library	85
LACMA & NHM	4
Los Angeles County Office of Education	37
Los Angeles County - Other (offices)	24
Los Angeles County Parks & Recreation	117
Los Angeles County Public Health	14
Los Angeles County Public Works	230
Los Angeles County Sheriff's Department	31

Note: The fire stations identified for this plan include those located within the 59 cities and all the unincorporated areas that the Los Angeles County Fire Department serves.



Kern County

San Bernardino
County

Ventura
County

Orange
County

Pacific Ocean



0 2.5 5 10 15 Miles

Legend

- Fire Station
- National Forest

Source
Homeland Infrastructure
Foundation-Level Data, 2019

Los Angeles County Fire Department
Figure 3-10

2019 Los Angeles County
All-Hazards Mitigation Plan



Kern County

San Bernardino
County

Ventura
County

Los Angeles

Orange
County

Pacific Ocean



0 2.5 5 10 15 Miles

Legend

- Hospital and Clinic
- National Forest

Source
Los Angeles County Department
of Human Services, 2019

Los Angeles County Department of Health Services
Figure 3-11

2019 Los Angeles County
All-Hazards Mitigation Plan



Los Angeles County Museum of Art
and Museum of Natural History
Figure 3-13

2019 Los Angeles County
All-Hazards Mitigation Plan











Los Angeles County Sheriff's Department
Figure 3-19

2019 Los Angeles County
All-Hazards Mitigation Plan

4 HAZARD IDENTIFICATION AND RISK ASSESSMENT

Section 4 – Hazard Identification and Risk Assessment addresses Element B of the Local Mitigation Plan Regulation Checklist.

Regulation Checklist – 44 CFR 201.6 Local Mitigation Plans	
Element B: Hazard Identification and Risk Assessment	
B1. Does the Plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction(s)? (Requirement § 201.6(c)(2)(ii))	
B2. Does the Plan include information on previous occurrences of hazard events and on the probability of future hazard events for each jurisdiction? (Requirement § 201.6(c)(2)(i))	
B3. Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability for each jurisdiction? (Requirement § 201.6(c)(2)(ii))	
B4. Does the Plan address NFIP insured structures within the jurisdiction that have been repetitively damaged by floods? (Requirement § 201.6(c)(2)(ii))	

For the 2019 AHMP, the AHMP project manager and consultant revisited the hazards addressed in the 2014 AHMP. It was determined that the primary focus of the 2019 AHMP should be natural hazards and secondary hazards, as a result of a natural hazard. In addition, it was decided that climate change should be included in the plan, as increasing surface temperatures will likely result in more droughts and subsequently the risk of wildfires. Therefore, climate change, dam failure, drought, earthquake, flood, landslide, tsunami, and wildfire are profiled in the 2019 AHMP.

Hazard identification consists of describing the nature of the hazard, disaster history, location, extent/severity, and probability of future events. Hazard identification profiles have been developed for each of the eight hazards addressed in **Section 4.1** through **Section 4.8**. Additionally, impact (i.e., risk assessment) tables have been created for each hazard. Quantitative impact tables were prepared using GIS analysis for climate change (sea level rise), dam failure, earthquake, flood, landslide, tsunami, and wildfire, while a qualitative impact table was prepared for drought. Impacts considered include: land area, vulnerable populations and critical facilities. Overall summary descriptions have been developed as well. NFIP insured structures are discussed in **Table 4-23**. **Appendix C** contains unincorporated area-specific and critical facility-specific impact tables.

According to the *Comprehensive Preparedness Guide (CPG) 201: Threat and Hazard Identification and Risk Assessment Guide—Second Edition* (CPG 201) drought, earthquake, flood, landslide, tsunami, and wildfire are classified natural hazards, while dam failure is classified as a technological hazard (but is often a secondary hazard of other natural hazards). CPG 201 does not classify climate change. As such, the hazards profiled for this AHMP are discussed in alphabetical order and not by CPG 201 classification. **The order does not signify level of risk.**

4.1 CLIMATE CHANGE

Table 4-1. Climate Change Identification Profile

Profile	Description
Nature	Climate change is defined as the average statistics of weather, which includes temperature, precipitation, and seasonal patterns in a particular region. Climate change refers to the long-term and irrevocable shift in these weather-related patterns, either regionally or globally. The Earth and its natural ecosystem are very closely tied to the climate and any permanent climate change will lead to an imbalance in the existing ecosystem, impacting the way people live, the food they grow, their health, the wildlife, the availability of water, and much more. Research indicates that much of this warming is due to human activities, primarily burning fossil fuels and clearing forests, that release carbon dioxide (CO₂) and other gases into the atmosphere, trapping in heat that would otherwise escape into space. Once in the atmosphere, these heat-trapping emissions remain there for many years (for example, CO₂ lasts about 100 years. If left unchecked, by the end of the century, CO₂ concentrations could reach levels three times higher than pre-industrial times. According to most climatologists, the planet is starting to experience shifts in climate patterns and increased frequency of extreme weather events at both the global and local levels. Over the next century, increasing atmospheric greenhouse gas concentrations are expected to cause a variety of changes to local climate conditions, including sea level rise and storm surge in coastal areas, reduced mountain snow pack, increased riverine flooding, and more frequent, higher temperatures (leading to extreme heat events and wildfires), particularly inland, decreasing air quality, and extended periods of drought. These effects of climate change are expected to negatively impact water and electricity demand and supplies in Los Angeles County. Decreasing air quality and extreme heat days will degrade public health, as well as and increase wildfire risk. And low-lying water front areas may flood or be underwater from sea level rise.
Location	According to the National Climate Assessment, the entire Pacific coastal region, including Los Angeles County, has been affected by climate change.
History	The history of the scientific discovery of climate change began in the early 19th century, when ice ages and other natural changes in paleoclimate were first suspected and the natural greenhouse effect first identified. In the late 19th century, scientists first argued that human emissions of greenhouse gases could change the climate. Many other theories of climate change were advanced, involving forces from volcanism to solar variation. In the 1960s, the warming effect of carbon dioxide gas became increasingly convincing, although some scientists also pointed out that human activities, in the form of atmospheric aerosols (e.g., "pollution"), could have cooling effects as well. During the 1970s, scientific opinion increasingly favored the warming viewpoint. By the 1990s, as a result of improving fidelity of computer models and observational work confirming the Milankovitch theory of the ice ages, a consensus position formed: greenhouse gases were deeply involved in most climate changes, and human emissions were bringing serious global warming. Since the 1990s, scientific research on climate change has included multiple disciplines and has expanded, significantly increasing our understanding of causal relations, links with historic data, and ability to numerically model climate change. The most recent work has been summarized in the Assessment Reports by the Intergovernmental Panel on Climate Change (IPCC). Climate change is a significant and lasting change in the statistical distribution of weather patterns over periods ranging from decades to millions of years. It may be a change in average weather conditions, or in the distribution of weather around the average conditions (i.e., more or fewer extreme weather events). Climate change is caused by factors that include oceanic processes (such as oceanic circulation), biotic processes, variations in solar radiation received by Earth, plate

Table 4-1. Climate Change Identification Profile

Profile	Description
	tectonics and volcanic eruptions, and human-induced alterations of the natural world; these latter effects are currently causing global warming, and "climate change" is often used to describe human-specific impacts.
Extent / Severity	Over the next century, weather patterns that are considered extreme today are expected to become the norm. The average summer temperature will rise, and in inland areas 100-plus degree Fahrenheit (°F) days will occur more frequently. A temperature change map (Figure 4-1) produced by the California Nevada Climate Applications Program predict that the average temperature in the region is expected to rise between 2.5 and 8°F. Drier conditions will also make wildfires more frequent and intense. The National Oceanic and Atmospheric Administration has produced a sea level rise view that shows the impacts of predicted sea level rise. As shown in Figure 4-2, a sea level rise of just 3 feet above mean higher high tide (approximate year 2050 – 2060) will result in coastal flooding of 2.25 square miles of Los Angeles County and 0.03 square miles of unincorporated areas of Los Angeles County, while a sea level rise of 6 feet above mean higher high tide (approximate year 2100) will result in coastal flooding of 6.13 square miles of Los Angeles County and 0.15 square miles of unincorporated areas of Los Angeles County.
Recurrence Probability	The specific probability of the extent and frequency climate change induced impacts is uncertain and depends on various climate modeling assumptions. While there is some uncertainty about the rate of climate of change and the severity and frequency of extreme weather events, the IPCC, in its Fifth Assessment of Climate Change (2014), concluded that: ...warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, sea level has risen, and the concentrations of greenhouse gases have increased...It is extremely likely that human influence has been the dominant cause of the observed warming since the mid-20th century.

Table 4-2. Climate Change Impact on Land Area

Entity	3 Ft. Sea Level Rise		6 Ft. Sea Level Rise	
	# of Sq. Miles	% of Sq. Miles	# of Sq. Miles	% of Sq. Miles
Los Angeles County	2.25	0.05	6.13	0.13
Unincorporated Los Angeles County	0.03	0.00	0.15	0.00
Supervisory District 1	0.00	0.00	0.00	0.00
Supervisory District 2	0.03	0.02	0.07	0.04
Supervisory District 3	0.14	0.03	0.34	0.08
Supervisory District 4	1.98	0.45	5.58	1.27
Supervisory District 5	0.00	0.00	0.00	0.00

Table 4-3. Climate Change Impact on Vulnerable Populations – People Experiencing Homelessness

Entity	3 Ft. Sea Level Rise		6 Ft. Sea Level Rise	
	# of Homeless	% of Homeless	# of Homeless	% of Homeless
City of Los Angeles	51	0.15	126	0.38
Unincorporated Los Angeles County	0	0.00	2	0.04

Table 4-4. Climate Change Impact on County Critical Facilities

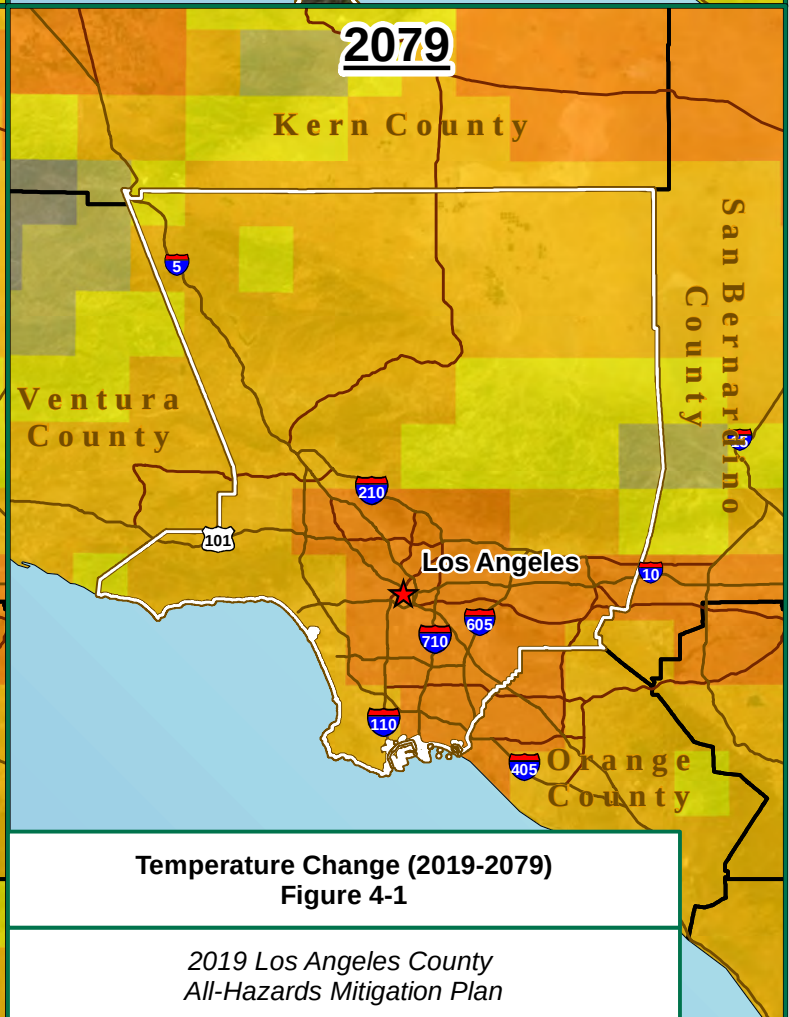
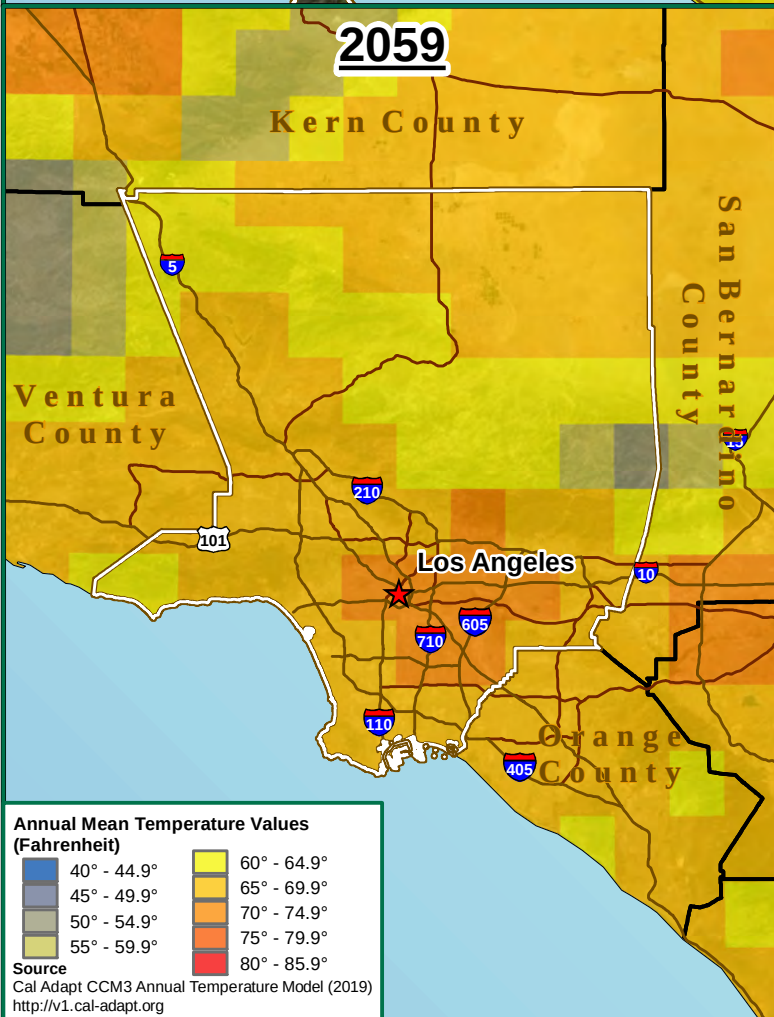
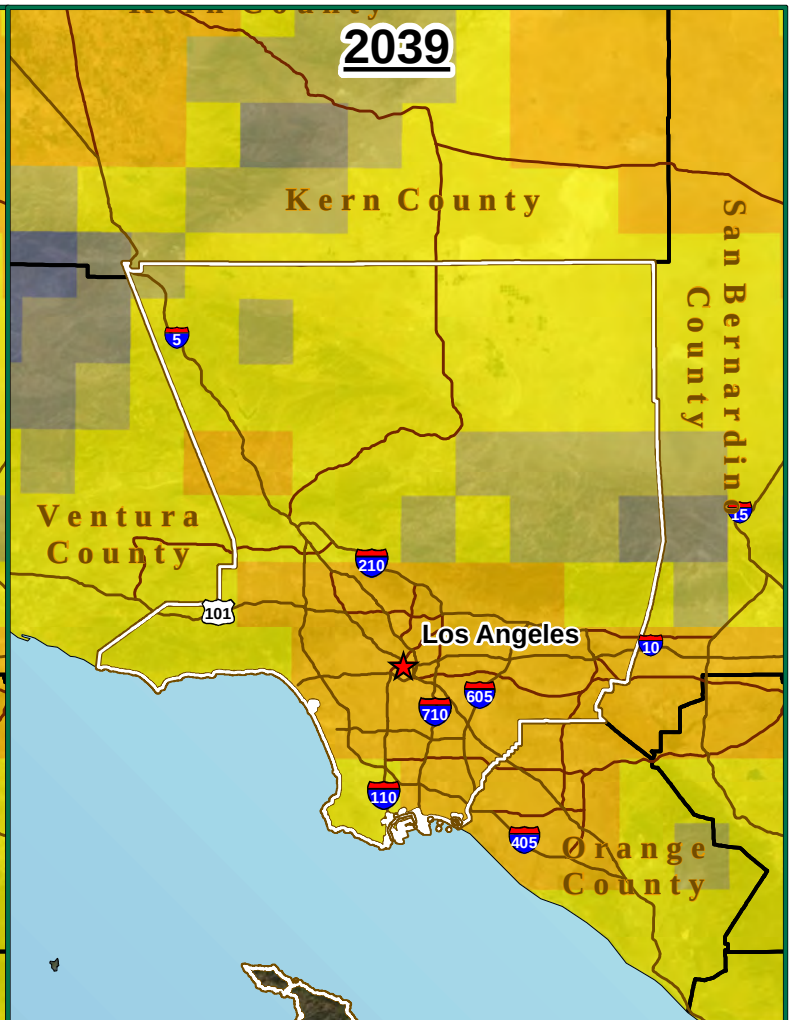
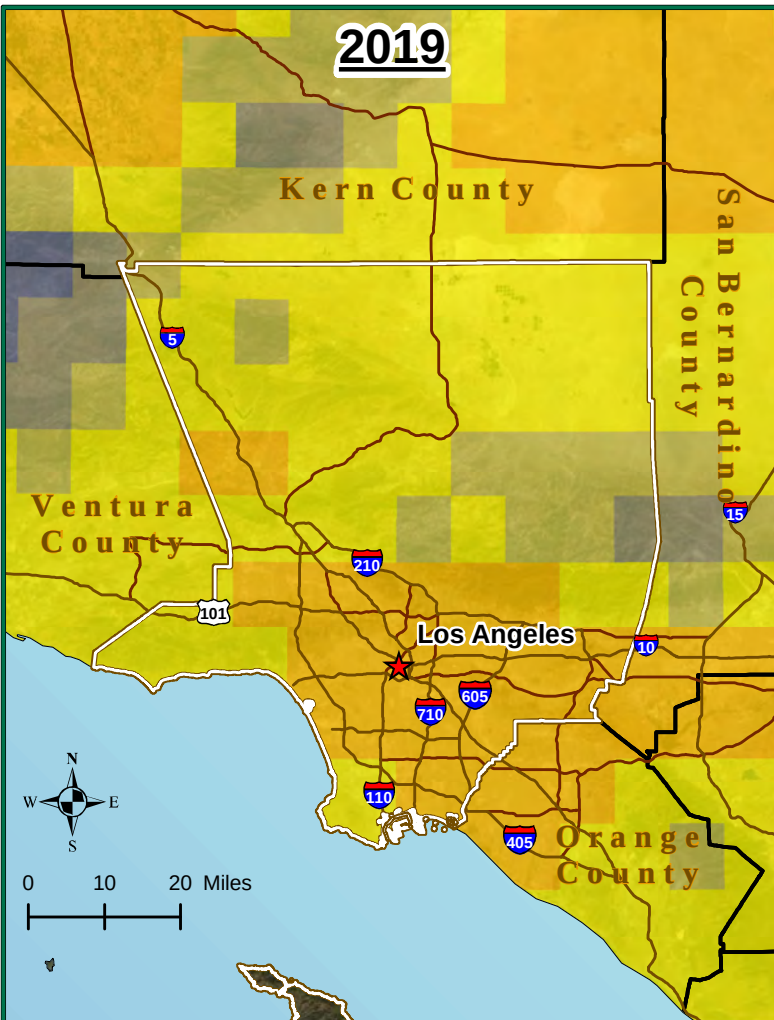
Department/ Agency	3 Ft. Sea Level Rise		6 Ft. Sea Level Rise	
	# of Facilities	% of Facilities	# of Facilities	% of Facilities
Los Angeles County Animal Care & Control	0	0.00	0	0.00
Los Angeles County Fire Department	1	0.00	5	1.4
Los Angeles County Health Services	0	0.00	0	0.00
Los Angeles County Library	0	0.00	0	0.00
LACMA & NHM	0	0.00	0	0.00
Los Angeles County Office of Education	0	0.00	0	0.00
Los Angeles County - Other (offices)	0	0.00	0	0.00
Los Angeles County Parks & Recreation	0	0.00	0	0.00
Los Angeles County Public Health	0	0.00	0	0.00
Los Angeles County Public Works	3	1.30	6	2.61
Los Angeles County Sheriff's Department	1	3.23	0	0.00

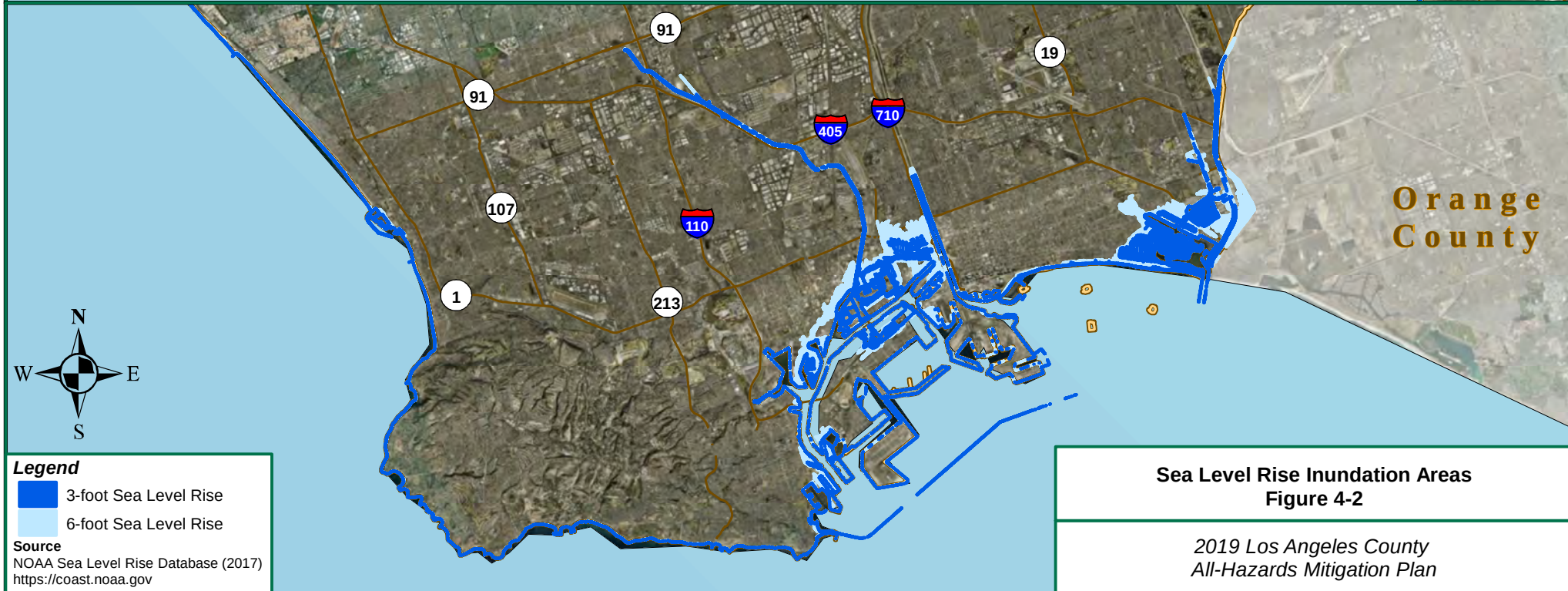
LACMA = Los Angeles County Museum of Art

NHM = Natural History Museum

Table 4-5. Overall Summary of Vulnerability to Climate Change

Climate Change	
Summary	Climate change will affect every person and every area of Los Angeles County. As noted above, the number of extreme heat days will rise, and inland county areas will experience days with temperatures in excess of 100°F more frequently. Extreme heat can trigger a variety of heat stress conditions, such as heat stroke. Higher temperatures can also contribute to the build-up of harmful pollutants and cause respiratory issues. Drier, hotter conditions will also make wildfires more frequent and intense, particularly in the High and Very High Fire Hazard Severity Zones (FHSZ). Wildfires can: burn homes, businesses, and critical facilities; interrupt transportation and utilities; and cause death to people and animals. In addition, mega storms that are linked to climate change will cause severe flooding in cities and form lakes in the Central Valley and Mojave Desert. Along the coast, deadly and destructive storm surges will push farther inland than they once did, which means more frequent nuisance flooding. Los Angeles County is addressing climate change through the implementation of the 2015 Community Climate Action Plan. The plan describes how the County will address the impacts of climate change by reducing greenhouse gas emissions from community activities in the unincorporated areas of Los Angeles County by at least 11% below 2010 levels by 2020. Additionally, in April 2019 the mayor of Los Angeles released the city's Green New Deal, which "sets aggressive goals for the city's sustainable future, tackles the climate emergency with accelerated targets... and sets L.A. on course to be carbon neutral by 2050."





4.2 DAM FAILURE

Table 4-6. Dam Failure Identification Profile

Profile	Description
Nature	Dam failure is the structural collapse of a dam that releases the water stored in the reservoir behind the dam. A dam failure is usually the result of the age of the structure, inadequate spillway capacity used in construction, or structural damage caused by an earthquake or flood. When a dam fails, a large quantity of water is suddenly released with a great potential to cause human casualties, economic loss, and environmental damage. This type of disaster is especially dangerous because it can occur suddenly, providing little warning and evacuation time for the people living downstream. The flows resulting from dam failure generally are much larger than the capacity of the downstream channels and therefore lead to extensive flooding. Flood damage occurs as a result of the momentum of the flood caused by the sediment-laden water flooding over the channelbanks and impact debris carried by the flow.
Location	According to the California Department of Water Resource's Division of Safety of Dams (DSOD), there are 90 dams under State jurisdiction in Los Angeles County. A dam breach inundation map shows flooding that could result from a hypothetical failure of a dam or its critical appurtenant structure. In 2017, the California Legislature passed a law requiring all State jurisdictional dam owners, except for owners of low-hazard dams, to develop inundation maps approved by DSOD and emergency action plans approved by Cal OES. At the time of the drafting of this plan in early July 2019, 12 State jurisdictional dams in Los Angeles County had approved dam breach inundation maps, including: • Castaic Lake Dam: an earthen dam with a storage capacity of 323,700 acre-feet in Warm Springs Mountain • Pyramid Dam: an earthen and rock dam with a storage capacity of 178,700 acre-feet in Black Mountain • Chevy Chase 1290: an earthen dam with a storage capacity 17 acre-feet of in Pasadena • Elysian Dam: and earthen dam with a storage capacity of 167 acre-feet in Los Angeles • Lower San Fernando Dam: hydraulic fill dam with a storage capacity of 9,843 acre-feet in San Fernando • Eagle Rock Dam: an earthen dam with a storage capacity of 254 acre-feet in Pasadena • Santa Ynez Canyon Dam: an earthen dam with a storage capacity 356 acre-feet in Topanga • Devils Gate Dam: a gravity dam with a storage capacity of 2,600 acre-feet Pasadena • Palos Verdes Reservoir: an earthen dam with a storage capacity of 1,100 acre-feet in Torrance • Littlerock – Palmdale Dam: a roller-compacted concrete dam with a storage capacity of 4,600 acre-feet in Pacifico Mountain • Harold Reservoir: an earthen dam with a storage capacity of 3,870 acre-feet in Palmdale • Westlake Reservoir: an earthen dam with a storage capacity of 9,200 acre-feet in Westlake Village

Table 4-6. Dam Failure Identification Profile

Profile	Description
History	Los Angeles County was the scene of the worst dam failure in United States history. The St. Francis Dam was built in San Francisquito Canyon, approximately 40 miles northwest of downtown Los Angeles, in 1924. On the night of March 12-13, 1928, the dam catastrophically failed, releasing approximately 12.4 billion gallons of water. At least 411 people were killed. Subsequent investigations determined that the dam failed as a result of defective foundations that had been built upon an unstable rock formation. As a result of the disaster, the State of California increased dam safety legislation and oversight, and created a state Board of Registration for civil engineers to regulate the industry.
Extent / Severity	The Federal Guidelines for Inundation Mapping of Flood Risks Associated with Dam Incidents and Failures (FEMA P-946, July 2013) defines downstream hazards for dam incidents. Downstream hazards are based “solely on the potential downstream impacts to life and property should the dam fail when operating with a full reservoir.” FEMA has developed three categories in increasing severity for downstream hazards: Low, Significant, and High. DSOD adds a fourth category of Extremely High. In Los Angeles County there are 40 dams that are classified as High, with the potential impact expected to cause loss of at least one human life, and 30 dams classified as Extremely High, with the potential impact expected to cause considerable loss of human life or result in an inundation area with a population of 1,000 or more. As noted in Figure 4-3, nine Extremely High hazard dams and three High hazard dams in the county have approved dam breach inundation maps for a total of 45.70 square miles (0.96 %) in Los Angeles County, and a total of 13.37 square miles (0.44 %) in the unincorporated areas of Los Angeles County.
Recurrence Probability	Dams fail for a variety of reasons, including Sub-standard construction materials/techniques, spillway design error, geological instability, poor maintenance, and earthquakes, and therefore recurrence probabilities are unknown. State jurisdiction dams are regulated by the DSOD and each dam undergoes inspection on an annual basis to ensure it is safe, performing as intended, and is not developing issues. However, in 2017, the United States Army Corps of Engineers (USACE) discovered that the Whittier Narrows Dam was structurally unsafe and that an intense storm could prematurely open the dam’s massive spillway and flood the area below from Pico Rivera to Long Beach. The USACE has reclassified the dam as the agency’s highest dam priority nationally because of the risk of “very significant loss of life and economic impacts.” Construction on the dam is expected to start in 2021 and conclude by 2025.

Table 4-7. Dam Failure Impact on Land Area

Entity	Dam Breach Inundation	
	# of Sq. Miles	% of Sq. Miles
Los Angeles County	45.70	0.96
Unincorporated Los Angeles County	13.37	0.44
Supervisory District 1	1.40	0.57
Supervisory District 2	0.00	0.00
Supervisory District 3	24.84	5.76
Supervisory District 4	0.67	0.15
Supervisory District 5	18.00	0.64

Table 4-8. Dam Failure Impact on Vulnerable Populations – People Experiencing Homelessness

Entity	Dam Breach Inundation	
	# of Homeless	% of Homeless
City of Los Angeles	1,193	3.62
Unincorporated Los Angeles County	13	0.22

Table 4-9. Dam Failure Impact on County Critical Facilities

Department / Agency	Dam Breach Inundation	
	# of Facilities	% of Facilities
Los Angeles County Animal Care & Control	1	14.29
Los Angeles County Fire Department	3	0.89
Los Angeles County Health Services	2	6.90
Los Angeles County Library	1	1.18
LACMA & NHM	0	0.00
Los Angeles County Office of Education	2	5.41
Los Angeles County - Other (offices)	0	0.00
Los Angeles County Parks & Recreation	2	1.71
Los Angeles County Public Health	0	0.00
Los Angeles County Public Works	1	0.43
Los Angeles County Sheriff's Department	3	9.68

Table 4-10. Overall Summary of Vulnerability to Dam Failure

Dam Failure	
Summary	There are 90 dams in Los Angeles County under State jurisdiction. Seventy dams are classified as High and Extremely High hazard and failure of these types of dams will cause loss of human life and/or result in an inundation area with a population of 1,000 or more. As of June 2017, all dams except those classified as Low hazard are required by the DSOD to have an Emergency Action Plan (EAP). An EAP identifies incidents that can lead to potential emergency conditions at a dam, identifies the areas that could be affected by the loss of a reservoir and specifies pre-planned actions to be followed to minimize property damage, potential loss of infrastructure and water resources, and potential loss of life due to failure or misoperation of a dam. EAPs also require dam breach inundation maps to be prepared. While the State regulates dams to prevent failure, safeguard life, and protect property, some researchers doubt that the “overall safety of aging federal flood control systems that were not designed with climate change in mind.” They argue that as California experiences more intense storms, the aging dams in the area could fail and/or prematurely open and flood homes, schools, businesses, and roads. In 2016, Climate-Safe Infrastructure Bill (Assembly Bill [AB] 2800) became law and “established the Climate-Safe Infrastructure Working Group to develop recommendations to the California legislature on how to build and design our infrastructure to be safer for Californians in the face of growing climate extremes.” The Working Group’s 2018 report identified nearly 700 High hazard dams in California needing repairs and upgrades.



Table 4-11. Drought Identification Profile

Profile	Description
Nature	Drought is a normal, recurrent feature of virtually all climatic zones, including areas of both high and low rainfall, although characteristics will vary significantly from one region to another. Drought differs from normal aridity, which is a permanent feature of the climate in areas of low rainfall. Drought is the result of a natural decline in the expected precipitation over an extended period of time, typically one or more seasons in length. Other climatic characteristics, such as high temperature, high wind, and low relative humidity, impact the severity of drought conditions. Four common definitions for drought are provided as follows: • Meteorological drought is defined solely on the degree of dryness, expressed as a departure of actual precipitation from an expected average or normal amount based on monthly, seasonal, or annual time scales. • Hydrological drought is related to the effects of precipitation shortfalls on stream flows and reservoir, lake, and groundwater levels. • Agricultural drought is defined principally in terms of soil moisture deficiencies relative to water demands of plant life, usually crops. • Socioeconomic drought associates the supply and demand of economic goods or services with elements of meteorological, hydrologic, and agricultural drought. Socioeconomic drought occurs when the demand for water exceeds the supply as a result of weather-related supply shortfall. It may also be referred to as a water management drought. A drought's severity depends on numerous factors, including duration, intensity, and geographic extent, as well as regional water supply demands by humans and vegetation. Due to its multi-dimensional nature, drought is difficult to define in exact terms and poses difficulties in terms of comprehensive risk assessments. Drought differs from other natural hazards in three ways. First, the onset and end of a drought are difficult to determine due to the slow accumulation and lingering of effects of an event after its apparent end. Second, the lack of an exact and universally accepted definition adds to the confusion of its existence and severity. Third, in contrast with other natural hazards, the impact of drought is less obvious and may be spread over a larger geographic area. These characteristics have hindered the preparation of drought contingency or mitigation plans by many governments.
Location	The occurrence of drought is regional in nature and scope, which holds true for Los Angeles County. As such, when drought occurs it typically affects the entire county.
History	Drought is a cyclic part of the climate of California, occurring in both summer and winter, with an average recurrence interval between 3 and 10 years. Droughts in California over the past 100 years are listed as follows. The most recent drought from 2011 to 2015 was the driest 4-year period on record in California since recordkeeping began in 1895. • 1917-1921, Statewide except for central Sierra Nevada and north coast • 1922-1926, Statewide except for central Sierra Nevada • 1928-1937, Statewide • 1943-1951, Statewide • 1959-1962, Statewide • 1976-1977, Statewide, except for southwestern deserts • 1987-1992, Statewide • 2007-2009, Statewide, particularly the central coast • 2011-2015, Statewide

Table 4-11. Drought Identification Profile

Profile	Description
Extent / Severity	The National Drought Mitigation Center produces drought monitor maps for the United States. It classifies droughts into five categories: D0 is the least severe, with abnormally dry conditions; and D4 is the most severe, with exceptional drought conditions. California, including Los Angeles County, was in some form of drought for 376 consecutive weeks from December 20, 2011 until March 14, 2019. As of August 13, 2019, Los Angeles County remains free of drought.
Recurrence Probability	Researchers for California's Fourth Climate Change Assessment have noted that California has a "highly variable climate" with wet or dry periods that can span years and that are "heavily affected by extreme precipitation events." Furthermore, climate scientists also suggest the possibility of longer and more destructive droughts with climate change. As such, California is likely to experience long-term droughts at least every decade.

Table 4-12. Drought Impact

Drought	
Summary	Severe droughts can impact the region's agriculture, forests, hydropower, groundwater supply, recreation, aquatic ecosystems, as well as isolated communities that have limited water supply.

Table 4-13. Overall Summary of Vulnerability to Drought

Drought	
Summary	Climate scientists predict that Los Angeles County and the rest of southern California will get drier and northern California will get hotter. The resulting loss of snowpack in the Sierra Nevada will mean less water for all Californians – farmers, residents, utilities, and even hatchery fish. However, while drought cannot be controlled, according to the USGS, drought can be managed in two ways: through drought planning and in helping communities make the best day-to-day management decisions while the drought is taking place. During the drafting of this plan update, the Governor of California signed an executive order directing specific State agencies to develop a Water Resilience Portfolio to "ensure safe and dependable water supplies, flood protection and healthy waterways for the state's communities, economy and environment."

4.3 EARTHQUAKE

Table 4-14. Earthquake Identification Profile

Profile	Description
Nature	An earthquake is a sudden motion or trembling caused by a release of strain accumulated in or along the edge of Earth's tectonic plates. The effects of an earthquake can be felt far beyond the site of its occurrence. Earthquakes usually occur without warning and can cause massive damage and extensive casualties in a few seconds. Common effects of earthquakes are ground motion and shaking, surface fault ruptures, and ground failure. Ground motion is the vibration or shaking of the ground during an earthquake. When a fault ruptures, seismic waves radiate, causing the ground to vibrate. The severity of the vibration increases with the amount of energy released and decreases with distance from the causative fault or epicenter. Soft soils can amplify ground motions. In addition to ground motion, several secondary natural hazards can occur from earthquakes, such as the following: • Surface Faulting: Surface faulting is the differential movement of two sides of a fault at the Earth's surface. Displacement along faults, both in terms of length and width, varies but can be significant (e.g., up to 20 feet), as can the length of the surface rupture (e.g., up to 200 miles). Surface faulting can cause severe damage to linear structures, including railways, highways, pipelines, tunnels and dams. • Liquefaction: Liquefaction occurs when seismic waves pass through saturated granular soil, distorting its granular structure, and causing some of the empty spaces between granules to collapse. Liquefaction causes lateral spreads (i.e., horizontal movements of commonly 10 to 15 feet, but up to 100 feet), flow failures (i.e., massive flows of soil, typically hundreds of feet, but up to 12 miles), and loss of bearing strength (i.e., soil deformations causing structures to settle or tip). Liquefaction can cause severe damage to property. • Landslides/Debris Flows: Landslides/debris flows occur as a result of horizontal seismic inertia forces induced in the slopes by the ground shaking. The most common earthquake-induced landslides include shallow, disrupted landslides such as rock falls, rockslides, and soil slides. Debris flows are created when surface soil on steep slopes becomes totally saturated with water. Once the soil liquefies, it loses the ability to hold together and can flow downhill at very high speeds, taking vegetation and/or structures with it. Slide risks increase after an earthquake during a wet winter. The two most common measures of earthquake intensity used in the United States are the Modified Mercalli Intensity Scale, which measures felt intensity, and peak ground acceleration (PGA), which measures instrumental intensity by quantifying how hard the earth shakes in a given location. Magnitude (M) is measured by the amplitude of the earthquake waves recorded on a seismograph using a logarithmic scale.

Table 4-14. Earthquake Identification Profile

Profile	Description
Location	As in most of southern and coastal California, the potential for earthquake damage exists throughout Los Angeles County because of the number of active faults in and near the county. These faults are shown on the California Geological Survey (CGS) Fault Activity Map of California. Descriptions of the active faults are provided below. The locations of the active and potentially active faults are shown on Figure 4-4. Some of the more significant faults are described below: • Malibu Coast fault system: The Malibu Coast fault system includes the Malibu Coast, Santa Monica, and Hollywood faults. The system begins in the Hollywood area, extends along the southern base of the Santa Monica Mountains, and passes offshore a few miles west of Point Dume. The 1973 Point Mugu earthquake is believed to have originated on this fault system. • Oak Ridge fault system: The Oak Ridge fault system is a steep (65 degrees) southerly dipping reverse fault that extends from the Santa Susana Mountains westward along the southerly side of the Santa Clara River Valley and into the Oxnard Plain. The system is more than 50 miles long on the mainland and may extend an equal or greater distance offshore. Several recorded earthquake epicenters on land and offshore may have been associated with the Oak Ridge fault system. Portions of the system are zoned by the state as active. • Pine Mountain thrust fault and Big Pine fault: These two large faults occur in the mountainous portion of Ventura County north of the Santa Ynez fault; the faults are located 9 and 16 miles north of the city of Ojai, respectively. The Pine Mountain thrust fault is reported to have ruptured the ground surface for 30 miles along its length during the northern Ventura County earthquakes of November 1852. • San Andreas fault: San Andreas is the longest and most significant fault in California. Because of clearly established historical earthquake activity, this fault has been designated as active by the State of California. The last major earthquake on this fault near Ventura County was the Fort Tejon earthquake of 1857, which was estimated at magnitude (M) 8.0 and would have caused considerable damage if there had been structures in the southern part of the county. There is a 59 % chance that an M 6.7 quake or larger will occur on this fault in the next 30 years. • San Cayetano–Red Mountain–Santa Susana fault system: This fault system consists of a major series of north-dipping reverse faults that extend over 150 miles from Santa Barbara County into Los Angeles County. In this system, the San Cayetano fault is the greatest hazard to Ventura County; it is a major, north-dipping reverse fault that extends for 25 miles along the northern portion of the Ventura Basin. The San Fernando earthquake of 1971, described in the previous section, was caused by activity along this fault. • Simi–Santa Rosa fault system: This fault system extends from the Santa Susana Mountains westward along the northern margin of the Simi and Tierra Rejada valleys and along the southern slope and crest of the Las Posas Hills to their westerly termination. • Ventura-Pitas Point fault: The western half of this fault is known as the Pitas Point fault, and the eastern half is known as the Ventura fault. The Pitas Point fault extends offshore into the Pacific Ocean and is roughly 14 miles long. The Ventura fault extends into the communities of Ventura and Sea Cliff and runs roughly parallel to portions of U.S. 101 and State Route 126. The fault is roughly 12 miles long and is a left-reverse fault.

Table 4-14. Earthquake Identification Profile

Profile	Description
History	As shown in Figure 4-5, according to the USGS, 163 earthquakes M 5.0> have been recorded in southern California since 1769. Four of these earthquakes have been larger than M 7.0 including: • San Juan Capistrano Earthquake (M 7.5), December 8, 1812 • Kern County Earthquake (M 7.5), July 21, 1952 • West Ventura Earthquake (M 7.1), December 21, 1812 • Ridgecrest, (M 7.1), July 6, 2019 In Los Angeles County, significant earthquakes over the past 50 years include: • La Habra (M 5.1), March 28, 2014, resulting in a few injuries and \$10 million dollars in damages • Chino Hills (M 5.5), July 29, 2008, resulting in 8 injuries and limited damages • Northridge (M 6.7), January 17, 1994, resulting in 57 deaths, 8,700 injuries and up to \$40 billion dollars in damages. • Sierra Madre (M 5.6), June 28, 199, resulting in 1 death, 100+ injuries and up to \$40 million dollars in damages. • Upland (M 5.7), February 28, 1990, resulting in 30 injuries and \$12.7 million dollars in damages • Whittier (M 5.9), October 1, 1987, resulting in 8 deaths, 200 injuries and \$358 million in damages • San Fernando (M 6.6), February 9, 1971, resulting in 58 – 65 deaths, 200 – 2,000 injuries and up to \$553 million in damages
Extent / Severity	The strength of an earthquake's ground movement can be measured by PGA. PGA measures the rate in change of motion relative to the established rate of acceleration due to gravity ($g = 980$ centimeters per second, per second). PGA is used to project the risk of damage from future earthquakes by showing earthquake ground motions that have a specified probability (e.g., 10%, 5%, or 2%) of being exceeded in 50 years. The ground motion values are used for reference in construction design for earthquake resistance and can also be used to assess relative hazard between sites when making economic and safety decisions. In 2008, CGS developed an updated map of earthquake shaking potential for California. The map shows the relative intensity of ground shaking and damage in California from anticipated future earthquakes. Regions near major, active faults are shown in red and pink and experience stronger earthquake shaking more frequently. Regions that are distant from known, active faults are shown in orange and yellow and experience lower levels of shaking less frequently. Figure 4-6 indicates the level of low-frequency shaking potential in Los Angeles County (in which local soil conditions have greater effect on low frequency). In Los Angeles County there are 3,041.91 (63.90%) square miles with violent low frequency shaking potential; and 711.01 square miles (14.93%) with extreme low frequency shaking potential. In unincorporated areas of Los Angeles County, there are 1,783.57 (58.65%) square miles with violent low frequency shaking potential; and 527.60 square miles (17.35%) with extreme low frequency shaking potential.

Table 4-14. Earthquake Identification Profile

Profile	Description
Recurrence Probability	Ongoing field and laboratory studies suggest the likely maximum magnitudes and recurrence intervals for the major local faults are as follows: • Chatsworth fault: M 6.0-6.8, unknown recurrence interval • Hollywood fault: M 5.8-6.5, recurrence interval approximately every 1600 years • Malibu Coast fault: M 6.7, recurrence interval 2,908 years • Newport-Inglewood fault: M 6.0-7.4, unknown recurrence interval • Oak Ridge fault: M 6.9, recurrence interval 299 years • Palos Verdes fault: M 6.0-7.0 or greater, unknown recurrence interval • Red Hill fault (aka Etiwanda Avenue fault): M 6.0-7.0, unknown recurrence interval • Raymond fault: M 6.0-7.0, recurrence interval approximately 4500 years • San Andreas fault: M 6.8-8.0, recurrence interval of 140 years on Mojave segment to 300 years • San Cayetano fault: M 6.5-7.3, unknown recurrence interval • San Fernando fault: M 6.0-6.8, recurrence interval approximately every 200 years • San Jose fault: M 6.0-6.5, unknown recurrence interval • Santa Susana fault system: M 6.6, recurrence interval 138 years • Santa Monica fault: M 6.0-7.0, unknown recurrence interval • Sierra Madre fault: M 6.0-7.0, recurrence interval several thousand years • Simi-Santa Rosa fault: M 6.7, recurrence interval 933 years • Verdugo fault: M 6.0-6.8, unknown recurrence interval • Whittier fault: M 6.0-7.2, unknown recurrence interval

Table 4-15. Seismic Hazard Impact on Land Area

Entity	Violent EQ Shaking		Extreme EQ Shaking	
	# of Sq. Miles	% of Sq. Miles	# of Sq. Miles	% of Sq. Miles
Los Angeles County	3,041.91	63.90	711.01	14.93
Unincorporated Los Angeles County	1,783.57	58.65	527.60	17.35
Supervisory District 1	244.34	99.25	0.00	0.00
Supervisory District 2	161.74	99.94	0.00	0.00
Supervisory District 3	379.41	87.99	41.73	9.68
Supervisory District 4	305.40	69.42	0.00	0.00
Supervisory District 5	1,950.78	69.50	669.26	23.84

EQ = earthquake

Table 4-16. Seismic Hazard Impact on Vulnerable Populations – People Experiencing Homelessness

Entity	Violent EQ Shaking		Extreme EQ Shaking	
	# of Homeless	% of Homeless	# of Homeless	% of Homeless
City of Los Angeles	31,037	94.25	1,827	5.55
Unincorporated Los Angeles County	5,328	90.60	361	6.14

EQ = earthquake

Table 4-17. Seismic Hazard Impact on County Critical Facilities

Department / Agency	Violent EQ Shaking		Extreme EQ Shaking	
	# of Facilities	% of Facilities	# of Facilities	% of Facilities
Los Angeles County Animal Care & Control	6	85.71	1	14.29
Los Angeles County Fire Department	314	93.18	19	5.64
Los Angeles County Health Services	24	82.76	5	17.24
Los Angeles County Library	79	92.94	5	5.88
LACMA & NHM	3	75.00	1	25.00
Los Angeles County Office of Education	32	86.49	5	13.51
Los Angeles County - Other (offices)	24	100.00	0	0.00
Los Angeles County Parks & Recreation	103	88.03	14	11.97
Los Angeles County Public Health	13	92.86	1	7.14
Los Angeles County Public Works	201	87.39	21	9.13
Los Angeles County Sheriff's Department	28	90.32	2	6.45

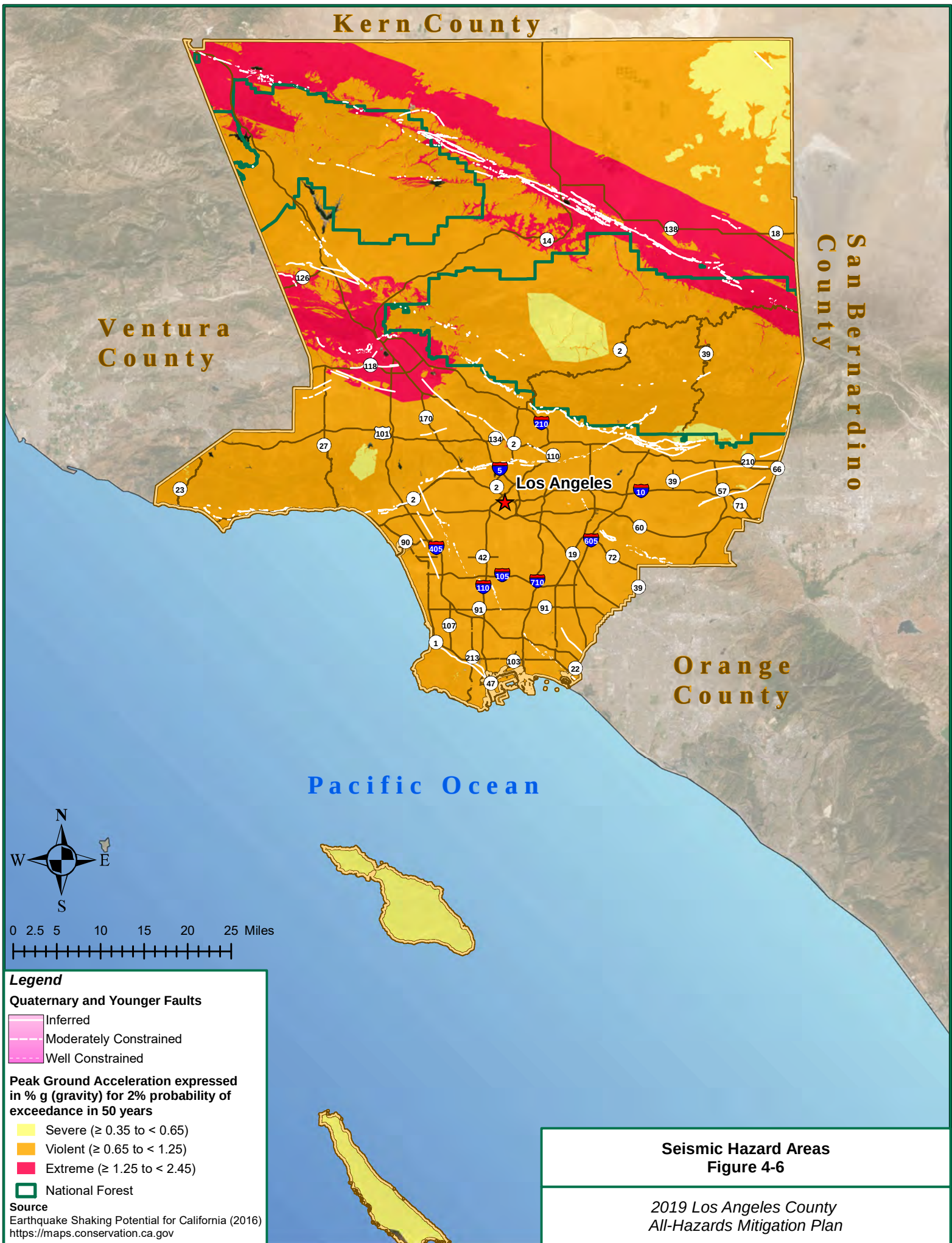
EQ = earthquake

Table 4-18. Overall Summary of Vulnerability to Earthquakes

Earthquake	
Summary	Over 75% of unincorporated Los Angeles County is at risk to violent and extreme perceived shaking from future earthquakes. Violent perceived shaking can produce the potential for heavy damage. According to the USGS, this could mean that well-designed framed structures could be thrown out of plumb and substantial buildings could experience partial building collapse. In extreme shaking, the USGS notes that some well-built wooden structures could be destroyed, and most masonry and frame structures with foundations could be destroyed. Many people in California are looking to boost seismic regulations through the implementation of Assembly Bill (AB) 1857 and AB 2681. AB 1857 will instruct the California Building Standards Commission to increase minimum mandatory standards for most types of buildings in the state, such as apartments, office buildings, and commercial spaces, but would exempt single-family houses and duplexes, while AB 2681 will require cities and counties to create an inventory of potentially vulnerable buildings.







4.4 FLOOD

Table 4-19. Flood Identification Profile

Profile	Description
Nature	A flood occurs when the existing channel of a stream, river, canyon, or other watercourse cannot contain excess runoff from rainfall or snowmelt, resulting in overflow onto adjacent lands. In coastal areas, flooding may occur when high winds or tides result in a surge of seawater into areas that are above the normal high tide line. Secondary hazards from floods can include: • Erosion or scouring of stream banks, roadway embankments, foundations, footings for bridge piers, and other features. • Impact damage to structures, roads, bridges, culverts, and other features from high-velocity flow and from debris carried by floodwaters. Such debris may also accumulate on bridge piers and in culverts, increasing loads on these features or causing overtopping or backwater effects. • Destruction of crops, erosion of topsoil, and deposition of debris and sediment on croplands. • Release of sewage and hazardous or toxic materials when wastewater treatment plants are inundated, storage tanks are damaged, and pipelines are severed. In areas such as Los Angeles County that do not have extended periods of below-freezing temperatures or significant snowfall, floods usually occur during the season of highest precipitation or during heavy rainfalls after prolonged dry periods. Los Angeles County is dry during the late spring, summer, and early fall, and receives most of its rain during the winter months. The rainfall season extends from November through April, with approximately 95% of the annual rainfall occurring during this period. Los Angeles County averages only 15 inches of precipitation per year; less in along the coast and the dessert, and more in the foothills and mountains.
Location	Los Angeles County has an extensive flood control system (Figure 4-7) that has eliminated much of their flood hazards. However, major flood sources in Los Angeles County still include Ballona Creek, Los Angeles River, Malibu Creek, Pacific Ocean, Rio Hondo River, San Gabriel River and its tributaries, Santa Clara River, Topanga Canyon, and the Pacific Ocean. In the unincorporated areas of Los Angeles County, flooding sources include: • Little Rock and Big Rock Washes: Flooding occurs when the flows reach the valley floor where the channels flatten out. This allows the flows to spread over great distances, inundating the surrounding areas. • Antelope Valley: Flooding occurs when flows from the mountains reach the broad alluvial plan in the Antelope Valley are northerly from the mountains across the broad alluvial plain. During minor storms, much of the flow percolates into the ground. In major storms, flows reach the lake at the northern county limits, where flood flows pond until evaporated. • Foothills of Santa Clarita: Flooding and mudflows occur in the foothill areas during intense rainfall, usually following fires in the upstream watershed. • Coastline: Flooding is caused by waves generated by winter storms. The occurrence of such a storm event in combination with high astronomical tides and strong winds can cause a significant wave runoff and allow storm waves to reach higher than normal elevations along the coastline.

Table 4-19. Flood Identification Profile

Profile	Description
History	The federal government has declared 13 flooding emergencies affecting Los Angeles County, including: • California Flood and Erosion (Disaster Declaration Number [DR]-15), February 5, 1954 • California Flooding (DR-47), December 23, 1955 • California Heavy Rainstorms, Flood (DR-82), April 4, 1958 • California Floods (DR-122), March 6, 1962 • California Severe Storms, Flooding (DR-138), October 24, 1962 • California Severe Storms, Heavy Rains, Flooding (DR-145), February 25, 1963 • California Flooding (DR-270), August 15, 1969 • California Winter Storms Flooding (DR-547), February 15, 1978 • Southern California Winter Storms (DR-615), February 7 and 21, 1980 • Coastal Storms (DR-812), December 21, 1988 • California Winter Storms (DR-935), February 12 and 19, 1992 • California Winter Storms (DR-979), January 7, 1993-February 19, 1993 • California Severe Winter Storms, Flooding, and Mudslides (DR-4305), January 18, 2017-January 23, 2017
Extent / Severity	The magnitude of flooding that is used as the standard for floodplain management in the United States is a flood with a probability of occurrence of 1% in any given year. This flood is also known as the 100-year flood (i.e., base flood). The 100-year flood, as well as the 500-year flood (0.2%), are considered Special Flood Hazard Areas (SFHA) and identified on FEMA's Digit Flood Insurance Rate Maps (DFIRM). The Los Angeles County DFIRM (Figure 4-8) identifies 4.19 square miles (0.09%) with a 1% annual chance of flooding, and 243.32 square miles (5.11%) with a 0.2% annual chance of flooding. In the unincorporated areas of Los Angeles County, there are 1.23 square miles (0.04%) with a 1% annual chance of flooding, and an additional 64.77 square miles (2.13 %) with a 0.2% annual chance of flooding.
Recurrence Probability	Floods can occur at any time but are most common with winter storms packed with subtropical moisture.

Table 4-20. Flood Impact on Land Area

Entity	0.2% Annual Chance of Flooding		1% Annual Chance of Flooding	
	# of Sq. Miles	% of Sq. Miles	# of Sq. Miles	% of Sq. Miles
Los Angeles County	243.32	5.11	4.19	0.09
Unincorporated Los Angeles County	64.77	2.13	1.23	0.04
Supervisory District 1	27.14	11.02	0.90	0.37
Supervisory District 2	19.32	11.94	0.20	0.12
Supervisory District 3	4.38	1.01	1.31	0.30
Supervisory District 4	80.06	18.20	0.32	0.07
Supervisory District 5	112.39	4.00	1.45	0.05

Table 4-21. Flood Impact on Vulnerable Populations – People Experiencing Homelessness

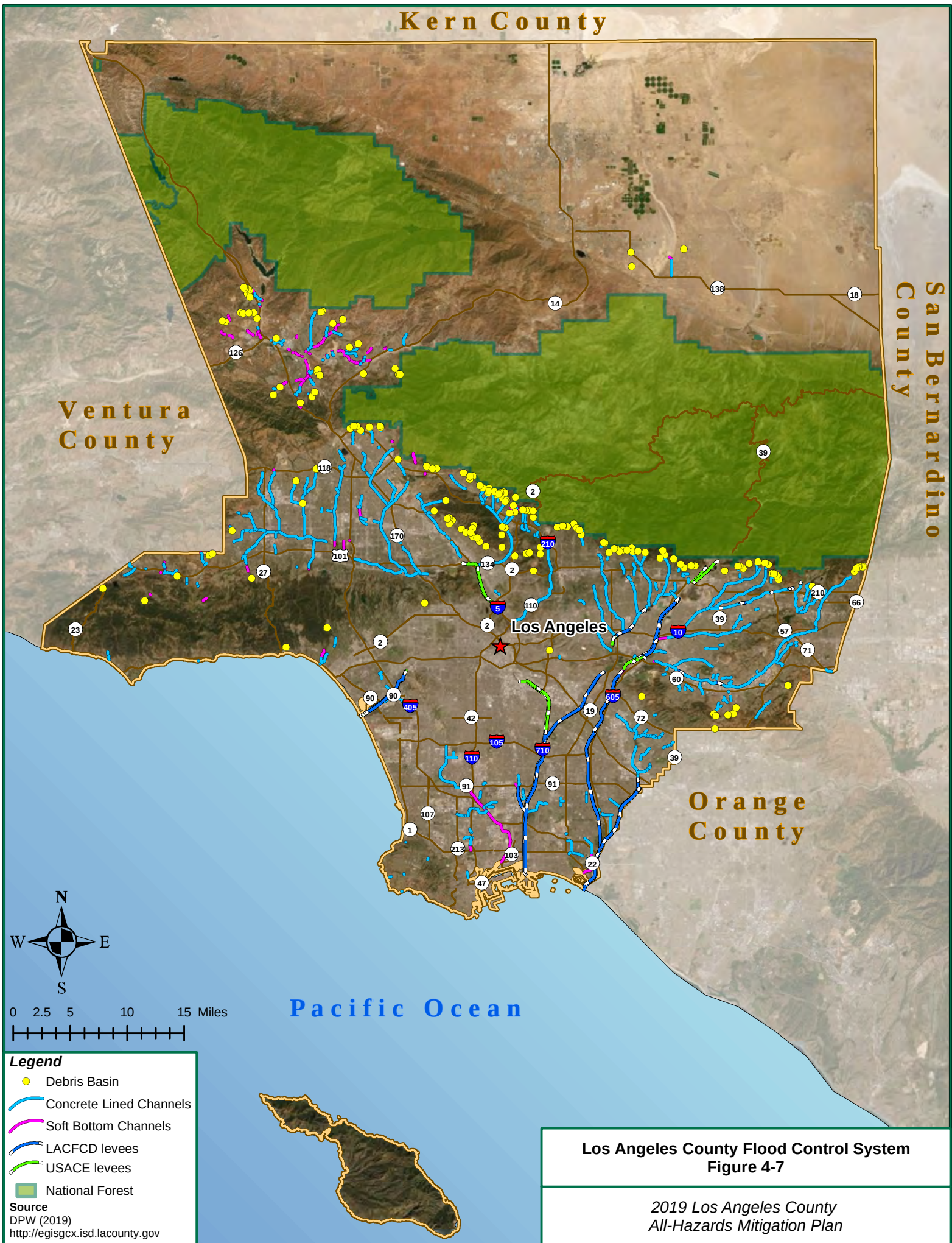
Entity	0.2% Annual Chance of Flooding		1% Annual Chance of Flooding	
	# of Homeless	% of Homeless	# of Homeless	% of Homeless
City of Los Angeles	1,601	4.86	87	0.26
Unincorporated Los Angeles County	170	2.88	0	0.00

Table 4-22. Flood Impact on County Critical Facilities

Department / Agency	0.2% Annual Chance of Flooding		1% Annual Chance of Flooding	
	# of Facilities	% of Facilities	# of Facilities	% of Facilities
Los Angeles County Animal Care & Control	2	28.57	0	0.00
Los Angeles County Fire Department	46	13.65	0	0.00
Los Angeles County Health Services	5	17.24	0	0.00
Los Angeles County Library	15	17.65	0	0.00
LACMA & NHM	0	0.00	0	0.00
Los Angeles County Office of Education	5	13.51	0	0.00
Los Angeles County - Other (offices)	2	8.33	0	0.00
Los Angeles County Parks & Recreation	8	6.84	0	0.00
Los Angeles County Public Health	0	0	0	0.00
Los Angeles County Public Works	41	17.38	1	0.43
Los Angeles County Sheriff's Department	5	16.13	0	0.000

Table 4-23. Overall Summary of Vulnerability to Floods

Flood	
Summary	Los Angeles County has a long history of moderate to severe flooding during major storms. In the Los Angeles basin area, an extensive flood control system has eliminated much of this problem. However, in the less densely populated areas where relatively few flood controls have been constructed, flooding remains a problem. In areas with alluvial fans, flood flows discharge from the mountainous canyons in an uncontrolled manner onto the desert floor, thereby resulting in widespread damage to agricultural land, buildings, and infrastructure. In the foothill areas that experience intense rainfall, mudflows pose a risk to those downstream. Finally, along the coast, waves generated by winter storms in combination with high astronomical tides and strong winds can cause a significant wave runup, resulting in erosion and coastal flooding to low-lying portions of the shoreline. According to the Los Angeles County Public Works, there are 55 Repetitive Loss (RL) properties in 22 RL areas of unincorporated Los Angeles County as of the last submitted 2019 Community Rating System (CRS) Recertification. A Repetitive Loss (RL) property is any insurable building for which two or more claims of more than \$1,000 were paid by the National Flood Insurance Program (NFIP) in any rolling 10-year period, since 1978. Updated location information about RL properties in the unincorporated areas of Los Angeles County were not available during the drafting of this plan. Data from 2011 showed that 26 RL properties were located in the SFHA. At the time, Los Angeles County Public Works stated, “the majority of the repetitive losses are associated with localized urban drainage flood problems, even for properties within a FEMA-designated flood zone.” Los Angeles County Public Works oversees RL mitigation projects.



4.5 LANDSLIDE

Table 4-24. Landslide Identification Profile

Profile	Description
Nature	Landslide is a general term for the dislodging and fall of a mass of soil or rocks along a sloped surface, or for the dislodged mass itself. The term is used for varying phenomena, including mudflows, mudslides, debris flows, rock falls, rockslides, debris avalanches, debris slides, and slump-earth flows. Landslides may result from a wide range of combinations of natural rock, soil, or artificial fill. The susceptibility of hillside and mountainous areas to landslides depends on variations in geology, topography, vegetation, and weather. Landslides may also occur because of indiscriminate development of sloping ground or the creation of cut-and-fill slopes in areas of unstable or inadequately stable geologic conditions. Additionally, landslides often occur together with other natural hazards, thereby exacerbating conditions, as described below: • Shaking due to earthquakes can trigger events ranging from rock falls and topples to massive slides. • Intense or prolonged precipitation that causes flooding can also saturate slopes and cause failures leading to landslides. • Wildfires can remove vegetation from hillsides, significantly increasing runoff and landslide potential. • Landslides into a reservoir can indirectly compromise dam safety; a landslide can even affect the dam itself. • Another type of landslide occurs in areas cut by perennial streams. As floodwaters erode channel banks, rivers have undercut clay-rich sedimentary rocks along their south bank, thereby destabilizing the ground and causing the ground above it to slide.
Location	In 2011, CGS created a deep-seated landslide grip map to show the relative likelihood of deep landslides in California. The map combines landslide inventory, geology, rock strength, slope, average annual rainfall and earthquake shaking potential layers to create classes of landslide susceptibility. As shown in Figure 4-9, the map shows areas of low landslide susceptibility, mainly, the Los Angeles Basin, to areas of high susceptibility, including the Santa Monica Mountains, the San Gabriel Mountains, the Sierra Pelona Mountains, the Baldwin Hills, the Puente Hills, and the Palos Verdes Hills.

Table 4-24. Landslide Identification Profile

Profile	Description
History	Like much of California, Los Angeles County has experienced landslides. Landslides in Los Angeles are generally triggered by intense and/or prolonged rainfall but can also occur after an earthquake. Notable recent landslides in Los Angeles County include: • January 1994, the Northridge earthquake triggered more than 11,000 landslides, with the majority concentrated in the Santa Susana Mountains and the mountains north of the Santa Clara River valley. Most of the triggered landslides were shallow highly disrupted falls and slides. However, the larger disrupted slides were reactivations of previously existing landslides. • March 1995, heavy rains weakened the geologically unstable Pacific Palisades bluffs. A 300-foot section gave way and buried part of Pacific Coast Highway under up to 30 feet of rain-soaked earth, rock, and debris. • March 2005, a slide near Sunset Mesa caused 20,000 cubic yards of debris to cover the Pacific Coast Highway. • January 2018, a hillside in Malibu gave way leaving a house uninhabitable. • December 2018, heavy rain on the Woolsey Fire burned hillsides created debris flows and mudslides in and around Malibu causing several road closures. • January 2019, sections of the Pacific Coast Highway near the Ventura County line were closed due to mudslides.
Extent / Severity	Figure 4-9 shows deep seated landslide susceptibility areas in Los Angeles County. According to the Susceptibility to Deep-Seated Landslides map, there are 750.02 square miles (15.75%) of land in Los Angeles County located in the Classes IX and X. In the unincorporated areas of Los Angeles County, there are 577.63 square miles (18.99%) in this hazard area.
Recurrence Probability	Shallow landslides can occur at any time during the winter but are more likely happen when the ground is nearly saturated. According to the USGS, in Southern California “at least 10 inches of rainfall during the winter is needed to nearly saturate the ground. After this point, a rain burst of 0.2 to 0.25 in in one hour has been observed to trigger abundant shallow landslides.” However, deep-seated landslides generally need deep infiltration of rainfall (which can take weeks or months to occur) to be triggered.

Table 4-25. Landslide Impact on Land Area

Entity	Deep Seated Landslide Class IX and X	
	# of Sq. Miles	% of Sq. Miles
Los Angeles County	750.02	15.75
Unincorporated Los Angeles County	577.63	18.99
Supervisory District 1	17.29	7.02
Supervisory District 2	2.73	1.68
Supervisory District 3	114.61	26.58
Supervisory District 4	105.12	23.89
Supervisory District 5	509.31	18.14

Table 4-26. Landslide Impact on Vulnerable Populations – People Experiencing Homelessness

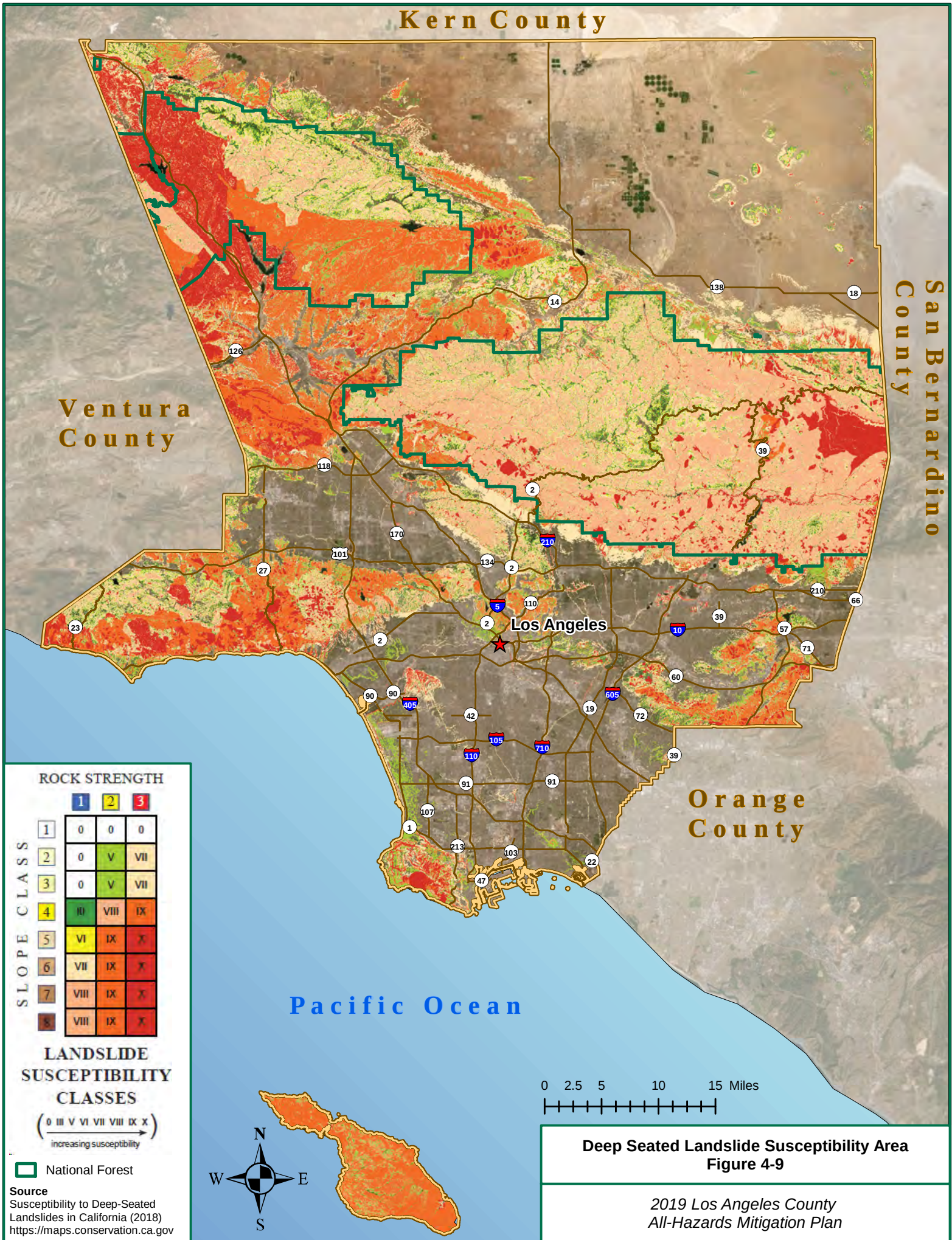
Entity	Deep Seated Landslide Class IX and X	
	# of Homeless	% of Homeless
City of Los Angeles	234	0.71
Unincorporated Los Angeles County	325	5.55

Table 4-27. Landslide Impact on County Critical Facilities

Department / Agency	Deep Seated Landslide Class IX and X	
	# of Facilities	% of Facilities
Los Angeles County Animal Care & Control	0	0.00
Los Angeles County Fire Department	7	2.08
Los Angeles County Health Services	0	0.00
Los Angeles County Library	0	0.00
LACMA & NHM	0	0.00
Los Angeles County Office of Education	1	2.70
Los Angeles County - Other (offices)	0	0.00
Los Angeles County Parks & Recreation	2	1.71
Los Angeles County Public Health	0	0.00
Los Angeles County Public Works	37	16.09
Los Angeles County Sheriff's Department	1	3.23

Table 4-28. Overall Summary of Vulnerability to Landslides

Landslide	
Summary	Areas prone to landslide include existing old landslides, base of slopes, base of minor drainage hollows, base or top of an old fill slope, base or top of a steep cut slope, and developed hillsides where leach field septic systems are used. In Los Angeles County, the majority of landslide-prone areas include the Santa Monica Mountains, the San Gabriel Mountains, the Sierra Pelona Mountains, the Baldwin Hills, the Puente Hills, and the Palos Verdes Hills. Landslides may: cause injury or death to those trapped; break utility lines; block/damage roadways; damage foundations, chimneys, or surrounding land; and lead to flash flooding and additional landsliding. In Los Angeles County, landslide risks are mitigated through the Hillside Management Area Ordinance & Hillside Design Guidelines (Table 5-3).



Deep Seated Landslide Susceptibility Area
Figure 4-9

*2019 Los Angeles County
 All-Hazards Mitigation Plan*

4.6 TSUNAMI

Table 4-29. Tsunami Identification Profile

Profile	Description
Nature	A tsunami is a series of traveling ocean waves of extremely long length, generated by disturbances associated primarily with earthquakes occurring below or near the ocean floor. Subduction zone earthquakes at plate boundaries often cause tsunamis. However, tsunamis can also be generated by underwater landslides or volcanic eruptions, the collapse of volcanic edifices, and—in very rare instances—large meteorite impacts in the ocean. In the deep ocean, a tsunami may have a length from wave crest to wave crest of 100 miles or more, but a wave height of only a few feet or less. Thus, the wave period can be up to several hours, and wavelengths can exceed several hundred miles. Therefore, tsunamis are unlike typical wind-generated swells on the ocean, which might have a period of about 10 seconds and a wavelength of up to 300 feet. Tsunamis cannot be felt aboard ships and they cannot be seen from the air or the open ocean. In deep water, the waves may reach speeds exceeding 700 miles per hour. Tsunamis arrive as a series of successive crests (high water levels) and troughs (low water levels). These successive crests and troughs can occur anywhere from 5 to 90 minutes apart; however, they usually occur 10 to 45 minutes apart. Tsunamis not only affect beaches that are open to the ocean, but also bay mouths, tidal flats, and the shores of large coastal rivers. Tsunami waves can also diffract around land masses. Because tsunamis are asymmetrical, the waves may be much stronger in one direction than another, depending on the nature of the source and the surrounding geography. However, tsunamis do propagate outward from their source, so coasts in the shadow of affected land masses are safer.
Location	Figure 4-10 shows tsunami evacuation area based on Maximum Phase as described in the California Tsunami Evacuation Playbook. This map illustrates coastal land areas that can become submerged due to tsunami run-up. The area of land subject to inundation is a factor of: • Distance of shoreline from the tsunami-generating event • Magnitude of the earthquake causing the event; duration and period of waves • Run-up elevations • Tidal level at time of occurrence • Location along shore and direction of shore in respect to propagated waves • Topography of the seabed In Los Angeles County, areas at risk to the maximum tsunami run up include the ports of Long Beach and Los Angeles, Catalina Island, and areas in the cities of Los Angeles, Long Beach, Manhattan Beach, Redondo Beach, Hermosa Beach, El Segundo, Palos Verdes, Santa Monica, and Malibu. In the unincorporated areas of Los Angeles County, the five coastal zones (i.e., Marin Del Rey, Santa Catalina Island, Santa Monica Mountains, San Clemente Island, and Ballona Wetlands Area A) are subject to inundation.

Table 4-29. Tsunami Identification Profile

Profile	Description
History	Between 1923 and 2011, 11 major tsunami events occurred in Los Angeles County, including: • April 13, 1923, a M 7.2 earthquake in Kamchatka caused a tsunami in Los Angeles. • August 30, 1930, a probable meteotsunami (i.e., a tsunami of meteorological origin) with a 10-foot run-up amplitude hit Santa Monica. • April 1, 1946, a M 8.8 earthquake in the Aleutian Islands caused tsunamis with run-up amplitudes ranging from 1 to 6 feet in Catalina Island, Los Angeles, and Long Beach, breaking ships from their moorings. • November 4, 1952, a M 9.0 earthquake in Kamchatka caused tsunamis with run-up amplitudes ranging from 1 to 2 feet in Santa Monica, Los Angeles, and Long Beach. • March 9, 1957, a M 8.6 earthquake in the Aleutian Islands caused tsunamis with run-up amplitudes ranging from 1 to 2 feet in Santa Monica, Los Angeles, and Long Beach. • May 22, 1960, a M 9.5 earthquake in Chile caused tsunamis with run-up amplitudes ranging from 2 to 5 feet in Catalina Island, Los Angeles, Long Beach, and Santa Monica. One person died, 800 small craft were unmoored, 200 boats were damaged, and 40 boats were sunk. The tsunamis resulting in \$1 million dollars in damages. • March 28, 1964, a M 9.2 earthquake in Alaska caused tsunamis with run-up amplitudes ranging from 2 to 3 feet in Catalina Island, Los Angeles, Long Beach, and Santa Monica. One longshoreman was killed, 100 boats were unmoored, and 7 boats were sunk. The tsunamis caused approximately \$350 thousand dollars in damages. • November 29, 1975, a M 7.1 earthquake in Hawaii caused a tsunami with a run-up amplitude of 4 feet in Catalina Island, damaging docks and boats. • September 29, 2009, a M 8.0 earthquake in Samoa caused a tsunami with a 1-foot run-up amplitude in Los Angeles. • February 27, 2010, a M 8.8 earthquake in Chile caused tsunamis with run-up amplitudes ranging from 1 to 3 feet in Catalina Island, Los Angeles, Long Beach, and Santa Monica, causing minor damage to docks and boats. • March 11, 2011, a M 9.0 earthquake in Japan caused tsunamis with run-up amplitudes ranging from 2 to 3 feet in Catalina Island, Los Angeles, Long Beach, Redondo Beach, and Santa Monica, damaging docks and boats.
Extent / Severity	Figure 4-10 shows the maximum considered tsunami runup from a number of extreme tsunami sources. There are 43.35 square miles (0.91%) in Los Angeles County located in this hazard area. In the unincorporated areas of Los Angeles County there are 2.07 square miles (0.07%) at risk to a maximum tsunami runup.
Recurrence Probability	Based on the history of tsunami run-ups in the region and the history of earthquakes in the Pacific Rim, another tsunami event is likely to occur, although the extent and probability is unknown.

Table 4-30. Tsunami Impact on Land Area

Entity	Maximum Tsunami Inundation Area	
	# of Sq. Miles	% of Sq. Miles
Los Angeles County	43.35	0.91
Unincorporated Los Angeles County	2.07	0.07
Supervisory District 1	0.00	0.00
Supervisory District 2	0.12	0.08
Supervisory District 3	2.65	0.61
Supervisory District 4	18.00	4.09
Supervisory District 5	0.00	0.00

Table 4-31. Tsunami Impact on Vulnerable Populations – People Experiencing Homelessness

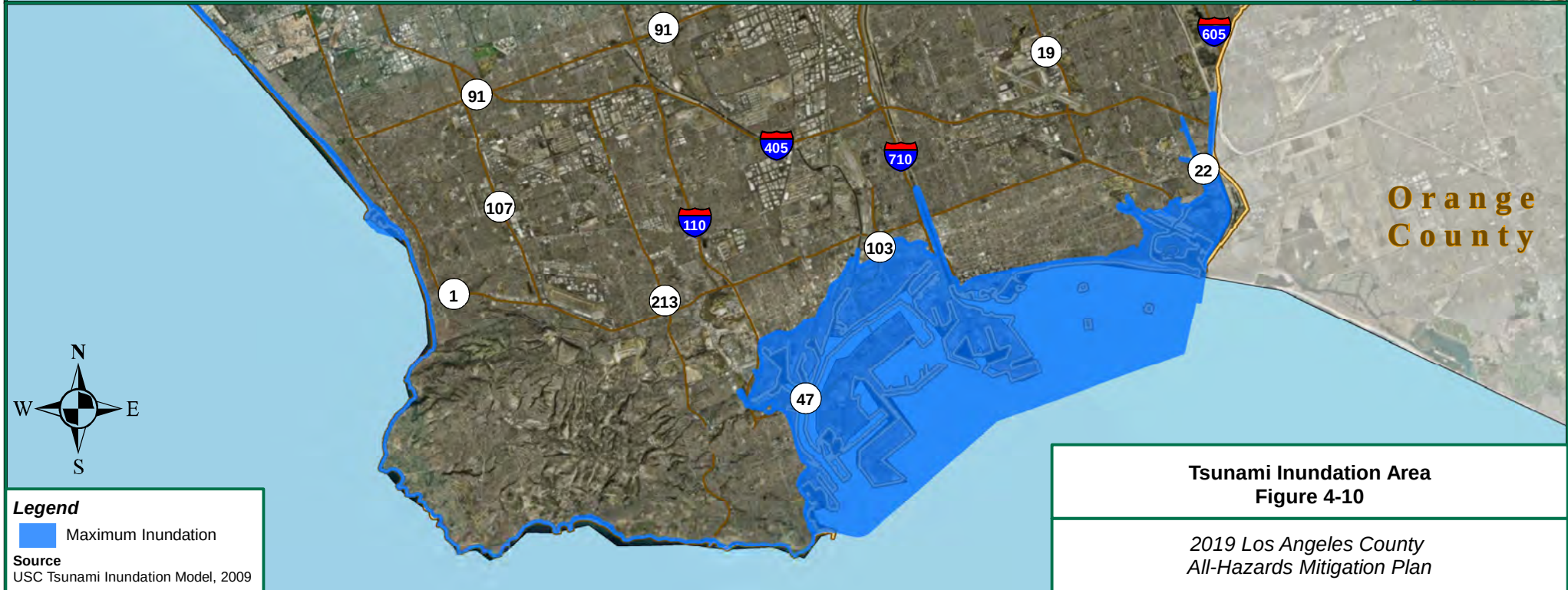
Entity	Maximum Tsunami Inundation Area	
	# of Homeless	% of Homeless
City of Los Angeles	622	1.89
Unincorporated Los Angeles County	20	0.34

Table 4-32. Tsunami Impact on County Critical Facilities

Department / Agency	Maximum Tsunami Inundation Area	
	# of Facilities	% of Square Facilities
Los Angeles County Animal Care & Control	0	0.00
Los Angeles County Fire Department	14	4.15
Los Angeles County Health Services	0	0.00
Los Angeles County Library	1	1.18
LACMA & NHM	0	0.00
Los Angeles County Office of Education	0	0.00
Los Angeles County - Other (offices)	1	4.17
Los Angeles County Parks & Recreation	0	0.00
Los Angeles County Public Health	0	0.00
Los Angeles County Public Works	15	6.52
Los Angeles County Sheriff's Department	1	3.23

Table 4-33. Overall Summary of Vulnerability to Tsunamis

Tsunami	
Summary	In Southern California, an earthquake could trigger an underwater avalanche or submarine landslide in the Santa Monica Bay and produce a tsunami that could inundate low-lying areas of Los Angeles County. In fact, according to researchers a locally generated tsunami could bring water as high as 5 feet in Marina del Rey, 7 feet in Manhattan Beach, 8 feet at the ports, and 11 feet in Redondo Beach. Such a tsunami could flood homes and destroy many small boats in nearby harbors, thereby creating dangerous debris. Researchers warn that California needs to be better prepared for tsunamis and while new deep-sea sensors have helped in tsunami detection, they are better suited for far-away tsunamis rather than local tsunamis. California OES and CGS lead Tsunami Preparedness Week in California annually. During this week, governmental agencies, such as Los Angeles County OEM, and community organizations, participate in exercises, test warning systems and response plans, and host community events to promote tsunami awareness.



4.7 WILDFIRE

Table 4-34. Wildfire Identification Profile

Profile	Description
Nature	Wildfires spread by consuming flammable vegetation. This fire type often begins unnoticed, spreads quickly, and is usually signaled by dense smoke that may be visible from miles around. Wildfires can be caused by human activities (e.g., unattended burns, campfires, or off-road vehicles without spark arresting muffles) or by natural events such as lightning. Wildfires often occur in forests or other highly vegetated areas. In addition, wildfires can be classified as forest, urban, interface or intermix fires, and prescribed burns. The following three factors contribute significantly to wildfire behavior and can be used to identify wildfire hazard areas: • Topography describes slope increases, which influences wildfire spread rate increases. South-facing slopes are also subject to more solar radiation, making them drier and thereby intensifying wildfire behavior. However, ridge tops may mark the end of wildfire spread since fire spreads more slowly or may even be unable to spread downhill. • Fuel is the type and condition of vegetation that plays a significant role in wildfire spread occurrence. Certain plant types are more susceptible to burning or will burn with greater intensity. Dense or overgrown vegetation increases the amount of combustible material available as fire fuel (referred to as the “fuel load”). The living-to-dead plant matter ratio is also important. Certain climate changes may increase wildfire risk significantly during prolonged drought periods, as both living and dead plant matter moisture content decreases. Both the horizontal and vertical fuel load continuity is also an important factor. • Weather is the most variable factor affecting wildfire behavior. Temperature, humidity, wind, and lightning can affect ignition opportunities and fire spread rate. Extreme weather, such as high temperatures and low humidity, can lead to extreme wildfire activity. Climate change increases fire to vegetation ignition susceptibility due to longer dry seasons. By contrast, cooling and higher humidity often signal reduced wildfire occurrence and easier containment. Wildfire frequency and severity sometimes result from other hazard impacts, such as lightning, drought, and infestations (e.g., damage caused by spruce-bark beetle infestations). If not promptly controlled, wildfires may grow into an emergency or disaster. Even small fires can threaten lives and resources and destroy improved properties. In addition to affecting people, wildfires may severely affect livestock and pets. Such events may require emergency water/food, evacuation, and shelter. Indirect wildfire effects can be catastrophic. In addition to stripping the land of vegetation and destroying forest resources, large, intense fires can harm the soil, waterways, and the land itself. Soil exposed to intense heat may lose its capability to absorb moisture and support life. Exposed soils erode quickly and exacerbate river and stream siltation; thereby increasing flood potential, harming aquatic life, and degrading water quality. Vegetation-stripped lands are more susceptible to increased debris flow hazards.
Location	Public Resources Code 4201 4204 and Government Code 51175 89 directed the California Department of Forestry and Fire Protection (Cal FIRE) to map areas of significant fire hazards based on fuels, terrain, weather, and other relevant factors. These FHSZ are represented as very high, high, or moderate. Specifically, the maps were created using data and models describing development patterns, potential fuels over a 30- to 50-year time horizon, expected fire behavior, and expected burn probabilities. The maps are divided into local responsibility areas (LRAs) and state responsibility areas (SRAs). LRAs generally include cities, cultivated agriculture lands, and portions of the desert. LRA fire protection is typically provided by city fire departments, fire protection districts, counties, and by Cal FIRE under contract to the local government. SRA is a

Table 4-34. Wildfire Identification Profile

Profile	Description
	legal term defining the area where the state has financial responsibility for wildfire protection. The Los Angeles County Fire Department is one of six contract counties, which has executed a contract with the State of California to provide wildland fire protection on SRA. Figure 4-11 displays the areas of Los Angeles County most susceptible to wildfires and indicates areas of local or state responsibility. Very high FHSZs are generally located in mountainous or hillside areas, including the Santa Monica Mountains, San Gabriel Mountains, Palos Verdes Hills, and Puente Hills.
History	As shown in Figure 4-12, wildfires are a common occurrence in Los Angeles County. Some of the county's most destructive fires have occurred since 2000, including: • The Grand Prix Fire started on October 21, 2003 and burned a total of 50,618 acres between Claremont and Lytle Creek. The fire destroyed 136 homes and was ruled "accidental but human-initiated." • The Simi Fire started on October 25, 2003 and burned a total of 107,570 acres between Simi Hills and southeastern Simi Valley, in eastern Ventura County and western Los Angeles County, California. It destroyed 37 homes and 278 out buildings. The cause of the fire remains unknown. • The Day Fire started on October 30, 2006 and burned a total of 161,816 acres. The fire primarily burned the Los Padres National Forest. The cause of the fire was human-ignited debris. • The Ranch Fire started on October 20, 2007 and burned a total of 58,410 acres near Townsend Peak in the Angeles National Forest. The cause of the fire was equipment. • The Station Fire started on September 22, 2009 and burned a total of 160,883 acres in the Angeles National Forest. The Station Fire is the largest recorded fire in Los Angeles County. It destroyed 89 residences and another 120 buildings of significance. Two firefighters were killed. The cause of the fire was arson. • The Woolsey Fire started November 8, 2018 and burned a total of 96,949 acres in Los Angeles and Ventura counties including Thousand Oaks, Agoura Hills, Calabasas, the Santa Monica Mountains, Malibu, and West Hills. A total of 1,643 structures were destroyed and 3 people were killed.
Extent / Severity	As shown on the Cal FIRE FHSZ maps, in Los Angeles County, there are 386.06 square miles (8.11%) located in the very high LRA FHSZ, 625.01 square miles (13.13%) in the very high SRA FHSZ, and 132.77 square miles (2.79%) in the high SRA FHSZ. In the Unincorporated Los Angeles County, this includes: 23.53 square miles (0.77%) of very high LRA FHSZ; 610.94 square miles (20.09%) of very high SRA FHSZ; and 132.06 square miles (4.34%) of high SRA FHSZ.
Recurrence Probability	The climate in Los Angeles County is characterized as Mediterranean dry-summer featuring cool, wet winters and warm, dry summers. High moisture levels during the winter rainy season significantly increase the growth of plants. However, the vegetation is dried during the long, hot summers, decreasing plant moisture content and increasing the ratio of dead fuel to living fuel. As a result, fire susceptibility increases dramatically, particularly in late summer and early autumn. In addition, the presence of chaparral, a drought-resistant variety of vegetation that is dependent on occasional wildfires, is expected in Mediterranean dry-summer climates. The history of plant succession in Los Angeles County is important in predicting fire susceptibility. For several years after a fire has occurred, easily flammable herbaceous species thrive and increase the likelihood of new fires. When woody species become re-established, they contribute to a lower overall level of fire susceptibility for approximately 10 years. However, after this period, the slow aging plant

Table 4-34. Wildfire Identification Profile

Profile	Description
	community becomes ever more likely to burn because of increased levels of dead plant material and lowered plant moisture levels. Additionally, a local meteorological phenomenon, known as the Santa Ana winds, contributes to the high incidence of wildfires in Los Angeles County. These winds originate during the autumn months in the hot, dry interior deserts to the north and east of Los Angeles County. They often sweep west into the county, bringing extremely dry air and high wind speeds that further desiccate plant communities during the period of the year when the constituent species have very low moisture content. The effect of these winds on existing fires is particularly dangerous; the winds can greatly increase the rate at which fires spread. Based on the conditions described above and the history of occurrence in the past, future events are very likely to occur. In the past, fires burning more than 1,000 acres have occurred about every 1 to 3 years. The extent of future events will depend on specific conditions at the time of the fire.

Table 4-35. Wildfire Impact on Land Area

Entity	Very High LRA FHSZ		High SRA FHSZ		Very High SRA FHSZ	
	# of Sq. Miles	% of Sq. Miles	# of Sq. Miles	% of Sq. Miles	# of Sq. Miles	% of Sq. Miles
Los Angeles County	386.06	8.11	132.77	2.79	625.01	13.13
Unincorporated Los Angeles County	23.54	0.77	132.06	4.34	610.94	20.09
Supervisory District 1	31.42	12.76	0.00	0.00	1.13	0.46
Supervisory District 2	3.25	2.01	0.00	0.00	0.00	0.00
Supervisory District 3	140.58	32.60	0.01	0.00	92.18	21.38
Supervisory District 4	45.78	10.41	1.11	0.25	86.61	19.69
Supervisory District 5	164.90	5.87	131.65	4.69	444.99	15.85

Table 4-36. Wildfire Impact on Vulnerable Populations – People Experiencing Homelessness

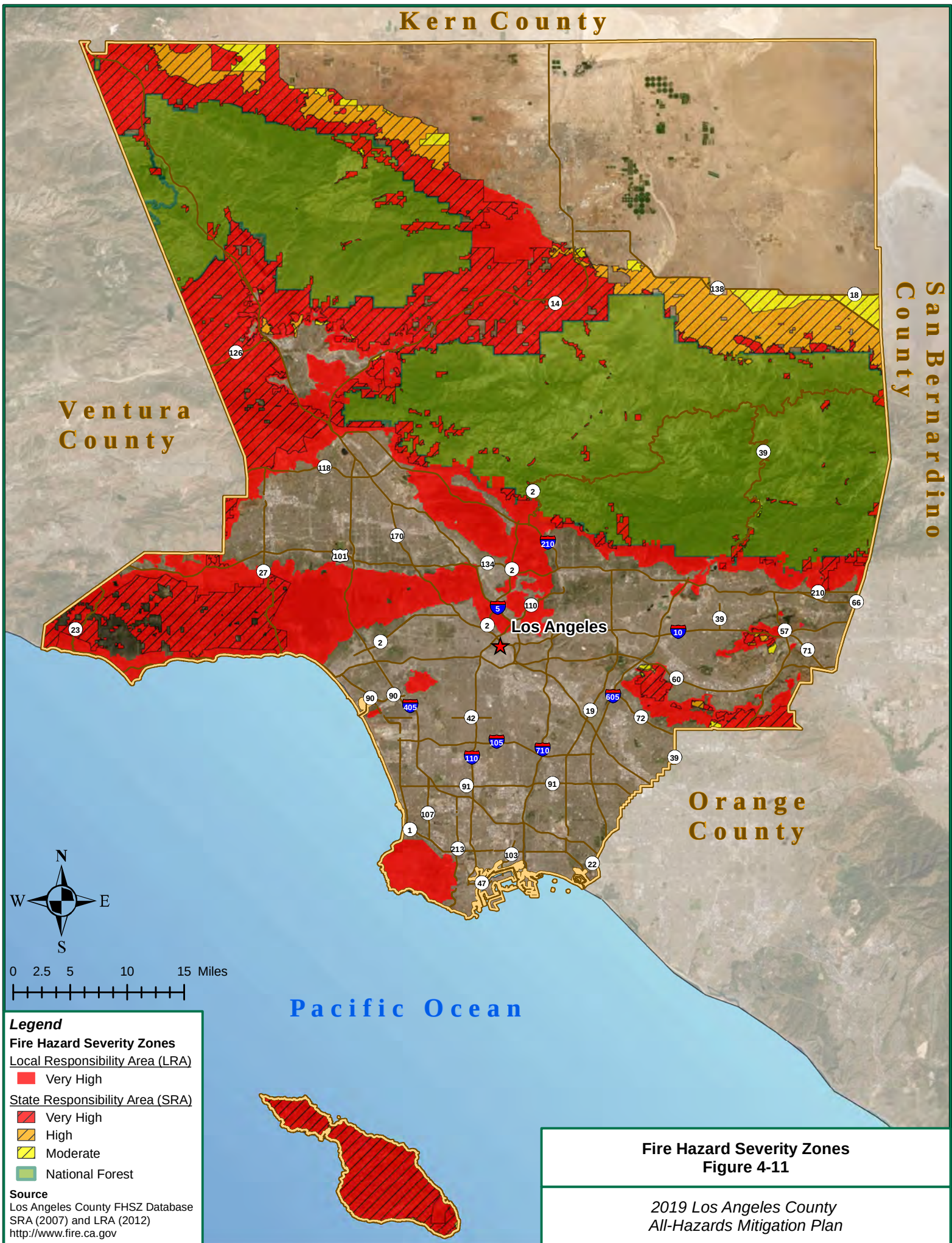
Entity	Very High LRA FHSZ		High SRA FHSZ		Very High SRA FHSZ	
	# of Homeless	% of Homeless	# of Homeless	% of Homeless	# of Homeless	% of Homeless
City of Los Angeles	1,291	3.92	0	0.00	0	0.00
Unincorporated Los Angeles County	88	1.49	58	0.99	465	7.91

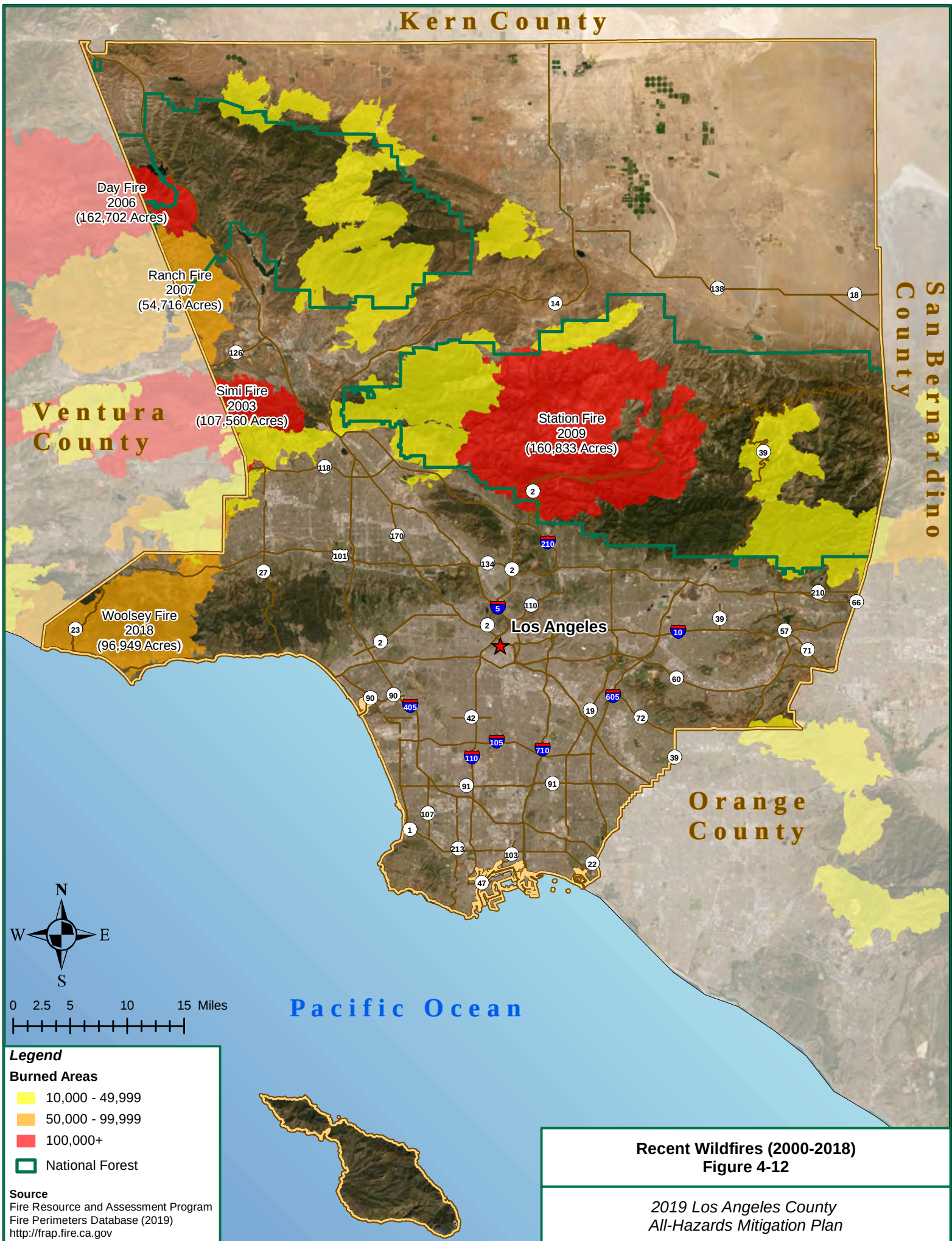
Table 4-37. Wildfire Impact on County Critical Facilities

Department / Agency	Very High LRA FHSZ		High SRA FHSZ		Very High SRA FHSZ	
	# of Facilities	% of Facilities	# of Facilities	% of Facilities	# of Facilities	% of Facilities
Los Angeles County Animal Care & Control	1	14.29	0	0.00	1	14.29
Los Angeles County Fire Department	39	11.57	1	0.30	14	4.15
Los Angeles County Health Services	1	3.45	0	0.00	0	0.00
Los Angeles County Library	7	8.24	1	1.18	2	2.35
LACMA & NHM	1	25.00	0	0.00	0	0.00
Los Angeles County Office of Education	3	8.11	0	0.00	3	8.11
Los Angeles County - Other (offices)	0	0.00	0	0.00	0	0.00
Los Angeles County Parks & Recreation	13	11.11	1	0.85	12	10.26
Los Angeles County Public Health	52	22.61	4	1.74	41	17.83
Los Angeles County Public Works	0	0.00	0	0.00	0	0.00
Los Angeles County Sheriff's Department	3	9.68	1	3.23	3	9.68

Table 4-38. Overall Summary of Vulnerability to Wildfires

Wildfire	
Summary	Wildfires are not only capable of burning down vegetation, homes, critical facilities, and infrastructure, but they can also cause loss of life to humans and animals, soil erosion, debris flows, air pollution, serious health problems, and restriction of access to recreational areas. The areas in Los Angeles County that are most susceptible to wildfires are generally located in mountainous or hillside areas, including the Santa Monica Mountains, San Gabriel Mountains, Palos Verdes Hills, and Puente Hills. However, the areas that pose greatest risk to people are generally along the wildland-urban interface (WUI) or intermix. These areas are the transition zones between wildlands and human development and often where areas of housing and vegetation commingle. According to researchers at the United States Forest Service, fires in the WUI areas have not deterred redevelopment. In fact, according to the same researchers, there is a push to return the area to “normal” as soon as possible. California has the strictest fire regulations in the country, which supersede any type of local regulations. However, the rules do not apply to existing homes built before 1991, with the average home in California built decades prior. And unlike earthquakes and floods, there is not a retrofit type of program to encourage homeowners to bring their homes up to current fire requirements.





5 MITIGATION STRATEGY

Section 5 – Mitigation Strategy addresses Element C of the Local Mitigation Plan Regulation Checklist.

Regulation Checklist – 44 CFR 201.6 Local Mitigation Plans	
Element C: Mitigation Strategy	
C1. Does the Plan document each jurisdiction’s existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs? (Requirement § 201.6(c)(3))	
C2. Does the Plan address each jurisdiction’s participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement § 201.6(c)(3)(i))	
C3. Does the Plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement § 201.6(c)(3)(i))	
C4. Does the Plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure? (Requirement § 201.6(c)(3)(ii))	
C5. Does the Plan contain an action plan that describes how the actions identified will be prioritized (including cost benefit review), implemented, and administered by each jurisdiction? (Requirement § 201.6(c)(3)(iv)); (Requirement § 201.6(c)(3)(iii))	
C6. Does the Plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? (Requirement § 201.6(c)(4)(ii))	

5.1 AUTHORITIES, POLICIES, PROGRAMS, AND RESOURCES

Los Angeles County’s existing authorities, policies, programs and resources available for hazard mitigation are listed in **Table 5-1** through **Table 5-3**. These tables have been updated since the 2014 AHMP to reflect any changes in human, technical, financial, legal, and regulatory resources.

Table 5-1 Human and Technical Resources for Hazard Mitigation

Staff/Personnel	Department / Agency	Principal Activities Related to Hazard Mitigation
Planner(s), engineer(s) and technical staff with knowledge of land development, land management practices, and human-caused and natural hazards.	Los Angeles County Department of Regional Planning	Develops and maintains the Los Angeles County 2035 General Plan, including the safety element. Develops area plans based on the Los Angeles County 2035 General Plan, to provide more specific guidance for the development of more specific areas. Reviews private development projects and proposed capital improvements projects and other physical projects involving property for consistency and conformity with the Los Angeles County 2035 General Plan. Anticipates and acts on the need for new plans, policies, and code changes. Applies the approved plans, policies, code provisions, and other regulations to proposed land uses.
Engineer(s), Building Inspectors/Code Enforcement Officers or other professional(s), and technical staff trained in construction requirements	Los Angeles County Public Works	Oversees the effective, efficient, fair, and safe enforcement of the 2017 County of Los Angeles Building Code.
Engineers, construction project managers, and supporting technical staff	Los Angeles County Public Works	Provides direct or contract civil, structural, and mechanical engineering services, including contract, project, and construction management.
Engineer(s), project manager(s), technical staff, equipment operators, and maintenance and construction staff	Los Angeles County Public Works	Maintains and operates of a wide range of local equipment and facilities and assists members of the public. This includes providing sufficient clean fresh water, reliable sewer services, street maintenance, storm drainage systems, street cleaning, street lights and traffic signals.
Floodplain Administrator	Los Angeles County Public Works	Enforces the floodplain management ordinance, ensures that new development proposals do not increase flood risk, and that new developments are not located below the 100-year flood level. In addition, the floodplain administrator is responsible for planning and managing flood risk reduction projects throughout the county.
Emergency Manager	Los Angeles County Chief Executive Office – Office of Emergency Management	Maintains and updates the Los Angeles County Operational Area Emergency Response Plan for the unincorporated areas of the county. In addition, coordinates local response and relief activities in the Emergency Operation Center, and works closely with local, state, and federal partners to support planning and training and to provide information and coordinate assistance.

Table 5-1 Human and Technical Resources for Hazard Mitigation

Staff/Personnel	Department / Agency	Principal Activities Related to Hazard Mitigation
Procurement Services Manager	Internal Services Department	Provides a full range of municipal financial services, administers several licensing measures, and functions as the county's procurement services manager.
Comptroller	Los Angeles County Auditor - Controller	Provides financial services including grant financial services.
District Attorney	Los Angeles County District Attorney	Provides legal services for the county.
Fire Chief	Los Angeles County Fire Department	Provides fire protection services including response, fire prevention, and mitigation activities for the county.
Sheriff	Los Angeles County Sheriff Department	Provides law enforcement services in the county.

Table 5-2. Financial Resources for Hazard Mitigation

Type	Administrator	Purpose	Amount
General Fund	Chief Executive Office	Program operations and specific projects.	Variable.
General Obligation Bonds	Los Angeles County Auditor-Controller	General obligation bonds are appropriately used for the construction and/or acquisition of improvements to real property broadly available to residents and visitors. Such facilities include but are not limited to: libraries, hospitals, parks, public safety facilities, and cultural and educational facilities.	Variable.
Special Tax and Revenue Bonds	Comptroller	Revenue bonds are used to finance capital projects that: 1) have an identified budgetary stream for repayment (e.g., specified fees, tax receipts); 2) generate project revenue but rely on a broader pledge of general fund revenues to reduce borrowing costs; or 3) finance the acquisition and installation of equipment for the local jurisdiction's general governmental purposes.	Variable.
Vegetation Management Program	Cal FIRE	Cost-sharing program between Cal FIRE and private land owners, which focuses on the use of prescribed fire, mechanical, biological, and chemical means addressing wildland fire fuel hazards and other resource management issues on SRA and LRA lands	Project-specific.
Wildfire Emergency and Mitigation Funds	Cal FIRE	Administers funding from the FEMA, Bureau of Land Management, and U.S. Forest Service for certain types of wildfire emergency and mitigation funding	Project-specific.
California Residential Mitigation Program	California Earthquake Authority	Created by the California Earthquake Authority and the Governor's Office of Emergency Services, Earthquake Brace + Bolt: Funds to Strengthen Your Foundation is the first incentive program offered by the California Residential Mitigation Program.	Project-specific.
Public Health Emergency Preparedness Cooperative Agreement.	Center for Disease Control	Funds are intended to upgrade state and local public health jurisdictions' preparedness and response to bioterrorism, outbreaks of infectious diseases, and other public health threats and emergencies.	Grant award based on specific projects as they are identified.

Table 5-2. Financial Resources for Hazard Mitigation

Type	Administrator	Purpose	Amount
Hazard Mitigation Grant Program	FEMA	Supports pre- and post-disaster mitigation plans and projects. Available to California communities after a presidentially declared disaster has occurred in California, administered by Cal OES.	Grant award based on specific projects as they are identified.
Pre-Disaster Mitigation grant program	FEMA	Supports pre-disaster mitigation plans and projects. Available on an annual basis as a nationally competitive grant, administered by Cal OES.	Grant award based on specific projects as they are identified.
Flood Mitigation Assistance grant program	FEMA	Mitigates repetitively flooded structures and infrastructure. Available on an annual basis, distributed to California communities, administered by Cal OES.	Grant award based on specific projects as they are identified.
Homeland Security Preparedness Technical Assistance Program	FEMA/DHS	Build and sustain preparedness technical assistance activities in support of the four homeland security mission areas (i.e., prevention, protection, response, recovery) and homeland security program management.	Grant award based on specific projects as they are identified.
Assistance to Firefighters Grant Program	FEMA/U.S. Fire Administration	Provides equipment, protective gear, emergency vehicles, training, and other resources needed to protect the public and emergency personnel from fire and related hazards. Available to fire departments and nonaffiliated emergency medical services providers.	Grant awards based on specific projects as they are identified.
Land and Water Conservation Funds	U.S. Department of the Interior	Supports the protection of federal public lands and waters and voluntary conservation on private land.	Project-specific.
Community Action for a Renewed Environment	U.S. Environmental Protection Agency (EPA)	Through financial and technical assistance offers an innovative way for a community to organize and take action to reduce toxic pollution (e.g., stormwater) in its local environment. Through this program, a community creates a partnership that implements solutions to reduce releases of toxic pollutants and minimize people's exposure to them.	Grant award based on specific projects as they are identified.
Clean Water State Revolving Fund	U.S. EPA	A loan program that provides low-cost financing to eligible entities on state and tribal lands for water quality projects, including all types of non-point source, watershed protection or restoration, estuary management projects, and more traditional municipal wastewater treatment projects.	Variable.

Table 5-2. Financial Resources for Hazard Mitigation

Type	Administrator	Purpose	Amount
Community Block Grant Program Entitlement Communities Grants	U.S. Department of Housing and Urban Development	Acquisition of real property, relocation and demolition, rehabilitation of residential and non-residential structures, construction of public facilities and improvements, such as water and sewer facilities, streets, neighborhood centers, and the conversion of school buildings for eligible purposes.	Grant award based on specific projects as they are identified.

Table 5-3. Legal and Regulatory Resources for Hazard Mitigation

Name	Description	Hazards Addressed	Emergency Management	Potential to Affect Development
Los Angeles County 2035 General Plan (2015)	Describes hazard areas and lists goals and policies to reduce the potential risk of death, injuries, and economic damage resulting from natural and human-caused hazards.	Seismic and geotechnical, flood and inundation hazards, and fire hazards.	Mitigation, Preparedness, Response	Yes
Comprehensive Floodplain Management Plan (2016)	Reviews existing floodplain management programs in the county and recommends enhancements to them through 35 mitigation actions.	Flood	Mitigation	Yes
Los Angeles County Fire Department 2018 Strategic Fire Plan	Identifies and prioritizes pre-fire and post-fire management strategies and tactics meant to reduce the loss of values at risk in Los Angeles County.	Wildfire	Preparedness, Mitigation	Yes
Greater Los Angeles County Region Integrated Regional Water Management Plan (2014)	Identifies a comprehensive set of solutions to achieve the several objectives over the 25-year planning horizon including reducing flood risk in flood prone areas by either increasing protection or decreasing needs using integrated flood management approaches and adapting to and mitigate against climate change vulnerabilities.	Flood, Climate Change	Mitigation	Yes
Unincorporated County Community Climate Action Plan 2020 (2015)	Provides a roadmap for successfully implementing greenhouse gas reduction measures in the County. It is a component of the General Plan Air Quality Element, the Community Climate Action Plan actions are closely tied to many of the goals, policies, and programs of the General Plan, as well as to several other existing programs in the County.	Climate Change	Mitigation	Yes
County of Los Angeles Local Coastal Programs	Requires coastal cities and counties to establish coastal resource conservation and development programs.	Climate change, flood	Prevention, Mitigation	Yes
Los Angeles County Floodplain Management Ordinance	Promotes the public health, safety, and general welfare. Additionally, aims to minimize public and private losses due to flood conditions in specific areas by legally enforceable regulations applied uniformly throughout the community to all publicly and privately owned land in flood prone, mudslide (i.e., mudflow) or flood related erosion areas.	Flood	Mitigation	Yes

Table 5-3. Legal and Regulatory Resources for Hazard Mitigation

Name	Description	Hazards Addressed	Emergency Management	Potential to Affect Development
Hillside Management Area Ordinance & Hillside Design Guidelines	Required for development in Hillside Management Areas, which are defined as areas with 25% or greater natural slopes. The guidelines include specific and measurable design techniques that can be applied to residential, commercial, industrial, and other types of projects.	Landslide	Mitigation	Yes
Los Angeles County Fuel Modification Code	Requires the review aspects such as structure location and type of construction, topography, slope, amount and arrangement of vegetation, and overall site settings for a new structure or an addition that is equal to or greater than 50% of the existing square footage. The objective of this approval plan process is to create defensible space necessary for effective fire protection of homes in the FHSZs.	Wildfire	Preparedness, Mitigation	Yes
California Fire Plan	Requires the County of Los Angeles Fire Plan Unit to implement the California Fire Plan, a statewide framework for minimizing costs and losses from wildland fires. The Fire Plan Unit uses a GIS platform to identify high hazard/high value areas and communities at risk in the wildland-urban interface.	Wildfire	Preparedness, Mitigation	Yes
Los Angeles County Brush Clearance Program	Legally declares both improved and unimproved properties a public nuisance, and where necessary, requires the clearance of hazardous vegetation. These measures create “Defensible Space” for effective fire protection of property, life, and the environment. The Brush Clearance Program is a joint effort between the County of Los Angeles Fire Department and the County of Los Angeles Department of Agricultural Commissioner/Weights and Measures, Weed Hazard, and Pest Abatement Bureau (Weed Abatement Division).	Wildfire	Mitigation	No

5.2 NFIP PARTICIPATION

The NFIP aims to reduce the impact of flooding to residential and non-residential buildings. It does so by providing insurance to property owners and by encouraging communities to adopt and enforce floodplain management regulations. Los Angeles County entered the NFIP in 1980, and the first Los Angeles County DFIRM was issued on December 2, 1980. The Los Angeles County Public Works enforces the county's floodplain management ordinance and participate in FEMA's Community Assisted Visits, which occur on a 3- to 5-year cycle. According to Los Angeles County Public Works, as of September 30, 2018, there are 1,553 floodplain policies in force in the unincorporated areas of Los Angeles County.

Los Angeles County also participates in the CRS program. The CRS program is a voluntary program for communities that engage in community floodplain management activities, which exceed the minimum NFIP standards. CRS communities benefit from reduced insurance rates and improved floodplain management programs. Los Angeles County is currently a Class 7 CRS community; therefore, homeowners who live in the SFHA can receive a 5 to 15 percent discount on their flood insurance policy.

5.3 MITIGATION GOALS

Mitigation goals are defined as general guidelines that explain what a community wants to achieve in terms of hazard and loss prevention. Goal statements are typically long-range, policy-oriented statements representing community-wide vision. For the 2019 AHMP, the overarching goal is for Los Angeles County to be a disaster resilient community. A disaster resilient community is able to prepare for, respond to, and recover from adverse hazards and disasters. According to laresilience.org, "in the resilience framework, less emphasis is placed on traditional, individually-focused preparedness efforts... building community resilience is really about making communities stronger."

5.4 POTENTIAL MITIGATION ACTIONS AND PROJECTS

Mitigation actions and projects help achieve the goals of the AHMP. For the 2019 AHMP, potential mitigation actions to be considered are listed below in **Table 5-4** and include the following hazard mitigation categories: education and awareness; natural systems protection; structure and infrastructure projects; preparedness and response; and local plans and regulations. This list addresses every hazard profiled in this plan and is based on the plan's risk assessment as well as lessons learned from recent disasters. It was developed using: FEMA success stories and best management practices; FEMA job aids; local and regional plans and reports; and input from subject matter experts and pertinent Los Angeles County departments and agencies.

Table 5-4. Potential Mitigation Actions and Projects

Red Flag Warning Public Outreach	
Project Description	Create an online and offline public outreach campaign for Red Flag Warnings. Include information about: what is a Red Flag Warning; what land may be closed; and what individuals should do to be prepared as well as what activities should be avoided. Tailor outreach material to various target groups, including people experiencing homelessness, the elderly, the young, and non-English speaking residents.

Table 5-4. Potential Mitigation Actions and Projects

Type of Project	Education and Awareness Programs
Hazard(s) Mitigated	Wildfire
Project Source	Red Flag Working Group, LA County Homeless Initiatives
Pros	Education can help reduce the risk of human-caused fires Public outreach is generally low-cost Public outreach to homeless individuals can help built rapport with county agencies
Cons	Maybe difficult to reach some target groups
Vegetation Management Program	
Project Description	Continue to implement the County's Vegetation Management Program. The Los Angeles County Fire Department Vegetation Management Unit works closely with the Fire Plan Unit and the Air and Wildland Division's Prescribed Fire Office to implement projects. The Vegetation Management Unit provides the State and County with required paperwork for prescribed burning, mechanical, biological and chemical treatment methods used in project areas.
Type of Project	Natural Systems Protection
Hazard(s) Mitigated	Wildfire
Project Source	Los Angeles County Fire Department
Pros	Program has been implemented in Los Angeles County for the last 40 years and are generally cost effective Can be used selectively to treat the most vulnerable areas
Cons	Often requires ongoing maintenance Can cause soil disturbance and increase sedimentation and erosion Prescribed fire and chemical application methods require close supervision
Fireproof Coating of Critical Assets	
Project Description	Fireproof coat critical facilities in Very High FHSZs which will allow structures to extend their strength in the event of a fire.
Type of Project	Structure and Infrastructure Projects
Hazard(s) Mitigated	Wildfire
Project Source	Los Angeles County Public Works
Pros	Generally cost-effective and non-toxic
Cons	None
Auxiliary Power for Critical Facilities	
Project Description	Determine which critical facilities need and do not have auxiliary power in order to remain functional during de-energization or "Public Safety Power Shut-Offs" and/or general loss of power and install auxiliary power systems. Auxiliary power systems may include back-up generators, local Solar Photovoltaic plus storage, and microgrids.
Type of Project	Structure and Infrastructure Projects
Hazard(s) Mitigated	Wildfire specifically, but also applies to all hazards

Table 5-4. Potential Mitigation Actions and Projects

Project Source	Los Angeles County Public Works
Pros	Provides emergency power to keep critical facilities operational and functional
Cons	Diesel generators can be expensive to operate and contribute to air pollution
Earthquake-Resistant Ductile Iron Pipes Replacement	
Project Description	Continue to replace aging critical pipes in extreme or violent shaking hazard areas and Class IX and X landslide hazard areas to improve seismic reliability/safeguard critical water distribution lines against the potential destructive impacts of large-scale earthquakes and accompanying landslides. Los Angeles County Public Works completed its' first earthquake-resistant ductile iron pipe replacement pilot program in 2013.
Type of Project	Structural and Infrastructure Projects
Hazard(s) Mitigated	Landslides, Earthquakes
Project Source	Los Angeles County Public Works
Pros	Improves water reliability Restores those without service more rapidly
Cons	None
Watershed Ecosystem Restoration	
Project Description	Modernize existing flood control retention facilities to improve flood protection, water quality and ecological health. Potential projects include: Arroyo Seco and Compton Creek.
Type of Project	Natural Systems Protection
Hazard(s) Mitigated	Climate Change, Flood, Tsunami
Project Source	County of Loss Angeles Repetitive Property Loss Area Analysis Progress Report (2017 – 2018), OurWaterLA
Pros	Reduces the risk of flooding to the surrounding neighborhoods Provides new recreational space and safety amenities
Cons	Additional studies needed to determine best approaches
Green Streets	
Project Description	Implement the Green Street Master Plan with the goal of identifying 110 feasible sites. A green street is a stormwater management approach that incorporates vegetation, soil, and engineered systems (e.g., permeable pavements) to slow, filter, and cleanse stormwater runoff from impervious surfaces. In addition to the traditional green street approach, incorporate “complete streets” design strategies to provide more room for emergency response vehicles and create defensible space in plaza areas and around buildings.
Type of Project	Natural Systems Protection, Preparedness and Response
Hazard(s) Mitigated	Stormwater/Flood, Climate Change
Project Source	Los Angeles County Public Works, U.S. EPA
Pros	Protects water quality in rivers and streams by removing pollutants

Table 5-4. Potential Mitigation Actions and Projects

	Replenishes groundwater supplies Absorbs carbon Improves air quality and neighborhood aesthetics Improves pedestrian and bicycle safety
Cons	Requires selected site suitability to do utility conflicts, and geotechnical and environmental characteristics
Coordinated Data Collection and Database Systems	
Project Description	Create coordinated data collection and database system in which intake and assessment information can be entered in real time and can support multiple users at the same time. Components can include critical facilities and vulnerable populations.
Type of Project	Preparedness and Response
Hazard(s) Mitigated	All hazards
Project Source	Los Angeles County OEM
Pros	Coordinated systems
Cons	Different data collection needs may require parallel databases
Brush Clearance Program	
Project Description	Expand the County's Brush Clearance Program to include a grant fundable mitigation component for qualified low-income and/or elderly homeowners that have properties that are found to be non-compliant. Instead of warning property owners and imposing infractions for inadequate fire hazard reduction, Los Angeles County will work with the homeowner to develop and implement a fire reduction plan.
Type of Project	Natural Systems Protection, Preparedness and Response
Hazard(s) Mitigated	Wildfire
Project Source	Los Angeles County Fire Department
Pros	Proactive, not reactive approach to working with homeowners to reducing wildfire fuel hazards
Cons	Often requires ongoing maintenance
Wildland Urban-Interface Ordinance	
Project Description	Codifying development standards to guide development in the WUI areas that face a severe threat of wildfires.
Type of Project	Local Plans and Regulations
Hazard(s) Mitigated	Wildfire
Project Source	Draft Safety Element Update for Los Angeles County 2035 General Plan, Los Angeles County Sustainability Plan
Pros	Additional review of development in WUIs will enable best practices are incorporated in the project design.
Cons	Additional regulations may be perceived as too burdensome by property owners.

Table 5-4. Potential Mitigation Actions and Projects

Urban Forest Management Plan	
Project Description	Create Urban Forest Management Plan for Los Angeles County with a well-defined scope that includes a comprehensive tree inventory, assessment of tree health, identification of shade-poor neighborhoods, cost-benefit analysis of tree vs shade-structure interventions, urban forest financing plan, and a plan for sustainable management.
Type of Project	Local Plans and Regulations
Hazard(s) Mitigated	Climate Change, Drought
Project Source	Los Angeles County Sustainability Plan (Los Angeles County Chief Sustainability Office), A Greater L.A. Climate Action Framework (L.A. Regional Collaborative for Climate Action and Sustainability), and Los Angeles County 2035 General Plan
Pros	Extreme heat is the greatest health threat to Los Angeles County residents. Providing shade will help mitigate the effects of extreme heat in disadvantaged neighborhoods. Residents from these communities may not have private vehicles and encounter problems traveling to cooling centers; they may also have limited access to air conditioning.
Cons	The inability of residents to pay for water to establish newly planted trees may hinder the establishment of an urban forest. County-wide water conservation measures during times of drought may also conflict with efforts to establish and maintain an urban forest. In such situations, shade structures may fulfill the same needs.
Community Wildfire Protection Plans	
Project Description	Continue to work with communities to develop Community Wildfire Protection Plans (CWPP). CWPPs enable communities to plan how they will reduce the risk of wildfire by identifying strategic sites and methods for fuel reduction projects across the landscape and jurisdictional boundaries.
Type of Project	Local Plans and Regulations
Hazard(s) Mitigated	Wildfire
Project Source	Los Angeles County Fire Department 2018 Strategic Fire Plan
Pros	Opportunity to establish a localized definition and boundary for the WUI. Priority funding is often given to projects and treatment areas identified in a CWPP.
Cons	May be difficult to get collaboration from stakeholders.

5.5 MITIGATION ACTION PLANS

A mitigation action plan is a prioritized list of proposed mitigation projects and actions that a community hopes to implement to reduce its' risks and vulnerabilities. The 2019 AHMP mitigation action plan, as shown in **Table 5-5** and **Table 5-6**, is prioritized into Tier 1 and Tier 2 activities:

- Tier 1 activities are essential to remedy or prevent a major health/safety hazard. They meet FEMA HMA grant criteria, including project eligibility, benefit-cost, and performance period.
- Tier 2 activities are important in building a culture and practice of disaster resilience that will prevent new risks. They do not necessarily require and/or meet FEMA HMA grant criteria (but may qualify for other state and federal funds).

Table 5-5. Tier 1 Mitigation Action Plan

Project Name	Implementation Details
Red Flag Warning Public Outreach	Department/Agency: LAHSA, Los Angeles County OEM, Los Angeles County Fire Department, and Los Angeles County Sheriff's Department Potential Funding Source: FEMA grants Performance Period: 6 months development, implementation prior to every summer/fall
Vegetation Management Program	Department/Agency: Los Angeles County Fire Department Potential Funding Source: Cal FIRE, FEMA grants Performance Period: Ongoing
Fireproof Coating of Critical Facilities	Department/Agency: Los Angeles County Public Works, Los Angeles County Fire Department Potential Funding Source: Cal FIRE, FEMA grants Performance Period: 1-3 years
Auxiliary Power for Critical Facilities	Department/Agency: Los Angeles County Public Works Potential Funding Source: FEMA grants Performance Period: Ongoing
Earthquake-Resistant Ductile Iron Pipes Replacement	Department/Agency: Los Angeles County Public Works Potential Funding Source: FEMA grants Performance Period: Ongoing
Brush Clearance Program	Department/Agency: Los Angeles County Fire Department Potential Funding Source: Cal FIRE, FEMA grants Performance Period: Ongoing
Community Wildfire Protection Plans	Department / Agency: Los Angeles County Fire Department Potential Funding Source: Cal FIRE, FEMA grants Performance Period: Ongoing

Table 5-6. Tier 2 Mitigation Action Plan

Project Name	Implementation Details
Watershed Ecosystem Restoration	Department/Agency: Los Angeles County Public Works Potential Funding Source: U.S. EPA, U.S. Department of Interior grants Performance Period: 3-5 years
Green Streets	Department/Agency: Los Angeles County Public Works Potential Funding Source: U.S. EPA grants Performance Period: 3-5 years
Coordinated Data Collection & Database Systems	Department/Agency: Los Angeles County OEM Potential Funding Source: County funds Performance Period: 1-2 years, Ongoing
Wildland Urban-Interface Ordinance	Department/Agency: Los Angeles County Department of Regional Planning, Los Angeles County Fire Department Potential Funding Source: County funds Performance Period: 6 months – 1 year
Urban Forest Management Plan	Department/Agency: Los Angeles County Department of Regional Planning, Los Angeles County Fire Department Potential Funding Source: County funds Performance Period: 1-2 years

5.6 PLAN INTEGRATION

The AHMP project manager will be the lead in working with Los Angeles County departments and agencies to ensure that elements of the 2019 AHMP are incorporated into other relevant county planning documents as they are created or updated.

As such, the AHMP project manager will work with:

- The Los Angeles County Public Works to incorporate the flood risk assessment and flood mitigation actions into the county's Comprehensive Floodplain Management Plan. The Comprehensive Floodplain Management Plan is currently being updated and is expected to be completed in 2021.
- The Los Angeles County Department of Regional Planning to ensure that the 2019 AHMP's hazard profiles and mitigation projects and actions align with those addressed in the General Plan's Safety Element. The Safety Element is currently being updated and is expected to be completed in 2021.
- The Los Angeles County OEM to ensure that the hazard profiles are included in the Los Angeles County Threat and Hazard Identification Risk Assessment and the Los Angeles County Operational Area Emergency Response Plans and Annexes as they are updated.

6 PLAN REVIEW, EVALUATION, AND IMPLEMENTATION

Section 4 – Plan Review, Evaluation, and Implementation addresses Element D of the Local Mitigation Plan Regulation Checklist.

Regulation Checklist – 44 CFR 201.6 Local Mitigation Plans
Element D: Plan Review, Evaluation, and Implementation
D1. Was the plan revised to reflect changes in development? (Requirement § 201.6(d)(3))
D2. Was the plan revised to reflect progress in local mitigation efforts? (Requirement § 201.6(d)(3))
D3. Was the plan revised to reflect changes in priorities? Requirement § 201.6(d)(3))

6.1 CHANGES IN DEVELOPMENT

As noted in **Section 3.2**, the slowing population growth is in part due to the lack of housing. Most economists agree that building new housing is key to addressing the state’s housing crisis. During the drafting of the 2019 AHMP, nearly 28,000 units were under construction in Los Angeles County. In the city of Los Angeles, developers have targeted properties in older neighborhoods, rather than undeveloped land in the city’s outskirts. However, as the State of California pushes for greater growth in order to meet the governor’s goal of 3.5 million new units by 2025, there is growing concern that without land-use restrictions, new development will occur in fire-prone and other hazard areas of the county. These concerns are addressed within the 2019 AHMP mitigation strategy.

6.2 PROGRESS IN LOCAL MITIGATION EFFORTS

The 2014 AHMP Mitigation Actions Matrix was reviewed by each of the coordinating agencies identified on the matrix in order to determine mitigation action status. Mitigation actions that were identified as not having been implemented or deferred were considered for **Table 5-4**. Mitigation actions that were identified as completed are shown in **Table 6-1**.

In addition, the consultant reviewed the County of Los Angeles Floodplain Management Plan 2018 Progress Report to determine mitigation action status. Flood mitigation actions that were listed as “no progress” were considered for **Table 5-4**. Relevant flood mitigation actions that were listed as “project complete” are shown in **Table 6-1**.

Table 6-1. Completed Local Mitigation Efforts

Coordinating Agency	Project Description
Los Angeles County Department of Coroner	Purchased equipment to set up an off-site mobile morgue. This equipment was incorporated into the business continuity plan in case the main facility is unusable and would help to avoid unnecessary exposure of employees or the public to biological, radiological, or chemical agents.
Los Angeles County Department of Regional Planning	Updated building codes on January 1, 2017.

Table 6-1. Completed Local Mitigation Efforts

Coordinating Agency	Project Description
Los Angeles County Public Works	Continue the seismic upgrade to improve water reliability through earthquake-resistant pipe installation. The work took place on Reseda Boulevard from Roscoe to Strathern; Etiwanda Avenue from Roscoe to Strathern; Cantara Street from Reseda to Etiwanda; and Strathern Street from Reseda to Etiwanda.
Los Angeles County Public Works	In October 2017, the Los Angeles County Public Works mailed 3,551 copies of "Are You Prepared for A Flood?" brochure to property owners and residents in Special Flood Hazard Areas, County Floodways, and possible gaps in floodplain mapping (i.e., areas with possible flood hazards that are not on FEMA or County maps). The County of Los Angeles' National Flood Insurance Program (NFIP) website links were checked and updated. Previously, brochures were distributed to the Malibu, Rosemead, and Castaic Public Libraries. Brochures were distributed to additional public libraries closer to the floodplains including Topanga, Altadena, Duarte, and San Dimas.
Los Angeles County Public Works	In addition to the outreach efforts mentioned in Initiative No. 1 above, the Los Angeles County Public Works mailed 226 copies of CDs containing County of Los Angeles and FEMA publications to all property owners and residents in RL properties and properties in the RL areas.
Los Angeles County Public Works	In December 2017, the Los Angeles County Public Works mailed a letter and outreach materials to owners of critical facilities located in FEMA's-designated Special Flood Hazard Areas. Critical facilities that received outreach materials include schools, hospitals, fire stations, and health care facilities.
Los Angeles County Public Works	County of Los Angeles Office of Emergency Management, Fire Department, Sheriff's Department, and Public Works' Disaster Service Group participated in emergency preparedness events such as Los Angeles County's Preparation throughout this reporting period. Participants at the fair provided attendees with information and resources for preparation, such as the "Are You Prepared for a Flood?", "ALERT LA COUNTY" brochure, "Homeowner's Guide for Flood, Debris, and Erosion Control," and the "Emergency Survival Guide."

6.3 CHANGES IN PRIORITIES

The 2014 AHMP's Mitigation Action Matrix was prioritized using a number ranking system to determine a project's priority. For the 2019 AHMP, mitigation actions were prioritized into two separate groups, which both helped achieve meeting the goal of disaster resiliency. As noted in **Section 5.3**, resilient communities are able to minimize any disaster, making the return to normal life as soon and as effortless as possible. As such, the first part (i.e., first priority) of this goal is to ensure that life-safety needs are addressed as soon as possible. The second part (i.e., second priority) is to implement plans, policies, and programs to reduce current risks and prevent new/future ones.

7 PLAN ADOPTION

Section 6 – Plan Adoption addresses Element E of the Local Mitigation Plan Regulation Checklist.

Regulation Checklist – 44 CFR 201.6 Local Mitigation Plans	
Element E: Plan Adoption	
E1. Does the Plan include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval? (Requirement §201.6(c)(5))	
E2. For multi-jurisdictional plans, has each jurisdiction requesting approval of the plan documented formal plan adoption? (Requirement §201.6(c)(5))	

7.1 FORMAL ADOPTION

[To be completed] The 2019 AHMP was formally adopted by the Los Angeles County Board of Supervisors via resolution on [To be completed]. A scanned copy of the resolution is included as **Figure 7-2**. It will also be kept on file with Los Angeles County OEM and additional be sent to Cal OES and FEMA.

ADOPTION RESOLUTION

APPENDIX A – PLANNING PROCESS

From: Stephanie Kim

Sent: Tuesday, August 20, 2019 2:44 PM

To: XXX@monosheriff.org; XXX@ocsd.org; XXX@rivco.org; XXX@ontarioca.gov; XXX@inyocounty.us; XXX@co.imperial.ca.us; XXX@laquintaca.gov; XXX@sbcoem.org; XXX@mono.ca.gov; XXX@lcf.ca.gov; XXX@sa.ocgov.com; XXX@rivco.org; XXX@cbc-city.org; XXX@inyocounty.us; XXX@cityofbishop.com; XXX@sandiego.gov; XXX@rivco.org; XXX@octa.net; XXX@sbc-sd.org; XXX@sandiego.gov; XXX@octa.net; XXX@rcoe.us; XXX@dgs.ca.gov; XXX@sbc-sd.org; XXX@lawa.org; XXX@rivco.org; XXX@lausd.net; XXX@inyocounty.us; XXX@octa.net; XXX@ranchomirageca.gov; XXX@rivco.org; XXX@inyocounty.us; XXX@sbc-cd.edu; XXX@morongo-n-s-n.gov; XXX@noaa.gov; XXX@cityofredlands.org; XXX@morongo-n-s-n.gov; XXX@coachella.org; XXX@ocsd.org; XXX@sbc-sd.org; XXX@cityoftemecula.org; XXX@santabarbaraca.gov; XXX@mwdh2o.com; XXX@sbc-sd.org; XXX@kerncountyfire.org

Cc: XXX@ceooem.lacounty.gov

Subject: Los Angeles County Hazard Mitigation Plan Update

Dear Stakeholders,

We are reaching out to let you know that the Los Angeles County Office of Emergency Management is in the process of updating its' All-Hazards Mitigation Plan. I'm attaching our public outreach flyer for your information. We will send out an additional email when our draft plan goes out to public comment later this fall. If you have any questions or would like to be part of the plan update process, please contact me!

Emily Montanez

emontanez@ceooem.lacounty.gov

(323) 980-2813

Stephanie Kim
Academic Intern
LA County CEO Office of Emergency Management

2019 County of Los Angeles All-Hazards Mitigation Plan



The Los Angeles County Office of Emergency Management is updating the County's All-Hazards Mitigation Plan! Over the next few months, we will re-assess risks posed by natural disasters and review and revise existing strategies as well as develop new ones to protect life and property future events.

Natural disasters addressed in our plan include: climate change, dam failure, drought, flood, earthquake, landslide, tsunami, and wildfire.

Once our plan is completed and approved by FEMA, the County will be re-eligible to apply for and receive certain types of non-emergency disaster assistance, including funding for mitigation projects identified in our plan.

To learn more about hazard mitigation planning, please visit: <https://www.fema.gov/hazard-mitigation-planning>.

To learn more about our plan and/or participate in our planning process, please visit our website lacounty.gov/emergency or our Twitter account @ReadyLACounty.



Plan de Mitigación para Todos los Peligros del Condado de Los Ángeles 2019



¡La Oficina de Manejo de Emergencias del Condado de Los Ángeles está actualizando el Plan de Mitigación para Todos los Peligros del Condado! En los próximos meses, reevaluaremos los riesgos debidos a los desastres naturales y repasaremos y revisaremos las estrategias existentes, y también desarrollaremos otras nuevas para proteger vidas y propiedades antes de que ocurran incidentes futuros.

Los riesgos discutidos en nuestro plan incluyen: cambios climáticos, falla de presas, sequías, inundaciones, terremotos, deslizamientos de tierra, tsunamis e incendios forestales.

Una vez que FEMA complete y apruebe nuestro plan, el Condado volverá a ser elegible para solicitar y recibir ciertos tipos de asistencia por desastre que no sea de emergencia, incluyendo la financiación para proyectos de mitigación identificados en nuestro plan.

Para obtener más información sobre la planificación de mitigación de riesgos, por favor visite: <https://www.fema.gov/hazard-mitigation-planning>.

Para obtener más información sobre nuestro plan y / o participar en nuestro proceso de planificación, visite nuestro sitio web lacounty.gov/emergency o nuestra cuenta de Twitter @ReadyLACounty.





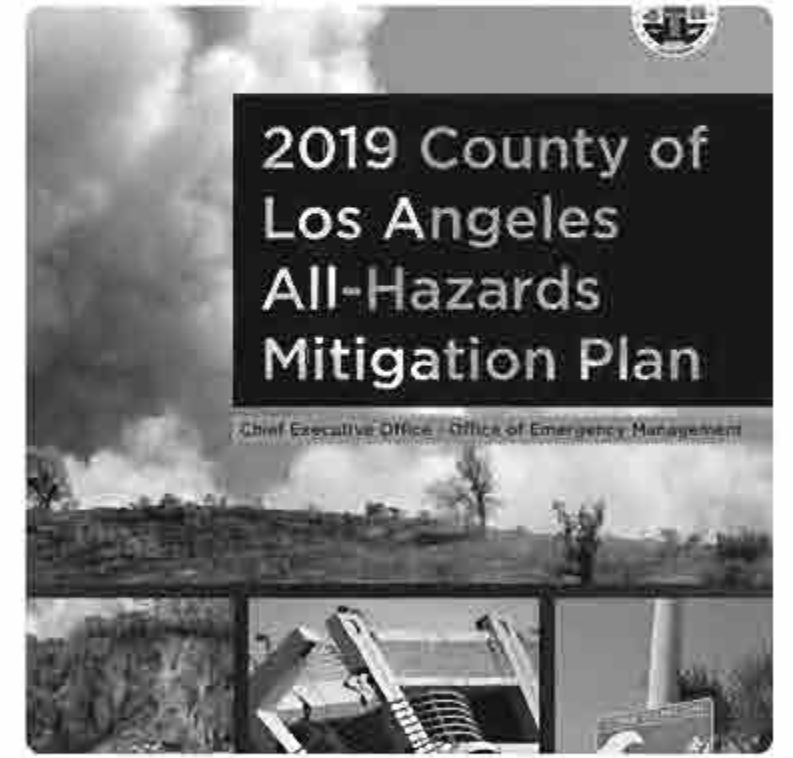
Ready Los Angeles County
Official account of the Los Angeles County Office of Emergency Management for disaster & preparedness information. Please note: change in account to official emergency.

Los Angeles County
@ReadyLACounty
11000 Wilshire Blvd, Suite 1000
Beverly Hills, CA 90212

Ready Los Angeles County
@ReadyLACounty

Follow

We are updating the County of Los Angeles All-Hazards Mitigation Plan in order to help protect life and property from future disaster events. To learn more about our plan, please follow our Twitter account @ReadyLACounty.



12:03 PM - 6 Aug 2019

2 Retweets 4 Likes

Reply Retweet Like



Ready Los Angeles County

@ReadyLACounty

Official Account of the Los Angeles County Office of Emergency Management for disaster & preparedness information. Please note change @LACOEOM to @ReadyLACounty

Los Angeles County

LACOEOM

Joined January 2012



Ready Los Angeles County

@ReadyLACounty

Follow

Our updated All-Hazards Mitigation Plan will address climate change, dam failure, drought, flood, earthquake, landslide, tsunami, and wildfire. What natural hazard concerns you the most?



11:36 AM · 21 Aug 2019

2 Retweets

1 Like



2



1



Tweet



Ready Los Angeles County

@ReadyLACounty

A hazard mitigation plan is required to be eligible for certain types of disaster assistance. To learn more about hazard mitigation planning, please visit: fema.gov/hazard-mitigat...



Local Mitigation Planning Handbook

March 2013



FEMA



2019 AHMP - Annual Review Worksheet

HMP Section	Questions	Yes	No	Comments
PLANNING PROCESS	Has your County department/agency (or other type of organization) done any public outreach activities regarding the AHMP or a mitigation project? If yes, please describe.			
	Has your County department/agency (or other type of organization) integrated any of the AHMP's elements into other plans or policies? If yes, please describe.			
HAZARD IDENTIFICATION	Has a disaster occurred in this reporting period that affected your department/agency (or other type of organization)?			
	Do you know of new hazard studies, reports and/or mapping available for Los Angeles County? If so, what are they?			
RISK ASSESSMENT	Does your County department/agency have any new critical assets that should be included in the 2024 AHMP risk assessment?			
	Have there been changes in development trends that could create additional risks?			
MITIGATION STRATEGY	Are there different or additional resources (financial, technical, and human) that are now available for mitigation planning?			
	Should new mitigation actions be added?			

2019 AHMP - Annual Review Worksheet

HMP Section	Questions	Yes	No	Comments
PLANNING PROCESS	Has your County department/agency (or other type of organization) done any public outreach activities regarding the AHMP or a mitigation project? If yes, please describe.			
	Has your County department/agency (or other type of organization) integrated any of the AHMP's elements into other plans or policies? If yes, please describe.			
HAZARD IDENTIFICATION	Has a disaster occurred in this reporting period that affected your department/agency (or other type of organization)?			
	Do you know of new hazard studies, reports and/or mapping available for Los Angeles County? If so, what are they?			
RISK ASSESSMENT	Does your County department/agency have any new critical assets that should be included in the 2024 AHMP risk assessment?			
	Have there been changes in development trends that could create additional risks?			
MITIGATION STRATEGY	Are there different or additional resources (financial, technical, and human) that are now available for mitigation planning?			
	Should new mitigation actions be added?			

2019 AHMP - Mitigation Project Progress Report			
Progress Report Period From (date):		To (date):	
Project Title:			
Project ID:			
Description of Project:			
Implementing Department/Agency:			
Supporting Department/Agencies:			
Contact Name:			
Contact E-mail:			
Contact Number:			
Grant/Finance Administrator:			
Total Project Cost:			
Anticipated Cost Overrun/Underrun:			
Date of Project Approval:			
Project Start Date:			
Anticipated Completion Date:			
Summary of Progress of Project for this Reporting Period			
1. What was accomplished during this reporting period?			
2. What obstacles, problems, or delays did the project encounter, if any?			
3. How were the problems resolved?			

APPENDIX B – COMMUNITY PROFILE

Table B-1. County Critical Facilities

Department / Agency	Facility Name
Animal Care & Control	Agoura Animal Care Center
Animal Care & Control	Baldwin Park Animal Care Center
Animal Care & Control	Carson Animal Care Center
Animal Care & Control	Castaic Animal Care Center (Castaic)
Animal Care & Control	Downey Animal Care Center
Animal Care & Control	Lancaster County Animal Care Center
Animal Care & Control	Palmdale Animal Care Center
Fire Department	Bob Hope Airport Fire Department
Fire Department	City of Alhambra Fire Department - Training Facility
Fire Department	City of Alhambra Fire Department Station 71 - Headquarters
Fire Department	City of Alhambra Fire Department Station 72 - Southeast District
Fire Department	City of Alhambra Fire Department Station 73 - Northwest
Fire Department	City of Alhambra Fire Department Station 74 - Southwest
Fire Department	City of Arcadia Fire Department Station 105
Fire Department	City of Arcadia Fire Department Station 106 - Headquarters
Fire Department	City of Arcadia Fire Department Station 107
Fire Department	City of Avalon Fire Department
Fire Department	City of Beverly Hills Fire Department Station 1 - Headquarters
Fire Department	City of Beverly Hills Fire Department Station 2
Fire Department	City of Beverly Hills Fire Department Station 3
Fire Department	City of Burbank Fire Department Station 11 - Headquarters
Fire Department	City of Burbank Fire Department Station 12
Fire Department	City of Burbank Fire Department Station 13
Fire Department	City of Burbank Fire Department Station 14
Fire Department	City of Burbank Fire Department Station 15
Fire Department	City of Burbank Fire Department Station 16
Fire Department	City of Compton Fire Department Station 1 - Headquarters
Fire Department	City of Compton Fire Department Station 2
Fire Department	City of Compton Fire Department Station 3
Fire Department	City of Compton Fire Department Station 4
Fire Department	City of Downey Fire Department Station 1 - Headquarters
Fire Department	City of Downey Fire Department Station 2
Fire Department	City of Downey Fire Department Station 3
Fire Department	City of Downey Fire Department Station 4
Fire Department	City of Glendale Fire Department Station 21
Fire Department	City of Glendale Fire Department Station 22
Fire Department	City of Glendale Fire Department Station 23
Fire Department	City of Glendale Fire Department Station 24
Fire Department	City of Glendale Fire Department Station 25
Fire Department	City of Glendale Fire Department Station 26
Fire Department	City of Glendale Fire Department Station 27
Fire Department	City of Glendale Fire Department Station 28
Fire Department	City of Long Beach Fire Department - Beach Operations
Fire Department	City of Long Beach Fire Department - Headquarters
Fire Department	City of Long Beach Fire Department Station 1
Fire Department	City of Long Beach Fire Department Station 10
Fire Department	City of Long Beach Fire Department Station 11
Fire Department	City of Long Beach Fire Department Station 12
Fire Department	City of Long Beach Fire Department Station 13
Fire Department	City of Long Beach Fire Department Station 14
Fire Department	City of Long Beach Fire Department Station 15
Fire Department	City of Long Beach Fire Department Station 16
Fire Department	City of Long Beach Fire Department Station 17
Fire Department	City of Long Beach Fire Department Station 18
Fire Department	City of Long Beach Fire Department Station 19

Table B-1. County Critical Facilities

[illegible]

Table B-1. County Critical Facilities

Department / Agency	Facility Name
Fire Department	City of Los Angeles Fire Department Station 65
Fire Department	City of Los Angeles Fire Department Station 66
Fire Department	City of Los Angeles Fire Department Station 67
Fire Department	City of Los Angeles Fire Department Station 68
Fire Department	City of Los Angeles Fire Department Station 7
Fire Department	City of Los Angeles Fire Department Station 71
Fire Department	City of Los Angeles Fire Department Station 76
Fire Department	City of Los Angeles Fire Department Station 80
Fire Department	City of Los Angeles Fire Department Station 82
Fire Department	City of Los Angeles Fire Department Station 9
Fire Department	City of Los Angeles Fire Department Station 92
Fire Department	City of Los Angeles Fire Department Station 94
Fire Department	City of Los Angeles Fire Department Station 95
Fire Department	City of Los Angeles Fire Department Station 97
Fire Department	City of Los Angeles Fire Department Station 99
Fire Department	City of Monterey Park Fire Department Station 61 - Headquarters
Fire Department	City of Monterey Park Fire Department Station 62
Fire Department	City of Monterey Park Fire Department Station 63
Fire Department	City of Santa Fe Springs Fire Department Station 1 - Headquarters
Fire Department	City of Santa Fe Springs Fire Department Station 2
Fire Department	City of Santa Fe Springs Fire Department Station 3
Fire Department	City of Santa Fe Springs Fire Department Station 4
Fire Department	City of Santa Monica Fire Department - Training Facility
Fire Department	City of Santa Monica Fire Department Station 1 - Headquarters
Fire Department	City of Santa Monica Fire Department Station 2
Fire Department	City of Santa Monica Fire Department Station 3
Fire Department	City of Santa Monica Fire Department Station 5
Fire Department	City of Vernon Fire Department Station 2
Fire Department	City of Vernon Fire Department Station 3
Fire Department	City of Vernon Fire Department Station 4
Fire Department	City of West Covina Fire Department Station 1
Fire Department	City of West Covina Fire Department Station 2
Fire Department	City of West Covina Fire Department Station 3
Fire Department	City of West Covina Fire Department Station 4
Fire Department	City of West Covina Fire Department Station 5
Fire Department	Culver City Fire Department Station 1 - Headquarters
Fire Department	Culver City Fire Department Station 2
Fire Department	Culver City Fire Department Station 3
Fire Department	La Verne Fire Department Station 1 - Headquarters
Fire Department	La Verne Fire Department Station 2
Fire Department	Los Angeles County Fire Department - HQ/Heliport/Training Facility
Fire Department	Los Angeles County Fire Department Station 1
Fire Department	Los Angeles County Fire Department Station 10
Fire Department	Los Angeles County Fire Department Station 101
Fire Department	Los Angeles County Fire Department Station 102
Fire Department	Los Angeles County Fire Department Station 103
Fire Department	Los Angeles County Fire Department Station 104
Fire Department	Los Angeles County Fire Department Station 105
Fire Department	Los Angeles County Fire Department Station 106
Fire Department	Los Angeles County Fire Department Station 107
Fire Department	Los Angeles County Fire Department Station 11
Fire Department	Los Angeles County Fire Department Station 110
Fire Department	Los Angeles County Fire Department Station 111
Fire Department	Los Angeles County Fire Department Station 112
Fire Department	Los Angeles County Fire Department Station 114

Table B-1. County Critical Facilities

[illegible]

Table B-1. County Critical Facilities

[illegible]

Table B-1. County Critical Facilities

[illegible]

Table B-1. County Critical Facilities

Department / Agency	Facility Name
Fire Department	San Gabriel Fire Department Station 1 - Headquarters
Fire Department	San Gabriel Fire Department Station 2
Fire Department	San Marino Fire Department
Fire Department	Sierra Madre Volunteer Fire Department
Fire Department	South Pasadena Fire Department
Fire Department	The City of El Segundo Fire Department Station 1 - Headquarters
Fire Department	The City of El Segundo Fire Department Station 2
Fire Department	Torrance Fire Department Fire Station 1 - Headquarters
Fire Department	Torrance Fire Department Fire Station 2
Fire Department	Torrance Fire Department Fire Station 3
Fire Department	Torrance Fire Department Fire Station 4
Fire Department	Torrance Fire Department Fire Station 5
Fire Department	Torrance Fire Department Fire Station 6
Fire Department	Vernon Fire Department
Health Services	Antelope Valley Health Center
Health Services	Bellflower Health Center
Health Services	Central Public Health Center
Health Services	Curtis R. Tucker Health Center
Health Services	Dollarhide Health Center
Health Services	East Los Angeles Health Center
Health Services	East San Gabriel Valley Health Center
Health Services	Edward R. Roybal Comprehensive Health Center
Health Services	El Monte Comprehensive Health Center
Health Services	Glendale Health Center
Health Services	H. Claude Hudson Comprehensive Health Center
Health Services	Harbor-UCLA Medical Center
Health Services	High Desert Regional Health Center
Health Services	Hubert H. Humphrey Comprehensive Health Center
Health Services	La Puente Health Center
Health Services	LAC + USC Medical Center
Health Services	Lake Los Angeles Community Clinic
Health Services	Littlerock Community Clinic
Health Services	Long Beach Comprehensive Health Center
Health Services	Martin Luther King, Jr. Outpatient Center
Health Services	Mid Valley Comprehensive Health Center
Health Services	Olive View-UCLA Medical Center
Health Services	Rancho Los Amigos National Rehabilitation Center
Health Services	San Fernando Health Center
Health Services	South Valley Health Center
Health Services	Torrance Health Center
Health Services	Vaughn School Based Health Center
Health Services	West Valley Health Center
Health Services	Wilmington Health Center
Library	A C Bilbrew Library
Library	Acton Agua Dulce Library
Library	Agoura Hills Library
Library	Alondra Library
Library	Angelo M. Iacoboni Library
Library	Anthony Quinn Library
Library	Artesia Library
Library	Avalon Library
Library	Baldwin Park Library
Library	Bell Gardens Library
Library	Bell Library
Library	Carson Library

Table B-1. County Critical Facilities

Department / Agency	Facility Name
Library	Castaic Library
Library	Charter Oak Library
Library	Chet Holifield Library
Library	City Terrace Library
Library	Claremont Helen Renwick Library
Library	Clifton M. Brakensiek Library
Library	Compton Library
Library	Cudahy Library
Library	Culver City Julian Dixon Library
Library	Diamond Bar Library
Library	Dr. Martin Luther King, Jr. Library
Library	Duarte Library
Library	East Los Angeles Library
Library	East Rancho Dominguez Library
Library	El Camino Real Library
Library	El Monte Library
Library	Florence Express Library
Library	Gardena Mayme Dear Library
Library	George Nye Jr. Library
Library	Graham Library
Library	Hacienda Heights Library
Library	Hawaiian Gardens Library
Library	Hawthorne Library
Library	Hermosa Beach Library
Library	Hollydale Library
Library	Huntington Park Library
Library	La Canada Flintridge Library
Library	La Crescenta Library
Library	La Mirada Library
Library	La Puente Library
Library	La Verne Library
Library	Lake Los Angeles Library
Library	Lancaster Library
Library	Lawndale Library
Library	Leland R. Weaver Library
Library	Lennox Library
Library	Littlerock Library
Library	Live Oak Library
Library	Lloyd Taber-Marina del Rey Library
Library	Lomita Library
Library	Los Nietos Library
Library	Lynwood Library
Library	Malibu Library
Library	Manhattan Beach Library
Library	Masao W. Satow Library
Library	Maywood Cesar Chavez Library
Library	Montebello Library
Library	Norwalk Library
Library	Norwood Library
Library	Paramount Library
Library	Pico Rivera Library
Library	Quartz Hill Library
Library	Rivera Library
Library	Rosemead Library
Library	Rowland Heights Library

Table B-1. County Critical Facilities

Department / Agency	Facility Name
Library	San Dimas Library
Library	San Fernando Library
Library	San Gabriel Library
Library	Sorensen Library
Library	South El Monte Library
Library	South Whittier Library
Library	Stevenson Ranch Library
Library	Sunkist Library
Library	Temple City Library
Library	Topanga Library
Library	View Park Bebe Moore Campbell Library
Library	Walnut Library
Library	West Covina Library
Library	West Hollywood Library
Library	Westlake Village Library
Library	Willowbrook Library
Library	Wiseburn Library
Library	Woodcrest Library
Los Angeles County Museum of Arts & Museum of Natural History	La Brea Tarpits
Los Angeles County Museum of Arts & Museum of Natural History	Los Angeles County Museum of Art
Los Angeles County Museum of Arts & Museum of Natural History	Natural History Museum
Los Angeles County Museum of Arts & Museum of Natural History	William S. Hart Museum
Office of Education	Afflerbaugh-Paige Camp
Office of Education	Alma Fuerte Public
Office of Education	Animo City of Champions Charter High
Office of Education	Aspire Antonio Maria Lugo Academy
Office of Education	Aspire Ollin University Preparatory Academy
Office of Education	Central Juvenile Hall
Office of Education	Da Vinci RISE High
Office of Education	Environmental Charter Middle
Office of Education	Environmental Charter Middle - Inglewood
Office of Education	Intellectual Virtues Academy
Office of Education	International Polytechnic High
Office of Education	Jardin de la Infancia
Office of Education	Kirby, Dorothy Camp
Office of Education	L.A. County High School for the Arts
Office of Education	LA's Promise Charter High #1
Office of Education	LA's Promise Charter Middle #1
Office of Education	Lashon Academy
Office of Education	Los Angeles County Special Education
Office of Education	Los Angeles International Charter High
Office of Education	Los Padrinos Juvenile Hall
Office of Education	Magnolia Science Academy
Office of Education	Magnolia Science Academy 2
Office of Education	Magnolia Science Academy 3
Office of Education	Magnolia Science Academy 5
Office of Education	McNair Camp
Office of Education	Nidorf, Barry J.
Office of Education	North Valley Military Institute College Preparatory Academy
Office of Education	Odyssey Charter
Office of Education	Onizuka Camp

Table B-1. County Critical Facilities

Department / Agency	Facility Name
Office of Education	Optimist Charter
Office of Education	Phoenix Academy Residential Education Center
Office of Education	Renaissance County Community
Office of Education	Road to Success Academy at Campus Kilpatrick
Office of Education	Rockey, Glenn Camp
Office of Education	Scott, Joseph Camp
Office of Education	Soleil Academy Charter
Office of Education	Valiente College Preparatory Charter
Other (Office)	1000 S. Fremont Ave.
Other (Office)	1055 Wilshire Blvd.
Other (Office)	1100 North Eastern Ave.
Other (Office)	1104 N. Mission Rd.
Other (Office)	12300 Lower Azusa Rd.
Other (Office)	12400 Imperial Highway
Other (Office)	12860 Crossroads Parkway South
Other (Office)	1320 North Eastern Ave.
Other (Office)	13837 Fiji Way
Other (Office)	1816 S. Figueroa
Other (Office)	210 W. Temple St.
Other (Office)	211 W. Temple St.
Other (Office)	313 N Figueroa St.
Other (Office)	3175 West Sixth St.
Other (Office)	320 West Temple St.
Other (Office)	425 Shatto Place
Other (Office)	550 South Vermont Ave.
Other (Office)	5770 S. Eastern Ave.
Other (Office)	5898 Cherry Ave.
Other (Office)	5905 Wilshire Blvd.
Other (Office)	700 W. Main St.
Other (Office)	7400 East Imperial Highway
Other (Office)	900 South Fremont Ave.
Other (Office)	Kenneth Hahn Hall of Administration
Parks & Recreation	Acton Park
Parks & Recreation	Adventure Park
Parks & Recreation	Adventure Park
Parks & Recreation	Allen J. Martin Park
Parks & Recreation	Alondra Community Regional Park
Parks & Recreation	Alondra Community Regional Park
Parks & Recreation	Amelia Mayberry Park
Parks & Recreation	Amelia Mayberry Park
Parks & Recreation	Amigo Park
Parks & Recreation	Arcadia Community Regional Park
Parks & Recreation	Arcadia Community Regional Park
Parks & Recreation	Athens Park
Parks & Recreation	Athens Park
Parks & Recreation	Bassett Park
Parks & Recreation	Bassett Park
Parks & Recreation	Bassett Park
Parks & Recreation	Belvedere Community Regional Park
Parks & Recreation	Belvedere Community Regional Park
Parks & Recreation	Bodger Park
Parks & Recreation	Carolyn Rosas Park
Parks & Recreation	Castaic Regional Sports Complex
Parks & Recreation	Castaic Regional Sports Complex
Parks & Recreation	Charles S. Farnsworth Park

Table B-1. County Critical Facilities

Department / Agency	Facility Name
Parks & Recreation	Charles S. Farnsworth Park
Parks & Recreation	Charles S. Farnsworth Park
Parks & Recreation	Charles S. Farnsworth Park
Parks & Recreation	Charter Oak Park
Parks & Recreation	City Terrace Park
Parks & Recreation	City Terrace Park
Parks & Recreation	Col. Leon H. Washington Park
Parks & Recreation	Col. Leon H. Washington Park
Parks & Recreation	Crescenta Valley Community Regional Park
Parks & Recreation	Crescenta Valley Community Regional Park
Parks & Recreation	Dalton Park
Parks & Recreation	Del Aire Park
Parks & Recreation	Del Aire Park
Parks & Recreation	Devil's Punchbowl Natural Area and Nature Center
Parks & Recreation	Dexter Park
Parks & Recreation	Dexter Park
Parks & Recreation	Don Knabe Community Regional Park
Parks & Recreation	Don Knabe Community Regional Park
Parks & Recreation	Don Knabe Community Regional Park
Parks & Recreation	East Rancho Dominguez Park
Parks & Recreation	East Rancho Dominguez Park
Parks & Recreation	East Rancho Dominguez Park
Parks & Recreation	El Cariso Community Regional Park
Parks & Recreation	El Cariso Community Regional Park
Parks & Recreation	El Cariso Community Regional Park
Parks & Recreation	Enterprise Park
Parks & Recreation	Eugene A. Obregon Park
Parks & Recreation	Eugene A. Obregon Park
Parks & Recreation	Franklin D. Roosevelt Park
Parks & Recreation	Franklin D. Roosevelt Park
Parks & Recreation	George Lane Park
Parks & Recreation	George Lane Park
Parks & Recreation	George Washington Carver Park
Parks & Recreation	Hacienda Heights Community and Rec Center
Parks & Recreation	Hacienda Heights Community and Rec Center
Parks & Recreation	Hacienda Heights Community and Rec Center
Parks & Recreation	Helen Keller Park
Parks & Recreation	Hollywood Bowl
Parks & Recreation	Jackie Robinson Park
Parks & Recreation	Jackie Robinson Park
Parks & Recreation	Jesse Owens Community Regional Park
Parks & Recreation	Jesse Owens Community Regional Park
Parks & Recreation	John Anson Ford Amphitheatre
Parks & Recreation	John Anson Ford Amphitheatre
Parks & Recreation	Kenneth Hahn State Recreation Area
Parks & Recreation	Ladera Park
Parks & Recreation	Ladera Park
Parks & Recreation	Ladera Park
Parks & Recreation	Lennox Park
Parks & Recreation	Lennox Park
Parks & Recreation	Lennox Park
Parks & Recreation	Loma Alta Park
Parks & Recreation	Loma Alta Park
Parks & Recreation	Los Angeles County Arboretum and Botanic Garden
Parks & Recreation	Manzanita Park

Table B-1. County Critical Facilities

Department / Agency	Facility Name
Parks & Recreation	Mary M. Bethune Park
Parks & Recreation	Mary M. Bethune Park
Parks & Recreation	Mona Park
Parks & Recreation	Mona Park
Parks & Recreation	Pamela County Park
Parks & Recreation	Pamela County Park
Parks & Recreation	Pathfinder Community Regional Park
Parks & Recreation	Pearblossom County Park
Parks & Recreation	Peter F Schabarum Regional County Park
Parks & Recreation	Rimgrove Park
Parks & Recreation	Rowland Heights Park
Parks & Recreation	Roy Campanella Park
Parks & Recreation	Ruben F Salazar Park
Parks & Recreation	Ruben F Salazar Park
Parks & Recreation	Ruben F Salazar Park
Parks & Recreation	San Angelo Park
Parks & Recreation	San Fernando Recreation Park and Aquatic Center
Parks & Recreation	Saybrook Park
Parks & Recreation	Sorensen Park
Parks & Recreation	South Coast Botanic Garden
Parks & Recreation	Stephen Sorensen Park
Parks & Recreation	Sunshine Park
Parks & Recreation	Ted Watkins Memorial Park
Parks & Recreation	Ted Watkins Memorial Park
Parks & Recreation	Tesoro Adobe Historic Park
Parks & Recreation	Val Verde Community Regional Park
Parks & Recreation	Val Verde Community Regional Park
Parks & Recreation	Valleydale Park
Parks & Recreation	Valleydale Park
Parks & Recreation	Vasquez Rocks Natural Area and Nature Center
Parks & Recreation	Veterans Memorial Community Regional Park
Parks & Recreation	Victoria Community Regional Park
Parks & Recreation	Victoria Community Regional Park
Parks & Recreation	Walnut Nature Park
Parks & Recreation	Whittier Narrows Recreation Area
Parks & Recreation	William S. Hart Regional Park
Parks & Recreation	William Steinmetz Park
Parks & Recreation	William Steinmetz Park
Parks & Recreation	William Steinmetz Park
Public Health	Antelope Valley Health Center
Public Health	Central Public Health Center
Public Health	Curtis R. Tucker Health Center
Public Health	Glendale Health Center
Public Health	Hollywood/Wilshire Public Health Center
Public Health	Martin Luther King, Jr. Center for Public Health
Public Health	Monrovia Public Health Center
Public Health	North Hollywood Public Health Center
Public Health	Pacoima Public Health Center
Public Health	Pomona Public Health Center
Public Health	Ruth-Temple Public Health Center
Public Health	Simms/Mann Health and Wellness Center
Public Health	Torrance Public Health Center
Public Health	Whittier Public Health Center
Public Works	Big Dalton Dam
Public Works	Big Tujunga Dam

Table B-1. County Critical Facilities

Department / Agency	Facility Name
Public Works	Brackett Field Airport
Public Works	Cogswell Dam
Public Works	Compton/Woodley Airport
Public Works	Devil's Gate Dam
Public Works	Eaton Wash Dam
Public Works	General Wm. J. Fox Airfield
Public Works	Live Oak Dam
Public Works	Morris Dam
Public Works	Pacoima Dam
Public Works	Puddingstone Dam
Public Works	Puddingstone Diversion Dam
Public Works	PW Headquarters Building
Public Works	PW ITD – Mount Wilson Radio Antenna Tower
Public Works	PW ITD – Mount Wilson Radio Facility Bldg.
Public Works	PW OSD - Eaton Yard – Maintenance Office
Public Works	PW RMD – 518-B Maintenance Yard
Public Works	PW RMD – Baldwin Park Maintenance Yard
Public Works	PW RMD - Div 446 Maintenance Yard
Public Works	PW RMD – Div. #116 Maintenance Yard
Public Works	PW RMD – Div. #141/241 Maintenance Yard
Public Works	PW RMD – Div. #142 Maintenance Yard
Public Works	PW RMD – Div. #232 Maintenance Yard
Public Works	PW RMD – Div. #336 Maint. Yd.
Public Works	PW RMD – Div. #339/539 Agoura Maintenance Yard
Public Works	PW RMD – Div. #417 Maintenance Yard
Public Works	PW RMD – Div. #446 Sub Maintenance Yard
Public Works	PW RMD – Div. #518 Maintenance Yard
Public Works	PW RMD – Div. #519 Maintenance Yard
Public Works	PW RMD – Div. #523 Maintenance Yard
Public Works	PW RMD – Div. #524 Maintenance Yard
Public Works	PW RMD – Div. #526 Maint. Yd.
Public Works	PW RMD – Div. #551 Maintenance Yard
Public Works	PW RMD – Div. #555 Maintenance Yard
Public Works	PW RMD – Div. #558 Maint. Yard
Public Works	PW RMD – Div. #558a Jackson Lake Maintenance Yd.
Public Works	PW RMD – Div. #559b Maintenance Yard
Public Works	PW RMD - Lower Central Yard – Division Administration
Public Works	PW RMD – Maint. District 3 Yard
Public Works	PW RMD – Maintenance District No.4 Yard
Public Works	PW RMD – Palmdale Maintenance Dist. No. 5 Bldg. Yard
Public Works	PW RMD - Upper Central Yard
Public Works	PW RMD – Van Pelt Bridge Maintenance Yard
Public Works	PW SMD - 132ND Street
Public Works	PW SMD - 213TH Street
Public Works	PW SMD - AGAVE
Public Works	PW SMD - Balfour
Public Works	PW SMD - Bradhurst
Public Works	PW SMD - Broadway
Public Works	PW SMD - CAPALLERO
Public Works	PW SMD - Centinela
Public Works	PW SMD – Central Yard
Public Works	PW SMD - Commerce Center Drive
Public Works	PW SMD - Davids Road
Public Works	PW SMD – East Yard
Public Works	PW SMD - Heatherfield

Table B-1. County Critical Facilities

Department / Agency	Facility Name
Public Works	PW SMD – Lake Hughes
Public Works	PW SMD - Lake Hughes - Newvale
Public Works	PW SMD - Lake Hughes - Trail K
Public Works	PW SMD - Lawndale
Public Works	PW SMD - LOWRIDGE
Public Works	PW SMD – Malibu Mesa WWTP
Public Works	PW SMD – Malibu TP
Public Works	PW SMD - Marina Del Rey
Public Works	PW SMD - Maybrook
Public Works	PW SMD - Muscatel
Public Works	PW SMD – North Yard
Public Works	PW SMD - Painter
Public Works	PW SMD – South Yard
Public Works	PW SMD - Surrey Drive
Public Works	PW SMD - Trancas WWTP
Public Works	PW SMD - TYLER
Public Works	PW SMD - Ulmus
Public Works	PW SMD - Viewridge
Public Works	PW SWMD - 120th St. Pump Station
Public Works	PW SWMD - 17th St Pump Station
Public Works	PW SWMD – 83rd St. Maintenance Yard
Public Works	PW SWMD - Alameda Street 3B Pump Station
Public Works	PW SWMD - Alameda Street 3C Pump Station
Public Works	PW SWMD - Alamitos Bay Pump Station
Public Works	PW SWMD – Alamitos Maintenance Yard
Public Works	PW SWMD - Alondra Pump Station
Public Works	PW SWMD - Anaheim St. Pump Station
Public Works	PW SWMD - Appian Way Pump Station
Public Works	PW SWMD - Arena Pump Station
Public Works	PW SWMD - Avalon Pump Station
Public Works	PW SWMD - Belmont Pump Station
Public Works	PW SWMD - Boone Olive Pump Station
Public Works	PW SWMD - Century Frwy Pump Station
Public Works	PW SWMD - Cerritos Pump Station
Public Works	PW SWMD - Claretta Pump Station
Public Works	PW SWMD - Compton Creek Pump Station #1
Public Works	PW SWMD - Compton Creek Pump Station #2
Public Works	PW SWMD - Cordova Walk Pump Station
Public Works	PW SWMD - Dominger Pump Station
Public Works	PW SWMD - Dominguez Pump Station
Public Works	PW SWMD - Doris Pump Station
Public Works	PW SWMD - East Toledo Pump Station
Public Works	PW SWMD – Eaton Maintenance Yard
Public Works	PW SWMD - El Dorado Pump Station
Public Works	PW SWMD - El Segundo Pump Station
Public Works	PW SWMD – El Segundo Yard
Public Works	PW SWMD - Electric Ave Pump Station
Public Works	PW SWMD - Garnet Avenue Pump Station
Public Works	PW SWMD - Hamilton Bowl South Pump Station
Public Works	PW SWMD - Hamilton Bowl West Pump Station
Public Works	PW SWMD - Hill St. Pump Station
Public Works	PW SWMD – Imperial Yard
Public Works	PW SWMD - Johnson Pump Station
Public Works	PW SWMD - Lakewood Pump Station
Public Works	PW SWMD - Lennox Blvd Pump Station

Table B-1. County Critical Facilities

Department / Agency	Facility Name
Public Works	PW SWMD – Longden Yard
Public Works	PW SWMD - Los Altos Pump Station
Public Works	PW SWMD - Lynwood Pump Station
Public Works	PW SWMD - Manhattan Beach Pump Station
Public Works	PW SWMD - Market St. Pump Station
Public Works	PW SWMD - Naples Pump Station
Public Works	PW SWMD - Oxford Pump Station
Public Works	PW SWMD - Paramount Pump Station
Public Works	PW SWMD – Pickens Yard
Public Works	PW SWMD - Redondo Beach Blvd Pump Station
Public Works	PW SWMD – Redondo Yard Office
Public Works	PW SWMD – Rio Hondo Yard
Public Works	PW SWMD – Riverview Maintenance Yard
Public Works	PW SWMD – Rubio Yard
Public Works	PW SWMD – San Dimas Maintenance Yard
Public Works	PW SWMD – Santa Clara Flood Maintenance Yard
Public Works	PW SWMD – Saticoy Yard
Public Works	PW SWMD - Seaside Pump Station
Public Works	PW SWMD - Walteria Lake Pump Station
Public Works	PW SWMD - West Long Beach Pump Station
Public Works	PW SWMD - West Neapolitan Pump Station
Public Works	PW SWMD - West Toledo Pump Station
Public Works	PW SWMD - Wilmington Unit 2 Pump Station
Public Works	PW WWD - 116th street pump station
Public Works	PW WWD - 116th street Tank
Public Works	PW WWD - 168th and G Pump station
Public Works	PW WWD - 27 Tank
Public Works	PW WWD - 37-1 Well
Public Works	PW WWD - 37-3 Well
Public Works	PW WWD - 37-4 Well
Public Works	PW WWD - 39 Tank
Public Works	PW WWD - Adobe Tank
Public Works	PW WWD - Anaverde Tanks and pump station
Public Works	PW WWD - Bev martin tank and Pump Station
Public Works	PW WWD - Blue Rock Tank
Public Works	PW WWD - Butte's Tank
Public Works	PW WWD - City Ranch Tanks
Public Works	PW WWD - Crown Valley Pump station
Public Works	PW WWD - Cuyama Tank
Public Works	PW WWD - Ft. Tejon Tank
Public Works	PW WWD - Hasley Pump Station
Public Works	PW WWD - Hasley Tank
Public Works	PW WWD - Joshua Ranch Tank
Public Works	PW WWD - Kohl's tank
Public Works	PW WWD - Los Valles Pump station and Well
Public Works	PW WWD - M & 7th west Tank site
Public Works	PW WWD - McCennery Tank
Public Works	PW WWD - North Tank
Public Works	PW WWD - Old timers tank and pump station
Public Works	PW WWD - P-10 Pump station
Public Works	PW WWD - Q-9 Tanks
Public Works	PW WWD - Rancho Vista tanks
Public Works	PW WWD - South Tank
Public Works	PW WWD - Tierra Subida Pump Station
Public Works	PW WWD - Tierra Subida Tanks

Table B-1. County Critical Facilities

Department / Agency	Facility Name
Public Works	PW WWD - Vincent Pump station
Public Works	PW WWD #04 – M/5e Water Tank
Public Works	PW WWD #04 – North Administration Building
Public Works	PW WWD #04-M8/75w Water Tank
Public Works	PW WWD #29 - 20858 Regulating Station
Public Works	PW WWD #29 - Big Rock 1010 Tank
Public Works	PW WWD #29 - Big Rock 1200 Tank
Public Works	PW WWD #29 - Big Rock 900 Pump Station
Public Works	PW WWD #29 - Broad Beach Regulating Station
Public Works	PW WWD #29 - Carbon Mesa Tank
Public Works	PW WWD #29 - Entrada Pump Station
Public Works	PW WWD #29 - Entrada Tank
Public Works	PW WWD #29 - Fernwood Tank
Public Works	PW WWD #29 - Guernsey Regulating Station
Public Works	PW WWD #29 - Heather Cliff Regulating Station
Public Works	PW WWD #29 - Horizon Tank
Public Works	PW WWD #29 - Hume Tank
Public Works	PW WWD #29 - La Chusa Feeder Regulating Station
Public Works	PW WWD #29 - La Costa
Public Works	PW WWD #29 - La Costa Regulating Station
Public Works	PW WWD #29 – LADWP Emergency Mindanao Connection
Public Works	PW WWD #29 - Las Flores Pump Station
Public Works	PW WWD #29 - Las Flores Tank
Public Works	PW WWD #29 - Latigo Tank
Public Works	PW WWD #29 - Lower Big Rock 195 Pump Station
Public Works	PW WWD #29 - Lower Busch Pump Station
Public Works	PW WWD #29 - LVMWD , Saddle Peak Interconnection
Public Works	PW WWD #29 - LVMWD, Hume Connection
Public Works	PW WWD #29 - LVMWD, Latigo Connection
Public Works	PW WWD #29 - Malibu Beach Pump Station
Public Works	PW WWD #29 - Malibu Knolls Tank
Public Works	PW WWD #29 - New Summit Tank
Public Works	PW WWD #29 - Nicholas Beach Tank
Public Works	PW WWD #29 - Old Summit Tank
Public Works	PW WWD #29 - Owen Pump Station
Public Works	PW WWD #29 - Pepperdine 545 Pump Station
Public Works	PW WWD #29 - Pepperdine 812 Tank
Public Works	PW WWD #29 - Pepperdine 907 Tank
Public Works	PW WWD #29 - Philip Tank
Public Works	PW WWD #29 - Point Dume Pump Station and Tank
Public Works	PW WWD #29 - Portshead Tank
Public Works	PW WWD #29 - Saddle Peak Tank
Public Works	PW WWD #29 - Santa Maria Tank
Public Works	PW WWD #29 - Serra Pump Station
Public Works	PW WWD #29 - Sumac Ridge Tank
Public Works	PW WWD #29 - Sweetwater Hydro Pump Station
Public Works	PW WWD #29 - Sweetwater Mesa Tank
Public Works	PW WWD #29 - Topanga Beach Pump Station
Public Works	PW WWD #29 - Topanga Beach Tank
Public Works	PW WWD #29 - Topanga Forks Tank
Public Works	PW WWD #29 - Topanga Oaks Tank
Public Works	PW WWD #29 - Topanga Park Pump Station
Public Works	PW WWD #29 - Trancas Tank
Public Works	PW WWD #29 - Upper Big Rock 730 Pump Station
Public Works	PW WWD #29 - Upper Encinal Tank

Table B-1. County Critical Facilities

Department / Agency	Facility Name
Public Works	PW WWD #29 - Winding Wy Tank
Public Works	PW WWD #29 LADWP Emergency Via Dolce Connection
Public Works	San Dimas Dam
Public Works	San Gabriel Dam
Public Works	San Gabriel Valley Airport
Public Works	Santa Anita Dam
Public Works	Thompson Creek Dam
Public Works	Whiteman Airport
Sheriff's Department	Altadena Sheriff's Station
Sheriff's Department	Avalon Sheriff's Station
Sheriff's Department	Carson Sheriff's Station
Sheriff's Department	Century Regional Detention Facility
Sheriff's Department	Century Sheriff's Station
Sheriff's Department	Cerritos Sheriff's Station
Sheriff's Department	Compton Sheriff's Station
Sheriff's Department	Crescenta Valley Sheriff's Station
Sheriff's Department	East Los Angeles Sheriff's Station
Sheriff's Department	Industry Sheriff's Station
Sheriff's Department	Inmate Reception Center
Sheriff's Department	Lakewood Sheriff's Station
Sheriff's Department	Lancaster Sheriff's Station
Sheriff's Department	Lomita Sheriff's Station
Sheriff's Department	Malibu/Lost Hills Sheriff's Station
Sheriff's Department	Marina Del Rey Sheriff's Station
Sheriff's Department	Men's Central Jail
Sheriff's Department	North County Correctional Facility
Sheriff's Department	Norwalk Sheriff's Station
Sheriff's Department	Palmdale Sheriff's Station
Sheriff's Department	Pico Rivera Sheriff's Station
Sheriff's Department	Pitchess Detention Center East Facility
Sheriff's Department	Pitchess Detention Center North Facility
Sheriff's Department	Pitchess Detention Center South Facility
Sheriff's Department	San Dimas Sheriff's Station
Sheriff's Department	Santa Clarita Valley Sheriff's Station
Sheriff's Department	South Los Angeles Sheriff's Station
Sheriff's Department	Temple Sheriff's Station
Sheriff's Department	Twin Towers Correctional Facility
Sheriff's Department	Walnut/Diamond Bar Sheriff's Station
Sheriff's Department	West Hollywood Sheriff's Station

APPENDIX C – RISK ASSESSMENT

Table C-1: County-wide Statistical Area Hazard Impacts

CSA	S.D.	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flood	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Avocado Heights	1				1				1				
Bandini Islands	1				1				1				
Bassett	1				1		1		1				
Charter Oak	1				1		1		1		1		
East Los Angeles	1				1				1				
El Monte	1				1								
North Whittier	1				1				1				
Padua Hills	1				1				1		1		
Pellissier Village	1				1				1				
San Jose Hills	1				1		1		1				
South El Monte	1				1								
South San Gabriel	1				1				1				
Valinda	1				1		1		1				
Walnut	1				1				1				
West Puente Valley	1				1		1						
Whittier Narrows	1				1		1		1				
Athens Village	2				1				1				
Athens-Westmont	2				1				1				
Del Rey	2	1	1		1			1	1				
Hawthorne	2				1								
Ladera Heights	2				1		1		1		1		
Rosewood	2				1								
Rosewood/East Gardena	2				1								
Rosewood/West Rancho Dominguez	2				1								

Table C-1: County-wide Statistical Area Hazard Impacts

CSA	S.D.	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flood	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
View Park/Windsor Hills	2				1				1		1		
West Rancho Dominguez	2				1								
Willowbrook	2				1		1		1				
Wiseburn	2				1								
Franklin Canyon	3				1		1		1		1		
Miracle Mile	3				1		1						
Santa Monica Mountains	3	1	1	1	1		1	1	1	1	1	1	1
Universal City	3				1				1		1		
West LA	3				1				1				
Westhills	3				1				1		1		1
Cerritos	4				1		1						
East La Mirada	4				1		1		1				
East Whittier	4				1								
Harbor Gateway	4				1								
La Habra Heights	4				1				1				
La Rambla	4				1				1				
Lakewood	4				1		1		1				
Long Beach	4				1		1						
Palos Verdes Peninsula	4				1				1		1		
San Clemente Island	4								1				
Santa Catalina Island	4								1	1	1	1	1
South Whittier	4				1		1		1				
Westfield/Academy Hills	4				1				1		1		
Acton	5				1	1			1		1		1

Table C-1: County-wide Statistical Area Hazard Impacts

CSA	S.D.	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flood	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Agua Dulce	5				1	1			1		1	1	1
Altadena	5				1		1		1		1	1	1
Anaverde	5			1	1	1			1			1	1
Bouquet Canyon	5				1	1	1		1		1		1
Bradbury	5				1				1		1		
Canyon Country	5				1				1		1	1	1
Castaic	5			1	1	1	1	1	1		1	1	1
Del Sur	5				1	1	1		1				
Desert View Highlands	5					1							
East Covina	5				1				1				
East Lancaster	5			1	1		1						
East Pasadena	5				1				1		1		1
Elizabeth Lake	5				1	1			1			1	1
Hi Vista	5				1				1				
La Crescenta-Montrose	5				1				1		1		1
Lake Hughes	5				1	1			1				1
Lake Los Angeles	5				1	1			1				
Lake Manor	5				1				1		1		1
Leona Valley	5				1	1	1		1		1	1	1
Littlerock	5			1		1	1		1			1	
Littlerock/Juniper Hills	5			1	1	1	1		1			1	1
Littlerock/Pearblossom	5			1	1	1	1		1			1	
Llano	5				1	1			1			1	1
Monrovia	5				1								
Newhall	5					1			1		1		1
North Lancaster	5				1		1		1				
Northeast San Gabriel	5				1				1				

Table C-1: County-wide Statistical Area Hazard Impacts

CSA	S.D.	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flood	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Palmdale	5			1	1	1	1						
Pearblossom/Llano	5				1	1	1		1			1	
Placerita Canyon	5				1	1			1		1		1
Quartz Hill	5				1	1	1		1				
Roosevelt	5				1		1						
San Francisquito Canyon/Bouquet Canyon	5				1	1			1		1		1
San Pasqual	5				1								
Sand Canyon	5				1	1			1		1		1
Saugus	5				1				1		1		1
Saugus/Canyon Country	5				1				1				1
South Antelope Valley	5			1	1	1			1			1	1
South Edwards	5				1		1	1	1				
Southeast Antelope Valley	5			1	1	1			1			1	1
Stevenson Ranch	5			1	1	1			1		1	1	1
Sun Village	5			1	1	1	1		1				
Twin Lakes/Oat Mountain	5				1	1			1		1		1
Val Verde	5			1	1	1			1		1	1	1
Valencia	5				1				1		1	1	1
West Antelope Valley	5				1	1	1	1	1		1	1	1
West Chatsworth	5				1				1		1		1
White Fence Farms	5					1	1						
Florence-Firestone	1 and 2				1								
Walnut Park	1 and 2				1								
Hacienda Heights	1 and 4				1		1		1		1	1	1

Table C-1: County-wide Statistical Area Hazard Impacts

CSA	S.D.	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flood	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Rowland Heights	1 and 4				1				1		1	1	1
Sunrise Village	1 and 4				1		1		1				
West Whittier/Los Nietos	1 and 4				1		1		1				
Whittier	1 and 4				1		1		1		1	1	1
Arcadia	1 and 5				1				1				
Azusa	1 and 5				1				1		1		1
Claremont	1 and 5				1				1		1		1
Covina	1 and 5				1		1		1		1	1	1
Covina (Charter Oak)	1 and 5				1				1				
Duarte	1 and 5				1				1				
Glendora	1 and 5				1		1		1		1		1
La Verne	1 and 5				1				1		1		1
Pomona	1 and 5				1				1		1	1	1
Lynwood	1, 2, and 4				1		1		1				
Angeles National Forest	1, 3, and 5			1	1	1	1	1	1		1	1	1
Del Aire	2 and 4				1				1				
East Rancho Dominguez	2 and 4				1		1		1				
El Camino Village	2 and 4				1				1				
Lennox	2 and 4				1				1				
Rancho Dominguez	2 and 4				1		1		1				
West Carson	2 and 4				1		1		1				
Marina del Rey	2, 3, and 4	1	1		1		1	1	1	1			
Kagel/Lopez Canyons	3 and 5				1	1	1		1		1		1

Table C-2: Animal Care & Control Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Agoura Animal Care Center				1						1		
Baldwin Park Animal Care Center				1								
Carson Animal Care Center				1								
Castaic Animal Care Center (Castaic)			1	1								1
Downey Animal Care Center				1		1						
Lancaster County Animal Care Center				1								
Palmdale Animal Care Center					1	1						

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Bob Hope Airport Fire Department				1								
City of Alhambra Fire Department - Training Facility				1								
City of Alhambra Fire Department Station 71 - Headquarters				1								
City of Alhambra Fire Department Station 72 - Southeast District				1								
City of Alhambra Fire Department Station 73 - Northwest				1								
City of Alhambra Fire Department Station 74 - Southwest				1								
City of Arcadia Fire Department Station 105				1								
City of Arcadia Fire Department Station 106 - Headquarters				1								
City of Arcadia Fire Department Station 107				1								
City of Avalon Fire Department										1		
City of Beverly Hills Fire Department Station 1 - Headquarters				1								
City of Beverly Hills Fire Department Station 2				1						1		
City of Beverly Hills Fire Department Station 3				1								

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
City of Burbank Fire Department Station 11 - Headquarters				1								
City of Burbank Fire Department Station 12				1								
City of Burbank Fire Department Station 13				1								
City of Burbank Fire Department Station 14				1								
City of Burbank Fire Department Station 15				1								
City of Burbank Fire Department Station 16				1						1		
City of Compton Fire Department Station 1 - Headquarters				1		1						
City of Compton Fire Department Station 2				1		1						
City of Compton Fire Department Station 3				1								
City of Compton Fire Department Station 4				1								
City of Downey Fire Department Station 1 - Headquarters				1		1						
City of Downey Fire Department Station 2				1		1						
City of Downey Fire Department Station 3				1		1						
City of Downey Fire Department Station 4				1		1						

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
City of Glendale Fire Department Station 21				1								
City of Glendale Fire Department Station 22				1								
City of Glendale Fire Department Station 23				1						1		
City of Glendale Fire Department Station 24				1						1		
City of Glendale Fire Department Station 25				1								
City of Glendale Fire Department Station 26				1								
City of Glendale Fire Department Station 27				1								
City of Glendale Fire Department Station 28				1								
City of Long Beach Fire Department - Beach Operations				1					1			
City of Long Beach Fire Department - Headquarters				1								
City of Long Beach Fire Department Station 1				1								
City of Long Beach Fire Department Station 10				1								
City of Long Beach Fire Department Station 11				1		1						
City of Long Beach Fire Department Station 12				1		1						

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
City of Long Beach Fire Department Station 13				1		1						
City of Long Beach Fire Department Station 14		1		1					1			
City of Long Beach Fire Department Station 15				1					1			
City of Long Beach Fire Department Station 16				1								
City of Long Beach Fire Department Station 17				1								
City of Long Beach Fire Department Station 18				1		1						
City of Long Beach Fire Department Station 19				1		1						
City of Long Beach Fire Department Station 2				1								
City of Long Beach Fire Department Station 20		1		1					1			
City of Long Beach Fire Department Station 21		1		1		1			1			
City of Long Beach Fire Department Station 22				1		1						
City of Long Beach Fire Department Station 24				1					1			
City of Long Beach Fire Department Station 3				1								
City of Long Beach Fire Department Station 4				1								
City of Long Beach Fire Department Station 5				1		1						

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
City of Long Beach Fire Department Station 6				1					1			
City of Long Beach Fire Department Station 7				1		1						
City of Long Beach Fire Department Station 8	1	1		1					1			
City of Long Beach Fire Department Station 9				1								
City of Los Angeles Fire Department Station 1				1								
City of Los Angeles Fire Department Station 10				1								
City of Los Angeles Fire Department Station 108				1						1		
City of Los Angeles Fire Department Station 109				1						1		
City of Los Angeles Fire Department Station 11				1								
City of Los Angeles Fire Department Station 12				1								
City of Los Angeles Fire Department Station 13				1								
City of Los Angeles Fire Department Station 14				1								
City of Los Angeles Fire Department Station 15				1								
City of Los Angeles Fire Department Station 16				1								
City of Los Angeles Fire Department Station 17				1								

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
City of Los Angeles Fire Department Station 19				1						1		
City of Los Angeles Fire Department Station 2				1								
City of Los Angeles Fire Department Station 20				1								
City of Los Angeles Fire Department Station 21				1								
City of Los Angeles Fire Department Station 25				1								
City of Los Angeles Fire Department Station 26				1								
City of Los Angeles Fire Department Station 27				1								
City of Los Angeles Fire Department Station 29				1		1						
City of Los Angeles Fire Department Station 3				1								
City of Los Angeles Fire Department Station 33				1								
City of Los Angeles Fire Department Station 34				1								
City of Los Angeles Fire Department Station 35				1								
City of Los Angeles Fire Department Station 37				1								
City of Los Angeles Fire Department Station 4				1								
City of Los Angeles Fire Department Station 41				1								

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
City of Los Angeles Fire Department Station 42				1								
City of Los Angeles Fire Department Station 43				1								
City of Los Angeles Fire Department Station 44				1								
City of Los Angeles Fire Department Station 46				1								
City of Los Angeles Fire Department Station 47				1						1		
City of Los Angeles Fire Department Station 5				1								
City of Los Angeles Fire Department Station 50				1								
City of Los Angeles Fire Department Station 51				1								
City of Los Angeles Fire Department Station 52				1								
City of Los Angeles Fire Department Station 56				1						1		
City of Los Angeles Fire Department Station 57				1								
City of Los Angeles Fire Department Station 58				1								
City of Los Angeles Fire Department Station 59				1								
City of Los Angeles Fire Department Station 6				1								
City of Los Angeles Fire Department Station 61				1								

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
City of Los Angeles Fire Department Station 62				1								
City of Los Angeles Fire Department Station 64				1								
City of Los Angeles Fire Department Station 65				1								
City of Los Angeles Fire Department Station 66				1								
City of Los Angeles Fire Department Station 67				1								
City of Los Angeles Fire Department Station 68				1								
City of Los Angeles Fire Department Station 7					1							
City of Los Angeles Fire Department Station 71				1								
City of Los Angeles Fire Department Station 76				1						1		
City of Los Angeles Fire Department Station 80				1								
City of Los Angeles Fire Department Station 82				1								
City of Los Angeles Fire Department Station 9				1								
City of Los Angeles Fire Department Station 92				1								
City of Los Angeles Fire Department Station 94				1								
City of Los Angeles Fire Department Station 95				1								

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
City of Los Angeles Fire Department Station 97				1						1		
City of Los Angeles Fire Department Station 99				1						1		
City of Monterey Park Fire Department Station 61 - Headquarters				1								
City of Monterey Park Fire Department Station 62				1								
City of Monterey Park Fire Department Station 63				1								
City of Santa Fe Springs Fire Department Station 1 - Headquarters				1								
City of Santa Fe Springs Fire Department Station 2				1								
City of Santa Fe Springs Fire Department Station 3				1								
City of Santa Fe Springs Fire Department Station 4				1		1						
City of Santa Monica Fire Department - Training Facility				1								
City of Santa Monica Fire Department Station 1 - Headquarters				1								
City of Santa Monica Fire Department Station 2				1								

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
City of Santa Monica Fire Department Station 3				1								
City of Santa Monica Fire Department Station 5				1								
City of Vernon Fire Department Station 2				1								
City of Vernon Fire Department Station 3				1								
City of Vernon Fire Department Station 4				1								
City of West Covina Fire Department Station 1				1		1						
City of West Covina Fire Department Station 2				1		1						
City of West Covina Fire Department Station 3				1		1						
City of West Covina Fire Department Station 4				1		1				1		
City of West Covina Fire Department Station 5				1								
Culver City Fire Department Station 1 - Headquarters				1								
Culver City Fire Department Station 2				1								
Culver City Fire Department Station 3				1								
La Verne Fire Department Station 1 - Headquarters				1								

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
La Verne Fire Department Station 2				1								
Los Angeles County Fire Department - Hq/Heliport/Training Facility				1								
Los Angeles County Fire Department Station 1				1								
Los Angeles County Fire Department Station 10				1		1						
Los Angeles County Fire Department Station 101				1								
Los Angeles County Fire Department Station 102				1								
Los Angeles County Fire Department Station 103				1		1						
Los Angeles County Fire Department Station 104				1						1		
Los Angeles County Fire Department Station 105				1		1						
Los Angeles County Fire Department Station 106				1				1		1		
Los Angeles County Fire Department Station 107					1							
Los Angeles County Fire Department Station 11				1								
Los Angeles County Fire Department Station 110				1					1			
Los Angeles County Fire Department Station 111				1								

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Los Angeles County Fire Department Station 112				1		1						
Los Angeles County Fire Department Station 114												
Los Angeles County Fire Department Station 115				1		1						
Los Angeles County Fire Department Station 116				1								
Los Angeles County Fire Department Station 117				1		1						
Los Angeles County Fire Department Station 118				1								
Los Angeles County Fire Department Station 119				1				1				
Los Angeles County Fire Department Station 12				1								
Los Angeles County Fire Department Station 120				1								
Los Angeles County Fire Department Station 121				1				1				
Los Angeles County Fire Department Station 122				1								
Los Angeles County Fire Department Station 123					1					1		
Los Angeles County Fire Department Station 124				1				1				
Los Angeles County Fire Department Station 125				1						1		
Los Angeles County Fire Department Station 126					1							

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Los Angeles County Fire Department Station 127				1		1						
Los Angeles County Fire Department Station 129					1							
Los Angeles County Fire Department Station 130				1		1						
Los Angeles County Fire Department Station 131					1							
Los Angeles County Fire Department Station 132				1				1		1		
Los Angeles County Fire Department Station 134					1							
Los Angeles County Fire Department Station 135				1		1						
Los Angeles County Fire Department Station 14				1								
Los Angeles County Fire Department Station 140					1							1
Los Angeles County Fire Department Station 141				1				1				
Los Angeles County Fire Department Station 144			1	1						1		
Los Angeles County Fire Department Station 145				1								
Los Angeles County Fire Department Station 146				1								
Los Angeles County Fire Department Station 147				1								
Los Angeles County Fire Department Station 148				1		1						

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Los Angeles County Fire Department Station 149			1	1						1		
Los Angeles County Fire Department Station 15				1								
Los Angeles County Fire Department Station 151				1								
Los Angeles County Fire Department Station 152				1								
Los Angeles County Fire Department Station 153				1								
Los Angeles County Fire Department Station 154				1								
Los Angeles County Fire Department Station 155												1
Los Angeles County Fire Department Station 156				1				1				1
Los Angeles County Fire Department Station 157					1	1						1
Los Angeles County Fire Department Station 158				1								
Los Angeles County Fire Department Station 159				1								
Los Angeles County Fire Department Station 16				1								
Los Angeles County Fire Department Station 160				1								
Los Angeles County Fire Department Station 161				1								
Los Angeles County Fire Department Station 162				1								

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Los Angeles County Fire Department Station 163				1								
Los Angeles County Fire Department Station 164				1								
Los Angeles County Fire Department Station 165				1								
Los Angeles County Fire Department Station 166				1								
Los Angeles County Fire Department Station 167				1								
Los Angeles County Fire Department Station 168				1								
Los Angeles County Fire Department Station 169				1								
Los Angeles County Fire Department Station 17				1								
Los Angeles County Fire Department Station 170				1								
Los Angeles County Fire Department Station 171				1								
Los Angeles County Fire Department Station 172				1								
Los Angeles County Fire Department Station 173				1								
Los Angeles County Fire Department Station 18				1								
Los Angeles County Fire Department Station 181				1								
Los Angeles County Fire Department Station 182				1								

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Los Angeles County Fire Department Station 183				1								
Los Angeles County Fire Department Station 184				1								
Los Angeles County Fire Department Station 185				1								
Los Angeles County Fire Department Station 186				1								
Los Angeles County Fire Department Station 187				1								
Los Angeles County Fire Department Station 188				1								
Los Angeles County Fire Department Station 19				1						1		
Los Angeles County Fire Department Station 2				1						1		
Los Angeles County Fire Department Station 20				1								
Los Angeles County Fire Department Station 21				1								
Los Angeles County Fire Department Station 22				1								
Los Angeles County Fire Department Station 23				1		1						
Los Angeles County Fire Department Station 24					1							
Los Angeles County Fire Department Station 25				1		1						
Los Angeles County Fire Department Station 26				1								

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Los Angeles County Fire Department Station 27				1								
Los Angeles County Fire Department Station 28				1								
Los Angeles County Fire Department Station 29				1								
Los Angeles County Fire Department Station 3				1								
Los Angeles County Fire Department Station 30				1		1						
Los Angeles County Fire Department Station 31				1		1						
Los Angeles County Fire Department Station 32				1								
Los Angeles County Fire Department Station 33				1		1						
Los Angeles County Fire Department Station 34				1		1						
Los Angeles County Fire Department Station 35				1								
Los Angeles County Fire Department Station 36				1								
Los Angeles County Fire Department Station 37					1	1						
Los Angeles County Fire Department Station 38				1								
Los Angeles County Fire Department Station 39				1								
Los Angeles County Fire Department Station 4				1								

Table C-3: Fire Department Facility Hazard Impacts

[illegible]

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Los Angeles County Fire Department Station 56				1						1		
Los Angeles County Fire Department Station 57				1		1						
Los Angeles County Fire Department Station 58				1								
Los Angeles County Fire Department Station 59				1								
Los Angeles County Fire Department Station 6				1								
Los Angeles County Fire Department Station 60				1								
Los Angeles County Fire Department Station 61				1								
Los Angeles County Fire Department Station 62				1						1		
Los Angeles County Fire Department Station 63				1								
Los Angeles County Fire Department Station 64				1								
Los Angeles County Fire Department Station 65				1								1
Los Angeles County Fire Department Station 66				1								
Los Angeles County Fire Department Station 67				1								1
Los Angeles County Fire Department Station 68				1						1		
Los Angeles County Fire Department Station 69				1								1

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Los Angeles County Fire Department Station 7				1								
Los Angeles County Fire Department Station 70				1						1		
Los Angeles County Fire Department Station 71				1						1		
Los Angeles County Fire Department Station 72				1								1
Los Angeles County Fire Department Station 73					1							
Los Angeles County Fire Department Station 74					1							1
Los Angeles County Fire Department Station 75				1						1		
Los Angeles County Fire Department Station 76			1	1							1	
Los Angeles County Fire Department Station 77					1							1
Los Angeles County Fire Department Station 78					1							1
Los Angeles County Fire Department Station 79					1							
Los Angeles County Fire Department Station 8				1								
Los Angeles County Fire Department Station 80					1							1
Los Angeles County Fire Department Station 81				1								1
Los Angeles County Fire Department Station 82				1						1		

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Los Angeles County Fire Department Station 83				1						1		
Los Angeles County Fire Department Station 84					1	1						
Los Angeles County Fire Department Station 85				1								
Los Angeles County Fire Department Station 86				1								
Los Angeles County Fire Department Station 87				1								
Los Angeles County Fire Department Station 88				1					1	1		
Los Angeles County Fire Department Station 89				1								
Los Angeles County Fire Department Station 90				1								
Los Angeles County Fire Department Station 91				1								1
Los Angeles County Fire Department Station 92					1							
Los Angeles County Fire Department Station 94				1		1						
Los Angeles County Fire Department Station 95				1								
Los Angeles County Fire Department Station 96				1								
Los Angeles County Fire Department Station 97				1						1		
Los Angeles County Fire Department Station 98				1		1						

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Los Angeles County Fire Department Station 99				1						1		
Manhattan Beach Fire Department Station 1 - Headquarters				1								
Manhattan Beach Fire Department Station 2				1								
Montebello Fire Department Station 1 - Headquarters				1								
Montebello Fire Department Station 2				1								
Montebello Fire Department Station 3				1								
Pasadena Fire Department Station 31				1								
Pasadena Fire Department Station 32				1								
Pasadena Fire Department Station 33				1								
Pasadena Fire Department Station 34				1								
Pasadena Fire Department Station 36				1								
Pasadena Fire Department Station 37				1								
Pasadena Fire Department Station 38				1						1		
Pasadena Fire Department Station 39				1						1		

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Redondo Beach Fire Department Station 1 - Headquarters				1								
Redondo Beach Fire Department Station 2				1								
Redondo Beach Fire Department Station 3		1		1					1			
San Gabriel Fire Department Station 1 - Headquarters				1								
San Gabriel Fire Department Station 2				1								
San Marino Fire Department				1								
Sierra Madre Volunteer Fire Department				1								
South Pasadena Fire Department				1								
The City of El Segundo Fire Department Station 1 - Headquarters				1								
The City of El Segundo Fire Department Station 2				1								
Torrance Fire Department Fire Station 1 - Headquarters				1								
Torrance Fire Department Fire Station 2				1								
Torrance Fire Department Fire Station 3				1								

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Torrance Fire Department Fire Station 4				1								
Torrance Fire Department Fire Station 5				1								
Torrance Fire Department Fire Station 6				1								
Vernon Fire Department				1								

Table C-4: Health Services Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Antelope Valley Health Center				1								
Bellflower Health Center				1		1						
Central Public Health Center				1								
Curtis R. Tucker Health Center				1								
Dollarhide Health Center				1		1						
East Los Angeles Health Center				1								
East San Gabriel Valley Health Center				1								
Edward R. Roybal Comprehensive Health Center				1								
El Monte Comprehensive Health Center				1								
Glendale Health Center				1								
H. Claude Hudson Comprehensive Health Center				1								
Harbor-UCLA Medical Center				1								
High Desert Regional Health Center				1								
Hubert H. Humphrey Comprehensive Health Center				1								
La Puente Health Center				1								
LAC + USC Medical Center				1								

Table C-4: Health Services Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Lake Los Angeles Community Clinic				1								
Littlerock Community Clinic					1	1						
Long Beach Comprehensive Health Center				1								
Martin Luther King, Jr. Outpatient Center				1								
Mid Valley Comprehensive Health Center			1	1								
Olive View-UCLA Medical Center					1					1		
Rancho Los Amigos National Rehabilitation Center				1		1						
San Fernando Health Center					1							
South Valley Health Center			1		1	1						
Torrance Health Center				1								
Vaughn School Based Health Center					1							
West Valley Health Center				1								
Wilmington Health Center				1								

Table C-5: Library Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
A C Bilbrew Library				1								
Acton Agua Dulce Library					1							1
Agoura Hills Library				1						1		
Alondra Library				1		1						
Angelo M. Iacoboni Library				1		1						
Anthony Quinn Library				1								
Artesia Library				1		1						
Avalon Library										1		
Baldwin Park Library				1								
Bell Gardens Library				1								
Bell Library				1								
Carson Library				1								
Castaic Library				1						1		
Charter Oak Library				1								
Chet Holifield Library				1								
City Terrace Library				1								
Claremont Helen Renwick Library				1								
Clifton M. Brakensiek Library				1		1						
Compton Library				1		1						
Cudahy Library				1		1						

Table C-5: Library Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Culver City Julian Dixon Library				1								
Diamond Bar Library				1								
Dr. Martin Luther King, Jr. Library				1								
Duarte Library				1								
East Los Angeles Library				1								
East Rancho Dominguez Library				1		1						
El Camino Real Library				1								
El Monte Library				1								
Florence Express Library				1								
Gardena Mayme Dear Library				1								
George Nye Jr. Library				1		1						
Graham Library				1								
Hacienda Heights Library				1								
Hawaiian Gardens Library				1		1						
Hawthorne Library				1								
Hermosa Beach Library				1								
Hollydale Library				1		1						
Huntington Park Library				1								

Table C-5: Library Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
La Canada Flintridge Library				1						1		
La Crescenta Library				1								
La Mirada Library				1								
La Puente Library				1								
La Verne Library				1								
Lake Los Angeles Library				1								
Lancaster Library				1		1						
Lawndale Library				1								
Leland R. Weaver Library				1								
Lennox Library				1								
Littlerock Library					1						1	
Live Oak Library				1								
Lloyd Taber- Marina del Rey Library				1					1			
Lomita Library				1								
Los Nietos Library				1								
Lynwood Library				1								
Malibu Library			1	1						1		
Manhattan Beach Library				1								
Masao W. Satow Library				1								
Maywood Cesar Chavez Library				1								
Montebello Library				1								

Table C-5: Library Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Norwalk Library				1								
Norwood Library				1								
Paramount Library				1		1						
Pico Rivera Library				1		1						
Quartz Hill Library					1							
Rivera Library				1		1						
Rosemead Library				1								
Rowland Heights Library				1								
San Dimas Library				1								
San Fernando Library					1							
San Gabriel Library				1								
Sorensen Library				1								
South El Monte Library				1								
South Whittier Library				1								
Stevenson Ranch Library					1					1		
Sunkist Library				1								
Temple City Library				1								
Topanga Library				1								1
View Park Bebe Moore Campbell Library				1								
Walnut Library				1								
West Covina Library				1		1						

Table C-5: Library Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
West Hollywood Library				1								
Westlake Village Library				1						1		
Willowbrook Library				1								
Wiseburn Library				1								
Woodcrest Library				1								

Table C-6: LACMA+MNH Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
La Brea Tarpits				1								
Los Angeles County Museum of Art				1								
Natural History Museum				1								
William S. Hart Museum					1					1		

Table C-7: Office of Education Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Afflerbaugh-Paige Camp				1								1
Alma Fuerte Public				1								
Animo City of Champions Charter High				1								
Aspire Antonio Maria Lugo Academy				1								
Aspire Ollin University Preparatory Academy				1								
Central Juvenile Hall				1								
Da Vinci RISE High				1								
Environmental Charter Middle				1								
Environmental Charter Middle - Inglewood				1								
Intellectual Virtues Academy				1								
International Polytechnic High				1								
Jardin de la Infancia				1								
Kirby, Dorothy Camp				1								
L.A. County High School for the Arts				1								
LA's Promise Charter High #1				1								
LA's Promise Charter Middle #1				1		1						
Lashon Academy			1	1								
Los Angeles County Special Education				1		1						

Table C-7: Office of Education Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Los Angeles International Charter High				1						1		
Los Padrinos Juvenile Hall				1		1						
Magnolia Science Academy			1	1								
Magnolia Science Academy 2				1								
Magnolia Science Academy 3				1		1						
Magnolia Science Academy 5				1								
McNair Camp					1							
Nidorf, Barry J.					1							
North Valley Military Institute College Preparatory Academy					1							
Odyssey Charter				1								
Onizuka Camp					1							
Optimist Charter				1						1		
Phoenix Academy Residential Education Center					1							
Renaissance County Community				1								
Road to Success Academy at Campus Kilpatrick				1								1
Rockey, Glenn Camp				1				1		1		
Scott, Joseph Camp				1								1
Soleil Academy Charter				1		1						
Valiente College				1								

Table C-7: Office of Education Hazard Impacts[illegible]

Table C-7: Other (Office) Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
1000 S. Fremont Ave.				1								
1055 Wilshire Blvd.				1								
1100 North Eastern Ave.				1								
1104 N. Mission Rd.				1								
12300 Lower Azusa Rd.				1								
12400 Imperial Highway				1								
12860 Crossroads Parkway South				1								
1320 North Eastern Ave.				1								
13837 Fiji Way				1					1			
1816 S. Figueroa				1								
210 W. Temple St.				1								
211 W. Temple St.				1								
313 N Figueroa St.				1								
3175 West Sixth St.				1								
320 West Temple St.				1								
425 Shatto Place				1								
550 South Vermont Ave.				1								
5770 S. Eastern Ave.				1								

Table C-7: Other (Office) Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
5898 Cherry Ave.				1		1						
5905 Wilshire Blvd.				1								
700 W. Main St.				1								
7400 East Imperial Highway				1		1						
900 South Fremont Ave.				1								
Kenneth Hahn Hall of Administration				1								

Table C-8: Parks & Recreation Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Acton Park				1								1
Adventure Park				1								
Adventure Park				1								
Allen J. Martin Park				1								
Alondra Community Regional Park				1								
Alondra Community Regional Park				1								
Amelia Mayberry Park				1								
Amelia Mayberry Park				1								
Amigo Park				1		1						
Arcadia Community Regional Park				1								
Arcadia Community Regional Park				1								
Athens Park				1								
Athens Park				1								
Bassett Park				1								
Bassett Park				1								
Bassett Park				1								
Belvedere Community Regional Park				1								
Belvedere Community Regional Park				1								
Bodger Park				1								
Carolyn Rosas Park				1								
Castaic Regional Sports Complex			1	1								1
Castaic Regional Sports Complex			1	1								1

Table C-8: Parks & Recreation Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Charles S. Farnsworth Park				1						1		
Charles S. Farnsworth Park				1								
Charles S. Farnsworth Park				1								
Charles S. Farnsworth Park				1								
Charter Oak Park				1								
City Terrace Park				1								
City Terrace Park				1								
Col. Leon H. Washington Park				1								
Col. Leon H. Washington Park				1								
Crescenta Valley Community Regional Park				1						1		
Crescenta Valley Community Regional Park				1						1		
Dalton Park				1								
Del Aire Park				1								
Del Aire Park				1								
Devil's Punchbowl Natural Area and Nature Center					1						1	
Dexter Park					1			1				1
Dexter Park					1			1				1
Don Knabe Community Regional Park				1								

Table C-8: Parks & Recreation Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Don Knabe Community Regional Park				1								
Don Knabe Community Regional Park				1								
East Rancho Dominguez Park				1		1						
East Rancho Dominguez Park				1		1						
East Rancho Dominguez Park				1		1						
El Cariso Community Regional Park					1							
El Cariso Community Regional Park					1							
El Cariso Community Regional Park					1							
Enterprise Park				1								
Eugene A. Obregon Park				1								
Eugene A. Obregon Park				1								
Franklin D. Roosevelt Park				1								
Franklin D. Roosevelt Park				1								
George Lane Park					1	1						
George Lane Park					1	1						
George Washington Carver Park				1								

Table C-8: Parks & Recreation Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Hacienda Heights Community and Rec Center				1								
Hacienda Heights Community and Rec Center				1								
Hacienda Heights Community and Rec Center				1								
Helen Keller Park				1								
Hollywood Bowl				1						1		
Jackie Robinson Park					1	1						
Jackie Robinson Park					1	1						
Jesse Owens Community Regional Park				1								
Jesse Owens Community Regional Park				1								
John Anson Ford Amphitheatre				1						1		
John Anson Ford Amphitheatre				1						1		
Kenneth Hahn State Recreation Area				1						1		
Ladera Park				1								
Ladera Park				1								
Ladera Park				1								
Lennox Park				1								
Lennox Park				1								
Lennox Park				1								

Table C-8: Parks & Recreation Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Loma Alta Park				1								1
Loma Alta Park				1								1
Los Angeles County Arboretum and Botanic Garden				1								
Manzanita Park				1								
Mary M. Bethune Park				1								
Mary M. Bethune Park				1								
Mona Park				1								
Mona Park				1								
Pamela County Park				1								
Pamela County Park				1								
Pathfinder Community Regional Park				1						1		1
Pearblossom County Park					1							
Peter F Schabarum Regional County Park				1						1		
Rimgrove Park				1								
Rowland Heights Park				1								
Roy Campanella Park				1								
Ruben F Salazar Park				1								
Ruben F Salazar Park				1								
Ruben F Salazar Park				1								
San Angelo Park				1								
San Fernando Recreation Park and Aquatic Center					1							
Saybrook Park				1								
Sorensen Park				1								

Table C-8: Parks & Recreation Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
South Coast Botanic Garden				1						1		
Stephen Sorensen Park				1								
Sunshine Park				1								
Ted Watkins Memorial Park				1								
Ted Watkins Memorial Park				1								
Tesoro Adobe Historic Park				1						1		1
Val Verde Community Regional Park				1								1
Val Verde Community Regional Park				1								1
Valleydale Park				1								
Valleydale Park				1								
Vasquez Rocks Natural Area and Nature Center				1								1
Veterans Memorial Community Regional Park					1					1		
Victoria Community Regional Park				1								
Victoria Community Regional Park				1								
Walnut Nature Park				1								
Whittier Narrows Recreation Area				1								
William S. Hart Regional Park					1					1		
William Steinmetz Park				1								

Table C-8: Parks & Recreation Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
William Steinmetz Park				1								
William Steinmetz Park				1								

Table C-9: Public Health Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Antelope Valley Health Center				1								
Central Public Health Center				1								
Curtis R. Tucker Health Center				1								
Glendale Health Center				1								
Hollywood/Wilshire Public Health Center				1								
Martin Luther King, Jr. Center for Public Health				1								
Monrovia Public Health Center				1								
North Hollywood Public Health Center				1								
Pacoima Public Health Center					1							
Pomona Public Health Center				1								
Ruth-Temple Public Health Center				1								
Simms/Mann Health and Wellness Center				1								
Torrance Public Health Center				1								
Whittier Public Health Center				1								

Table C-10: Public Works Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Brackett Field Airport				1								
Compton/Woodley Airport				1								
San Gabriel Valley Airport				1								
General Wm. J. Fox Airfield				1								
Whiteman Airport					1							
Big Dalton Dam								1		1		
Big Tujunga Dam				1				1				
Cogswell Dam				1				1				
Devil's Gate Dam				1						1		
Eaton Wash Dam				1								
Live Oak Dam				1								1
Morris Dam				1				1				1
Pacoima Dam								1				1
Puddingstone Dam				1								
Puddingstone Diversion Dam				1								
San Dimas Dam				1								1
San Gabriel Dam				1								
Santa Anita Dam				1				1				
Thompson Creek Dam				1						1		
PW ITD – Mount Wilson Radio Antenna Tower				1								
PW ITD – Mount Wilson Radio Facility Bldg.				1								
PW WWD - 37-1 Well				1								1
PW WWD - 37-3 Well				1								1

Table C-10: Public Works Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
PW WWD - 37-4 Well				1								1
PW Headquarters Building				1								
PW RMD – Div. #116 Maintenance Yard				1								
PW RMD – Div. #142 Maintenance Yard				1								
PW RMD – Div. #417 Maintenance Yard				1								
PW RMD – Baldwin Park Maintenance Yard				1								
PW RMD - Lower Central Yard – Division Administration				1								
PW RMD - Upper Central Yard				1								
PW RMD – Van Pelt Bridge Maintenance Yard				1								
PW SWMD – Imperial Yard				1		1						
PW SWMD – Longden Yard				1								
PW SWMD – Rio Hondo Yard				1								
PW SWMD – Riverview Maintenance Yard				1		1						
PW RMD – Div. #141/241 Maintenance Yard				1								

Table C-10: Public Works Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
PW RMD – Div. #232 Maintenance Yard				1								
PW RMD – Maint. District 3 Yard				1								
PW SWMD – 83rd St. Maintenance Yard				1								
PW RMD – Div. #336 Maint. Yd.				1						1		
PW RMD – Div. #339/539 Agoura Maintenance Yard				1								1
PW SWMD – Saticoy Yard				1			1					
PW WWD #29 - 20858 Regulating Station				1		1				1		
PW WWD #29 - Big Rock 900 Pump Station				1				1				1
PW WWD #29 - Big Rock 1010 Tank				1				1				1
PW WWD #29 - Big Rock 1200 Tank				1				1				1
PW WWD #29 - Broad Beach Regulating Station				1				1		1		
PW WWD #29 - Carbon Mesa Tank				1						1		
PW WWD #29 - Entrada Pump Station				1				1				1
PW WWD #29 - Entrada Tank				1				1				1

Table C-10: Public Works Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
PW WWD #29 - Fernwood Tank				1				1				1
PW WWD #29 - Guernsey Regulating Station				1						1		
PW WWD #29 - Heather Cliff Regulating Station				1						1		
PW WWD #29 - Horizon Tank				1						1		
PW WWD #29 - Hume Tank				1								1
PW WWD #29 - La Chusa Feeder Regulating Station				1						1		
PW WWD #29 - La Costa				1						1		
PW WWD #29 - La Costa Regulating Station				1				1		1		
PW WWD #29 - Las Flores Pump Station				1						1		
PW WWD #29 - Las Flores Tank				1						1		
PW WWD #29 - Latigo Tank				1				1				1
PW WWD #29 - Lower Big Rock 195 Pump Station				1				1		1		
PW WWD #29 - LVMWD, Hume Connection				1				1				1

Table C-10: Public Works Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
PW WWD #29 - LVMWD, Latigo Connection				1				1				1
PW WWD #29 - LVMWD , Saddle Peak Interconnection				1								1
PW WWD #29 - Lower Busch Pump Station				1						1		
PW WWD #29 - Malibu Beach Pump Station				1						1		
PW WWD #29 - Malibu Knolls Tank				1						1		
PW WWD #29 - New Summit Tank				1								1
PW WWD #29 - Nicholas Beach Tank				1				1		1		
PW WWD #29 - Old Summit Tank				1						1		
PW WWD #29 - Owen Pump Station				1								1
PW WWD #29 - Pepperdine 545 Pump Station				1						1		
PW WWD #29 - Pepperdine 812 Tank				1								1
PW WWD #29 - Pepperdine 907 Tank				1				1				1
PW WWD #29 - Philip Tank				1						1		

Table C-10: Public Works Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
PW WWD #29 - Point Dume Pump Station and Tank				1						1		
PW WWD #29 - Portshead Tank				1								
PW WWD #29 - Saddle Peak Tank				1				1				1
PW WWD #29 - Santa Maria Tank				1						1		
PW WWD #29 - Serra Pump Station				1						1		
PW WWD #29 - Sumac Ridge Tank				1						1		
PW WWD #29 - Sweetwater Hydro Pump Station				1						1		
PW WWD #29 - Sweetwater Mesa Tank				1				1		1		
PW WWD #29 - Topanga Beach Pump Station				1				1				1
PW WWD #29 - Topanga Beach Tank				1						1		
PW WWD #29 - Topanga Forks Tank				1				1				1
PW WWD #29 - Topanga Oaks Tank				1				1				1
PW WWD #29 - Topanga Park Pump Station				1								1

Table C-10: Public Works Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
PW WWD #29 - Trancas Tank				1						1		
PW WWD #29 - Upper Big Rock 730 Pump Station				1				1		1		
PW WWD #29 - Upper Encinal Tank				1				1		1		
PW WWD #29 - Winding Wy Tank				1				1				1
PW RMD - Div 446 Maintenance Yard				1		1						
PW RMD – Div. #446 Sub Maintenance Yard				1								
PW RMD – Maintenance District No.4 Yard				1		1						
PW SWMD – Alamitos Maintenance Yard				1		1						
PW SWMD – El Segundo Yard				1								
PW SWMD – Redondo Yard Office				1								
PW WWD #29 LADWP Emergency Via Dolce Connection				1		1			1			
PW WWD #29 – LADWP Emergency Mindanao Connection				1								
PW OSD - Eaton Yard – Maintenance Office				1				1				

Table C-10: Public Works Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
PW RMD – 518-B Maintenance Yard				1						1		
PW RMD – Div. #523 Maintenance Yard				1						1		
PW RMD – Div. #524 Maintenance Yard				1						1		
PW RMD – Div. #518 Maintenance Yard				1								
PW RMD – Div. #519 Maintenance Yard				1								
PW RMD – Div. #526 Maint. Yd.			1	1		1				1		
PW RMD – Div. #551 Maintenance Yard					1	1						
PW RMD – Div. #555 Maintenance Yard				1								
PW RMD – Div. #558 Maint. Yard					1							
PW RMD – Div. #558a Jackson Lake Maintenance Yd.					1							
PW RMD – Div. #559b Maintenance Yard				1								
PW RMD – Palmdale Maintenance Dist. No. 5 Bldg. Yard					1	1						
PW SWMD – Eaton Maintenance Yard				1								
PW SWMD – Pickens Yard				1						1		

Table C-10: Public Works Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
PW SWMD – Rubio Yard				1						1		
PW SWMD – Santa Clara Flood Maintenance Yard				1						1		
PW WWD #04 – North Administration Building				1		1						
PW SWMD – San Dimas Maintenance Yard				1								
PW SMD - Balfour				1		1						
PW SMD - Bradhurst				1		1						
PW SMD - Broadway				1								
PW SMD - Muscatel				1								
PW SMD - Painter				1								
PW SMD - Surrey Drive				1				1		1		
PW SMD - 132ND STREET				1								
PW SMD - Centinela				1								
PW SMD - Davids Road				1						1		
PW SMD - Ulmus				1				1		1		
PW SMD - Viewridge				1				1		1		
PW SMD - 213TH STREET				1								
PW SMD - AGAVE				1								
PW SMD - HEATHERFIELD				1				1		1		
PW SMD - MAYBROOK				1								

Table C-10: Public Works Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
PW WWD - 116th street pump station					1							
PW WWD - P-10 Pump station					1							
PW WWD - Tierra Subida Pump Station				1								
PW SMD - CAPALLERO				1								1
PW SMD - COMMERCE CENTER DRIVE				1				1				
PW SMD - LAKE HUGHES - NEWVALE					1							1
PW SMD - LAKE HUGHES - TRAIL K					1							1
PW SMD - LOWRIDGE				1						1		
PW SMD - MARINA DEL REY				1					1			
PW SMD - TYLER				1								
PW WWD - Crown Valley Pump station				1								1
PW WWD - Hasley Pump Station				1								1
PW SWMD - 120th St. Pump Station				1								
PW SWMD - Alameda Street 3B Pump Station				1		1						
PW SWMD - Alameda Street 3C Pump Station				1		1						

Table C-10: Public Works Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
PW SWMD - Avalon Pump Station				1		1						
PW SWMD - Compton Creek Pump Station #1				1		1						
PW SWMD - Compton Creek Pump Station #2				1		1						
PW SWMD - Dominger Pump Station				1		1						
PW SWMD - Lennox Blvd Pump Station				1								
PW SWMD - Oxford Pump Station				1					1			
PW SWMD - Redondo Beach Blvd Pump Station				1								
PW SWMD - Boone Olive Pump Station				1		1			1			
PW SWMD - Electric Ave Pump Station				1								
PW SWMD - 17th St Pump Station				1								
PW SWMD - Alamitos Bay Pump Station		1		1					1			
PW SWMD - Alondra Pump Station				1		1						
PW SWMD - Anaheim St. Pump Station		1		1		1			1			

Table C-10: Public Works Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
PW SWMD - Appian Way Pump Station		1		1		1			1			
PW SWMD - Arena Pump Station				1								
PW SWMD - Belmont Pump Station	1	1		1					1			
PW SWMD - Century Frwy Pump Station				1		1						
PW SWMD - Cerritos Pump Station				1		1						
PW SWMD - Claretta Pump Station				1		1						
PW SWMD - Cordova Walk Pump Station									1			
PW SWMD - Dominguez Pump Station				1		1						
PW SWMD - Doris Pump Station				1								
PW SWMD - East Toledo Pump Station									1			
PW SWMD - El Dorado Pump Station				1		1						
PW SWMD - El Segundo Pump Station				1								
PW SWMD - Garnet Avenue Pump Station				1		1						
PW SWMD - Hamilton Bowl South Pump Station				1		1						
PW SWMD - Hamilton Bowl West				1		1						

Table C-10: Public Works Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Pump Station												
PW SWMD - Hill St. Pump Station				1		1						
PW SWMD - Johnson Pump Station				1								
PW SWMD - Lakewood Pump Station				1		1						
PW SWMD - Los Altos Pump Station				1								
PW SWMD - Lynwood Pump Station				1		1						
PW SWMD - Manhattan Beach Pump Station				1								
PW SWMD - Market St. Pump Station				1		1						
PW SWMD - Naples Pump Station									1			
PW SWMD - Paramount Pump Station				1		1						
PW SWMD - Seaside Pump Station				1		1			1			
PW SWMD - Walteria Lake Pump Station				1								
PW SWMD - West Long Beach Pump Station	1	1		1					1			
PW SWMD - West Neapolitan Pump Station	1	1		1					1			

Table C-10: Public Works Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
PW SWMD - West Toledo Pump Station									1			
PW SWMD - Wilmington Unit 2 Pump Station				1								
PW SMD – Malibu Mesa WWTP				1						1		
PW SMD – Malibu TP				1						1		
PW SMD - Trancas WWTP				1		1				1		
PW SMD – LAKE HUGHES					1							
PW WWD - 27 Tank					1						1	
PW WWD - 39 Tank					1						1	
PW WWD - 116th street Tank				1							1	
PW WWD - Adobe Tank												
PW WWD - Blue Rock Tank				1								
PW WWD - Butte's Tank												
PW WWD - City Ranch Tanks					1							
PW WWD - Ft. Tejon Tank					1						1	
PW WWD - Joshua Ranch Tank				1						1		
PW WWD - Kohl's tank					1	1						
PW WWD - M & 7th west Tank site					1							

Table C-10: Public Works Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
PW WWD - Q-9 Tanks					1							
PW WWD - Rancho Vista tanks				1				1		1		
PW WWD - Tierra Subida Tanks				1								
PW WWD #04 – M/5e Water Tank					1							
PW WWD #04- M8/75w Water Tank					1							
PW WWD - Cuyama Tank				1				1				1
PW WWD - Hasley Tank				1								1
PW WWD - North Tank				1								1
PW WWD - McCenney Tank					1			1				1
PW WWD - South Tank				1								1
PW WWD - 168th and G Pump station				1								
PW WWD - Anaverde Tanks and pump station				1						1		
PW WWD - Old timers tank and pump station				1								
PW WWD - Los Valles Pump station and Well				1								1
PW WWD - Vincent Pump station					1							1

Table C-10: Public Works Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
PW WWD - Bev martin tank and Pump Station				1		1						
PW SMD – East Yard				1								
PW SMD - Lawndale				1								
PW SMD – South Yard				1								
PW SMD – Central Yard				1								
PW SMD – North Yard				1		1						

Table C-11: Sheriff's Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Altadena Sheriff's Station				1								
Avalon Sheriff's Station										1		
Carson Sheriff's Station				1		1						
Century Regional Detention Facility				1								
Century Sheriff's Station				1								
Cerritos Sheriff's Station				1								
Compton Sheriff's Station				1		1						
Crescenta Valley Sheriff's Station				1						1		
East Los Angeles Sheriff's Station				1								
Industry Sheriff's Station				1								
Inmate Reception Center				1								
Lakewood Sheriff's Station				1		1						
Lancaster Sheriff's Station				1		1						
Lomita Sheriff's Station				1								
Malibu/Lost Hills Sheriff's Station				1						1		
Marina Del Rey Sheriff's Station				1					1			
Men's Central Jail				1								
North County Correctional Facility			1	1							1	
Norwalk Sheriff's Station				1								
Palmdale Sheriff's Station					1							
Pico Rivera Sheriff's Station				1		1						
Pitchess Detention Center East Facility				1				1				1

Table C-11: Sheriff's Department Facility Hazard Impacts

Facility Name	3 Ft Sea Level Rise	6 Ft Sea Level Rise	Dam Failure Inundation	Violent EQ Shaking	Extreme EQ Shaking	0.2% Annual Chance Flooding	1% Annual Chance Flooding	Deep Seated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
Pitchess Detention Center North Facility			1	1								1
Pitchess Detention Center South Facility			1	1								1
San Dimas Sheriff's Station				1								
Santa Clarita Valley Sheriff's Station					1							
South Los Angeles Sheriff's Station				1								
Temple Sheriff's Station				1								
Twin Towers Correctional Facility				1								
Walnut/Diamond Bar Sheriff's Station				1								
West Hollywood Sheriff's Station				1								

